

**UNIVERSITY OF THE WESTERN CAPE  
INSTITUTE FOR SOCIAL DEVELOPMENT**



**UNIVERSITY of the  
WESTERN CAPE**

**MIGRATION AS A CLIMATE CHANGE ADAPTATION STRATEGY IN RURAL  
ZIMBABWE: AN ANALYSIS OF THE EXPERIENCES OF FEMALE CLIMATE  
MIGRANTS IN GOROMONZI DISTRICT**

**A research proposal submitted at the Institute for Social Development, Faculty of  
Economic and Management Sciences, University of the Western Cape in partial  
fulfilment of the requirements for the award of a Master in Development Studies.**



**STUDENT NUMBER:** 3265455

**NAME:** Michelle Paidamwoyo Masuku

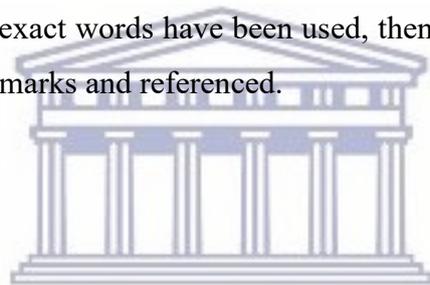
**SUPERVISOR:** Dr. Abdulrazak Karriem

**April 2018**

## DECLARATION

I, Michelle Paidamwoyo Masuku (student number 3265455), declare that:

1. The research reported in this thesis, except where otherwise indicated, is my original work.
2. This thesis has not been submitted for any degree or examination at any other university.
3. This thesis does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from such persons.
4. This thesis does not contain other persons' writing, unless specifically acknowledged as being sourced from other researchers. Where other written sources have been quoted, then:
  - a) Their words have been re-written, but the general information attributed to them has been referenced.
  - b) Where their exact words have been used, then their writing has been placed in quotation marks and referenced.



UNIVERSITY of the  
WESTERN CAPE

A handwritten signature in purple ink, appearing to read 'M. Paidamwoyo Masuku'.

**Michelle Paidamwoyo Masuku**

April 2018

## ACKNOWLEDGEMENTS

First and foremost, I would like to thank God Almighty for giving me the strength, knowledge, ability and opportunity to undertake this research study and to persevere and complete it satisfactorily. Without his blessings, this achievement would not have been possible.

I would also like to thank my supervisor, Dr. Abdulrazack Karriem for the patient guidance, encouragement, advice and immense knowledge he has provided throughout my time as his student. I have been extremely lucky to have a supervisor who cared so much about my work, and who responded to my questions and queries so promptly.

I wish to thank my parents – Michael and Florence Masuku – for their love and encouragement, without whom I would never have enjoyed so many opportunities. Thank you both for giving me strength to reach for the stars and chase my dreams.

I cannot forget friends who went through hard times together, cheered me on, and celebrated each accomplishment throughout this journey: Munyaradzi Mapfumo, Thelma Mabambe and Joeferry Tugwete. And a special thanks to Headman Musonza, Sabhuku Hiya and the whole of Hiya village in Goromonzi for sharing their knowledge and experiences with me.

I thank the National Research Foundation (NRF) for its financial assistance towards this research. Opinions expressed and conclusions arrived at, are those of the author and are not necessarily to be attributed to the NRF.

Michelle Paidamwoyo Masuku

## ACRONYMS/ABBREVIATIONS

FAO	-	Food and Agriculture Organization of the United Nations
FPE	-	Feminist Political Ecology
GMB	-	Grain Marketing Board
NEM	-	New Economics of Migration
ILO	-	International Labour Organization
UN	-	United Nations
UNDP	-	United Nations Development Programme
UNEP	-	United Nations Environmental Programme
UNFPA	-	United Nations Population Fund
VAR	-	Vector Auto-Regression
ZimStat	-	Zimbabwe National Statistics



UNIVERSITY *of the*  
WESTERN CAPE

## ABSTRACT

Climate change has induced a number of environmental issues that have affected people's lives beyond the scope of ecology; these effects have touched on the social, cultural and economic dimensions of life as well. In light of this, migration has increasingly been used as a climate adaptation strategy particularly in rural areas. This has not only changed migration patterns, it has also reconstructed the gender dynamics within the migration discourse through the 'feminization of migration.' Hence it has become important to analyse, understand and unpack the various ways in which women experience climate change and climate-induced migration, and how this has affected their lives. Additionally, women's position as active agents in climate migration and knowledge production has increasingly been acknowledged in climate and migration discourse. This study focused on the effects of climate change on female migration patterns in Goromonzi District, Zimbabwe; and took place in Hiya village. The main research question aimed to find out if using migration as an adaptation strategy to climate change had positively changed the lives of women in rural Zimbabwe? With a focus on Hiya village in Goromonzi, Zimbabwe the research question was answered through identifying migration push factors for women, climate resistant livelihoods and the benefits of migration in light of climate induced environmental disasters. A mixed methods research approach was used however the research is largely qualitative.

Through one-on-one interviews and focus group discussions, women residing in the village shared their experiences of climate change and migration in the area. Analysis of qualitative data showed that the impacts of climate variability such as increased temperatures and inconsistent rainfall had resulted in decreased land productivity and limited crop options for agriculture. Despite this, Hiya village is an area that receives female climate-migrants who have experienced worse environmental events in other parts of Zimbabwe. Migration in the area is controlled by cultural protocols which play a role in regulating migrant numbers. Additionally, female migrants are more likely to be given access to the area. This is due to village authorities mostly sympathizing with the vulnerable state of migrant women who travel alone or with children. Contrary to this, migrant men are often denied access to the village. Climate-induced migration has also changed household structures and gender dynamics with women taking on more active roles to support their families. Most female migrants are involved in agricultural activities in Hiya village, Goromonzi which have become their livelihoods. Hence climate change has played a role in increasing female rural-rural migration and

transforming household gender roles and dynamics through granting women more financial autonomy. A brief quantitative analysis of general migration and climate trends in Zimbabwe was done using STATA. A Vector Auto-Regression model was used to conduct trend analysis on precipitation and temperature data from 1991 to 2015; and migration data from 2004-2015. Results showed that there is a positive relationship between climate change and migration.

**Key words:** Climate change, migration, feminist political ecology, gender, adaptation strategy, livelihoods, rural, Goromonzi, Zimbabwe



## LIST OF FIGURES

<b>FIGURE 1.1:</b> Map of Zimbabwe .....	6
<b>FIGURE 1.2:</b> Map of Mashonaland East .....	7
<b>FIGURE 5.1:</b> A homestead shared by migrant women .....	45
<b>FIGURE 5.2:</b> Homestead in Hiya village .....	54
<b>FIGURE 5.3:</b> Withered maize .....	57
<b>FIGURE 5.4:</b> Sandy soil .....	59
<b>FIGURE 5.5:</b> Road-runner chicken in poultry project .....	65
<b>FIGURE 5.6:</b> Vegetable garden .....	69
<b>FIGURE 5.7:</b> Changes in annual average rainfall since 1900 .....	79
<b>FIGURE 5.8:</b> Average rainfall map .....	80
<b>FIGURE 5.9:</b> Average temperature map .....	81



## LIST OF TABLES

<b>Table 4.1:</b> Thematic Coding .....	37
<b>Table 5.1:</b> Precipitation ADF Test Results .....	73
<b>Table 5.2:</b> Temperature ADF Test Results .....	74
<b>Table 5.3:</b> Migration ADF Test .....	75
<b>Table 5.4:</b> VAR Precipitation .....	76
<b>Table 5.6:</b> VAR Temperature .....	77
<b>Table 5.7:</b> VAR Migration .....	78

## TABLE OF CONTENTS

<b>DECLARATION</b> .....	ii
<b>ACKNOWLEDGEMENTS</b> .....	iii
<b>ACRONYMS/ABBREVIATIONS</b> .....	iv
<b>ABSTRACT</b> .....	v
<b>LIST OF FIGURES</b> .....	vii
<b>LIST OF TABLES</b> .....	vii
<b>TABLE OF CONTENTS</b> .....	viii
<b>CHAPTER 1: INTRODUCTION AND BACKGROUND</b> .....	1
1.1. INTRODUCTION.....	1
1.2. BACKGROUND AND CONTEXTUALIZATION.....	4
1.3. RESEARCH AREA .....	5
1.4. RATIONALE AND SIGNIFICANCE OF THE STUDY .....	8
1.5. AIMS AND OBJECTIVES.....	8
1.6. RESEARCH QUESTION.....	9
1.7. THESIS OUTLINE .....	9
<b>CHAPTER 2: LITERATURE REVIEW</b> .....	10
2.1. INTRODUCTION.....	10
2.2. RURAL-URBAN MIGRATION.....	10
2.3. LAND PRODUCTIVITY AND MIGRATION .....	12
2.4. CROP YIELDS AND MIGRATION.....	13
2.5. FOOD INSECURITY AND MIGRATION .....	14
2.6. LOSS OF LIVELIHOODS AND MIGRATION .....	15
2.7. GENDER AND MIGRATION.....	16
2.8. CHAPTER SUMMARY .....	19
<b>CHAPTER 3: THEORETICAL FRAMEWORK</b> .....	20
3.1. INTRODUCTION.....	20
3.2. MIGRATION THEORIES .....	21
3.2.1. Neo-classical Migration Theory: Micro framework .....	21
3.2.2. New Economics of Migration Theory (NEM).....	22
3.3. HOUSEHOLD STRATEGY THEORY .....	23
3.4. FEMINIST POLITICAL ECOLOGY THEORY .....	24
3.5. CHAPTER SUMMARY .....	26

<b>CHAPTER 4: RESEARCH METHODOLOGY .....</b>	<b>27</b>
4.1. INTRODUCTION.....	27
4.2. QUALITATIVE RESEARCH METHODOLOGY.....	27
4.2.1. Phenomenological Research Design.....	28
4.2.2. Sampling .....	29
4.2.3. Gatekeepers.....	30
4.2.4. Qualitative Data Collection Methods.....	31
4.2.5. Interview Schedules .....	35
4.2.6. Qualitative Data Analysis Process .....	36
4.3. QUANTITATIVE RESEARCH METHODOLOGY .....	40
4.3.1. Quantitative Data Collection Methods.....	40
4.3.2. Data Analysis .....	41
4.4. ETHICAL CONSIDERATIONS.....	41
4.5. CHAPTER SUMMARY .....	42
<b>CHAPTER 5: DATA ANALYSIS .....</b>	<b>44</b>
5.1. INTRODUCTION.....	44
5.2. QUALITATIVE DATA ANALYSIS AND INTERPRETATION.....	44
5.2.1. Theme 1 - Temporary migration .....	44
5.2.2. Theme 2 – Family Ties .....	52
5.2.3. Theme 3 - Agriculture and Climate Change .....	56
5.2.4. Theme 4 - Government Support .....	69
5.3. Summary of Qualitative Data Analysis.....	71
5.4. QUANTITATIVE DATA ANALYSIS.....	72
5.4.1. Augmented Dickey-Fuller Test.....	72
5.4.2. Vector Auto-regression (VAR) Model .....	75
5.4.3. Summary of Quantitative Data Analysis.....	78
<b>CHAPTER 6: CONCLUSION AND DISCUSSION OF THE FINDINGS .....</b>	<b>83</b>
6.1. Introduction .....	83
6.2. Discussion of the Findings .....	83
6.2.1. Key Findings.....	85
6.3. Limitations of the Study.....	86
6.4. Recommendations .....	86
<b>BIBLIOGRAPHY.....</b>	<b>87</b>
<b>APPENDICES.....</b>	<b>106</b>
One-on-one Interview Information Sheet .....	106

One-on-one Interview Letter of Consent .....	108
Interview Schedule.....	109
Focus Group Discussion Information Sheet.....	111
Focus Group Discussion Interview Letter of Consent .....	113
Focus Group Discussion Interview Schedule.....	114
Headman’s Approval Letter .....	116



UNIVERSITY *of the*  
WESTERN CAPE

## **CHAPTER 1: INTRODUCTION AND BACKGROUND**

### **1.1. INTRODUCTION**

Climate change is one of the world's most significant challenges which have gradually worsened over the last few decades. Climate change has induced a number of environmental issues that have affected people's lives beyond the scope of ecology; these effects have touched on the social, cultural and economic dimensions of life as well. In light of this, the issue of climate change has called for increased attention as it has resulted in a variety of problems, the most prominent being irregular weather patterns. Drastic weather changes have triggered a range of climate related problems such as land degradation, floods and droughts which, in turn, have led to severe food and water shortages and disease outbreaks (Bauer & Scholz, 2015; Thornton et al., 2014; Brauch et al. 2003). This in turn has exacerbated poverty and diminished or destroyed the livelihoods of many people. According to the UNDP Human Development Report (2011), people living in countries with a low human development index (HDI) tend to be more prone to having their livelihoods affected by climate change, particularly the rural poor. People who belong to disadvantaged groups are usually dependent on climate-sensitive livelihoods such as fisheries and agriculture, making them more susceptible to the adverse effects of climate change. In addition, the poor often do not have sufficient resources to withstand the effects of climate change. As a result, most have used various climate adaptation strategies to survive and sustain themselves, their families and their communities (Salzmann, 2016; Lobell, et al., 2008). An adaptation can be defined as a modification of natural or human systems as a result of environmental shocks (IPCC, 2001). Mitchell and Tanner (2006) add to this definition stating that adaptation is an understanding of how people prepare for and respond to changes in climate or their environment in order to reduce climate vulnerability. One such adaptation strategy is migration.

Although migration and climate change are two interconnected global processes, the link between them has only been made in recent years as the body of evidence relating these two issues continues to grow. Migration has often been viewed as a result of factors such as economic instability and political unrest. However, the increased frequency and severity of environmental disasters which coincided with a spike in migration has led to the recognition of climate change as a migration push factor. As a result, there has been an increase in literature focusing on climate induced migration in various parts of the world, and the effects of migration

as an adaptation strategy to the effects of environmental disasters. Climate-induced migration has led to the reconstruction of global migration patterns. Historically, people have been known to relocate from areas that have severe or unfavorable weather conditions. White (2011) states that the escalation of adverse climate change effects will lead to a parallel and continuous rise in the scale of local and international migration. It is often thought that migration shows an inability to acclimate to environmental changes (Tacoli, 2009). As a result, there is sparse literature that captures the possible role that migration can play as a livelihood strategy in the context of climate change. This in part can be attributed to the limited availability of data and research that speaks to this issue. Warner (2009) agrees with the notion of migration as a livelihood strategy stating that migration should rather be seen as both a coping and survival strategy which manages socio-environmental relations. This coping mechanism is often used by people living in rural areas. According to Yamin (2004), people living in poor regions of the world are the ones most affected by climate change. These areas are usually underdeveloped, and experience inhibited development due to increased natural resource scarcity. Christian Aid (2007) adds that the scarcity of resources can also result in conflict over tenure and rights to resources and this too can lead to migration. In rural areas, land tenure plays a significant role in determining a person's degree of vulnerability to climate-induced disasters. Insecure land tenure hinders the diversification of livelihoods and the use of sound land management systems. Lastarria-Cornhiel (2002) explains land tenure in rural Southern Africa stating that it is governed by social relations, economic structures and family structures. Family structures bring with them marriage and inheritance practices around land. Typically, in customary tenure regimes, the chief/headman is the main custodian of community land. Therefore, people who have no access to land or have limited access to land are vulnerable to climate change as land can be recalled from them due to their lack of ownership, or they may have insufficient land to support an agriculture-based livelihood in light of changes in temperature or rainfall. As a result, migration becomes an option for these people. It is for this reason that the United Nations Environment Programme has cited climatic influences as "one of three major causes of displacement..." along with conflict and economic instability (2007, p. 104). There have been various reports on the estimated number of 'climate change migrants' over the next few decades. Greenpeace Germany projected that over the next three decades there will be about 200 million climate migrants globally (Jakobeit & Methmann, 2007). Christian Aid (2007) expounds on this estimate stating that by the year 2050, there will be 1 billion climate migrants across the world. With such large estimations, it is important to ask who is migrating in this context and to view climate-induced migration from a gendered perspective.

Historically, migration has been seen as a gender-neutral, male-centric phenomenon. Women were often viewed as dependent family members who accompany migrants and not autonomous migrants. This can in part be attributed to cultural restriction of female migration that stipulate that women cannot travel alone. Cultural (and in some cases structural) institutions were able to regulate female migration by reinforcing gender ideals the portrayed independent female migrants as immoral rebels (Sharpe, 2001). It is only around the 1960's that female migration started to significantly increase as women began to move around for economic reasons. This can be attributed to globalization which vastly increased the opportunities available for women to work and offered numerous means of migration. Additionally, globalization transformed perceptions of female migration and gender ideals making it more acceptable for women to travel alone. This led to the 'feminization of migration' which has become a growing phenomenon calling for increased attention and awareness. The feminization of migration describes the upward trend of voluntary female migration in migration trends. In light of this, it has now become imperative to look at the gendered nature of migration patterns.

In the discourses of climate change and migration, gender is often an aspect that is present; however, it is seldom discussed in the literature. Migration is experienced in varying ways by men and women, and because it is a climate change adaptation strategy it is of great importance to incorporate a gendered perspective. Gender plays a role in influencing the pressure that people have to migrate, the places they choose to migrate to, the livelihoods they engage in, and the impact that these factors have on social relations in the area's migrants have left and relocated to. Climate-induced migration is often motivated by the need to diversify household income in the form of remittances. However, the question of who migrates and to where is often dependent on region and culture. Zlotnick (2003) states that over the last few decades the number of female migrants has increased, resulting in women making up nearly half of the migrants around the world. Despite this, most literature on migration has looked at the issue broadly, focusing on where people migrate to and their reasons for migration without a gendered perspective (Boyd & Grieco, 2003). Research by Thang, MacLachlan and Goda (2002) exemplifies such studies where they looked at the migration of male expatriates assuming that women only played the role of a dependent. Such gender-neutrality in migration and climate issues has not only been limited to academic discourse, it has also been observed in public and policy dialogue (Clancy & Solomon, 2015; FAO, 2009). The slow incorporation of women into climate change and migration discussions only began in the 1980's. It has

become increasingly evident that an understanding of gender roles and not simply sex-disaggregated data is vital in comprehending migration patterns that are influenced by climate change.

This research focuses on the experiences of female climate migrants in the Goromonzi District, Zimbabwe. It is therefore important to understand the socio-economic and climatic conditions of Zimbabwe and the effects climatic variations have had in the country. The following section will provide some background and context to the climatic conditions in the country.

## **1.2. BACKGROUND AND CONTEXTUALIZATION**

Many scholars have unanimously agreed that Africa's exposure to high levels of poverty, low levels of development and erratic climatic conditions has increased the vulnerability of some countries on the continent compared to other regions of the world (Bauer & Scholz, 2015; Madzwamuse, 2010; Thornton et al., 2006). Zimbabwe is one such country which has been negatively affected by climate change. The country's large dependence on agriculture-based, climate sensitive livelihoods – particularly for people residing in rural areas – has been greatly affected by intermittent climatic conditions. This has subsequently led to the intensification of local and national issues of diminishing agricultural output and food insecurity. A number of studies looking at the impacts of climate change in Zimbabwe have noted the gradual decrease of average rainfall and the increase in temperatures in various regions in the country. Zhakata (cited in Phiri et al., 2014) noted that Bulawayo – located in Matabeleland province – has been experiencing increasingly warm temperatures during summer and winter; and suggests that by the end of the 21<sup>st</sup> century the city will experience at least a 2.7°C daily increase in temperature. Similarly, changing weather patterns have been noted by Masendeke (cited in Phiri et al., 2014) who stated that farmers in the country expressed that changing rainfall patterns have resulted in many bodies of water such as rivers and wetlands drying up.

In light of the increased vulnerability induced by climate change, the issue of gender has slowly started to get attention in Zimbabwe. Women are more susceptible to experiencing the negative effects of climate change due to their dependence on natural resources and agriculture due to their role as producers and providers of household food. According to Madzwamuse (2010), 70% of rural women in Zimbabwe are involved in small scale agriculture. However, the adaptive capacity of women is diminished due to their lack of ownership and rights to land

particularly in rural areas. This can be attributed to the strong patriarchal customs still upheld in these areas regarding land ownership. As a result, women have sought alternative adaptation strategies such as migration in order to provide for their families. Female migration from rural areas has mostly been to urban centers such as Harare and Bulawayo. Moyo and Kawewe (2002) concur, stating that after independence there was an influx of women who were previously restricted to villages into urban areas in search of informal work. The feminization of migration in Zimbabwe has not been limited to areas within the nation; there has also been a significant increase in international female migrants. According to Crush and Tevera (2010), an estimated 44% of international migrants from Zimbabwe are women.

The effects of climate change have also been amplified by the unfavorable socio-economic climate that the country has been facing for the last two and a half decades. Since attaining independence in 1980, Zimbabwe's highest recorded period of economic growth was between 1980 and 1990. During this decade, economic growth was at a rate of 5.5%. However, as a result of political instability, economic mismanagement and a drastic fall in international support, the economic performance of the country fell between 2000 and 2010. The economic decline was in part a result of the Land Reform Programme of 2000 which saw the reallocation of commercial farms to primarily landless indigenous populations (Chagutah, 2010). This period saw a dramatic rise in poverty and unemployment which increased people's dependence on agricultural based livelihoods and the exploitation of natural resources. This period also corresponded with the country's worst drought period which brought about temperature increases and erratic rainfall patterns. These factors exacerbated food insecurity and poverty, especially for people living in rural areas where approximately 62% of the population resides (Muchadenyika, et al. 2012).

### **1.3. RESEARCH AREA**

This study will be conducted in Goromonzi District, Zimbabwe. Goromonzi is one of the nine districts located in Mashonaland East Province (Fig 1). This district is predominantly rural. The district was established in 1992 after the consolidation of Bromley-Ruwa rural, Arcturus rural and Goromonzi-Kubatana district councils.

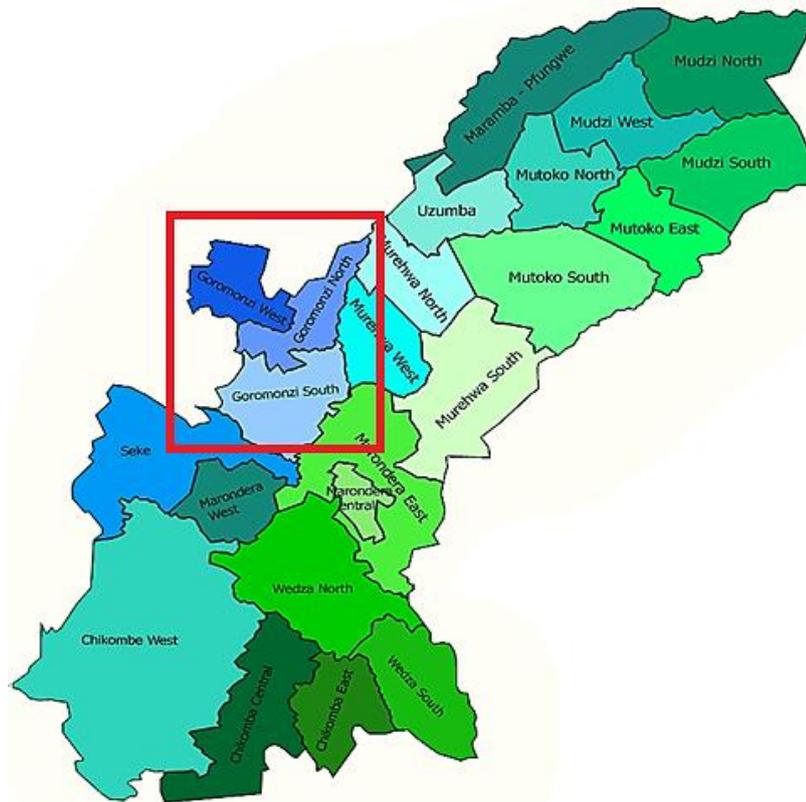
**FIGURE 1.1:** Map of Zimbabwe



[Source: <https://goo.gl/images/mj37Pz>]



**FIGURE 1.2:** Map of Mashonaland East



[Source: <https://goo.gl/images/tDKQ3M>]

UNIVERSITY of the  
WESTERN CAPE

Apart from Goromonzi, other provinces in Mashonaland East include Uzumba-Maramba-Pfungwe, Seke and Wedza. The district is situated 32 km's out of Harare – the country's capital city – and between Marondera and Ruwa. The population of Goromonzi makes up about 14% of Mashonaland East Province which has a total population of approximately 1 280 000 people. This is the highest in the province. According to the Central Statistical Office (2004), 96% of the population resides in rural areas whilst only 4% live in urban areas. The gender distribution in the rural area is almost equally distributed with men making up 49% of the population and women making up 51% (Central Statistical Office, 2004). Goromonzi district is made up of 25 wards – 13 for commercial agriculture, 11 communal areas, and 1 ward for small scale farming. The topography in the area is largely suitable for intensive and extensive agricultural activities. The Goromonzi Rural District Council states that of the 25 407 200 hectares of land in the area, 20 007 000 are arable (<http://www.goromonzirdc.org>). Although Goromonzi is known for its prominent agricultural sector, this has since been affected by the drastic fall of the country's

economy and constant droughts. The communal farming sector is largely dependent on rainfall as there are limited irrigation facilities. Crop cultivation, livestock rearing; vegetable and dairy production are the most notable farming activities in the area.

#### **1.4. RATIONALE AND SIGNIFICANCE OF THE STUDY**

The experiences of men and women with regards to climate change mitigation vastly differ. Over the years, more attention has been placed on the gendered aspect of climate change vulnerability and the subsequent adaptation strategies that have emerged. Migration is one such common strategy. Migration literature has often focused on male-centered migration, with women being viewed as secondary participants; often dependents. However, there has been an increase in the number of female migrants, especially from rural areas. The increasingly unpredictable nature of climate patterns in Zimbabwe has led to a decline in the reliability of climate-dependent livelihoods which has in turn resulted in an increase in the number of women migrating. Additionally, most climate related research conducted in Zimbabwe is based on quantitative methods with the aim of generating statistical reports, and this has resulted in a qualitative gap in literature. The lack of adequate gendered literature on both climate change and migration, particularly in the context of Zimbabwe and Africa at large, calls for a need for more knowledge on these interlinked issues. Hence this study will contribute to literature and help close the existing gap. Additionally, it will shed more light on the experiences of women with regards to climate-induced migration. This will allow for a better understanding of the ways in which alternate adaptation strategies can be used to assist rural-based women and inform future climate-related policies.

#### **1.5. AIMS AND OBJECTIVES**

The aim of this research is to find out if using migration as an adaptation strategy to climate change had positively changed the lives of women in rural Zimbabwe.

The objectives of this research are as follows:

1. To identify the climate related migration push factors that women in Goromonzi have experienced.
2. To assess the benefits of migration for women.

3. To identify climate resistant livelihood strategies employed by migrant women in Goromonzi district.
4. To ultimately contribute to a better understanding of the nexus between climate change and migration, and the effects these factors have on women living in rural areas.

## **1.6. RESEARCH QUESTION**

Has using migration as an adaptation strategy to climate change positively changed the lives of women in rural Zimbabwe?

## **1.7. THESIS OUTLINE**

This thesis is made up of six chapters. Chapter two – literature review – looks at various regional and international studies conducted on climate change and migration. Different drivers and factors that influence climate-induced migration such as gender, migration type, migration destinations and culture are taken into consideration.

Chapter three looks at the theoretical framework that is used to guide this research. Theoretical triangulation is used to fuse feminist political ecology, migration theory and household strategy theory.

Chapter four provides an analysis of the methodologies used for data collection and data analysis. A phenomenological research design was employed for the collection of qualitative data, whilst quantitative data was collected from various credible online sources.

Chapter five focuses on the qualitative and quantitative analysis of data. It describes and analyzes the qualitative and quantitative data collected in the field in order to answer the research objectives and research question.

Chapter six is the presentation of research findings and concludes the thesis by providing a summary of key research findings, limitations of the study and suggestions for future research.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1. INTRODUCTION**

A number of scholars have written on the influence of changing climatic conditions on global migration patterns. This chapter will provide an overview of research previously conducted on migration and climate change and aims to identify the various migration push factors that have contributed to increased female migration. Moreover, by understanding the findings of previously conducted studies, research gaps in existing literature can be identified. Guided by the research questions for this study, this review will provide a gendered assessment of climate migration literature and will show the differences in migratory decision making, composition and patterns of men and women in different countries.

The increase in climatic shocks globally has caused a rise in climate-induced migration in both developing and developed countries. With a number of rural livelihoods being sustained by agriculture; livelihood destruction and loss resulting from temperature and precipitation variability's have increasingly become a push-factor for migration. Various climate disasters can instigate migration at different levels depending on the severity, duration and impact on livelihoods. In line with this, households and individuals in areas prone to environmental shocks have used rural, urban and in some cases international temporary or long-term migration to manage the livelihood impacts. According to Raleigh et al. (2008), income diversification through labour migration is the main mitigation strategy used by people vulnerable to climate change hazards. Additionally, chronic environmental degradation brought about by climate change has also prompted migration so as to increase remittances.

### **2.2. RURAL-URBAN MIGRATION**

Climate change has been known to be one of the factors that stimulate increased rural-urban migration. The potential economic opportunities in urban areas draw climate migrants who are in search of both formal and informal jobs. Piguet et al. (2011) defines rural-urban migration as the residential relocation of people living in a largely agricultural area to an urban area where employment is mainly in non-agricultural activities. Studies have found that rural-urban migration is often undertaken by men, whilst women remain in rural areas. Hence there tends to be an uneven gender ration in rural-urban migratory patterns, particularly in Africa and South

East Asia (Westermann et al., 2006; Lou, 2006; Castle & Baldwin, 1988). Rural-urban migration is seen as a way to improve or expand household income beyond what can be provided through agricultural activities. This can be linked to neo-classical theories of migration which hold that wage differentials are a driving force for the migration of people to the capitalist sector (Wright, 1995). Climate change has resulted in the increased need for people to find ways to diversify their incomes and this has – in some cases – been achieved through migration to urban areas. Variations in temperature and rainfall greatly affect agricultural productivity hence affecting rural livelihoods. Limited arable land and the decline in land fertility have been some of the results of climatic change which have led people to migrate from rural areas to urban areas. This is a phenomenon that has been observed in various studies in different countries which have looked at how people in rural areas adapt to changing climatic conditions (Currie-Alder et al., 2014; Lopez-Carr & Burgdorfer, 2013; Gray, 2011).

The migration of people from rural areas to urban centres is common particularly in the developing world. In a number of studies conducted on the effects of climate change on migration, rural-urban migration has been the most prevalent type of migration (Nawrotzki et al., 2015; Asian Development Bank, 2012). Such migration is induced by environmental shocks in rural areas. Kinuthia-Njenga and Blanco's (2009) study on environmental migration in Kenya found that a lack of rainfall, droughts and floods were the key reasons given for moving into the city. Migrants from the southeast area of the Kenya cited drought as the motivation to migrate whilst migrants from the Nyanza and western districts referred to flooding. As a result, these migrants relocated to two of Nairobi's biggest slums - Kibera and Mathare. Relocation to urban slums was also observed by Bahauddin et al. (2016) who assessed climate-induced migration in Bangladesh. In the districts of Khulna and Satkhira, climatic problems such as cyclones, flash floods and tidal surges were common which resulted in an increase in migration to build livelihoods elsewhere. The loss of farm land for villagers residing in the area drastically affected their livelihoods. Therefore, displaced climate migrants relocated to urban centers – particularly Dhaka – and often “end[ed] up in the big urban slums and ghettos, earning the bare minimum in the informal-sector” (Bahauddin et al., 2016, p. 3). A similar study conducted by Adril (2014), also in Bangladesh, showed parallel results. Rural climate migrants relocated to Korail – an urban slum in Dhaka – due to flooding, river bank erosion, and drought which were severely affecting their agricultural activities. However, for these climate migrants, living in an urban area was found to have greater repercussions due to their lack of education and finance. The study showed a correlation between climate change and rapid urbanization in Bangladesh.

Neupane et al. (2016) looked at the effects of climate change on migration in countries with large populations – particularly India and China. Through the incorporation of socio-economic and political variables, as well as factors that impede or facilitate migration decisions, the study found that climate-induced migration exacerbated problems such as overpopulation in cities and other urban and peri-urban centers in these countries. An increase in the urban population was also noted by Suckall (2013) who looked at rural-urban migration in the context of climate change in Malawi. The results of the study showed that changes in temperature and rainfall gave rise to flooding and droughts which devastated rural households that were dependent on maize farming. This led to largely permanent rural-urban climate migration to cities as people sought non-agricultural livelihoods. Mongolia has also faced similar challenges as a consequence of climate change. Bilegsaikhan's (2015) assessment of the impact of climate change on rural-urban migration showed that seasonal migration to Ulaanbaatar – the capital city of Mongolia – was popular amongst nomadic and semi-nomadic families. For these families, which came from the western region of the country, droughts and heavy winters resulted in the loss of livestock, which adversely impacted their livelihoods. Hence the overlap between environmental and economic reasons informed their decision to migrate which contributed to increased urbanization in Ulaanbaatar. Similar findings were found in Saeed et al's. (2015a) study of migration and climate change in Pakistan. The study showed that the adverse effects of heat stress on winter crops (e.g. wheat) triggered rural-urban migration, resulting in inadvertent urbanization and expansion of cities such as Karachi.

### **2.3. LAND PRODUCTIVITY AND MIGRATION**

The effect of climate change on arable land has negatively affected rural agricultural-based livelihoods in various ways. The decline in land productivity has prompted migration in some areas. The income insecurity that comes with diminished land productivity and livestock deaths has been found in numerous studies to be the main motivator for migration. Diminished crop yields and land infertility are also common features in areas affected by climate change. In developing countries, climate change has weathered soil, resulting in deteriorating soil fertility and land degradation. According to St. Clair and Lynch (2010, p. 101), “climate models predict that warmer temperatures and increases in the frequency and duration of drought during the 21st century will have net negative effects on agricultural productivity.”

Various studies have shown a correlation between climate-induced land infertility/unproductivity and migration. Bohra-Mishra et al.'s (2017) looks at climatic conditions and inter-provincial migration in the Philippines. Results showed that variations in rainfall and temperature were affecting rice yields which, in turn, led to the out-migration of people from affected areas. Mariscal et al. (2013) also found that the effects of climate variability on temperature were causing inconsistent agricultural production in Bolivia. Typhoons which were triggered by rising temperatures negatively affected rice yields leading to migration from these regions. Mugula (2013) evaluated the impact of climate change on rice in the Wami-Ruvu Basin, Tanzania and found that farmers had complained that that drought aggravated by climate change had reduced rice yields and increased the prevalence of crop pest infestation. As a result, migration to urban areas was popular amongst the rice farmers. Temperature related issues were cited in Morrissey's (2008) study of climatic conditions in the north-eastern Ethiopian highlands. Drought in this area was the most prevalent environmental stressor which affected the agricultural productivity of land. As a result, both temporary-distress migration and permanent migration were used as adaptation strategies by people residing in the area. Also based on Ethiopia, Yalew's (2016) research found that increased temperatures had decreased soil moisture whilst rainfall patterns had become increasingly unpredictable. Both these factors greatly affected land productivity and crop yields, and this triggered the temporary and permanent out-migration of farmers from rural areas which affected the country's agricultural sector. The effects of climate on land productivity subsequently affect crop yields. Diminishing crop yields have been cited in various studies as a migration push factor.

#### **2.4. CROP YIELDS AND MIGRATION**

In a study by Feng et al. (2010) climate change and its effect on crop yields was found to impact migration from Mexico to the United States. Results of the research showed that there was a positive relationship between climate related changes in agricultural yield and the rate of migration to the US. A statistical analysis showed that a 10% fall in agricultural productivity resulted in a subsequent 2% increase in immigration to the US. Feng et al's (2010) research predicted that by 2080 climate change would have led 1.4 - 1.6 million Mexicans to immigrate solely based on agricultural productivity. In a more recent study Feng et al. (2013) evaluated the relationship between agricultural productivity and migration in the USA rural counties of the Corn Belt (mid-western USA). The results showed that the negative effects of climate

change on crop yields led to a subsequent increase in out-migration. A 0.1% decline in crop yields resulted in a 0.17% decrease in population as a result of migration. Martin et al's. (2014) assessment of the migration decision-making in Bangladesh in the context of changes in the economy and increased climate change exposure showed similar results. It was found that climatic stressors that diminished crop yields and subsequently affected income generation played a role in motivating migration. A decline in crop yields often coincides with food insecurity. An inability to access and provide adequate amounts of food for consumption has resulted in increased out-migration from certain areas.

## **2.5. FOOD INSECURITY AND MIGRATION**

Afifi et al. (2014) addressed the interconnection between variations in precipitation, food insecurity and migration in the Same District located in the Kilimanjaro region of Tanzania. The assessment of three villages – Vudee, Bangalala and Ruvu Mferejini – showed that there was a positive relationship between lack of rainfall in these villages and increased out-migration. The motivation for migration was growing food insecurity which had been caused by low crop yields. Similarly, in Warner et al's. (2009) study in Mexico, farmers dependent on rain-fed crops stated that summer droughts had resulted in declined reservoir levels. Farmers in the Mexican states of Chiapas and Tlaxcala expressed that climate change had increased soil erosion and deforestation in the area, making it difficult to have any successful agricultural activity in the area. The unreliable crop harvests which resulted from these variations in water supply led to the local and international migration of people. Castellanos and Guerra's (2009) analysis of variations in rainfall in Cabrican, Guatemala showed a link to soil erosion which in turn decreased the fertility of the soil resulting in lowered productivity and increased food insecurity. As a result, people migrated from this region. Rainfall variability in the Janjigir-Champa district of Chhattisgarh, India had similar effects on soil productivity. Muraji and Afifi's (2014) study in this area found that changes in rainfall patterns, floods and drought had resulted in decreased food production which resulted in food insecurity. Hence seasonal and permanent migration was used as a coping strategy against climate variability. In some cases, people experienced a complete loss of livelihood as a result of climate change.

## **2.6. LOSS OF LIVELIHOODS AND MIGRATION**

Climate change has not only diminished crop yields and affected land productivity, in some cases it has resulted in the complete loss of livelihood. Many countries that are more prone to climatic variations have lost natural resources and this has resulted in substantial financial damages to people, particularly those residing in rural areas. Changes in temperature and rainfall have affected livelihoods through the destruction of crops and the death of livestock which are used to generate income and provide food. Numerous studies have been conducted linking climate change to livelihood loss which has ultimately caused people to migrate. One such study in Pakistan found a drastic decline in agricultural productivity that resulted from climate variations and which destabilized the income and livelihood of poor cultivators in rural areas (Saeed et al's. 2015b). Hence the decision to migrate was motivated by loss of income and livelihood. Furthermore, Huq et al. (2015) investigated the effects of climate change on people residing in Bangladesh's south west Khulna District and found that low socio-economic standing, coupled with the cumulative effects of on-going adverse climatic conditions, had gradually resulted in the loss of livelihoods for rice farmers. Some were forced to migrate closer to water bodies and had to convert to shrimp farming which was a far less profitable alternative. Norrington-Davies (2011) study on the northern Sudano-Sahelian region of Cameroon found that increasing temperatures had resulted in the expansion of the desert. Additionally, the southwest coastal and rainforest regions had increased incidents of flooding. With 70% to 75% of the country's population relying on agriculture-based livelihoods, changes in climate had resulted in vast livelihood losses which had led to the migration of people in search of productive land.

The issue of soil erosion experienced in Bangladesh was also seen to severely affect livelihoods. According to Stojanov et al. (2016), an estimated 140km's of land is lost due to soil erosion in Bangladesh every year. The eroded soil also induces flooding and river blockages. The loss of fertile soil resulted in the loss of livelihoods for households which depended on agriculture. This led to the migration of some members of these households to urban areas. Another study based in Bangladesh's Khulna district by Biswas et al. (2015) showed that the degradation of soil combined with long term saline water logging had resulted in the loss of livelihoods and the displacement of people in the area. The human displacement caused by these issues led to both temporary and permanent migration as people sought non-

agricultural livelihoods. The loss of livelihoods also induced migration in Indramayu District, Indonesia. A study by Sagala and Sani (2014) in the area showed that fisheries provided livelihood for many households in the area; however, climatic conditions such as droughts, rising sea levels, tidal waves and floods severely affected the profitability of fishing. As a result, many fishermen became migrant workers to provide for their families. Ghosh et al. (2014) investigated the ‘disappearing islands’ phenomenon, focusing on India’s Ghoramara Island. This study revealed that climate change had led to the erosion of the island. Additionally, the key livelihoods on the island – agriculture, fishing and prawn seed collection – were severely affected and as a result people migrated to Sagar Island. Climatic variations in the Andean Altiplano, South America were seen to have a significant impact on the livelihoods of people in the area. Valdivia et al. (2013) state that increases in temperature caused a reduction in soil moisture and increase in pest infestations on crops. As a result, a substantial decline in crop production and loss of livelihoods was experienced leading to increased outmigration.

## **2.7. GENDER AND MIGRATION**

Whilst migration as an adaptation strategy in light of climatic stresses is common, it is experienced in different ways by men and women. Tradition and culture play a great role in dictating which family member can migrate and where to. In these cases, it is often male family members who migrate in search of economic opportunities to sustain the family. Nelson et al. (2001) states that the outmigration of men is due to the “strong relationship between poverty and vulnerability to environmental change, and the stark fact that women, as a group, are poorer and less powerful than men”. Afolayan and Adelekan (1999) found that during times of drought the decrease in agricultural produce affected food security and household income in Western Sudan. This resulted in temporary climate-migration of males from Western Sudan to Khartoum region in search of employment opportunities. Friedman (2014) cited similar findings from Pakistan where heat-stress was found to be the chief driver of long-term male migration. The loss of agricultural yields forced male wage-earners to search for employment in other areas to supplement household income. Similarly, droughts in Somalia and Burundi were also found to instigate male migration, particularly amongst pastoral households (Kolmannskog, 2009). Parallel results in Abebe’s (2014) study in Ethiopia showed that climate change caused pastoral male household heads to migrate in search of either water, better grazing land or employment during droughts. The role of gender in climate-migration was also noted by Tiwari and Joshi (2016) whose research in the Himalaya’s showed that climate-

induced depletion of natural resources played a role in stimulating the out-migration of male youths.

According to Buechler (2009), the effects of climate change on fruit and vegetable production in Sonora, north-west Mexico had similar effects on gendered migration in the area. The increase in droughts which resulted in a fall in yields led to an increase in male migration. Migration was used to supplement household income; however, it increased the household workload on women who were left behind. Research in Nepal's mountainous regions and rural areas by the UNFPA (2009) showed that the increase in water related climate disasters such as floods led to a subsequent increase in the number of men leaving these areas in search of employment in urban centers. In Ethiopia, long distance labour migration was found to be a common coping mechanism used by men in drought-stricken areas (Grey & Mueller, 2012). The decline in grain harvests created a need for additional household income. Likewise, the effect of drought on rain-fed crops and low soil productivity in Burkina Faso resulted in the temporary migration of young men (Henry et al., 2004). The study concluded that male migration is sensitive to rainfall conditions and economic hardships. Additionally, climate related migration was found to increase rural-urban migration and rural-rural migration amongst men; however, it did not significantly affect international migration.

Although migration has mainly been viewed as a strategy used by men, over recent decades there has been an increase in female migration, particularly from rural areas (BBS cited in Bhuiyan & Siddiqui, 2015). Whilst literature on female climate migration is sparse, the need for a gendered-perspective on climate-induced migration has been gaining increasing attention amongst academics. Studies have been conducted in various countries – mostly in Africa – looking at how and why women use migration as an adaptation strategy to climate change. Many of these studies have found that women face unique challenges when they migrate due to their gender which is often linked to low levels of education and low socio-economic standing, particularly when they are coming from a rural background. Abebe (2014) states that the migration of women from rural areas is highly dependent on the status they hold in the society and the situation at hand.

Women who engage in climate-induced migration are faced with various challenges. Whilst female migration may increase due to climatic shocks, accessing adequate housing and jobs still remains a hurdle for migrant women (Deprez, 2010). Kakissis (2010) found that female

climate migrants in rural Bangladesh who migrated to cities were often faced with difficulties attaining decent jobs due to their low levels of education and limited skill set. As a result, many of these women ended up in low paying jobs which require no skills such as sweatshops. Lack of adequate education was also found to be a barrier to accessing employment among climate migrants in Morocco (Wodon et al., 2014). Female climate migrants expressed that most jobs required a university degree or fluency in French which they did not have. Cultural barriers were cited by Ramachandran (2005) as posing problems for female climate migrants from Bangladesh who were moving to India. The risk of deportation forced many women to adopt cultural markers which were synonymous with Hinduism in order to blend in and access some opportunities. Many of the challenges faced by migrant women are difficult to overcome and often result in women being pushed into a poverty trap. Willinger (2008) states that climate-induced female distress-migration in New Orleans after Hurricane Katrina forced many women into poverty as they could not afford housing and did not have jobs after being displaced from their homes. Likewise, Bohra-Mishra and Massey (2010) who also looked at female migrants affected by Hurricane Katrina found that forced migration coupled with low adaptive capacities made it difficult for women to settle in their migration destinations. A lack of resources caused many women to only migrate locally.

The decision to migrate for women in instances of climate-induced livelihood destruction/diminishment has been noted to be made by a male household head (Kartiki, 2011). The presence of patriarchy in rural areas renders many women unable to make their own decisions. Research by Wodon et al. (2014) concurs with this, where the migration of women in rural Egypt was influenced by the male household head. These women migrated to Cairo due to the negative effects of chronic drought on crop production. In this case, women were permitted to migrate in order to diversify household income. Hence it can be assumed that when women within households migrate, they are merely being sent out for work with the expectation of them remitting money back home. The subordinate position of women within the household gives them minimal power over migration decisions (Barkat & Ahsan, 2014).

However, in countries such as the Philippines and Tanzania the migration of women is not uncommon (Maurel & Kubik, 2014; Nelson, 2011). In the Philippines, unfavorable climatic conditions for women living in fishing communities incited local migration of women who sought work as domestic workers (UNFPA, 2009). Maurel and Kubik's (2014) research in Tanzania found that women made up 60% of climate migrants from rural areas. An increase in

female climate migration was also noted by Deheza and Mora (2013) who state that the number of female youths is fast catching up to the number of young men leaving Chiapas, Mexico after hurricanes, landslides and soil erosion diminished crop production. Similarly, findings by Neupane et al. (2016) show that young, working age women from New Beichuan, China migrated after flooding to industrial cities such as Mianyang. Migration has also been used by households as a tactic to overcome household hunger in light of climate related disasters. Findley (cited in Raleigh et al., 2008) states that temporary migration to relatives in other villages can be used by women and children to reduce food consumption in a household.

## **2.8. CHAPTER SUMMARY**

This literature review has examined a vast number of studies that speak to the effects of climate-induced environmental degradation on migration patterns. Migration is an adaptation strategy that has been used in two key ways: to diversify household income streams through seeking non-agricultural employment and to alleviate household food insecurity and hunger. Additionally, gender differences have been noted in migratory patterns with patriarchy playing a significant role in determining women's migratory ability and capacity in some areas. Age and marital status were also seen to influence migration flexibility amongst women with young women/female youths and unmarried women making up a majority of female climate migrants. Chapter three will give some theoretical background and foundation for this study by explaining the theoretical framework that guides this research.

## **CHAPTER 3: THEORETICAL FRAMEWORK**

### **3.1. INTRODUCTION**

This chapter will present and discuss the theoretical framework underpinning climate-induced female migration. A theory can be described as a system of concepts, principles and ideals which are a perspective of looking at and explaining a phenomenon or making predictions (Fouché & Schurink, 2011). The theoretical framework will offer insight into dimensions and complexities of the research problem, provide linkages to the current research and motivate ideas about the research subject (Neuman, 2006). Three theories are reviewed with focus being on their applicability and suitability to the research question. These theories are Migration Theory, Household Strategy Theory and Feminist Political Ecology Theory. Each framework is equally pertinent to this research; therefore, the key concepts in each framework will be analyzed in detail.

The theoretical standing of migration in general has evolved over time as the migration process has become more diverse and complex. The study of migration has become engrained in numerous other fields such as gender studies, economics and development studies and this has resulted in the reformation of migration theories. As a result, in order to get a more comprehensive theoretical understanding of migration it is imperative to combine classical migration theories with contemporary theories linked to migration. In light of this, theoretical triangulation will be used for the theoretical framework of this research. As stated by Cohen and Manion (2000, p. 254), triangulation “attempt[s] to map out, or explain more fully the richness and complexity of human behavior by studying it from more than one standpoint.” Altrichter et al. (2008, p. 147) concurs with this statement adding that triangulation “gives a more detailed and balanced picture of a situation.” Three theories – migration theories, household strategy theory and feminist political ecology theory – will be analyzed in this chapter and this will give a strong foundational understanding of the origins of migration theory and the incorporation of women and gender into such theories.

## **3.2. MIGRATION THEORIES**

### **3.2.1. Neo-classical Migration Theory: Micro framework**

Neo-classical migration theory has been used in migration studies as the main research framework. The micro-framework of this theory uses the individual as the unit of analysis. Todaro and Maruszko (1987) state that an individual's cost-benefit analysis of the economic advantages of migrating is the chief motivator of migration. Therefore, migration is seen as an investment strategy as individuals aim to capitalize on their returns to labour. Within migration discourse, Ravenstein's 1885 'Laws of Migration' have been used by many orthodox migration theorists to inform the constructions of various migration models. Ernst Georg Ravenstein, a German born sociologist, formulated eight laws of migration based on his study of migration patterns in Britain during the late 1880's. Ravenstein's 8 laws state that:

1. Short distance migration is the most common and preferred type of migration (distance decay).
2. Migration process follows a series of steps (Lee's model).
3. Each migration process generates a counter stream in the opposite direction which is not always equal in size.
4. The key reason for migration is economic motivations.
5. Migrants who move long distances end up in larger cities (Gravity model).
6. Young adults are more migratory than families.
7. Women are more migratory than men in shorter distances/internal migration whilst men are more likely to migrate longer distances/internationally.
8. Urban residents are less migratory than rural residents.

(Weber, 2010, p. 41)

According to these laws, the key motivator for migration is external economic opportunities (Bodvarsson & Van den Berg, 2009). The 'push-pull' factor model – which is rooted in economic theory – is used to explain the economic motivations of migration with wage differentials and income maximization being cited as some of the key factors. In this regard, neo-classists view migration as a linear process and consider migrants to be individual decision makers. From Ravenstein's laws of migration, theorists concluded that all migration theories incorporate two key principles: (1) men are more prone to migrate compared to women; and (2) migration decisions are made at an individual level and are informed by an individual's

cost-benefit analysis of migration (Weber, 2010). The emphasis on the individual as the principal decision maker makes neo-classical migration theory an individualistic approach.

Neo-classical migration theory is of key importance in this study as migration for remitting purposes has been cited in chapter two as common practice amongst climate migrants. Therefore, the notion that economic motivations drive migration can be substantiated by this theory. However, although neo-classical migration theory is the cornerstone of migration theories, it does have some shortcomings. In order to account for these, the new economics of migration theory was introduced.

### **3.2.2. New Economics of Migration Theory (NEM)**

The shortcomings of Neo-classical Migration Theory, which were heavily criticized in the 1980's by Oded Stark and David Bloom (1985) were addressed by New Economics of Migration Theory (NEM) which emerged during the 1990's. New economics of migration theory arose as a critical response to and enhancement of neo-classical migration theory (Massey, et al 1993). NEM theory rejects the individualistic and inflexible nature of neo-classical models which makes such models inadequate when incorporating and addressing the complexities and multiple realities of the migration process. NEM theory has therefore become an alternative to neo-classical migration theory as it proposes a new analytical lens through which to look at migration and adds to some of the foundational ideas of neo-classical migration theory. It also shifts from neo-classical migration theory's individualistic approach to a more integrative approach which places emphasis on "the family or the household as the most appropriate decision-making unit," (de Haas, 2008, p. 36). Similarly, Mincer (1978, p. 749) stated that choices to migrate are more based on the composition of a household rather than an individual's choice. Massey et al. (1993) add to this, stating that a household decision making process is adopted as a safeguard against income risks and market failures. In this regard, migration is viewed as a strategy to diversify the economic well-being of a household. Massey et al. (1993) further state that economic instability and government policies have a significant impact on income distribution which can result in a change in levels of deprivation in households leading to an increased incentive to migrate. It is important to note that NEM theory does not reject neo-classical migration theory's notion of expected income differentials as motivators for migration; rather, it adds to this theory and fills its gaps by incorporating other variables which are equally important.

NEM theory's emphasis on the household as a decision-making unit is significant to this research as a number of female migrants tend to be married women who migrate in order to help sustain their families. In light of this, the Household Strategy Theory can shed more light into this dimension of female migration by looking more closely at the gender dynamics of migration decision making at a household level.

### **3.3. HOUSEHOLD STRATEGY THEORY**

The household strategy theory of migration makes an important departure from earlier neoclassical economic theories of migration. This theory emphasizes that migration decisions are taken rationally by family units. Additionally, it recognizes that the relative control over resources exercised by men and women has a significant and often gender differentiated impact on family consumption and expenditure. But it has not adequately accounted for the fact that households, like workplaces, can be sites of unbalanced decision making in many cultures. Gender inequality can permeate the decision, process and impacts of migration, as well as the networks and support systems that play a key role at all stages of migration (UNGA, 2004). But migration can also help reconfigure gendered relations, particularly by offering women the opportunity to enter the global labour market.

Household strategy theory – chiefly developed by Oded Stark in the late 1970's – emerged as an approach to migration which draws from neo-classical and structuralist approaches, placing the household at the center of migration analysis. Similar to neo-classical migration theory, household strategy theory proposes that migration decisions are made by the household in response to negative livelihood externalities which affect the well-being of the household. Within this approach, remittances are seen as the migration push factor which contrasts with neo-classical migration theory's approach that puts an individual's potential wage gains as the key motivator. A gendered perspective on migration has been incorporated in support of household strategy theory by scholars such as Chant (1991, 1998) who argue that migration takes place as a way to secure the welfare needs of a household. Chant adds that including a gendered take on migration addresses the gender-neutral, androcentricity of the neoclassical perspective. Household strategy theory, in comparison to other migration theories, places emphasis on human agency within migration. For example, people who reside in rural areas are often viewed as inert victims of external economic forces; however, de Haas (2007) refutes

this notion stating that the rural poor use migration as a way to improve their living conditions in light of the structural and economic challenges that they may be faced with.

Household strategy theory sheds some light on the gender differences in household power which affects migration decisions. This theory can help explain some of the migration decisions undertaken by women and how much say they have in these decisions. Household strategy theory focuses on migration; however, it is important to also have a theory that looks at climate and gender. In this regard, feminist political ecology theory emerges as a particularly apt theoretical lens as it highlights the importance of gender when discussing environmental issues.

### **3.4. FEMINIST POLITICAL ECOLOGY THEORY**

Feminist political ecology (FPE) is a modern manifestation which stems from the theoretical field of feminism and is a field of study within political ecology. FPE is a theory that fits well in theorizing women's role in the fight against climate change. It looks at the ways in which gender intersects with political ecology and how women are firstly vulnerable to the adverse effects of climate change and secondly the adaptation methods women use to deal with these adversities in their day to day lives. Moreover, FPE highlights how women's integration into ecological issues can drastically improve the efficiency of programmes and policies implemented to deal with these issues.

FPE places women at the center of natural resource use and management, making their position in climate-change/environmental discourse instrumental. The redefinition of environmental issues to recognize and acknowledge the significance of women's knowledge, experience and interests has not only empowered women; it has also shown the contribution women can make with regards to climatic issues. These developments come after FPE has fought against the use of social constructs of gender in determining natural resource access and management. Traditional gender roles (particularly in rural areas) have put women in direct contact with natural resources such as water and land. Natural resources provide for a number of basic needs for rural families. Food production and processing is one such need and this falls under the responsibility of women. The responsibility of food production has required women to come up with varied farming practices (such as crop rotation) in order to satisfy housed (and at times economic) needs. Closely linked to this is the issue of land tenure, which has been one of the biggest factors' women have faced. Land is typically passed on to men and this has

marginalized women in land ownership, hence their power over such resources is severely limited. FPE is focused on increasing women's voices in climate-change discourse through challenging the ideas surrounding women's knowledge and power regarding natural resources. In light of this, FPE is a theory that can adequately give foundation to research looking at gender and climate change.

Feminist political ecology (FPE) begins with a dismissal of the essentialist relationship endorsed by certain branches of ecofeminism. This notion is supported by Rocheleau et al. (1996, p. 3) who state that "there are real, not imagined, gender differences in experiences of, responsibilities for, and interests in 'nature' and environments, but that these differences are not rooted in biology per se." Rather than accept the biologically inclined viewpoints of ecofeminism, feminist political ecology focuses on a more historical-materialist relationship which looks at gender as a determinant of an individual's access to resources and other types of power (Nightingale, 2006). FPE expands our knowledge of the historical-materialist connection between women and ecology in the context of various subjectivities. FPE considers gender to be closely related to materialistic realities, which stipulate that culturally defined gender roles determine how each gender interacts with the natural environment around them. Nevertheless, it is important to note that FPE does not view the connection between gender and the environment as a universalistic one. Instead, FPE "rejects the dualisms of man/nature and emphasizes multiplicity, diversity, and complex interconnections" (Jarosz, 2011, p. 54). Apart from looking at gender as a critical variable in historical materialism (the interaction of society, economics and history), FPE expands its scope by also considering the element of change which perceives gender to be a continuously evolving process linked to livelihoods. It is through understanding the fluidity of gender that FPE emphasizes the role of hardship involved in gender roles and livelihood opportunities (Nightingale, 2006; Rocheleau et al. 1996). Hence by understanding women's interactions with the environment in the context of climate change, their role in climate change discourse can be transformed.

Feminist political ecology places women at the centre of the resolution of climate change by emphasizing the important role women play in finding adaptation strategies to adverse climatic effects. This theory is important to this research as it shows the important role that women play in ecological issues. This is particularly true for women who reside in rural areas and are engaged in agricultural activities.

### 3.5. CHAPTER SUMMARY

The theories used for this study play an important role in understanding climate-induced female migration. The use of theoretical triangulation has shown that no single theory can be used to explain this phenomenon. This chapter has explored theoretical frameworks underpinning climate-induced migration and shown the importance of each theory in answering the research question. These theories are interlinked as they each address various parts of the research question. Migration theory addresses the common economic motivation that drives people to migrate in light of loss of livelihoods and food insecurity caused by climatic events. Household strategy theory addresses the migration decision making process and takes the household gender and power dynamics (often linked to culture) into consideration. Lastly, feminist political ecology theory shows the important role women play in climate change discourse. The knowledge women gain through their close work with natural resources is greatly beneficial not only in addressing some of the causes of climate change and management of natural resources, but also in informing migratory decisions. Chapter four will look at the methodological approaches used in this research.



## **CHAPTER 4: RESEARCH METHODOLOGY**

### **4.1. INTRODUCTION**

A research methodology is “the general approach the researcher takes in carrying out the research project; to some extent, this approach dictates the particular tools the researcher selects” (Leedy & Ormrod, 2005, p. 12). The objective of this research is to gain a deeper understanding of the connection between climate-induced migration and gender. Moreover, it seeks to reveal the differences in the ways men and women use migration as an adaptation strategy to climate change. In order to achieve this, various research methods were used to collect and analyze climate and migration data. The main methodological approach taken for this research was a qualitative approach. However, alongside the qualitative aspect of the research, some basic quantitative analysis of migration statistics was done to substantiate the qualitative data, therefore a mixed methods approach was used. This chapter will discuss in detail the qualitative and quantitative methodological approaches that were used in this research. Descriptions of the data collection and analysis methods, the research sample and research instruments used will be given. Additionally, the ethical considerations undertaken will be discussed.

### **4.2. QUALITATIVE RESEARCH METHODOLOGY**

Qualitative research is a non-statistical methodological approach which incorporates a wide range of research methods. Qualitative research methodologies have different aims which are based on the aims and background of a study. A qualitative approach is beneficial for studies that aim to gain a comprehensive understanding of people's perspectives, motivations and reasons regarding a situation or phenomenon. It provides insight into the context of a problem whilst also generating hypotheses that can be incorporated into quantitative research (Olson et al., 2016). The nature of qualitative research is exploratory or investigative. Although occasionally the findings of qualitative research are not deemed conclusive, making it difficult to make generalizations based on these findings, they allow for the development of a “given thematic complex and sound rationale for further decision making” (Moscoso, 2017, p. 57). Because this research aimed to study a social problem, a qualitative approach was used in order to understand rural women’s perceptions and experiences of climate change and how migration has (or has not) been a useful adaptation strategy.

#### **4.2.1. Phenomenological Research Design**

A phenomenological research design was used for the qualitative segment of this research. Phenomenology looks at an individual's' experience and perspective, “‘bracketing’ taken-for-granted assumptions and usual ways of perceiving” (Tripathy & Tripathy, 2017, p. 82) Phenomenological research aims to explore and understand the essence of a phenomenon through the lenses of those affected by the phenomenon. This is achieved through using inductive, qualitative data gathering methods such as one-on-one interviews and participant observation; and looking at phenomena from the participant's viewpoint. From an epistemological standpoint, the phenomenology paradigm is rooted in subjectivity and individual comprehension with emphasis being placed on a person's perspective and interpretation of a situation or phenomenon (Kafle, 2011). Hence phenomenological approaches are powerful tools when seeking to understand personal experiences, capture the essence of what motivates people's actions and looking past conventional wisdom.

Phenomenological research coincides with other qualitative approaches such as ethnography and symbolic interactionism. Husserl (in Goss & Stevens, 2016) states that phenomenological research is more descriptive than explanatory and is devoid of preconceptions. However, this notion has been controverted by feminist and humanist researchers who put forth that preconception or bias cannot be wholly avoided and highlight the importance of emphasizing the researcher's position as a “detached and impartial observer” (Goss & Stevens, 2016, p. 105). The phenomenological approach brings forth individuals' insights and experiences which can effectively challenge normative presuppositions.

Most climate related research conducted in Zimbabwe is based on quantitative methods with the aim of generating statistical reports, and this has resulted in a qualitative gap in literature. A phenomenological approach will be beneficial to this research as it will address the experiences of women affected by climate change and gain a better understanding of why they migrated and whether migration was a helpful adaptation strategy. It will be able to elicit the “affective, emotional, and often intense human experiences” related to climate-induced migration (Merriam & Tisdell, 2016, p.28). These results will be used in conjunction with the vast quantitative data that has been collected over the years by ZIMSTAT.

#### **4.2.2. Sampling**

Typically, it is not possible for a researcher to study a whole population therefore researchers utilize sampling to choose research participants who will be representatives for the entire populace. Hence a sample can be described as a subgroup of a populace which is selected to take part in a study (Pilot et al., 2001). Brink (1996) also defines a sample as a small group from a population which represents the characteristics or content of the population which the sample is gathered from. Sampling is used in both qualitative and quantitative research. In qualitative research, sampling choices are usually made to enable a deeper understanding of the phenomenon under examination. The sampling method is dependent with the type of research being conducted. For example, non-probability sampling can be used in qualitative research where “the researchers’ goal is in-depth, idiographic understanding rather than more general, nomothetic understanding,” (McMartin, 1995, p. 100). Non-probability sampling includes snowball sampling and purposive sampling. For qualitative research purposes, sampling is done with the aim of attaining measurable variables that can be generalized. Probability sampling fits well with quantitative research as it uses random selection which gives every unit in the population equal chance of being selected (Daniel, 2012). This allows for statistical inferences to be made. With both sampling methods, sample size is of great importance. Polit and Hungler (1993) emphasize the importance of sample size in sampling stating that it is important for researchers to use the largest sample possible in order to increase the accuracy and generalizability of their findings. For the purposes of this research, homogeneous-purposive sampling was used to obtain suitable female participants. Homogeneous-purposive sampling will be further discussed below.

##### **4.2.2.1. Sampling Method: Homogeneous-purposive Sampling**

Neelankavil (2015) states that sampling is a process of choosing a research sample in order to gather relevant information concerning a phenomenon. Hence a sampling method is used to select eligible candidates from a populace to participate in a study. The aim of this research was to understand women’s perceptions and experiences of migration in the context of climate change. Because the target respondents were women, the homogeneous-purposive sampling method was used to attain a population sample. Purposive sampling (which is also known as selective or subjective sampling) is a non-probability or qualitative sampling technique used to select a sample group for research purposes (Teddlie & Tashakkori, 2009). This sampling form

depends on the researcher's preference for selecting participants and the sample is usually small. Purposive sampling aims to focus on the interesting characteristics of a population which enable a researcher to answer his/her research question/s. For this research, characteristics such as gender, age, migration status and geographical location played a role in screening possible participants. The gender specification is important as this research focuses on women's experiences. Although the participant's ages varied, 60% of the sample was made up of elderly women who had resided in Hiya village (Goromonzi District) for an extended period of time. Older women were selected because they were more likely to have information and experiences to share regarding changes in migration and climate change as compared to younger women. Despite this, younger women were also included in the study as they were more recent migrants.

The advantages of using purposive sampling for this research are that it is a useful methodology to use when there is need for obtaining a sample quickly. Due to time constraints which did not allow for extended time in the field, purposive sampling fit well with this research as sampling proportionality was not a key issue. Additionally, homogeneous-purposive sampling is an economical approach. However, a disadvantage of using this method is its lack of result generalizability. The probability of this in the research is high because the research was conducted only in Goromonzi District's Chinkyika Ward, and the findings may vary when compared to findings in other districts and regions due to differences in climate, land arability, land availability and sample size. The favorable climate in Goromonzi District and its proximity to the capital city, Harare, makes it a favorable migration destination for some women.

#### **4.2.3. Gatekeepers**

During this research, the researcher encountered gatekeepers in the form of the village head and his delegates. Gatekeepers are people who serve the role of 'guardian' over research participants to ensure their protection from coercion and exploitation by researchers (Bryman, 2008). They also have the ability to affect research progress on the basis of their personal beliefs and conceptions about the effects and aims of the research at hand. Hence it is of great importance for a researcher to understanding the position, perspective, beliefs and values of the gatekeeper (Johl & Renganathan, 2010). Gatekeepers stand between a researcher and a prospective participant. By virtue of the personal and traditional relationship that existed

between gatekeepers and participants, the gatekeepers were able to control and restrict the researchers' access to participants. It is therefore important for a researcher to strategically and successfully negotiate with gatekeepers in order to obtain the required data.

In this research, the researcher was able to gain the trust of the gatekeepers firstly through being granted permission to interview Hiya village residents by the Headman and secondly by asking the village head for permission as well despite the Headman's granting of access. Furthermore, the village head assisted in identifying participants; however, the researcher was unable to screen them to ensure that they fit the selection criteria. To be a participant in the research, an individual had to be a female climate migrant from outside Goromonzi district. However, as a result of the influence of gatekeepers, some people who did not fit the criteria were interviewed and this resulted in an increase in the number of intended interviews. Those who did not fit the initial criteria were mostly marriage migrants. Additionally, the desired sample size for this study was 20 participants. However, the number of participants increased to 29 and included 2 male participants.

Lavrakas (2008) states that it is important for researcher's to carefully balance between giving gatekeepers enough information regarding the research to allow the access and protecting and respecting respondent privacy when asked questions. Additionally, researchers should cognizant of the rules and traditions of the research area in order to avoid offending residents. In this research, the village head (*sabhuku*) – who served as the main gatekeeper – was present during all interviews during the first 2 days of the data collection process. Thereafter, a female gatekeeper was assigned to the researcher to oversee the interview process and to explain to selected participants that the village head had authorized them to speak to the researcher.

#### **4.2.4. Qualitative Data Collection Methods**

Qualitative data collection methods are often based on adaptable methodological techniques such as in-depth, one-on-one interviews which are able to elicit detailed information. For this research, it was important to get as much information as possible from participants in order to understand their perceptions of the effects of climate change in their area and on their lives. To accomplish this, two qualitative data collection methods were employed: one-on-one interviews (life histories) and focus group discussions.

#### 4.2.4.1. Interviews

Interviews are one of the most commonly used qualitative data collection tools in social science research. Interviews can be defined as “controlled conversations that the interviewer uses to obtain data required from the respondent by means of asking serious questions verbally,” (Akabayrak in Madziwa, 2016). Interviews are normally used when a researcher wants to obtain personalized data or seeks to look deeper into the underlying factors of a particular phenomenon. There are a number of advantages of using interviews for data collection and these were beneficial to this research.

1. The main advantage of using interviews is their ability to provide insight and context to a topic. Interviews also remove the element of ambiguity that comes with other methods. Participants can expound on their thoughts if the interviewer doesn't understand. As a result, the data gathered becomes more comprehensive and there is a more substantial understanding of the issues under research. For this research, the researcher was able to contextualize the questions for interviewees in order for them to gain a better understanding and answer questions in an informed manner.
2. One-on-one interviews create a comfortable environment for interviewees which allows them to be candid with their responses (Hair et al., 2003). As a result, comprehensive data can be obtained. This was particularly useful for interviews with younger female participants who tended to be more open about their opinions in one-on-one interviews, but more conservative during focus groups.
3. The ability to observe verbal and nonverbal cues such as facial expressions and body language enable an interviewer to use these gestures to probe further and find the underlying reasons behind the action. This is also useful in discerning disparity between what is being said and what one actually feels about a matter or to substantiate a point being emphasized.

In this research semi-structured, one-on-one interviews as well as informal interviews were conducted with women living in Goromonzi. 15 semi-structured interviews were conducted. The use of a semi-structured interview schedule helped in identifying the key areas that needed to be discussed. The use of semi-structure interviews also left room for participants to add more useful information which had not been thought of previously by the researcher. Additionally,

the life histories research technique was incorporated into interviews with elderly women. Life history interviewing requires participants to give an account of their life in relation to a specific topic (in this case, climate change). This gave a better understanding of the climatic changes and their effects on women.

#### **4.2.4.2. Conducting the Interviews**

For this research, 15 one-on-one interviews were conducted; 13 with female participants and 2 with male participants. Participants were attained through different channels – connections of the village head and recommendations of the village secretary. Male participants (particularly the village head and his close relation) were included because they hold information on land distribution and the formalities that are associated with the processes of accommodating female migrants. Interviews lasted between 15 to 30 minutes, and all interviews were conducted in Shona and took place at the homes of the participants. A female gatekeeper was assigned to go with the researcher to each participant's homestead. She observed and at times assisted in further explaining questions that participants could not understand, mainly to elderly women. Information regarding the location and time of interviews was conveyed to participants by the village head (*Sabhuku*) the day before the interviews took place. The areas to be discussed in the interviews were explained to all participants in Shona and all participants were given an information sheet (in both English and Shona), a copy of the questions to be asked and a consent form to sign. All interviews were recorded with the permission of participants.

#### **4.2.4.3. Focus groups**

Focus groups are used in a number of different disciplines and this has resulted in an array of definitions for this data collection method. Powell & Single (1996, p. 499) defines focus groups as “a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research.” Focus groups aim to elicit the experiences, perspectives and attitudes of participants in a way that is not possible with other methods such as surveys. Hence focus groups generate rich data through the sharing of views and interaction between participants. It is useful to use focus group when there are power differences within a community, when the views of a particular group are of interest, and also to probe people's degree of consensus regarding a particular topic. According to Morgan (1988), focus groups can be used to validate information or to complement other data

collection methods. The use of focus groups was beneficial to this research for a number of reasons:

1. The flexibility of conversation in a focus group allows participants to speak beyond the scope of the researchers' interview schedule, giving the researcher the opportunity to look into areas concerning the research question introduced by the group (Cavana et al., 2001).
2. Group dynamics allowed for participants to express more varied and profound views and opinions of migration and climate change in the area. The mix of women of varying ages, as well as the gender mix elicited rich data and deeper insight into the issue (Cooper & Schindler, 2006; Cavana et al., 2001).
3. The use of focus groups was beneficial as it was cost effective and time efficient (Beyea & Nicoll, 2000; Zikmund, 2003).

#### **4.2.4.4. Conducting the Focus Groups Discussions**

According to Morgan (1991), it is recommended that a project have between three to five focus groups. Conversely, Cooper and Schindler (2006) state that researchers should continuously conduct focus groups until no new information is obtained. The use of up to four focus groups (with a minimum of 6 participants each) allows for comprehensive themes to be obtained from the discussions (Krueger & Casey, 2000). Two focus groups were conducted in this research – one female focus group consisting of 6 participants and one mixed focus group consisting of 8 participants (5 female and 3 male). The researcher used two focus groups as they were sufficient enough to obtain the necessary information given of the size of the study and the limited time in the field. Additionally, the use of different gender compositions in the focus groups was beneficial.

Women in rural areas tend to be obscure and invisible in terms of participation in research. This is largely due to cultural values and lack of information. Additionally, women tend not to speak up in public domains hence their views and opinions are not heard. It has been found that in heterogeneous focus groups, women speak far less than men, hence valuable insights and views can be lost in this regard (Huang, 2008; Parker & Tritter, 2007). By conducting a homogenous

focus groups with women, it was easier to create a comfortable atmosphere which fostered free speech and allowed women to express their views. This was particularly important for the younger female participants. Although this research was focused on women, it was also important to incorporate some men into the discussion as land distribution, particularly to migrant women, was overseen by the head men in the village. Therefore, men had more information regarding the process of settling migrant women in their region and the criteria used to allow different women access to land in the village. Additionally, some men had information as observers and had knowledge regarding migration patterns in the area. Elderly female participants took part in the mixed focus group and they were able to comfortably express their views. The researcher noted that amongst younger female participants, the expression of opinions around men was difficult and often the men would speak whilst the women shared ideas occasionally. However, elderly female participants spoke freely, and the men would often be quiet and listen when one of the elderly women spoke. Therefore, gender dynamics were closely linked to and affected by age in Hiya village.

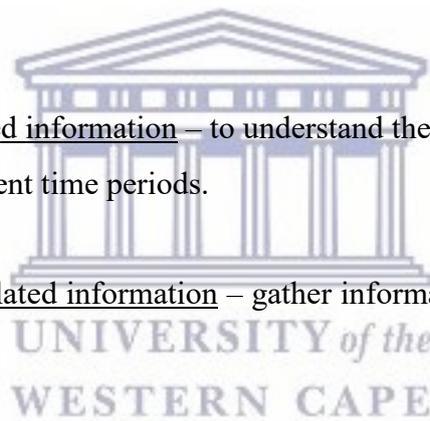
Both focus groups were constructed to take between 45 minutes to 1 hour. Phillips et al. (2013) states that one hour is adequate time to conduct an effective focus group. Taking too long may be off putting to participants and this can taint the responses given. The size of the female focus group was 6 participants and the mixed focus group consisted of 8 participants (5 female and 3 male). A group size of 6 has been deemed ideal by a number of scholars as it allows all participants to take part and share their thoughts, ideals, feelings and perspectives (Zikmund, 2003; Cavana et al., 2001; Vaughn, et al., 1996). Details regarding the location and time of the focus groups were conveyed to participants by the village head (known as the *sabhuku*). The areas to be discussed in the focus group discussion were explained to all participants in Shona and all participants were given an information sheet (in both English and Shona), a copy of the questions to be asked and a consent form to sign. Both focus groups were recorded with the permission of participants. A female gate keeper who was assigned to the researcher was present during both focus groups however she only observed and did not participate.

#### **4.2.5. Interview Schedules**

Before both interviews and focus groups were conducted, the researcher developed an interview schedule to serve as a question guide during interviews. Before constructing the interview schedule, literature on previously conducted, similar studies were studied thoroughly.

Information acquired during this process was used to assist the construction of questions on climate change and migration. Questions were divided into 4 parts which had separate themes and an interview schedule was developed (see Appendix 1). Although questions were organized thematically, this order was not followed strictly during both interviews and focus groups. The open-ended and semi-structured nature of the interview questions allowed participants to respond in an unconstrained manner. Hence the interview schedule was used more as an orientation tool which ensured that all research questions were asked. The interview schedule was piloted to test the questions, and this resulted in some minor language-based changes being made in the translated sections of the interview schedule. Due to the difference in Shona dialect, some questions were reconstructed in a way that would be easily understandable to participants. The interview schedule was structured as follows:

1. Part I: General demographic information – to gain more insight on the background of participants.
2. Part II: Climate related information – to understand the general weather conditions in the area during different time periods.
3. Part III: Migration related information – gather information on reasons for migration to Goromonzi.
4. Part IV: Gender related information – assess the impacts of migration on women and understand household power dynamics in terms of migratory decision making.



#### **4.2.6. Qualitative Data Analysis Process**

According to Patton (2002), data analysis is a transformative process which generates findings through the ordering, structuring and meaning ascription of data. The analysis process is not linear, but rather spirals as it involves reducing and synthesizing large amounts of information into an accessible form. This is done through separating relevant from irrelevant information, the identification of patterns and the construction of a data framework that speaks to the crux of the data. Fouché and Bartley (2011, p. 249) state that “data analysis does not in itself provide answers to research questions as these are found by way of interpretation of the analyzed data.” In essence, data interpretation is the explanation of data. Hence it can be said that the

interpretation and analysis of data are two interwoven processes that occur together. The qualitative data analysis process began with theme generation.

The data analysis process for this research started with the transcription of interviews and focus groups. As both interviews and focus group discussions were conducted in Shona, the researcher translated these to English. Thereafter, transcripts were carefully and thoroughly read to get a sense and understanding of each individual and group session. This step was of great importance, and this is emphasized by Agar (1980) who highlights the significance of researchers engrossing themselves in the details of interviews before picking out themes to give them a sense of the interview as a whole. Through this process, a number of trends in participant responses were identified. These reflected what participants felt most strongly about, and what elicited the most emotive responses. The identification of “salient themes, recurring ideas or language, and patterns of belief that link the participants” is an integral part of the data analysis process (Marshall and Rossman cited in Chen, 2016, p.133). Recurring patterns were grouped together and used to generate themes. It is important to note that at times it is difficult to acknowledge the perception and representation of every participants’ expressions whilst also extracting broader themes. In this regard, Falmagne (2006, p. 172) promotes “a notion of generalization that preserves the richly particularized, socially constituted nature of concrete individuals while enabling social interpretations that transcend the particular case.” Falmagne’s statement validates the use of the phenomenological/interpretive paradigm in this research in terms of theme identification and interpretation. In order to organize the varying ideas and commonalities expressed by participants, a coding process was used.

#### **4.2.6.1. Coding of Themes**

The concept of coding was introduced by Strauss and Corbin who described open coding as “the initial phase of the coding process” (Given, 2008, p. 581). Open coding is essentially the discovery of the thoughts and meanings participants have ascribed to certain aspects of the phenomenon being researched. Open coding aims to separate data for analysis purposes. In this research, the raw data used were interview transcripts which were assessed by the researcher who then extracted various ideas and concepts. Extracted data were labeled in a systematic manner which made it easier to cluster similar ideas and concepts. Although the research topic served as a guide in identifying relevant ideas, the researcher was open minded during this process and took note of all recurring ideas. Through the open coding process, some ideas were

found to be classified more than once. Data was then ordered and reduced to create more specific groups and subgroups under various labels. The next stage of the coding process was axial coding.

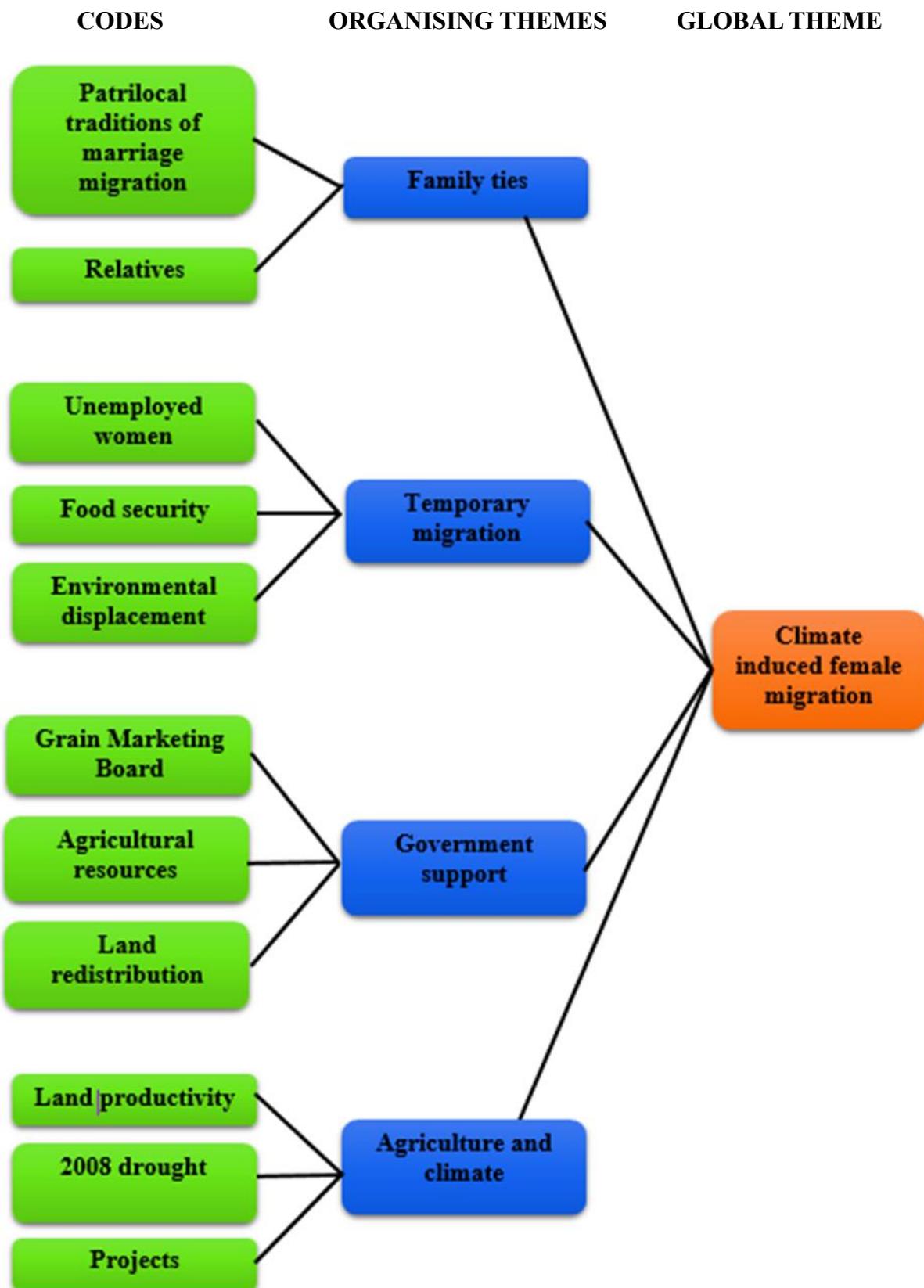
Axial coding entails reassembling data in a way that makes it easy to make links to the research question. “Axial coding is the phase where concepts and categories that begin to stand out are refined and relationships among them are pursued systematically” (Given, 2008, p. 51). Categories focus on actions, entities or occurrences. In this research, once categories were identified various paradigms of the category were explored. Given (2008, p. 52) defines a paradigm as “a scheme to assist in the organization of data.” The paradigm looked at the context, processes and outcomes related to the category. The use of the paradigmatic analytical approach was beneficial for structuring data and noting cause and effect. Ultimately, this elicited the development of patterns in the data. Thereafter, the final stage of the coding process was selective coding. Selective coding is the selection of a core category which encompasses and relates all other categories (Strauss & Corbin, 2008). At this stage, the aim was to find the key ideas which the responses revolve around.

#### **4.2.6.2. Themes**

The research question aimed to uncover women’s experiences of climate-induced migration in Goromonzi District. The data interpretation process brought out four distinct themes:

1. Family ties
2. Agriculture and climate change
3. Temporary migration
4. Government support

Table 4.1: Thematic Coding



Source: Authors own construct

Table 4.1 illustrates the breakdown of themes and their classifications. All themes feed into the main theme – ‘climate induced female migration’ – which speaks to the research question on the use of migration as an adaptation strategy to climate change by women in rural Zimbabwe. The family ties organizational theme looks at the relational links that encourage or assist women with migration to Hiya village. These are patrilocal traditions of marriage migration and relatives. These familial ties facilitate women’s migration process. The temporary migration organizing theme explores the migration push factors for female migrants in Goromonzi. The push factors – female unemployment, environmental displacement and food insecurity – are what brought women to Goromonzi in search of a place to relocate. This theme fits into the migration and climate change aspect of the global theme. The agriculture and climate organizational theme looks into the effects of climate change on agricultural activities in Hiya village. Many migrant women are engaged in agriculture therefore the effects of land productivity and droughts, as well as the use of projects was examined in relation to the global theme. Lastly, the government support organizational theme looks into the impact that government support for agriculture had in the area and how it could help build climate resistance.

### **4.3. QUANTITATIVE RESEARCH METHODOLOGY**

A quantitative methodological approach is used to quantify a problem through the generation of statistics and the use of numerical data. This approach is used to formulate facts and find patterns/trends in research. Bryman and Bell (2005, p. 154) describe quantitative research as “entailing the collection of numerical data and exhibiting the view of relationship between theory and research as deductive, a predilection for natural science approach, and as having an objectivist conception of social reality.” A quantitative assessment of rainfall distribution is an essential part of on climate-based study. The precariousness of rainfall has been one of the most significant consequences of climate change. Therefore, an understanding of precipitation trends is vital especially for prediction purposes.

#### **4.3.1. Quantitative Data Collection Methods**

Secondary time series climate data on temperature and precipitation in Zimbabwe was used. Time series refers to “a collection of quantitative observations that are evenly spaced in time and measured successively,” (Snyder, 2001, p. 179). For this research, time series precipitation

and temperature data were used for the period 1991-2015. With regards to migration data, secondary time series data for the period 2002-2015 was used. This research used secondary data as it is cost effective and allows for the analysis of a wide geographical range without the need to collect data. The relevant climate data was obtained from the World Bank's online records whilst migration data was obtained from the United Nations (UN) online records.

#### **4.3.2. Data Analysis**

Time series analysis (also known as trend analysis) was used for descriptive purposes in this research. Data was analyzed for the identification of annual trends in migration and climate in Zimbabwe. Time series data refers to observations that are measured systematically over a period of time. Time series analysis aims to understand the behavior of a phenomenon over time (e.g. temperature). The meteorological variables under investigation in this research are temperature and precipitation. The time series analysis was executed on STATA using a Vector Auto-Regression (VAR) model. The VAR model is "a stochastic process model used to capture the linear interdependencies among multiple time series," (Stock & Watson, 2001, p. 1).

#### **4.4. ETHICAL CONSIDERATIONS**

It is vital for any research to take into consideration ethical issues. According to Schurink (2005), ethical considerations are the concerns that arise regarding the proper execution of research in a way that is not harmful to research participants. This research adhered to the University of the Western Capes' research ethics policy which is dedicated to certifying the ethical integrity and compliance of all research conducted through the university. Furthermore, a research proposal was submitted to the Faculty of Economics and Management Sciences and the Senate Higher Degrees Committee for evaluation. This research was carried out after the research proposal had been approved by these committees.

A number of traditional approval channels were followed by the researcher in order to attain permission to conduct the research in Chinyika Ward, Goromonzi. Permission had to be granted by the Headman who oversees all villages under his ward. The purpose of the research was explained as well as the target group and timeline for data collection. Written permission was granted by the Headman and the letter was used to show all participants that the research being conducted had been verified. Despite the Headman's permission, the village head also had to

be asked for permission to ask his constituents questions. The purpose of the research and timeline for data collection were explained to the village head. Additionally, a copy of the interview schedule, consent forms and information sheet were given to him.

In addition to the attainment of village and ward consent, the research ensured participant anonymity. Anonymity entails the removal of any identifying values that can link a participant to the information they would have shared (Hersh, 2015). Participants were told before any engagement that they will be anonymous in the research. This helped make them feel more comfortable in sharing information, however some did not mind having their names known. Despite this, a pseudonym was given to each participant in the data analysis chapter. In addition to anonymity, confidentiality was also observed. Confidentiality refers to keeping participants personal information private (e.g. address, date of birth and ID number) (Dolgoff et al., 2009). Such information is excluded from the data analysis chapter and any other areas in this thesis. Participants were given informed consent forms which gave them information about the research, why it was being conducted and what the gathered information will be used for. Additionally, the consent form was explained verbally to all participants before they sign to ensure that they understood the aims of the research. The informed consent form ensures that participants have enough knowledge prior to deciding whether or not they want to participate in the research (Jessop, 2012). Participants voluntarily took part in this research. Even after signing the consent form, participants were free to leave if at any point they felt uncomfortable during interviews or focus group discussions. Participants were also free to not answer a question that they do not want to. This was also made clear to participants in the informed consent form. Those who participated in the focus group discussions were asked not to divulge any information that was discussed in the focus group discussion. Participants were also given information sheets which had more details about the aims and purpose of the research. All forms were in both English and Shona to accommodate all participants and avoid language barriers.

#### **4.5. CHAPTER SUMMARY**

This chapter has addressed the research methodology and research approach. A mixed methods approach was used in this research to cater for the understanding and analysis of quantitative climate data and participant experiences and knowledge. For qualitative data, a phenomenological research design was used. The participants were selected using

homogeneous-purposive sampling with the assistance of various community gatekeepers. Interviews and focus groups were conducted with participants to collect data on their experiences of climate change and migration in the area. Quantitative data was collected from various sources.



## **CHAPTER 5: DATA ANALYSIS**

### **5.1. INTRODUCTION**

In chapter four, the purpose and rationale for using a largely qualitative methodological approach was explained, and the qualitative and quantitative data collection processes undertaken were described in detail. A qualitative approach was favored in this research as it was the best way to acquire information regarding women's experiences of migration in the context of climate change in Hiya village, Goromonzi District. Quantitative data was used to a lesser extent due to data access and availability limitations. Moreover, the validity and suitability of the chosen data collection instruments was motivated in chapter four. This chapter builds on chapter four by systematically presenting and analyzing the qualitative and quantitative data. Qualitative data was analyzed thematically whilst regression analysis was used to evaluate quantitative data. All data was evaluated in accordance with the research aims and questions.

### **5.2. QUALITATIVE DATA ANALYSIS AND INTERPRETATION**

This section will give a detailed analysis of data obtained in interviews and focus groups. Data is discussed according to the themes – temporary migration, family ties, agriculture and climate change, and government support. Links will be made between data, theory and literature. This will highlight the significance of various factors reflected in the themes in climate change discourse.

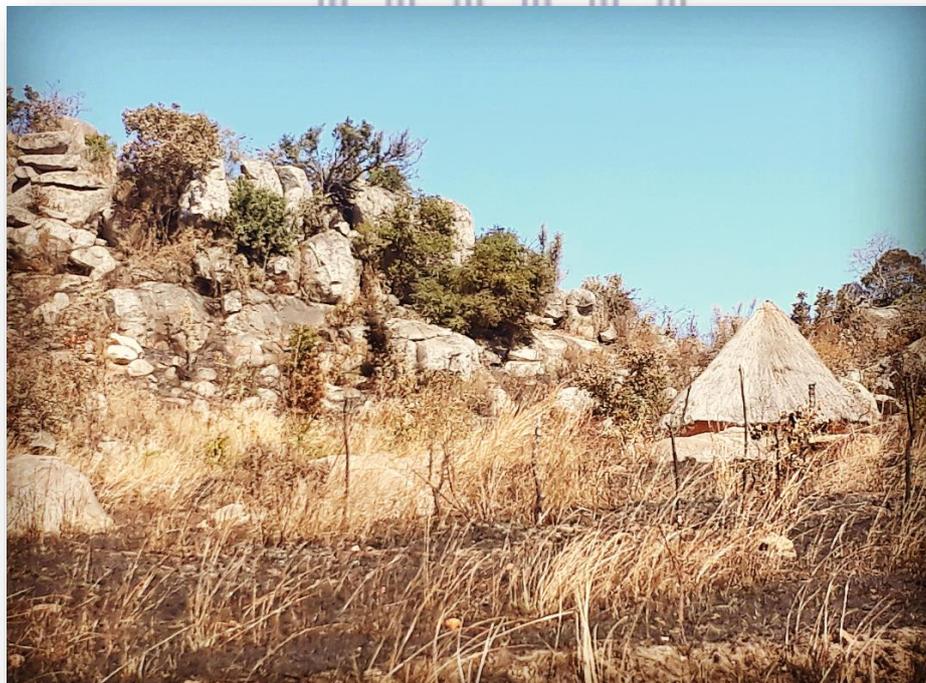
#### **5.2.1. Theme 1 - Temporary migration**

Interviews and focus group discussions showed that a number of female migrants in Hiya village only moved to the area temporarily. The negative impacts of single climatic events were a common migration push factor for women as they were displaced from their homes. Single climatic events are natural disasters that occur once such as hurricanes, mudslides or floods. Brown (2008) states that climate stress overlaps with socio-economic factors and this also contributes to the migration push factor. The use of temporary migration in times of climate stress is common practice for local migration and is mostly used for income diversification through remittances or to reduce the severity of various household insecurities such as food insecurity (Brown, 2008). Similarly, in this research temporary migration was used by women to cope with unfavorable climatic conditions which also affected their socio-economic

standing. Tanaka (31), a single mother from Tsholotsho, explained why she migrated to Hiya village. The floods in Tsholotsho which were brought on by the tropical Cyclone Dineo in early 2017 destroyed many homes in the area. Among those was Tanaka's home which she shared with her 5-year-old son Tinotenda. Apart from the destruction of her home, Tanaka also lost her crops – her livelihood. This led to her looking for different areas to settle temporarily:

*When we had the floods in Tsholotsho I went to different places looking for somewhere to start. I took a chance coming this far. You know where Tsholotsho is right? I had planted my maize in November and it was growing well, and then the rains came and destroyed everything...They had those emergency shelters there, but I didn't want to stay there. I would sit and then what? What would my child eat? I had to move so I finally came here, and the village head gave me that plot there, the one with ground nuts. That's where I'm planting. I share it [Figure 5.1] with three other ladies who also migrated from other areas.*

**FIGURE 5.1:** A homestead shared by migrant women



**Source:** Authors field pictures

The move to Hiya village from Tsholotsho in light of flooding in the area shows how migration is used by women to overcome the disastrous effects of climate change in some areas of Zimbabwe. The level of environmental destruction in Tsholotsho prevented Tanaka from staying in the area. For her, her son was her main motivation to migrate. She spoke passionately about the need to ensure that he had somewhere safe to sleep and something to eat. Hence, she opted not to stay in the temporary, emergency shelters constructed in the area by the government and NGOs. In line with Household Strategy Theory, this shows how migration decisions are made by a household in response to negative livelihood externalities which affect the well-being of the household. The use of temporary migration by women in response to single climatic events was also noted by Ezemonye (2015). Ezemonye's (2015) research in Illah Rural Community of Delta State, Nigeria found that some female headed households used forced temporary migration as a coping strategy during a time of flooding in the area. For Tanaka the well-being of her small household informed her decision to migrate from Tsholotsho. It is important to note that Tanaka's ability to make migratory decisions for her household can partly be attributed to the fact that she is a single mother. Hence she is not constrained by cultural and gendered migration 'rules' that usually regulate the movement of women. Although constraints on female migration are becoming more relaxed as globalization becomes more prominent, in some areas (especially rural regions), men have a majority of the decision-making power in a household. Hence a decision to migrate would usually be made by a male household head. In this case, Tanaka has decision making power as the head of her household, much like the Nigerian female household heads in Ezemonye's (2015) study.

The regulatory power that men have in households allows them to decide whether migration can or cannot take place. This power can be seen in Susan's narration of her migration experience after a severe drought in Chipinge forced her family to leave. Climate related loss of livelihood in the form of livestock forced her and her family to migrate:

*I am one of the ladies who also farms there. Uhh, I come from Chipinge. I left because of the drought there. My husband and I had cattle, but they were starving, and we had to sell them for \$15. \$15 for the whole cow, we didn't have a choice. My husband left for Joburg in June/July last year. I came here because we didn't have enough money to both go to Joburg and I don't have a passport. His friend is the one who referred me to this region, his sister is actually staying in Chibamu village close to here.*

The loss of livestock for Susan's family is of great significance because of the value that cows hold in African culture, more so in rural areas such as Chipinge. Historically, cows are seen as an asset because of their uses as fuel, a source of income (milk and meat), clothing, and for traditional purposes (e.g. linking families through marriage - *lobola*). The more cows one has, the wealthier they are perceived to be, and it is important to ensure that cows are well taken care of as their value is based on their state of health. For Susan, the drought negatively affected grazing land which resulted in the deterioration of the cows' health due to starvation. Rather than lose the cows to death, they opted to sell them; however, they were sold for an extremely low price of \$150 which is the equivalent of R1875. The average price of a cow in Zimbabwe is roughly \$500. Here we see the severity of the impact of climate on the livelihoods as the loss of livestock resulted in forced migration. Migration here was undertaken to counter the problems of food insecurity and loss of income. As a result, Susan's husband migrated to Johannesburg whilst she moved to Hiya village in Goromonzi. Although they both migrated from Chipinge, the significance of the places chosen to migrate to is important to note. International migration – according to Neo-classical migration theory – states that “women are more migratory than men in shorter distances/internal migration whilst men are more likely to migrate longer distances/internationally,” (Jolly, 2005, p.7). The decision for the man to migrate internationally instead of the woman feeds into the idea that men have better networks which makes international migration easy for them. Memon (2005) states that often when women migrate internationally, these movements are marriage-related or to accompany spouses. However, in Susan's case insufficient funds and her lack of a passport made it impossible for her to leave with her husband. Additionally, migration patterns for women in contemporary society – especially urbanites – have changed as more women are migrating for economic reasons, and modern couples have become more flexible with regard to cultural ideals surrounding female migration. For example, in Ethiopia permanent migration is more prevalent amongst women (Djamba et al., 2000) whilst in Vietnam, women migrate more now in search of employment opportunities (ILO, 2004). Susan's separation from her husband as a result of migration shows some of the negative impacts of climate-induced migration on women and the family structure as a whole. Wahyuni (2000) states that migration splits a family into two households which are geographically dispersed. Often this results in an added work burden for women who are often left behind, especially when remittances are received sporadically. Ordinarily, this is the case for households that depend on migrants who are unskilled workers. This idea is supported by McEvoy (2008) who's study in Mexico revealed that one of the

negative impacts of out-migration is mixed financial outcomes where “A few women received large, steady remittances while the majority received minimal, sporadic remittances,” (p. 3).

The village head – as a regulator of migration into the village – shared his perception of female migration into the area. His position in the village gives him the power to decide who is able to stay, for how long and where they can stay. He says:

*I feel sorry for those who come sometimes because people are desperate especially women with children. My heart breaks for them, so usually in those cases we give them a small piece of land to stay. Its where there's that sandy soil, we can't give them the grazing side that's for our cows. Even though they get the bad soil they are still grateful. They can grow vegetables and sell them at the main road.*

Despite the strict rules and extensive migration procedures that take place before a person migrates, it is interesting to see that the village head expresses compassion towards women who come asking for a place to stay. Participants shared the positive impact migration had had on them. A number of women were able to continue engaging in agricultural activities; however, they had to change the types of crops they grew. This was due to the differences in climate and soil quality between their previous areas of residence and Hiya village. Despite being allocated the 'unwanted' land they are able to make it productive and use it to create a livelihood. Moving to Hiya village greatly benefited Tanaka and her son who lost everything they had in the Tsholotsho floods:

*Here I have been able to plant my groundnuts and make peanut butter. I sell it at the growth point [shopping centre] and make a little money. If I hadn't come here, I honestly do not know what my child and I would have done.*

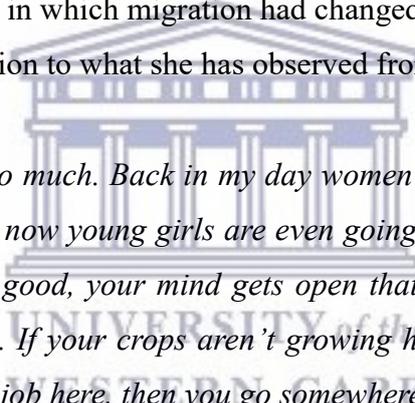
Before relocating to Hiya village, Tanaka used to grow maize in Tsholotsho. She mentions that she has now switched to growing groundnuts. Tanaka – unlike many of the younger women in her age group in the village – has followed the path of the older women who prefer crop farming to other agricultural activities. A majority of the younger women in the area are more inclined towards animal husbandry in the form of poultry and rabbit projects. Younger women's preference for animal husbandry was not viewed positively by older women in the area who

attributed this form of agriculture to an unwillingness to learn from them about crop farming, and laziness to farm. Tanaka's choice of livelihood can be viewed in a number of ways. Because Tanaka was previously into crop farming as a livelihood, she may have decided to continue with it in Hiya village as she already has skills and experience. Hence it would be easier for her to generate income through this means. Her growing groundnuts speaks to knowledge sharing amongst women in the village – the old teaching the young – as older women stood out as advocates for growing groundnuts in the climate stressed soil of the village. The benefits of knowledge sharing can be seen with Tanaka as she has been able to generate an income for her family from growing and selling groundnuts as advised by the older women in the area. Mpofo (2016) speaks of agricultural knowledge sharing amongst rural women stating that “as women, despite historical negligence because of patriarchy, we have used co-creation of knowledge to assert our rights and to strengthen the position of rural women.” This is reminiscent of Feminist Political Ecology theory which emphasizes the power of knowledge sharing amongst rural women in light of climate change and ecology at large. The significance of female knowledge in FPE is carried in the emphasis on agency. Rutherford (2007) views agency in FPE as a “productive process” and knowledge sharing is one such productive process that women use to help each other diversify their livelihoods. Knowledge sharing between older women and younger women in Hiya village provides insight to how the knowledge sharing systems empower women in agriculture and climate-based issues.

Tanaka's case can also speak to the issue of acceptance for climate-migrants. Following the livelihood strategy used by the older women could be a result of age-related power dynamics in the village. Age plays an important role in determining power dynamics and levels of respect in rural settings and African cultures. Older people are considered to be wise and therefore the younger generation is often expected to learn from their experiences and adopt their 'tried and tested' ways. For example, the older women in Hiya village believed the younger women should grow groundnuts because they found groundnuts to be the most suitable crop for their area. In Ghanaian society, the elderly are treated with dignity and respect due to their years of experience and vast knowledge; they are considered wiser and more honorable than other members of society (Oheneba-Sakyi & Takyi, 2006). Observation in the field also revealed the importance of respecting seniority ranks in the community. The village head was extremely respectful of the older women in the village, kneeling when he greeted them and speaking in a demure manner. This was a complete contrast to the way he spoke to other men and women in the village. This shows that age transcends gender when it comes to certain power and respect

in the village. Tanaka's decision to grow groundnuts could have been due to these seniority hierarchy's and respecting them through taking their advice on a suitable livelihood. This may have been instrumental in making her integration into the community easier. On the other hand, she may not have received help from younger women with regards to information on poultry and rabbit rearing in the area, and its profitability. The few women who are doing these projects expressed that its success is due to the low levels of competition in the area. Therefore, including other women may be undesirable as it will reduce their market share and profits. This shows the differences in willingness to share knowledge between young women and older women in the village.

Participants were asked about their perceptions of female migration in general in light of the changes in climate that have been taking place in the country. Whilst responses varied, the general consensus was that migration was beneficial to women. Itai (82), the oldest participant in the research, noted the ways in which migration had changed for women. She compares her ideas and experience of migration to what she has observed from younger women:



*Things have changed so much. Back in my day women could only leave when they were married, but now young girls are even going to South Africa alone. Like you [laughs]. It's good, your mind gets open that way. There are better opportunities out there. If your crops aren't growing here, then you find new land. If you can't get a job here, then you go somewhere else. If it was like that in my day who knows where I'd be [laughs].*

Itai makes an important distinction between the female migration patterns when she was younger (around 1960) and in contemporary society. Marriage migration during the mid-nineties was the most prevalent form of migration for women. Female migrants were often viewed as mere dependent family members of male migrants. Migration was portrayed as purely a male phenomenon. It is partly from these perceptions that neo-classical migration theory established the premise that men are more prone to migrate compared to women (Davis & Winter, 2011; Weber, 2010). The prevalence of marriage migration is reflected by the number of marriage migrants in Hiya village – many of which are older women. Theme 1 has unpacked the nuances of marriage migration amongst women in Hiya village. Itai makes reference to one of the biggest changes in female migration – the ability to migrate internationally. The feminization of migration (in Zimbabwe) took off in the 1980's, with some parts of the world

having more female than male migrants. However, the Human Development Report (2009, p. 1) states that “by 1960 women already made up nearly 47% of all international migrants, a percentage that increased by only two points during the following four decades.” Women’s increased migration freedom means they can easily relocate from a place affected by unfavorable climatic conditions. This is one of the benefits of migration that Itai saw when she states that “*if your crops aren’t growing here, then you find new land.*” She also states the employment benefits that migration presents to women as they can move around in search of jobs. Similarly, 37-year-old Vuyo – a mother of 4 – was in full support of migration because of the economic opportunities it presented to women:

*Yes, migration is good, migration is good. I saw that in Chirundu with the women who do trading there, they go and work for a few months then come back. But they would have made enough for their children to have clothes, food, shoes. Nowadays as a woman you can’t just sit, you have to work. Do something that will feed your children. So yes, migration is good if you have the money.*

The transformation in female migration patterns in Zimbabwe (particularly international migration) can be attributed to factors that include globalization and the gradual decline of the economy. Many women who were previously engaged in subsistence and small-scale farming turned to cross-border trading as a result of changes in climate that affected their income generating activities. Vuyo who is a climate-migrant from Chirundu - a village on the border of Zambia – recalls how women in the region would use migration as a means to sustain their families. Temporary migration was the most common form of migration as women would “*go and work for a few months then come back.*” It is common in such cases for children to be left in the care of relatives who would receive remittances from these migrant women. Vuyo alludes to the way migration has transformed women’s role in the household when she says, “*nowadays as a woman you can’t just sit, you have to work.*” Women have become an integral part of household survival and no longer depend on their husbands to be providers. Their role has transformed or expanded from being just homemakers’ to also being breadwinners. Given the global economic climate, it has become increasingly important for households to have dual-incomes. Hence migration has given women the opportunity to join the labour force.

### 5.2.2. Theme 2 – Family Ties

This theme is based on women's familial reasons for migrating to Goromonzi Districts' Hiya village. A number of women cited family links as the main factor that influenced their move to the area. This was either a result of marriage or having relatives in the area. Although many of the responses in this theme were focused on migration and not climate, it is important to look at that various forms of migration that have Marriage and migration are two intertwined concepts that are very much gender specific, particularly for women. Many people in rural Zimbabwe practice the patrilocal tradition of marriage migration where women who are married outside of their natal (birth) village migrate to their husband's village. It is not often that a man moves to his wife's village. In a focus group discussion, a number of female participants expressed that they had lived in Hiya village for a number of years, even decades as a result of marriage migration. For example, Maria, an elderly lady of 84, states that: "*I was married into Goromonzi, I came here ages ago. I was married in 1951. I had my first child in 1953 here. Now it seems like I was born here.*" Similar sentiments were shared by 77-year-old Ruva who, like Maria, also moved to Goromonzi as a result of marriage. She states that: "*I come from Msengezi in Zvimba. So, we all come due to marriage our husbands are the ones who were born in this area.*"

Furthermore, Precious, a younger female respondent of 45, describes her journey of moving to Goromonzi:

*I came here in 1993 from Arcturus Mine. I would come to grow ground nuts and vegetables, but I started living here in 1995 after I got married. My husband and I met when I used to come tend to my plot.*

According to Rosenzweig and Stark (1989), a significant proportion of female migrants in rural areas are marriage migrants. Marriage migration was cited as the main reason for migrating to Goromonzi, particularly by elderly female participants. Marriage migration has been viewed as a growing area of migration which emphasizes and highlights the mobility of women in third world countries (Piper, 2003; Suzuki, 2007). In rural areas, it is also closely related to and mediated by patriarchy and tradition. Shona culture follows patrilineal descent where descent is measured only from males to their offspring. In accordance with this, patrilocal marriage customs apply which stipulate that a married couple should establish their home near the

husbands' home/village. This staunch adherence to patrilocal traditions of marriage has vastly changed with contemporary couples establishing neolocal residences but still following patrilineal descent. Patrilocality is common in Africa, with cultural groups such as the Yoruba in Nigeria, the Ganda in Uganda and the Gikuyu in Kenya also practicing this custom (Siegel, 1996). The prevalence of marriage migration amongst women was also noted by Afsar (2003) whose research in Bangladesh showed that 56% of rural-rural migration by woman was marriage migration. The elderly women's reference to their period of residence in Goromonzi implies that they have not moved to any other areas since they started living there. This is reflective of the conditions surrounding female migration during their time of migration (roughly around the 1940's to 1960's) where female migration was limited. The role of women in migration was subordinate, with women migrating mainly as dependents. Additionally, women were mostly confined to working in the fields tending to crops and animals whilst men worked in cities and towns, remitting money back home (Ye, 2016; UNESCO, 1984). This can explain why many women in the area are involved in small scale agriculture (this will be covered in detail in theme 2). As a result, female migration was significantly lower than it is today. This is closely linked to neo-classical theory of migration which highlights that men are more likely to migrate compared to women as they migrate for economic reasons. Although marriage migration still occurs in contemporary society, it has evolved with the changes in female migration. The patrilineality kinship system is still upheld; however, marriage migration is no longer confined to the husbands' village as women now migrate internationally with their husbands, not as dependents, but as economically active partners. The changes in female migration patterns can be attributed to modernization and urbanization (Louw, 2004). Family life in rural areas has gone through dramatic changes, with the process of rural-urban labour migration being one of the most notable aspects of urbanization. Additionally, modernization has transformed gender roles with women having increased access to information and knowledge which has empowered them and afforded them freedom that women did not previously have. This includes increased the autonomy to migrate locally and internationally.

Other women moved to Hiya village because of kinship. Having relatives in the area made it possible for them to move into the community. However, there are procedures that take place before one can move into the village even if they have relatives. This includes consulting with the village head (*Sabhuku*) who would determine if it was suitable for the person to relocate. This was dependent on factors such as the nature of the migrants' relation to their kin (e.g. if they are close or distant relatives), the intended duration of their stay in the village and their

reasons for wanting to relocate to the village. One such migrant was 23-year-old Farai who moved to Hiya village from Arcturus Mine (a mining community near Goromonzi) to live with her sister – a marriage migrant living in Hiya village. Farai describes her migration experience stating that: “*I moved here last year to come and stay with my sister. She’s married to a close relative of the village head, so I didn’t really have much difficulty moving.*”

Another migrant, 26-year-old Sharon also moved to Hiya village with her younger brother to live with an aunt after a death in the family. Her experience of settling into the community was different to Farai’s, and she describes it as follows:

*My brother and I came to live here with our aunt, my mother’s older sister, after our mother passed away in 2006. He has since moved but I have now become a part of this community, they are like family. But mmm, the process of staying here was not easy. We thank God the village head helped us. I’m now married and have my own compound over there [Figure 5.2].*

**FIGURE 5.2:** Homestead in Hiya village



**Source:** Authors field pictures

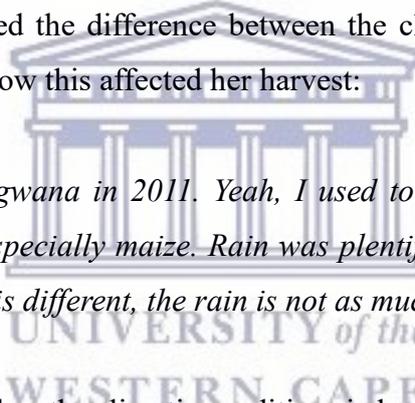
These responses highlight the important role kinship/family ties play in the migration process in Goromonzi, particularly in rural areas. In migration, kinship networks are a form of social capital which bear on a migrant's decision to move to an area. In rural areas such as Hiya village, kinship plays a significant function as it is an important social institution. This is the case in various other countries such as India, where research by Banerjee (1981) showed that 82% of migrants reported having a relative in their chosen area of migration as this made the migration process easier. Kinship can be generational (e.g. father-son), based on marriage (e.g. husband-wife), based on blood (e.g. brother-sister) or connected through 'binding thread' (father-in-law – son-in-law) (Phagan-Hansel, 2015). These relational links are used to determine or regulate many things in societies which include family line relationships, family rights and obligations in a community, status and land ownership. In Hiya village, it was important to determine the kinship of the migrant to their resident relative. The closer the kinship relationship, the easier it is to be granted access into the village. This can be seen in the different experiences shared by Farai and Sharon who both migrated to the village to stay with relatives. Farai's family tie – her sister – who is married to a close relative of the village head represents strong social capital in the village. Her expressing that her transition into the village was not difficult suggests that power relations played a role in facilitating her migration process. Being closely related to the village head may have allowed her to surpass some of the vetting procedures that migrants go through. This shows the influence of power and position in the migration process. The gendered politics of power over land can be linked to FPEs aims, which include interrogating the dispossession associated with gender disadvantage and inequality in the ownership and control of environmental resources (Elmhirst, 2015). The village head essentially has control over land in his jurisdiction and who has access to that land despite the familial ties a person may have that should grant them access to the land.

Contrary to Farai's experience, Sharon stated that she faced challenges with her migration process. This could be due to the nature of her kinship relationship. As stated above, Goromonzi follows a patrilineal system hence in accordance with that, Sharon and her brother should have moved to their father's village or to a paternal relative's home. The fact that they wanted to stay with a maternal relative complicated their migration process. This shows the influence of cultural beliefs on migration procedures. The importance of family ties in the migration process resonates with Household Strategy Theory's emphasis on migration being a household decision. In African communities, what is often referred to as 'extended family' by Westerners is considered as core family. Therefore, what constitutes a household would be much larger in

that regard. Household Strategy Theory places emphasis on maximizing expected income and minimizing family risks (Okoro, 2013). Van Dalen et al. (2005) describes migration in this sense as a “portfolio investment strategy as to the risk” as family members move to live with relatives in other areas. The presence of family ties in Hiya village allowed many women to live in the area, minimizing risk in their places of origin – like in Sharon’s case. In the context of climate change, such familial networks play a role in facilitating the migration processes.

### **5.2.3. Theme 3 - Agriculture and Climate Change**

The focus of this theme is on women’s perceptions of climate and agriculture in the context of migration. Female participants made comparisons between the climatic conditions in their natal villages and Hiya village. A majority of the women stated that they were engaged in agricultural activities before they migrated. Therefore, they were aware of the variances in temperature and rainfall and how this negatively affected their agricultural activities. For example, Thembi – a 32-year-old woman – explained the difference between the climatic conditions in her natal village and Hiya village, and how this affected her harvest:



*I moved from Rupangwana in 2011. Yeah, I used to farm there, my whole family would farm, especially maize. Rain was plentiful, so our harvest was always good. Here it is different, the rain is not as much, but it’s not bad.*

77-year-old Ruva also reflected on the climatic conditions in her natal village before she moved to Goromonzi. The variations in both rainfall and temperature had an effect on crop yields.

*I got married young and moved here long ago so I don’t know if the weather is still the same. But back then yeah, the weather was good...but then again everything was good [laughs]. We used to farm a lot, especially my parents. They had a good plot of land and my mother knew what to plant and at what time of the season. Here the rainfall is okay, but it can get very hot and then the crops wither [Figure 5.3].*

**FIGURE 5.3:** Withered maize



**Source:** Authors field pictures

Variations in climatic conditions between Goromonzi and other areas of the country can be seen in the participant's responses. Rainfall in Goromonzi was cited as the most common difference with other areas (such as Zvimba and Rupangwana) and this had notable effects on agricultural activities. Both Ruva and Thembi make reference to agriculture being a family activity. This is indicative of the lucrative nature of agriculture (particularly wheat and maize) in the area, the favorable climate and also changes in the division of labour in the household. The natal villages of respondents are located in areas considered 'natural farming regions' in the country. Hence, they had access to arable land and good weather conditions. This in turn allowed these women and their families to have good crop yields. Their move to Goromonzi saw a change in the quality of land and climatic conditions. Although Goromonzi is known for commercial farming (implying that the topography and climate are conducive), Hiya village is located in an area with predominantly sandy soil. Despite having 2 dams in the area (Mapfeni dam and Chinyika dam), a lack of irrigation resources makes it difficult for residents of Hiya village and other surrounding villages to access the water. The water in these dams is mainly utilized by commercial farms in the area and this has contributed to the success of the crops

grown on these farms. This shows the importance of location and access to resources (particularly land and water) in small-scale agriculture. It is however important to note that these women migrated to Goromonzi 10+ years ago therefore the climatic conditions they remember in their respective villages could have changed with time.

The mention of agriculture as a family activity is indicative of a shift in, and dynamic patterns of the gender division of labour (influenced by potential economic gain). Typically, the women in a household are responsible for the production of food crops. However, in the production of cash or dual-purpose crops men also get involved in household agricultural activities in order to generate an income. According to the Food and Agriculture Organization (2011), men's involvement in such cases is minimal, with women usually doing most of the planting, weeding and food processing. Men are involved in land preparation and selling of produce. Studies on the gender division of labour have noted similar results in countries such as Uganda where in rural areas, men dominate remunerative agricultural activities, but women and children are responsible for much of the labour (mostly tedious and/or time-consuming tasks) (FAO, 2011). In Hiya village, agricultural activities are mostly left for women and this can be linked to the lack of arable land and inconsistent rainfall. These conditions are not suitable for the farming of cash crops hence men are less inclined to be take part.

Closely linked to climatic change is land productivity/arability. Participants noted differences in land productivity and the effects of climate on agricultural activities in their natal villages and Hiya village. As agriculture is an important activity in the village, having access to fertile, productive soil is essential. Participants gave varying responses to this question with some women expressing the challenges they faced regarding soil fertility. One of the elderly participants, 70-year-old Thelma, shared her experience with farming on sandy soils in Hiya village (Figure 5.4) comparing its productivity to the soil in her natal village.

*I used to farm, we had farming groups. The soil from Bindura was better because it was more productive. The soil here is less productive. But now I'm used to it like everyone else.*

**FIGURE 5.4:** Sandy soil



**Source:** Authors field pictures

Similar to other participants, Thelma makes a comparison between her former place of residence – Bindura – and Goromonzi. She notes that soil in Bindura was far more productive than the soil in Goromonzi, which can be attributed to the climatic conditions in the area. Climate change has significant adverse effects on soil quality and functions, which affects agriculture. Increased temperatures and lack of adequate water damages soil through land degradation. This occurs through soil erosion, desertification and salinization, thus decreasing the capacity of soil to support a wide range of agricultural activity, limiting the types of crops that can be grown in the affected area. Figure 5.4 above shows the sandy soil found in most parts of Hiya village. The quality of such soil retains few nutrients and has low water retention capacity (Herrera, 2006). Thelma’s expression – “*But now I’m used to it like everyone else,*” implies that she (and others) have tried in the past to make improvements to the soil and possibly plant a wider range of crops. However, constant failure of harvests could have resulted in her becoming accustomed to the limitations of the soil in Hiya village. This however has led women to integrate climate resilient crops into their crop farming systems through focusing more on groundnuts and vegetables which are suitable for the soil quality.

Participants shared some information on some of the crops they grew and why they grew them. Given the limited carrying capacity of the soil, it was important to participants that they grew climate resilient crops that would provide a generous harvest and crops that would not only feed their household, but were marketable. Betty discussed the crops she grows to sustain her family of six. For her, agricultural produce is not only for consumption, but also for income generation.

*I mainly grow maize and different groundnuts. That's mainly what I plant so that my family can survive. If you grow maize you can sell, even the groundnuts, you sell so you can get money. If I have enough groundnuts, I can also make peanut butter.*

Experience with agriculture in the area has resulted in women growing crops that are not only suitable for the soil but also somewhat climate resistant. Betty mentioned that she grows a variety of ground nuts. Groundnuts are ideal for sandy soils and thrive in the warm climate of Goromonzi. Additionally, a small plot of land can be used to grow a considerable amount of nuts. Maize is another crop grown by Betty on her plot of land. The area used to be known for its maize production in the 1980's, before climatic conditions started to change. Maria who has lived in Hiya village for over 50 years recalls this period where she used to grow a range of crops including maize on her plot of land: *"A long time ago I used to farm a lot; gardens, vegetables, maize in this field and we'd get a lot."* However, with changing rainfall patterns and increased temperatures, soil quality has deteriorated. Therefore, the production of maize can no longer be done on a large scale, but small-scale farmers such as Betty are still able to grow enough for their households. The fact that Betty and many of the other participants mostly mentioned maize and groundnuts as the key crops they grow shows the limitations of the soil in Hiya village. This is a stark contrast to some of the commercial farms that border the village. The formerly white owned commercial farms near Hiya village grow climate-resilient crops such as sorghum and millet. The lush crops and the dam used for irrigation can be seen from the village. Participants attributed this sharp contrast in crop quality to soil quality, stating that these farms had rich soil which was suitable for growing a diversity of crops. This suggests that climate change in the area has had the most impact on the agricultural activities of the poor. Commercial farms are more likely to have access to various soil enrichment resources, skills and tools that keep soil quality good and allow for the growth of various crops. The ability to determine suitable crops for the sandy soil in Hiya village speaks to the knowledge that rural women have on climate change and its effects. This is in line with one of the main focuses of

Feminist Political Ecology theory, which pushes for the acknowledgement of the significance of women's knowledge and experience with regards to climatic issues (Bryant, 1998). This knowledge can translate into power that rural women hold in terms of natural resource management. Therefore, whilst men hold power over land in terms of ownership, women hold power over land in terms of knowledge. Betty mentions that she also makes peanut butter with the groundnuts she grows. Given the limitations posed by the soil and climate in Hiya village, growing a versatile crop like groundnuts is more favorable. With groundnuts they can be sold raw, cooked or processed into peanut butter. This versatility allows women to have various options when it comes to selling their produce.

The effects of adverse climatic conditions on soil quality in Hiya village have led to an increased need for fertilizer for agricultural purposes. A number of participants emphasized that fertilizer is essential for anyone who wants to harvest in the area, especially those who rely on their crops for income. One of the younger participants, 26-year-old Sharon, felt the soil could not be used to grow anything without fertilizer (unlike other participants who mentioned crops like groundnuts). Sharon said that *"Fertilizer is the only way you can make this soil do anything. Especially for maize, it's too sandy so it needs fertilizer."* Similar sentiments were shared by Precious who also expressed the need for fertilizer to grow anything successfully. Her experience of farming in the area has been difficult due to changing climatic conditions and poor soil quality. The lack of fertilizer has made it difficult for her to harvest anything significant, with Precious stating that:– *"The soil here if you get fertilizer you can harvest, without [it] there is nothing. And it is expensive to buy so we just do what's there."* Changes in climate that have negatively affected soil quality in Hiya village and resulted in the increased need for fertilizer to improve the fertility of the soil. Both Sharon and Precious emphasized the difficulties of planting in poor soil. The lack of fertilizer has crippled their potential harvests and reduced the capacity of the soil in the area. Although the option to improve soil productivity through adding fertilizer is available, financial constraints affect many of the women who cannot afford to buy it. For example, Precious stated that *"it [fertilizer] is expensive to buy."* Therefore, the cost of having a good harvest – buying expensive fertilizer – is not one that most women are able to incur. Climate change has increased cost of agricultural production which has affected women's capacity to produce adequate crops and hence make a living.

Gilbert (2014) shows that rural small-scale farmers in Uganda have experienced similar issues as a result of climate change. One interviewee – Teo Kataratambi – states that soil quality in his small third generation farm in Nyamiyada village had significantly changed and had

resulted in low harvests, leading to a need for fertilizer. However, Teo, like Precious in my case study area, expressed that fertilizer was expensive, with a single bag costing the equivalent of R672. These issues show that the effects of climate change on agriculture tend to affect the rural poor more as they struggle to cope with the changes. Dr Bashir Jama of Alliance for the Green Revolution in Africa sheds more 'light on this issue, stating that a lack of fertilizer will result in a continued diminishment of soil nutrients in African soils leading to potential food insecurity (Gilbert, 2014). Without government support targeted at cash-strapped smallholder farmers; the livelihoods of many rural households, especially those that are women-headed, will be devastated. The participant's responses address the research question on women's use of climate resistant livelihood strategies (activities households do to provide for a means of living). Access to resources greatly influences the choice of livelihood strategy. In the case of Hiya village, access to land allowed women to use agriculture as a livelihood strategy. However, climate change has negatively affected livelihoods through diminishing soil quality and productivity. Fertilizer is a resource that many women viewed as a means to make their crops more climate resilient through improved soil quality. Lack of access to this resource has resulted in women being unable to fully utilize the land they have access to. Research conducted by Wrigley-Asante et al. (2017) similarly shows how fertilizer plays a role in combating the negative effects of climate change. In their study, Wrigley-Asante et al. (2017) found that in Ashanti and Brong-Ahafo regions of Ghana, female smallholder farmers responded to climate change by using agronomic practices such as inorganic fertilizers and compost to improve soil quality. Pearl-Martinez (2017) highlights the significance of female smallholder farmers such as the women in Hiya village, stating that female farmers have the potential to effectively build climate change resilience and bring forth solutions to food insecurity with the right government support.

The effects of climate change on agriculture in Hiya village resulted in many women becoming more aware of and knowledgeable about ways to mitigate these changes. Earlier responses show how different women perceive the effects of climate change on the land and subsequently agriculture in the area. Participants like Betty stated that despite the challenges posed by poor soils, she is able to grow groundnuts which are suitable for the soil. Figure 5.3 above shows the sandy soil in Hiya village. Such soil is suitable for growing crops like groundnuts. Ground nuts have been considered a climate resilient crop in African countries like Cameroon and Zimbabwe. Tingem et al. (2008) assessed the effects of greenhouse gas (GHG)-induced climate change on the crop yields of bambara nut, groundnut, maize, sorghum and soybean in

Cameroon. The results showed that for bambara groundnut, soybean and groundnut; variations in climate did not significantly affect crop yields. Research has found that groundnuts can grow in a variety of soil types, with “drained sandy and sandy loam soils, as light soil” being the most desirable (Govardhan Das et al., 2015, p. 28). This, in part, explains the preference for growing groundnuts by elderly women in Hiya village. The sandy soil (Figure 5.4) coupled with the temperature in the area are conducive for ground nut cultivation. However, it has been noted that changing rainfall patterns can have negative impacts to groundnut yields (Arakalagudu, n.d). However, other participants, like Precious believed the soil could not produce anything on its own and required fertilizer in order to be productive. Elderly female participants believed that a lack of knowledge on the types of crops suitable for the soil in the area is what resulted in most peoples’ claims that the soil is unproductive. Through their years of experience growing different crops in the area, they are now aware of the importance of knowing soil management and crop rotation. Traditionally in rural areas knowledge systems are developed over decades or centuries and are freely shared. These same systems are developed for climate and agriculture related information. Dr. Fassil Gebeyehu of the Institute for Sustainable Development (ISD) in Ethiopia looked at seed knowledge in Keyarata community. He states that there are varying levels of seed knowledge in Ethiopia and women are the most knowledgeable as they are responsible for seed identification, selection and storage. Age also influenced knowledge levels with older women having more knowledge (African Biodiversity Network, 2017). They have been called ‘seed custodians’ in the community. The agricultural knowledge of women is not limited to crops, it goes further to reading environmental signs to predict pest attacks on crops. Teresa Makena Daudi, a participant in research conducted by African Biodiversity Network, Kenya, reflects on the knowledge that was passed on to her from elderly women in Tharaka community. She states that “elders read the behaviour of the birds, the insects and the trees and they can tell what is likely to happen. Then they take action to prevent the pests before they come,” (African Biodiversity Network, 2017, p. 56). Women’s role in communities as environmental stewards has placed them in a position where they have the most knowledge and skills on ways to mitigate and adapt to changes in climate in their communities. The unique knowledge they hold, preserve and pass down makes them significant contributors to climate change discourse.

In a focus group with elderly women, many shared their positive experiences of working with the climate affected soil. One participant, Ruva has lived in the area for over 50 years and has

vast experience working with the land. shared She her views on the perception that soil in Hiya village was unproductive:

*What I have noticed about the soil in this area is that sometimes the people don't know how to farm on this soil, there is no problem with the soil. No. For those who enjoy growing ground nuts they will never go without a harvest.*

Maria agreed with Ruva's views, giving an example of just how productive the soil could be for those who – in her opinion – cared to learn about it. She speaks of Mrs Gono, another elderly woman residing in Hiya village and the success she has had farming in the soil despite the climatic conditions:

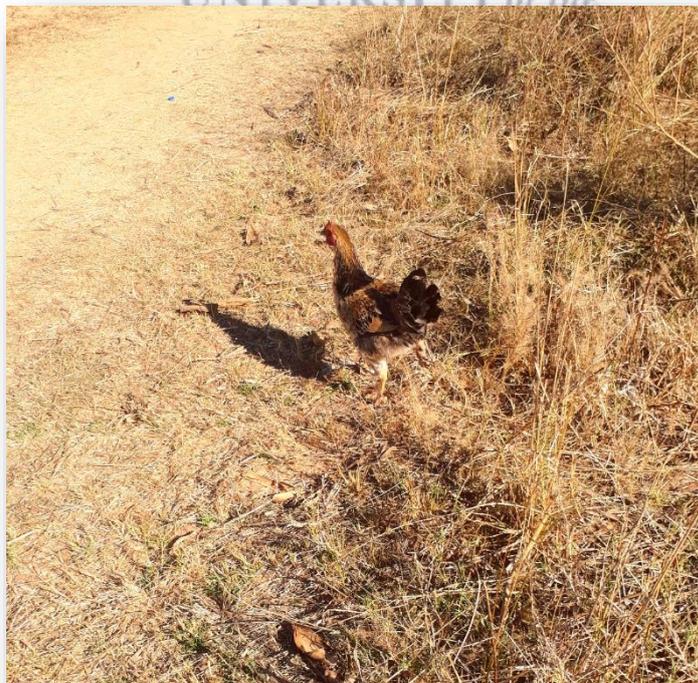
*Even Mrs Gono who lives down there had such a big harvest that she needed assistance. We can't say it's the soil, the people just don't care to farm ground nuts, that's what I would say. Because some people think about finding the seeds and they get lazy and would rather not.*

Maria and Ruva both concur that soil in Hiya village is productive for some crops despite the climatic conditions and its effects in the area. As stated before, variations in temperature and rainfall have resulted in drastic changes in soil quality in the area, making it sandy and less productive. Hence it has become important for women to find crops that are suitable (climate resilient) to grow in these conditions. Groundnuts were mentioned by a number of participants including Maria and Ruva who believe they are the most suitable crop to grow. They believe that those who claim the soil cannot successfully grow anything at all are “lazy” or “the people don't know how to farm on [the] soil”. Hence a lack of knowledge and an unwillingness to learn have affected the agricultural productive capacity of many women in the area. It is interesting to note that mostly elderly women believed in the soils' capability whilst younger women emphasized its unproductive nature without fertilizer. Therefore, older women, as a result of their years of experience doing small-scale farming in the area, have been able to understand the soil more. This knowledge has allowed them to overcome some of the difficulties faced by other people in the area such as an inability to harvest anything.

Many of the older women in Hiya village are widows; therefore, it is also possible that the need to provide for themselves (and for some, for their grandchildren) has also pushed them to become more aware of the conditions in the area and encouraged them to find ways to work in these conditions. Hence groundnuts are a popular crop to grow amongst this group as they are

not very labour intensive, which benefits them given their age, they are easy to harvest, and they grow well in the local climatic conditions. Contrary to this, younger women favoured growing maize; however, it is difficult to grow maize successfully without fertilizer. Hence their perception of crop cultivation in Hiya village is negative unlike the older women. Additionally, younger women had a preference for animal husbandry projects such as chicken and rabbit rearing. This is a result of the profitability of such projects in the area. With few people undertaking these projects in the area, there is a big market available which includes the local schools where teachers (who are perceived to be financially apt) reside and the local shopping center (growth point). However, a lack of sufficient knowledge on food required, medications needed, illnesses associated with these animals and the absence of a close local vet makes it difficult for these women to take up animal husbandry. These differences in opinion show the generational gap between women in the area and the way in which the importance of agriculture has changed over time. Younger women's lesser interest in crop cultivation can be attributed to their preference of animal husbandry through running various projects such as chicken and rabbit rearing. However, for older women, crop cultivation is more important to them as they have the skills, experience and willingness to adjust their activities to changes in climate.

**FIGURE 5.5:** Road-runner chicken in poultry project



**Source:** Authors field pictures

Sharma (2018) shows that rural women in India – much like the older women in Hiya village – have also been able to understand their climate conditions which has resulted in them knowing more about crop suitability in the area. The research, which looked at three villages in Faizabad district in eastern Uttar Pradesh, showed that women in these flood prone areas were able to know the different crops most suitable for their conditions (e.g. okra). The importance of rural women’s knowledge on climate change and its associated coping strategies was acknowledged by Dr Anil Gupta of the Indian Institute of Management, Ahmedabad who stated that “knowledge networks of women contribute immensely to tide over the adverse effect of the risk episodes” (Sharma, 2018). But these informal channels of dissemination of the knowledge are often not recorded in formal scientific discourses. It is therefore of great importance to learn from these women and find ways to harness and facilitate the recording and sharing of their knowledge on climate change in various rural areas. The acknowledgement of rural women’s knowledge resonates with Feminist Political Ecology Theory which pushes for a deeper understanding of women’s interactions with the environment in the context of climate change so that their role in climate change discourse can be transformed. Hanson (2015) also points out the importance of women’s oral histories of socio-environmental change. ecological oral histories stating that there is much to be learnt from storytelling, which is a form of knowledge transfer used by some rural women. This form of knowledge transfer was also noted and utilized by Hayman et al. (2015) in their analysis of water-based cosmologies of the Tagish and Tlingit peoples. They synthesized narrative storytelling with feminist and post-colonial analyses of climate change relationships.

Women in Hiya village can be seen as knowledge creators, possessors and researchers based on their ability to experiment with and observe various crops in the area in their pursuit to find suitable climate resilient crops for their personal agricultural endeavors. The adaptation of women to these conditions also speaks to the research objective of this research – climate resistant livelihood strategies. It can be noted that age played a role in determining the livelihood strategy favoured by women, with older women choosing to adapt to the effects of climate change by changing their crops. Younger women also engaged in agriculture to a lesser extent and opted to either continue growing maize despite the unfavorable conditions or to start chicken or rabbit projects instead.

One of the most significant climatic events in Zimbabwean history was the 2007-2008 drought that affected the whole country. It was important to find out how women in Hiya village experienced and coped with the drought in their already climate affected area. Discussing this

period with participants elicited emotional responses. Linda, a 62-year-old mother and grandmother of 5, shared her difficult experience generating income during the 2008 drought:

*In 2008 I didn't harvest well and all I do is farm for income and food. I was left with nothing, I had to go work at the farms for a little food and it wasn't even enough for my family. I will never forget that time.*

Betty (42) also shared a similar experience, stating the economic implications the drought had for her and her family. As her household depends on agricultural produce for food, the drought affected Betty's ability to provide for her family's food security needs.

*I did plant maize, but it got burnt by the sun, I got nothing from it. I didn't have fertilizer and I didn't have money. The little money that we got we would go buy food for that time.*

The 2007/2008 drought in Zimbabwe came at a time when the country was experiencing the failure of the land redistribution scheme which partly led to hyperinflation in the country's economy (Chitiga & Mabugu, 2008). The effects of the drought coupled with the unfavorable economic climate resulted in a drastic decline in food production as people failed to harvest meaningful produce. The lack of rainfall in the country was a result of the El-Nino weather phenomenon affecting many southern African countries. El Nino can be defined as the "weather pattern associated with a sustained period of warming in the central and eastern tropical Pacific which can spark deadly and costly climate extremes in parts of the world," (<https://m.phys.org>). The FAO (2015) states that this phenomenon can have devastating effects on harvests which can lead to food insecurity in southern Africa. The effects of El Nino in Zimbabwe were most severely experienced in 2008. Betty shares how the lack of rainfall and increased temperatures resulted in the drying up of her maize crop. With rural subsistence farmers largely dependent on rainfed agriculture, the lack of rainfall in areas like Goromonzi resulted in the complete destruction of crops or severely diminished harvests. According to the World Food Programme (add year), during this drought period Zimbabwe experienced an estimated 44% decline in harvest, resulting in severe food insecurity for both rural and urban households. Precious (45) described the severity of food insecurity in her household, with vegetables being the only source of food she could afford and access due to financial constraints: "*Many things affected me in 2008, we lived on vegetables, inflation affected us a lot we couldn't buy mealie-meal. I didn't farm.*"

In light of the bad harvest, many people had to buy their food from stores or vendors; however, the food crisis in the hyperinflationary economic environment led to food shortages and high food prices. With those in the rural areas depending on their crops for income, they had not only been affected in terms of food, their finances had also been diminished. As a result, they could not afford to purchase food. Some people in Hiya village resorted to looking for work in the neighboring farms to get money or food handouts. Linda (62) recalls having to go work on local farms for small amounts of food that could not sustain her family. This shows the severity of the effects of the 2008 drought on households in Hiya village. Macheka (2016) conducted research in Mwenzi District, Masvingo, showing the effects of the El Nino induced drought on women in the area. Interviews conducted with women in the area who rely on agriculture showed similar findings to those in Hiya village. Many recalled the hunger their families experienced during this time, with a loss of livestock being a common theme amongst these women. Additionally, women sought casual work including brick making in order to earn money to buy food. Similar effects of El Nino were experienced in rural El Salvador in 2009 resulting in destructive heavy rains, droughts, and increased temperatures. This negatively affected the viability of rural livelihoods resulting in the migration of many farming families to urban centers or across borders (Oxfam, 2016). This shows the different ways in which people residing in rural areas dealt with similar climatic conditions. The inability to migrate in the case of women in Hiya village can be attributed to the turbulent economic conditions in the country. This is contrary to El Salvador where rural residence had the option of migration.

The 2007/2008 El Nino influenced drought shows the importance of considering various factors when looking at climate change and agriculture. In the case of Zimbabwe, the economic crisis at that time greatly affected and limited the ways in which rural residents could mitigate the extreme weather conditions. In El Salvador, extreme climatic devastation led to the rural poor using migration to improve their living conditions in light of the environmental challenges that they are faced with. This relates to the research objective on the benefits of migration for women. In this sense, migration can be considered a desirable but unattainable option given the environmental factors which affected agricultural activities and the economic circumstances faced by women in Hiya village. Migration in light of the 2007/2008 drought would have been an option taken for economic reasons as women would have migrated to urban areas in search of work or affordable food.

#### 5.2.4. Theme 4 - Government Support

In interviews and focus groups, women spoke of the need for government support in their agricultural ventures. According to the older women, the government used to support small scale farmers in the area. As a result, women were able to be more financially independent and empower themselves through forming women's farming groups. Maria (84) recalls the time when her women's farming group used to receive support from the government which made it possible for them to compete with other farms in the area. She spoke of this time with sadness as she compared the way she used to farm then and now:

*I used to grow maize in the women's group we had. We would combine our harvest for the GMB [Grain Marketing Board] and split the money. It help us a lot. But without the fertilizer and seeds I could no longer do maize, I had to change to groundnuts and vegetables, and I can't sell those in this area because almost everyone is doing the same thing.*

**FIGURE 5.6:** Vegetable garden



**Source:** Authors field pictures

The formation of women's groups for agriculture played a significant role in the lives of women in Goromonzi. Farming as a group not only allowed women to collectively receive support from the government in the form of agricultural training, seeds, fertilizer and transport for grain, but women also became more financially independent and it created camaraderie amongst them. Stempel (2011) shows similar findings in Aceh, Indonesia where women's farming groups enabled women to create livelihoods through the growing and selling of vegetables. This led to an increased quality of life, unity amongst women and empowerment. The formation of such groups shows an increased interest in the abilities of women not only in agriculture, but also in the climate change discourse. In order to fund/support these groups it is imperative to first learn from women's experiences of farming in the area to identify the most viable crops. Hence it can be assumed that in these cases, women's knowledge on climate and natural resources in the area is important for the success of farming groups. Such acknowledgement reinforces FPE's ideas on the importance of taking note of the vast knowledge women hold with regard to natural resources and climate change. The significance of women's knowledge networks is noted by feminist scholars, Anne-Marie Hanson and Stephanie Buechler (2015) who – through the application of FPE - focus on women's agency and knowledge instead of women's vulnerabilities in relation to broader structural and environmental forces. They note that women's knowledge plays a vital role in understanding environmental degradation, climate change and the innovative adaptation strategies that are created as a result of this knowledge.

Maria mentions that her group used to grow maize with the help of government supplied fertilizer and seeds. As mentioned in theme 2 (agriculture and climate), Goromonzi is known for having vast agricultural lands and is home to a number of commercial farms. Many of these farms grow crops like maize and millet, crops that are often sold to the Grain Marketing Board (GMB). In Zimbabwe, the GMB is the largest buyer of grain in the country and its primary role is to safeguard the country's food security through sponsoring crop production. The women's groups were able to be competitive with such farms as they could also grow maize, "*combine our harvest for the GMB and split the money.*" Government support made it possible for women to grow more profitable crops in the area, enabled them to increase their crop production and benefit from selling to the GMB.

The withdrawal of government support for small scale farming in the area had serious repercussions for women. Many lost their livelihood, and some could not continue to grow maize in the same way. Thelma (70) angrily spoke of the negative effects that the withdrawal

of government support had on herself and other women in the village. She expressed feeling abandoned and marginalized by the government:

*Those people at the GMB are heartless, even the government. They forgot about us, now they just focus on the [commercial] farms that side. We see them getting millet and fertilizer. They don't understand how many of us lived on that money. It still hurts me up to today.*

The withdrawal of support by the government was pushed by the drastic changes in the economy that took place from the early 2000s. Such economic changes were brought on by the withdrawal of financial support from institutions such as the World Bank which had extended an Economic Structural Adjustment Programme to the country. The ESAP managed to boost the agriculture sector by supporting both small and large-scale farmers. However, with the imposition of sanctions, this support was withdrawn and greatly affected small scale farmers such as Maria and Thelma. The GMB struggled immensely to pay a number of small-scale farmers and ended up withdrawing support as it became too expensive. The lack of circulating cash, hyperinflation and drought made it difficult for the government to assist many farmers. This resulted in women such as Maria resorting to growing vegetables which are not as profitable as many people in the area grow and sell them. The lack of government support for small scale farmers in Goromonzi can explain some of the migration from the area as people left for urban areas (mainly Harare) in search of informal jobs. In light of the effects that climate change has had in the area in terms of soil quality, government support could assist women farming groups cope with these changes through providing training, seed and fertilizer which would help them to farm in the climatic conditions of the area.

### **5.3. Summary of Qualitative Data Analysis**

The thematic analysis of qualitative data showcased the effects that climate change has had on women in Hiya village. Previously, women were able to grow maize in large quantities and sell it to the GMB, giving them a reliable livelihood. However, climatic variances such as the 2007-2008 drought and the El Nino phenomenon have severely affected soil quality resulting in land degradation, which, in turn, has negatively affected their livelihoods. It was also highlighted that the withdrawal of government support from women's farming groups in the area exacerbated the negative impacts of climate change in Hiya village. However, in light of this

women were able to increase their knowledge of climate change adaptation. Whilst older women experimented with and found new ways to work with the poor soil in the village, younger women opted for more contemporary adaptation strategies such as poultry projects. Climate change was also noted as the cause for migration of a number of women in the area. Women from various parts of Zimbabwe who had experienced different climate-induced disasters moved to Goromonzi in search of a place to settle temporarily. The migration of women into Goromonzi highlighted the multi-dimensional nature of female migration. Whilst some women were climate migrants, others mentioned marriage migration as the main reason for moving to the area. Within these different forms of migration, the changes in gender ideals and household gender dynamics were seen. Older marriage migrants viewed female migration as a modern phenomenon that alluded to changes in cultural ideals of women. Climate migrants were mostly young women. The importance of family ties in the migration of women was seen in the different experiences' women had when they moved to the village. Women with relatives in the area were more readily accepted into the village whilst those without had to go through various procedures before being granted access.

#### **5.4. QUANTITATIVE DATA ANALYSIS**

Quantitative time series data was analyzed using time series analysis. Time series data is “a set of observations on the values that a variable takes at different times,” (Gujarati in Mollet, 2011, p. 45). Time series analysis (also known as trend analysis) is a method of analyzing quantitative that allows for the extraction of meaningful statistics. Annual data from 1991-2015 was used for climate data (temperature and precipitation), whilst data from 2004 to 2015 was used for migration data. Data used makes reference to changes in migration, temperature and precipitation in Zimbabwe. Data was obtained from The World Bank (<http://sdwebx.worldbank.org>) whilst migration data was obtained from the UN (<https://esa.un.org>). All tests were conducted on STATA. The Vector Auto-Regression (VAR) model was used to run data. Data was prepared by running an augmented Dickey-Fuller test.

##### **5.4.1. Augmented Dickey-Fuller Test**

The augmented Dickey-Fuller (ADF) test is used to conclude if a unit-root (a feature that can potentially be problematic in statistical inference) exists in an auto-regressive model. Data was tested for stationarity because series can strongly influence its behavior and properties, and it

is essential to avoid spurious regressions implying that if two variables are trending over time, a regression of one variable on the other could produce a high R squared even if those two variables are unrelated (Brookes, 2008). If the mean and variance are constant over time, then the series is stationary therefore a unit-root does not exist in the data. The tables below show the results of the ADF test for precipitation, temperature and migration data.

#### 5.4.1.1. Precipitation ADF Test

**Table 5.1: Precipitation ADF Test Results**

```
. dfuller Precipitation_n, lags(3) trend regress
```

Augmented Dickey-Fuller test for unit root                      Number of obs       =            296

Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z(t)	-9.014	-3.988	-3.428	-3.130

MacKinnon approximate p-value for Z(t) = 0.0000

D.Precipi~_n	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Precipita~_n						
L1.	-1.125066	.1248091	-9.01	0.000	-1.370713	-.8794199
LD.	.0890062	.1054642	0.84	0.399	-.1185662	.2965786
L2D.	.0463828	.0845846	0.55	0.584	-.1200947	.2128603
L3D.	-.0184064	.0585305	-0.31	0.753	-.1336049	.0967921
_trend	.0126735	.0439669	0.29	0.773	-.0738612	.0992082
_cons	57.35873	9.923213	5.78	0.000	37.82809	76.88938

The results above show that there are 3 maximum number of lags that were selected with 296 observations of precipitation over the period 1991-2015. This articulates the validity of the results since 296 is a large figure which enables estimated p values to be as close as possible to the actual values of the population. The aim of running an ADF test is to determine whether the mean and variance are constant over time and as shown above our  $p > |t|$  @ 5% critical value is 0.000 which is a constant value. This shows that the data for precipitation is stationary at first difference therefore spurious regressions can be avoided.

### 5.4.1.2. Temperature ADF Test

**Table 5.2: Temperature ADF Test Results**

```
. dfuller Temperature_n, lags(3) trend regress
```

Augmented Dickey-Fuller test for unit root                      Number of obs = 296

Interpolated Dickey-Fuller

Test	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-3.988	-3.428	-3.130

MacKinnon approximate p-value for Z(t) = 0.0000

	Coef.	Std. Err.	t	P> t	[95% Conf. Int
L1.	-1.246938	.1270713	-9.81	0.000	-1.497037 - .9
L2D.	.1914675	.1061269	1.80	0.072	-.0174091 .4
L3D.	.1482948	.0852475	1.74	0.083	-.0194874 .3
_trend	.0006806	.0021804	0.31	0.755	-.0036109 .0
_cons	27.20379	2.79185	9.74	0.000	21.70893 32

As shown above, temperature became stationary after first differencing thereby avoiding spurious regressions at 5% critical value. There are 296 observations which are a sufficient number of degrees of freedom and this increases the proximity of estimated temperature findings to the actual temperature findings, making the study more robust. In order to satisfy

one of the main assumptions of classical linear regression model, the mean and variance should be constant over time and thus our  $p > z/$  of 0.00.

### 5.4.1.3. Migration ADF Test

**Table 5.3: Migration ADF Test**

```
. dfuller Migration_n, lags(3) trend regress
```

Augmented Dickey-Fuller test for unit root                      Number of obs    =                      10

Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z(t)	-0.795	-4.380	-3.600	-3.240

MacKinnon approximate p-value for Z(t) = 0.9661

D.Migrati~_n	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Migration_n						
L1.	-1.751298	2.202172	-0.80	0.471	-7.865506	4.362911
LD.	.7644343	2.091482	0.37	0.733	-5.042451	6.57132
L2D.	.0287577	1.663866	0.02	0.987	-4.590874	4.64839
L3D.	.1599568	.9628955	0.17	0.876	-2.51347	2.833383
_trend	-3687.941	13758.02	-0.27	0.802	-41886.33	34510.45
_cons	573602.9	799036.6	0.72	0.513	-1644878	2792084

The table above represents the ADF test for a unit root in migration. The data shows that stationarity was attained after first differencing and that there is absence a unit root in the hypothesis hence avoiding spurious regression. As determined by the AIC, there are 3 maximum number of lags and the coefficient is statistically significant 1.75 at 95% significant level and also the standard error is statistically significant at 2.202 in the first lag. The  $p > |t|$  0.471 is statistically significant showing how robust the results are.

### 5.4.2. Vector Auto-regression (VAR) Model

The VAR model is “a stochastic process model used to capture the linear interdependencies among multiple time series,” (Stock & Watson, 2001, p. 1). It is used to explain variables against each other by their past values. A VAR model only requires a list of variables which can be hypothesized to affect each other intertemporally. VAR analysis was run for

precipitation, temperature and migration data. The results were as follows.

### 5.4.2.1. Precipitation VAR Analysis

**Table 5.4: VAR Precipitation**

```
. var Precipitation_n

Vector autoregression

Sample: 1991m3 - 2015m12      Number of obs   =      298
Log likelihood = -1662.304    AIC              =    11.17654
FPE              =  4182.489    HQIC             =    11.19144
Det (Sigma_ml)  =  4099.117    SBIC             =    11.21376
```

Equation	Parms	RMSE	R-sq	chi2	P>chi2
Precipitation_n	3	64.3491	0.0027	.7971155	0.6713

Precipitation_n	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Precipitation_n						
Precipitation_n						
L1.	-.0389069	.0578956	-0.67	0.502	-.1523802	.0745664
L2.	-.0354684	.0578188	-0.61	0.540	-.1487912	.0778544
_cons	56.62833	5.75447	9.84	0.000	45.34978	67.90689

The table above illustrates precipitation in the VAR model and as shown above in the Akaike Information Criterion (AIC) there is a 3-maximum number of lags. Our equation is statistically significant at 95% confidence level as shown by p>|z| of 0.502 in the first lag and 0.540 in the second lag which are not deviating that much from at least 0.5. Our coefficient -0.38798096 is statistically significant at 95% confidence level.

### 5.4.2.2. Temperature VAR Analysis

**Table 5.5: VAR Temperature**

```
. var Temperature_n
```

Vector autoregression

```
Sample: 1991m3 - 2015m12          Number of obs   =          298
Log likelihood = -769.8855        AIC              =       5.187151
FPE            = 10.47797         HQIC            =       5.20205
Det(Sigma_ml) = 10.2691         SBIC            =       5.22437
```

Equation	Parms	RMSE	R-sq	chi2	P>chi2
Temperature_n	3	3.2208	0.0034	1.018505	0.6009

Temperature_n	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Temperature_n						
Temperature_n						
L1.	-.0526383	.0578645	-0.91	0.363	-.1660506	.0607741
L2.	-.0279833	.0578694	-0.48	0.629	-.1414052	.0854386
_cons	23.65453	1.846325	12.81	0.000	20.0358	27.27326



There are 3 maximum number of lags as determined by the Akaike Information Criterion (AIC) of 5.1877512. The R-Squared is significant at 0.0034. One of the CLRM assumptions is that the coefficient and standard errors should be statistically significant, and this can be seen - 0.526383 for the coefficient in the first lag and -0.279833 in the second lag. The standard errors are both statistically significant in both lags at 0.579.

### 5.4.2.3. Migration VAR Analysis

**Table 5.6: VAR Migration**

Vector autoregression

Sample:	2004 - 2015	Number of obs	=	12
Log likelihood	= -142.0913	AIC	=	24.18188
FPE	= 1.88e+09	HQIC	=	24.137
Det (Sigma_ml)	= 1.13e+09	SBIC	=	24.30311

Equation	Parms	RMSE	R-sq	chi2	P>chi2
Migration_n	3	38787.2	0.1704	2.465201	0.2915

Migration_n	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
Migration_n					
Migration_n					
L1.	-.1037012	.2920191	-0.36	0.723	-.6760481 .4686458
L2.	-.4425437	.3013956	-1.47	0.142	-1.033268 .1481808
_cons	483609.6	124585.3	3.88	0.000	239426.9 727792.3

The table above depicts the VAR for net migration from 2004 - 2015. The sample has a good number of degrees of freedom and it allows the estimated results to be close to the actual net migration figures thereby reducing the standard errors in the study. As determined by the Akaike Information Criterion (AIC) there are a maximum number of 3 lags as shown by 24.182. There are also statistically significant coefficients in both lags of -1.037 in the first lag and -.443. The P>|Z| 0.723 is also statistically significant at 95% confidence level.

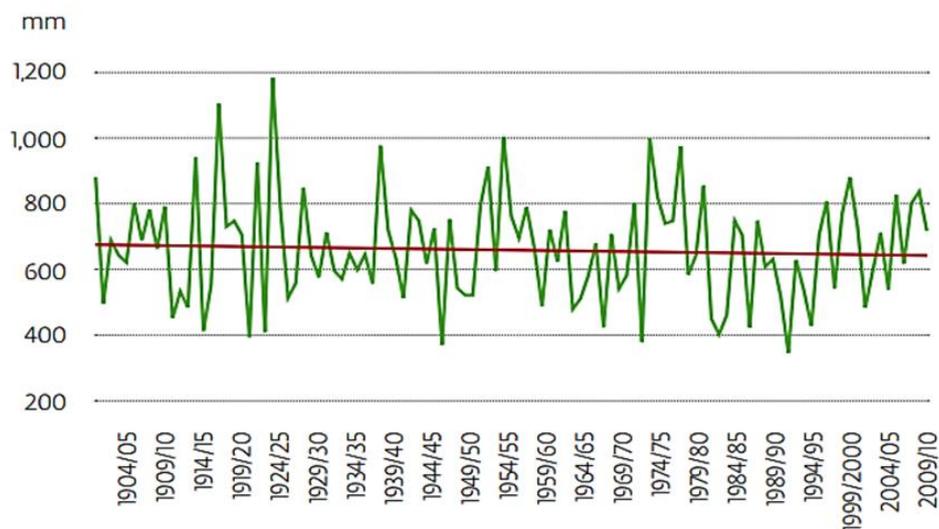
### 5.4.3. Summary of Quantitative Data Analysis

Having run an ADF test and a VAR analysis on temperature, precipitation and migration figures in Zimbabwe, the results have shown that the p-values for these three factors are statistically insignificant. The p-values for temperature, precipitation and migration all came up below 5%. These results were influenced by a number of factors, the most significant being the challenges faced in accessing credible data. The researcher was unable to obtain consistent migration, temperature and precipitation data from ZimStat which made it difficult to test the data for correlation between variables. This problem was countered by obtaining data from the World Bank and United Nations (UN) climate databases. However, there were variations in data presentation – ZimStat data was presented quarterly whilst other data was presented monthly.

This required adjustments being made to the World Bank and UN to match the quarterly data to make the analysis process easier.

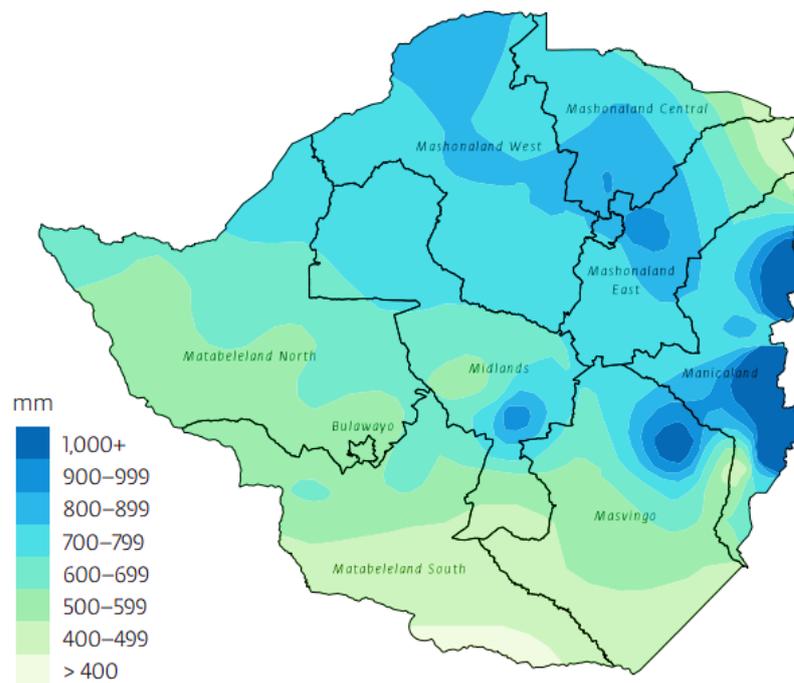
Despite this setback, there are various other studies that have analyzed climate and migration trends in Zimbabwe. Brazier (2015) conducted extensive research on the effects of climate change on rainfall patterns in Zimbabwe. The study found that the “increase in rainfall variability, make[s] it difficult for people who depend on rainfall and water resources – including those involved with agriculture, tourism and industry – to plan their activities,” (p. 40). According to Brazier’s (2005) data, rainfall in Zimbabwe has decreased by 5% since the 1900s (Figure 5.8). This has extended the number of dry days during the rainy season which in turn has resulted in the increased frequency of floods and droughts, “often occurring back to back with a flood year immediately following a drought year,” (p. 40).

**Figure 5.7:** Changes in annual average rainfall since 1900



Source: MSD in Brazier (2015)

**Figure 5.8:** Average rainfall map



Source: MSD in Brazier (2015)

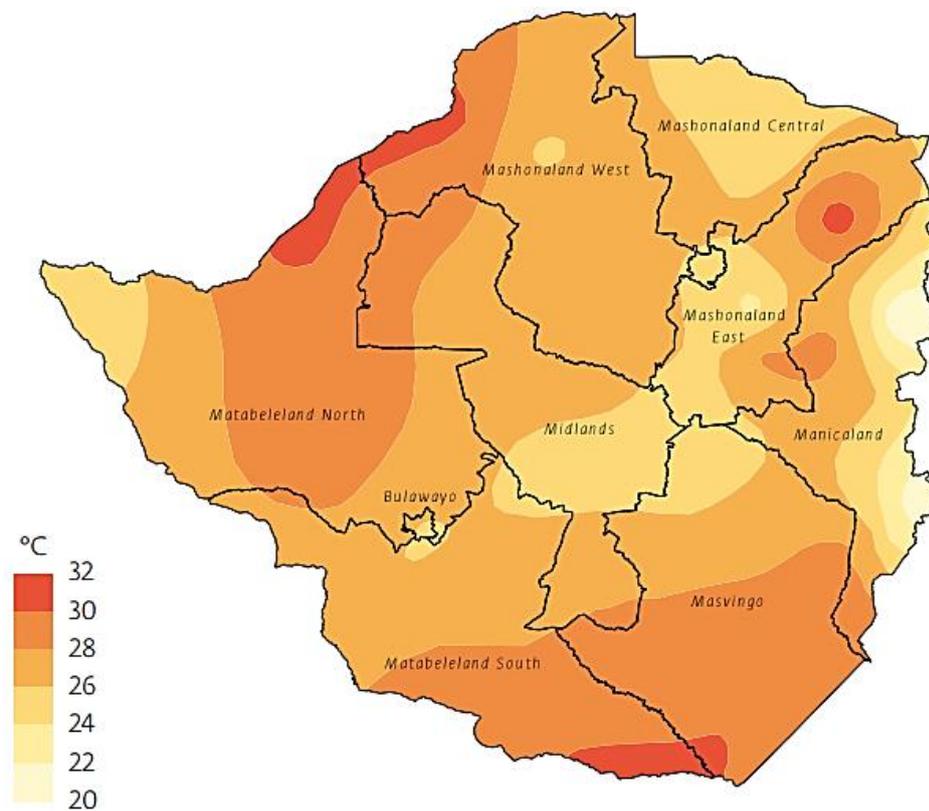
These statistics are reflective of the results found in the qualitative part of this study. The women in Hiya village expressed that although the area receive some rain, the amounts received had declined over time and rainy seasons had become unpredictable making it difficult to grow crops well. Similar sentiments were shared by migrant women who recalled droughts in their previous areas of residence as being their migration push-factor. Sango and Godwell (2015) conducted a similar study in Makonde District, Zimbabwe where they accessed the environmental impacts of climate change in the area, and residents' perceptions of climate change and its effects. Their findings concur with those of this study and the statistics in Figure 5.8 which reflect a progressive decrease and disruption in rainfall patterns. This is also coupled with increasingly frequent drought spells in the area. In another climate related study by Moyo et al. (2012), the climate perceptions of farmers in the Hwange and Masvingo were similar to those in this study. Farmers stated that in the last 10-20 years, rainfall in the area has significantly decreased; becoming more erratic and with less amounts of rain. This in turn has negatively affected livestock and crops in these areas. Nhemachena et al. (2014) investigated the perceptions of rural communities on climate change and its impacts on their livelihoods in Hwange District. This study found that

The results of these various studies which were undertaken in different parts of Zimbabwe can

confirm that climate change has affected rainfall patterns in the country. The reduced amounts of rainfall which resulted in longer dry days and increased droughts were – for some women in this study – migration push factors. Therefore, a link can be seen between migration and climate change based on statistical climate information generated from other studies in the country, perceptions of changing rainfall patterns given by participants in other studies and the migration push factors cited by migrant women in Hiya village.

Climate change has also had an impact on temperatures in Zimbabwe. According to Brazier (2015) Zimbabwe’s temperature is predicted to increase by 3°C by the end of the 21<sup>st</sup> century. Increased temperatures have resulted in heat waves during hot seasons and drought. Figure 5.10 shows the average temperatures around the country.

**Figure 5.9:** Average temperature map



Source: MSD in Brazier (2015)

Various studies have looked at the variances in temperatures as a result of climate change in Zimbabwe. Sango and Godwell’s (2015) analysis of climate change trends in Makonde Rural District found that changes in climate have been significantly in the last 30 years with increases in the average temperature. Data used in this study was obtained from the Department of

Meteorological Services. The results also showed that the rate of temperature increase over time is increasing. “A trend analysis of temperature in the study area revealed an increase in both annual maximum and minimum temperatures between 1962 and 2008. Further analysis showed that the period of most rapid warming occurred since the early 1980s to date,” (p. 3). Manyeruke et al. (2013) states that the increased temperatures in Zimbabwe have started to shift traditional farming seasons and agro-ecological zones. The rapidity of climate change has made it increasingly difficult to predict rainfall patterns and increased the frequency of droughts and dry spells which now occur every 3 years compared to every 10 years in the 1960’s and 1970’s. This was evident between 2002 – 2008 when the country experienced one of its worst seasons to date. According to the Climate System Analysis Group (2016), based on the changes in climatic conditions in Zimbabwe it can be predicted that by the middle of this century, the temperature would have increased by 2 – 2.75°C. The impacts of this will include “changes in crop yields, changes in forest biomes, decreased supply and quality of water and melting of tar on roads.” These predictions were made using the Global Climate Models (GCMs).

The results from various studies stated above concur with the perceptions of climate change stated by participants in this study. The women of Hiya village state that it had gradually become hotter in the area over time and this had negatively affected the productivity of soil in the area. Additionally, some migrant women mentioned severe droughts as their reason for migrating to the village. The statistical analysis of temperature data in the studies mentioned above shows that changes in environmental temperature have affected the country as a whole however some areas have experienced hotter temperatures than others. Although Hiya village has its climatic challenges, women who have migrated to the area believe it is better off than their previous areas of residence. The variations in both precipitation and temperature in the country can be seen in Figures 5.8 and 5.9 which illustrate the areas most affected by/prone to climatic changes.

## **CHAPTER 6: CONCLUSION AND DISCUSSION OF THE FINDINGS**

### **6.1. Introduction**

This chapter will conclude the thesis by presenting a summary of the thesis, discussing the findings and their implications, making recommendations based on the findings and highlighting the limitations of the findings. The chapter is divided into 3 sections: (1) discussion of the findings, (2) limitations of the research and (3) recommendations.

### **6.2. Discussion of the Findings**

This thesis aimed to identify the ways in which female climate migrants in Goromonzi had experienced migration and if migration had positively impacted their lives. A mixed methods approach was used to gather qualitative and quantitative data. Qualitative data was analyzed using thematic analysis. Through an analysis of interview transcriptions, four key themes emerged from the data – family ties, agriculture and climate, temporary migration and government support. An analysis of the findings revealed that female migration is a complex, multi-faceted process in Goromonzi. The migration of women into the area was controlled and facilitated by various factors determined by the form of migration they used. Women who permanently migrated to Hiya village, Goromonzi were mostly marriage migrants. Such migration is facilitated by the protocols of patrilocal marriage tradition where women move to their husband's villages once married. Such migrants were able to move into the village with ease. On the other hand, temporary migration was mostly undertaken by climate-migrants from various parts of the country. These women migrated to Goromonzi as a result of environmental stressors which include flooding and drought. Their move into the area was more complex than that of marriage migrants as they had to go through a vetting process with the village head and Headman. Gender played a big role in determining access to the village as the village head stated that women are more likely to be permitted to temporarily stay. The various complexities behind female migration show that culture and tradition play a role in influencing women's ability to migrate into certain areas. This can influence female migration patterns in certain regions. Most women who migrated to the area were from other rural areas hence the influence of culture may only be restricted to these regions. Migration to urban areas and international female migration may show varied results due to less stringent rules surrounding female migration. Women believed that migration was beneficial mainly because it allowed them to search for opportunities and escape hardships.

Climate change in Goromonzi was found to have affected soil productivity in Hiya village. Through historical accounts and experiences given by interviewees, it was clear that changes in climate had led to soil quality degradation which had negative economic effects on women in the village. The low soil productivity resulted in a decrease in the variety of crops that could be grown in the area. As Goromonzi is an area known for farming and it is home to numerous commercial farms, fertile soil is a common finding in the region. However, the effects of climate on soil particularly in Hiya village forced women to give up on growing maize – which is a profitable crop – and resort to growing groundnuts and vegetables. It is important to note that apart from climate change, a withdrawal of government support also contributed to exacerbating the negative impacts of climate. The government used to support women's farming groups in the area with seed and fertilizer, and also buy back the grain through the Grain Marketing Board. Many women's households depended on the food and money generated through these projects. Additionally, such projects gave women autonomy and empowered them. The withdrawal of government support coupled with unfavorable climatic conditions resulted in women and their households having negative experiences with climate change. Hence it is clear that climate change does not work alone in affecting people's lives, various other factors such as the economy and availability of finances play a part in pushing women towards adaptation strategies such as migration.

Gender played various roles in the migration and climate change analysis done for this research. Marital status influenced climate induced migration differently for different women. Single women were able to migrate more freely to the places of their choosing as they did not have any male figure regulating their movements. Contrary to this, married women were more likely to either travel with their husbands or migrate to a place determined by the husband. This showcases the importance of considering gender ideals and gender roles within marriage as they can influence female migration. Quantitative data showed that at 2 lags, comparisons against migration, precipitation and temperature showed no correlation between changes in climate and migration patterns. This shows the importance of considering other external factors that can be considered migration push factors. In the case of Zimbabwe, it is important to consider the volatile economic state of the country during this same period. This could have been the main migration push factor at the time, with climate change contributing to migration to a lesser extent.

### 6.2.1. Key Findings

In accordance with the research objectives, the findings of this research showed the following:

- a) *Objective 1: To identify the climate related migration push factors that women in Goromonzi have experienced.*

Various climate migration push factors were identified for women. It is important to note that these women engaged in rural-rural migration. Most women who migrated for climate related reasons moved as a result of a *single climatic events* which are natural disasters that occur once. Linked to this was *loss of livelihood*, therefore it can be said that economic loss also played a role in encouraging female migration. The research also identified other migration push factors. *Marriage* played a role as a migration push factor as women upheld patrilocal marriage traditions of migration. *Marital status* played a different role as it was more for women who were not married into the area, but who were sent to the village in light of a negative climatic event. Husbands were able to determine where their wives would stay if they could not migrate together.

- b) *Objective 2: To assess the benefits of migration for women.*

Migrant women benefited from *access to land* in the area. This allowed them to become economically active and feed themselves or their families. Women also benefited from being given *shelter* as there was an area usually given to temporary migrants that has a hut (Fig 7).

- c) *Objective 3: To identify climate resistant livelihood strategies employed by migrant women in Goromonzi district.*

Besides migration as an adaptation strategy to climate change, women used *agriculture* as well to create livelihoods. Knowledge which women had on the weather patterns and soil in the area help them identify vegetables and groundnuts as suitable crops for the area. Young non-migrant women on the other hand preferred to *start rabbit and poultry* projects.

- d) *Objective 4: To ultimately contribute to a better understanding of the nexus between climate change and migration, and the effects these factors have on women living in rural areas.*

Although climate change plays a big role in influencing female migration especially in rural areas, it is of great importance not to look at climate change in isolation, but to take

into consideration factors such as the economic state of the country. As can be seen in the qualitative and quantitative results, it is not enough to just measure migration against climate change without considering other factors.

### **6.3. Limitations of the Study**

The study only used a sample from one village in Goromonzi, therefore the sample size was small. This was a result of time constraints that did not allow for extensive time in the field collecting data. Qualitative migration data used in the study was not very extensive. This was a result of data access issues as there is limited data available on internal migration trends in Zimbabwe as a whole. Lastly, due to the small size of the data set a VAR model was used to analyze the data however data of this nature is usually analyzed using the Mann-Kendall test and a t-test. These tests however do not compute accurate results with small data sets such as the one used in this research. Additionally, there was limited, accurate data that could be obtained to compute meaningful results.

### **6.4. Recommendations**

In spite of the limitations, the conclusions do give useful suggestions for climate induced migration analysis. It is important for researchers to take a holistic approach to migration and climate. Although there is a definite link between these two concepts, they do not affect each other in isolation. Factors such as culture (context), political state, economic stability, access to resources and education levels should all be taken into consideration as they play a great role in influencing female migration both locally and internationally.

## **BIBLIOGRAPHY**

- Abebe, M.A. (2014). Climate Change, Gender Inequality and Migration in East Africa. *Washington Journal of Environmental Law & Policy*, 4(1): 104-140.
- Adril, N. (2014). *Climate-induced Rural-Urban Migration in Bangladesh: Experience of migrants in Dhaka City*. International Centre for Climate Change and Development [online]. Available at: <http://beta.icccad.net/climate-induced-rural-urban-migration-in-bangladesh-experience-of-migrants-in-dhaka-city/> [Accessed: 27 July 2017].
- Afifi, T., Liwenga, E., & Kwezi, L. (2014). Rainfall-induced crop failure, food insecurity and out-migration in Same-Kilimanjaro, Tanzania. *Climate and Development*, 6(1): 53-60.
- Afolayan, A. A. & Adelekan, I. O. (1999). The role of climatic variations on migration and human health in Africa. *The Environmentalist*, 18(4): 213–218.
- African Biodiversity Network. (2017). *Celebrating African Rural Women: Custodians of Seed, Food and Traditional Knowledge for Climate Change Resilience*. UK: African Biodiversity Network.
- Afsar, R. (2003). *Internal migration and the development nexus: The case of Bangladesh*. Dhaka: Bangladesh Institute of Development Studies.
- Agar, M. (1980). *The Professional Stranger: An Informal Introduction to Ethnography*. New York: Academic Press.
- Altrichter, H., Feldman, A., Posch, P. & Somekh, B. (2008). *Teachers investigate their work: An introduction to action research across the professions (2nd ed.)*. Routledge: New York.
- Asian Development Bank. (2012). *Addressing Climate Change and Migration in Asia and the Pacific*. Mandaluyong: Asia Development Bank.
- Bahauddin, K.M., Dutkiewicz, M.J. & Nath, M.K. (2016). *Climate Change-induced Migration in Bangladesh: Realizing the Migration Process, Human Security and Sustainable Development*. Policy Brief for GSDR – 2016 Update. Available at: [https://sustainabledevelopment.un.org/content/documents/1014764\\_Bahauddin\\_Climate%20Change-](https://sustainabledevelopment.un.org/content/documents/1014764_Bahauddin_Climate%20Change-)

[induced%20Migration%20in%20Bangladesh\\_Realizing%20the%20Migration%20Process\\_Human%20Security%20and%20Sustainable%20Development.pdf](#) [Accessed 27 July 2017].

Banerjee, B. (1981). Rural-Urban Migration and family Ties: An analysis of family considerations in migration behaviour in India. *Oxford Bulletin of Economics and Statistics*, 43(4): 321-355.

Barkat, A. & Ahsan, M. (2014). *Gender and migration from Bangladesh: Mainstreaming migration into national development plans from a gender perspective*. Geneva: International Labour Organization.

Bauer, S. & Scholz, I. (2015). *Adaptation to Climate Change in Southern Africa: New Boundaries for Development*. New York: Routledge.

Beyea, S.C. & Nicoll, L.H. (2000). Collecting, analyzing, and interpreting focus group data. *Association of Registered Nurses (AORN) Journal*, 71(6). DOI: [https://doi.org/10.1016/S0001-2092\(06\)61446-4](https://doi.org/10.1016/S0001-2092(06)61446-4).

Bhuiyan, M.R.A. & Siddiqui, T. (2015). *Migration in the Indian Bengal Delta and the Mahanadi Delta: A review of the literature*. DECCMA Working Paper, Deltas, Vulnerability and Climate Change: Migration and Adaptation. IDRC Project Number 107642. Available online at: [www.deccma.com](http://www.deccma.com). [Accessed 01 September 2017].

Bilegsaikhon, S. (2015). *How is climate change affecting rural-urban migration in Mongolia?* Available at: <http://www.transre.org/en/blog/how-climate-change-affecting-rural-urban-migration-mongolia/> [Accessed: 27 July 2017].

Biswas, A.A.A., Sattar, M.A., Hossain, M.A., Faisal, M., & Islam, M.R. (2015). An Internal Environmental Displacement and Livelihood Security in Uttar Bedkashi Union of Bangladesh. *Applied Ecology and Environmental Sciences*, 3(6): 163-175.

Bodvarsson, O. & Van den Berg, H. (2009). *The Economics of Immigration: Theory and Policy*. Springer-Verlag: Heidelberg.

Bohra-Mishra, P. & Massey, D.S. (2010). *Environmental Degradation and Out-Migration: New Evidence from Nepal*. Princeton, NJ: Princeton University.

Bohra-Mishra, P., Oppenheimer, M., Cai, R., Feng, S. & Licker, R. (2017). Climate variability and migration in the Philippines. *Population Environment*, 38(3): 286-308.

Boyd, M. & Grieco, E. (2003). *Women and Migration: Incorporating Gender into International Migration Theory*. Migration Policy Institute: Migration Information Source [online]. Washington, D.C: Migration Policy Institute. Available: [www.migrationinformation.org](http://www.migrationinformation.org). [Accessed 3 March 2017].

Brauch, H.G. (2003). Security and Environment Linkages in the Mediterranean: Three Phases of Research on Human and Environmental Security and Peace. In *Security and Environment in the Mediterranean. Conceptualising Security and Environmental Conflicts*: Brauch, H.G.; Liotta, P.H; Marquina, A.; Roger, P.; Selim, M. El-Sayed (Eds.). Berlin-Heidelberg, Germany: Springer, 35-143.

Brazier, A. (2015). *Climate Change in Zimbabwe: Facts for Planners and Decision Makers*. Harare: Konrad-Adenauer-Stiftung.

Brink, H. (1996). *Fundamentals of research methodology for health care professionals*. Kenwyn: Juta.

Brooks, C. (2008). *Introductory econometrics for finance*. Cambridge: Cambridge University.

Brown, O. (2008). *Migration and Climate Change*. Geneva: International Organization for Migration.

Bryman, A. & Bell, E. (2005). *Business Research Methods*. Oxford: Oxford University Press.

Bryman, A. (2008). *Social Research Methods*. Oxford: Oxford University Press.

Buechler, S. (2009). Gender, water, and climate change in Sonora, Mexico: Implications for policies and programmes on agricultural income-generation. *Gender Development*, 17: 51-66.

Castle, E.N. & Baldwin, B. (1988). *National Rural Studies Committee: Second Annual Meeting*. Oregon: Western Rural Development Centre at Oregon State University.

Cavana, R.Y., Delahaye, B.L. & Sekaran, U. (2001). *Applied Business Research: Qualitative and Quantitative Methods*. Brisbane: John Wiley & Sons, Inc.

Central Statistical Office. (2004). *Census 2002: Provincial profile: Mashonaland East*. Harare: Central Statistical Office.

Chagutah, T. (2010). *Climate Change Vulnerability and Preparedness in Southern Africa: Zimbabwe Country Report*. Cape Town: Heinrich Böll Stiftung (HBS).

Chant, S. (1991). *Women and Survival in Mexican Cities: Perspectives on Gender, Labour Markets and Low-income Households*. Manchester: Manchester University Press.

Chant, S. (1998). Households, gender and rural-urban migration: Reflections on linkages and considerations for policy. *Environment and Urbanization*, 10(1): 5-21.

Chen, Q. (2016). *Globalization and Transnational Academic Mobility: The Experiences of Chinese Academic Returnees*. Singapore: Springer.

Chitiga, M. & Mabugu, R. (2008). Evaluating the impact of land redistribution: A CGE microsimulation application to Zimbabwe. *Journal of African Economies*, 17(4): 527-549.

Christian Aid. (2007). *Human tide: The real migration crisis – A Christian Aid report*. London: Christian Aid.

Clancy, C.P. & Solomon, S.B. (2015). A Survey on Climate Change: How Beliefs Shape Responsibility. *Journal of Environmental and Resource Economics at Colby*, 2(1): 1-19.

Climate System Analysis Group. (2016). *Information on Zimbabwe's climate and how it is changing*. Available: <https://www.weadapt.org/knowledge-base/using-climate-information/zimbabwe-climate-analysis>. [Accessed: 01 March 2018].

Cohen, L. & Manion, L. (2000). *Research Methods in Education* (5th ed). Routledge: New York.

Cooper, D.R. & Schindler, P.S. (2006). *Business Research Methods*. New York: McGraw-Hill Irwin.

Crush, J. & Tevera, D. (Eds.). (2010). *Zimbabwe's Exodus: Crisis, Migration, Survival*. Kingston: Southern African Migration Programme.

Currie-Alder, B., Kanbur, R., Malone, D.M. & Medhora, M. (Eds.). (2014). *International Development: Ideas, Experience, and Prospects*. Oxford, Oxford University Press.

Daniel, J. (2012). *Sampling Essentials: Practical Guidelines for Making Sampling Choices*. Thousand Oaks, CA: SAGE Publications.

Davis, B. & Winter, P. (2011). Gender, Networks and Mexico-US Migration, *The Journal of Development Studies*, 38(2): 1-26.

de Haas, H. (2007). Morocco's migration experience: A transitional perspective. *International Migration*, 45(4): 39-70.

de Haas, H. (2008). *The internal dynamics of migration processes*. Paper presented at IMSCOE Conference on Theories of Migration and Social Change St Anne's College, University of Oxford, 1-3 July 2008.

Deheza, E. & Mora, J. (2013). *Climate Change, migration and Security: Best-Practice Policy and Operational Options for Mexico*. The Royal United Services Institute for Defense and Security Studies Whitehall, Report 1-13.

Deprez, A. (2010). *Climate Migration in Latin America: A Future 'Flood of Refugees' to the North?* Analysis prepared by COHA Research Fellow Alexandra Deprez, Blog post of the Council on Hemispheric Affairs. Available at: <http://www.coha.org/climate-migration-in-latin-america-part-1/>. [Accessed 02 September 2017].

Djamba, Y.K., Goldstein, S. & Goldstein, A. (2000). Migration and Occupational Change During Periods of Economic Transition: Women and Men in Vietnam. *Asian and Pacific Migration Journal*, 9(1): 65-92.

Dolgoff, R., Loewenberg, F.M. & Harrington, D. (2009). *Ethical Decisions for Social Work Practice*. Belmont, CA: Thomson/Brooks Cole.

Elmhirst, R. (2015). Feminist Political Ecology. In Perreault, T., Bridge, G & McCarthy, J (Eds.), *The Routledge Handbook of Political Ecology* (pp. 519-530).

Ezemonye, M.N. (2015). Flood and Female Headed Households in Illah Rural Community of Delta State, Nigeria. *Academic Journal of Interdisciplinary Studies*, 4(2): 109-116. DOI: <https://doi.org/10.5901/ajis.2015.v4n2p109>.

Falmagne, R.J. (2006). The dialectic of the particular and the general. *International Journal of Critical Psychology*, 17: 167-184.

Feng, S., Krueger, A. B., & Oppenheimer, M. (2010). *Linkages among climate change, crop yields and Mexico-US cross-border migration*. Proceedings of the National Academy of Sciences USA, 107, 14257-14262.

Feng, S., Oppenheimer, M., & Schlenker, W. (2013). *Climate change, crop yields, and internal migration in the United States*. In National Bureau of economic research Working Paper No. 17734. Available: [www.nber.org/papers/w17734](http://www.nber.org/papers/w17734). [Accessed 30 June 2017].

Food and Agriculture Organization of the United Nations (FAO). (2011). *Women in Agriculture: Closing the gender gap for development*. Rome: FAO.

Food and Agriculture Organization of the United Nations (FAO). (2009). *Livestock in the balance*. Rome: FAO.

Food and Agriculture Organization of the United Nations (FAO). (2015). *Social protection and agriculture: Breaking the cycle of rural poverty*. Rome: FAO.

Fouché, C.B. & Bartley, A. (2011). Quantitative data analysis and interpretation. In: De Vos, A.S., Strydom, H., Fouché, C.B. & Delpont, C.S.L, *Research at grass roots for the social sciences and human service professionals* 4<sup>th</sup> ed. Pretoria: Van Schaik.

Fouché, C.B. & Schurink, W. (2011). Qualitative research designs. In: De Vos, A.S., Strydom, H., Fouché, C.B. & Delpont, C.S.L. *Research at grass roots for the social sciences and human service professions* (4th ed). Pretoria: Van Schaik Publishers.

Friedman, L. (2014). Heat Stress Drives Climate Migration. *Scientific American* [online]. Available on: <https://www.scientificamerican.com/article/heat-stress-drives-climate-migration/> [Accessed 15 August 2017].

Ghosh, T., Hajra, R. & Mukhopadhyay, A. (2014). Island Erosion and Afflicted Population: Crisis and Policies to Handle Climate Change. In: *International Perspectives on Climate Change: Latin America and Beyond*. Ed: Filho Leal, Fátima Alves, Sandra Caeiro and Ulisses Azeiteiro, IX, 217-226, Springer.

Gilbert, N. (2014). 'Costly fertilizers holds back a green revolution in Africa,' *The Guardian*, Friday 5 December. Available at: <https://www.theguardian.com/global->

[development/2014/dec/05/costly-fertiliser-holds-back-a-green-revolution-in-africa](http://development/2014/dec/05/costly-fertiliser-holds-back-a-green-revolution-in-africa) [Accessed 29 January 2018].

Given, L.M. (2008). *The SAGE Encyclopedia of Qualitative Research Methods: A-L; Vol 2, M-Z Index*. California: SAGE Publications.

Goromonzi District Council. (n.d.). *About Goromonzi District Council*. Available: <http://www.goromonzirdc.org/index.php?page=about> [Accessed 15 October 2017].

Goss, S. & Stevens, C. (2016). *Making Research Matter: Researching for change in the theory and practice of counseling and psychotherapy*. New York: Routledge.

Govardhan Das, S.V., Priya, S. & Kenmore, P.E. (2015). *Smarter smallholders - Community based climate adaptation in well irrigated agriculture*. New Dehli: FAO.

Gray, C.L. (2011). Soil Quality and Human Migration in Kenya and Uganda. *Global Environmental Change*, 21(2): 421-430.

Grey, C.L. & Mueller, V. (2012). Drought and Population Mobility in Rural Ethiopia. *World Development*, 40(1): 134-145.

Hair, J.F., Bush, R.P. & Ortinau, D.J. (2003). *Marketing research: Within a changing information environment*. New York: McGraw-Hill Irwin.

Hanson, A. & Buechler, S. (2015). Towards a feminist political ecology of women, global change, and vulnerable waterscapes. In A. Hanson & S. Buechler (Eds.), *A Political Ecology of Women, Water and Global Environmental Change* (pp. 1-16). London: Routledge, Taylor & Francis Group.

Hanson, A. (2015). Shoes in the seaweed and bottles on the beach: global garbage and women's oral histories of socioenvironmental change in coastal Yucatan, in A. Hanson & S. Buechler (Eds.), *A Political Ecology of Women, Water and Global Environmental Change* (pp. 165-184). London: Routledge, Taylor & Francis Group.

Hayman, E., James, C. & Wedge, M. (2015). 'Héen Kas'él'ti X\_oo (Among the ragged lakes) – Storytelling water, north of the future: Collaborative water research with Carcross/Tagish First Nation, Yukon Territory, Canada', in A. Hanson & S. Buechler (Eds.), *A Political Ecology of*

*Women, Water and Global Environmental Change* (pp. 185-205). London: Routledge, Taylor & Francis Group.

Henry, S., Schoumaker, B. & Beauchemin, C. (2004). The Impact of Rainfall on the First Out-Migration: A Multi-level Event-History Analysis in Burkina Faso. *Population and Environment*, 25(5): 423-460.

Herrera, G.A. (2006). *Ancient Agriculture: Roots and application of sustainable farming*. Salt Lake City: Ancient City Press.

Hersh, M. (2015). *Ethical Engineering for International Development and Environmental Sustainability*. London: Springer.

Huang, P.M. (2008). *Gender bias in academia: Findings from focus groups*. Center for Worklife Law, University of California. Available: <http://worklifelaw.org/publications/gender-bias-academia.pdf> [Accessed: 21 December 2017].

Huq, N., Huye, J., Boon, E. & Gain, A.K. (2015). Climate Change Impacts in Agricultural Communities in Rural Areas of Coastal Bangladesh: A Tale of Many Stories. *Sustainability*, 7: 8437-8460.

Intergovernmental Panel on Climate Change (IPCC). (2001). *Climate Change 2001: Impacts, adaptation and vulnerability. Contribution of working group II to the third assessment report of the intergovernmental panel on climate change*. Eds: J.J. McCarthy, O.F. Canziani, N.A. Leary, D.J. Dokken & K.S. White. Cambridge, UK: Cambridge University Press.

International Labour Organization (ILO). (2004). *Gender and Migration in Arab States: The Case of Domestic Workers*. Beirut: ILO Regional Office for Arab States.

Jakobeit, C. & Methmann, C. (2007). *Klimafluchtlinge – Die Verleugnete Katastrophe*. Hamburg: Greenpeace.

Jarosz, L. (2011). Nourishing women: Toward a feminist political ecology of community supported agriculture in the United States. *Gender, Place & Culture*, 18(3): 307-326.

Jessop, J. (2012). *Ethics in Qualitative Research*. London: SAGE Publications.

Johl, S.K. & Renganathan, S. (2010). Strategies for Gaining Access in Doing Fieldwork: Reflection of two researchers. *The Electronic Journal of Business Research Methods*, 8(1): 42-50.

Jolly, S. (2005). *Gender and Migration: Overview report*. UK: Institute of Development Studies (IDS).

Kafle, N.P. (2011). Hermeneutic phenomenological research method simplified. *Bodhi: An Interdisciplinary Journal*, 5: 181-200.

Kakissis, J. (2010). *Environmental refugees unable to return home*. New York Times. Available at: <https://www.nytimes.com/2010/01/04/world/asia/04migrants.html>. [Accessed 15 August 2017].

Kartiki, K. (2011). Climate change and migration: a case study from rural Bangladesh. *Gender and Development*, 19(1): 23-38. DOI: <https://dx.doi.org/10.1080/13552074.2011.554017>.

Kinuthia-Njenga, C. & Blanco, P.K. (2009). *Climate Change and Migration in Nairobi - Environmental Migration and its Urban Manifestation at the Local Scale*. New York: Columbia University.

Kolmannskog, V. (2009). *Climate change-related displacement and the European response*. Paper presented at SID Vijverberg Session on Climate Change and Migration, The Hague.

Krueger, R.A. & Casey, M.A. (2000). *Focus Groups: A practical guide for applied research*. Thousand Oaks, CA: SAGE Publications.

Lastarria-Cornhiel, S. (2002). 'Concepts of property rights and citizenship: Market economy, customary tenure, and gender', *Land Tenure Centre presentation for Conference on Conflicts over Land and Water in Africa: Questions of Citizenship and Identity*. Centre for Development Research, Copenhagen, Denmark, 28-29 November 2002.

Lavrakas, P.J. (2008). *Encyclopedia of Survey Research Methods: A-M*. Thousand Oaks, CA: SAGE Publications.

Leedy, P.D. & Ormrod, J.E. (2005). *Practical research: Planning and design* (8th ed.). New Jersey: Prentice Hall.

Lobell, D.B. Burke, M.B., Tebaldi, C., Mastrandrea, M.D., Falcon, W.P. & Naylor, R.L. (2008). Prioritizing climate change adaptation needs for food security in 2030. *Science*, 319(5863): 607-610. DOI: <https://doi.org/10.1126/science.1152339>.

Lopez-Carr, D. & Burgdorfer, J. (2013). Deforestation Drivers: Population, Migration, and Tropical Land Use. *Environment*, 55(1): 1-10. DOI: <https://dx.doi.org/10.1080%2F00139157.2013.748385>.

Lou, G. (2006). China's Rural-Urban Migration: Structure and Gender Attributes of the Floating Rural Labor Force. *Finnish Yearbook of Population Research*, 42: 65-92. Available at: <https://journal.fi/fypr/article/view/45027> [Accessed: 7 May 2017].

Louw, J.M. (2004). Rural-Urban Migration in South Africa. In T. Falola & S.J. Salm (Eds.), *Globalization and Urbanization in Africa* (pp. 105-116). New Jersey: African World Press, Inc.

Macheka, T. (2016). *El Niño: Faces of the Drought in Zimbabwe*. Available at: <https://www.wfp.org/stories/el-nino-faces-drought-zimbabwe> [Accessed: 09 February 2018].

Madziwa, M. (2016). *Interviewing as a data collection method*. Available at: <https://www.linkedin.com/pulse/interview-data-collection-method-munyaradzi-madziwa> [Accessed 13 December 2017].

Madzwamuse, M. (2010). *Climate Governance in Africa: Adaptation Strategies and Institutions*. Cape Town: Heinrich Böll Stiftung (HBS).

Manyeruke, C., Hamauswa S. & Mhandara, L. (2013). The Effects of Climate Change and Variability on Food Security in Zimbabwe: A Socio-Economic and Political Analysis. *International Journal of Humanities and Social Science*, 3(6): 270-286.

Mariscal, C.B., Tassi, N., Miranda, A.R., Canedo, L.A. & Cazorla, I. (2011). *Rural migration in Bolivia: the impact of climate change, economic crisis and state policy*. Human Settlements Working Paper Series, Rural-Urban Interactions and Livelihood Strategies-31. London: International Institute for Environment and Development (IIED).

Martin, M., Billah, M., Siddiqui, T., Abrar, C., Black, R. & Kniveton, D. (2014). Climate-related migration in rural Bangladesh: A behavioural model. *Population and Environment*, 36: 85-110.

- Massey, D.S., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A. & Taylor, J.E. (1993). Theories of International Migration: A Review and Appraisal. *Population and Development Review*, 19(3): 431-466.
- Maurel, M. & Kubik, Z. (2014). *Climate variability and migration: Evidence from Tanzania*. Paris: *Foundation pour les études et recherches sur e développement international*. (Working Paper 104).
- McEvoy, J.P. (2008). *Male Out-Migration and the Women Left Behind: A Case Study of a Small Farming Community in Southeastern Mexico*. Master's thesis, Utah State University, Utah.
- McMartin, J. (1995). *Personality Psychology – A student centered approach*. London: SAGE Publications.
- Memon, R. (2005). Pakistan: Internal Migration and Poverty Reduction. In *Migration, Development and Poverty reduction in Asia*. Proceedings of the Regional Conference on Migration and Development in Asia, Lanzhou, China, sponsored by the UK Department for International Development, IOM, Geneva.
- Merriam, S.B. & Tisdell, E.J. (2016). *Qualitative Research: A Guide to Design and Implementation*. San Francisco: John Wiley & Sons, Inc.
- Mincer, J. (1978). Family Migration Decisions. *Journal of Political Economy*, 86(5): 749-773.
- Mitchell, T. & Tanner, T.M. (2006). *Adapting to Climate Change: Challenges and opportunities for the development community*. Middlesex, UK: Tearfund.
- Mollet, J.A. (2011). *Female Labour Force Participation and Economic Development in West Papua*. Newcastle: Cambridge Scholars Publishing.
- Morgan, D.L. (1988). *Focus Groups as Qualitative Research*. Beverley Hills, CA: SAGE Publications.
- Morgan, D.L. (1991). *Focus Groups as Qualitative Research*. Beverley Hills, CA: SAGE Publications.
- Morrissey, J. (2008). Rural-urban migration in Ethiopia. *Forced Migration Review*, 31: 28-29.

Moyo, M., Mvumi, B.M., Kunekweguta, M., Mazvimavi, K., Craufurd, P. & Dorward, P. (2012). Farmer perceptions on climate change and variability in semi-arid Zimbabwe in relation to climatology evidence. *African Crop Science Journal*, 20(2): 317-335.

Moyo, M., Mvumi, B.M., Kunzekweguta, M., Mazvimazi, K., Craufurd, P. & Dorward, P. (2012). Farmer perceptions on climate change and variability in semi-arid Zimbabwe in relation to climatology evidence. *African Crop Science Journal*, 20(2): 317-335.

Moyo, O.N. & Kawewe, S. (2002). The Dynamics of a Racialized, Gendered, Ethnicized, and Economically Stratified Society: Understanding the Socio-Economic Status of Women in Zimbabwe. *Feminist Economics*, 8(2): 163-181.

Mpofu, E. (2016). *Opinion: Women farm through knowledge sharing*. Available: <https://viacampesina.org/en/opinion-women-farm-through-knowledge-sharing/> [Accessed: 13 February 2018].

Muchadenyika, D., Brown, D., Chanakira, R.R., Chatiza, K., Dhliwayo, M., Dodman, D., Masiwa, M., Mugabe, P. & Zvigadza, S. (2012). *Climate change impacts, vulnerability and adaptation in Zimbabwe*. International Institute for Environment and Development Climate Change Working Paper No. 3. Available at <http://pubs.iied.org/pdfs/10034IIED.pdf> [Accessed 5 March 2017].

Mugula, V.J. (2013). *Economics of Climate Change Adaptation in Smallholder Rice Production Systems in Wami-Ruvu Basin, Tanzania*. Master of Science in Agriculture Thesis. University of Agriculture. Morogoro, Tanzania.

Muraji, J. & Afifi, T. (2014). Rainfall variability, food security and human mobility in the Janjgir-Champa district of Chhattisgarh state, India. *Climate and Development*, 6(1): 28-37.

Nawrotzki, R.J., Hunter, L.M. Runfola, D.M. & Riosmena, F. (2015). Climate Change as Migration Driver from Rural and Urban Mexico. *Environmental Research Letters*, 10(11): 1-9.

Neelankavi, J.P. (2015). *International business research*. New York: Routledge.

Nelson V. (2011). *Gender, Generations, Social Protection and Climate Change: A thematic review*. London: Overseas Development Institute.

Nelson, V., Meadows, K., Cannon, T., Morton, J. & Martin, A. (2001). Uncertain predictions, invisible impacts, and the need to mainstream gender in climate change adaptations. *Gender and Development*, 10(2): 51-59.

Neuman, W.L. (2006). *Social Research Methods: Qualitative and Quantitative Approaches*. Toronto: Pearson.

Neupane, K.W., Rubinyi, L., Sivappa T. & Wang, Y. (2016). *Climate Migrants and Urban Adaptation in India and China*. Workshop in International Public Affairs. Prepared for University of Notre Dame Global Adaptation Index (ND-GAIN).

Nhemachena, C., Mano, R., Mudombi, S. & Muwanigwa, V. (2014). Perceptions on climate change and its impact on livelihoods in Hwange district, Zimbabwe. *Jàmbá: Journal of Disaster Risk Studies*, 6(1). DOI: <http://dx.doi.org/10.4102/jamba.v6i1.123>.

Nightingale, A. (2006). The nature of gender: work, gender and environment. *Environment and Planning: Society and Space*, 24: 165-185.

Norrington-Davies, G. (2011). *Climate Change Financing and Aid Effectiveness: Cameroon Case Study*. Addis Ababa: African Development Bank.

Oheneba-Sakyi, Y. & Takyi, B.K. (2006). *African Families at the Turn of the 21st Century*. Westport, CT: Praeger Publishers.

Okoro, O. (2013). *Long Distance International Caregiving to Elderly Parents Left Behind: A Case of Nigerian Adult Children Immigrants In USA*. PhD. University of North Texas. Texas, USA. Available at:

[https://digital.library.unt.edu/ark:/67531/metadc407817/m2/1/high\\_res\\_d/dissertation.pdf](https://digital.library.unt.edu/ark:/67531/metadc407817/m2/1/high_res_d/dissertation.pdf)

[Accessed: 02 February 2018].

Olson, K., Young, R.A. & Schultz, I.Z. (2016). *Handbook of Qualitative Health Research for Evidence-Based Practice*. New York: Springer.

Oxfam. (2016). *Drought, El Nino farmers in Central America*. Available at: <https://www.oxfamamerica.org/explore/stories/drought-el-niño-hit-farmers-in-central%20-america/> [Accessed: 25 November 2017].

Parker, A. & Tritter, J. (2007). Focus group method and methodology: Current practice and recent debate. *International Journal of Research & Method in Education*, 29: 23-37. DOI: <https://doi.org/10.1080/01406720500537304>.

Patton, M.Q. (2000). *Qualitative research and evaluation methods*. California: SAGE Publications.

Pearl-Martinez, R. (2017). *Financing Women Farmers: The need to increase and redirect agriculture and climate adaptation resources*. DOI: <https://doi.org/10.21201/2017.0889>.

Phagan-Hansel, K. (2015). *The Kinship Parenting Toolbox: A unique guidebook for the kinship care parenting journey*. New Jersey: EMK Press.

Phillips, P.P., Phillips, J.J. & Aaron, B. (2013). *Survey Basics*. Alexandria, VA: American Society for Training and Development (ASTD) Press.

Phiri, K., Ndlovu, S. & Chiname, T.B. (2014). Climate Change Impacts on Rural Based Women: Emerging Evidence on Coping and Adaptation Strategies in Tsholotsho, Zimbabwe. *Mediterranean Journal of Social Sciences*, 5(23): 2545-2552.

Piguet, E., Pécoud, A. & Guchteneire, P.F.A. (2011). *Migration and Climate Change*. Cambridge: Cambridge University Press.

Pilot, D.F., Beck C.T. & Hungler, B.P. (2001). *Essentials of Nursing Research: Methods, Appraisal and Utilization*. Philadelphia: Williams & Wilkins.

Piper, N. (2003). Bridging Gender, Migration and Governance: Theoretical Possibilities in the Asian Context. *Asian and Pacific Migration Journal*, 12(1): 21-48.

Polit, D.F. & Hungler, B.P. (1993). *Study Guide for Essentials of Nursing Research: Methods, Appraisal, and Utilization*. Michigan: Lippincott.

Powell, R.A. & Single, H.M. (1996). *Focus groups*. *International Journal of Quality in Health Care*, 8(5): 499-504.

Raleigh, C., Jordan, L. & Salehyan, I. (2008). *Assessing the impact of climate change on migration and conflict*. Paper presented at Social Dimensions of Climate Change, Social Development Department, the World Bank, Washington DC.

Ramachandran, S. (2005). *Indifference, impotence, and intolerance: Transnational Bangladeshis in India Global Migration Perspectives*. Geneva: Global Commission on International Migration.

Rocheleau, D.E., Thomas-Slayter, B.P. & Wangari, E. (1996). *Feminist Political Ecology: Global Issues and Local Experiences*. New York: Routledge.

Rosenzweig, M. & Stark, O. (1989). Consumption Smoothing, Migration, and Marriage: Evidence from Rural India. *Journal of Political Economy*, 97(4): 905-926.

Rutherford, S. (2007). Green governmentality: Insights and opportunities in the study of nature's rule. *Progress in Human Geography*, 31: 291-307.

Saeed, F., Salik K.M. & Ishfaq, S. (2015a). *Climate-induced rural-to urban migration in Pakistan*. Working paper for Pathways to Resilience in Semi-arid Economies (PRISE) project.

Saeed, F., Salik, K.M. & Ishfaq, S. (2015b). *Climate change and heat-waves: Rural-to-Urban Migration in Pakistan A silent looming crisis - Policy Brief #47*. Islamabad: Sustainable Development Policy Institute.

Sagala, S. & Sani, I.R. (2014). *Livelihood Adjustments to Climate Changes and Foreign Migrant Worker*. Resilience Development Initiative Working Paper No. 9. ISSN 2406-7865.

Salzmann, M. (2016). Global warming without global mean precipitation increase? *Science Advances*, 2(6): 1-6. DOI: <https://doi.org/10.1126/sciadv.1501572>.

Sango, I. & Godwell, N. (2015). An Investigation into the Household Climate Change Adaptation Strategies in Makonde Communal Lands of Zimbabwe. *Journal of Human Ecology (Delhi, India)*, 52(1-2): 116-130.

Schurink, W.J. (2005). *Lecture 13: Evaluating Qualitative Research*. Johannesburg: University of Johannesburg.

Sharma, D.C. (2018, January 02). Rural women have resilience to cope with climate risks: Study. *Down To Earth*. Available at: <http://www.downtoearth.org.in/news/rural-women-have-resilience-to-cope-with-climate-risks-study-59404> [Accessed: 18 January 2018].

Sharpe, P. (ed.). (2001). *Women, Gender and Labour Migration: Historical and Global Perspectives*. New York: Routledge.

Siegel, B. (1996). African Family and Kinship. *Anthropology Publications*. Paper 3.

Snyder, T.D. (2001). *Projections of Education Statistics to 2010*. Jessup, MD: U.S. Department of Education.

St. Clair, S.B. & Lynch, J.P. (2010). The opening of Pandora's Box: climate change impacts on soil fertility and crop nutrition in developing countries. *Plant Soil*, 335: 101-115.

Stark, O. & Bloom, D.E. (1985). The New Economics of Labor Migration. *American Economic Review*, 75: 173-178.

Stock, J.H. & Watson, M.W. (2001). *Vector Auto-regression*. Available at: <https://faculty.washington.edu> [Accessed 6 January 2018].

Stojanov, R., Kelman, I., Ullah, A.A., Duzi, B., Procházka, D. & Blahútová, K.K. (2016). Local Expert Perceptions of Migration as a Climate Change Adaptation in Bangladesh. *Sustainability*, 8(12): 1-15.

Strauss, A.L. & Corbin, J.M. (2008). *Basics of qualitative research: Techniques and procedures for delivering grounded theory*. California: SAGE Publications.

Strempel, A. (2011). *Women and Agriculture in Aceh, Indonesia. Needs Assessment for the BPTP and ACIAR 'Women Farmer Groups' project*. Available: [http://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0015/380112/KWTNeedsAssessment-English.pdf](http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0015/380112/KWTNeedsAssessment-English.pdf) [Accessed: 24 February 2018].

Suckall, N.R. (2013). *The potential impact of climate change on rural-urban migration in Malawi*. Doctoral of Philosophy thesis, The University of Leeds, Leeds.

Suzuki, N. (2007). Carework and migration: Japanese perspectives on the Japan-Philippines Economic Partnership Agreement. *Asian and Pacific Migration Journal*, 16(3): 357-381.

Tacoli, C. (2009). Crisis or adaptation? Migration and climate change in context of high mobility, *Environment and Urbanization*, 21(2): 513-525.

Teddle, A. & Tashakkori, C. (Eds). (2009). *Handbook of mixed methods in social and behavioral research*. Thousand Oaks, CA: SAGE Publications.

Thang, L. L., Maclachlan, E. & Goda, M. (2002). Expatriates on the margins - a study of Japanese women working in Singapore. *Geoforum*, 33(4): 539-551.

Thornton, P.K., Ericksen, P.J., Herrero, M. & Challinor, A.J. (2014). Climate variability and vulnerability to climate change: A review. *Global Change Biology*, 20(11): 3313-3328. DOI: <https://doi.org/10.1111/gcb.12581>.

Thornton, P.K., Jones, P.G., Owiyo, T.M., Kruska, R.L., Herrero, M., Kristjanson, P., Notenbaert, A., Bekele, N. & Omolo, A. (2006). *Mapping Climate Vulnerability and Poverty in Africa: Report to the Department of International Development*. Nairobi: International Livestock Research Institute (ILRI).

Tingem, M., Rivington, M., Bellocchi, G., Azam-Ali, S. & Colls, J. (2008). Effects of climate change on crop production in Cameroon. *Climate Research*, 36: 65-77. DOI: <https://doi.org/10.3354/cr00733>.

Tiwari, P. C. & Joshi, B. (2016). Gender processes in rural out-migration and socio-economic development in the Himalaya. *Migration and Development*, 5(2): 330-350. DOI: <https://dx.doi.org/10.1080/21632324.2015.1022970>.

Today, M.P. & Maruszko, L. (1987). Illegal migration and US immigration reform: A conceptual framework. *Population and Development Review*, 13: 101-114.

Tripathy, P. & Tripathy, P.K. (2017). *Fundamentals of Research. A Dissective View*. Hamburg: Anchor Academic Publishing.

UNESCO. (1984). *Women in the Villages, Men in the Towns: Women in a world perspective*. California: UNESCO.

UNGA (UN General Assembly). (2004). *World Survey on the role of women in development*, Report of the Secretary General, addendum on “Women and international migration”, September, New York.

United Nations Development Programme (UNDP). (2009). *Human Development Report 2009*. New York: Palgrave Macmillan.

United Nations Development Programme (UNDP). (2011). *Human Development Report 2011*. New York: Palgrave Macmillan.

United Nations Environment Programme (UNEP). (2007). *Sudan - Post conflict environmental assessment*. Nairobi: UNEP.

United Nations Population Fund (UNFPA). (2009). *State of World Population 2009 - Facing a Changing World: Women, Population, and Climate*. New York: United Nations Population Fund.

Valdivia, C., Thibeault, J., Gilles, J.L., Gracia, M. & Seth, A. (2013). Climate trends and projections for the Andean Altiplano and strategies for adaptation. *Advances in geoscience*, 33: 69-77.

Van Dalen, H.P., Groenewold, G. & Fokkema, T. (2005). *Remittances and their effect on emigration intentions in Egypt, Morocco and Turkey*. Available at: <http://repub.eur.nl/res/pub/6591/2005-0301.pdf> [Accessed: 02 February 2018].

Vaughn, S., Schumm, J.S. & Sinagub, J.M. (1996). *Focus Group Interviews in Education and Psychology*. Thousand Oaks, CA: SAGE Publications.

Wahyuni, E.S. (2000). *The Impact of Migration Up on Family Structure and Functioning in Java*. PhD thesis, Adelaide University, Australia.

Warner, K. (2009). Migration: climate adaptation or failure to adapt? Findings from a global comparative field study. *IOP Conference Series: Earth and Environmental Science (EES)*, 6(56). DOI: <http://dx.doi.org/10.1088/1755-1307/6/56/562006>.

Warner, K. Ehrhart, C., de Sherbinin., A., Adamo, S. & Chai-Onn, T. (2009). *In search of shelter: Mapping the effects of climate change on human migration and displacement. A policy paper prepared for the 2009 climate negotiations*. Bonn: United Nations University, CARE, and CIESIN-Columbia University.

Weber, M. (2010). The distribution of power within the community: Classes, Stände, parties. *Journal of Classical Sociology*, 10(2): 137-152.

Westermann, D., Smith, E.W. & Forde, C.D. (2006). *Africa*. Oxford: Oxford University Press.

White, G. (2011). *Climate Change and Migration: Security and Borders in a Warming World*. New York: Oxford University Press.

Willinger, B. (Ed). (2008). *Katrina and the Women of New Orleans*. New Orleans: Newcomb College Center for Research on Women.

Wodon, Q., Burger, N., Grant, A. & Liverani, A. (2014). Climate Change, Migration, and Adaptation in the MENA Region. In Q. Wodon., A. Liverani., G. Joseph. & N. Bougnoux, Eds, *Climate Change and Migration: Evidence from the Middle East and North Africa*. World Bank: Washington, DC.

Wright, C. (1995). Gender Awareness in Migration Theory: Synthesizing Actor and Structure in Southern Africa. *Development and Change*, 26: 771-791. DOI: <https://doi.org/10.1111/j.1467-7660.1995.tb00574.x>.

Wrigley-Asante, C., Owusu, K., Egyir, I.S. & Owiyo, T.M. (2017). Gender dimensions of climate change adaptation practices: the experiences of smallholder crop farmers in the transition zone of Ghana. *African Geographical Review*. DOI: <https://doi.org/10.1080/19376812.2017.1340168>.

Yalew, A.W. (2016). *Economy-wide Effects of Climate Change in Ethiopia*. Paper presented at the International Conference on economic Modelling (EcoMod2016). Lisbon, Portugal.

Yamin, F. (2004). Overview of climate change and development. *Institute of Development Studies Bulletin*, 35(3): 1-19.

Ye, J. (2016). Left-behind women: gender exclusion and inequality in rural-urban migration in China. *The Journal of Peasant Studies*, 43(4): 910- 941. DOI: <https://doi.org/10.1080/03066150.2016.1157584>.

Zikmund, W.G. (2003). *Business Research Methods* (7th ed.). Ohio: Thomson South Western.

Zlotnick, H. (2003). *The Global Dimensions of Female Migration*. Washington, DC: Migration Policy Institute.

## APPENDICES

### One-on-one Interview Information Sheet



Private Bag X17, Bellville 7535, Cape Town, South Africa

Telephone: (021) 959 3858/6 Fax: (021) 959 3865

E-mail: [pkippie@uwc.ac.za](mailto:pkippie@uwc.ac.za)



UNIVERSITY of the  
WESTERN CAPE

### INFORMATION SHEET

#### FOR

#### ONE-ON-ONE INTERVIEW PARTICIPANTS

#### Project Title:

Migration as An Adaptation Strategy To Climate Change In Rural Zimbabwe: An analysis of the experiences of female climate migrants in Goromonzi District.

#### What is this study about?

This research project is being conducted by Michelle Paidamwoyo Masuku, a student at the University of the Western Cape. You are invited to participate in this project as a female resident of Goromonzi. The study seeks to understand the impact of migration as an adaptation strategy to climate change.

#### What will I be asked to do if I agree to participate?

You will be asked to share information on how changes in weather patterns have affected you and your livelihood, why you decided to migrate from the affected area and if the decision to migrate to Goromonzi has been beneficial.

#### Would my participation in this study be kept confidential?

All your personal information will be kept confidential and will remain anonymous. You will be required to sign a consent form to protect your privacy and confidentiality while participating in this study. The researcher shall not reveal the identity of the participants and will safeguard the confidential information obtained in the course of the study.

#### What are the risks of this research?

There are no risks involved in participating in this research project. From the beginning, aims and objectives will be clear.

**What are the benefits of this research?**

There are no material benefits for the interviewee, but it will create an awareness and understanding on the effects of climate change on women and migration in the country.

**Do I have to be in this research and may I stop participating at any time?**

Your participation in this research is completely voluntary. You may choose not to participate and to stop participating at any time you want. If you stop or decide not to participate, you will not lose anything.

**Is any assistance available if I am negatively affected by participating in this study?**

There are no negative effects that could happen from participating in this study.

**What if I have questions?**

This research is being conducted by Michelle Paidamwoyo Masuku, a student at the University of the Western Cape. Her contact details are as follows:

Cell: +263 772 364 412 OR +27 633 580 3599 Email: [3265455@myuwc.ac.za](mailto:3265455@myuwc.ac.za)

If you have any questions about the research study itself, please contact Dr. Abdulrazak Karriem at The Institute for Social Development (ISD), University of the Western Cape. His contact details are as follows:

Tel: +27 (021) 959 3853 Email: [akarriem@uwc.ac.za](mailto:akarriem@uwc.ac.za)

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Dr Sharon Penderis

Acting Director

Email: [spenderis@uwc.ac.za](mailto:spenderis@uwc.ac.za)

Tel: +27 (021) 959 348

This research has been approved by the University of the Western Cape's Senate Research Committee and Ethics Committee.

One-on-one Interview Letter of Consent



Private Bag X17, Bellville 7535, Cape Town, South Africa

Telephone: (021) 959 3858/6 Fax: (021) 959 3865

E-mail: [pkippie@uwc.ac.za](mailto:pkippie@uwc.ac.za)



UNIVERSITY of the  
WESTERN CAPE

**LETTER OF CONSENT: TO PARTICIPATE IN A ONE-ON-ONE INTERVIEW**

I....., have had the opportunity to ask any questions related to this study, and received satisfactory answers to my questions, and any additional details I wanted.

I agree to take part in this research.

I understand that my participation in this study is voluntary. I am free not to participate and have the right to withdraw from the study at any time, without having to explain myself.

I am aware that the information I provide in this interview might result in research which may be published, but my name will not be used.

I understand that my signature on this form indicates that I understand the information on the information sheet regarding the structure of the questions.

I have read the information regarding this research study on climate change and migration.

I agree to answer the questions to the best of my ability.

I understand that if I don't want my name to be used that this will be ensured by the researcher.

I may also refuse to answer any questions that I don't want to answer.

I consent to audio recordings being made of the interview session and to the recordings being used to aid the work.

I consent to the excerpts from these recordings, or descriptions of them, being used by the researcher (Michelle Paidamwoyo Masuku) for the purposes of academic research.

By signing this letter, I give free and informed consent to participate in this research study.

Date: \_\_\_\_\_

Participant Name: \_\_\_\_\_

Participant Signature: \_\_\_\_\_

Interviewer name: \_\_\_\_\_

Interviewer Signature: \_\_\_\_\_

## Interview Schedule



Private Bag X17, Bellville 7535, Cape Town, South Africa

Telephone: (021) 959 3858/6 Fax: (021) 959 3865

E-mail: [pkippie@uwc.ac.za](mailto:pkippie@uwc.ac.za)



UNIVERSITY of the  
WESTERN CAPE

### **INTERVIEW SCHEDULE**

#### Opening

- A. Establish Rapport – Introduce myself and explain where I am coming from (UWC).
- B. Purpose – Explain the purpose of the interview and a brief overview of what will be discussed.
- C. Motivation – Explain the importance of the information that will be shared and how it will add value to the research.
- D. Time Line – Indicate the approximate time the interview will take

#### Part I – General demographic information

1. Can you tell me a little bit about yourself and your family?
  - a) Age
  - b) Number of family members
  - c) Gender distribution in the family
2. How long have you lived in Goromonzi District?
3. Are you originally from Goromonzi District?
  - a) (If 'NO') Where are you originally from?

#### Part II – Climate related information

4. What are the general climatic conditions in Goromonzi?
5. What are the general climatic conditions in the area you are originally from?
6. What was your experience during the 2008 drought?
7. Have weather conditions improved since 2008?

### Part III – Migration related information

8. Why did you migrate from your original area of residence?
9. Whose decision was it to migrate?
10. Did many people migrate from the area?
11. Why did you migrate to Goromonzi?
12. Has migration been beneficial to you and your family?
13. Has migration changed your livelihood/income generating activity?
14. Did changes in climatic conditions influence your decision to migrate in any way?

### Part IV – Gender related information

15. As a woman, do you have the power in your household to make migration decisions?
16. How do you feel about the increase in female-migration in the country?
17. What are the benefits (if any) of being able to migrate?



This research is being conducted by Michelle Paidamwoyo Masuku, a student at the University of the Western Cape. Her contact details are as follows:

Cell: +263 772 364 412 OR +27 633 580 3599

Email: [3265455@myuwc.ac.za](mailto:3265455@myuwc.ac.za)

If you have any questions about the research study itself, please contact Dr. Abdulrazak Karriem at The Institute for Social Development (ISD), University of the Western Cape. His contact details are as follows:

Tel: +27 (021) 959 3853

Email: [akarriem@uwc.ac.za](mailto:akarriem@uwc.ac.za)



Private Bag X17, Bellville 7535, Cape Town, South Africa

Telephone: (021) 959 3858/6 Fax: (021) 959 3865

E-mail: [pkippie@uwc.ac.za](mailto:pkippie@uwc.ac.za)



UNIVERSITY of the  
WESTERN CAPE

**INFORMATION SHEET**  
**FOR**  
**FOCUS GROUP DISCUSSION PARTICIPANTS**

**Project Title:**

Migration As An Adaptation Strategy To Climate Change In Rural Zimbabwe: An analysis of the experiences of female climate migrants in Goromonzi District.

**What is this study about?**

This research project is being conducted by Michelle Paidamwoyo Masuku, a student at the University of the Western Cape. You are invited to participate in this project as a female resident of Goromonzi. The study seeks to understand the impact of migration as an adaptation strategy to climate change.

**What will I be asked to do if I agree to participate?**

You will be asked to share information on how changes in weather patterns have affected you and your livelihood, why you decided to migrate from the affected area and if the decision to migrate to Goromonzi has been beneficial. You will also be asked not to divulge any information that was discussed in the Focus Group Discussion.

**Would my participation in this study be kept confidential?**

All your personal information will be kept confidential and will remain anonymous. You will be required to sign a consent form to protect your privacy and confidentiality while participating in this study. The researcher shall not reveal the identity of the participants and will safeguard the confidential information obtained in the course of the study.

**What are the risks of this research?**

There are no risks involved in participating in this research project. From the beginning, aims and objectives will be clear.

**What are the benefits of this research?**

There are no material benefits for the interviewee, but it will create an awareness and

understanding on the effects of climate change on women and migration in the country.

**Do I have to be in this research and may I stop participating at any time?**

Your participation in this research is completely voluntary. You may choose not to participate and to stop participating at any time you want. If you stop or decide not to participate, you will not lose anything.

**Is any assistance available if I am negatively affected by participating in this study?**

There are no negative effects that could happen from participating in this study.

**What if I have questions?**

This research is being conducted by Michelle Paidamwoyo Masuku, a student at the University of the Western Cape. Her contact details are as follows:

Cell: +263 772 364 412 OR +27 633 580 3599

Email: [3265455@myuwc.ac.za](mailto:3265455@myuwc.ac.za)

If you have any questions about the research study itself, please contact Dr. Abdulrazak Karriem at The Institute for Social Development (ISD), University of the Western Cape. His contact details are as follows:

Tel: +27 (021) 959 3853

Email: [akarriem@uwc.ac.za](mailto:akarriem@uwc.ac.za)

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Dr Sharon Penderis

Acting Director

Email: [spenderis@uwc.ac.za](mailto:spenderis@uwc.ac.za)

Tel: +27 (021) 959 348

This research has been approved by the University of the Western Cape's Senate Research Committee and Ethics Committee



Private Bag X17, Bellville 7535, Cape Town, South Africa

Telephone: (021) 959 3858/6 Fax: (021) 959 3865

E-mail: [pkipie@uwc.ac.za](mailto:pkipie@uwc.ac.za)



UNIVERSITY of the  
WESTERN CAPE

**LETTER OF CONSENT: TO PARTICIPATE IN FOCUS GROUP DISCUSSION**

I....., have had the opportunity to ask any questions related to this study, and received satisfactory answers to my questions, and any additional details I wanted.

I agree to take part in this research.

I understand that my participation in this study is voluntary. I am free not to participate and have the right to withdraw from the study at any time, without having to explain myself.

I agree not to divulge any information that was discussed in the Focus Group Discussion.

I am aware that the information I provide in this Focus Group Discussion might result in research which may be published, but my name will not be used.

I understand that my signature on this form indicates that I understand the information on the information sheet regarding the structure of the questions.

I have read the information regarding this research study on climate change and migration.

I agree to answer the questions to the best of my ability.

I understand that if I don't want my name to be used that this will be ensured by the researcher.

I may also refuse to answer any questions that I don't want to answer.

I consent to audio recordings being made of the interview session and to the recordings being used to aid the work.

I consent to the excerpts from these recordings, or descriptions of them, being used by the researcher (Michelle Paidamwoyo Masuku) for the purposes of academic research.

By signing this letter, I give free and informed consent to participate in this research study.

Date: \_\_\_\_\_

Participant Name: \_\_\_\_\_

Participant Signature: \_\_\_\_\_

Interviewer name: \_\_\_\_\_

Interviewer Signature: \_\_\_\_\_

## Focus Group Discussion Interview Schedule



Private Bag X17, Bellville 7535, Cape Town, South Africa

Telephone: (021) 959 3858/6 Fax: (021) 959 3865

E-mail: [pkippie@uwc.ac.za](mailto:pkippie@uwc.ac.za)



UNIVERSITY of the  
WESTERN CAPE

### **FOCUS GROUP INTERVIEW SCHEDULE**

#### Opening

- E. Establish Rapport – Introduce myself and explain where I am coming from (UWC).
- F. Purpose – Explain the purpose of the interview and a brief overview of what will be discussed.
- G. Motivation – Explain the importance of the information that will be shared and how it will add value to the research.
- H. Time Line – Indicate the approximate time the interview will take.

#### Part I – General demographic information

- 18. Can you tell me a little bit about yourself and your family?
  - d) Age
  - e) Number of family members
  - f) Gender distribution in the family
- 19. How long have you lived in Goromonzi District?
- 20. Are you originally from Goromonzi District?
  - b) (If 'NO') Where are you originally from?

#### Part II – Climate related information

- 21. What are the general climatic conditions in Goromonzi?
- 22. What are the general climatic conditions in the area you are originally from?
- 23. What was your experience during the 2008 drought?
- 24. Have weather conditions improved since 2008?

### Part III – Migration related information

25. Why did you migrate from your original area of residence?
26. Whose decision was it to migrate?
27. Did many people migrate from the area?
28. Why did you migrate to Goromonzi?
29. Where do the majority of female climate migrants in Goromonzi come from?
30. Has migration been beneficial to you and your family?
31. Has migration changed your livelihood/income generating activity?
32. Did changes in climatic conditions influence your decision to migrate in any way?

### Part IV – Gender related information

33. As a woman, do you have the power in your household to make migration decisions?
34. How do you feel about the increase in female-migration in the country?
35. What are the benefits (if any) of being able to migrate?
  - a) Is the ability to migrate empowering to women?

This research is being conducted by Michelle Paidamwoyo Masuku, a student at the University of the Western Cape. Her contact details are as follows:

Cell: +263 772 364 412 OR +27 633 580 3599

Email: [3265455@myuwc.ac.za](mailto:3265455@myuwc.ac.za)

If you have any questions about the research study itself, please contact Dr. Abdulrazak Karriem at The Institute for Social Development (ISD), University of the Western Cape. His contact details are as follows:

Tel: +27 (021) 959 3853

Email: [akarriem@uwc.ac.za](mailto:akarriem@uwc.ac.za)

Headman's Approval Letter

