

Climate Change & Human Mobility;
The interconnectedness of colonial, contemporary development policies,
and climate change in shaping human mobility in Zimbabwe's small-
scale rural farming areas

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Abstract

“Climate Change and Human Mobility; The interconnectedness of colonial, contemporary development policies, and climate change in shaping human mobility in Zimbabwe’s small-scale rural farming areas”

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Climatic and non-climatic factors affect small-scale agriculture leading to high cases of food insecurity and subsequent human mobility in Zimbabwe’s communal areas. These farming areas were established by the colonial British government for African farmers during the colonial era, and livelihoods in these marginal areas have endured a long history of poverty, poor agricultural production, and underdevelopment. Communal farming areas still exist today and continue to shape the livelihoods of most African farmers, subjecting them to high cases of food insecurity and poverty. Compounding these livelihood challenges in communal areas, are contemporary global and national economic development decisions brought about by the international community and the new African government in Zimbabwe after independence. The turn of the 20th century has seen climatic factors working together with other human mobility drivers in exacerbating the existing food security challenges, increasing the imperative of people to move in Zimbabwe. The motives behind human mobility have been working together to create a complex web of mobility patterns in Zimbabwe’s communal areas.

Unfortunately, there are no peer-reviewed studies explaining this interplay of multicausal factors contributing to human mobility patterns in Zimbabwe. As a result, this study examines the interconnectedness of climate change, colonial and contemporary development policies in shaping modern-day human mobility patterns in Zimbabwe. I argue that climate change adaptation challenges in communal areas of Zimbabwe cannot be addressed without first dealing with the complex political and historical context of the country. Additionally, climate change is being ignored in human mobility studies in Zimbabwe, and there is a need to seriously consider climatic factors alongside other traditional human mobility drivers in the country. Lastly, human mobility as a climate adaptation strategy should be incorporated into the country’s climate policy framework, mimicking a strategy at the national level that has been effectively used by households at the local level to cushion themselves from climate and livelihood related stresses over the years.

August 20, 2020

Dedication

Glory be to God! This thesis is dedicated to my late parents Ezekiel and Stella Maganga whose love for hardworking children was unparalleled. To my wife Florence, daughters Bridget, Caylin, and Candice Maganga, and my sisters Petronella, Chipo, and Nyasha Maganga I thank you for your support throughout my studies. To my brother from another mother, Edison Ndayambaje you made all this possible, may the good Lord bless you abundantly. To you all, I say this thesis is also for you, I have set the pace and shown you the way, please follow my footsteps.

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Acronyms

AER	Agro-ecological Regions
Agritex	Agricultural Extension
BSAC	British South African Company
CHA	Contextual Historical Approach
CMB	Cotton Marketing Board
COP	Conference of Parties
CPZ	Civil Protection Zimbabwe
CSA	Climate Smart Agriculture
CSC	Cold Storage Commission
DA	District Administrator
DANIDA	Danish International Development Agency
DMB	Dairy Marketing Board
DRSS	Department of Research and Specialized Services
EMA	Environmental Management Agency
ESAP	Economic Structural Adjustment Program
EWS	Early Warning Systems
EU	European Union

FAO	Food and Agricultural Organization
FDGs	Focus Group Discussions
FDI	Foreign Direct Investment
FEWS NET	Famine Early Warning System Network
FFYNDP	First Five-Year National Development Plan
FNC	Food and Nutrition Council
FTLRP	Fast Track Land Reform Program
GDP	Gross Domestic Product
GMB	Grain Marketing Board
GMO	Genetically Modified
GOZ	Government of Zimbabwe
Ha	Hectares
HDI	Human Development Index
HSCT	Harmonized Social Cash Transfer
IDP	Internally Displaced People
IFA	Integrative Framework Approach
IFIs	International Financial Institutions
IHHIs	Individual Household Interviews
IKS	Indegenous Knowledge System

ILO	International Labour Organization
IMF	International Monetary Fund
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
Kg	Kilograms
LFCLSR	Labour Force and Child Labour Survey Report
LSC	Large Scale Commercial Farmers
MDC	Movement for Democratic Change
MT	Metric Tonnes
NCCRS	National Climate Change Response Strategy
NCP	National Climate Policy
NGO	Non-Governmental Organization
NRC	Norwegian Refugee Council
RTGS	Real Time Gross Settlement
SACF	Southern African Climate Finance
SADC	Southern African Development Community
SDGs	Sustainable Development Goals
SFDRR	Sendai Framework for Disaster Risk Reduction
SH	Small Holder Farmers

SLF	Sustainable Livelihood Framework
SMU REB	Saint Mary’s University Research Ethics Board
SoS	Start of Season
TTL	Tribal Trust Land
UN DESA	United Nations Department of Economic and Social Affairs
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
UNICEF	United Nations International Children’s Fund
UNPF	United Nations Population Fund
USD	United States Dollar
VIDCO	Village Development Committee
WACDEP	Water, Climate and Development Program
WFP	World Food Program
ZANU-PF	Zimbabwe African National Unity- Patriotic Front
ZDRMSAP	Zimbabwe Draft Risk Management Strategy and Action Plan

ZIDERA	Zimbabwe democracy and Economic Development
Zimstat	Zimbabwe National Statistic Office
ZimVac	Zimbabwe Vulnerability Assessment Committee
ZINWA	Zimbabwe National Water Authority
ZMSD	Zimbabwe Meteorological Services Department
Z\$	Zimbabwe Dollar

Chapter 1: Introduction and Research Problem

In Zimbabwe, climatic and non-climatic factors continue to affect food crop production leading to high cases of food insecurity and subsequently human mobility in communal areas. These communal areas are located in the country's poor Agro-ecological Regions (AERs)¹ IV and, V, and were established by the British colonial government to accommodate the majority of African farmers who had their land ownership rights rescinded due to the influx of European farmers during the colonial era. These areas have a long history of poor agricultural production and poverty. Over the years, the interplay of multicausal factors including climate change, colonial and contemporary development policies brought about by the global economy and the Post-Independence Black majority government in Zimbabwe have exacerbated the already existing food security and livelihoods challenges increasing the imperative of people in communal areas to move to other areas with better agro-ecological conditions and prospects.

Extreme climatic events such as droughts, floods, and sea level rise have resulted in many livelihood stresses and population displacements around the world. The adverse effects of climate change and human displacements have been well documented in several studies. Fears exist that the intensity and frequency of climate variabilities will increase by 2050, making a large portion of the earth unsuitable for human habitation, thus triggering human mobility

¹ Zimbabwe has five agro-ecological regions (AERs) which are classified according to (i) climatic conditions, that is the rainfall and temperature regimes, and (ii) ecological conditions, such as the soil quality and vegetation cover found region (FAO, 2006). Zimbabwe's main AERs are (i) AER I-Intensive Farming Region (>1000mm annual rainfall), (ii) AER II- Intensive Farming Region (750-1000mm annual rainfall), (iii) AER III- Semi Intensive Farming Region (650-750mm annual rainfall), (iv) AER IV- Semi Extensive Farming Region (450-650mm annual rainfall), and (v) AER V-Extensive Farming Region (\leq 450mm annual rainfall) (FAO, 2006).

in affected communities around the world (Ahsan *et al.*, 2014; Intergovernmental Panel on Climate Change (IPCC), 2019:553). Human mobility in these circumstances is a result of people experiencing poor agricultural production output, water stresses and outbreak of diseases, among others brought about by extreme climatic events (United Nations Development Program (UNDP), 2017; IPCC, 2019:450). The experience of decline in livelihood and continual exposure to climatic variabilities has increased the desire for people to move and seek alternative livelihoods in areas with abundant land and food supplies (McMichael, 2015:550). Although there is a strong causal relationship that exists between climate change and human mobility, the relationship is complex because the motivations for people to move consist of multiple causal factors (Mearns & Norton, 2010; Piguet *et al.*, 2011; Hastrup & Olwig, 2012; Faist & Schade, 2013; Science for Environmental Policy, 2015). These multiple casual factors include economic, social, political, demographic, and environmental factors (Mearns & Norton, 2010; Piguet *et al.*, 2011; Hastrup & Olwig, 2012; Faist & Schade, 2013; Science for Environmental Policy, 2015).

The variety of reasons behind human mobility often work together to create a complex web of mobility patterns. More recently, climate change has increased the imperative for people to move, especially for those vulnerable communities located on low-lying, coastal and semi-arid areas of Africa, Asia and Latin America (Hugo, 2011; McLeman, 2013, Rigaud *et al.*, 2018). The major reason for their movements is largely due to their inability to adapt to climate change. This inability stems from socioeconomic and environmental factors related to high populations and poverty levels, and the continual degradation of natural ecosystems that provide livelihoods and ecosystem services to both flora and fauna by climate variabilities (Black *et al.*, 2011). Under these circumstances, human mobility is a form of adaptation brought about by the climate change-induced food insecurities exacerbated by non-climatic factors. In

this case, human mobility can be viewed as a “proactive” rather than a “reactive” climate change adaptation strategy adopted by different households to cushion themselves from livelihood related risks and uncertainties (Stark & Bloom, 1985; Russel, 2013; Hagen-Zanker, 2015: 69, 70). Similarly, adaptation in this context “involves adjustments to enhance the viability of social and economic activities to reduce their vulnerability and extreme events as well as long-term climate change” (Government of Zimbabwe (GOZ), 2016b:55). With the intensity and frequency of extreme climatic events expected to increase, coupled with limited climate change adaptation strategies, there are fears that approximately 143 million people in developing countries will be displaced by climate change by 2050 (Rigaud *et al.*, 2018). Poor small-scale communal farmers² are among those likely to be displaced by climate variabilities because of their over-reliance on climate sensitive sectors such as agriculture for their livelihoods, and their lack of necessary systems to adapt and cushion them from the adverse effects of climate change (United Nations Economic Commission for Africa (UNECA), 2013b).

In Zimbabwe, where complex mobility patterns already exist, the growing intensity and frequency of extreme climatic events, together with non-climatic factors have led to higher human mobility patterns in rural communal areas. A Reuters report by Mambondiyani (2015, August 27) indicate that as of 2015, approximately 20,000 people have reportedly fled the drought prone western low-lying areas in agro-ecological regions (AERs) IV and V, (shown on *Fig 1.1* below), experiencing low crop and livestock production levels, to the Eastern

² Small scale farmers are those farmers who are located in communal or resettlement areas. Small scale communal areas have “lower natural potential of rainfall, soils and water irrigation...have lower economic potential because of poor communication and social infrastructure” (FAO, 2003b:114). Furthermore, communal farming areas are known for growing grain crops (staple foods) which are mainly for their consumption (FAO, 2003b). The study will use the word "farmer" in lieu to refer to small scale communal farmers from here onwards.

Highlands Regions of Zimbabwe in AERs I and II which are characterised by abundant water sources and favourable agro climatic conditions.

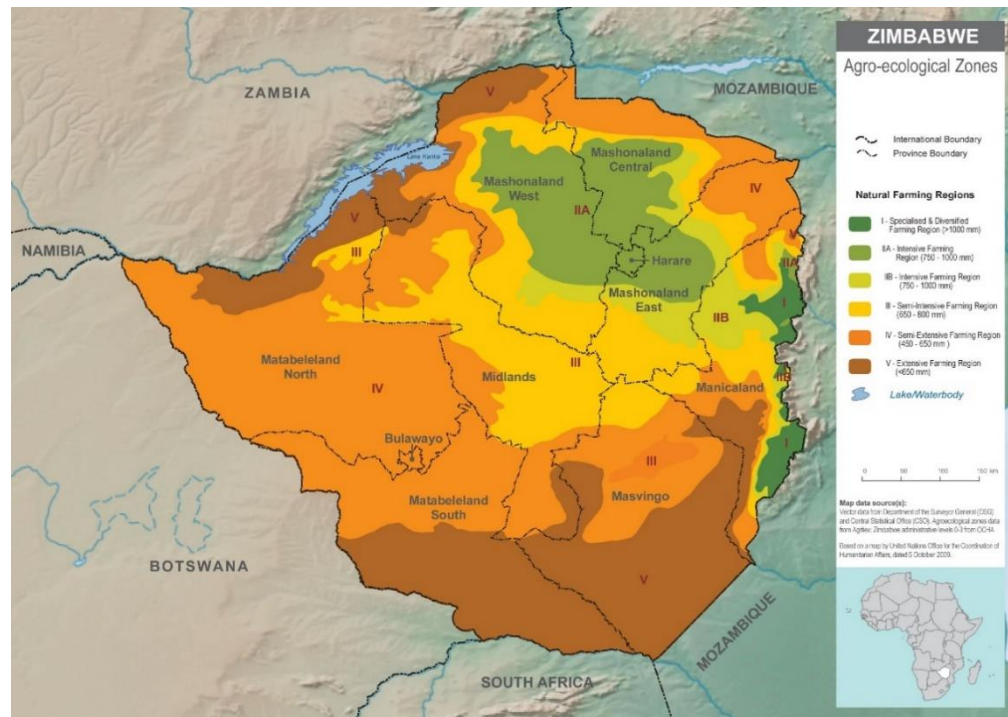


Fig. 1.1 Zimbabwe's Agro-ecological Zones. Prepared by Saint Mary's University Department of Geography and Environmental Studies Cartographer, with sources from the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) (2009, October 5)

These movements have largely been a result of deteriorating socioeconomic, political and demographic environment in Zimbabwe's communal areas, coupled with the worsening climatic conditions brought about by droughts and flooding. Preliminary indications reveal that the challenge to adapt to climate change has resulted in increasing out-migration from marginal lands in Zimbabwe due to water scarcity, poor crop and livestock production (Zimbabwean Newspaper, 2014, July 02; Brazier, 2015). In these instances, both climatic and non-climatic related challenges experienced by farmers in Zimbabwe's marginal lands have

resulted in adverse human consequences, such as food insecurity³ (Mafa *et al.*, 2015), thereby resulting in high out-migration patterns.

In Zimbabwe, the long history of suffering among small-scale communal farmers can be traced back to the colonial period when the country was under the British rule (1890 to 1980) and also the post-independence period to present. These pre- and post- colonial developmental phases, together with the contemporary climatic conditions in Zimbabwe are responsible for shaping the current state of underdevelopment and food production challenges being faced by farmers. As a result, addressing climate change adaptation in a meaningful way is an enormous challenge, and a matter of great urgency for farmers who cannot afford to wait for Governmental or non-governmental agency interventions. Farmers need to survive, and to do so, some have to move. Zimbabwe's history shows us that the colonial land and agricultural policies enacted by the British Government in Zimbabwe (then Rhodesia), such as the Land Apportionment Act⁴ of 1930-1951, including the introduction of the Hut Tax system, forcibly evicted African small-scale communal farmers from their productive prime agricultural lands, which they had owned for generations to make way for the new commercial white farmers (Potts, 2010; Mafa *et al.*, 2015).

These policies made the life of African farmers difficult, their land rights were rescinded and later they were allocated pieces of land in native reserves or communal areas. As a result, the farmers were marginalized from the main economic hubs of the country (Palmer,

³ Food security in this context refers to food availability, accessibility, utilization and stability (FAO, 2008). Thus, “food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life” (FAO, 2003a: 29; UNDP, 2017:72,73). Similarly, at household level “food security is the application of this concept to the family level, with individuals within households as the focus of concern” (FAO, 2003a:29).

⁴ The Land Apportionment Act of 1930 saw the apportionment of land in colonial Zimbabwe based on racial lines, namely European and African Reserves. Under this Act, European farmers were entitled to prime agricultural lands in AER I, II and III, while African reserves were established in poor agro-ecological regions IV and V of Zimbabwe (Mafa *et al.*, 2015: 41).

1977; Mafa *et al.*, 2015). In the native reserve areas, African farmers experienced overcrowding, shortage of land, over-grazing and poor agro-ecological conditions that failed to support crop and livestock production (Palmer, 1977; Potts, 2010; Hugo, 2011; McLeman, 2013; Brazier, 2015). In addition to the land inequalities that existed in British colonial Zimbabwe that impoverished the majority of African farmers, the colonial agricultural development policies were skewed towards supporting European commercial farmers at the expense of African farmers. For example, the European commercial farmers benefited from the government support such as access to credit lines, capital to invest in agricultural machinery, technologies, and extension services (Palmer, 1977; Rukuni *et al.*, 2006; Mafa *et al.*, 2015). As a consequence of these colonial policies, two new forms of human mobility patterns were developed in communal areas during that time. Firstly, European farmers moved into agricultural land previously occupied by African farmers, while many African farmers were forced to abandon their farming areas and move into marginal lands in AERs IV and V, which were opened by European farmers (Potts, 2010; Mafa *et al.*, 2015). Secondly, the land in native reserves failed to support agricultural production and many African farmers were forced to abandon their agricultural lands in native reserves and seek wage labor in European owned farms, mines and factories to meet their tax obligations (Palmer, 1977:238; Kramer, 1997:161; Maravanyika & Huijzenveld, 2010:20; Dzingirai *et al.*, 2015:7; Green, 2016:8). There is no doubt that these movements that happened in colonial Zimbabwe were politically motivated, as they were meant to protect the economic interest of a few European farmers (Potts, 2010).

The post-independence period in Zimbabwe saw the new African government, led by Robert Mugabe, implement various economic development and land resettlement and reform programs to address the land ownership imbalances which it inherited from the colonial era. Studies show that these economic development policies included the Growth with Equity

Policy and the Transnational National Development Plan and they were meant to improve the socioeconomic conditions of Africans (Sibanda & Makwata, 2017:4, 7). From these economic development policies emerged several economic hubs including industrial parks were created in Zimbabwe's major cities which led to high cases of rural-urban migration patterns. These movements were mainly inspired by the wage differentials that existed between urban and rural areas which subsequently changed the country's human mobility patterns in the process (Potts, 2010). Furthermore, the transition from colonial rule to the Black majority rule saw many communal farmers moving from infertile and overpopulated lands in the southern parts of the country into new cotton farming zones located in northern parts of the country that offered them access to fertile land and better incomes (Nyambara, 2001).

The period after independence also saw the new African Government implementing various Land Reform and Resettlement programs to improve the socioeconomic conditions of peasant farmers who were primarily located in communal areas and practising subsistence agriculture (Pazvakavambwa & Hungwe, 2009; Zamchiya, 2011; Scoones *et al.*, 2011; Naidu & Benhura, 2015). The Land Reform and Resettlement programs displaced hundreds of thousands of African families, including European commercial farmers and their workers to various destinations across the country (Zimbabwe Institute, n.d.; Potts, 2010; International Organization for Migration (IOM), 2010; Zamchiya, 2011). Although the Land Reform and Resettlement programs in Zimbabwe managed to reduce acreages of land owned by European commercial farmers, these programs failed to improve the living conditions of African farmers in communal areas. Several scholars attribute this failure (Land Reform and Resettlement programs) to their heavily politicized and partisan nature, which exacerbated rural poverty by failing to address land ownership imbalances and production capacities of small-scale farmers (Scoones *et al.*, 2011; Zamchiya, 2011; Pazvakavambwa & Hungwe, 2011; Matondi & Dekker,

2011; UNDP, 2017). Given that these farmers have endured a long history of poor agricultural productivity, as a result of poor agro-ecological conditions found in these marginal regions (Potts, 2010; Government of Zimbabwe (GOZ), 2015; Brazier, 2015; UNDP, 2017), the failure of these programs to alleviate rural poverty further exposed these poor farmers to modern-day climate change. From this background, it is undeniable that the impact of climate change together with non-climatic factors have combined to produce new forms of human mobility patterns in these vulnerable regions of Zimbabwe.

On the other hand, globally imposed development strategies such as the Economic Structural Adjustment Programs (ESAP) that was introduced by the Bretton Woods Institutions to Zimbabwe (Weaving, 1996), and the extension of economic sanctions imposed on Zimbabwe by Western powers primarily Britain and European Union nations allies (World Bank, 2019), also played a role in shaping the human mobility patterns that happened in the country between the mid-1990s and 2000s. These human mobility patterns were economically motivated, leading to untold suffering to both urban and rural populations. As a result of these policies, thousands of people who lost their urban jobs moved to rural areas which were already congested. Life in the rural areas was not easy due to income insecurity, as most rural households experienced serious food challenges due to cuts in food subsidies and agricultural support from the government (Potts, 2010:86; Rukuni *et al.*, 2006). These changes strained the economic and ecological resources in rural areas that were already suffering from overpopulation and underdevelopment. However, these population movements were not only confined to Zimbabwe, but most people, especially the skilled labor force, also moved to other countries such as South Africa, Botswana, and the United Kingdom (FAO, 2010; Crush *et al.*, 2015; Crush & Tevera, 2016). The exodus of the skilled labor force included agricultural extension officers and agricultural research specialists who are the backbone of small scale

agriculture development in communal areas through their provision of technical and scientific research support (Matanda & Jeche, 1998:214; Potts, 2010). The nature of these human mobility patterns were mostly circular, as people oscillated between their homes in Zimbabwe and working places abroad (IOM, 2010; Crush & Tevera, 2016). Furthermore, the exodus of skilled personnel came at a period of economic hyperinflation in Zimbabwe, when costs of agricultural inputs were rising beyond the reach of many poor farmers, with serious shortages of fertilizers and seed inputs. All these factors compromised the food production systems in communal areas (FAO, 2010).

Compounding the socioeconomic challenges affecting people in communal areas, the politically motivated “Operation Restore Order” or *Murambatsvina* (Clear filth and decongest urban areas) in 2005 also influenced human mobility patterns in the late 2000s in Zimbabwe. Under the Operation *Murambatsvina*, the government clamped down on illegal housing settlements and informal jobs in urban areas (Naidu & Benhura, 2015). This operation was characterized by bulldozing and razing down of people’s structures without notices being given (Naidu & Benhura, 2015: 154). As highlighted by the United Nations Special Envoy on Human Settlements report, hundreds of thousands of urban dwellers lost their homes and livelihoods under Operation *Murambatsvina* (Tibaijuka, 2005). The majority of urbanites who lost their homes ended up congesting the communal areas (Potts, 2010), leading to serious socioeconomic and demographic challenges in rural areas. Unfortunately, those urban dwellers who failed to cope with the poor living conditions in rural areas reverted to urban areas where they were further subjected to poor living conditions (Potts, 2010). Studies show that Operation *Murambatsvina* was a political strategy meant to neutralize the urban voters which had become strongholds for the opposition politics (Potts, 2010). This political program also had ripple effects on rural livelihoods, as most families suffered from reduced remittances, as

their urban economic base that supported them with food and agricultural inputs through periods of economic and climatic stresses was no longer functional. Furthermore, the high populations that migrated to rural areas during Operation *Murambatsvina* led to serious shortages of productive resources such as land for agriculture and housing purposes.

The prevailing impoverishment in Zimbabwe's communal areas is further worsened by the country's rising population growth rates. Studies show that the country's population has doubled since independence (Zimstat, 2015d). Sadly, for a poor country like Zimbabwe where the majority of this population age group is below 15 years (Zimstat, 2015d), and fears are that these demographic changes pose serious developmental challenges. These socioeconomic challenges are due to high demands for agricultural and housing land and the provision for social services, such as education and health services, which have already intensified in most parts of the country (Zimstat, 2015d). Furthermore, the high population growth rates, coupled with the compromised food production system and lack of social protection programs have also created serious food insecurity challenges in Zimbabwe, evidenced by high cases of poverty and malnutrition recorded in the rural areas (UNDP, 2017).

1.1 Study Objective

After having identified the research problem above, this study examines the interconnectedness of climatic and non-climatic factors such as colonial and contemporary development policies in shaping modern-day human mobility patterns in Zimbabwe's small-scale rural farming areas. The farmers in these areas are comprised of communal farmers who happen to be marginal producers working on marginal land and are being subjected to some of the worst effects of climate change. The communal farming system used by the majority of

small-scale farmers in Zimbabwe was set up by the colonial system and was inherited by the new African government and continues to shape the lives of farmers in marginal areas long after independence. In this case, I argue that human mobility patterns in communal areas in Zimbabwe continue to be shaped by the political economy of the country that these farmers are living in. These factors make human mobility in Zimbabwe's communal areas complex, as this stems from the complicated historical context that put these farmers in the difficult situations that they are in. This difficult situation is attributed to the long colonial history, post-colonial developmental policies, and climate change that underdeveloped these communities, thus forcing them to migrate to other areas.

With the growing intensity of extreme weather conditions, Zimbabwe is expected to experience decreasing cereal crop production levels, as a result of water deficiencies and reduced cropping land due to degradation, thus exacerbating hunger and malnutrition (Chikodzi *et al.*, 2013; IPCC, 2014; Brazier, 2015; World Bank, 2015, February 20; GOZ, 2016a; 2016b). The resulting effect of this could then be high incidents of human mobility. Considering the above mentioned, climate change will hit hard mostly on the Southern regions of Zimbabwe located in AERs IV and V, which happen to be the same areas that have long suffered from poor agricultural production (World Bank, 2015, February 20). With this growing intensity of extreme climatic conditions, fears are that the deteriorating natural ecological conditions in these marginal areas will result in a high influx of small-scale farmers to better areas with favourable climate and agricultural conditions. These new human mobility trends, exacerbated by climatic factors, have changed the traditional circular migration patterns that saw people moving between rural and urban areas in search of better economic conditions. Furthermore, the new developments brought about by climate change on communal farmers have seen most rural farmers abandoning their customary land they held for generations either

temporarily or permanently in most cases. This movement will likely escalate conflicts between the new climate migrants and the locals over access to water resources and agricultural production resources such as land for farming, grazing and housing.

In this context, the central research question for this study is: *How is the interconnectedness of climatic and non-climatic factors impacting contemporary human mobility patterns among small-scale farmers in Zimbabwe's communal lands, and what are their perceptions and responses to new forms of human mobility?*

And the guiding questions for this study are:

1. What does shape the interaction between climate change and other factors of human mobility?
2. What are farmers perceived versus actual alternatives to human mobility?
3. How do government and community interventions address the climate change and human mobility patterns occurring in the study areas?
4. Are there any effective interventions for strengthening the resilience of agricultural/rural livelihoods against climate change disasters operating in Zimbabwe's communal areas?
5. How do Zimbabweans understand the complexity of multi-vulnerability factors that will lead or compel people to move?

1.2 Contributions of this study to the climate change and human mobility debate

Firstly, there is need to recognize climate change as one of the major drivers of human mobility in Zimbabwe. The majority of work in human mobility in Zimbabwe that include several government papers and the migration literature fail to recognize climate change as one of the

major drivers of human mobility in communal areas. Over the years, population movements in Zimbabwe have largely been explained with regard to traditional human mobility drivers that include social, economic, political and demographic factors, with little mention of climatic factors. This is despite the country facing several climate change-related human mobility issues since the beginning of the 21st century due to droughts and cyclone-induced flooding. Globally, this gap was noticed by the Norwegian Refugee Council (NRC) (2009:5), and it claim that “as early as in the First Assessment Report in 1990 the Intergovernmental Panel on Climate Change (IPCC) stated the gravest effects of climate change may be those on human mobility. Yet there is still lack of research relating to this issue”

However, in Zimbabwe, the only exceptions where climate change has been directly linked to human mobility is in grey literature materials such as newspaper articles and online blogs. Similarly, other studies by Crush & Tawadzera (2016) and the National Labor Force and Child Labor Survey Reports (LFCLSRs) of 2014 and 2019 managed to establish this relationship in their study of internal and international migration patterns in Zimbabwe. However, apart from showing numbers of people moved by natural disasters and in-search of better agricultural land, the LFCLSRs fail to provide relevant qualitative data on the nature of these human mobility decisions. In addition, climate-related human mobility patterns are underreported in the country’s census reports. In these reports, information on internal migration is only derived from understanding migrants’ “lifetime (place of birth) migration, fixed-interval/inter-censal migration (place of residence x years ago) and volume of movements (place of usual residence in the last 12 months’ vis-a-vis place of enumeration” (Zimstat, 2013:30). Such information is vague, as it fails to provide policy makers with vital information on various factors that contributed to migrants’ human mobility decisions needed for effective policy formulation. Given these flaws and underreporting of climatic factors in

human mobility work in in Zimbabwe, this study will demonstrate that climatic factors are not merely “secondary” but “primary” human mobility drivers that needs serious consideration in the climate change and human mobility literature in Zimbabwe.

My second contribution to the climate change and human mobility debate is that, despite climatic factors taking the centre stage in the contemporary human mobility issues, a lot of traditional arguments such as social, economic, demographic, and political factors remain valid in explaining most of the human mobility patterns happening across the globe. Therefore, when bringing in climatic factors in the human mobility debate, there is need to seriously consider the relevance of traditional multi-causal drivers of human mobility. Similarly, when examining climate-related human mobility patterns in Zimbabwe’s communal lands, caution should be exercised, as human mobility in communal areas is shaped by the interplay of both climatic and non-climatic factors. For example, the interplay of these various factors emanate from the current state of these regions that have been shaped by their colonial history, contemporary developmental challenges policies, and modern day climate change. Given that the option of moving permanently from their (communal farmers) customary land, which belongs to their ancestors and is rooted in their identity, has never been considered by most communal people in Zimbabwe. This study will demonstrate that human mobility in these marginal regions goes beyond seeking additional incomes but is influenced by looming food insecurity challenges and the interplay of climatic and non-climatic factors. Having said this, I argue that there is need to seriously consider the contribution of other factors when making the climate change and human mobility connection in Zimbabwe.

My last contribution through this study to the climate change and human mobility debate is that developing countries, including Zimbabwe need to have climate polices that regard human mobility as a climate change adaptation strategy. Such policies will enable

developing countries to promote effective climate adaptation, especially among the poor farmers in marginal regions with limited irrigation facilities and income diversifying activities to supplement their food deficit gap during periods of climatic stress. Adopting human mobility in climate change adaptation policies works well for a poor country like Zimbabwe, where the majority of small-scale farmers are poor resourced and located in overpopulated and densely cramped areas with bad lands, poor climate and biodiversity, and over rely on rain fed agricultural production for their livelihoods. These livelihoods continuously suffer from underdevelopment, malfunctioning agricultural input and outputs marketing systems, and poor rural infrastructure such as irrigation facilities, road and transport network systems. Human mobility as an adaptation strategy to food insecurity has been successfully used over the years by most communal households, especially those found in the driest provinces of Zimbabwe to supplement their food deficit gaps during periods of climatic stress.

Unfortunately, the government's approach to climate change adaptation fails to recognize and consider human mobility as an adaptation strategy despite this strategy being effectively and widely used by most rural people. Most of the climate adaptation policies in Zimbabwe focus on Climate Smart Agriculture (CSA) strategies which are beyond the reach of many poor-resource rural farmers. The CSA strategies being promoted by the government fail to acknowledge that current adaptation challenges in communal areas are largely due to multi-causal factors that include the current underdevelopment state of communal areas shaped by the country's colonial history, contemporary developmental policies, and economic sanctions. In this regard, integrating human mobility in mainstream climate change adaptation policies in Zimbabwe will go a long way in ensuring effective climate change adaptation among communal farmers in marginal regions.

1.3 Structure of this study

To show the interconnectedness of climatic and non-climatic factors as major variables in shaping human mobility patterns in Zimbabwe's communal areas, my arguments for this study will be structured as follows; in chapter two, the discussions will be centred on the major debates surrounding the different theoretical perspectives used in explaining human mobility. This will involve conceptualizing some of the terms used in this study and discussing the different economic and social models used in understanding the major reasons why people move. This chapter will conclude by showing the interconnectedness of these different migration theories and their relevance in explaining human mobility patterns in Zimbabwe's communal areas. Similarly, I will discuss whether human mobility is an appropriate climate change adaptation strategy to address food insecurity. Lastly, I will introduce the theoretical framework of this study. The third chapter introduces readers to the research methodology used for the original research for this study. This includes providing a detailed description of the research areas, the statistical data and archival evidence used for this study, the qualitative data collection approaches and techniques, and lastly the data analysis process.

Chapter four provides the historical context of the human mobility patterns in Zimbabwe's communal areas based on the detailed analysis of the country's human mobility from the pre- to the post- independence era. The impacts of pre- and post-colonial land and agricultural development policies on food security challenges and their subsequent contribution to human mobility patterns in communal areas will be discussed in this chapter. In chapter five, the focus will be on the literature on climate change, agricultural production and human mobility in small-scale communal areas of Zimbabwe. This involves providing an analysis of the current qualitative and statistical data on the effects of climate change and food

production challenges which happen to influence human mobility patterns in communal areas. Similarly, I will discuss climate change governance in Zimbabwe. This will involve a discussion on the main climate change policies being promoted by the Government of Zimbabwe. This chapter will conclude by discussing some of the major constraints in effective climate change adaptation leading to human mobility in Zimbabwe.

Chapter six provides the major findings of the field work component of this study. This involve documenting the major issues brought about by participants in various interviews conducted during field work. Issues to be discussed in this chapter include, the various motivations for people to move, the nature of human mobility patterns, and people's preferred destinations in times socioeconomic and climatic stress. This chapter will conclude with a discussion on the benefits and consequences of such population movements in communal areas with regard to people's socioeconomic well-being. Lastly, a discussion on the study's major findings and a general summary of the study are given in chapter seven.

1.4 Conclusion

The growing intensity and frequency of climatic factors compounded by non-climatic factors has resulted in several livelihood stresses and high human mobility case in Zimbabwe's communal areas. The multi-causal factors to livelihood stresses and human mobility in communal areas include (i) extreme climatic conditions such as droughts and floods, (ii) the country's colonial history that subjected small-scale farmers to areas with poor agro-ecological conditions, and (iii) contemporary development policies that include the failed land reform programs, ESAP and economic sanctions imposed to Zimbabwe by the international community. Unfortunately, most traditional literature on migration fails to recognize the role

played by climatic factors in influencing human mobility decisions in communal areas. Also, most climate policies in Zimbabwe do not recognize human mobility as an adaptation strategy although it has been used by several generations to mitigate food insecurity challenges brought about by the worsening climatic conditions in communal areas. It is in this context that this study seeks to understand the interplay of climatic and non-climatic factors in influencing contemporary human mobility patterns among small-scale farmers in Zimbabwe's communal lands. I argue that:

- (i) Climate change is being ignored in human mobility studies in Zimbabwe, as there is no link between human mobility and climate change in most studies in Zimbabwe. I will argue for the inclusion of climate change into the human mobility literature in Zimbabwe.
- (ii) When we bring climate change into the human mobility literature, we have to do it in a way that still considers the significant contribution of all other traditional arguments in human mobility decisions.
- (iii) The government's approach to human mobility fail to understand it as an adaptation strategy to climate change, hence there is need to incorporate human mobility in the country's climate adaptation policy framework as an effective adaptation strategy.

All this will be achieved through an understanding of communal farmer's perceptions and responses using two unique case studies of Buhera and Chipinge rural districts located in Zimbabwe's AER V and I, respectively. The findings of this study will provide realistic strategies to support people's lives in marginalized agricultural regions of Zimbabwe through documenting their voices. It is hoped that these strategies and views from these vulnerable communities will be considered in informing the central government when formulating or

revising their comprehensive climate change adaptation policies and social protection programs, including agricultural support and land reform and resettlements in both origin and destination areas

Chapter 2: Human Mobility and Climate Change

2.1 Introduction

Human mobility is a term borrowed from the field of geography and demography which refers to the “movement of human beings (individuals as well as groups) in space and time” (Barbosa *et al.*, 2018:2), or within a network or system. Human mobility in this case was used in analyzing early people's movement data across different cities and countries around the world (Barbosa *et al.*, 2018:2). According to Rigaud *et al.* (2018), this population movement includes "temporary or long-term, short- or long-distance, voluntary or forced, and seasonal or permanent movement as well as planned relocation (ix). The term human mobility is often used interchangeably with the term “migration”, which according to the International Organization for Migration (IOM) refers to “the movements of people across an international border or within”. In this context, the terms “human mobility” and “migration” will be used interchangeably to refer to internal population movements that happened or continue to happen within the country.

In this study, human mobility in Zimbabwe's communal areas is regarded as an adaptation strategy to avert the dangers associated with food insecurity as it involves the movement of people from food insecure to food secure regions during periods of socioeconomic and climatic stress. As highlighted above, under these difficult circumstances, communal area dwellers move either temporally or permanently from marginal areas to better AERs that offer them better farming lands, better economic conditions, and food security, necessary in sustaining their livelihoods. The intensity of such movements is often measured

by a household's capacity to respond and recover from its climate-related food insecurity status through human mobility.

It is also important to acknowledge that the human mobility literature has been well documented in articles, books, and journals by many scholars, notably from Population and Environmental Studies, Sociology, and Migration (Tomanek, 2011, March 09). This has brought in different arguments that continuously guide our understandings of human mobility patterns across the world. For example, scholars in the field of demography and environmental studies argue from a neo-Malthusian perspective and view human mobility as a result of high population growth, limited production resources such as land, water scarcity and deteriorating physical environments (Faist & Schade, 2013: 7; Morrissey, 2012:37). From this assertion, human mobility is regarded as a product of demographic and environmental factors, especially in drylands and areas experiencing desertification (Morrissey, 2012:37). Sociologists take a different view and argue that human mobility is a result of societal inequalities that determines "the degree of vulnerability or resilience and coping capacities irrespective of certain segments of a population to environmental stresses" (Faist & Schade, 2013:10). Scholars from migration studies view mobility as a proactive response to harsh climatic and economic conditions meant to cushion stressed livelihoods through engaging in income diversification activities (Faist & Schade, 2013:11). Economics scholars argue that human mobility is a result of seeking out better incomes, wage differentials, and better job opportunities that exist between the two geographical areas (Russel, 2013; Ahsan *et al.*, 2014).

This complexity of human mobility studies has been documented in several studies. According to Antonio Guterres, the former United Nations High Commissioner for Refugees, "the process of climate change and the natural disasters and conflict it engenders will add to the scale and complexity of human mobility and displacements" (Norwegian Refugee Council,

2009:3). Similarly, given that human mobility is a multidisciplinary field, the discipline has been marred by a lack of coordination among stakeholders, including lack of common working definitions, and theoretical frameworks in guiding research on this field (Piguet *et al.*, 2011:16; Gemenne, 2011:46). As a result, there are no comprehensive methodologies in data collection, no predefined concepts, and definitions, including common terminologies, concepts, and definitions for explaining displaced communities around the world (Piguet *et al.*, 2011:16; Gemenne, 2011:46). Over the years, several terms, including Climate Refugees, Climate Migrants, Internally Displaced People (IDPs), Environmental Refugees, and Environmental Migrants have often been used to describe people displaced by extreme climatic conditions around the world. Similarly, terms such as IDPs and Forced migration may also include people who are displaced by the impact of climate change (Rigaud *et al.*, 2018). All this has complicated the process of collecting, consolidating, and analyzing human mobility data across the world (Piguet *et al.*, 2011:16; Gemenne, 2011:46; McLeman, 2013:604). However, for the sake of this study, the term “climate/environmental migrants⁵” will be adopted to refer to people displaced by climate change worldwide.

There is lots of great human mobility in climate change theories and lots of lessons to learn from them. In this chapter I will argue that the Push and Pull Migration Theory, Neoclassical Theory, New Economics Labour for Migration Theory, while they offer useful concepts and ideas that can be drawn upon, they neglect the significance of the historical, structural and social aspects of migration. Given this, I argue that the Historical Structural Human Mobility Model, and the Migration Systems and Network Theories are better

⁵ According to the IOM (2011:33), climate migration is “the movement of a person or group who, predominantly for the reasons of sudden or progressive change in the environment due to climate change, are obliged to leave their habitual place of residence, or choose to do so, either temporarily or permanently, and who move within their country or abroad”.

positioned to explain the various human mobility patterns happening in Zimbabwe's communal areas. The richness of these migration models/theories in explaining human mobility patterns in communal areas stems from their abilities to understanding human mobility in the context of historical and social dynamics of migration and climate change. In the second part of the chapter, I will argue why we need to put at the forefront the historical, structural, and social aspects of migration when we look at human mobility and climate change beyond these and other theories. The last sections of this chapter introduce the Integrative Framework Approach (IFA) and Contextual Historical Approach (CHA) that was used in framing up the theoretical framework of this study.

2.2 Push and Pull Migration Theory

The Push and Pull Migration Theory by Ernst Ravenstein (1880), referred to as the father of migration, was extensively used in the 19th century in explaining migration patterns within and between countries (Tomanek, 2011, March 09; Russel, 2013; Ahsan *et al.*, 2014; Barbosa *et al.*, 2018). The Push and Pull migration model asserts that migration is a product of better economic opportunities that include higher incomes and better job opportunities in destination areas that enables people to fulfill their desire to maximize their wellbeing (Russel, 2013; Ahsan *et al.*, 2014; Castles *et al.*, 2014:28; Hagen-Zanker, 2015:60). In this instance, “push factors” or “minuses” in areas of origin such as poverty, low incomes, high unemployment, poor health care, and lack of human security, force people to out-migrate, while “pull factors” or “pluses” such as better wages, job opportunities, better living conditions, and availability of land in destination areas tend to attract people to leave their homes (Tomanek, 2011, March

09; Russel, 2013; Ahsan *et al.*, 2014; Castles *et al.*, 2014:28; Mavroudi & Nagel: 2016). This theory is useful in explaining the human mobility patterns happening in most agro-based rural economies around the world, especially during periods of economic and climatic stresses. In this context, the exposure of rural households to reduced crop yields and low farm incomes due to climate change, coupled with a lack of off-farm income opportunities, has resulted in a large exodus of rural people in areas that offer them better yields and incomes (McLeman, 2013; Detraz & Windsor, 2014). Under such extreme environments, urban areas become the preferred choices as they offer rural migrants favorable conditions, such as jobs and other social amenities that they lacked in their areas of origin (Ahsan *et al.*, 2014:7).

However, the push and pull theory is noted to be descriptive, as it lacks a proper framework that helps explain the interaction of various human mobility factors and how they informed out-migration decisions (Castles *et al.*, 2014:28). Secondly, the theory has been critiqued for generalizing that human mobility factors such as population growth and environmental degradation lead to human mobility, thus neglecting the advancement of agricultural technology as an important factor in determining people to stay (Castles *et al.*, 2014:28). For a poor country such as Zimbabwe, economic sanctions, agricultural technologies, and investments that encourage people to adapt *in situ* will remain a mirage due to the prevailing economic hardships brought about by extreme climatic conditions and economic sanctions. In this context, droughts, local and foreign currency shortages, and limited credit lines due to trade embargoes imposed on Zimbabwe by the international community have limited agricultural research and development investments and technological transfers in the country. Furthermore, the suitability of this model on population movements driven by non-economic factors, such as rapid-onset disasters, has been questioned by several studies (Castles *et al.*, 2014:28; Ahsan *et al.*, 2014). Under such circumstances, out-migration is

taken as a proactive step that seeks to safeguard livelihoods from the harsh economic conditions (Faist & Schade, 2013:11). In this case, it can be argued that migration is more of a coping strategy that is used by the poor to diversify their agricultural incomes and provide remittances to families under periods of crop failure (Faist & Schade, 2013:11). Lastly, Push and Pull Migration theories “overlooks a host of factors that influence moves, including historical relations, family and community dynamics, the role of intermediaries encouraging migration by arranging passage, and the role of the states in recruiting labour...” (O’Reilly, 2015:26) in their human mobility explanations. Having said this, it is important to acknowledge that the push and pull migration theory laid the foundations for several migration theories that followed, and this model is still being used today in explaining most human mobility patterns across the world.

2.3 The Neoclassical Economic Migration Theory

The Neoclassical Economic Migration Theory, first developed by J.R Harris & M.P Todaro (1970) contextualized the motives for human mobility at various levels, which is at both “macro” and “micro” levels (Castles *et al.*, 2014: 29, 30; Hagen-Zanker, 2015: 61). At the macro level, this theory assumes that human mobility is a result of wage differentials that exist between developed and developing economies, and further explains how the migration process helps in absorbing the labor surpluses in sending areas, which are mostly rural agricultural societies (De Haas, 2008; Castles *et al.*, 2014: 29; Hagen-Zanker, 2015: 62). The neoclassical economic migration theory argues that human mobility enables the effective allocation and use of labor resources between labor-constrained areas (destination areas) and labor-abundant areas (sending areas), with capital also flowing the opposite way (Castles *et al.*, 2014: 30).

Subsequently, “this process will eventually result in the convergence between wages” (Castles *et al.*, 2014: 30). At the micro-level, out-migration decisions are mostly done at the individual level "based on a cost-benefit application, maximizing their incomes" (Castles *et al.*, 2014:29). This form of migration is common among rural-urban labour migrants where individuals compare the potential economic gains such as wage differences and job possibilities of moving against staying in areas of origin, with positive economic gains in destination areas (mostly urban areas) simply translating to human mobility (Anushree, n.d.; Lilleør & Van den Broeck, 2011:71; Castles *et al.*, 2014:29). In this case, people are likely to move out of rural areas if there are high possibilities of receiving higher salaries and better living standards (Anushree, n.d.; Lilleør & Van den Broeck, 2011:71; Castles *et al.*, 2014:29). Labour migration among farmers in this particular case is regarded as a way of protecting themselves from hunger and famines through diversifying their farm incomes (Lilleør & Van den Broeck, 2011; Ahsan *et al.*, 2014), as they will be able to send remittances to family members left in the areas of origin (Russell, 2013; IPCC, 2014).

Unlike the push and pull migration theories that view migration as a result of favourable/unfavourable economic, political, cultural and environmental conditions in receiving and sending areas, migration patterns under the Neoclassical Economic Migration model is viewed as rational decisions made by an individual through conducting a cost and benefit analysis with regard to human mobility decisions. This process involves an understanding of "the urban-rural wage gap, urban employment rate, and the responsiveness of potential migrants to the resulting opportunities" (Anushree, n.d.: para 12). However, this rational reasoning behind human mobility decisions, as portrayed by the Neoclassical Economics Migration Theory has been identified as one of the major weaknesses of this migration model by many scholars. In this case, this model assumes that people are fully

informed of their mobility decisions "rational actors" who first conduct initial economic and market assessments, including income levels and job opportunities in urban areas before deciding to move (Castles *et al.*, 2014: 31). In reality, most rural population movements are not planned and they are motivated by a variety of factors other than economic factors that include climatic, social, and political factors. Generally, this has been the major weakness of all economic migration theories including the Push-Pull Migration Theory and the Neoclassical Economic Migration Theory. This bias stems from their "one-sided" approach which is biased towards their "economic" views in their human mobility explanations (Castles *et al.*, 2014: 31). Furthermore, the neoclassical model assumes that markets are "perfect and accessible to the poor" (Castles *et al.*, 2014: 31; O'Reilly, 2015:26). This belief ignores the inequalities that exist in most societies where the elites have all the power within the economy to control markets and insurance programs that are meant to benefit the poor. Similarly, the Neoclassical Economic Migration Theory ignores that "many migrants move on their own initiatives and create jobs that would not otherwise exist" (O'Reilly, 2015:27)

2.4 The New Economics of Labour Migration Theory

The New Economics of Labour Migration Theory by Oded Stark (1991) views migration as a household decision rather than an individual decision as portrayed by other migration models (Bloom, 1985: 174; Hagen-Zanker, 2015: 60-61; Stark & Bloom, 1985: 174; Hagen-Zanker, 2015: 70; O'Reilly, 2015: 26). This entails the household unit together with kinship ties in destination areas helping the labor migrant with travel and settlement-related costs including financial support during the periods of unemployment or job hunting in destination areas (Stark & Bloom, 1985: 174; Hagen-Zanker, 2015: 70; O'Reilly, 2015: 26). The range of motivations for out-migration, in this case, include the desire of a

household to "maximize" on double incomes and improve its economic status. In return, labour migrants provide support to the family back home through remittances (Hagen-Zanker, 2015: 70). As a result, family members in origin areas end up receiving double incomes from remittances sent by labor migrants and farm incomes realized from their agricultural activities (Hagen-Zanker, 2015: 69). This model regards labor migration as a form of "risk aversion" and income diversification strategy adopted by different households to cushion themselves from livelihood related risks and uncertainties (Stark & Bloom, 1985; Russel, 2013; Hagen-Zanker, 2015: 69, 70).

In agro-based economies, that constantly experience wage fluctuations, market failures making investments unbearable, climate variations, and lack of social protection programs that help protect livelihoods during stressful periods (Lilleør & Van den Broeck, 2011:71; Hagen-Zanker, 2015: 70), can be seen as a "form of risk handling...to realize economies of scale..." by migrating into non-farming sectors (Stark & Bloom, 1985: 175). In this case, farmers prefer areas "where earnings are either negatively correlated, statistically independent or highly positively correlated with earnings in the origin sector" (Stark & Bloom, 1985: 175). Because of this, migration trends are inspired by economic factors that help cushion the family from "risk of consumption failure" rather than an individual decision (Lilleør & Van den Broeck, 2011:71). Besides bringing a new perspective into the understanding of human mobility, the New Economics of Labor Migration Theory has often been criticized for failing to acknowledge the individual differences and conflicts that exist between family members (Stark & Bloom, 1985:175).

In this regard, the New Economics of Labour Migration Theory views a family as an entity that lives in harmony with common goals and makes decisions as a collective unit, without acknowledging the differences and conflicts that exist within families. This is usually

common among younger family members that tend to “disassociate themselves from familial and traditional bondage, regardless of negative externalities thereby imposed upon their families” (Stark & Bloom, 1985:175). For Zimbabwe, a country dominated by patriarchal systems, this view provides us with a better understanding of the role being played by the family (as a household unit) in the making of human mobility decision, including the various benefits associated with human mobility, especially by communal households in their drive to attain their food security. However, the theory has been criticized for viewing migration as a proactive strategy meant to cushion households from uncertainties and not as a result of failing to adapt to the prevailing socioeconomic (Stark & Bloom, 1985:174-5). Apart from these setbacks, the New Economics of Labor Migration Theory has been widely used for its use in explaining human mobility decisions with regard to risk aversion and insurance (Hagen-Zanker, 2015: 71)

2.5 Historical-Structural Human Mobility Models

The historical-structural human mobility theories follow a neo-Marxist political economy perspective that "emphasizes global inequality and views migration as a central feature contributing to the perpetuation of the system" (Russell, 2013; Castles *et al.*, 2014: 27, 28; O'Reilly, 2015:27). Poverty in this case that leads to human mobility in developing countries is viewed in the context of "historical relations, power, dependency, and debt" (O'Reilly, 2015: 27). Similarly, this suffering in developing countries leading to human mobility is directly linked to the history of colonialism and contemporary development policies such as neoliberal reforms that created capitalist systems and global inequalities (Russell, 2013; Castles *et al.*, 2014: 27, 28; Mavroudi & Nagel, 2016:19). This is true for a low-income country like Zimbabwe that

has been under the British rule for a century, and continue to experience macroeconomic challenges from globally-induced neoliberal reforms and economic sanctions. The reminiscences of poverty left behind by these colonial policies and contemporary developmental incommunal areas of Zimbabwe continue to negatively affect several livelihoods, thus increasing the imperative of people to move.

Furthermore, the capitalist systems, in this case, disrupted modes of production in developing areas and created a demand for labor in receiving countries (Hagen-Zanker, 2015:64). This move destroyed people's traditions, cultures, and livelihoods in developing countries, pushing them off their subsistence ways of living and forcing them to seek wage-labor in developed economies, thus making them more vulnerable to human mobility (Russel, 2013; Hagen-Zanker, 2015:64). Similar policies were also implemented in Zimbabwe, where the division of labour principles, land consolidations, and western models of farm production was introduced to disrupt traditional modes of production (Hagen-Zanker, 2015:64). In this view, human mobility serves to promote capital accumulation in capitalist societies through tapping into cheap labor markets in sending communities (Castles *et al.*, 2014).

In addition, historical-structural human mobility theories argue that economic and political power is invested into the hands of few elites, while cultural and social practices have resulted in social disequilibrium (Castles *et al.*, 2014: 28). 28). It is indisputable that colonial and capitalist policies exacerbated the existing social and regional inequalities (Castles *et al.*, 2014: 28). In Zimbabwe, such policies can be blamed for promoting regional differences through promoting agricultural and rural infrastructure development in commercial farming areas owned by Europeans at the expense of poor small-scale farming areas occupied by African farmers. These regional inequalities have been attributed to the exodus of people from these marginal areas to seeking work in modernized industrial and agricultural production sectors

within the country. These mobility patterns across the country's regions are made easier by the strong colonial and historical brought about by commonalities in language and culture, among others (Russel, 2013).

Several studies, as highlighted by Portes & Walton (1981) and Sasse (1988) (cited in O'Reilly, 2015:27) equate contemporary human mobility happening in developing countries to modern-day colonialism. These studies argue that the structural and economic issues determining these human mobility patterns in developing countries are still being controlled by rich nations, which is the same way they used "military and economic controls" to control poor nations during the colonial era countries (O'Reilly, 2015:27). On the other hand, it is important to highlight that the historical-structural human mobility approaches are "... not in opposition to the push and pull approach but rather takes a critical global view to explain the action of individuals from a structural perspective" (O'Reilly, 2015:27). The ability of historical-structural migration models to view migration from a historical and structural perspective makes it differ from other push and pull migration models that only views human mobility from an economic perspective and "tend to overlook political and cultural processes" (O'Reilly, 2015:28). However, the major weakness of Historical-Structural Migration Models is that they "often saw the interests of capital as all-determining, and paid inadequate attention to the motivations and actions of the individual and groups involved" (Castles & Miller, 1998:23).

2.6 Migration Systems & Network Theories

The Migration Systems and Network Theories bring in a new dimension that brings about the importance of social systems, networks, and social capital into our understanding of human

mobility drivers in developing countries. According to Massey *et al.* (1993), “migration networks are sets of interpersonal ties that connect migrants or former migrants, non-migrants in origin and destination areas through bonds of kinship, friendship and shared community origin” (448). Thus, people utilize their migration network and social capital “to gain access to resources everywhere” (Castles *et al.*, 2014:40). In this context, social capital and the networks that exist within societies through relationships brought about by the community’s social structure play a pivotal role in determining human mobility decisions. In addition, social networks provide households with the necessary financial support needed for transportation, logistics, and job networks in new destination areas (Faist & Schade, 2013). Studies show that there is a positive correlation between migration networks and cheaper migration costs, as people use their social networks to lessen the socioeconomic and psychological costs associated with the migration process. This phenomenon is evident when one looks at how international migration patterns manifest by people utilizing their existing migration network and social capital with the pioneer migrants in destination areas to access job markets.

Similarly, proponents for the Migration Systems Theory argue that human mobility is a result of both macro and microstructures working together, thus influencing population movements between countries. In this context, macro structures include the cordial relationships that exist between countries and the world's political-economic systems, while at the microstructural level, human mobility is determined by informal relationships and networks that exist between migrants in receiving and sending areas (Castles & Miller, 1998:24). In this case, potential migrants in sending areas make use of their social capital in destination areas (mostly based on pioneer migrants) and employment agencies that convey information and ideas about the living conditions, consumption patterns, job opportunities, and ways of navigating and adapting to a new life in destination areas (Castles & Miller, 1998:

25; Castles *et al.*, 2014:41). The more appealing the information sent by pioneer migrants and employment agencies, the higher the migration chances for potential migrants in origin areas. As indicated by the Migration Networks/Social Capital Theories, the “informational and cultural capitals” possessed by migrants not only smooths their migration processes but lessens their migration costs, thus increasing the desire for potential migrants to move (Castles & Miller, 1998: 25; Castles *et al.*, 2014:40).

From this analysis, it can be argued that "migration systems link people, families, and communities over space... and information is not only instrumental in facilitating migration capabilities, but new ideas and exposure to new lifestyles conveyed by migrants may also change people's cultural repertoires, preferences, and aspirations" (Castles *et al.*, 2014:43). This is true for international migration patterns, as migrants follow pre-existing or historical routes that are mostly determined by strong social and international networks that provide easier passages for households into international communities (McLeman, 2013:603; Faist & Schade, 2013:13). Furthermore, migratory decisions are community or household products based on societal norms and values, and the choices of pioneer migrants that determine the choice of a destination rather than environmental or strictly economic factors (Findlay, 2011; Castles *et al.*, 2014:40). With this, "the formation of the migrant community at one destination, therefore, increases the likelihood of more migration to the same area" (Castles *et al.*, 2014:41). Similarly, out-migration is often not an individual decision but a household decision that is tied to social networks such as family members and friends who play a pivotal role in determining a family members' areas of destination in times of climatic disasters (Murali & Afifi, 2014:33; Hagen-Zanker, 2015:68).

Unlike Push and Pull economic migration theories that are often criticized for being "one-sided" and fail to explain the complexities of human mobility in their analysis, the

Migration Systems and Network Theories are useful in analyzing the migratory decisions in poor agricultural-based rural economies around the world. The strength of these models lies in their abilities to interpret human mobility patterns through understanding the interactions of economic factors with various structures and systems such as social institutions, social networks, and government policies among others that informs human mobility decisions (Mavroudi & Nagel, 2016:20). Furthermore, these models can examine both ends of the migration spectrum by drawing the line between the factors in the destination and areas of origin.

All in all, the above theories clearly illustrate that human mobility is a complex multidisciplinary subject. The various human mobility drivers make it difficult to attribute out-migration decisions to a single variable, as there isn't one theory or approach that can best be used to explain human migration. Although I agree that the economic migration theories are useful tools in explaining human mobility patterns in Zimbabwe, there is however, a need for these theories to better account for the historical and structural conditions operating in communal areas. There is no doubt that the structural conditions in communal areas which are leading to human mobility in these areas were created by the colonial history which are factors that are beyond the creation of these communal farmers. In this way, communal farmers are forced to operate under these difficult conditions and situations created by colonial policies that are beyond their choosing. I, therefore, argue that with Historical-Structural Human Mobility Models, I will be able to understand the historical conditions that created those difficult conditions in communal areas that are leading to human mobility in the first place. Similarly, the Migration Systems and Network Theories which are key assets for this study human mobility holistically, that is "it involves moving out from the individual to wider and interconnected sets of circumstances-the wider system or network-which an individual

agent is located" (O'Reilly, 2015:28). Similarly, unlike economic migration models, the Migration Systems and Network Theories are useful in understanding "complex migration processes that take place, become consolidated, change nature and shape, and emerge over time" (O'Reilly, 2015:28). Having said this, I argue that the economic migration theories are useful in explaining human mobility but they ignore the historical and social dynamics of migration and climate change, which are the key drivers of migration in Zimbabwe's communal areas. For this reason, I chose the Historical-Structural Human Mobility Models, and the Migration Systems and Networks Theory that better understand the importance of historical and social dynamics which are key drivers in migration and climate change in Zimbabwe's communal areas.

Characteristic(s) of Human Mobility Theory	Theory's Relevance To This Study
<i>(1) Push and Pull Migration Theory (Ernst Ravenstein, 1880)</i>	
<ul style="list-style-type: none"> • The theory explains human mobility in the context of “push” and “pull” factors found in destination and areas of origin. • Push Factors refer to poor living conditions found in areas of origin such as poverty, low incomes, high unemployment, poor health care, and lack of human security, which forces people to seek better economic and living conditions outside their homes. • Pull Factors refer to better economic and living conditions found in destination areas that attract people to abandon their homes while enabling them to fulfill their desires and to maximize their economic wellbeing. These conditions include higher incomes and better job opportunities found in destination areas. 	<ul style="list-style-type: none"> • The Push-Pull Migration suites well with my study as it provides a different perspective into understanding and explaining different factors that shape human mobility patterns in rural Zimbabwe. • This theory entails an understanding of factors that forces people to abandon their homes in marginal and also factors attracting people to seek better livelihood alternatives in destination communities.
<i>(2) Neoclassical Economic Migration Theory (Harris & Todaro, 1970)</i>	

<ul style="list-style-type: none"> • Explains human mobility at macro- and micro-level in the context of different economic conditions that exist between developed and developing countries or regions within a country. • At the macro-level, migration is viewed as necessary in balancing the high labour shortages in developed countries with abundant surplus labour in developing countries. At micro-level, human mobility manifests itself through individuals who engage in moving across different regions within the country or region with high hopes of attaining better economic opportunities such as wages in destination areas. 	<ul style="list-style-type: none"> • Useful in explaining the impact of economic differences (high wage and income differences) between communal areas and former white commercial farming areas in Zimbabwe on migration. These two regions endured diverse economic development policies from the colonial period.
<p>(3) <i>The New Economics of Labor Migration Theory (Oded Stark, 1991)</i></p>	
<ul style="list-style-type: none"> • Human mobility is a household decision inspired by the desire of a household to “maximize” and double incomes as a way of improving its economic well-being. • Human Mobility is a “risk aversion” strategy meant to diversify farm incomes from livelihood related risks and uncertainties. (Stark & Bloom, 1985; Russel, 2013; Hagen-Zanker, 2015: 69, 70). • Household members help the labour migrant with travel and settlement-related costs including financial support during periods of unemployment or job hunting in destination areas. In return, the labour migrant supports the family back home by sending remittances, thus making the family earn double incomes (farm incomes plus remittances) 	<ul style="list-style-type: none"> • This model enables this study to understand the human mobility patterns happening in Zimbabwe, a country experiencing extreme climatic conditions and volatile macroeconomic conditions. Similarly, the country lacks social protection programs that help protect livelihoods during stressful periods. • The New Economics of Labor Migration Theory guides this study in understanding whether migration is a “risk aversion” coping strategy used by communal households in Zimbabwe during this period of economic and climatic stress or not.
<p>(4) <i>The Historical-Structural Human Mobility Models</i></p>	
<ul style="list-style-type: none"> • The Historical-Structural Human Mobility acknowledges that human mobility is a result of structural conditions in developing countries 	<ul style="list-style-type: none"> • This model is useful in determining the impact of the country’s colonial and historical legacy, including the contemporary global policies responsible for shaping the

<p>that were created by global inequalities.</p> <ul style="list-style-type: none"> • The poverty leading to human mobility patterns in developing countries stems from (i) colonialism and historical relations, (ii) capitalism, (iii) unequal power relations that exist between "core areas" in developed nations and "periphery areas" in developing countries, and (iv) over-dependency of developing countries on developed countries (O'Reilly, 2015) 	<p>structural conditions in communal areas and contributing to human mobility.</p>
<p>(5) <i>The Migration Systems and Network Theories by Bourdieu (1985) and Mabogunje (1970)</i></p>	
<ul style="list-style-type: none"> • Human mobility is viewed in the context of social networks and social capitals that connects migrants in both sending and receiving areas. • Potential migrants make use of information and ideas gathered from already established migrants in destination areas, such as employment opportunities, living conditions and, consumption patterns in destination areas to inform their out-migration decisions (Castles & Miller, 1998: 25; Castles <i>et al.</i>, 2014:41). • Migrants utilize their social networks and systems to travel and access resources in destination areas. Similarly, resources offered by established migrants to potential migrants that include information, financial, job networks and, logistical assistance (Faist & Schade, 2013) help migrants ease their migration processes • These macro and microstructures work together in influencing population movements between different geographical areas (Castles & Miller, 1998:24). 	<ul style="list-style-type: none"> • These models provide this study with a holistic view of understanding the social dynamics of migration and climate change in communal areas. This includes their ability in explaining the complex human mobility patterns brought about by the interconnectedness of various economic and social structures and systems such as social institutions, social networks, and government policies among others that informs human mobility decisions in these marginal areas (O'Reilly, 2015:28) • Secondly, this model enabled my study to understand the different social connections, networks, and systems that people utilize to move from across the different farming regions of the country

Table 2.1 Summary of human mobility theories used in this study

2.7 Human Mobility in the context of vulnerability

Although migration theories differ in their approach and understanding of human mobility decisions, these models do complement each other in their drive to explain rural out-migration patterns (Hagen-Zanker, 2015:75). Most theories attest that human mobility in agro-based rural communities is a result of vulnerability⁶ and responses to livelihood stresses. As highlighted in the previous section on human mobility theories, population movements are determined by available resources and networks which either encourage people to adapt *in situ* or move (NRC, 2009:8). Given this scenario, climate change negatively impacts peoples' resources and networks, thus increasing their vulnerability and their desire to either move or remain in their places in the process (NRC, 2009:8). Vulnerability in this case is a product of both biophysical and social factors.

2.7.1 Biophysical Approaches to Vulnerability

The Biophysical Approach views vulnerability to climate change which leads to human mobility in the context of "natural" or "external" factors beyond the control of human action (Mearns & Norton, 2010:51). These natural or external factors include droughts and floods and other climatic conditions that destroy people's livelihoods, leading to human mobility (Mearns & Norton, 2010:51). In explaining this, the Biophysical approach often makes use of the Risk-Hazard Model that outlines the impacts produced by a single climatic event on

⁶"Vulnerability is the degree to which a system is susceptible to and unable to cope with adverse effects of climate change, including climate variability and extremes" (GOZ, 2016b:55). According to the IPCC Conceptual Framework; Vulnerability = f (Exposure, Sensitivity- Adaptive Capacity) (GOZ, 2016b:55)

people's livelihoods. According to this model, biophysical factors produce multiple outcomes or impacts that lead to livelihood stresses within communities, leading to dislocations (Mearns & Norton, 2010:51). Human mobility in this case is determined by the nature and frequency of the climatic event, including its degree of exposure and resilience of community systems to withstand and recover from the threats posed by that climatic event (Brooks, 2003:3).

However, not all scholars agree that the impact of climatic events is significant enough to result in human mobility, as attributed by the Biophysical and Risk-Hazard Models. They argue that climatic factors are only "contributory causes" or "secondary drivers" to human mobility decisions, while socioeconomic and political factors continue to be regarded as primary drivers for human mobility (Mearns & Norton, 2010: 47, 103,104; Hugo, 2011:29; Faist & Schade, 2013:12). "While there is a clear mono-causal relationship between climate change... and displacements, the existence of a clear link between the phenomena is increasingly recognized. Voluntary migration can be a form of coping or adaptation, but climate change and disasters also contribute to forced displacement as a survival strategy" (NRC, 2009:5)

This is despite World Bank studies showing that approximately 26 million people have been internally displaced by floods and cyclones between 2008-2015, with another 24 million being reported to have suffered from the same fate in 2016 (Rigaud *et al.*, 2018:4). These "displacements can be devastating, whether short term or protracted, internal or external. Consequences include loss of home, land, and belongings, disruption of livelihoods or education, separation from community and family members" (Naidu & Benhura, 2015:8). As highlighted by Mearns & Norton (2010: 112), human mobility patterns resulting from biophysical factors, that are from both slow or rapid onset climatic disasters vary according to the nature and scale of the disasters (Mearns & Norton, 2010:112). For example, chronic

disasters, which are slow-onset disasters such as droughts, land degradation, and desertification, usually result in temporary and circular migration (Mearns & Norton, 2010:112). In this case, migration in poor economies is a result of low agriculture outputs caused by losses in soil nutrients, which are exacerbated by land degradation and erosion, salinization, and environmental pollution (Brown, 2007:10; Black *et al.*, 2011:8; Findlay, 2011:51; Morrissey, 2012:43; Science for Environmental Policy, 2015:7). In this case, people are inspired to move as they desire to acquire “sustainable farmland” in other areas (Parker, 2018, March 19: para 4).

These short-term population movements are usually confined within rural regions, with households rarely embarking on long-distance or international migrations and with the hope of returning to their areas of origin once the situation has calmed (Piguet *et al.*, 2011: 9, 11; Hastrup & Olwig, 2012: 122). This was the case in Somalia where droughts severely affected crops and water supplies for both humans and animals, thus displacing millions of pastoralist farmers to large cities including Mogadishu in the process (Hastrup & Olwig, 2012: 120,121; Goldbaum, 2018, February 21). However, human mobility patterns tend to be permanent for people experiencing slow-onset disasters such as the sea-level rise and temperature increases (Mearns & Norton, 2010:112). Similarly, sudden-onset disasters such as floods and hurricanes usually produce short term migration patterns (Mearns & Norton, 2010:112), as people intend to safeguard lives and protect their household belongings and property from theft and robbery (Findlay, 2011:53). Similarly, sudden-onset disasters and prolonged chronic hazards force households to engage in "distress migration" (mainly internal) or temporary migration due to dilapidated ecosystems, incapable of sustaining livelihoods (Mearns & Norton, 2010:112). On separate cases, sudden-onset disasters have been responsible for triggering permanent displacements of people in particular areas, as was the

case of Pattonsburg, Missouri, the USA where the high frequency of floods, that averaged 35 floods in every 50 years, led to permanent relocation of people (Black *et al.*, 2011:7).

2.7.2 Social Factors and Vulnerability

Social vulnerabilities also have similar impacts as Biophysical factors, increasing the potential of households to out-migrate in agricultural rural economies. As highlighted by Dodman & Mitlin (2015:226), climate vulnerability is determined by the “...potential of a system to be adversely affected, and adaptive capacity...the potential of a system to adapt”. In developing economies, socioeconomic factors that include (i) poverty, (ii) discriminatory political structures and systems, (iii) food entitlements, (iv) lack of proper representations of marginalized groups, (v) unequal access to key productive community resources, and (vi) lack of access to insurance, have increased climate sensitivity and limited people’s capacities to respond and recover from climate change (Brooks, 2003; Mearns & Norton, 2010; Black *et al.*, 2011; Faist & Schade, 2013; Castles *et al.*, 2014:26). Poverty, which is usually a product of socioeconomic inequalities has been regarded as the number one factor increasing people's vulnerability to climate variabilities and displacements (Mearns & Norton, 2010: 50). Similarly, undemocratic societies marginalize and restrict people from expressing their democratic rights, and as a result, most people are compelled to move to other regions where their voices are heard and respected (Faist & Schade, 2013). These non-climatic factors produce (i) *additive effects* that resemble the same livelihood stresses as ones posed by environmental stresses, (ii) *developmental effects* that usually worsens the already existing environmental stresses on people’s livelihoods, (iii) *enabling effects* that are created by biophysical factors that limit people's desire

to stay, and (iv) *barrier effects* that hinder people's desire to move. (Hastrup & Olwig, 2014:124-134).

According to the Sustainable Livelihoods Framework (SLF) by Scoones (1998), in most societies, non-climatic factors, especially poverty, undermine the household's ability to respond and recover from climatic stresses, due to compromised human, social, natural, physical, and financial capital. In agro-based economies, constrained social, natural, financial and, physical capital continues to hamper small-scale farmer's production, leading to low crop yields and income, increasing their vulnerability to climate change. This is due to high poverty rates in developing countries that have seen the majority of farmers being unable to invest in irrigation systems necessary for supporting their agricultural production (Rigaud *et al.*, 2018:78). Furthermore, other factors such as income distribution, population growth, and unequal land ownership policies in rural areas continue to increase climate vulnerability and population displacements in these poor areas (McMichael, 2015:550). There is no doubt that equal access to production resources such as agricultural land is the mainstay of national economies in developing countries, and crucial for the majority of rural livelihoods (Feresu, 2017:15), especially on their drive to cope with their food insecurity and unsustainable farm incomes during periods of climatic stress. The opposite is also true, as unequal access to productive assets such as land and poor social protection programs increases poor people's vulnerability to climate-induced food insecurities which results in out-migration (Faist & Schade, 2013). This argument was further expounded by Amartya Sen's Capabilities/Entitlement Approach that states that "vulnerability is a lack of entitlements or lack of sufficient means to protect or sustain oneself in the face of climate events, where risk is shaped by society's provision of food, productive assets, and social protection programs" (Mearns & Norton, 2010:53).

On the other hand, the high population growth rates witnessed around the world have led to a scarcity of agricultural land and pushing people to occupy marginal, low-lying, and drylands, which further increased their vulnerabilities to climatic disasters (Morrissey, 2012). This relationship is well explained by the Neo-Malthusianism perspective, which argues that the high demand for the ever-depleting natural resources base coupled with increasing populations has resulted in high human mobility cases, especially in communities that rely on climate-sensitive sectors such as agriculture (Faist & Schade, 2013:7). However, the applicability of the neo-Malthusian perspective on the Zimbabwe context is highly contested. I argue that the high population and overcrowding challenges being experienced in most communal areas and leading to human mobility are not natural, but were politically created by colonial policies that disenfranchised African farmers from prime agricultural lands to areas with poor agricultural lands. Furthermore, the failure of agricultural production to meet the ever-increasing world population have, in some cases, resulted in irreversible cases of land degradation, conflicts and population displacements in several rural communities around the world (Mearns & Norton, 2010; Hugo, 2011; Faist & Schade, 2013:7; Science for Environmental Policy, 2015).

2.8 Thesis Statement

The urge to improve climate change resilience and adaptation strategies for small-scale farmers in developing countries have long been on the agenda of most governments and international development organizations such as the United Nations Framework Convention on Climate Change (UNFCCC). The need to address climate change adaptation among small-scale agricultural producers in developing countries stems from the fact that these farmers are the

major food producers in these countries. It is undeniable that the continual exposure of small-scale farmers, who rely on rain-fed agricultural production systems to climate change will have negative impacts on food security and economic development for developing countries and beyond. Furthermore, the failure to address climate change-induced food insecurities in these countries will result in serious socioeconomic developmental challenges, and subsequently out-migration. Given this, I argue that climate change adaptation programs that target small-scale agricultural producers in developing countries are crucial for addressing the imminent food security, economic growth, and human mobility challenges being faced by these countries. So far, most climate change adaptation policies being promoted by the UNFCCC, Windhoek Declaration of 2016, and Zimbabwe's National Climate Policy, among others emphasize Climate Smart Agricultural strategies that are beyond the reach of many farmers. These policies neglect human mobility, which has been used by the generation of farmers as an important climate change adaptation strategy in communal areas in their policy frameworks. In this case, effective climate change adaptation strategies, which are within the reach of small-scale rural farmers improve rural livelihoods including their food security status and incomes especially during periods of economic and climatic stress.

Secondly, based on the impact of biophysical factors on human mobility, I contextualize that climate change vulnerability that leads to poor agricultural productivity, and subsequently human mobility among farmers has external factors, which are beyond the reach of human actions. In Zimbabwe, these biophysical factors include extreme climatic events such as droughts, floods, and tropical cyclones that produce multiple outcomes such as poor crop yields, loss of livelihoods, famine, economic loss, reduced well-being, and subsequent dislocations in the long-term (Mearns & Norton, 2010:52). These external factors increase the desire for many rural, and vulnerable people to out-migrate from vulnerable areas to areas that

offer them better climatic and living conditions. In which case, I argue that biophysical/climatic factors are important human mobility drivers in Zimbabwe's communal areas, hence there is need to in-cooperate these human mobility drivers into the country's climate change and human mobility literature. This will not only help enhance the climate change and human mobility literature in Zimbabwe but also help policymakers formulate effective climate change adaptation policies.

Thirdly, I argue that, while the effects of climate change are widespread, the particular colonial history and post-independence development paths shape the unique pathways of human mobility among small scale farmers in rural Zimbabwe. In this case, Zimbabwe's colonial land and agricultural policies such as the Land Apportionment Act of 1931 led to the creation of native reserves/communal areas in marginal and unfertile lands that were later used to settle African farmers. These communal areas continue to suffer from underdevelopment, overcrowding, and serious land degradation issues due to these colonial policies. Similarly, the politicized land reform policies failed to bring the desired changes of empowering African farmers and improving their food security, and in the process putting more pressure on life in communal areas (Russel, 2013). Similarly, globally-induced Economic Structural Adjustment Programs (ESAP) and economic sanctions imposed on Zimbabwe by the International Community also led to serious livelihood challenges for both the urban and rural populations in Zimbabwe.

This colonial and neo-colonial legacy together with contemporary development policies has not been gentle for the country and generally, life has underlying demographic, economic and, political challenges for most rural people in Zimbabwe since independence (UNDP, 2017). In general, life in communal areas has been characterized by several socioeconomic, demographic, and environmental challenges that have incapacitated the

recovery and adaptation processes of these people from climate change, and in return, people are forced to out-migrate to areas that offered them better livelihoods. Given this background, I argue that it is through an understanding of the contextual and historical perspectives of developing countries, which includes the role being played by contemporary development policies, that one will be able to establish the impact of various factors which make climate change adaptation difficult in communal areas. This involves an understanding of the interplay of multi-causal factors leading to poor climate change adaptation and subsequently, human mobility in Zimbabwe's communal areas. It is through an understanding of the country's historical and contemporary development challenges that we will be able to know that the typical top-down UN's Sustainable Development Goals (SDGs) and UNFCCC's climate change adaptation approaches may not be effective or applicable to the locally specific case of Zimbabwe.

I, therefore, argue that a climate change adaptation strategy that; (i) takes into consideration that climate change as an important human mobility driver, (ii) recognize the interconnectedness of climatic and non-climatic factors, including the country's colonial history, as primary drivers for increased vulnerability to food insecurity and human mobility in Zimbabwe's communal lands and, (iii) regard human mobility as an adaptation strategy will develop a better policy towards climate change mitigation and adaptation in these areas. Such a strategy will provide context for the multi-causal effects to climate change vulnerability and embraces human mobility as a mitigation and adaptation strategy that translates climate change adaptation policies to better mitigation measures in Zimbabwe's communal areas. By exploring Zimbabwe's rural communal areas, areas that have endured several human mobility patterns since the pre- and post-colonial era, this study will help us understand the interplay of climatic and non-climatic factors in shaping the contemporary human mobility patterns happening in

these marginal areas. This will provide a narrative that will help people best understand why and how multi-vulnerability factors have exposed small-scale communal farmers to food insecurity and increased their desire to move around the world. Similarly, this study will contribute new insights on examining the complex human mobility patterns in Zimbabwe's communal lands that have long been associated with non-climatic factors, as voices from vulnerable groups will be documented to understand this complexity.

2.9 Theoretical Framework

In developing the contextual framework for this study, I took into consideration the following factors; firstly, from the above theories of migration, human mobility in agro-based rural economies can be viewed as a product of multi-vulnerability factors. In this regard, I contextualize climate change vulnerability that leads to human mobility among small-scale farmers as an external factor caused by climatic factors such as droughts and floods that operate beyond the human capacity. Secondly, I will also be treating vulnerability to climate change as a human-made challenge resulting from social, economic, and political inequalities. Most of these inequalities were created by colonial and contemporary developmental policies that brought about the socio-economic challenges experienced in these marginalized areas. These multi-causal factors (climatic and non-climatic) work together in creating livelihood stresses (food insecurities) in communal areas and subsequently leads to out-migratory decisions among households. Since human mobility has multi-casual factors, this study found it necessary to adopt a multidisciplinary approach that explains human mobility from different perspectives and how different factors have led to population movements in rural Zimbabwe.

In so doing, this case study adds to the existing literature that emphasizes the complexity of human mobility

Given this background, this study adopted an Integrative Framework Approach (IFA) and a Contextual and Historical Approach (CHA) in its analysis of human mobility patterns in rural Zimbabwe. The Integrative Framework Approach (IFA) encompasses both climatic and non-climatic human mobility factors in its analysis of climate change vulnerability among vulnerable communities in developing countries. This involves using climate vulnerability models such as the Capability/Entitlement Approach and the Sustainable Livelihoods Framework Approach that views human mobility as a result of deprivations of people's freedoms and rights in choosing their lifestyles (Faist & Schade, 2013). These freedoms and rights include their choices in choosing their natural, physical, mental, cultural, social, economic, financial, and political assets that they need to live their lives to the fullest (Faist & Schade, 2013). Thus, the greater the chances of a household to acquire these assets the lesser the risks of being exposed to climate variabilities or deciding to move during periods of climatic stress (Faist & Schade, 2013).

Given this context, "vulnerability is a lack of entitlements or lack of sufficient means to protect or sustain oneself in the face of climate events, where risk is shaped by society's provision of food, productive assets, and social protection programs" (Mearns & Norton, 2010:53). As highlighted in previous sections of this study, it is usually the poor with limited capabilities/entitlements created by societal classes, unequal power, and distribution of productive resources that are more vulnerable to the adverse effects of climate change (Piguet *et al.*, 2011). In this context, community resilience to climatic factors is achieved when a household has access to i) human, ii) social, iii) natural, iv) physical and, v) financial capitals (Scoones, 1998). These capitals enhance a household's resilience to extreme weather

conditions (Scoones, 1998). In this case, the SLF is “used to access the adaptive capacity of communities...it is through the use of different livelihood assets that communities are able to transform their vulnerability context” (GOZ, 2016b:55). Interestingly, this framework has been successfully used by the Government of Zimbabwe in understanding livelihoods vulnerability and climate change coping strategies employed by households within the country (GOZ, 2016b:55)

Furthermore, the IFA acknowledges that human mobility is a result of "external" or biophysical factors beyond the reach of human actions (Mearns & Norton, 2010). In this context, food insecurity and human mobility among small-scale farmers are attributed to the exposure of agricultural production systems to natural causes such as droughts and floods which are beyond human actions. The fact that this approach acknowledges human mobility as a result of exposure to agricultural systems by biophysical and non-climatic factors (Mearns and Norton, 2010) makes this approach an asset for my study. This is so because the IFA emphasizes that “vulnerability has an external dimension which is represented by the exposure of a system to climate variations, as well as an internal dimension which comprises its sensitivity and its adaptive capacity to these stressors" (Mearns & Norton, 2010:53). So, with the IFA approach, this study will be able to assess the impact of natural and man-made factors on households' vulnerability and adaptation to climate change, including its ability to recover from such atrocities. In understanding the human mobility patterns in rural Zimbabwe, the IFA enables this study to understand the root causes of vulnerability to climate change among small-scale farmers. In the context, and understanding of the exposure and failure of agricultural production systems from both climatic and socioeconomic factors, including the capacity of farmers to respond to these extreme conditions will be examined. Furthermore, this approach uses different approaches such as the biophysical and social vulnerability

approaches to climate change that complement each other, an aspect which is crucial in our understanding of different factors that expose people to climate change vulnerabilities and prohibits them to adapt to climate change in situ.

In addition to the IFA, the Contextual and Historical Approach (CHA) will be used in this study to determine the relationship between historical/colonial decisions and climate change in shaping the modern-day human mobility patterns in Zimbabwe's communal areas. This approach helps with analyzing the significance of colonial land ownership policies in Zimbabwe that alienated African small-scale farmers from the productive prime lands and their impacts on modern-day food insecurities and human mobility challenges experienced by these poor farmers. It is through understanding Zimbabwe's contextual and historical perspective that this study will be able to establish the impact of colonial development policies that are making adaptation to climate change difficult for these poor farmers in this period of climate change. The CHA goes further to untangle "the reasons why structures look the way they do, and begin to think why people will move, what impacts of that movement might be and, what measure might be taken to best secure human well-being" (Morrissey, 2012:46). Thus, "a contextual and historical perspective queries issues of power, asking why particular relationships matter, and how they came to be" (Morrissey, 2012: 45).

It is through a better understanding of the role played by colonial and development policies in exposing rural people to climate change that we will be able to understand the modern-day human mobility patterns happening in developing countries. Thus, I argue that an adaptation strategy that takes into consideration colonial/historical and contemporary developmental problems in Zimbabwe's AER IV and V will develop a better policy towards climate change adaptation, because it understands the nexus of multi-vulnerability factors such as climate change and the socio-economic environment brought about by colonialism and

international development strategies which led to the underdevelopment of people in AER IV and V. By establishing the climate change, history, and contemporary development policies nexus to modern-day human mobility patterns, we will be able to understand the nature of the impact of climate change and what kind of measures are needed to encourage rural communities in Zimbabwe to adapt *in situ*. By understanding this relationship, one will be able to help Zimbabwe to best manage these human mobility patterns by encouraging climate change adaptation policies that improve lives for future vulnerabilities.

2.10 Conclusion

This chapter has demonstrated that the decisions to out-migrate are complex as they are usually multi-causal and non-linear. However, over the years, various migration theories that include economic migration centered theories, historical-structural human mobility models, and migration systems and network migration theories, among others have been used by different scholars to explain human mobility patterns across the world. Although the economic migration theories are useful as they provide different views and insights in their explanation of human mobility issues across the world, these models overlook the historical and social dynamics of migration and climate change, which I believe are crucial in our understanding of human mobility issues in Zimbabwe. For this reason, this study adopted the Historical-Structural Human Mobility Model, and the Migration Systems and Network Theories. With the Historical-Structural Human Mobility Model, I can explain human mobility patterns happening in rural Zimbabwe in the context of the historical relations and colonial structures left behind by colonial policies in communal areas, thus making climate change adaptation difficult for most farmers. Similarly, with the Migration Systems and Network Theories, I am

capable of explaining complex human mobility patterns happening across the different farming regions in Zimbabwe through an understanding of various economic and social structures and systems that include social institutions, social networks, and government policies that help inform human mobility decisions in communal areas.

Lastly, I adopted an Integrative Framework Approach (IFA) and a Contextual and Historical Approach (CHA) as a theoretical framework for analyzing human mobility patterns in Zimbabwe for this study. The IFA has been widely used in explaining human mobility stemming from multi-vulnerability factors such as biophysical and social factors, which are both “external” and “internal” dimensions to human actions. Furthermore, since the main focus of my study is on understanding the importance of historical and social dynamics which are key drivers in migration and climate change in Zimbabwe's communal areas, the CHA provides a contextual and historical perspective that enables this study to understand a variety of factors that made communal structures look the way they are, including their impacts on food security and human mobility.

Chapter 3: Research Methodology and Data Collection

3.1 Introduction

This study was conducted in the context of understanding the interconnectedness of colonial, contemporary development policies, and climate change in shaping human mobility in Zimbabwe's small-scale rural farming areas. The study was conducted in Buhera and Chipinge rural districts of Zimbabwe between May-August 2019. These two districts are located in two diverse AERs, have different climatic conditions, and experienced different colonial development histories. The field study period coincided with the summer period in Zimbabwe, which is a good time to research communal areas as most farmers would have finished working harvesting their fields. This worked to my advantage as I was able to assess/ observe their current season's harvest, and also interview as many farmers as I could without interfering with their daily livelihoods. This study involved the use of qualitative data collection techniques and data collection methods that include, Individual Household Interviews, Focus Group Discussions, Key Informant Interviews, and Direct Observation. The selection criteria of study areas were based on various reports generated by the government and newspaper articles that showed the country's most vulnerable districts including migrant's hotspot areas. Similarly, all research participants voluntarily agreed to participate in this study based on their knowledge and experiences of living and farming in these study areas. The following sections of this chapter will discuss in detail the research methodology and the data collection approaches and techniques used in this study.

3.2 Study Areas

In answering the research questions for this thesis, I employed a case study approach of Buhera and Chipinge rural districts located in the Manicaland province of Zimbabwe. Manicaland Province is located in the eastern highlands of the country with a population of 1.8 million people, a total area of 36,456 km² (Zimstat, 2017b: 8). Besides Buhera and Chipinge, Manicaland has 5 more administrative districts namely; Chimanimani, Makoni, Mutare, Mutasa, and Nyanga, as shown in *Fig 3.1* below.

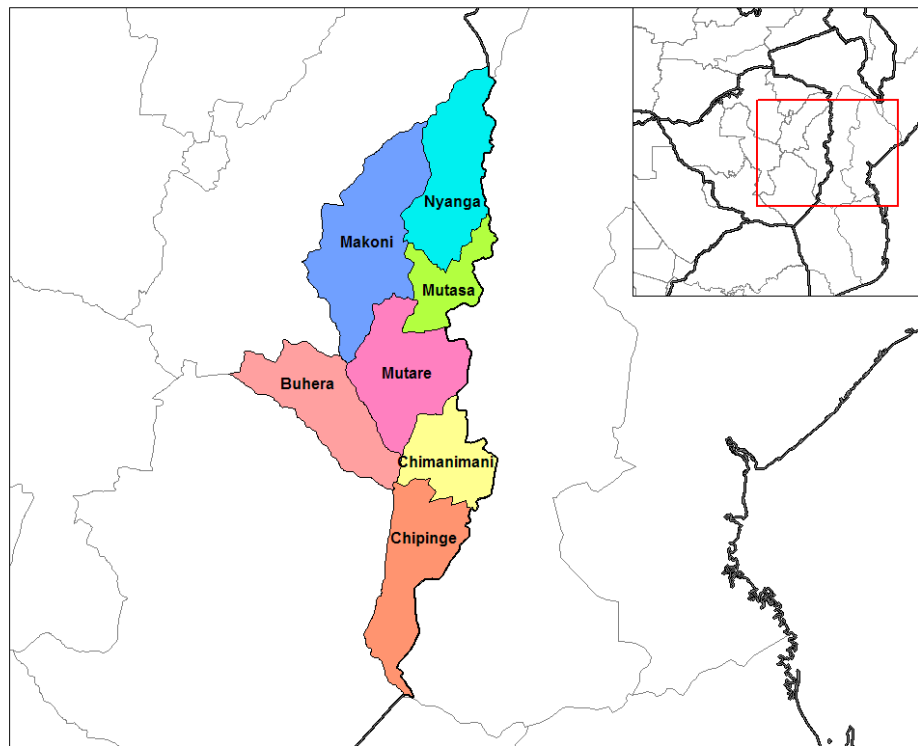


Fig.3.1 District Map of Manicaland Province (https://en.wikipedia.org/wiki/Makoni_District)

The province is rich in soil fertility, with all 5 AERs (I-V) that stretches from the high rainfall AERs I of Vumba Highland in Mutare District to the drier and hot regions of Save Valley in Chipinge District's AER V (Chingarande *et al.*, 2020:8). Furthermore, Manicaland is home to

several perennial rivers, making it a very special agricultural zone in Zimbabwe, conducive for both commercial and small scale (subsistence) agriculture (Chingarande *et al.*, 2020:8)

Similarly, Buhera and Chipinge districts are found in the South-Western and South-Eastern regions of Manicaland Province, respectively as shown in *Fig. 3.2* below.

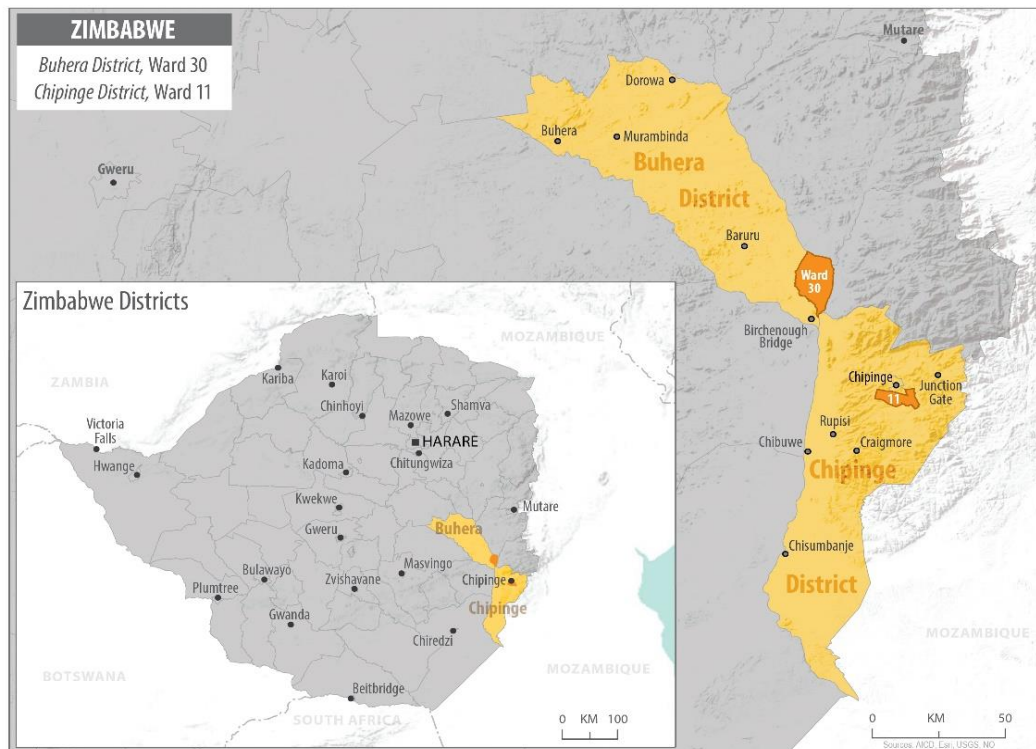


Fig. 3.2 Map of Buhera and Chipinge study areas. Prepared by Saint Mary’s University Department of Geography and Environmental Studies Cartographer, with sources from Marashe (2018)

The total population in the Buhera district is 246,462 people and 57,126 households (average household size of 4.3 persons) spread across the district’s 33 Wards (Zimstat, 2012). In terms of land use patterns, two-thirds of the agriculture land in Buhera is under AERs IV and V (the rest under AER III) and is occupied by small scale communal farmers who are responsible for growing food crops, such as millet and sorghum mainly used for maintaining the household’s nutrition and food security (FAO, 2006; Oxfam, 2015; Chingarande *et al.*, 2020:8).

In Chipinge district, there are 300,792 people, with a total of 66,403 households (average household size of 4.5 persons) scattered across the 30 Wards of the district (Zimstat, 2012).

Table 3.1 below shows the Land use pattern of Chipinge district post-2000 agrarian structure.

In addition, 36,132 ha of the total 96,944 ha of land redistributed in Highveld⁷ areas belong to 4,881 A1⁸ households, while 922 A2 farmers share the remainder with a few informal settlers (Zamchiya, 2011: 1098).

AER	LSC	SSC	CL	RST 1	RST 2	FL	Other	Total (ha)
I	42,615	4,822	7,962	96,006	9,837	2,598	1,790	148,447
II	1,671	815	11,787	938	8,066			22,339
III	5,432	2,578	27,125	854	1,796		1250	46,194
IV	6,845	1,015	112,863	781			6641	130,172
V	15,175	2,942	134,720	9,162			21,052	192,151
Total (ha)	71,738	12,172	294,457	107,741	19,699	2,598	30,733	539,303

Key; **LSC** = Large Scale Commercial Farming Area, **SSC**= Small Scale Commercial Farming Area, **CL**= Communal Lands, **RST 1**= Resettlement (A1 & A2/Informal), **RST 2**= Old Resettlement, **FL**= Forest Land

Table 3.1 Chipinge District: post-2000 Agrarian Structure as of 2010. Adapted from Zamchiya (2011)

Land in the high veldt areas of Chipinge (AERs I and II) is characterized by plantations and large-scale commercial farms practicing intensive diversified agriculture and livestock production (FAO, 2006; Chingarande *et al.*, 2020:8). The region is suitable for dairy and beef production including food crops such as tea, coffee, fruit, horticultural crops, potatoes, and

⁷ In Zimbabwe the “four major relief regions are generally recognized on the basis of their elevation: i) the Lowveld (< 600 m above mean sea level); ii) the Middleveld (600-1200 m); iii) the Highveld (1200-2000 m); iv) the Eastern Highlands (2000-2400 m)” (FAO, 2016c:1)

⁸ These are government-designated programs that came during the FTLRP. Under the A1 farming model, individual families own at least 6 ha of land. These families have village homesteads with farming areas that are located in designated areas, including common grazing lands for livestock (Zimstat, 2019a:18). On the other hand, A2 farmers own large tracts of land (depending on their AERs) used for both crop and livestock production (Zimstat, 2019a:18). A2 farming models are similar to commercial farming models, as farmers are provided with the offer letter and a 99 year -land lease from the government (Zimstat, 2019a:18).

more recently maize, beans, and vegetables, to name a few (FAO, 2006; Zamchiya, 2011; Chingarande *et al.*, 2020:8). The low veldt areas which are drought-prone AERs IV and V are limited to growing food and cash crops that include small grains (millet and sorghum) and tobacco, including livestock production (FAO, 2006; Zamchiya, 2011; Chingarande *et al.*, 2020:8).

Although both districts are in the same province, they represent two distinct regions that vary on their AERs (Buhera AER V, Chipinge AER I). Firstly, the agricultural farming lands in Chipinge's AER I are located in the prime agricultural lands of the country, characterized by good soil, rich biodiversity, good climatic conditions, with a high average annual rainfall of above 1000mm (FAO, 2006). This agricultural richness has enabled farmers in that region to venture into growing high-value cash crops such as tea, coffee, and fruits, as well as forestry, beef, and dairy production, mainly meant for exports (FAO, 2006; Chingarande *et al.*, 2020:8). On the other hand, most agricultural lands in Buhera are found in extensive farming areas that are prone to drought, with poor lands and unreliable rainfall patterns of below 450mm per year (FAO, 2006). This development has resulted in Buhera over-relying on growing low-value food crops such as maize, sorghum, and millet that are primarily used to maintain household nutrition and food security (FAO, 2006; Chingarande *et al.*, 2020:8).

Secondly, Zimbabwe's long history informs us that these two distinct regions undertook different development trajectories that can be traced to their colonial histories. Farmers in Chipinge's high veldt areas benefited most from the colonial land and agricultural policies that were skewed towards supporting white commercial agriculture who resided in those areas at the expense of poor farmers in marginal lands. The previous studies show that the white minority commercial farmers who were approximately 3,000 in number owned

approximately 51% of the prime agricultural lands, while the majority of African farmers (approximately 587,000 people) languished from poverty in native reserve (Kramer, 1997; Potts, 2010; Mafa *et al.*, 2015; World Bank, 2019). According to Zamchiya (2011: 1095), approximately 107,741 ha of land under the hands of white farmers was later redistributed to African farmers by the government between 2000- 2011 (Zamchiya, 2011:1095;). Besides the good agricultural lands and climatic conditions, white-owned lands enjoyed massive agricultural and infrastructural investments, including easy access to markets, while African farming areas in marginal lands suffered from poor agricultural investments, overcrowding, and land degradation (Kramer, 1997; Potts, 2010; Mafa *et al.*, 2015). Studies show that as of 2015, there were approximately 482,621 A1 farmers, and 50,175 A2 farmers who are actively involved in agricultural production in Zimbabwe, utilizing an average of 6 ha of land (A1 farmers), and more 1000ha of land (A2 farmers) depending on the AER (Zimstat, 2015a; 2015b; 2019a).

These socioeconomic and environmental inequalities that exist across the richer and poor AERs continue in Zimbabwe, 40 years after independence. These inequalities have made the livelihoods unbearable for most communal farmers in AERs IV and V, and continue to shape how farmers cope and respond to climate change. Most of the climate change coping mechanisms adopted by these vulnerable groups of people are the response to the changing opportunities and challenges happening in rural areas. The two case studies of Buhera and Chipinge districts showcase how human mobility patterns have changed over time and what types of climate change coping mechanisms were adopted by the farmers. Lastly, these case studies helped me evaluate the coping strategies that are working (encouraging people to adapt *in situ*) and those strategies that lead to out-migration.

3.2.1 Study Area 1: Buhera District Ward 30

Buhera Ward 30 (Gunura) is located in the southern parts of the district and it borders Ward 29 (Chabata) North-West and Ward 33 (Birchnough Bridge) to the South, which is one of the major trading and economic hubs in the district, as shown in *Fig 3.2* above. The ward has a total population of 4,682 people in 1,061 households with an average household size of 4.4 family members (Zimstat, 2012). The ward is made up of three Village Development Committees (VIDCOs)⁹, namely; *Nechishanye* (VIDCO I), *Nemupande* (VIDCO II), and *Nendango* (VIDCO III). This ward is in the drought-prone AER V, and the majority of households are small-scale communal farmers who practice extensive mixed crop-livestock farming growing crops such as sorghum, rapoko, groundnuts, and millet. These households are also into livestock production, keeping animals that include cattle, goats, sheep, and donkeys, which are grazed under a communal system. A total of 12 villages under VIDCOs 1 and 2 participated in this study. The ward currently has a number of government/Donor-led projects happening and these include the Bonde Irrigation Scheme (with 365 beneficiaries) and Atikoreri Livestock Fattening Program. Despite this irrigation scheme and livestock production project being among the biggest in the ward and also in the district, these projects have failed to provide farmers with sustainable food sources including incomes, and jobs due to high electricity costs, macroeconomic instability, among other challenges, which have hampered the smooth operation of these projects.

⁹ “Village Development Committees (VIDCOs) are elected bodies with responsibility for defining local needs” Steward *et al.*, 1994:5) <file:///C:/Users/s9566342/Desktop/Zimbabwe%20levels%20of%20Authority.pdf>

3.2.2 Justifications for Selecting Buhera Ward 30

This ward was purposefully selected for this study for a variety of reasons. Firstly, through reading various reports generated by the ZimVAC, I discovered that the ward is ranked among the most vulnerable wards to drought and food insecurities in Zimbabwe. The prevalence of droughts and to some extent some floods have increased the dire food insecurity situation experienced by small-scale farmers in this ward. This has been the very reason the ward is awash with several climate change adaptation and food security programs, mostly funded by the Government of Zimbabwe in partnership with the donor community. However, climate change-induced food insecurity is still a major threat in this ward and this is despite the ward having:

- i. Vast government and NGO-led climate change and food security projects,
- ii. Some of the biggest irrigation schemes and livestock production projects, namely the Bonde Irrigation Scheme and Atikoreri Livestock
- iii. Access to perennial rivers e.g. the Save River that flows through it to the east, and proximity to the Dewure River

Given this scenario, the Buhera Ward 30 provided me with an opportunity to understand various factors (both climatic and non-climatic factors) that exposes people's vulnerability to food insecurity. Similarly, Buhera Ward 30 enabled me to understand farmers' alternatives to human mobility, including the various climate change adaptation strategies they adopted, and those that lead to human mobility.

Secondly, the ward is in close proximity (approximately 15 km away) from the second major economic hub or agricultural produce market in the district (Birchnough Bridge). In

addition to that, Buhera Ward 30 is located at the periphery of the district, thus sharing borders with areas in Chipinge, Chimanimani, and Mutare districts that happen to have better agro-ecological and climatic conditions. Interestingly, most people found in this ward have strong roots with people in these districts that can be traced back to times before their evictions by the colonial government. Over the last decades, studies show that several Africans located in marginal lands have found their way back to prime agricultural lands and this movement has been achieved through various ways such as the Land Reform and Resettlement Programs and people tracing their roots using their ancestral linkages. These human mobility trends have been supported by various reports that show that several distressed farmers in Zimbabwe's marginal lands have found their way back in AERs I, II that offer them better agro-ecological conditions to sustain their livelihoods. Given this background, I found it interesting to use Buhera Ward 30 as a case study to determine the importance of distance (proximity to economic hubs and fertile lands), including social capital in determining human mobility decisions, especially among food-insecure households. Similarly, this allowed me to understand the various coping strategies used by food-insecure households in situations where people have abundant options available to them.

3.2.3 Study Area 2: Chipinge District Ward 11

Chipinge Ward 11 has a total population of 3,249 people and 749 households (Zimstat, 2012). This ward is located on the northern side of Chipinge district under AER 1 with a total arable area of 8,166 ha. This ward shares borders with Chipinge Urban Council to the North as shown in *Fig 3.2* above, and has a total of 10 farming households, which are similar to villages in communal areas. The bulk of farmers in Ward 11 are 723 A1 farmers occupying 3,973 ha,

while the remainder of the land is shared by A2 and illegal settlers (Zamchiya, 2011:1097) who all benefited from the government-sponsored land reform programs. According to information presented by Agritex officials during field studies, Ward 11 has 2 Large-scale commercial farming households, 44 A2 farming households and, 245 A1 farming households. This ward has a rich biodiversity that is characterized by thick forest areas, various fruit trees, and many perennial streams. The major crops grown in this region include maize, potatoes, vegetables, tobacco, and horticulture products, to name a few. Studies have shown Chipinge Highveld regions, including some areas in Ward 11, have been witnessing an influx of new migrants due to favourable climatic and agricultural conditions, particularly migrants from the drought-prone regions of Zimbabwe.

This study was limited to 2 farming households of *Matione* and *Charurwa* due to financial challenges. *Matione* farming households fall under Retvlei or Hepkin Farm and has a total of 179 homesteads. Similarly, *Charurwa* farming households fall under Glendalough Farm and has a total of 169 homesteads. Interestingly, most farming households are still named after the white commercial farmers who used to occupy the land, and this is almost 20 years after white commercial farmers were evicted by the land reform programs. However, the continual use of colonial farming systems in Chipinge has often resulted in overlap and confusion, especially on the identification of these farming households. For example, Chipinge District Administrators' Office classified *Matione* (Retvlei or Hepkin) and *Charurwa* (Glendalough) farming households to be under Ward 11 using the new system, while Agritex records are still aligned to the colonial farm set-up system, thus classifying these farming households under Ward(s) 10 and 12 respectively. However, despite this confusion, I adopted the names *Matione* and *Charurwa* which are the official names found in Chipinge District Administrator's office

and classified under Ward 11. Similarly, *Matione* and *Charurwa* are under the jurisdiction of Ward 11 Councillor.

3.2.4 Justification for Selecting Chipinge Ward 11

Apart from the politically motivated land reform programs that changed the demographic structures of Zimbabwe's rural areas, this study hypothesized that climatic and favorable climatic conditions in AERs I and II have contributed to a high influx of people from communal areas into these regions. Chipinge's Ward 11 is an interesting case site because of its:

- i. Geographical location and proximity to drought-prone areas in AERs V (Buhera and those located in its low veldt areas) which made itself a hotspot for people from drier lands
- ii. Rich biodiversity, good agro-ecological conditions including perennial streams that supports both crop and livestock production
- iii. Favorable climatic conditions (reliable rainfall and temperature patterns)
- iv. Abundant agricultural and state land created by the eviction of white farmers and government-sponsored land reform program in Zimbabwe
- v. Abundant seasonal and casual jobs found in both the A1 and A2 small-scale and large-scale farming operations

Given these favorable socioeconomic and climatic conditions found in Chipinge's Ward 11, it was important for me to gather different views on the push and pull factors that are making Chipinge a migrant hotspot for both local migrants (those moving within the district from the

Lowveld areas in AERs IV and V) and new migrants from other regions. This involved a detailed understanding of socioeconomic, including climatic and environmental conditions happening between sending and receiving areas that are shaping people's livelihoods and informing migratory decisions. Similarly, this helped me gather information on the different climate change coping mechanisms and adaptation strategies to food insecurity employed by various people in both destination and areas of origin. This information helped me to gain an understanding of the climate change coping mechanisms rural people found working, that is encouraging people to adapt *in situ*; and those strategies not working, thus encouraging people to out-migration.

Furthermore, given that Ward 11 is home to several migrants from other drought-prone districts such as those from Buhera, Bocha, Masvingo, Chiredzi and Save Valley, I found it beneficial for my study to capture such experiences brought about by different people in their struggles to attain their food insecurity across the various districts of Zimbabwe. The information gathered from these two different study areas helped in my understanding of climate change and human mobility issues in communal areas. This eventually made me understand the nexus between colonial policies, contemporary development policies, and climate change adaptation in developing countries. Lastly, this gave me an insight into understanding how human mobility patterns have changed over time in rural Zimbabwe.

3.3 Research Methods

3.3.1 Data needs for this study

In answering the research question proposed in this study, the following data were collected to understand the connections between climatic and non-climatic factors in influencing contemporary human mobility patterns in Zimbabwe's communal areas. Firstly, I collected and analyzed data on all the major climatic events to hit the country's communal areas over the last two decades and beyond. Given that most communal farmers in Zimbabwe who rely on rain-fed agricultural production systems, I found it necessary to gather and review data on rainfall and temperature patterns, including other extreme climatic conditions experienced in Zimbabwe's communal areas about agricultural productivity over time. This climatic data set included rainfall and temperature patterns for Zimbabwe, Buhera and Chipinge districts which I obtained from the various departments such as the Zimbabwe Meteorological and Service Department (ZMSD), Agricultural Extension (Agritex) Department, and Climate Change Management Department under the Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement. Similar data was also collected from the research participants, including the elderly, given their long experiences living and farming in these poor regions. This group has knowledge about the major climatic disasters that happened in their areas over the years and also the impacts these disasters had on their livelihoods, crops, and livestock production. The obtained data was used to understand the relationship between climate change, food security (crop and livestock production), and how these factors had a bearing on human mobility decisions in Zimbabwe's communal areas.

Secondly, I collected data on crop and livestock production in Zimbabwe and the study areas. This data helped me determine (i) the food production levels, including the impacts of new pests and diseases brought about by climate change on crop and livestock production in rural Zimbabwe (ii) the nutritional status of the poor in communal areas and, (iii) the different strategies adopted by farmers to adapt to climate change-induced food insecurities in the communal areas. I assumed that human mobility decisions in rural communities are mostly a result of high food insecurity challenges brought about by climatic and non-climatic factors and the data I obtained enabled me to understand the impact of these complex factors on rural livelihoods, especially on poor households drive to achieve their food status. It was through collecting and analyzing such data that I was able to understand the different adaptation policies and strategies including human mobility used by communities including the government and NGOs to encourage rural people to adapt to climate change-induced food insecurities. To probe the connection between climatic and non-climatic factors in influencing human mobility decisions, I expanded the scope of my research and collected and analyzed data on multi-vulnerability factors of human mobility in Zimbabwe's communal areas. Similarly, it was worth noting the relationship that exists between the country's colonial history that led to the underdevelopment of rural areas and the influence it currently has on influencing contemporary human mobility decisions through working with other factors in communal areas.

Through data collection, I was able to understand the interplay of multi-vulnerability factors influencing human mobility patterns in Zimbabwe's communal areas. Furthermore, it was through analyzing such data that I was able to understand the different strategies used by rural people to cope with climate change-induced food insecurities including the effectiveness of human mobility as a climate change coping strategy. This also allowed me to learn how

human mobility patterns in Zimbabwe have changed over time. *Table 3.2* below shows the primary data sources collected from the interviews with various stakeholders during fieldwork.

National Level	District Level
<ul style="list-style-type: none"> • Various Departments under the Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement • Department of Research and Specialized Services (DRSS) • Zimbabwe National Statistics Offices • Food and Nutrition Council • Non-Governmental Organizations: International Organization for Migration (IOM); International Labor Organization (ILO); Food and Agricultural Organization (FAO); United Nations Development Organization (UNDP); World Food Program (WFP) 	<ul style="list-style-type: none"> • District Administrators' Office (DA) • Rural District Councils • Local Leaders: Village Heads • Department of Social Welfare • Department of Health and Child Care • Veterinary Services Department • Environmental Management Agency (EMA) • Local Agritex Officers • Non-Governmental Organizations: World Vision, GOAL Zimbabwe • Small-Scale Communal Farmers

Table 3.2 Primary sources of data

3.3.2 Documentary Evidence

I used various databases including books, journals, publications, reports, and archives from relevant government ministries, members of the NGOs and, other institutions to obtain data that I used for producing this publication. *Table 3.3* below shows some of the governmental departments including NGOs and institutions that provided data for this study.

Government Department/Institution	Documentary Evidence
Zimbabwe National Statistics (Zimstat)	Zimbabwe National Statistics Office (Zimstat) provided various statistical support for this study. Zimstat database and publications used in this study include population census, agriculture production, poverty, environmental, health, employment rates, and internal migration statistics.
Zimbabwe Meteorological Services Department (ZMSD)	The ZMSD database and publications provided information on rainfall and temperature historiography for Zimbabwe, Buhera, and Chipinge districts. The ZMSD provided me with data on some of the major climatic disasters that hit Zimbabwe and related study areas over the years. Also, I was informed about ZMSD operations including how climate forecasting and monitoring technologies are used to encourage farmers to adapt to climate change in the country.
Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement	The ministry provided me with information regarding national and district statistics on food crops, livestock production, and climate change. Through the Climate Change Department. I had access to various climate change policies implemented by the Government of Zimbabwe.
Other Institutions and Government Departments	The Zimbabwe Vulnerability Assessment Committee (ZimVac) and the Food Nutrition Council (FNC) provided me with the statistics on climate change and food security in communal areas. Through ZimVac publications I obtained information about the nature of rural livelihoods including their vulnerability and food and security situation. The Food Nutrition Council and the Ministry of Health provided me with district-specific data regarding rural communities' vulnerability to climate change, food security, and nutritional statistics.
Environmental Management Agency (EMA)	The Environmental Management Agency (EMA) provided me with information relating to rural livelihoods, food security, and natural resources with regard to climate change adaptation. At the district level, the study utilized natural resources utilization and management reports produced by EMA's field officers to gather district-specific data on environmental management concerning climate change and food security.
Non-Governmental Organizations (NGOs)	Various NGOs working on rural livelihoods programs across the world keep track of activities such as climatic disasters, agricultural production, food security issues, and out-migration patterns in their areas of operation. Through publications by Oxfam and various United Nations agencies that include, IOM, ILO, FAO, UNDP, and WFP, I obtained information about the various climate change adaptation programs aimed at promoting food security and community resilience across the country.

Table 3.3 Various institutions that provided data for this publication

3.3.3 Data Collection

The qualitative data were collected through four methods. Individual Household Interviews (IHHIs), Focus Group Discussions, Key Informant Interviews, and Direct Observation. A total of 48 IHHIs (Buhera=34, Chipinge =14) were conducted during the field study. I tried to strike a balance between men and women interviewees, but women dominated the household interviews in sending areas because most men had left for casual and seasonal jobs in Chipinge and other surrounding areas. These IHHIs in both study areas targeted the households that were well informed of the study areas. This included knowledge on the (i) history of the study area, (ii) socioeconomic conditions, (iii) climatic conditions and food security situation, (iv) people's livelihoods and community sufferings and, (v) the adaptation strategies used by people during the periods of climatic stress. All households participated in the IHHIs in Buhera were selected based on their residency and practicing communal farming in the area, and also having experienced two or three climatic disasters for the last 15 or so years. These IHHs also targeted potential migrants in Buhera who were planning to go and work in Chipinge as seasonal migrant farmworkers. These potential migrants were identified through village head registers with people who have registered to go and work in Chipinge.

Similarly, for the Chipinge IHHIs, I primarily recruited the households with more than one migrant either from Buhera or other marginal regions of Zimbabwe located in drier and hot regions (AERs IV-V). These migrants would be practicing small-scale communal farming or engage in farm casual labour in Chipinge over the last couple of years. All the IHHIs in Buhera and Chipinge were administered using the semi-structured interview guide with open-ended questions. With the semi-structured interviews, I was given enough time to prepare a set of questions and major themes to cover with the research participants (Scott & Garner,

2013:282). This was all necessary for making sure that I covered all the critical areas of my study during IHHIs (Scott & Garner, 2013: 283). Furthermore, through using semi-structured interviews, I was able to tap into the participants' experiences and options (Mikkelsen, 2005:171) regarding how climate change has affected communal farmers' livelihoods and their capacities to cope with their food insecurities. Open-ended questions allowed the research participants to respond to the questions in their own words rather than forcing them to choose from fixed responses.

All participants for IHHIs were invited through advertisement posters which were posted at all public places that included ward centers, business complexes, boreholes, and at the dip tanks where community members usually meet. Interested participants were asked to register their names with village heads and ward councillors. The final selection process of interviewees was concluded through consultations with the respectable local leaders that included the Councillor and Village Heads. This was a verification process that ensured participants were residency in the study areas. This criterion ensured that participants were drawn (i) from different villages within the ward, (ii) were from different household types, sizes, and incomes, and this was done to gather different views and perspectives with different people with different backgrounds on the subject under study (Scott & Garner, 2013:283).

Secondly, I conducted 7 Focus Group Discussions (Buhera = 6, Chipinge = 1) across the two districts. Unlike communal households in Buhera that closely settled together in village homesteads (Zimstat, 2019a:18), the largely spaced and often scattered Chipinge households found in large scale farming areas made it difficult for me to recruit different households together for focus group discussions, hence resulted in the low number. These focus group discussions consisted of 6 to 12 participants who shared the same beliefs, knowledge, and experiences on the topic under study (Laws *et al.*, 2013: 204). Out of these focus group

discussions, 6 of them were done in Buhera with various social groups that included the local leaders, the elderly, men and women, young men and women household heads. The last focus group discussion was done in Chipinge and it was a mixed group made up of the locals. In all discussions, men and women participated separately and this was done to get the best contributions from both social groups. It is common in Zimbabwe that most women suffer from cultural barriers that limit their participation in these forums when grouped with men (White, 1996:7; Laws *et al.*, 2013:226). The age of participants in focus group discussions was also another factor that was considered for one's participation. In certain circumstances, some focus group discussions were limited to youths only (young families below 40 years), and others to the elderly, with the age of 50 years old and above who have been in the ward since 1980. These age groups were purposefully chosen to include the respondents who lived in the study areas long enough to witness the major droughts and narrate the story from an observant point of view. Similarly, the traditional leaders were included in the focus group discussion as they are the custodians of the land in the study area and are well versed with cultural and indigenous knowledge systems in climate change and food security systems. The oral histories on traditional perspectives regarding climate change and community adaptation strategies were recorded during these sessions. Since the process of selecting participants for focus group discussions involved consultations with the local leaders (village heads and ward councillors), all community members who held positions of authority in the wards/villages were excluded in these interviews. This process was done to encourage open and free discussions among participants.

Furthermore, 29 key informant interviews were conducted at the district and national levels. These interviews used the format of semi-structured interviews with open-ended questions and recruited key personnel working in the relevant government ministries and

NGOs at both district and national levels. These government officials and field professionals were selected based on their expertise and experience of working on the issues of climate change and food security at policy or grassroots levels. As highlighted by Mikkelsen (2005:172), the experts are “outsiders with inside knowledge [and] are often valuable key informants who can answer questions about people's knowledge, attitudes, and practices besides their own”. The government officials interviewed include officials from the Ministry of Lands, Agriculture, Water, Climate, and Rural Resettlement. My invitation for key informant interviews was also extended to the officials from the Environmental Management Officers, Ministry of Social Welfare, the Meteorological Department, Veterinary Department, Ministry of Local Government and, the Department of Research and Specialists Services (DRSS). Similarly, the interviewed key NGOs personnel include those from the United Nations Development Program (UNDP), Food and Agriculture Organization (FAO), World Food Program (WFP), World Vision, GOAL Zimbabwe and, Oxfam. Through these key informant interviews, I was able to obtain information on rural livelihoods about socioeconomic, demographic and, climatic conditions, including climate change policies and farmers' perceptions.

Unlike the case of IHHIs and Focus Group Discussions, a proposed debriefing and informed consent form were sent to all key informant interview participants in advance either via email or by hand delivery. All key informants consented to this interview either verbally or through writing. Furthermore, all key informative interviews with experts were done at their respective offices at the days and times that suited their schedules. Lastly, I had an opportunity to directly observe the “objects, processes, relationships, or people” (Laws *et al.*, 2003:304) in research areas during field studies. This process involved observing the (i) socioeconomic and demographic conditions, (ii) food security and livelihood situation, (iii) ecological conditions and, (iv) the climate change adaptation strategies used by the different households in the study

areas. I noted everything I came across and these observations were necessary to “check whether what people say they do or think is reflected in the actual behavior...directly record what people do as distinct from they say they do” (Laws *et al.*, 2003: 304, 305).

The triangulation of data collection techniques, that is IHHIs, Focus Group Discussions, Key Informative Interviews, and Direct Observation helped me understand different views and perspectives shared by different groups of people regarding the topic (Laws *et al.*, 2003:280; Neuman, 2006:149). These groups of people include communal farmers residing in the study areas, migrants in the destination areas, government and NGO officials working with the communities at grassroots levels and, policymakers at the national level. The triangulation of data collection techniques also helped in improving the accuracy and trustworthiness of my studies because all aspects concerning the social phenomena under the study were understood from different angles (Laws *et al.*, 2003:281; Neuman, 2006:149). However, notable challenges of the triangulation method may include a mismatch of data arising from the different perspectives brought about by this diverse group of research participants (Laws *et al.*, 2003:28). In addressing this challenge, I thoroughly examined the data I collected from different research participants to make informed conclusions regarding the social phenomena under study (Laws *et al.*, 2003:28).

For all IHHIs and Focus Group Discussions, a proposed debriefing and informed consent form were read to the participants before the interview/focus group discussion process to ensure that they conformed to the purpose and demands of this research. As a precondition for rolling out these interviews, all participants had to verbally consent to the debriefing and informed consent form. All IHHIs and discussions were conducted at participants' respective homes, while Focus Group Discussions were conducted at ward centers. Also, a voice recorder was used to capture all the data and this was done after seeking verbal consent from the

participants. Similarly, all participants verbally consented to have their photos used/ published in this study. All terms and conditions of undertaking these research activities were guided and approved by the Saint Mary's University Research Ethics Board (SMU REB). To satisfy the confidentiality of the informants, the SMU REB required that no information be provided in the publication that could identify who the individuals are. Furthermore, I acquired approval from the Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement and Buhera and Chipinge's District Administrators Office to research communal areas.

3.4 Data Analysis

The data analysis process links the data gathered from the fieldwork with the study's research questions. (Laws et al., 2013: 253). This process requires breaking “the text down into the into the smallest units and reorganizes these units into relatable stories” (Yi, 2018, July 23). In my case, the data analysis process enabled me to analyze the different views brought about by research participants during fieldwork and making sense out of them. As for this study, the first stage involved transcribing all the interviews I recorded during the fieldwork into a Microsoft Word document. Although this process took much time, it enabled me to manage the large quantities of qualitative data that came from interviews. Unlike the deductive approach to qualitative data coding that emphasizes on a bottom-up approach of having pre-set coding schemes from the literature, the inductive qualitative data coding approach is built on bottom-up approaches that enabled me to derive my codes from the data I collected from fieldwork (Asher Consult, 2014; Blackstone, 2014:19; Yi, 2018, July 23).

With this method (inductive approach to qualitative data coding), I identified the major themes from these interviews and manually coded them using the different colour codes on

the Microsoft Office 2013 (Windows 10) tools bar. These themes reflected on (i) peoples' different motives to move, (ii) variety of climate adaptation strategies being employed by farmers at both household and community level, and (iii) the various human mobility destinations undertaken by households during the periods of climatic stress. By colour coding each theme on Microsoft Office, I was able to reflect back and forth on my themes by copying and pasting them without much difficulty. The major reason for copying and pasting my interview notes rather than cutting and pasting was to enable me to keep track of my notes and also to "retain a complete dataset in the original file" (Laws et al., 2013 266). Similarly, it made my data management much easier, as I was able to navigate through the categories, "detect consistent and overarching themes" (Yi, 2018, July 23), and also change them whenever I found it necessary. Having done all this, as highlighted by Blackstone (2014:19), I was able to identify similar patterns in my data and while working on a theory that helped me explain those patterns.

3.5 Conclusion

In this chapter, I demonstrated the research methodology and the data collection approaches and techniques used in understanding the various factors that shape the interaction between climate change and other human mobility drivers in Zimbabwe's communal areas. The research areas chosen for this study represented two distinct rural districts of Zimbabwe, which is Chipinge (AER I) and Buhera (AER V) with diverse agro-ecological conditions, climatic conditions, and colonial development histories. Over the years, Buhera district is ranked among the most vulnerable districts to droughts and food insecurity in Zimbabwe, while Chipinge has been regarded as a major migrant hotspot area due to its favourable climatic and

agroecological conditions. In understanding (i) the interplay of climatic and non-climatic factors on human mobility patterns, (ii) farmers perceived and actual alternatives to human mobility, (iii) changes in human mobility patterns over time, and (iv) climate change coping strategies that have worked and those leading to human mobility in communal areas, this study employed qualitative data collection techniques.

This involved using various data collection methods such as IHHIs (N=48), FGDs (N=7), and Key Informant Interviews (N=29), across the two districts and beyond. Research participants in IHHIs and FGDs verbally consented to participate in this study after a proposed debriefing and informed consent form was read to them. Similarly, key informants consented to the interview either verbally or through writing. The data collection process of this study also involved conducting archival research on various databases, journals, and publications from relevant government departments, NGOs, and other institutions. The information sought from these archival studies was limited to understanding the country's migration patterns, food security and nutrition, major climatic disasters, rural livelihoods, environmental issues, and major climate change and community resilience programs being implemented in rural areas of Zimbabwe. To ensure the accuracy and reliability of this study, I triangulated the data collection methods. Lastly, all the data collected were manually coded and analyzed using a computer program to reflect on the major views and themes brought about by the research participants during the field study.

Chapter 4: Human Mobility Patterns in Pre- and Post-Colonial Zimbabwe

4.1 Introduction

Human mobility is not a new phenomenon in Zimbabwe. Population movements can be traced from 10,000 years ago when the Bantu people from North Africa (known for their exceptional skills in iron mining) first invaded Zimbabwe and forced the local Mapungubwe people to move further southwards (Mlambo, 2010:53). Other forms of human mobility followed and this migration which happened in ancient Zimbabwe was necessitated by the rise and fall of different kingdoms and emperors such as the Munhumutapa, Rozvi, Ndebele and, Nguni, among others (Mlambo, 2010:53; Mafa *et al.*, 2015:35, 36). These events were occurred by political and economic will at claiming power and control over productive resources such as agricultural lands and livestock, and control over the ivory and gold trade in pre-colonial Zimbabwe (Mafa *et al.*, 2015:35). The wars that were fought during this period, and which led to several movements, show how the land was valued by the indigenous people in the pre-colonial period. In this case, the land provided people with the “natural resources that include water, vegetation, wildlife resources...among other things in order for them to be able to earn a sustainable livelihood” (Mafa *et al.*, 2015:35).

Consequently, these unending wars, that were motivated by the need to own the means of production and trade, saw the Shona speaking people moving to the Eastern parts of Zimbabwe (Mlambo, 2010:54; Mafa *et al.*, 2015:36). Similarly, the Ndebele people, the second most powerful clan in Zimbabwe, ended up settling in the South-Western parts of the country (Mlambo, 2010:54; Mafa *et al.*, 2015:36). Furthermore, the political landscape in neighbouring South Africa did not do justice to the prevailing sociopolitical and demographic challenges that

happened in ancient Zimbabwe as many tribes crossed the Limpopo River into the country during the Mfecane/Defaqane¹⁰ the period in South Africa (Mlambo, 2010:54).

However, the new invasion of Zimbabwe by the Europeans in 1890 changed the political, economic, and demographic landscape, including the human mobility patterns that existed before the country gaining its independence in 1980. These "Old" migration patterns that happened between 1890-1980 were motivated by the colonial land system that was enacted by European farmers, which encouraged land-grabbing for whites and introduced taxes in areas occupied by African farmers (Dzingirai *et al.*, 2015: 6). Europeans first arrived under the leadership of Cecil John Rhodes and his British South African Company (BSAC)¹¹ in 1890. The initial mission of the BSAC was to extract the large gold deposits but later resorted to commercial agriculture (Mlambo, 2010:55; Mafa *et al.*, 2015:36; Green, 2016:5). According to Mlambo (2010:56), the sudden shift to commercial agriculture was necessitated by the low gold deposits found in the country that were way below what they had envisioned. Rhodes and his BSAC introduced a number of land and agricultural policies (shown in *Table 4.1*). These policies played a key role in explaining the untold suffering that most African farmers went through under colonial rule.

¹⁰ Mfecane/ Defaqane was a period of political and demographic upheaval that happened in South Africa in the 1800s and saw a lot of people crossing the border into Zimbabwe (Mlambo, 2010:54). There is no agreed explanation of the reasons behind Mfecane/Defaqane among scholars. Some scholars attribute Mfecane/ Defaqane to be a political move aimed at decongesting the interior for serving the self-interest of Tshaka the Zulu and white occupation (Mlambo, 2010:54). Other scholars believe that Mfecane/Defaqane was a result of persistent droughts and environmental changes that led to high population displacements (Mlambo, 2010:54).

¹¹ “The British South Africa Company (BSAC) was a mercantile company incorporated on 29 October 1889 by a royal charter given by Lord Salisbury, the British prime minister, to Cecil Rhodes. The company was modeled on the East India Company and was expected to annex and then administer territory in south-central Africa, to act as a police force, and develop settlements for European settlers. The charter was initially granted for 25 years and was extended for another 10 in 1915” (Boddy-Evans, 2017, March 08)

Year	Land Act or Commission	Purpose	Result
1889	The Lippert Concession	White settlers to acquire land rights from Native Zimbabweans	British South African Company (BSAC) buys concession and uses it as a basis for land appropriation
1898	Native Reserves Order in Council	To create Native Reserves in the face of mass land appropriation by white settlers	Native reserves created haphazardly in infertile, low-rainfall potential areas and which subsequently become communal areas.
1930	Land apportionment Act	To separate land between the black and white people	The high-potential areas become white large-scale privately-owned farms.
1951	Native Land Husbandry Act	To enforce private ownership of land, destocking and conservation practices on (TTLs) black smallholders	Mass resistance to legislation fuelling nationalistic politics. The Act scrapped in 1961.
1965	Tribal Trust Land (TTL) Act	To change the name of Native Reserves and create trustees for the land	Because of population pressure, TTLs became degraded homelands.
1969	Land Tenure Act	To replace the Land Apportionment Act of 1930 and finally divide land 50% white and 50% black	Combined with the TTL Act, Rhodesia had the equivalent of apartheid

Table 4.1 Zimbabwe – History of Land Policy (1889–1979). Adapted from Mafa et al. (2015:38)

For the sake of this study, I will focus only on three major policies that had the most impact on human mobility: The Lippert Concession of 1889; The Native Reserves Order in Council of 1898; and most importantly, the Land Apportionment Act of 1930. below) that marginalized and displaced African farmers. Hence, in the first sections of this chapter, I argue that human mobility patterns in communal areas should be understood from the country’s colonial development and historical perspective. Thus, these colonial land policies provide us with an understanding of how the creation of communal areas by the colonial British Government in Zimbabwe led to massive displacements of communal farmers and the

underdevelopment of peasant agriculture. Not only did these policies explain the food production struggles that besieged African farmers, but they also assist in explaining the socioeconomic, political, and demographic challenges, including climate vulnerability challenges that followed these farmers from the pre- to post-colonial era in Zimbabwe. Similarly, in the second part of this chapter, I argue that the second wave of human mobility patterns that followed the country after independence in 1980 was a result of poor national and globally-induced economic development policies that failed to encourage adaptation in communal areas. These policies include the failed land reform and resettlement programs, Operation *Murambatsvina*, ESAP, including the economic sanctions that were imposed by the international community on Zimbabwe. Compounding to these challenges are the high population growth rates that have created serious socio-economic challenges in communal areas. Given this, my overall argument in this chapter is that an understanding of the country's historical-political context, including the impact of contemporary developmental challenges provides Zimbabwe with key lessons needed to meet its SDGs while adapting climate change policies that enable farmers to overcome their future socioeconomic challenges.

4.2 The Lippert Concession 1889

Zimbabwe's history shows that the first 700 Europeans gained entrance into the country using the Lippert Concession that was signed between Eduardo Lippert (European financier), and Lobengula (Zimbabwe's Chief) in 1889 (Crush & Tevera, 2010:55; Mafa *et al.*, 2015:38). Lippert took advantage of Lobengula's illiteracy by making him consent to several treaties that included him surrendering all the land ownership rights which were in the hands of Africans to the Europeans. As highlighted by Mudzengi (2008:379) cited in Mafa *et al.*, (2015:38), part of the

clauses in the Lippert Concession included granting Europeans "the sole and exclusive right, power and privilege for the full term of 100 years' layout, grant or lease, farms, township buildings, plots, and grazing areas; to impose and levy rents, licenses and taxes thereon and to get in; collect and receive the same for his benefit; to give and grant certificates for the occupation of any farms, township, building, plots and grazing areas". In return for these exclusive land ownership rights, Lobengula was offered 1,000 rifles, a gunboat, and a mere 100-pound monthly salary (Mafa *et al.*, 2015:38). The Lippert Concession marked the beginning of all the sufferings that Africans endured under the European regime from 1890 to 1980. As the years progressed, the number of Europeans coming into Zimbabwe grew year by year using the Lippert Treaty. It is approximated that the total number of Europeans coming into Zimbabwe increased from 11,000 to 23,000 between 1901-1911, and this was largely due to the favourable agricultural policies that were presented to them by Cecil Rhodes and his BSAC (Crush & Tevera, 2010:55). Furthermore, the BSAC used land and cheap African labour to entice more European farmers into Zimbabwe. European farmers were offered land at cheap prices, and were guaranteed cheap labour through the introduction of a contract labour system that compelled them to undertake farming in Zimbabwe (Crush & Tevera, 2010:56).

The favourable agricultural conditions offered by the BSAC led to a high influx of Europeans into Zimbabwe and this had a ripple effect on high land demands. Faced with these mounting land demands and the high influx of European farmers into the country, the BSAC resorted to forcibly evicting African farmers who were sitting and farming on prime agricultural land to pave the way for the new European farmers (Crush & Tevera, 2010:56). Studies show that approximately 100,000 African farmers who occupied 21 million hectares of land were forcibly evicted from their land and resettled on 1 million hectares of poor marginal land in Gwai and Shangani regions (Mafa *et al.*, 2015:38). On the other hand,

approximately 6,000 acres of farmland were allocated to a few white farmers at the expense of the poor Africans who had been owners of that land for generations (Mafa *et al.*, 2015:38). In making matters worse to the African farmers who were evicted from their prime agricultural lands and, also as a response for their unwillingness to work in white-owned business entities, the BSAC passed laws that entitled these poor farmers to pay hut taxes (Crush & Tevera, 2010:63, 64). With this new law, a fixed hut tax of 10 shillings per male adult was passed by the BSAC, and those households that failed to pay their taxes were forced to work in European owned farms, mines, and factories (Mafa *et al.*, 2015: 38, 51).

4.3 The Native Reserves Order in Council of 1898

In line with implementing the 1889 Lippert Concession reforms, the BSAC established the Native Reserves Order in Council in 1898 to confiscate prime agricultural land owned by African farmers in order to give it to white commercial farmers (Potts, 2010:79; Mafa *et al.*, 2015: 40). By this, the BSAC under the Native Reserves Order was empowered to create “native reserves” which it would use to resettle the landless African farmers (Potts, 2010:79; Mafa *et al.*, 2015: 40). Approximately half of the arable land that belonged to African farmers in Zimbabwe’s AER I, II and III was confiscated by the BSAC and redistributed to the Europeans (Potts, 2010:79; Mafa *et al.*, 2015: 40). This practice continued during the early 20th century with Africans forcibly evicted and displaced from their prime agricultural land every time the BSAC found it suitable, without consultations with the local people (Potts, 2010:80). The quality of land redistributed to Africans in native reserves was very poor, as it suffered from overcrowding, overgrazing, and poor agricultural ecological systems that failed to support both crop and livestock production (Potts, 2010:80).

The native reserves, as highlighted by Mafa *et al.* (2015) were “created haphazardly in infertile, low-rainfall potential areas and which subsequently become communal areas” (38). This clearly shows that the BSAC’s intentions behind the Native Reserves Order in Council Act were to impoverish African farmers through forcing them to abandon their lands and encouraging them to seek wage employment in European owned farms, mines, and factories (Mafa *et al.*, 2015: 40, 50). Apart from this, Europeans also employed other unorthodox means such as charging hut taxes, direct violence, and kidnappings to force Africans to work for them free of charge (Mafa *et al.*, 2015: 40, 50). However, despite the colonial violence, most African continued to resist, preferring to sell their agricultural produce and livestock as a way of meeting their tax obligations rather than work for the Europeans (Kramer, 1997:160).

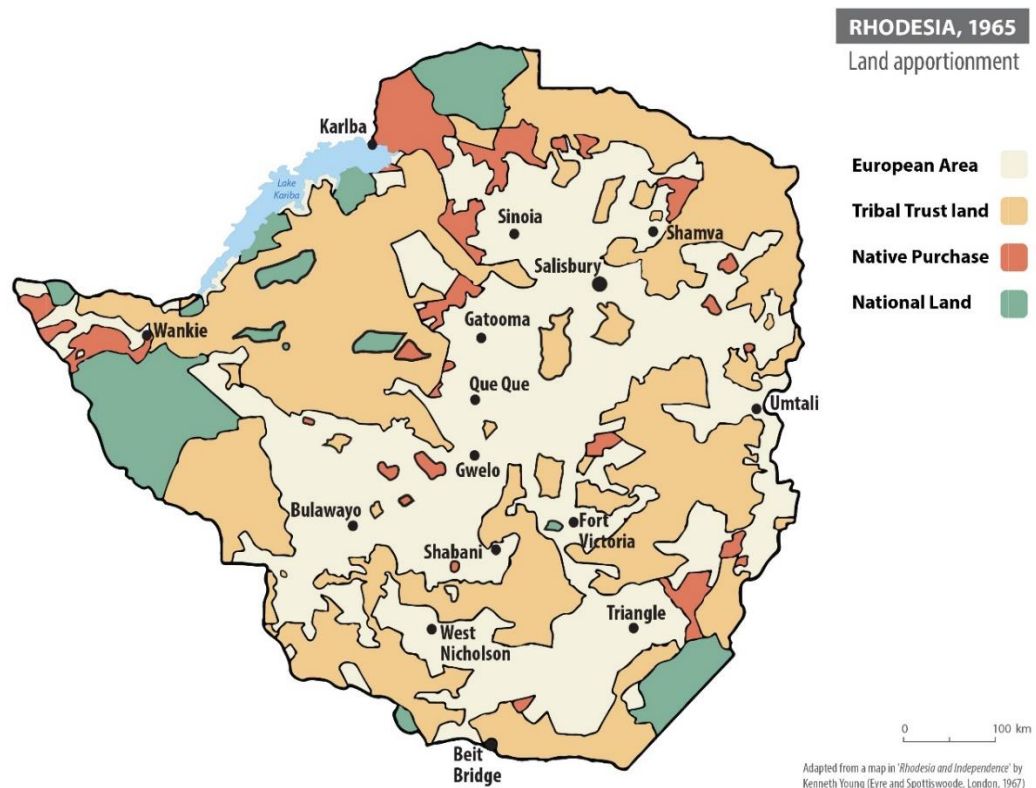


Fig 4.1 Rhodesia, 1965 Land Apportionment. Prepared by Saint Mary’s University Department of Geography and Environmental Studies Cartographer, with sources from Kenneth Young (Eyre and Spottiswoode, London, 1967).

Importantly, under this Act, the indigenous people were not allowed to buy land in areas close to white commercial farms (Mafa *et al.*, 2015: 40), but the only land in designated native purchase areas as shown in *Figure 4.1* above. These new policies did not go well with the local people, who rebelled against the colonial British Government, leading to the first *Chimurenga War* or Liberation War in 1896/7. Given their superiority and their use of advanced weapons, the Europeans won this battle, killing some of the high-profile Shona spiritual leaders namely *Nehanda* and *Kaguvi* during the process (Mafa *et al.*, 2015: 41). In summary, the Native Reserves Order in Council of 1898 was a strategy utilized by the Europeans to guard their self-interest of impoverishing African farmers through destroying their agricultural productivity, forcing them to work in white business enterprises. As a result, thousands of African farmers were displaced from their prime agricultural land, put into native reserves, and forced to work for the Europeans.

4.4 The Land Apportionment Act of 1930

The Land Apportionment Act of 1930 sums up all the colonial land policies that happened in colonial Zimbabwe and this led to serious socioeconomic consequences, in terms of African farmers' agricultural productivity in colonial Zimbabwe and beyond. Today, some of these socio-economic challenges led to the underdevelopment of communal areas in the colonial era, and are still being felt in modern Zimbabwe (Dodman & Mitlin, 2015: 226). This issue also came out in one of my interviews with an International NGO official who said that "the land-use policies have not changed since the colonial period as more and more African farmers continue to be trapped in marginal regions including flood plains of the Zambezi Valley and

other drier regions" (International NGO Official, 5). The Land Apportionment Act of 1930 apportioned land in colonial Zimbabwe using racial lines, with regard to European and African Reserves (Mafa *et al.*, 2015: 41). Similar to pioneer land policies in Zimbabwe, the Europeans were entitled to prime agricultural lands in AER I, II, and III, while African reserves were established in poor agroecological regions IV and V of Zimbabwe. The drafting of the Land Apportionment Act, including the identification and distribution of land under this policy, was never consulted with African farmers, despite them being the custodians of the land and representing the majority.

Similar to other land reform programs that happened before 1930, approximately 587,000 African farmers who represented a third of the total population were forcibly evicted from their prime agricultural land and placed on native reserves that were already congested and disconnected from the major economic hubs (Kramer, 1997:163; Mafa *et al.*, 2015: 41). Similar studies by the World Bank (2019:2) claim that the number of African farmers placed in native reserves which "generally had poorer-quality land" under the Land Apportionment Act was over 1.2 million people (2). About 3,000 Europeans, who constituted the minority group because of their population size, acquired and allocated to themselves 51% of the total arable land at the expense of African farmers who only got 29.7% of the land, and this was beside the Africans being the majority, as shown in *Table 4.2* below (Mafa *et al.*, 2015: 43; World Bank, 2019:2).

In making matters worse for Africans, the Land Apportionment Act took away all their land ownership and usage rights (Kramer, 1997: 163; Mafa *et al.*, 2015: 52). As a result of this policy, African farmers were only entitled to land allocated to them in native reserves and native purchase areas created by the BSAC (shown in *fig 4.1* above) (Palmer, 1977: 236; Kramer, 1997:163). The situation was even worse for those African farmers who enjoyed

favourable agricultural conditions on Crown Lands¹² before 1930. Unfortunately, the introduction of the Land Apportionment Act brought about new land policies that rescinded their rights to Crown Land, ordering them to relocate to lands in native reserves and native purchase areas (Kramer, 1997: 163; Mafa *et al.*, 2015: 52). However, in a few selected cases, African farmers who worked as labour tenants in white-owned farms were still permitted to farm in these Crown Lands (Palmer, 1977:242).

Designation	Area (ha)	% of Country
European Area	19, 890, 398	51.1
Native Reserves	8, 549, 996	12.0
Unassigned Area	7, 200, 850	18.5
Native Purchase Area	3, 020, 868	7.8
Forest Area	238, 972	0.6
Undetermined Area	35, 832	0.1
Total	38, 936, 916	100
Total for African Use	11, 570, 864	29.7

Table 4.2 Land Distributions during the Land Apportionment Act in Zimbabwe. Adapted from Mafa et al. (2015:42)

Studies show that the Land Apportionment Act was generally enacted to suppress peasant agriculture production, as there were no meaningful intentions by European farmers to fully utilize all the land they acquired. For example, half of the land (approximately 14 million acres of land) confiscated by the Europeans remained unused and unoccupied by 1925, and sadly that was long before the Land Apportionment Act of 1930 became effective in colonial Zimbabwe (Palmer, 1977:242). As time passed on, the socioeconomic and ecological conditions in native reserves deteriorated due to high populations, scarcity of farming land,

¹² Crown Land is the land that originally belongs to African farmers but now occupied by the new white commercial practice. Before the Land Apportionment Act of 1930, African farmers were only allowed to continue using that land through paying land usage rent to the new White Commercial Farmers (Mafa *et al.*, 2015:52)

and overgrazing. I also observed similar challenges during fieldwork, as overcrowding has led to serious environmental degradation issues in communal areas. Similarly, as highlighted by Shumba (2001) and Feresu (2017), overcrowding in communal areas has increased land degradation of land-based resources and wetlands due to soil erosion, and siltation of rivers that are needed to sustain irrigation systems, thus exacerbating the food insecurity and undermining livelihoods in these areas.

On the other hand, the BSAC enacted the Native Husbandry Act in 1951 to curb arising environmental challenges (Mafa *et al.*, 2015:45). Although evidence on the ground pointed towards high population growth and scarcity of land resources as the main sources of deteriorating conditions in native reserves, the BSAC believed that these environmental challenges were a result of poor land management and conservation practices in these areas (Mafa *et al.*, 2015:45). Through the Native Husbandry Act, the BSAC enacted the land management and conservation policies that aimed at (i) providing land ownership titles for African farmers, (ii) introducing permits on farming and livestock grazing land, (iii) capping the maximum number of livestock herd for each household, and (iv) drafting stringent measures on soil and water conservation practices (Mafa *et al.*, 2015:45). These policies suffered from a lack of community participation, and as a result, these policies failed to solve the socioeconomic, and ecological challenges in native reserves (Mafa *et al.*, 2015:45). Similarly, the other land policies that followed after the Land Apportionment Act of 1930 such as the Native Land Husbandry Act (1951) and the Tribal Trust Land (1965) were all meant to address land management and conservation challenges in communal areas through improving peasant farmers' land ownership and usage rights (Logan & Moseley, 2002:9; Mafa *et al.*, 2015:38). However, nothing changed in these marginal areas as population growth further exacerbated

land degradation resulting in lower yields per hectare among small scale farmers (Logan & Moseley, 2002:9; Mafa *et al.*, 2015:38)

4.5 The Impacts of Colonial Land Policies on African Farmers

Access to productive agricultural land is crucial for improving a households' livelihood, especially in its drive to improve food security status and incomes (Binswanger-Mkhize *et al.*, 2009). However, the opposite is also true if we refer to Zimbabwe's colonial history. From the discussion above, we can see that the colonial agricultural policies disenfranchised African farmers from productive agricultural land, and in the process resulted in high cases of poverty and population displacements into native reserves or communal areas. Thus, colonial land policies such as the Land Apportionment Act were skewed towards supporting white-owned large-scale agricultural production systems and played a pivotal role in undermining agricultural production in native reserves (World Bank, 2019: 2). This relationship was well elaborated by Shoppo's (1987) study (cited in Mafa *et al.*, 2015), which states that: "the agrarian structure of colonial Zimbabwe was its dualism, in which the state-supported the white commercial sector (both family farms and large company estates), which possessed the most fertile land with access to national and international markets, credit, technology, extension services, credit, manufactured inputs and consumer goods. The traditional or communal sector was assigned unproductive land, producing in the main for family consumption and local markets..." (53, 54).

This shows the nature of colonial land systems and their adverse effects on peasant agricultural production systems. These colonial land and agricultural policies did little justice in supporting or investing in agricultural systems owned by African farmers, in that European

farmers were heavily subsidized and funded, compared to African farmers. As stated by Palmer (1977), European farmers' operations "was heavily subsidized while African agriculture was utterly neglected... potential farmers were offered training on arrival, received Land Bank Loans to help establish themselves, and had a wide range of extension services" (243). Furthermore, in their quest to promote white settler farming, the BSAC established a Land Bank in 1912 to finance their operations where approximately 250,000 British pounds was allocated to support European farmers with farm equipment and machinery (Palmer, 1977: 231).

While the European farmers enjoyed this massive support from the government, no meaningful investments were channeled towards boosting agricultural productivity for African farmers. For example, in 1940, the BSAC government allocated only 14,000 British pounds to support agriculture development in native reserves, while a staggering 208,000 British pounds were provided to the minority of white farmers, (Palmer, 1977:244). Similarly, credit lines worth 100 million dollars were available to merely 6,000 European farmers in 1977, while 1 million dollars was given to approximately 600,000 African farmers (Mafa *et al.*, 2015:53). These credit lines enabled white commercial farmers to invest in sophisticated farm equipment and technologies such as tractors and chemical fertilizers, which boosted their agricultural productivity in return (Green, 2016:5).

Apart from the abundant financial support, European farmers were encouraged to grow cash crops such as tobacco and cotton by the government, and production of these crops was heavily subsidized with overseas markets which were already sourced for them (Palmer, 1977: 237). According to Schnurr (2019:8), "in this way African agricultural production was remade to prioritize the outsourcing of food production, through which Europe subsidized imported foods based on the subjugation of African Land and labour". Given this support,

European farmers became the top producers of cotton, barley, and tobacco between 1980 and 1985 in Zimbabwe (Rukuni *et al.*, 2006:579). Growing high-value cash crops improved the economic status of these farmers. On the other hand, African farmers were encouraged to grow low-value subsistence food crops that were meant for “household nutrition and risk aversion” such as maize, groundnuts, sweet potatoes and, pumpkins (Rukuni *et al.*, 2006:579). Studies also indicate that African farmers suffered from poor extension services (1:800 extension worker to farmer ratio), and this made it difficult for agricultural extension services to make significant progress in supporting agricultural growth in communal areas given the high number of farmers (approximately 60,000 farmers) who needed that technical assistance (Rukuni *et al.*, 2006: 580).

Given this background, it would be a miracle for African farmers to be productive under such difficult circumstances. The Europeans succeeded in their mandate of impoverishing African farmers as the native reserves depressed peasant farmers in colonial Zimbabwe (Kramer, 1997: 163; Mafa *et al.*, 2015:53). The poor agro-ecological conditions that characterized native reserves posed serious food production challenges for peasant agriculture production. (FAO, 2006; Potts, 2010; Brazier, 2015; Mafa *et al.*, 2015). These poor living conditions were also acknowledged by Ed Alvord, an American Missionary and Agriculturalist, who visited these areas in 1920 (Kramer, 1997: 163). According to various reports, Alvord was particularly shocked by the extreme poor climatic and ecological conditions, including the health hazards in native reserves that showed no signs of supporting crop production and livelihoods (Palmer, 1977: 238; Kramer, 1997: 163). Studies show that by 1943, there were around 38 native reserves in Zimbabwe and most of them were degraded due to high cases of soil erosion largely due to high population growth rates and overgrazing (Mafa *et al.*, 2015:44). Sadly, the number of African farmers living in these degraded areas had increased by 10%

between 1909 and 1922 (Kramer, 1997:162). As of 1950, approximately 180,000 Africans were living in these native reserves, and this was 50% above the carrying capacity of these areas (Green, 2016:9, 25). On top of that, native reserves suffered from high losses of biodiversity due to high cases of land degradation and fragmentation, including deforestation and soil erosion (Kramer, 1997:167; Green, 2016:25). All in all, these compounding factors crippled communal agricultural production in native reserves (Kramer, 1997:167; Green, 2016:25).

I also noticed similar challenges during my fieldwork, as the reminiscences of the colonial history that is leading to poor agricultural production are still being felt by most farmers. Similarly, I observed that the deplorable environmental and ecological conditions in these areas continue to be exacerbated by both droughts and anthropogenic activities that include high cases of deforestation to clear housing and farming land, brick moulding, poor farming methods, and overexploitation of natural resources. This was highlighted by one communal farmer during interviews, he said: "cutting down trees for clearing agricultural land, building homes, and firing brick kilns is common practice in this area especially among new families... most people have no choice as they need land and they end up cutting down trees for them to clear land for farming and building their homes... brick moulding is big business here and we use the trees as fuel for our brick baking ovens" (Buhera Male, 30s).

A tour of the study sites confirmed that the regions were once rich with wild fruit orchards but these tree species are now in a deplorable state or extinct due to droughts and overexploitation. A Buhera senior district official said: "The district is blessed with abundant wild fruits such as Baobab Fruits (Mauyu), the Snot Apple Fruit Matohwe, Bird Plum (Munyii), Groundnuts (Nzungu), Roundnuts (Nyimo), Wild Loquat Fruit (Mazhanje), Guavas, Chocolate Berry Fruit (Tsubvu) among others...the challenge is on droughts and outsiders who are coming as far as Bulawayo (Zimbabwe's Second Largest City) taking advantage of

poverty and hunger in the region to collect all the fruits at a giveaway price leaving our communities vulnerable to food insecurity” (Buhera, Senior District Official). Similarly, an International NGO Official said: “Lack of biodiversity in communal areas is due to the over-exploitation of wild fruits such as the Baobab Fruits for commercial purposes is high in this area and this is mainly due to hunger in the areas. Consequently, wild animals that also rely on those fruits are now suffering from the same fate (International NGO Official, 2).

From this discussion, it is clear that people are aware of the dangers associated with their actions but most of them have no choice, as they are forced to act that way due to the structural conditions which are beyond them that created the deplorable conditions that they are living in. Compounding low crop and livestock production levels are the haphazard land allocations in reserves that were isolated from the main economic hubs such as markets, rail and road systems that made life miserable for farmers (Palmer, 1977:237; Kramer, 1997: 163; Potts, 2010; Mafa *et al.*, 2015: 43). This isolation worked against African farmers as they endured high production and marketing costs for getting their products to markets (Kramer, 1997: 163; Mafa *et al.*, 2015). Coincidentally, these socioeconomic hardships in native reserves were exacerbated by the introduction of policies such as the Maize Control and the Cattle Levy Acts in 1931.¹³ Instead of boosting peasant production, these policies suppressed peasant agriculture (Kramer, 1992:161). Studies show that through the Maize Control and the Cattle Levy Acts, the BSAC closed all the grain and livestock output markets on African-owned farms to discourage production in these areas, while heavy grain subsidies were introduced on

¹³ The Maize Control and Cattle Levy Acts of 1931 are agricultural development policies introduced by the BSAC to suppress peasant agriculture in colonial Zimbabwe. Some of the stringent measures that came with these acts include (i) decrease on the production levels for most cereal crops grown by peasant farmers, (ii) lowering of market prices on maize and, (iii) poor remunerations and working conditions for indigenous people working for Europeans (Palmer, 1977: 241; Nyambara, 2000: 94).

exports from European farmers (Palmer, 1977: 237; Nyambara, 2000: 94, 95). As a consequence of this policy, African farmers who failed to break this politicized grain marketing system were left with no option but to engage in informal marketing systems for their grain (Palmer, 1977: 237; Nyambara, 2000: 94, 95).

Before the coming of the Europeans, Africans were master farmers in their own right (Palmer, 1977:243). These farmers applied their indigenous knowledge systems to grow their grain food crops, which they reserved for future consumption in underground granary facilities (Palmer, 1977:225). Several studies highlight that these farmers were even more knowledgeable on sustainable agricultural practices such as crop rotation and mixed farming (Kramer, 1997:159, 160). It was through engaging in best farming practices that these farmers managed to secure their food, as they allowed considerable time for their lands to substantially recharge their nutrients after long periods of extensive use (Kramer, 1997:159, 160). Instead of building on this success, Europeans discouraged peasant agriculture through policies such as the Land Apportionment Act that introduced high land user fees, livestock grazing fees, and hut taxes to African farmers (Palmer, 1977: 238; Kramer, 1997: 161; Maravanyika & Huijzenveld, 2010:20).

The full effects of these policies in native reserves forced most African farmers to trade their farming skills with wage labour in European owned business entities (Palmer, 1977: 238; Kramer, 1997: 161; Maravanyika & Huijzenveld, 2010:20; Dzingirai *et al.*, 2015:7; Green, 2016: 8; Schnurr, 2019:8). A significant number of African farmers migrated into new towns such as Harare and Bulawayo to work as wage labourers in European owned farms, mines, and factories for them to meet their tax obligations, as farming was no longer viable livelihood option (Palmer, 1977: 238; Kramer, 1997: 161; Maravanyika & Huijzenveld, 2010:20; Dzingirai *et al.*, 2015:7; Green, 2016:8). Studies show that the worsening socioeconomic conditions

during the colonial era saw approximately 80% of African incomes coming from wage labour (Palmer, 1977:243). Similarly, the Europeans made sure that they left no stone unturned in their drive to suppress agricultural production in native reserves as they passed laws that only allowed Africans to pay their taxes with labour (Palmer, 1977: 242; Green, 2016:7). Farming in Crown Land was now limited to 10 acres of farming land for Africans, and this was primarily done to eliminate them from competing with white farmers (Green, 2016:7). After 1960, the socioeconomic and political landscape in Zimbabwe was characterized by civil wars that saw rural areas being deemed unsafe for human habitation. As a result of these insurgencies, most farmers left their homes and migrated to South Africa to work in goldfields, or to major towns within Zimbabwe that offered them safer havens than countryside (Dzingirai *et al.*, 2015:7). The labour migrants engaged in circular migration, where they oscillated between their homes and working places (Dzingirai *et al.*, 2015:7).

Based on all these archival studies and the findings from my field study, it is undeniable that the political and economic factors that drove African farmers into communal lands posed serious socioeconomic and political consequences as they led to the underdevelopment of communal areas, and African farmers' drive to achieve their food security especially this period of climatic stress. The human mobility patterns that followed this were involuntary, circular, personal, and induced by the political or economic ambitions of the early European farmers (Dzingirai *et al.*, 2015:7), shown in *Table 4.3* below.

Period	Policy	Mobility Determinant(s)	Number of People Moved or Displaced
1889-1980	Lippert Concession (1889)	Political, Economic	<ul style="list-style-type: none"> ● 23,000 Europeans moved into Zimbabwe (Crush & Tevera, 2010:55) ● 100,000 African Farmers forcibly evicted from prime lands (Mafa <i>et al.</i>, 2015:38)
	Land Apportionment Act (1930)	Political, Economic	● 587,000 African Farmers moved into “Native Reserves” (Mafa <i>et al.</i> , 2015:41)
1980-1999	Growth with Equity Policy and the Transnational National Development Plan	Social, Economic	● A significant number of people in communal areas left for urban areas to fill the 150,000 jobs created by the government (Sibanda & Makwata, 2017:8; Potts, 2010:81)
	State Centered Market Based Land Reform Program	Social, Political, Economic	<ul style="list-style-type: none"> ● 71,000 African farmers resettled into new farming areas created by the government (Gonese <i>et al.</i>, 2002:12) ● 60,000 European farmers vacated the prime farming lands (IOM, 2010)
	State-Led Land Acquisition Program	Social, Political, Economic	● 11,000 African farmers resettled in new farming areas (Zimbabwe Institute, n.d)
	Economic Structural Adjustment Program (ESAP)	Economic	● Hundreds of thousands of urbanites displaced to rural areas and neighbouring countries (FAO, 2010; Crush <i>et al.</i> , 2015)
Post-2000	Fast Track Land Reform Program (FTLRP)	Social, Political, Economic	<ul style="list-style-type: none"> ● 80,000 - 200,000 farm workers displaced the FTLRP (Moyo & Chambati, 2013; United Nations General Assembly (UNGA), 2020) ● Over 4,000 white farmers violently displaced (Mukeredzi, 2019, July 31) ● 240,000 African households resettled in new farming areas under A1 and A2 farming modules (Moyo & Chambati, 2013:42)
	Economic Sanctions	Economic, Political	● 571,970 people left for neighbouring and far away countries due to economic hardships (Chereni & Bongo, 2018)
	Operation <i>Murambatsvina</i>	Political	● Over 700,000 urbanites displaced to various destinations across the country (Tibaijuka, 2005)

Table 4.3 Summary of major human mobility patterns in pre- and post-colonial Zimbabwe

4.6 Contemporary Human Mobility Patterns in Zimbabwe (1980-2000)

The “New” human mobility patterns that followed after independence, between 1980 and 2000, built on socio-economic and political challenges that happened in new Zimbabwe before its independence (Dzingirai *et al.*, 2015:8). These events and policies include the Government-led Land Reform and Resettlement programs between 1980-2000, and the Economic Structural Adjustment Program (ESAP) that came from the Bretton Woods Institutions in the early 1990s, among others. These programs and policies led to economic hardships, the collapse of the economy, high inflation and unemployment rates, and subsequently high population movements within Zimbabwe (Dzingirai *et al.*, 2015:8). Soon after independence, the plans by the new Zimbabwean Government led by Robert Mugabe was to establish an urban-based economic development model that encouraged high rural-urban migration patterns (Potts, 2010: 80).

These new economic developments changed the demographic patterns in Zimbabwe’s communal areas, as the new economic hubs created in urban areas attracted a large number of rural labour to towns. Similarly, a significant number of people living in communal areas were also displaced by various land reform and resettlement programs that were introduced by the Government of Zimbabwe during the early years of independence (Pazvakavambwa & Hungwe, 2009; Potts, 2010: 80; Zamchiya, 2011; Scoones *et al.*, 2011; Naidu & Benhura, 2015). These programs were primarily introduced to readdress land ownership imbalances that existed during the colonial era (Pazvakavambwa & Hungwe, 2009; Potts, 2010: 80; Zamchiya, 2011; Scoones *et al.*, 2011; Naidu & Benhura, 2015). From the mid-1990s to the late 2000s, the Government of Zimbabwe also implemented several economic and politically motivated development policies, such as the Economic Structural Adjustment Programs (ESAP),

Operation *Murambatsvina*, and the Fast Track Land Reform Program (Weaving, 1996; Pazvakavambwa & Hungwe, 2009; Potts, 2010; Zamchiya, 2011; Scoones *et al.*, 2011; Mburia, 2015; Naidu & Benhura, 2015; Chidhakwa & Chigumira, 2016; Thompson *et al.*, 2017), that led to serious underdevelopment and demographic challenges in communal areas. However, all these compounding multi-vulnerability factors together with climate change that has intensified in Zimbabwe since the beginning of the 21st century (Brown *et al.*, 2012; IPCC, 2014; GOZ, 2015; Brazier, 2015; Mambondiyani, 2015, August 27; Chikodzi *et al.*, 2013) have all contributed to livelihood stress among rural farmers leading to high human mobility cases in these areas.

The following sections of this chapter will present how these multi-vulnerability factors have led to serious social, economic, and ecological challenges among Zimbabwe's communal farmers, including their drive to out-migrate to the areas with better economic and agroecological conditions. The subsections are divided with regard to the following periods; human mobility patterns from (i) 1980- late 1990s, (ii) early to late 2000s, and (iii) the climate change era after 2000. These different subsections are a result of the different human mobility drivers that shaped Zimbabwe's human mobility patterns during its' post-colonial development process. Importantly, discussions in this section will also focus on climate change and adaptation policies in Zimbabwe, including their challenges in encouraging rural communities to adapt in situ.

4.6.1 Human Mobility 1980-Late 1990s

After inheriting a dual economy comprised of the wealthy white commercial farmers and poor marginalized communal farmers, the new Zimbabwean government was faced with an uphill

task of redressing the high economic inequalities and land imbalances that existed within the country (Sibanda & Makwata, 2017:4). The first task of the new Government of Zimbabwe was to introduce programs that promote socio-economic justice and equal distribution of productive resources, in particular land, and as a result, the government took an affirmative action approach that was directed towards empowering marginalized groups (Logan & Tevera, 2001: 102; Gonese *et al.*, 2002: 8; Sibanda & Makwata, 2017: 4). Through its desire to empower the majority of African peasant farmers who lived in marginal land that was disconnected from the major economic hubs, the Government of Zimbabwe initiated land resettlement and redistribution programs between 1980 and 1990 (Logan & Tevera, 2001: 114; Moyo & Chambati, 2013:30). According to Gonese *et al* (2002), “Land Reform in Zimbabwe seeks to address three key issues, namely: inequitable land distribution, insecurity of land tenure and unsustainable and sub-optimal use of land in communal areas and large-scale commercial farms respectively” (8). As highlighted by Moyo & Chambati (2013:30), Mafa *et al.* (2015:67), and the UNGA (2020; 13), redressing the land imbalances in Zimbabwe was to ensure that the indigenous people had equal access to land, and by granting them land rights, the locals were economically empowered and freed from the impacts of colonialism that subjected them to poverty. Given that at independence almost 40% of the country's arable land was in the hands of 5,000 white farmers, while 800,000 African farmers only had 54% of land in poor AERs (Logan & Tevera, 2001:114), the land reform programs in Zimbabwe were used as a poverty alleviation strategy meant to improve the economic status of poor rural households and reduced the high population to land ratios in rural areas (Gonese *et al.*, 2002: 9). The government achieved this through enacting land redistribution policies including those that encourage the effective use of idle land in white agricultural farming regions (Gonese *et al.*, 2002: 9).

As an action plan, the Zimbabwean Government implemented the State Centred Market Based Land Reform Program (1980-1996) and the Compulsory State-Led Land Acquisition Program (1996-1999) (Zimbabwe Institute, n.d) that resulted in several population movements within the country. This policy was also in line with The First Five-Year National Development Plan (FFYNDP) of 1986-1990 that emphasized the importance of economic growth and the improvement of rural livelihoods through land redistributions (Sibanda & Makwata, 2017:8,9). Studies show that under the State Centred Market Based Land Reform Program, the Government of Zimbabwe acquired approximately 3 million ha of land from the white commercial farmers and redistributed it to 71 000 African farmers (Gonese *et al.*, 2002: 12). The land resettlement program was done using the Willing Buyer and Willing Seller Agreement¹⁴ signed by the Zimbabwe and British Governments in the *Lancaster House Agreement* in 1979 (Gonese *et al.*, 2002:11; Pazvakavambwa & Hungwe, 2009; Sibanda & Makwata, 2017:5). This was a necessary move by the Government of Zimbabwe in its quest to empower the marginalized African farmers, as they lacked the necessary financial resources to purchase land in the new farming zones (Sibanda & Makwata, 2017:5). Interestingly, the same period also saw around 60,000 white farmers leaving Zimbabwe, as they could not contain the new political changes that were brought about by independence in the new Zimbabwe (IOM, 2010).

At this juncture, it is important to acknowledge the notable improvements that came from the various economic development policies that were introduced by the government in their drive to fight rural poverty. The major achievements that came during that time included:

¹⁴ “An assumption sometimes made for valuation purposes that the owner of the property concerned is willing to dispose of his interest therein and that there is at least one genuine purchaser in the market for that interest, whether or not such is the case at the date of valuation”

https://www.moneycontrol.com/glossary/property/willing-seller-willing-buyer_665.html

(i) the high increases in primary school enrollment rates (exceeded 100%) as a result of the government's universal free primary education program, and (ii) high employment opportunities that came from economic development policies that encouraged growth (Potts, 2010: 81; Sibanda & Makwata, 2017:8). However, studies also show that in terms of agricultural development and eradicating rural poverty, the State Centred Market Based Land Reform Program failed to live up to its expected mandate of eradicating rural poverty and empowering indigenous people, as it faced several challenges in its implementation stage (Zimbabwe Institute, n.d; Sibanda & Makwata, 2017:8). These challenges include (i) poor funding, as most program external donors were reluctant to release their funds, (ii) reluctance by the white commercial farmers to sell their productive land, as only 19% of the land bought by the government was of good quality, and (iii) lack of farming expertise among the new farmers hampered their agricultural productivity (Zimbabwe Institute, n.d; Sibanda & Makwata, 2017:5). The American Government ranked high among the international donors who defaulted their financial support towards this program (Gonese *et al.*, 2002: 11). As a consequence, the financial burden towards supporting the purchasing of the white-owned farms, resettlement of African farmers including the reconstruction program was left in the hands of few program donors who also found it challenging (Gonese *et al.*, 2002: 11). Also to blame for the failure of this land redistribution program was the 1986/87 drought that left the destruction of crops within the small scale and large-scale farming areas (Sibanda & Makwata, 2017:9). All these factors resulted in a 3% economic growth decline and a "subdued average productive sector growth of 1.7%" in Zimbabwe during that same period (Sibanda & Makwata, 2017:9).

On the other hand, the early years of independence the new Government of Zimbabwe also introduced new laws that encouraged people's movements in the country while removing

colonial policies that restricted people's movements within the country (Potts 2010: 79, 80). Before these new laws, Africans were confined to communal areas that were “besieged by a plethora of issues namely high stocking rates, sub-optimal climate, and deforestation and degradation” (Gadzirirayi *et al.*, 2007: 7). With all these compounding challenges in mind, the new Zimbabwean government took the central role in spearheading the country’s development process and introduced the Growth with Equity Policy (1981) and the Transnational National Development Plan (1982-90) (Sibanda & Makwata, 2017: 4, 7). The blueprints of these policy documents show that the government’s development agenda was premised on improving the economic conditions of marginalized groups (Sibanda & Makwata, 2017: 4, 7). The government intended to do this through the programs that supported economic development, and encouraged socioeconomic justice, equal distribution of productive resources, and job creation in state enterprises and manufacturing sectors (Logan & Tevera, 2001:103; Sibanda & Makwata, 2017: 4,7). Similarly, several institutions supported agricultural production in communal areas and these included the Agriculture Extension Services (Agritex) and the Agriculture Financing Cooperation. In addition, various agricultural marketing boards such as the Grain Marketing Board (GMB) and Cotton Marketing Board (CMB). These organizations were reoriented toward supporting communal agriculture (Rukuni *et al.*, 2006; Nyambara, 2001:257). Similarly, other government-supported programs encouraged infrastructure development in rural areas through the construction of road networks and the establishment of markets in areas easily accessible to farmers (Nyambara, 2001:257)

With these economic development policies and programs, major successes were noted in public and private sector employment, as over 150,000 new jobs were created within the first 10 years of Zimbabwe’s independence (Sibanda & Makwata, 2017:8; Potts, 2010:81). The national urban growth rate grew by 5% between 1982 and 1992, while in major cities such as

Harare and Bulawayo the average annual urban growth rate grew to 6.2% and 4.1% respectively (Potts, 2010: 82). These high rural-urban population movements were a result of (i) the wage differentials that existed between urban and rural areas, (ii) the better job opportunities that were found in urban areas, and (iii) the scarcity of agricultural land in communal areas due to high population growth rates (Potts, 2010:81).

In terms of agricultural development, these policies were seen as strategies to achieve sustainable food security in communal areas (FAO, 2003b). These strategies by the new Government of Zimbabwe paid off, as major successes were noted in communal agriculture. For the first time in Zimbabwean history, small-scale farmers ranked among the highest grain and maize suppliers in the country between 1980-1985 (FAO, 2003b; Rukuni *et al.*, 2006:578). *Table 4.4* below shows that food production levels in smallholder farms grew significantly within the first 10 years of gaining independence, with maize average production increasing from 42% in 1980 to 60% in 1995, outclassing large scale commercial farmers (Rukuni *et al.*, 2006:578).

Crop	1980-85			1990-95			1996-2000		
	AP (000t)	% Contribution		AP (000t)	% Contribution		AP (000t)	% Contribution	
		LSC	SH		LSC	SH		LSC	SH
Maize	1,854	58	42	1,532	42	58	1,978	40	60
Groundnut	71	14	86	73	20	82	121	6	94
Sorghum	85	27	73	72	28	72	100	16	84
Cotton	184	73	27	171	44	56	284	30	70
Burley Tobacco	4	80	20	11	64	36	7	43	57

Key: AP=Average Production, LSC=Large Scale Commercial Farmers, and SH=Smallholder Farmers

Table 4.4 Cropping Production Trends by Sector. Adapted from Rukuni et al. (2006:579)

Furthermore, the early government policies that encouraged growth with equity saw most African farmers venturing into growing commercial crops such as tobacco and cotton, which had predominantly been grown by white farmers in colonial Zimbabwe (Rukuni *et al.*, 2006:579). These successes in the small-scale agricultural sector can be attributed to the large influx of people into communal areas soon after independence. These included people who had fled and deserted their lands during the guerilla war into towns. Interestingly, areas such as Gokwe witnessed an influx of new immigrants from the Masvingo and Mberengwa areas who had fled the poor lands due to droughts and overcrowding (Nyambara, 2001:258; Dzingirai *et al.*, 2015).

These migrants were attracted by the newly discovered farming areas of Gokwe that were under a period of cotton boom soon after independence (Nyambara, 2001:258). On the other hand, the high population movements into these new farming areas created several socio-economic and ecological challenges in these areas. Most of the environmental degradations that happened in those areas show that these new farmers cared little about the environmental degradation, as their immediate goal was in fulfilling their economic needs without considering the environment (Logan & Moseley, 2002:3). This is true if we look at how the exodus of people into these vulnerable areas led to high demand for the scarce arable land, hence forcing most immigrants to settle and farm on land that was primarily reserved for livestock grazing (Nyambara, 2001:258; Logan & Moseley, 2002:10). For example, the influx of migrants including the ever-increasing populations in Buhera and Chipinge areas have seen most people settling in areas reserved for livestock grazing, wetlands, and watershed leading to high land degradation cases. As highlighted by a Buhera farmer, Buhera government official, and an International NGO official who said:

“What do you expect us to do? All the mainland farming areas are full due to the high land demands brought about by young families and other people moving into our district. These new groups of farmers need land to grow their crops and building their houses. Furthermore, the soils in the mainland are now exhausted and unfertile and the only option available for us is to utilize the river banks along the Save River where we are guaranteed better yields,” (Bubera Male, 40s).

“Due to high numbers of people are settling in land reserved for livestock grazing, most animals are now feeding on wetlands leaving them bare and exposing them to compaction...as a result capillary action is high on these wetlands (salt rising to the ground), thus affecting vegetation and causing drying up of these wetlands... most wetlands now scarce because of this...wetlands are disappearing due to excessive dry spells and hopes of people securing their food securing status lingers on exploiting these wetlands ” (Bubera, Government Official, 4).

“There are patterns of people from the drier regions of the country moving into the Chipinge farming lands. These people are mostly irregular migrants with no access to proper housing and farming land and they end up establishing their homes and agricultural lands in watershed and grazing areas. This has led to serious land degradation issues in these areas” (International NGO Official, 1).

This shows us that lack of farming land on the mainland coupled with lack of sustainable agriculture incomes has been the major reason for the high influx of people into streambank cultivation. For the majority of these farmers practicing stream bank cultivation, it is now a matter of life or death for them as lack of fertile farming land on the mainland, coupled with series of droughts, has put pressure on these families to source food for their growing families.

Sadly, such mal-agriculture practices that include stream bank cultivation and exploitation of wetlands in communal areas are negatively affecting the food security status of

the whole district and country at large. According to an International NGO official I interviewed, “the poor farming methods such as stream bank cultivation have led to high cases erosion and siltation of rivers in communal areas (International NGO Official, 2). I observed that most of the perennial rivers especially in Buhera district have dried up due to high cases of runoff, erosion and siltation, save for a few that have less water which is inadequate to support irrigation gardens and livestock production. These challenges were brought about by Buhera and Chipinge government officials, and one farmer during some of my interviews who said:

“We used to have many perennial rivers and dams, but now the district is left with only 4 perennial rivers. All inland rivers have been silted and are now dry (all this attributed to climate change e.g. flash floods leading to siltation of rivers) but there is also an element of human attributes on these factors...all these activities have reduced the amount of water needed to sustain community nutrition gardens in the district leading to high cases of food insecurity” (Buhera, Government Official, 4).

“There is too much water lost in water bodies (dams) through the siltation of dams and rivers and this is affecting irrigation schemes across the district leading to high cases of food insecurity (Chipinge, Senior District Official).

“We utilize these rivers during the dry season for irrigation our gardens and these gardens provided us with our nutrition supplements, thus act as cover during the food deficit gap in districts. We are no longer able to do that now as our gardens are going down due to lack of water in these rivers” (Buhera Female, 35).

There is no doubt that these anthropogenic activities have created several livelihood and food security challenges for most people during drought periods. In most cases communal farmers make use of community nutrition gardens to supplement their food deficit gaps that have been created by droughts, and this has been a common climate change adaptation strategy that has been adopted for most households over the years. However, the lack of irrigation water due to siltation of rivers in rural areas has threatened the existence of these nutritional gardens, thus leading to high cases of food insecurity in these marginal areas.

The last population movements that happened between 1980 and the late 1990s in Zimbabwe were motivated by government-led Compulsory State-Led Acquisition Program (1996-1999). This was the second land reform and resettlement program that was introduced by the Government of Zimbabwe soon after independence and it was triggered by the failure of the State Centred Market Based Land Reform Program in the early 1980s (Zimbabwe Institute, n.d). Unlike, the previous program that was marked by peace and approved by both governments (Zimbabwe and British Governments), the Compulsory State-Led Acquisition Program was characterized by land occupations (Zimbabwe Institute, n.d). The Zimbabwean government took advantage of the Land Acquisition Act of 1992 that coincided with the expiring of the Lancaster House Agreement of 1979 to evict white commercial farmers from their land without compensation (Gonese *et al.*, 2002:15; Zimbabwe Institute, n.d). Under this program, the Government of Zimbabwe acquired approximately 5 million ha of land which was used to resettle 110,000 households across the country using these various schemes/models (Zimbabwe Institute, n.d). Similarly, however, the Compulsory State-Led Acquisition Program also failed to improve farmer productivity and food security in rural Zimbabwe, as the program lacked comprehensive policies that supported agricultural productivity in communal areas (Zimbabwe Institute, n.d).

4.6.2 Human Mobility Patterns in the ESAP Era (1991-1995)

The beginning of 1991 saw the Government of Zimbabwe making some controversial and high-risk economic decisions that led to the abandonment of the state-led development model to a market-driven economy, starting with an Economic Structural Adjustment Program (ESAP) (Weaving, 1996; Sibanda & Makwata, 2017:11). Interestingly, ESAP came as part of the conditionalities attached to aid given to Zimbabwe by the Bretton Wood Institutions (World Bank and International Monetary Fund (IMF) in the early 1990s (Weaving, 1996). Some of the economic conditions prescribed by the Bretton Woods Institutions to Zimbabwe included: (i) obligation by the government to undertake market reforms, (ii) devaluation on the Zimbabwe dollar, (iii) liberalization of the foreign currency allocation system, and (iv) reduction in government spending and borrowings (Logan & Tevera, 2001:108). Thus, ESAP policies “sought to transform Zimbabwe's tightly controlled economic system to a more open, market-driven economy. The restructuring sought to promote higher growth and to reduce poverty and unemployment by (1) reducing fiscal and parastatal deficits and instituting prudent monetary policy; (2) liberalizing trade policies and the foreign exchange system; (3) carrying out domestic deregulation; and (4) establishing social safety net and training programs for vulnerable groups. The focus was on the formal sector as the engine of growth” (Weaving, 1996:1)

The stringent economic measures brought about by ESAP in Zimbabwe affected the performance and functioning of key production and social service sectors of the economy such as the agriculture, health, education, and industrial sectors. In the agriculture sector, ESAP forced the government to cut basic food and agricultural subsidies (Weaving, 1996; Crush *et*

al., 2015; UNDP, 2017). These measures included reduced government subsidies in maize mealie meal (Zimbabwe's staple food), bread, sugar, and cooking oil prices, among others that were crucial for ensuring food security and nutritional diets for the poor. For example, the year to year inflation rates soared from 18.6% to 24% between 1990 and 1991 in Zimbabwe (Logan & Tevera, 2001:124). Given this inflation, the prices of food and other basic commodities also responded similarly, resulting in high food insufficient levels across the country (Potts,2010:85). For example, the price for a 5-kilogram (kg) bag of maize meal increased from Z\$5.82 to Z\$8.83 in 1992, and by the end of 1998, the same bag was costing Z\$29.7 (Logan & Tevera, 2001:124). Similarly, the price of other basic commodities such as bread, cooking oil also increased in the same manner within the same period (Logan & Tevera, 2001:124).

Similarly, several institutions and industries that failed to withstand the demands of operating in a free market economy resorted to downsizing their workforces, and subsequent closure of shops (Weaving, 1996, 2012; Crush *et al.*, 2015; UNDP, 2017). The unemployment rate stood at 54% in 1991 (Logan & Tevera, 2001:123) and this resulted in lower-wage differentials between rural and urban areas (Potts, 2010, 86). Those urban workers who failed to cope with these economic challenges reverted to their rural homes, thus resulting in overcrowding and overuse of natural resources such as land. Furthermore, the ESAP era coupled with the economic sanctions imposed on Zimbabwe by developed countries for human rights violations also witnessed a high exodus of the skilled labour force that include agricultural extension officers and active age group crucial for the labour-intensive agricultural sector from Zimbabwe to other countries (Potts, 2010).

4.6.2.1 *The Effects of ESAP on Small Scale Agriculture in Zimbabwe*

As highlighted by Schnurr (2019:8), “until the turn of the millennium most agricultural development initiatives in Africa were tied to the World Bank-led structural adjustment programs and poverty reduction papers, which sought to minimize the continent’s heavy reliance on agriculture by investing in the production and export of manufactured goods. Under ESAP, “the expectation was that inputs and outputs would be traded efficiently in their respective markets and that the private actors would organize production effectively... while some of the relevant studies report positive relationships between institutional changes (liberalization) and agriculture development, there is also significant evidence of negative outcomes in terms of agricultural output growth and farmer’s incomes, which in some instances have led to deagrarianization” (Goto & Douangneune, 2017:486)”. The Government of Zimbabwe was expected to deregulate Agricultural Marketing in the country and introduce private traders in the marketing of agricultural inputs and products across the country (Matanda & Jeche, 1998:215; FAO, 2003b). As a consequence, these trade liberalization policies did more harm than good in terms of boosting agriculture production in Zimbabwe’s communal areas due to its commercial orientation approach (Matanda & Jeche, 1998:215).

This shows us that agricultural development in Africa was determined by outsiders with a lack of understanding on smallholder farming system (Schnurr, 2019:14), as policies such as trade liberalization took away all the agricultural support and subsidies that benefited small scale farmers that included agricultural financing and a subsidized input supply system (Weaving, 1996; Matanda & Jeche, 1998:215; Rukuni *et al.*, 2006; Potts, 2010:85). The new marketing system brought about by ESAP, small scale farmers lost all the government support as there were required to fund their operations through bank loans (Rukuni *et al.*, 2006).

Moreover, these commercial banks required collateral security from these poor farmers for them to secure credit lines, which most communal farmers did not have (Rukuni *et al.*, 2006).

This was a major concern for most communal farmers, and three farmers said:

"We are trapped here (Bubera), we have no incomes or irrigation investments to support ourselves, our fields are producing nothing due to these droughts, we cannot obtain financial assistance from banks and microfinance organizations due to lack of collateral securities unless we can get assistance from the government or donors in the form of irrigation materials and solar-powered water pumps to support our crops, we would not be able to have a decent life here" (Bubera Male, 55).

"Our country is poor and the economic situation has not been pleasing for some time and for us farmers the situation is even worse, so which bank or microfinance organization do you think is able to provide a loan to a poor widow like me? my crop production history is very poor due to these droughts and I have no livestock or assets to present to them as collateral security, so why should I risk my life going to jail over defaulting in paying these loans" (Bubera Female, 40).

"We remember the community being told to form some Village Savings and Lending Group by one donor organization. The idea was to link these groups microfinance organizations so that we could obtain loans and purchase solar-powered water pumps for our irrigation gardens, however, everything fell apart when the microfinance organization discovered that we had no assets to provide as collateral security" (Focus Group Discussions, Bubera Female, 35).

Under such circumstances, poor agricultural investment in irrigation facilities due to poverty, lack of access to credit lines by farmers, and economic hardships among the rural people have made the fight against food insecurity impossible, hence increasing the imperative of rural

people to move in search of better livelihoods. This shows that apart from the high cost of borrowing, there is a lack of formally recognized collateral among the new farmers to access these loans (Zimstat, 2019a:17). Furthermore, most of these commercial banks were located in major towns, areas that were beyond the reach of many small-scale farmers (Rukuni *et al.*, 2006).

The market liberalization system eliminated government subsidies for small-scale farmers and also caused high inflation which increased in prices for agricultural production costs (FAO, 2003b). The situation was even worse in rural areas because the removal of government subsidies on food and agricultural inputs increased both rural poverty, as the prices for these products went up beyond the reach of many rural poor (Potts, 2010:85). Surveys conducted during the ESAP era showed that the total costs of fertilizers, hybrid seeds, agricultural equipment, and stock feeds, among others increased beyond the reach of many farmers, including in areas occupied by large-scale commercial farmers across the country (Logan & Tevera, 2001:127; FAO, 2003b; Potts, 2010:85; FAO, 2010). For example, prices for compound and nitrogen fertilizers went up by 14.8% and 12.2% respectively during the 1992 growing season (Logan & Tevera, 2001:127). These high increases in agricultural inputs were necessitated by private traders who took advantage of the scarcity of these products on the local market due to the closure of several manufacturing industries in Zimbabwe (FAO, 2010).

Similarly, the new marketing system saw the elimination of government-controlled agricultural marketing boards that included the Grain Marketing Board (GMB), Cotton Marketing Board (CMB), Dairy Marketing Board (DMB), and the Cold Storage Commission (CSC) in the purchasing and selling of grain, cotton, dairy, and meat products across the country (Logan & Tevera, 2001:117; Matanda & Jeché, 1998: 211). The new changes in the agriculture marketing system led to (i) the free flow of all agricultural products within the

economy, (ii) introduction of new private players in the marketing of agriculture products across the country, (iii) the abolishment of agricultural price controls, and (iv) deregularization of all costs associated with the transportation and distribution of agricultural inputs and products across the country (Matanda & Jeché, 1998: 211; FAO, 2003b; Logan & Tevera, 2001:116). This was all done by the government to create a competitive agricultural production system that focussed on improving exports while controlling government overspendings (Logan & Tevera, 2001:117; FAO, 2003b). The new developments posed several socioeconomic challenges for most small-scale farmers, as these agriculture marketing boards played a pivotal role in controlling the flow of agricultural products across the country (Rukuni *et al.*, 2006). The old marketing system benefited communal farmers by supplying them with credit lines and agricultural inputs, and technical support in the form of agricultural extension services when necessary (Rukuni *et al.*, 2006; Logan & Tevera, 2001:116).

Instead of boosting small scale agriculture in communal areas, trade liberalization policies posed serious challenges, especially on illiterate rural small-scale farmers who not only had to endure the hardships of establishing new relationships with the new private traders but also needed to understand the economic dynamics concerning marketing their products (Logan & Tevera, 2001:117). Unfortunately, most farmers have been falling victim to these unscrupulous middlemen (most of them not registered), who often take advantage of these farmers' desperation situation, such as cash shortages and hunger to propose very low prices, which are way below the regulated market prices for these agricultural products. This was highlighted by one key district official in Buhera, he said that "middlemen and agents are impoverishing farmers here, for example, they are buying people's small grains at very low prices or barter traded with their overpriced commodities...in several cases, a bucket of groundnut is being exchanged with a bar of soap or sold at less than USD\$2. This is daylight

robbery and in the end, our farmers continue to be subjected to poverty (Buhera, Senior District Official). In most cases, these farmers ended up selling their agricultural products at lower prices or risk losing their products to rising unscrupulous traders, due to poor negotiation skills (Logan & Tevera, 2001:117). The elimination of marketing boards also disadvantaged many farmers who lacked the financial capacity to compete with well-resourced large-scale farmers with high technical farming equipment (Logan & Tevera, 2001:117). Not only did these policies favoured large-scale farmers who enjoyed economies of scale, but they also widened the existing “regional and class differences in productivity and income” (Logan & Tevera, 2001:117). This was evident from the successes enjoyed in the large-scale agricultural sector during the ESAP era that showed the sector’s national output contribution increasing from 68% to 90% between 1989 and 1993 (Logan & Tevera, 2001:120).

While significant progress was noted in the large-scale agricultural sector, the national agricultural output in the communal agricultural farming sector, as shown in *Table 4.5* below, fell from 32% to 19% within that same period 1989-1993 (Logan & Tevera, 2001:120).

Crop	Pre-ESAP mean yield (1985-90) (kg/ha)	ESAP mean yield (1991-95) (kg/ha)	% change between the two periods	% change per annum
Maize	1 277.25	1 105.00	-13.49	-1.93
Sorghum	546.75	514.33	-5.93	-0.85
Cotton Seed	794.25	662.67	-16.57	-2.37
Groundnuts	477.25	445.00	-0.73	-0.06
Sunflower	498.25	426.67	-13.96	-1.99
Soya Beans	825.00	667.00	-19.15	-2.74

Table 4.5 Crop Yields and Productivity Changes in Communal Areas. Adapted from Logan & Tevera (2001:123)

The major reasons for these differences between the large- and small-scale agricultural production during the ESAP era are attributed to inadequate financial and technological

support, including limited marketing opportunities for small-scale farmers (Logan & Tevera, 2001:118).

Soon after its independence, Zimbabwe made socioeconomic progress that the country's skilled public-sector workforce delivered affordable education, health, and agricultural extension services to the indigenous people across the country (Potts, 2010:81). In addition, rural people had the freedom to diversify their agriculture incomes in the country's modernized industries and to move to the cities that offered them decent jobs and better incomes compared to their farm incomes (Potts, 2010:80). However, ESAP led to serious economic challenges that contributed to the meltdown of the economy and an increase in both urban and rural poverty (Chidhakwa & Chigumira, 2016:26; Kararach *et al.*, 2016:12). Of particular interest, communal agriculture suffered from the high exodus of key agricultural personnel. These personnel included officials from the Ministry of Agriculture, especially the Agricultural and Technical and Extension Services (Agritex) and Agriculture Researchers and Specialists. These key agricultural specialists played a pivotal role in providing technical and scientific research support that helped farmers practice sustainable and profitable agricultural production (Matanda & Jeche, 1998: 214). However, the prevailing economic hardships coupled with better incomes offered by Zimbabwe's neighbouring countries, such as South Africa, Botswana, Zambia, and Mozambique (FAO, 2010; Crush *et al.*, 2015). These countries tempted the skilled labor force to relocate with better livelihoods.

On another note, the economic challenges including high unemployment rates, rising inflation, and food shortages limited peoples' livelihood options, thus overburdening the small-scale farming sector in Zimbabwe. The population increase in communal areas increased pressure and competition for the scarce land resources and created several conflicts and disputes among various social and economic groups (Nyambara, 2001:269). Those who were

lucky to be allocated pieces of land in communal areas often suffered from economies of scale as their farm sizes were too small for viable agricultural production (Nyambara, 2001:268)

In addition to the above challenges brought about by ESAP, poor agricultural production in communal areas is also blamed on climatic factors that are working in conjunction with economic factors in making life unbearable in communal areas. At the peak of economic recessions after the introduction of ESAP, Zimbabwe faced one of the deadliest droughts in its history in 1991-92 (Logan & Tevera, 2001:127; Nangombe, 2014). According to reports, the 1991-92 drought seriously affected both maize crop and livestock productions in the country, with maize crop production falling by 35-75% of 1990-91 production levels, while approximately 1 million herds of cattle (25% of the national herd) was lost (Logan & Tevera, 2001:127; Nangombe, 2014). Even worse, all these misfortunes happened mostly in poor AERs IV and V that housed many communal farmers, resulting in serious food shortages (Logan & Tevera, 2001:126).

It was clear from the onset that the ESAP was doomed to fail in addressing rural poverty. Firstly, these economic policies targeted people employed in formal urban jobs, while paying little attention to the majority of workers working in the agricultural informal sector in rural areas (Weaving, 1996). Secondly, the elimination of food and agricultural subsidies exposed communal farmers to high food and agricultural inputs that made it impossible for them to be more productive than before. Thirdly, the elimination of agricultural marketing boards destabilized the input supply and agricultural output marketing systems for most farmers. As a result of the malfunctioning agricultural marketing system, communal farmers were exposed to high input prices and low output prices by unscrupulous businessmen who acted as middlemen. Fourthly, the high exodus of agriculture personnel with key technical and

scientific agriculture expertise due to economic hardship in Zimbabwe left a huge dent in communal agriculture production in the country.

Lastly, the high unemployment rates in urban areas brought about by ESAP overburdened the already constrained production resources in communal areas. As well, the introduction of user fees on social services (education and health services) came at a period when the country was experiencing massive retrenchments, thus subjecting more people to poverty, as most children dropped out of school or failed to access health services due to lack of user fees (Thomson *et al.*, 2017:11). All these socioeconomic and environmental challenges brought about by ESAP, including those brought about by climate change, made it difficult for policymakers to tackle the roots of poverty, a development that increased vulnerability of rural communities to modern-day climate change (World Bank, 2010a:91).

As a consequence of these economic policies, the human mobility patterns that arose from the early-mid 1990s in Zimbabwe were primarily shaped by the harsh economic environment brought about by the ESAP. This all led to the underperformance of the small-scale agriculture sector resulting in serious food insecurities that compelled people to move (Potts, 2010:86). Furthermore, with all these socioeconomic challenges facing Zimbabwe, the UNDP (cited in Dodman and Mitlin, 2015:226) gave the country zero chances in its drive to mitigate and adapt to climate change.

4.7 Post 2000 Human Mobility Patterns in Zimbabwe

The other major human mobility patterns to happen within Zimbabwe after the ESAP era were politically, economically, and climatically driven. These population movements were driven by the government's Fast Track Land Reform Program (FTLRP) in 2000, economic

sanctions imposed on Zimbabwe by the international community in 2001, Operation *Murambatsvina* in 2005, and worsening socio-economic conditions due to extreme climatic conditions since the turn of the 21st century (discussed in Chapter 5). In the following subsections, I will examine the impact of each government-led program on human mobility in the country.

4.7.1 The Fast Track Land Reform Program (FTLRP) and Human Mobility

Similar to the Compulsory State-Led Acquisition Program that happened in the 1990s in Zimbabwe, that was characterized by violent grabbing of white-owned farms, the FTLRP (also known as the Land Revolution or the 3rd *Chimurenga* War), was meant to forcefully grab all the land that had remained in the hands of white commercial farmers (Pazvakavambwa and Hungwe, 2009; Potts, 2010, Hammar *et al.*, 2010; Zamchiya, 2011). After the 2004 Land Acquisition Act sailed through parliament, the government of Zimbabwe had the obligation to acquire the remaining land owned by white commercial farmers without compensation or any fear of legal challenges (Zamchiya, 2011). Through using violence, the government managed to transfer 7.6 million out of the remaining 11.7 million ha of land that belonged to white commercial farmers in Zimbabwe under the FTLRP (Pazvakavambwa and Hungwe, 2009; Potts, 2010, Hammar *et al.*, 2010; Zamchiya, 2011; Naidu & Benhura, 2015).

Recent reports claim that the total number of displaced white commercial farmers during the FTLRP were more than 4,000 farmers (Mukeredzi, 2019, July 31). Land beneficiaries under the FTLRP were allocated land using the A1 (small scale farming areas) and A2 (medium to large scale farms) farming models (Pazvakavambwa and Hungwe, 2009; Zamchiya, 2011). The challenges in counting and reporting the accurate number of internal

displacements around the world are more prominent in developing countries where there are no established mechanisms and systems of collecting and tabulating data on internal population movements (Brown, 2007:17; Gemenne, 2011:46). In Zimbabwe, the lack of a comprehensive database on commercial farm workers also made it difficult for studies to come up with actual figures of farmworkers displaced by the FTLRP (Potts, 2010, 97). However, this challenge did not deter most scholars from analyzing the human displacements that happened during the FTLRP. Reports indicate that the number of displaced farm workers in white commercial farms ranged from 180,000- 200,000 (Potts (2010:97). Other reports also indicate that out of the total 2 million people that were negatively affected by FTLRP, 500,000 of them were farm workers (Naidu and Benhura, 2015:155). These varying figures are largely due to lack of coordination and a universal agreed framework, and fears are that different agencies end up producing figures without empirical basis, just to address their interests or for appeasing their funders (Gemenne, 2011:46).

Nevertheless, the majority of commercial farm workers displaced by the FTLRP were foreign migrant workers from Malawi, Mozambique, and Zambia (Potts, 2010: 97, 98). These farmworkers were excluded from the land beneficiary lists because of their allegiance to white commercial farmers and their nationality (Potts, 2010: 97, 98). Due to the violent nature of the FTLRP, these workers were dismissed without compensation, which resulted in serious financial challenges for them. Given the limited options they had, poor farmworkers ended up resettling in marginal and slum areas which were further destroyed by Operation *Murambatsvina* in 2005 (Potts, 2010:99, 100). Their vulnerability was also exacerbated by lack of social capital (no strong social networks) which could have gone a long way in helping them with relocating options and offsetting their transport and resettlement costs (Potts, 2010:99, 100). Similarly, the land redistribution program in Zimbabwe failed to consider other vulnerable groups of

people such as women and people living with disabilities. For example, from the approximately 12,000 who benefited from the FTLRP as A1 farmers in Manicaland, only 2,190 women were considered (Chingarande *et al.*, 2020:13). Similarly, a total of 97 women were considered as A2 farmers from the 1,058 farmers who benefited under this program in Manicaland Province (Chingarande *et al.*, 2020:13). These groups, especially those living with disabilities, were considered incapacitated and unproductive, hence less than 1% of them benefited from this land redistribution exercise (GOZ, 2015:54).

Apart from the social exclusion of many marginal groups, several studies show that the FTLRP failed to live to its mandate. Given the failure of the previous two land reform and resettlement programs, there were high hopes among the general public that the FTLRP was going to address the land inequalities in Zimbabwe (Moyo & Chambati, 2013:30). Although the government managed to redistribute 3 million hectares of prime land owned by white commercial farmers to African households by 2009 (Moyo & Chambati, 2013:42), the FTLRP failed straight from its planning to the implementation stage. The program diverted from its major objectives and instead, the FTLRP was heavily manipulated by the political cronies who ended up transferring large tracts of land among themselves (Logan & Tevera, 2001:121; Pazvakavambwa & Hungwe, 2009; Zamchiya, 2011; Scoones *et al.*, 2011).

Furthermore, the corrupt politicians who also happened to have strong connections acquired multiple farms that were against the "one man, one farm" principle set by the government (Pazvakavambwa & Hungwe, 2009; Zamchiya, 2011; Scoones *et al.*, 2011). As an illustration of how political leaders manipulated these land reform programs for their benefit, reports indicate that the former President of Zimbabwe, Robert Mugabe, had 21 farms for himself, that he was accused of leasing to European farmers (News 24, 2018, March 06). In most cases, these political cronies even acquired large pieces of land with an average higher

land per capita per farmer ratio of 1:5000ha, which was even more than the 1:2000 ha enjoyed by the white commercial farmers (1:2000 ha) to themselves (Pazvakavambwa & Hungwe, 2009; Zamchiya, 2011; Scoones *et al.*, 2011).

Studies show that as of 2009, approximately 13 million hectares of prime land was transferred from white commercial farmers to 240,000 African households in Zimbabwe (Moyo & Chambati, 2013:42). However, other studies by UNGA (2020:14) claim that 160,000 families were resettled under these programs in Zimbabwe. “Although statistics are contested, it is widely accepted that 90% of the land formerly owned by white farmers were transferred to landless Zimbabweans, with war veterans being treated with special favour” (UNGA, 2020; 14). By basing on Moyo & Chambati (2013) study, a simple math calculation shows that the land reform programs managed to repossess land owned by white farmers by 2009, with an 87% success rate. However, with special regard in understanding contemporary human mobility patterns in Zimbabwe's communal areas, more important questions would be: (i) To what extent did the Land Reform and Resettlement Programs managed to correct the land imbalances that existed in Zimbabwe before independence, (ii) To what extent did these programs managed to empower the poor indigenous farmer, and (iii) How far did programs went in addressing the socio-economic and demographic challenges in Zimbabwe's communal areas? The simple answer to all these questions would be zero.

However, from my interviews with farmers who benefited from the FTLPR in Chipinge, I noticed that the majority of them were politically connected, and a few of them took advantage of these programs and the favourable agro-ecological and climatic conditions in this area to improve their economic well-being. One migrant farmer said, "the reasons for my departure from Sabi Valley are the persistent droughts that caused acute food shortages. In Sabi Valley, we used to have one good harvest after every five years due to persistent

droughts but in Chipinge I now have abundant grain and plenty of food to eat unlike in Sabi Valley where I had challenges in securing food...all this would not have been possible if the government had not come up with the land reform program" (Sabi Valley Migrant Farmer in Chipinge, Male, 50s). As highlighted by Logan & Tevera (2001), "agricultural reform in the sense of empowering peasant communities is handicapped, therefore, by the same set of political economy alliances that pervade the rest of the economy" (121). In this regard, it is undeniable that the politicization of the land reform program in Zimbabwe failed to address the existing land imbalances that existed at independence and can be blamed for exacerbating the contemporary human mobility issues in communal areas. The FTLRP worsened the existing land ownership inequalities in Zimbabwe. Similarly, the land reform programs were haphazardly conducted without a clear plan on supporting new farmers with post-resettlement technical and financial support, which hampered production in these new areas (UNGA, 2020:14). This all led to the abandonment of large tracts of land "or managed by absent farmers through the so-called 'cell phone farmers' - while the existing tools, irrigation facilities, and infrastructures slowly deteriorated" (UNGA, 2020; 14).

It is clear from the implementation of these land reform programs, especially the Compulsory State-Led Acquisition Program and the FTLRP, that land reform programs were used by the government as a way of transferring land ownership and usage rights from one powerful group (dominated by whites), to another (comprised of elite black farmers with political connection). Also, the land redistribution and resettlement programs in Zimbabwe have worsened the environmental degradation in both communal and new areas (Mafa *et al.*, 2015:101). The most notable environmental degradation challenges stem from over-exploitation of natural resources such as soils, trees, wildlife, and minerals in resettlement areas by new farmers (Mafa *et al.*, 2015:101). According to the Government of Zimbabwe,

approximately 8 million hectares of forest land was cleared for cropping and tobacco curing soon after the FTLRP in Zimbabwe (GOZ, 2015:23). The deteriorating environmental situations are high in tobacco grown areas where trees are cut down to cure tobacco, making fencing poles, and furniture (Zembe *et al.*, 2014). The cutting of trees has left a big dent on the environment and Zimbabwe's drive of reducing its carbon emissions as agreed in the UNFCCC Kyoto Protocol and Paris Agreement (GOZ, 2015:23). Studies have also shown that overgrazing is rife in communal and newly resettled areas resulting in high cases of soil erosion Zembe *et al.*, 2014).

The failure of these programs has hampered the agricultural production capacity of most small-scale communal farmers in Zimbabwe, who have long been subjected to poor living and agro-ecological conditions (Potts, 2010; Brazier, 2015; GOZ:2015; UNDP, 2017). Studies show that instead of redressing the land imbalances and promoting peasant agriculture productivity in communal areas of the country, the land reform programs impoverished these rural people (Mafa *et al.*, 2015:105). According to the Zimbabwe Country Analysis Report of 2014 (cited in Dzingirai *et al.*, 2015:8) and the study by Dodman and Mitlin (2015: 226), the land reforms in Zimbabwe resulted in the meltdown of the economy, fall of the country's GDP which plunged by more than half, rising of inflation rates, high unemployment rates, and the underperformance of industries. In making matters worse, agricultural exports, which forms the backbone of the country's economy dropped from 39% in 2001 to 14% in 2006, thus compromising the country's food security, as the country was forced to import food to feed its people (Mudzonga & Chigwada, 2009). Furthermore, these programs increased climate change vulnerability among small-scale farmers that are making their adaptation difficult in communal areas.

4.7.2 Economic Sanctions, Food Security and Human Mobility in Zimbabwe

The second wave of human mobility in the post-2000 era was impelled by the economic sanctions imposed by the international community on Zimbabwe. Economic sanctions came in 2001 and that was soon after the FTLRP that was marred by deaths and allegations of human rights abuses by the government in Zimbabwe (Mbanje & Mahuku, 2011; Nyoni, 2019). These economic sanctions came under names such as "Targeted Sanctions" and the "Zimbabwe Democracy and Economic Recovery Act (ZIDERA)" and were drafted by the European Union, and other countries such as Australia, Canada and the United States (The Herald Newspaper, 2019, October 11; Nyoni, 2019; World Bank 2019). These economic sanctions aimed to force the government to address the deteriorating governance and human rights issues through targeting politicians including high-profile members and businesses aligned to the ruling party ZANU-PF (Mbanje & Mahuku, 2011; Nyoni, 2019; UNGA, 2020). However, economic sanctions led to serious socio-economic challenges by negatively impacting all sectors of the economy and caused the suffering of ordinary people. As highlighted by Holmes (2008) cited in Nyoni (2019:2), "economic sanctions cause a significant disruption of food, pharmaceuticals and sanitation supplies, it jeopardizes the quality of food and availability of cleaning water, it severely interferes the functioning of basic health and education systems and undermines the right to work".

In the manufacturing and processing, economic sanctions resulted in (i) limited access to international credit lines and foreign direct investment, (ii) foreign currency shortages crucial for the importation of raw materials, and this led to high job losses in the country (Mbanje & Mahuku, 2011). Similarly, forex shortages contributed to the soaring and defaulting in payments of the county's credit beyond its capacity, and this resulted in other challenges related

to importing of drugs, pharmaceuticals, food and other essential goods that are needed to sustain the country (Mbanje & Mahuku, 2011; UNGA, 2020). According to Trading Economics (n.d) “external debt in Zimbabwe averaged 6690.40 USD Million from 1999 until 2018, reaching an all-time high of 13,134 USD Million in 2018” (para.1). Similar studies by the World Bank (2017) highlight that the country is in serious debt crisis owing multilateral organizations such as the Africa Development Bank (USD 619 million), World Bank (USD1.2 Billion), and European Investment Bank (USD 221 million) and this has limited its borrowing and investment capacities. Compounding to these debt challenges, the country’s “total reserves¹⁵ to external debt diminished from 13.7% in 2010 to just under 5% in 2016... the vulnerability of both Zimbabwe financial sector and its liquidity position to changes in the international markets increased significantly between 2010 and 2015" (Chereni & Bongo, 2018:17). Furthermore, the underperformance of key sectors of the economy saw the country's GDP growth rate going down from 14% in 2012 to 0,7% in 2016 (World Bank, 2017:1). Given this debt crisis, it is going to be impossible for the country to acquire meaningful funding for economic development as it continues to be a "high-risk country", thus limiting its access to credit lines, foreign direct investments, and international markets (Herald Newspaper, 2019, October 11).

4.7.2.1 The Impacts of Economic Sanctions on Agricultural Production and Food Security

Economic sanctions have severely affected the performance of the agricultural sector which had held great promise since independence; thereby once being called "the breadbasket of

¹⁵ Reserves are external assets that the government controls and its monetary authority can mobilize these to settle imbalances, in order to achieve exchange-related and other desirable interventions" (Chereni & Bongo, 2018:16)

Africa" (Mbanje & Mahuku, 2011). All this changed, as economic sanctions have paralyzed funding and investments in this sector, contributing to low crop production yields, poverty, and food insecurity. As highlighted in the Herald Newspaper (2019, October 11:2.27) "the unilateral sanctions brought a myriad of challenges to the agriculture sector. Specifically, they have made it extremely difficult to access agriculture lines of credit and attract investment. As highlighted by an international NGO official:

"Communal farmers are directly experiencing the impacts of economic sanctions and political instability that have created these macroeconomic challenges happening in the country. All international credit lines have been closed for financial institutions and the multicurrency regime has made it impossible for most banks to risk their monies through availing loans to farmers who they know lack the capacities of paying back such loans. Similarly, most people who obtained loans in the United States Dollar era some years back are now required to pay back that loan using the useless local RTGS/Bond at a rate of USD1: 1 Bond Notes and with such policies no bank is willing to throw its investments under the bridge" (International NGO Official, 2).

This resulted in a lack of development, rehabilitation, modernization, and deterioration of production and marketing infrastructure, ultimately reducing productivity and access to markets." (The Herald, 2019, October 11:2.27). *Table 4.6* below highlights the negative impacts of the sanctions on agricultural development in Zimbabwe.

Furthermore, the post-2000 coincided with several macroeconomic challenges that include hyperinflationary rates, declining of the GDP, and a high decrease in agricultural production (UNGA, 2020). For example, limited access to agricultural resources due to lack of funding, the failure of the land reform, and the droughts saw maize grain production falling-

Economic Sanction	Observed Impact(s) on Agricultural Development
Limited Investments in Agriculture Mechanization	<ul style="list-style-type: none"> ● A decline in the number of functioning tractors. For example, the number declined from 14,000 before sanctions to 6,000 against the national requirement of 40,000. The combined capacity declined from 3,000 units to 130 functional units against a national requirement of 400 units ● Functional irrigation schemes declined from 275,000 ha to less than 206,000 due to lack of repair, maintenance, rehabilitation and modernization ● Underutilization and development of potential irrigation water bodies. More than 1,000 small, medium and large water bodies remain underutilized due to lack of investments in irrigation development, rehabilitation, and modernization
Limited access to credit lines	<ul style="list-style-type: none"> ● Manufacturing and Processing Industries failing to retool and invest in modern plant and machinery. This is hampering the production of agricultural inputs such as fertilizers and seeds and has resulted in high costs for agricultural inputs ● Local agricultural-based financial institutions charged high-interest rates by offshore banks because of the "high risk" tag placed on the country. Similarly, international organizations and donors are reluctant to partner with local financial institutions.
Limited investments in Climate Smart Agriculture and Climate Forecasting Technologies	<ul style="list-style-type: none"> ● Poor investments in Climate Smart Agriculture and Early Warning Systems (EWS) have increased the vulnerability of farmers to climate change. For example, the underdeveloped EWS made the country fail to predict disasters and risks such as Cyclone Idai which hit the Eastern parts of the country
Limited access to international markets	<ul style="list-style-type: none"> ● The severe decline of the horticulture industry and products on the international market e.g. sugar, beef, and cotton. Contribution of the horticultural industries to the Gross Domestic Product (GDP) fell from about 4.5% before sanctions to the current 0.8% ● Short supply of Vaccines affected animal health in Zimbabwe Relevant departments fail to control diseases like foot and mouth and this, in turn, affects the country's beef export
Lack of funding from the International community	<ul style="list-style-type: none"> ● Termination of several agricultural development programs across the country. These include; (i) The Danish International Development Agency's (DANIDA) in 1998 worth USD15.4 million, (ii) The International Fund for Agricultural Development (IFAD) funding to various programs worth US\$215,700 (the National Agricultural Extension and Research Project, Agricultural Credit and Export Promotion Project, Small Dry Areas Resource Management Project, South Eastern Dry Areas Project, Smallholder Irrigation Support Programme). Eventually, all these projects were stopped after the imposition of sanctions.

Table 4.6 Impacts of sanctions on the agricultural sector. Table constructed using data adapted from The Herald Newspaper (2019, October 11)

by almost 60%, which is from 2.7 million tonnes to 600,000 tonnes between 1981 and 2006 (Mbanje & Mahuku, 2011). These shortages and increase in prices of agricultural inputs have hampered agricultural production and exacerbated the food insecurity situation in communal areas. These inputs that include certified seeds, fertilizers, and chemicals have become difficult to access due to consistent shortages and poor marketing prices (Mutami, 2015; UNDP,2017).

A discussion with one senior government official in the district attributed these shortages and high prices of fertilizers to economic sanctions. He said, “sanctions are hitting people hard here in communal. Firstly, the country needs to import these inputs, especially fertilizer and we do not have that foreign currency. Secondly, you cannot get fertilizer on the official market and people have resorted to buying from the black market which demands payments in forex of which people do not have. Lastly, the price of fertilizer and seeds are ever increasing in this volatile economic environment brought up by sanctions" (Chipinge, Senior Government Official). Another villager also said, "these economic hardships brought about by Western countries are making farming unsustainable. We are enduring poor harvest as we cannot afford the cost of fertilizers and certified seeds. These input expenses are beyond the reach of most households. The situation is worsened by the low output marketing price offered by the Grain Marketing Board which makes it impossible to invest in next years' inputs or even securing our food and send our children to school" (Buhera Male, 40s).

Recent studies show that agriculture production is on the downward trend with the sector recording a 5% decline in 2015, and a further decline of 3.6% in 2016 (World Bank, 2017:2). These trends have seen maize production going down by 37% between 2015 and 2016 (World Bank, 2017:2) and these changes are the result of both economic and climatic factors, as the withdrawal of EUs development assistance funding on agricultural inputs such as fertilizers, seeds and pesticides have made most communal farmers having limited access on

these key means of production (Mbanje & Mahuku, 2011). As a result of poor agricultural production, extreme poverty cases have been increasing (from 2.3 million people to 2.8 million between 2014 and 2016) (World Bank, 2017:2).

In addition, the availability of inputs to farmers in communal areas has been hampered by poor government investments in rural infrastructure such as roads. One government official in the district highlighted this challenge;

"Our road systems in the district need attention, especially the poor road network between Murambinda and Birchnough Bridge. We continue facing numerous challenges from hired transporters who deny ferrying fertilizers, seeds, and food aid commodities to people in Birchnough Area due to the poor road network. The government and farmers are forced to pay large sums to produce deliveries, as delivery trucks ended up taking longer routes. Furthermore, poor road and transport systems have limited people's movements and access to markets. The central government is aware of this, but I don't blame them since their hands are also tied-up because of the economic sanctions that have been affecting us since the early 2000s" (Bubera, Government Official, 1).

I also faced similar challenges during field studies, as the poor nature of the Murambinda-Birchnough Road forced me to take a longer route (approximately 300km more) rather than the shorter Murambinda-Birchnough road that stretches for about 100km. In this case, economic challenges which have led to dilapidated road network systems and floods which have contributed to destruction on rural infrastructure can be blamed for short term loss of productivity and incomes (UNDP, 2017:48

Current studies show that over half of the county's total population of 14 million is food insecure due to their poor living conditions (UNGA, 2020). The socio-economic challenges have crippled the agricultural sector, increased the number of food aid beneficiaries,

and have changed the country's status from being a food exporter to being a food importer due to increased cases of food insecurity over the years (UNGA, 2020). Unfortunately, food security challenges are happening at a time when the country is overwhelmed with episodes of hyperinflation and increases in food and basic goods prices, high exchange rates, poor remunerations for workers, cash shortages, and limited livelihoods options (Chereni & Bongo, 2018; UNGA, 2020). For example, in 2019, there were some significant indicators of economic downfalls in the country: (i) the average inflation rate between November and December 2019 was 500%, (ii) proportion of household's expenditure on food rose by 68% in 2019 compared to 55% in 2018 (iii) over 81.5% of households suffered from cash shortages, and (iv) cereal prices were increased by 78.8% (UNGA, 2020). These high food prices, coupled with high inflation rates and stagnant salaries limited the accessibility of food for several households (UNGA, 2020).

The macroeconomic challenges experienced in the country coupled with droughts have also led to high increases in food prices which are beyond most communal farmers, thus affecting their food security situation. Studies show that drought and cyclones continue to worsen the food security situation in communal areas leading to spikes in food prices (UNDP, 2017; World Bank, 2019, October 13). My interviews with two farmers and a senior district official in Buhera showed that inflation of food prices have led to serious food security issues in communal areas. They said;

"We are living in desperate times here, first the rains are not coming and you have no food to give the children, secondly the food prices are going up every day, and you sometimes you wonder if this life is worth living for" (Buhera Female, 40s).

“The ever-rising prices of and basic food commodities like maize meal, sugar and cooking oil have made life impossible for us widows, we have resigned to our fate as we have no one to take care of us” (Bubera Female, 40s).

“The food prices are too high for people in this district. The prices are even higher during drought season and people rely on grain brought by traders from other regions such as from Chikomba and Chipinge districts. Those households with no money to buy this grain are forced to barter a few bags of grain with their beast... this is a worrisome situation, as traders take advantage of the hunger situation to rob our farmers. Furthermore, households with limited options have resorted to either practicing streambank cultivation or engage in labour migration as a last option to survive” (Bubera, Senior District Official).

Furthermore, the high food prices are associated with food security, which in the long-term leads to serious nutrition and health issues within communities (UNDP,2017:76). The growth monitoring data for children aged between 0-59 months I collected in Buhera shows that the district is overwhelmed with high cases of severe underweight and stunting averaging 988 and 600 cases per year respectively, over the last 6 years (Ministry of Health official, personal communication, July 03, 2019). Similarly, as highlighted above, the high expenditures in food generally translate to reduced dietary diversity and disposal of productive assets such as livestock in communal areas (UNDP,2017:76). In this case, rural households are forced to sell their cattle at low prices, and this is done to satisfy their immediate food requirements due to these drought conditions coupled with economic hardships. Sadly, these food production challenges experienced in Zimbabwe have now seen the country referred to as "the basket case" of Africa (Mbanje & Mahuku, 2011). 2020).

On a related note, the hyperinflation and high food prices in Zimbabwe have eroded the value of financial aid being given to vulnerable farmers under the Harmonized Social Cash Transfer (HSCT) program being implemented by the government and various donors. As highlighted by the World Bank (2016), the macroeconomic challenges happening in the country have led to the failure of these social protection programs, as they are no longer meeting the needs of the people. The beneficiaries of this program that I interviewed also complained of similar issues and blames the hyperinflation and high food prices currently happening in the country for their miseries. The four HSCT beneficiaries I interviewed had this to say:

"This money is valueless given the hyperinflation and daily food prices we are enduring every day ...the money I am receiving is too little to meet my daily food requirements together with my family...things used to be better during the United States Dollar, now with the RTGS and bond notes we are receiving and the daily food price increases you can not even buy a bucket of maize and a bottle of cooking oil with that money" (Bubera, Female 45).

"The government and donor programs are good e.g. the cash transfer and drought relief programs but they are happening at a small scale and not good enough to help everybody in the community. Similarly, we are supposing to get our cashouts and grain deliveries every month but you can go up to 3 months without receiving anything and by the time that money comes it would have been eroded by inflation and not helping either way" (Bubera, Female 60).

"Everything is expensive here in Bubera, and due to droughts we do not have a constant supply of the basic foods like grain, so we normally rely on grain supplied by traders from Chipinge and other areas who charges high prices, thus making our payouts from the government useless" (Bubera, Male 50s).

To conclude, the worsening socioeconomic conditions resulted in poor standards of living among people, as the country was pushed to the “Low HDI Category” on the United Nations Human Development Index scoring a low HDI of 0.51 and occupying position 154 out of a total of 188 countries (Chereni & Bongo, 2018:18). Many people lost their jobs in the Industrial and Social Services Sectors, as most workers' remunerations were no longer matching the periods of hyperinflation and high food prices that eroded their salaries. Consequently, unemployment rates grew from 10.7% to 11.3% between 2011 and 2014 (Chereni & Bongo, 2018:18), with thousands of government employees withdrawing their services due to the toughening economic conditions (Mbanje & Mahuku, 2011). A large number of skilled workers who could not bear the tough socioeconomic conditions relocated to other countries (Mbanje & Mahuku, 2011, Chereni & Bongo, 2018). Studies by the IOM indicated that approximately 571 970 people emigrated to countries such as South Africa, United Kingdom, Malawi, Australia, and Botswana (Chereni & Bongo, 2018: 33). *Table 4.7* below shows the top five destination countries for Zimbabwean emigrants.

Country	Total
South Africa	358,109
United Kingdom	115,708
Malawi	35,287
Australia	34,034
Botswana	28,832
Total	571,970

Table 4.7 Top five destination countries for Zimbabwean migrants, 2013. Source: UN DESA-Population Division and UNICEF, Migration Profiles: Zimbabwe cited in Chereni & Bongo (2018: 33)

Although other contributory factors such as education and forced migration contributed to the significant increase of emigrants, there is no doubt that the majority of people left the

country due to the macroeconomic challenges, high inflation, forex shortages, and liquidity constraints that led job and food shortages (Chereni & Bongo, 2018: 19, 33).

Similarly, large numbers of rural people who could not withstand the deteriorating economic conditions also fled to various destinations with the hope of finding jobs and accessing public services (United Nations, 2020). As highlighted from my discussions with various farmers, the economic challenges coupled with limited economic opportunities in Zimbabwe came with high job losses in the communal agriculture sector, forcing people to seek work in various sectors depending on one's job connections, including in large scale commercial farming areas. Four farmers in Buhera testified this;

“Despite the high inflation and high food prices worsening our food security situation, there are no industries here to absorb the growing populations and offer them jobs. As a result, those who fail to make it in the agricultural sector resort to go to towns and other areas that offer them jobs” (Buhera Male, 45).

“The low crop production due to droughts coupled with economic challenges affecting the proper functioning of the irrigation scheme has limited our employment opportunities. Most plot holders are failing to pay their electrical bills which I heard are high, forcing them to cut down on their operations. For people like me, this means that there are no casual jobs for us here, and with this hunger, we have to travel to Birchnough Bridge where we are guaranteed of casual jobs in the irrigation gardens” (Buhera Male, 35).

“The people who used to have plots in the Irrigation Scheme and help us with casual labour jobs and food in this area are no longer able to assist us as they are also facing the same hardships we are facing... as a result we have no incomes to pay school fees for our children and buy food for ourselves as

the prices are always increasing. As a precautionary measure, we travel to areas as Chipinge and Nyanyadzvi to work in large farms or trade our wares” (Bubera Female, 30s).

Having said this, there is no doubt that the socio-economic challenges brought about by economic sanctions on Zimbabwe have led to a lot of suffering among ordinary people, and those that could not withstand these harsh economic conditions resorted to emigrate to other countries or migrate within the country to mitigate current and future economic and food security challenges.

4.7.3 Human Mobility under Operation Murambatsvina

The last wave of human mobility patterns that hit Zimbabwe (in 2005) was induced by the government’s politically motivated Operation *Murambatsvina* (Clear Filth) policy (Potts, 2010; Naidu & Benhura, 2015). According to government sources, Operation *Murambatsvina* targeted urban populations through restoring order and decongesting the country’s urban areas (Potts, 2010; Naidu & Benhura, 2015). A different version of the proposed rationale of the program indicates that Operation *Murambatsvina* was a political strategy by the ruling Zimbabwe African National Unity-Patriotic Front (ZANU-PF). It meant to "reduce the urban population for political and economic reasons" (Potts, 2010; 101). Since the birth of the Movement for Democratic Change (MDC) in 1999 (Zimbabwe's Main Opposition Party), urban areas have been identified as a major stronghold for the MDC, and ZANU-PF used Operation *Murambatsvina* as a strategy to disenfranchise and neutralize the urban voters (Potts, 2010; 101). In doing this, the Government of Zimbabwe clamped down on all illegal settlements and informal businesses that had mushroomed in major cities such as Harare and Bulawayo, among

others (Naidu & Benhura, 2015). The official figures from the United Nations Special Envoy on Human Settlements that visited the country soon after Operation *Murambatsvina* indicated that more than 700,000 urban dwellers were affected by this operation in Zimbabwe (Tibaijuka, 2005; Potts, 2010:100). Reports indicate that over 92,000 houses were destroyed, resulting in 134 000 households losing their homes, while over 98,000 people losing their informal sector livelihoods under the orders of the government (Potts, 2010:100).

The worrying factor is that all these inhumane activities happened without any government warning to people (Naidu & Benhura, 2015: 154). People were not given time to prepare for their displacement, and the worst part was that the government did not have a plan at hand to resettle all the people displaced by *Operation Murambatsvina*. Faced with such displacements and with no other option, the majority of *Murambatsvina* victims who lost their homes and livelihoods resorted to returning to their rural homes (Potts, 2010). Although this was a viable move by those urban dwellers evicted by *Murambatsvina*, this study argues that this government-led operation resulted in serious social, economic, demographic, and environmental challenges in the rural areas of Zimbabwe. This move crippled the functioning of rural economies as the high populations led to serious shortages of productive resources such as land for agriculture and housing purposes. Studies show that most migrants returned to urban areas after being subjected to these socioeconomic and environmental challenges in rural areas (Potts, 2010:101). The likely destination for these returnees was informal settlements in urban areas that also subjected to overcrowding (Potts, 2010:101) and a host of waterborne diseases such as typhoid and cholera. Furthermore, Operation *Murambatsvina* eroded the economic base for most rural households who were still suffering from the after-effects of ESAP policies and the severe climatic conditions in Zimbabwe. Most rural households suffered from reduced remittances that were crucial to their livelihoods. As

highlighted by the New Economics of Labor Migration Theory (Stark & Bloom, 1985; Russel, 2013; Hagen-Zanker, 2015), remittances play a crucial role in protection livelihoods through minimizing risk and uncertainties, and in Zimbabwe, they help households to supplement their agricultural incomes including meeting their food intake demands and purchasing of agricultural inputs.

As a compounding factor, the ever-growing population in Zimbabwe has also exacerbated the existing socio-economic and environmental challenges in the country's communal areas. The country's total population doubled from 7.5 to 13.1 million people between 1982 and 2012, with the majority of this population being below 15 years old and residing in rural areas (*Table 4.8* below) (Zimstat, 2012:9; 2013:13; GOZ, 2015:6).

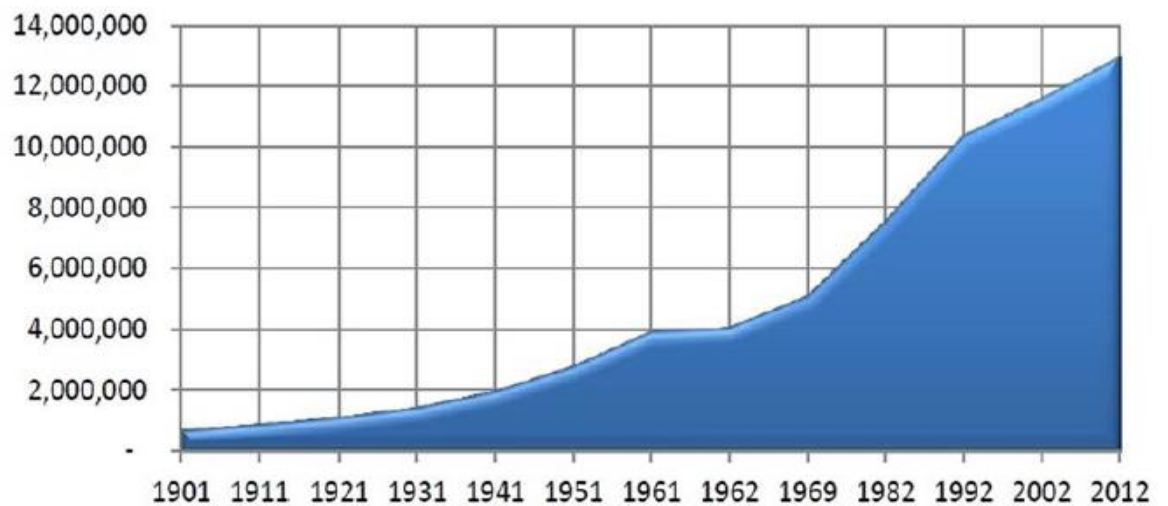


Table 4.8 Zimbabwe's Population Growth (1901-2012). Adapted from Zimstat (2012:1)

Studies by the Zimbabwe National Statistics Agency (Zimstat) and the United Nations Population Fund (UNPF) have projected an annual population growth rate of 2.35% over the next couple years, and expecting the total population to exceed 21 million people by 2032 for Zimbabwe (New Zimbabwe, 2019, November 08). Fears are that these demographic changes

will result in serious socioeconomic challenges for a developing country like Zimbabwe. Some of the challenges that Zimbabwe has to brace for, due to high population increases in communal areas include (i) high food insecurity cases which subsequently to hunger and malnutrition, (ii) provision for agricultural and housing land, which is scarce in Zimbabwe, (iii) provision for basic social services such as education and health services, which is already underfunded due to constrained budget lines, and (iv) job creations, that have been hampered by the closure of companies due to ESAP policies (Zimstat, 2012).

Unfortunately, these challenges are already evident in communal areas as the high demand for forest products has been on high demand over the years. For example, the high demand for housing and farming land has forced young families to cut down trees, thus clearing the remaining forests in communal areas. This issue was discussed during one of my Focus Group Discussion with young people who said, "we all know that deforestation destabilizes cloud formation necessary for rain formation leading to droughts and hunger...the problem is that ... we cannot continue living at our parent's homes when we are married...we need our own land for farming and building our homesteads, hence the need to clear pieces of land for ourselves" (Buhera, Focus Group Discussion with Young People). Similarly, the majority of people interviewed alluded that due to droughts, overcrowding, and scarcity of land, *Sadzza* (thick corn porridge- country's staple food) has become a luxury for most households as they are surviving on wild fruits such as Baobab fruits. From the interviews, I did in Buhera two farmers and a government official indicated that:

"I am harvesting nothing from my fields and my children are surviving on porridge made from Baobab fruits... I feed them twice a day, that is in the morning and (before and afternoon after school) ...at evening time, this is when we make Sadzsa (staple thick porridge made from maize grain) (Buhera Female, 38).

"Sadza is now a luxury meal here, we are all surviving on eating and selling Baobab fruits ...and getting these fruits has become difficult as we have to wade off competing from Baboons and Monkeys...I wake up early with my children every day to secure these fruits before animals get them ahead of us" (Bibera Female, 40s)

"The district lacks functional irrigation systems of growing green vegetables, so wild foods play an important role in providing cover for nutrition gap rising from vegetable deficits during drought...either way, this helps in promoting the food security situation in the district" (Bibera, Government Official, 4)

This shows us that population increases have increased in housing and farming, including food insecurity in communal areas. As a solution, people have resorted to deforestation and gathering wild fruits, which are providing an important diet and nutrition requirements for children during periods of food shortages (Shava, 2005:81; Woititez *et al*, 2013:11). Interestingly, besides being beneficiaries of wild fruits during food deficit periods, children also play a major role in the collection of these fruits during these periods (Campbell, 1987:380).

4.8 Conclusion

This chapter has demonstrated that climate change adaptation in Zimbabwe's communal areas can not be addressed without dealing with the complex political and historical context that continues to expose people to food insecurity and possibly shape human mobility. Similarly, these challenges that have besieged communal farmers can not be addressed without understanding the impact of contemporary development policies such as the failed land reform

programs, ESAP, and economic sanctions that have made climate change adaptation difficult in these areas. As highlighted by the discussion above, human mobility in Zimbabwe's communal areas have been determined by a variety of factors since the colonial era. "first wave" of population movements in Colonial-Zimbabwe (1890-1980) were initiated by political and economic policies such as the Lippert Concession of 1889, The Native Reserve Order in Council of 1898, and the Land Apportionment Act of 1930. These policies saw the influx of European farmers into Zimbabwe's prime lands that were occupied by African farmers. As a result of the influx of European farmers, the colonial government used the Land Apportionment Act of 1930 to divide lands into racial lines, a development that saw African farmers being allocated unproductive land in native reserve areas. Faced with no choices, the majority of farmers were forced to work in white-owned business enterprises as an obligation of meeting their hut taxes. This shows us that these colonial land policies that led to several patterns of human mobility in Zimbabwe were meant to disempower the African farmers while serving the political and economic interests of the few Europeans.

The "second wave" of human mobility in Zimbabwe happened soon after independence between 1980-2000 were social, political, and economic factors. This period saw the government implementing economic development policies that were centered on economic growth with equity. As a result of these policies, a number of economic and industrial hubs were created in urban areas, leading to high rural-urban migration patterns. Similarly, programs such as the State-Led Land Acquisition Programs saw many African farmers moving into new farming areas created by the government, as a way of empowering them. Furthermore, the ESAP that came in the early 1990s as an antidote to the recurring debt challenges by the government. ESAP came with trade liberalization, and reduction in government food and agricultural input subsidies, among others. This led to serious

socioeconomic challenges in the country which resulted in high rural-urban, and urban-rural migration cases, including the exodus of skilled personnel to neighbouring countries. Lastly, social, economic, political, including climatic factors determined the "third wave" of human mobility patterns that came post-2000 in Zimbabwe. The discussion above showed that these population movements were inspired by economic sanctions and Operation *Murambatsvina*. Similar to the ESAP era, economic sanctions came with trade embargoes, limited access to international credit lines and FDI, shortages of forex and agricultural inputs and, hyperinflation in Zimbabwe, among others. As a result of these economic hardships, the majority of farmers could not afford the high prices charged on agricultural inputs, while the country's skilled-labor force left for other countries, crippling the agricultural sector. Compounding to these challenges is the high population growth in communal areas that have led to serious socio-economic and environmental challenges to the already fragile condition in communal areas. As a result, socio-economic challenges such as food insecurity, livelihood stresses, and subsequently human mobility decisions have been on the rise in communal areas, compounded by climate change stressors, as the following Chapter (5) will illustrate.

Chapter 5: Climate Change, Governance, and Human Mobility in Zimbabwe

5.1 Introduction

In Zimbabwe, climatic events such as droughts and floods have led to high human mobility among small-scale farmers in communal lands (Mambondiyani, 2015, August 27). These farmers over-rely on climate-sensitive sectors such as rain-fed agricultural systems for their livelihoods, and lack other means of economic activities which have increased their vulnerability to climate change. As a result of insecure livelihoods, communal farmers in Zimbabwe continue to endure many challenges that include, poor crop yields and low agricultural incomes, as a result of water deficiencies, reduced farming land with high cases of soil degradation, and they often choose to out-migrate as a livelihood coping mechanism to food insecurity (Piguet *et al.*, 2011; Chikodzi *et al.*, 2013; IPCC, 2014). The challenge to adapt to climate change among communal farmers has led to an increasing level of human mobility from marginal lands in Zimbabwe (Zimbabwean Newspaper, 2014, July 02). Recent reports indicate that approximately 20,000 people have already fled the drought-prone western low-lying areas to the Eastern Highlands Regions of Zimbabwe, which are characterized by abundant water sources and favourable agro-climatic conditions (Mambondiyani, 2015, August 27).

With the growing intensity of extreme weather conditions and warming conditions, there are fears that Zimbabwe, and many other developing countries, will experience decreasing maize crop production levels by the end of this century (Chikodzi *et al.*, 2013; Government of Zimbabwe (GOZ), 2016b; IPCC, 2014; 2019). For Zimbabwe, these climatic changes will hit hard the southern regions of the country, especially in AERs IV and V which

have a long history of poor climatic conditions (World Bank, 2015, February 20). Consequently, the continual exposure to extreme climatic conditions, deteriorating natural ecological conditions in AER IV, and V of Zimbabwe will potentially result in a high influx of small-scale farmers to AER I and II which have favourable climate and agricultural conditions. Unfortunately, population movements have been happening in communal areas despite the country adopting several climate change adaptation policies. Some of these policies include the National Climate Policy, the National Climate Change Response Strategy (NCCRS), and the Zimbabwe Draft Risk Management Strategy and Action Plan (ZDRMSAP), among others enshrined in the National Constitution and operational in various *Acts* and *Policies* (GOZ, 2015; GOZ, 2016a; SACF, 2017; Brazier, 2017:93). These policies emphasize CSA principles, including the adoption of agricultural and climate monitoring technologies which are beyond the reach of most farmers. Furthermore, climate change adaptation in Zimbabwe has been severely affected by the socioeconomic and extreme climatic conditions happening in the country.

Having said this, in the first part of this chapter, I argue that climatic factors such as high temperatures, droughts, floods, and cyclones should be considered as primary drivers of human mobility in Zimbabwe's communal areas. However, it is important to note that these climatic factors do not operate in a vacuum, hence, there is a need to consider the relevance of traditional factors in our explanation of human mobility patterns in Zimbabwe's communal areas. In the second part of this chapter, I argue that the climate change adaptation policies that are being promoted by the government are failing to promote food security and encourage farmers to adapt *in situ* in communal areas. As a result, I argue that climate adaptation policies in Zimbabwe should be tailor-made to address the plight of rural farmers. Furthermore, there is a need for policymakers to recognize human mobility as a climate adaptation strategy in

communal areas in their formulation of national policies, since human mobility has been adopted by most farmers to sustain their livelihoods.

5.2 Climate change and agricultural production

Climate change is happening in Zimbabwe, as studies have shown that the country's temperatures and rainfall patterns have been changing over the last century. It is also important to acknowledge that climate change in Zimbabwe brought about slow-onset disasters such as gradual temperature and precipitation changes that are more long-standing and enduring than quick onset events like extreme weather events such as floods, wind storms, and tropical cyclones, among others. However, since the turn of the 20th century, Zimbabwe, like other developing countries, has been more subjected to extreme weather conditions, such as droughts, floods, and tropical storms (Chikodzi *et al.*, 2013:36). Zimbabwe has experienced increases in temperature and a decline in rainfall since 1900 (GOZ, 2015:16). Studies by the Government of Zimbabwe show that the country's annual surface temperatures have increased by 0.4°C since 1900, and projections are that global mean temperatures will increase even more by 2100 (GOZ, 2015:16). In the case of Zimbabwe, there have been increases in minimum and maximum temperatures by 2°C over the last decade (World Bank, n.d.; Zambuko, 2011; GOZ, 2015:16) and there is no doubt that this development has had serious production consequences for small scale farmers. Overall, global temperatures have been on the increase with annual minimum and maximum temperatures averaging 12°C and 30°C respectively annually over the last decade (GOZ, 2015:16). The warming conditions have resulted in hotter days, with the country recording its warmest years in history since 1987 (Zambuko, 2011; Brazier, 2015:40; GOZ, 2016b:58).

At the same time, the period 1904-2010 also witnessed Zimbabwe recording an average of 5% decrease in its annual rainfall compared to the 1961-1990 rainfall levels as shown in *Table 5.1* below (Brazier, 2015:6). Studies show that these downward trends in rainfall patterns are expected to continue until the end of this century (Brazier, 2015:6; GOZ, 2015:17, 20). Reports by the Famine Early Warning Systems Network (FEWS NET) show that the 2018/19 Agriculture Season in Zimbabwe saw the country recording its lowest rainfall in four decades, affecting approximately 5 million communal farmers (New Zimbabwe, 2019, March 08).

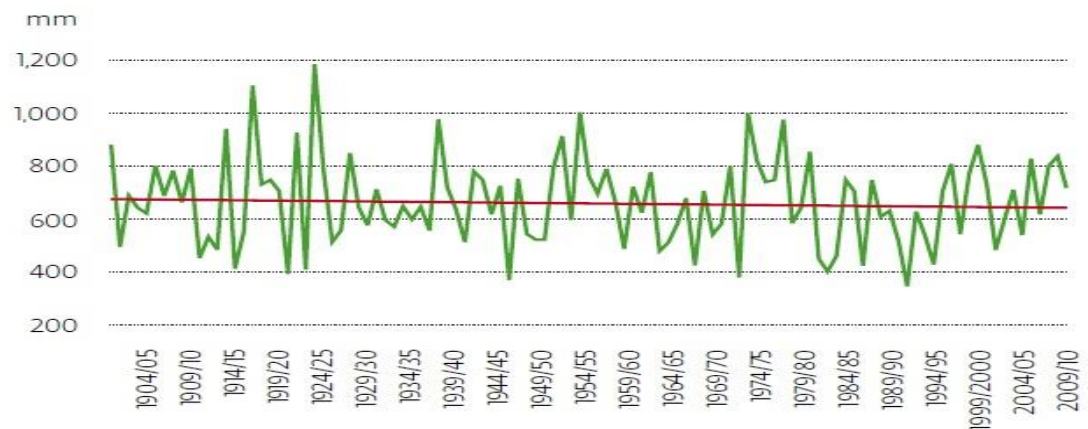


Table 5.1 Zimbabwe Average Seasonal Rainfall (1904-2010). Adapted from Brazier (2015:6)

These climatic changes have resulted in changes in agricultural seasons in Zimbabwe over the last decades. Historically, the rainy season began in October with low rain quantities, and the rains increased at the peak of the agricultural season between December and March before they start to subsidize in April, as shown in *Table 5.2* below (World Bank, n.d.; Brazier 2015:40).

These trends have since been reversed by climate change as more rains are being received at the beginning of the rainy season in October, and less in January and March (Brazier, 2015:40). These changes in rainfall patterns and agricultural seasons have been noticed by the majority of farmers, as they claim that they used to receive their first rains

between September and October, and expected more rains between December and the end of March, with rains then subsiding in April.

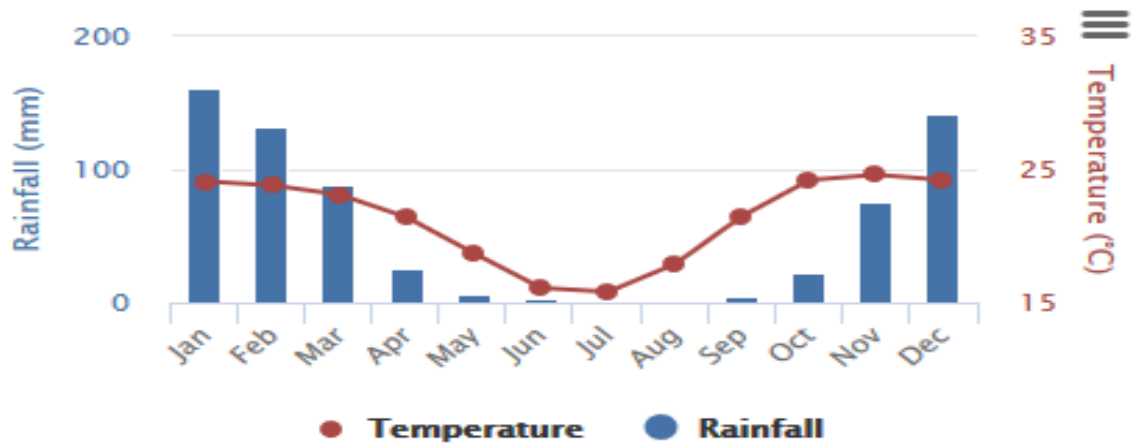


Table 5.2 Average Monthly Temperature and Rainfall for Zimbabwe (1901-2015). Adapted from World Bank (n.d.)

According to a government official, "climate has radically shifted and farming seasons have changed... rainfall used to start in October but now changes, people unable to follow their old farming calendars" (Harare, Government Official, 1). Similarly, one senior district official who has been residing in Buhera for the last 20 years said,

"10-15 years ago, the district used to receive heavy rains with lightning and thunder, strong winds at the onset of the summer season leading to flooding of rivers and sustainable moisture to cultivating our fields... rains would fade in January and February and long dry spells (to allow crop production), then receive heavy rains again from mid-February to March on daily basis to support our crop production, now due to climate change its hard for farmers to predict the rains or tell whether it is the onset of the summer season due to little rains (less than 27mm of rain). The rain intensity and distribution pattern have changed (no even distribution, as no rains are coming in January and February leading to wilting

of crops...then end of Feb to March it may rain 2 or 3 days and the rains are gone" (Buhera, Senior District Official).

These issues also came out during my Focus Group Discussions with Elders. One elder argued:

"We grew up in this area and we used to receive good rains in here, but now things have changed including our farming seasons...rains are now coming late usually at that end of December when most food crops would have already wilted... we have observed this shift from our traditional farming calendar since 1986...before that we used to receive our first rains which we called Gukurahundi ¹⁶in October and the rains could stretch up to May with everyone guaranteed of harvesting"" (Buhera, Focus Group Discussion with Elders, Male 60s,)

Furthermore, as highlighted another farmer, "now the rain onset season is starting late; rains are now coming late December/ early January with no rains registered in February, then we normally receive few rains end of March" (Buhera Female, 50s). Similar observations were also made in traditional high rain areas in Chipinge. One farmer highlighted that, "this area (Chipinge) is rich with abundant rains but recently the rains are no longer reliable. Rains are now coming late when most of crops would have already wilted" (Chipinge Male, 60s). A discussion with an official working for an international organization on food security issues confirmed that, "the duration of onset rain season was from mid November to March, of late the onset of effective rains only starts after Christmas which is a month and a half late, and surprisingly it only rains from mid-December to end of February" (International NGO Official, 1).

¹⁶ *Gukurahundi* is a Shona word that refers to the early rain which washes away the chaff before the spring rains

The late starts on growing seasons have been observed across all AERs as shown on *Table 5.3* below (GOZ, 2017b). Similar studies also note that “for the period 1997 to 2014, about 17 seasons were outside the range expected in each agroecological region” (GOZ, 2017b:1). Similar observations on delays on ‘Start of Season’ (SoS) in most AERs in Zimbabwe have been noted during the same period (GOZ, 2016b:67).

Agroecological Region	Meteorological Station	% Late and Early	% Late Start of Season	% Early Start of Season
V	Buffalo Range	53	41	12
IV	Plumtree	53	53	0
III	Gweru	47	35	12
II	Darwendale	24	18	6
I	Chisengu	47	41	6

Table 5.3 Changes in the start of agricultural season in relation to the baseline range in the agro-ecological zoning scheme (GOZ, 2017b:2)

For instance, the SoS delays observed by the Government of Zimbabwe indicate that in AER I, II, and III the SoS delays averaged between 1-2 months between 1997 and 2014 (GOZ, 2016b:67). Similarly, in AER IV and V, the SoS delays averaged between 1- 11/2 months and 1-3 months, respectively during that same period (GOZ, 2016b:67). In this scenario, it is clear that climate change has led to a shift in Zimbabwe's growing seasons (Brown *et al.*, 2012:3). According to the Government of Zimbabwe, "this decrease is predicted to occur in all season but is more conclusive for early and late rains than for the main rainy seasons months of December to February" (GOZ, 2015:17). In communal areas, such delays in SoS have created serious food challenges as most traditional vegetables that used to thrive under the previous rainy seasons are failing to adapt to the new climatic environment. This was highlighted by one farmer in Buhera, and she said that "our rains were structured in a certain way that made us survive better lives as we never run short of food supplies...it would start raining in November

and by December/January people would harvest our traditional vegetables and cucumbers...these rains would continue until March and everybody harvested...but now we hardly receive any rain and we cannot even enjoy most of our traditional vegetables now" (Buhera Female, 50s).

Although climate change is a global challenge, indications are that the high frequency and intensity of extreme climatic events are more gravely impacting Africa than any other region. This trend has seen Africa experiencing high frequency and intensity of extreme climatic events such as droughts, tropical cyclones, and floods, affecting millions of people in the process (Horion *et al.*, 2012:9; Brazier, 2015:40). In Zimbabwe, these drought years which were largely caused by high temperatures and low rainfalls, (as highlighted in *Table 5.1* above) include the 1990/91, 1991/92, 1993/94, 1994/95, 1997/98, 2001/02, 2002/03, 2004/05, and 2006/07 droughts (Zambuko, 2011; Brown *et al.*, 2012; Brazier, 2015:6). Similar studies by the Government of Zimbabwe (GOZ, 2017b) show that the country has been hit mostly by mild droughts since 1950 as shown in *Table 5.4* below.

	Extreme	Severe	Mild
¹⁷Drought Years	1983, 1992	1968, 1973, 1982, 2004	1951, 1960, 1964, 1965, 1970, 1987, 1991, 1995, 2002, 2003, 2005, 2007, 2008, 2009, 2010, 2012, 2015

Table 5.4 Droughts in Zimbabwe (1950-2015). Adapted from GOZ (2017b)

¹⁷ *Extreme drought years* represent seasons of no harvest and there are associated with high livestock deaths. *Severe drought years* are seasons of poor harvest and farmers had to rely on buffer and residual stocks from previous season. *Mild drought years*, the maize crop is severely affected although some other parts of the country still harvest, most people rely on small grain crops like Sorghum, Millet and Rapoko (Agritex Official, personal communication, July 27, 2019)

The impact of each drought varies depending on its magnitude, and extreme droughts are deadlier than others. For example, the 1992 extreme drought is still being remembered for causing serious food challenges leading to an approximately 75% drop in the grain production, depletion of grain reserves in the GMB, and the death of more than 1 million herds of livestock in the process (GOZ, n.d.; Nangombe, 2014; GOZ, 2017b). Studies have shown that droughts hamper the operation of irrigation schemes, as most irrigation schemes would need more than one season to be fully functional due to insufficient water flows needed to sustain river flows or rejuvenate the underground water tables (GOZ, n.d: 9). For example, it took more than "3 rainy seasons for the system to stabilize again" after the 1992 drought season (GOZ, n.d: 9).

Similarly, Zimbabwe's 3rd National Communication to the UNFCCC confirms that temperature increases contributing to droughts have been more prominent between January and March and these trends have been observed since 1960 (GOZ, 2016b: 65). According to GOZ (n.d.), droughts are ranked the most affecting hazard among the top ten natural disasters to affect the country since 1982 as shown in *Table 5.5* below.

Disaster	Year	No. affected
Drought	2001	6,000,000
Drought	1991	5,000,000
Drought	2007	2,100,000
Drought	2010	1,680,000
Drought	1982	700,000
Epidemic	1996	500,000
Flood	2000	266,000
Epidemic	2008	98,349
Drought	1998	55,000
Flood	2001	30,000

Table 5.5 Top-Ten Natural Disasters in Zimbabwe (1982-2011) (GOZ, n.d.:4)

In terms of rural livelihoods and crop production, the temperature and rainfall variations experienced in Zimbabwe have led to a reduction in water available for agricultural production (Brown *et al.*, 2012:3; GOZ, 2015:17, 20).

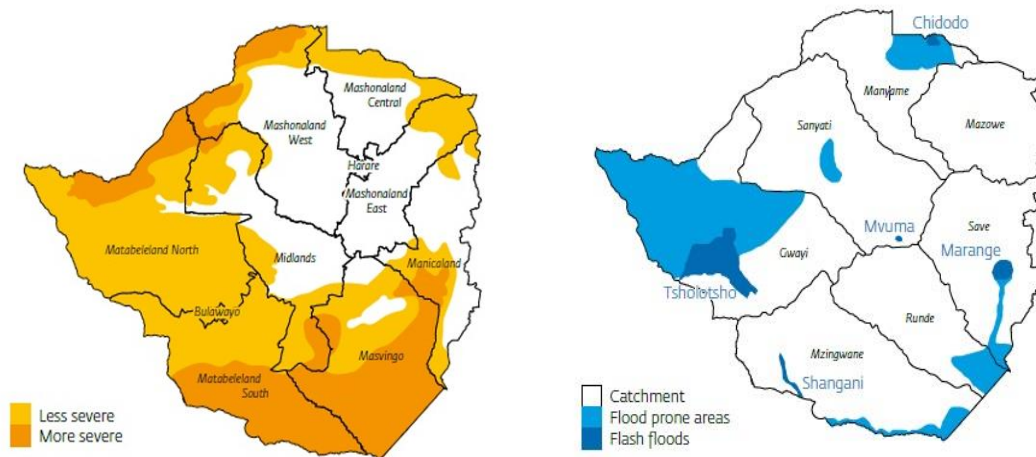


Fig.5.1 Drought (left) and Flood (right) Prone Regions of Zimbabwe (Brazier, 2017)

Unfortunately, these climatic changes (droughts and flooding) are impacting the food production systems belonging to communal farmers located on the Northern and Southern parts of the country, as shown in *Fig.5.1* above. These areas, which also happen to fall under Zimbabwe's poor AER IV and V receive an annual rainfall of below 400mm and poor soils that are not capable of resuscitating crop production (FAO, 2006; GOZ, 2016b:2). According to the Southern African Development Community (SADC) (2015) food security reports, these high temperatures experienced in Zimbabwe's Southern Provinces have negatively impacted the crop production levels in these poor regions. As highlighted by one key government official, "temperatures have been rising significantly over the past 30 years in Zimbabwe and they have been averaging 1.8-2.7°C...these high temperatures are more pronounced in the South-Western parts of the country and have affected the food security situation in these regions (Harare, Government Official, 2).Also, as highlighted by one farmer in Buhera,

"excessive heat has been a problem for crops and livestock production in our district and we are experiencing low yields as water availability for our crops and livestock has become scarce and thus leading to high food insecurity" (Buhera, Male, 45).

A closer look at the mean monthly evapotranspiration rates collected from the local Agritex Offices in Buhera, shown in *Table 5.6* below shows that the high temperatures experienced in the Buhera region have led to high evapotranspiration rates on crops between September and March which happens to be the peak of the agricultural season.

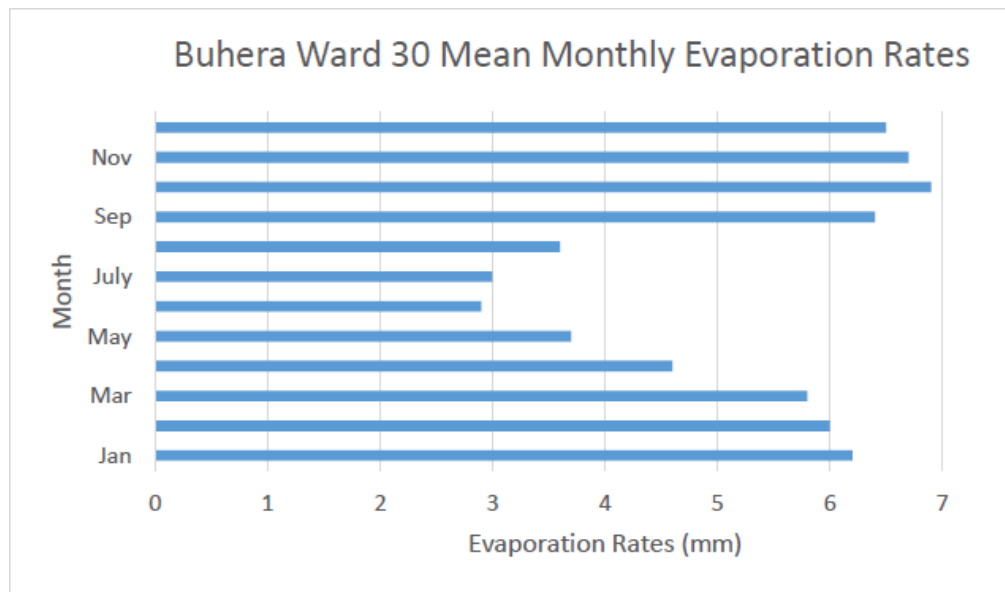


Table 5.6 Buhera Ward 30 Mean Monthly Evaporation Rates (Agritex Officer, personal communication, July 26, 2019)

The majority of farmers highlighted that they are losing their crops to wilting due to high temperatures, thus impacting negatively on their food production. Similar temperature changes were also noted in Chipinge areas. Said one farmer, "it has suddenly become hot here (Chipinge) and we are experiencing water shortages for our crops, a development that is affecting the growth of our crops" (Chipinge Female, 55). Furthermore, said another farmer,

"we are prone to high temperatures here...most perennial rivers have become seasonal and most wetlands are drying up...instead of having excess agriculture production, people have become subsistence farmers because of these high temperatures and poor rains" (Chipinge Male, 60s).

Similar studies argue that the "near normal" rains received in these Southern regions of Zimbabwe have failed to resuscitate crops suffering from moisture stress at their most critical stage of growth (SADC, 2012; 2015). In most cases, crops and pastures in marginal lands are written off before the farming season comes to an end due to permanent wilting caused by high temperatures prevailing in these poor regions (SADC, 2013a; 2015). I also noted that droughts are becoming more pronounced in communal areas making life hard for most farmers. The volatile food insecurity situation caused by droughts happening in communal areas was well explained by one key government official in Chipinge, who said:

"There are severe droughts in every 3 years per decade in drier and hot regions and people hardly harvests during those years. Similarly, out of every 10 years, there are only 3 years of good harvest in these poor areas but these harvests do not last them for more than 1 year. Furthermore, out of every 10 years, there are 4 years of moderate harvest, and unfortunately for people in marginal lands, this harvest only lasts 8 months or below that for them" (Chipinge, Government Official, 2).

According to GOZ (2017b), UNDP (2017), and Zimstat (2019a), these droughts happening in communal areas are El Nino-induced and have been responsible for reduced agricultural production in communal areas. These droughts are more severe in AERs IV and V which are areas that receive annual rainfalls of below 400mm and these rains are not sufficient to revive crop production (FAO, 2006; GOZ, 2016b). For example, in one of my study areas in Buhera, studies show that the region has been experiencing frequent droughts

since the early 1990s and the majority of communal farmers have been observing this phenomenon over the last two centuries, as shown on *Table 5.7* below. All the years with an annual rainfall of below 450mm, shown in *Table 5.7*, represent drought years.

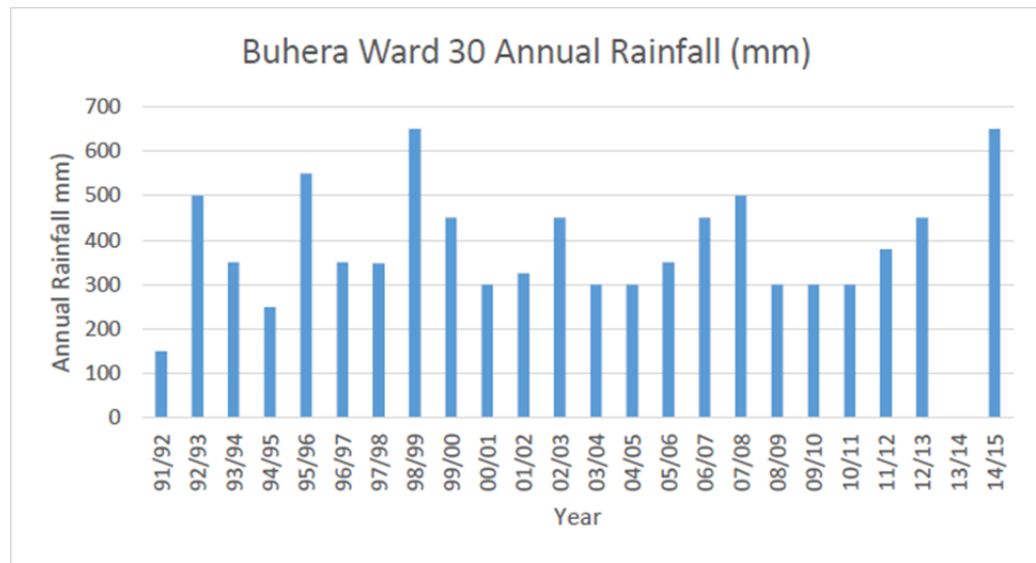


Table 5.7 Buhera Ward 30 Annual Rainfall Patterns (1991-2015). (Agritex Officer, personal communication, July 26, 2019).

According to the Government of Zimbabwe, "the rainy season in Zimbabwe even in drought years is characterized by mid-season droughts" (GOZ, n.d:7). From my discussion with the elders, they highlighted that the 1991/92, 2001/02, and 2008/09, are still fresh in people's minds as these droughts severely destroyed people's crops and livestock. Said one government official, "Our district has been under threats from droughts for some time as we have been receiving erratic rainfall of below 300mm/year, a sad development that has resulted in 80% of the district falling into AER V" (Buhera, Government Official, 1). Similar issues were highlighted by another government official, who said:

"Generally the cropping situation is poor in communal areas... climate change has reduced the potential of growing certain crops in the country. Given that 80% of maize production in Zim is under

rain-fed agriculture. The unreliable and poor distribution of rains is affecting the maize crop production which happens to be the country's staple food. All this has suppressed maize production in communal areas" (Harare, Government Official, 1).

The high frequency of droughts in these marginal areas has prompted hundreds of thousands, if not millions of households (depending on the magnitude of the drought) to rely on food aid programs. For example, studies by FAO (2016a) indicate that the number of food-insecure households and in dire need of food aid in Zimbabwe increased from 1.5 million people to 2.8 million people during the peak of the lean season, and this figure represents almost 30% of the total population in Zimbabwe (FAO, 2016a).

Similar reports by the New Zimbabwe Newspaper (2018, August 31) indicate that approximately one million people required food aid in rural areas, as food production in the 2018/2019 agricultural season was ruined by seasonal droughts. Furthermore, the dire food security situation in Zimbabwe's communal areas has been worsened by the limited livelihood diversification options and the deteriorating economic conditions in urban areas which normally provide safety nets for rural people. Migrating to urban areas is no longer a viable option for most people as they fear of being subjected to the same socioeconomic challenges in urban areas (New Zimbabwe Newspaper, 2018, August 31). Similarly, the unfavourable climatic conditions, coupled with the liquidity crunch, have negatively affected agriculture production, as the country is experiencing serious foreign currency shortages that are negatively affecting the importation of essential agricultural inputs (FAO, 2020, March 23). In addition to input shortages, the prolonged dry spells have reduced the desire of small-scale farmers to plant their crops, leading to decreased cropping area for food crops (SADC, 2013a; 2016).

On the other hand, the turn of the 20th century has seen the country experiencing major tropical cyclones that include Cyclone Eline (2000), Japhet (2003), Dineo (2017), and recently Idai (2019). These cyclones have been more profound in the Southern and Northern parts of Zimbabwe (shown on *fig.5.1* above) causing flooding that led to waterlogging crops, leaching of soil nutrients, and land degradation in communal areas (UN, 2000; The New Humanitarian (2003, March 04); Nangombe, 2014; GOZ, 2015; Mugabe, 2017, February 21; SADC, 2017a; 2017b). These issues were highlighted by the majority of participants during the various interviews I conducted in Buhera and Chipinge, as shown below:

"The climatic situation has been bad for most communal farmers in this district... farmers are exposed to hailstorms and windstorms i.e heavy rains associated with strong winds, lightning and thunder...and this has destroyed crops and a lot of infrastructures" (Buhera, Senior District Official).

"...apart from the seasonal droughts, this region is now experiencing new extreme climatic events brought about by cyclones, floods and high winds ...these extreme climatic events were not common in our area and there are destroying our crops" (Buhera Male, 40s).

"...if my memory serves me right, in 2000 we had Cyclone Eline and this year (2019) we experienced Cyclone Idai...these cyclones come with high rains and winds that either waterlogged or fell our crops and in worst scenarios destroy our livestock and houses" (Buhera Female, 50s).

These cyclones that we are facing now were not common in the 1950s, but starting from the 1990s we saw several cyclones e.g. Cyclone Japhet, Cyclone Eline, and now Cyclone Idai coming to Chipinge" (Chipinge, Government Official, 1).

"...besides the good harvest that we normally get here, we sometimes experience cyclones, high winds and Fall Armyworms which are destroying or crops and houses" (Chipinge Male, 50s).

Apart from droughts, there is no doubt that cyclones are hampering agricultural production in Zimbabwe. Sadly, migrants who moved from other marginal regions to Chipinge have not been spared either by these cyclones, as they continue to suffer from reduced crop production. One migrant farmer highlighted that "I ran away from droughts in Bocha, and here (Chipinge) I am being exposed to cyclones... recently we had Cyclone Idai that came and destroyed our grain crops that were about to be harvested" (Bocha Migrant Farmer in Chipinge, Male, 39). This supports claims by scholars who argue that human mobility is not a good climate change adaptation strategy as it further exposes migrants to the same dangers they fled from their homes (McMichael, 2015:549).

In addition, heavy non-stopping rains, features characterized by tropical cyclones, give farmers limited time to weed their crops, and that may be another contributing factor for reduced crop productivity (SADC, 2017a). Furthermore, the impacts of wind storms continue to hamper their efforts to attain food security. One farmer said, "how do you expect us to survive in this area when the high winds are felling the little crops (*kudonbedza*) that have survived from these cyclones...crops are fallen before they are even ripe for harvesting" (Buhera Female, 30s). Similar discussions with the elders during Focus Group Discussions in Buhera also blamed the high winds prevailing for the low rains being experienced in their region. One elder explained that "instead of raining here, the high winds are pushing those rains to fall in other areas leading into drought in our area" (Buhera Male,70s). The heavy rains and winds associated with cyclones in Zimbabwe have not only claimed the lives of people and livestock, but they have also destroyed infrastructure, livelihoods and exacerbated rural poverty and displacements (Nangombe, 2014; SADC, 2017a; 2017b). According to Civil Protection Zimbabwe (CPZ), the recent and fatal Cyclone Idai (2019) in Zimbabwe, which was characterized by torrential rains, flooding, landslides (mudflows, rock falls) and led to

serious destruction of agricultural lands, livestock, roads and infrastructure across four provinces of Zimbabwe (Sibanda, n.d). Similar studies show that approximately 50% of all maize and banana plantation lands were destroyed, 362 cattle and 514 goats reportedly lost, coupled with almost 90% road network damages in Chimanimani and Chipinge districts (Sibanda, n.d). This suddenly exposed thousands of households to food insecurity, and food aid efforts were hampered by a lack of accessibility to these areas due to damaged road and bridge infrastructures. On another related issue, there are reports of farmers being affected by hailstorms across the country over the years, and this has also affected farmers to lose their crops and houses in rural Zimbabwe (New Zimbabwe, 2018, December 03).

5.3 Climate change and food security

There is a strong correlation that exists between crop productivity and climate change. Scientific studies have proven that plants need water, air, and sunlight to grow, thus any significant changes in temperature and rainfall patterns will either positively or negatively affect crop production. In Zimbabwe, delays in onset rains, high temperatures, and changes in SoS have negatively affected impacted agricultural outputs across the country (GOZ, 2016b:67; 2017b:1). According to studies by the Government of Zimbabwe (2017b:38), there is a strong correlation between annual rainfall and communal land maize yield, as demonstrated in *Table 5.8* below.

Similarly, the field data I collected for Buhera Ward 30 on maize and small grains (sorghum and pearl millet) production, shown in *Table 5.9 below*, highlight that drought years correspond with years of low yields. Most households are harvesting zero yields on maize during severe drought years (see 2013/14 season).

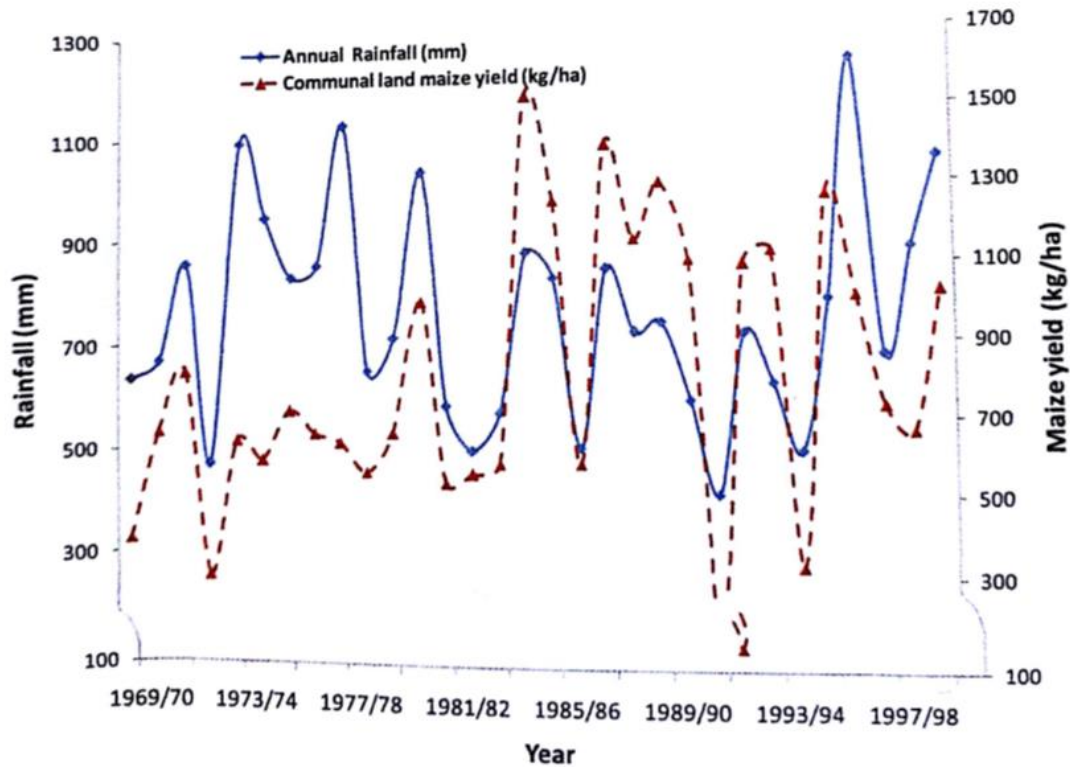


Table 5.8 Sensitivity of crops to rainfall in Zimbabwe's Communal Lands. Adapted from Government of Zimbabwe (2017:38)

In addition, said a senior district official "insufficient rains and prolonged droughts results in poor crop harvest and livestock production. Most families are harvesting nothing (need food aid) and those with small harvest won't even last them for 3 months" (Buhera, Senior District Official). Similarly, the majority of farmers have reduced their planting areas for maize and small grains due to unreliable rains, droughts, and low crop production in this region, also shown in Table 5.9 below. Also, the majority of farmers attested that the effects of droughts and cyclones are serious especially on the production of maize crops, although some small grains crops (finger and pearl millet and sorghum crops) are resisting, such resistance is not at sustainable levels.

Season	Area Planted (ha)			Yields (tonnes/ha)		
	Maize	Sorghum	Pearl Millet	Maize	Sorghum	Pearl Millet
2013/14	144	4,310	2,284	0	0.8	0.6
2014/15	334.9	2617	2,221.4	0.01	0.02	0.03
2015/16	319.4	1,450.9	1,521.2	0.01	0.04	0.05
2016/17	100	1,405.9	1,521.2	0.1	0.5	0.6
2017/18	48.4	2,878	2,555	0.4	0.9	0.9

Table 5.9 Cereal crop production in Buhera Ward 30 (Agritex Officer, personal communication, July 26, 2019)

Through my discussions with key government officials in Buhera district, I learned that most of the Southern parts of Buhera district are no longer viable for maize production and most people are now into growing small grains which are also struggling due to these persistent dry spells and droughts. The only food coming to the district is from the Western and Southern parts of the district which are still suitable for growing maize, but most officials claim that that food is not sufficient to feed the whole district as it constitutes only 20% of the district's food requirements.

This is a sad development for rain fed peasantry agricultural systems with limited access to irrigation facilities and who are responsible for the production of the country's staple foods such as maize, millet, and groundnuts (UNGA, 2020: 9). Given that the farming areas in AER II that used to receive normal to above normal rainfalls are now being reported to be experiencing lower rainfall patterns similar to those being experienced in AER III (Brown *et al.*, 2012:3), these shifts have also brought about changes in cereal growing areas for crops such as wheat and maize (Brazier, 2015:61; GOZ, 2016b: 66). Studies by Brazier (2015:61) highlight that these climatic changes will affect the growth of maize and sorghum crops in the Southern and Western parts of the country. According to Dodman and Mitlin (2015), "agriculture vulnerability and adaptation assessed using three indicator crops (sorghum, maize, and cotton):

area suitable for maize and cotton will decrease in northern and southern parts of the country; sorghum shows less sensitivity to climate change" (225). Surprisingly, these areas used to be the major strongholds for crop production. As a result of the above factors, Zimbabwe's agricultural production levels, especially on cereal production, which is the country's staple food, has been on the decline since the 1960s, as shown in *Table 5.10* below.

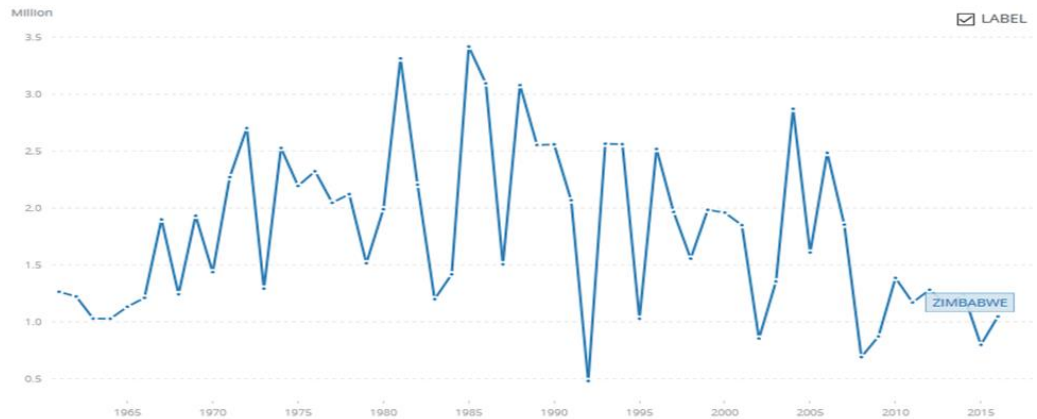


Table 5.10 Cereal Crop Production in Zimbabwe (1961-2016) (MT). Table adapted from World Bank (n.d.)

According to the World Bank (n.d.), the cereal production levels in Zimbabwe fell by more than 200,000 metric tons between 1961 and 2016. Although the cereal production levels have been above the 1.5 million metric tonnes (MT) threshold during the entire period of 1961 and the late-1980s, a sharp decline can be witnessed in 1992. Several studies have blamed such sharp decreases on globally induced economic development programs and the devastating drought that hit the country during the 1991/92 growing season. Since the 1992 drought, the cereal production levels in Zimbabwe have been struggling to surpass the 1.5 million MT threshold with more declines being witnessed after the turn of the 20th century. Studies by Brown *et al.*, (2012:7) show that Zimbabwe's annual maize production levels from 1993 to 2000 fell from the average 1.64 million metric tons to approximately 1.08 metric tonnes (2001-

2008) production levels. Similarly, the Southern African Development Community (SADC) (2012) has shown that from 2002 to 2012, an estimated average of 3.1 million people in Zimbabwe have been food insecure per year, with climate variations being the major cause. The low cereal production trend continued to 2018, where FAO (2020, March 23) studies indicated that the country harvested only 1.94 million tonnes which were 24% lower than the 2017 crop production rate. FAO (2020, March 23) further expounded that the decreased cereal crop yields in 2018 were due to the mid-season dry spell that hit the country in January of that particular year.

Given this background, it is undeniable that decreases in Zimbabwe's cereal production levels are perpetuated by the extreme climatic conditions happening in the country. According to the GOZ (2017c), the country's Global Hunger Index increased from 16.5 in 2014 to 30.8 in 2015 and this was due to erratic rainfall and drought conditions (6). Poor climatic conditions have either hampered crop growth or reduced the area available for crop production in most regions of the country (FAO, 2020, March 23). In supporting this notion, the FAO's (2020, March 23) climate forecasts demonstrated that the below normal rainfall situation between January and March during the 2018/19 growing season, which is usually the peak of cereal crop production in the country witnessed approximately 2.4 million food-insecure people during that period (FAO, 2020, March 23). Unfortunately, similar studies by the GOZ (2017c) indicate that approximately 78% (4.8 million) of a total of 6.3 million children living in rural areas live in extreme poverty with food shortages. Furthermore, the UNGA (2020:9) also confirmed that almost 50% of the 2019 cereal production was lost to adverse weather conditions, with 5.5 million (approximately 38% of the total rural people) declared food insecure. Interestingly, "droughts-induced losses are not completely borne by farmers; instead,

a portion of the losses are passed on to consumers through increased prices. The higher the price increases, the more losses will be passed on to consumers" (GOZ, n.d:9).

By taking a closer look at the maize production levels among small-scale agricultural producers in Zimbabwe, as indicated by Zimstat (2017a), the maize crop production levels among these farmers, except for communal farmers, have significantly declined between 2010-2015. For example, maize production levels among A2 and A1 and farmers decreased by 185,000 and 52,066 tonnes, respectively between 2010 and 2015, while production in communal areas increased by 191,209 tonnes during that period. However, some experts were quick to blame the low maize production and increased food insecurity experienced in communal areas on the government and farmer's failure to heed technical advice given to them by experts. Two government officials argued that:

"There is a need for a paradigm shift/behavioural change from the government and within our people. First, the government has to stop distributing maize seeds (which dominating the inputs in the command agriculture program) to households in areas that are not productive for maize production. Secondly, households need to take signs and technical advice seriously and change their farming behaviors by stopping to grow maize in these drought-prone areas (Harare, Government Official, 1).

"There is a need for a shift towards growing more drought-tolerant crops e.g. groundnuts, small grains (sorghum and millet), beans. Sadly, communal farmer's areas still in the habit of growing maize in no productive areas. On the other hand, "small grains are also being affected by droughts because of low rains and low moisture over a long period, as the rain season is short for these crops to mature)" (Harare, Government Official, 3).

However, through my discussions with the majority of communal farmers, I learned that the resistance posed by farmers in shifting from the growing of maize to small grains goes beyond

behavioural change or unavailability of seeds as highlighted by most government officials. Firstly, there is high uncertainty among farmers in terms of growing small grains. This uncertainty stems from a variety of factors that include lack of proper farming land and poor agricultural input and output markets for these crops. Similarly, the majority of farmers are not used to growing and consuming these crops. As a result, most farmers found it labour intensive to grow them, while others often complained of their poor taste and these are some of the reasons people shun growing these crops.

Similarly, the older generation was also quick to blame the younger generations for the droughts and low food production happening in their regions who they say are not respecting their traditional practices. One elder said:

"Our ancestors are angry with us that's why we are experiencing these unending droughts in this area...our elders (those who have stopped giving births) used to perform some traditional rituals to appease the medium spirits that brought us rains and abundant food in the past... nowadays we hardly practice this since we have adopted the western practices... if you move around the ward you will see young people playing in those sacred places...I tell you our ancestors are angry with this"
(Bibera Local leader, 60s).

This shows us that the majority of older farmers are failing to accept that climate change is real and affecting most communities around the world. Unfortunately, this denial by the older generation is happening at a time when several studies by the IPCC are projecting significant food crop production reduction in low income countries due to warming temperatures and changing rainfall patterns (IPCC, 2014; 2019; Schnurr, 2019:5). Similarly, as I observed during fieldwork, such ignorance among the older generation has been exacerbated by lack of

knowledge and poor mainstreaming of climate change and adaptation programs in the small scale farming regions of the country by the government and NGOs.

On a similar note, the crop assessment studies in Zimbabwe highlighted that the persistent food insecurity challenges are due to farmers' preference to continue growing the maize crop which hardly survives in the warm and drought conditions in these marginal areas (UNDP, 2017:78). Basing on my discussion with one government official, he said that "climate change has left several rural households more vulnerable because of the 'maize culture', that is people grow-up believing that maize is the only major source of food. Now droughts are affecting the production of maize in these vulnerable areas making households overly on food aid programs" (Harare, Government Official, 2).

On the other hand, the changing climatic conditions that brought about warming and flooding in these regions also exacerbated pests and diseases for crops and livestock in these regions. Studies by the Zimbabwe Vulnerability Assessment Committee show that over 58% of cereal crops (maize, sorghum, millet, and cowpeas) in small scale farming regions succumbed to the Fall Army Worm in 2019 (ZimVac, 2019). Similar reports by SADC (2013a; 2017) indicate that armyworm infestations witnessed during the 2012/13, and 206/17 agricultural seasons in Zimbabwe resulted in low agricultural production levels. As highlighted by a government official, "these pests and diseases are foreign to us and they flourish under the dry spells currently happening here and they include the Fall Army Worm (affecting maize crops), Mealie Bug (affecting cotton crop), and *Tuta absoluta* (affecting Tomatoes)" (Chipinge, Government Official, 2). These pests attack most crops during the vegetation and reproductive, a development that saw most households harvesting zero yields from their fields across the country (ZimVac, 2017).

These sentiments were shared by the majority of communal farmers in both districts during my discussion with them. Communal farmers complained that the new crop and animal diseases are on the rise, thus worsening the food insecurity situation in various regions of the country. They claimed that the prevailing warming conditions are harbouring pests and diseases which in turn are affecting their crop and livestock production. One farmer indicated that "I used to average harvest 1-2 tonnes for sorghum, finger millet, groundnuts, and beans per on a good season but now I will be lucky to get a 20-liter bucket of either sorghum or millet due to droughts and selected years of the Fall Army Worm infestations," (Buhera Male, 50s). Studies show that, in some districts in Masvingo Province, the rate of the Fall Army Worm infestation can be as high as 70%, resulting in zero cereal harvest for most households in these districts (ZimVac, 2019:36). Similarly, the warmer conditions in communal areas have introduced foreign diseases such as malaria that are affecting people in areas that used to not experience such diseases. These diseases were unknown in the Highveld and cooler regions of Zimbabwe, but climate change has brought warmer weather in these regions, creating a conducive environment for the mosquito parasite. One government official resident in Chipinge district said, "We used to have cooler summers but suddenly they have become warmer the whole areas are now being infested with mosquitos. Since I started living in this area we never heard of malaria, worse still the high cases of malaria that we are hearing now" (Chipinge, Government Official, 1).

Fears are that the intensity and frequency of extreme climatic conditions such as droughts and floods are expected to continue to increase in the coming century in Sub-Saharan Africa (SSA), with cases of hunger and malnutrition expected to increase due to ever-decreasing rates of crop production (Chikodzi *et al.*, 2013:36). The cereal productivity losses in some of Zimbabwe's drier regions (AER IV and V in the Southern and Northern parts of the

country as shown in *fig. 5.2* below will average between 25-50% productivity losses (Manyeruke *et al.*, 2013; Brazier, 2017:63).

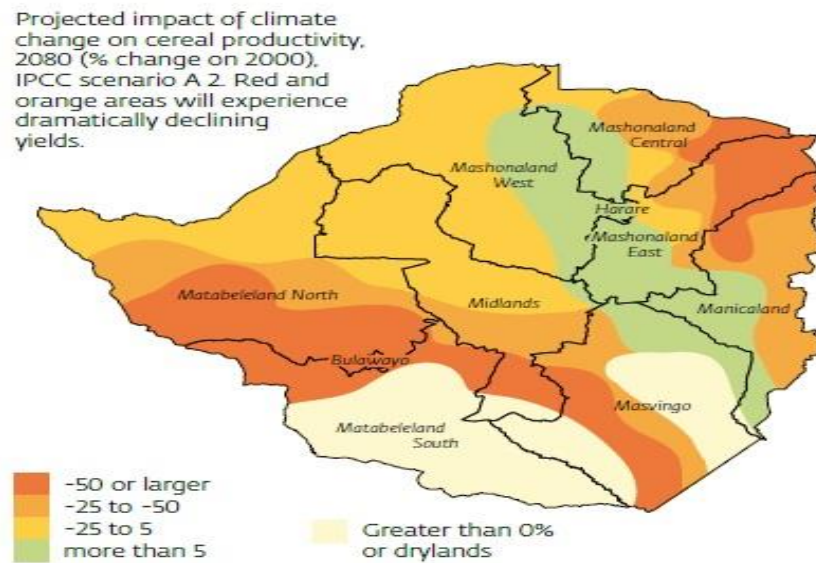


Fig.5.2 The likely impacts of climate change on crop yields in Zimbabwe. Adapted from Brazier (2017: 63)

Apart from the reduced cropping areas, most of the Southern and Western regions of Zimbabwe will not be conducive for growing crops such as maize, which require a greater amount of water because of climatic change by the end of this century (Brown *et al.*, 2012:4; Brazier, 2015:61). The most affected people in SSA will be those small-scale farmers in these poor regions with no irrigation systems, and who primarily depend on rain-fed agriculture production systems.

Such decreases in cereal production will have long-term food security implications, and nutrition and dietary consequences for most Zimbabweans, who "severely lacks diversity and largely dependent on maize" (UNGA, 2020:11). Furthermore, Zimbabwe's small-scale farmers just like other farmers around the world, risk being displaced by climate variabilities as they lack irrigation facilities needed to support their agricultural production systems (World Bank,

2015, February 20; Rigaud *et al.*, 2018:78). Similarly, studies have shown that involuntary out-migration is high among poor farmers located in poor agricultural regions with limited irrigation facilities, especially for those farmers who reside in low-lying and dryland areas due to droughts (Parker, 2018, March 19).

5.4 Climate change and livestock production

In addition to reduced cereal yields, droughts reduce availability of drinking water and pastures which eventually lead to (i) animal deaths, (ii) low rate of conception and miscarriages, (iii) low milk output, (iii) poor livestock value due weight loss and, (iv) reduced draught power from animals (GOZ, n.d:10). In most areas of Buhera, I discovered that pastures and water sources were dry making it difficult for most livestock. This was highlighted in most interviews, and one government official said "the growth rate of grass needed for pastures is now very low... some of the nutritious grass species for livestock are now missing due to climate change (droughts)... most cattle have turned into browsers instead of being grazers due to lack of pastures" (Harare, Government Official, 4). According to the UNDP (2017:49), pastures are degraded due to droughts, which have contributed to high moisture losses and poor forage, and increased incidents of veldt fires in smallholder farming regions. Communities in Buhera and Chipinge attested to have witnessed the high frequency of droughts which are associated with declining livestock production in communal areas. According to one farmer I interviewed, he said "stock herds are now on the decrease here in Buhera and this is largely due to fading grazing pastures and drying up of water holes we use for supplying drinking water for our livestock" (Buhera Male, 30s).

Similar issues were also noted by a government official working and district level. He highlighted that; "livestock production is at great risk due to droughts in the district, for example, lack of pastures, foliage, drinking water, and increase in diseases have reduced stock heads for most farmers" (Buhera, Government Official, 4). Furthermore, said by a senior district official in Buhera "droughts have deepened water tables and depleted most water sources in the district including water holes that we used in supplying water for our livestock. As a result, people are forced to walk for long distances with their livestock for drinking water. In most cases, livestock have been limited to drinking water once a week" (Buhera, Senior District Official). This is detrimental to ruminant production systems, especially on cattle as a lack of drinking water and exposure to extreme heat conditions expose these animals to increased diseases (UNDP, 2017:82).

Although specific data on livestock production within communal areas could not be established, the countrywide livestock data collected from the Ministry of Agriculture in Harare show that drought years directly correspond with declined cattle herds. Similarly, the high prevalence of livestock pests and diseases have negatively affected livestock production in communal areas. Three government officials said:

"The changing climatic conditions have brought new livestock pests and diseases with them...most communal areas are overwhelmed with pests and diseases that include tick-borne, foot and mouth, Theileriosis or January disease and anthrax diseases affecting cattle, while chickens have been hit hard by the Newcastle diseases" (Chipinge, Government Official, 2).

"The high cases of theileriosis and anthrax diseases have resulted in more 2700 (since 2016) and 600 (since 2006) cattle deaths respectively in the district" (Buhera, Government Official, 1).

"We have several livestock diseases are coming out in Buber North. People in those regions are losing most of their cattle which are their major source of food, draught power and incomes during periods of livelihoods stress due to these climate-related deaths" (Buber, Government Official, 6).



Fig.5.3 Livestock in Buber North struggling to get water due to excessive droughts which have dried most drinking water sources

Studies show that heatwaves associated with climate change can lower dairy milk production by 10-14%, and there are very slim chances for these dairy cattle to fully recover once exposure to heatwaves (UNDP, 2017:50). Field data collected from the Ministry of Lands, Agriculture and Rural Resettlement shows that dairy milk production in the country has been declining since 2001, as shown in *Table 5.11* below.

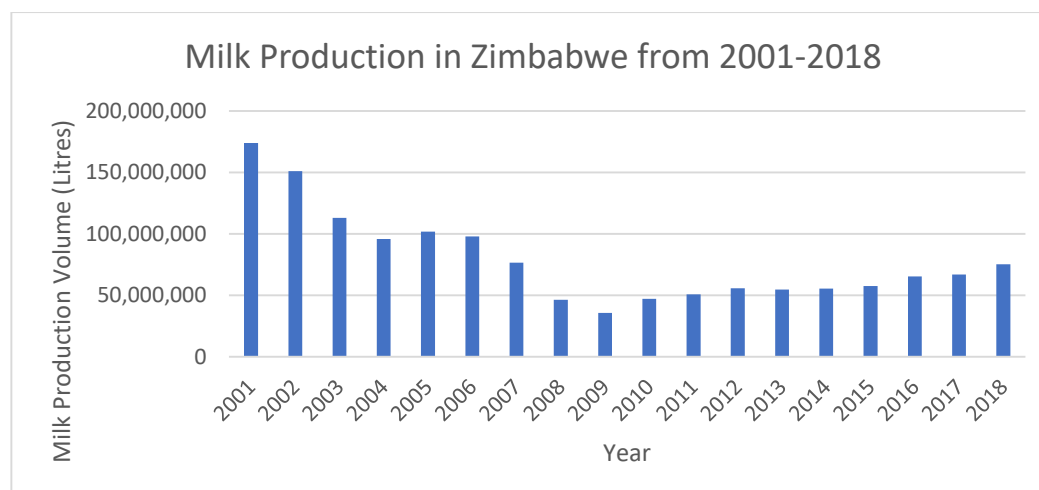


Table 5.11 Milk Production in Zimbabwe (2001-2018) (Agritex Livestock Department, personal communication, July 28, 2019)

This is an unwelcome development for an agro-based Zimbabwe economy, especially for farmers in drier regions practicing arable farming and livestock production in these extensive farming regions (GOZ, 2015:1). As a result, as highlighted by one farmer, "people have now been deprived food and a balanced diet due to droughts and prevalence of pests and diseases, lack of milk, beef and, goat meat which used to be abundant in the district, but now scarce as farmers have reduced their stock sizes.

All this has had ripple effects on people's livelihoods as livestock deaths, including low dairy milk correspond to low incomes and high poverty, and surges in food insecurity cases among poor households who end up relying on the donor for food aid" (Buhera, Male, 40s). Studies by the Government of Zimbabwe highlight that, there have been high cases of calves facing stiff competition for milk due to these shortages, and people also realizing less income from their livestock due to poor animal conditions on drought seasons in rural areas (GOZ, n. d:10).

These extreme climatic conditions prevailing in the country have forced several rural households to dispose of their productive assets at low prices, and this has even made it harder for these households "to satisfy the food and domestic need of a household especially when grain is obtained from open market where it is sold at exorbitant prices" (UNDP, 2017:51). In Buhera, said a government district official, "cattle are being sold at distress prices here, for example in 2016 cattle price went down to as low as USD\$80/head compared to USD\$300/head that people usually demand on a good season due to drought and food insecurity. Other families exchanged cattle with a few bags of grain which are not equivalent to the actual price of that beast and this is done to satisfy their immediate food needs" (Buhera, Government Official, 6).



Fig. 5.4 Harvested pods of a Camel Thorn Tree (Vachellia Erioloba Seeds) being dried. These pods are used by communal farmers to supplement their stock feeds during periods of climate-induced food stresses for livestock

From the interviews, farmers attributed the lower cattle and price on the prevailing climatic conditions and prevalence of pests and diseases which are hampering livestock production. In this case, said one livestock farmer in Buhera, "it is undeniable that droughts and livestock pests and diseases have reduced the market prices of our beasts including the quality of our beef products, and this has directly affected people's nutritional levels. Our cattle breeds are becoming smaller (less meaty), and producing a poor quality of beef, thus reducing their marketable produce due to climate change" (Buhera, Male, 40s). This has all compromised the food security in rural areas as livestock herd is regarded as a form of saving and risk aversion during periods of climatic stress. In this case, these challenges brought about by climate change on livestock production have "breached the last line of defense" for most farmers, thus exposing them to food insecurity and human mobility, as a last resort.

5.5 Climate Change Governance in Zimbabwe

Zimbabwe signed and ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 (Brazier, 2017: 87, Southern African Climate Finance (SACF), 2017: 6). In showing its commitment towards combating climate change, Zimbabwe also signed and ratified other UNFCCC treaties and protocols, including the Montreal Protocol, the Kyoto Protocol (1997), the Hyogo Framework for Action (2005-2015), the Sendai Framework for Disaster Risk Reduction (SFDRR) (2015-2030), and the Paris Agreement of 2015 (Paris Agreement, 12 December 2015; GOZ, 2016a; 2016b; 2017c; Brazier, 2017: 93; SACF, 2017: 6). The country has also signed several climate change-related treaties and conventions outside the UNFCCC protocol, including (i) Convention of Biological Diversity, (ii) United Nations

Convention to Combat Desertification (UNNCCD) in Africa, (iii) The SADC Climate Change Adaptation Strategy for the Water Sector, (iv) The Water, Climate and Development Program (WACDEP), and (v) The World Meteorological Organization (SADC, 2010: 20; GOZ, 2015:64; GOZ, 2016b:131; Brazier 2017:93).

On paper, Zimbabwe seems to have good climate policies and frameworks that provide opportunities for rural communities to adapt to climate change. Climate policies such as the; National Climate Policy (NCP) (2017), National Climate Change Response Strategy (NCCRS) (2015), Zimbabwe Draft Risk Management Strategy and Action Plan (ZDRMSAP) (2017), including the National Drought Plan, among others, provide potentially highly effective mitigation and adaptation plans needed to combat the dangers of climate change in the country. For instance, the NCP which is the "mother" of all climate policies in Zimbabwe, "guide climate change management in the country, enhance the national adaptation capacity, scale-up mitigation actions, facilitate domestication of climate-related global policies and ensure compliance to the global mechanisms" (GOZ, 2017a:4; Brazier, 2017:93). Some of the policy frameworks aligned to the NCP include (i) the National Climate Change Response Strategy (NCCRS), (ii) Nationally Determined Contribution (NDC), (iii) Meteorological Services Act, (iv) Forest Policy, and (vi) National Environmental Policy, among others (Brazier, 2017:93; GOZ, 2017a: 2,4). In addition, the NCP is mandated to promote sustainable development and improve people's adaptive capacities to climate change in the country through four key action plans that include (i) reducing climate vulnerability through strengthening adaptive capacities and climate governance structures, (ii) promoting stakeholder collaborations between the government, private sector and donor communities to increase climate resilience, (iii) encouraging the development and strengthening of climate research and

monitoring technologies, and (iv) improving climate awareness and information sharing platforms (Brazier, 2017:93; GOZ, 2017a:2,4).

Similarly, the NCCRS through its sectoral approach seeks to mainstream climate change and socioeconomic development at both national and sectoral levels through multi-stakeholder engagement, and targeting 3 key sectors that include the natural systems, economic, and physical and social infrastructure sectors (GOZ, 2015:10). In mainstreaming climate change across sectors, the NCCRS identified seven key pillars that focus on (i) adaptation and disaster risk management, (ii) mitigation and low-carbon development strategies, (iii) capacity building, (iv) governance framework, (v) finance and investment, (vi) technology development and transfer and, (vii) communication and advocacy (GOZ, 2015:10,11; Brazier, 2017:95,96). Also, the Zimbabwe Draft Risk Management Strategy and Action Plan (ZDRMSAP), which is an agricultural sector-specific policy framework were designed to promote sustainable and inclusive agricultural production systems in Zimbabwe. The ZDRMSAP focus centers are on profitable agricultural systems that are environmentally friendly, climate-resilient, and, inclusive of vulnerable groups such as women, youth, and children (GOZ, 2017b: 5, 6). This policy is centered on six strategic pillars of the mitigation strategy that were formulated around the Windhoek Declaration for Enhancing Resilience to Drought in Africa and the SFDRR strategies and priority goals that include, (i) Governance & Policy for Drought Risk Management, (ii) Drought Monitoring & Early Warning, (iii) Vulnerability & Impact Assessment for Drought Risk Reduction, (iv) Drought Preparedness & Mitigation, (v) Drought Awareness, Knowledge Management & Information Exchange, and (vi) identify & Reduce Underlying Factors of Drought Risk (GOZ, 2017b:8,9).

Since all climate policy frameworks in Zimbabwe are aligned to the NCP, which is also aligned to several UNFCCC and SADC conventions, including the United Nations Sustainable

Development Goal (SDG) number 13 (GOZ, 2017a:2), most of the climate change adaptation strategies being adopted by these national policies in the agricultural sector are centered around CSA principles, agricultural research and development, and high investments in agricultural and climate monitoring technologies. For example, the NCP advocate for (i) climate-resilient agricultural systems that encourage sustainable land-use practices that are aligned to CSA principles, (ii) investments in agricultural research and development, especially on drought-resistant crop and livestock breeds, and (iii) investments in irrigation facilities and climate forecasting technologies to support agricultural production in drylands, among others.

Similarly, the NCCRS' sectorial approach to climate change mainstreaming on the agriculture sector focusing on four thematic areas, which include Farming Systems, Crop Productivity, Livestock Productivity, Agriculture, and Water (GOZ, 2015:34-38). This will be achieved by using various strategies that include,

1. Development of frameworks for supporting agricultural specialization according to agroecological regions
2. Development of frameworks for promoting science-based crop production and post-harvest technologies and management practices
3. Strengthening the capacity to identify and promote the adoption of indigenous and improved livestock breeds that are tolerant to climate-related stresses.
4. Strengthening national research and extension capacity for development and integrated management of agricultural water resources (GOZ, 2015:34-38)

According to the Government of Zimbabwe, these strategies "ensure that mitigation and adaptation measures enhance agriculture-based livelihoods, by promoting food security and poverty alleviation" (GOZ, 2017a: 6). Not only do these policies allow farmers to adapt *in situ*

through averting the dangers brought about by climate change, but they go further in encouraging profitable agricultural production systems among rural farmers. Unfortunately, these climate adaptation policies, however, have not made much difference in people's lives, as over the years the country has witnessed increased climate change-induced food insecurities which have led to high human mobility cases across the country. In the following sub-sections, I will examine the major constraints and gaps in climate change programming in Zimbabwe which are leading to human mobility.

5.6 Constraints and Gaps in Climate Change Programming in Zimbabwe

5.6.1 Extreme Poverty and Climate Change Adaptation

Firstly, the high poverty levels in Zimbabwe's communal areas have inhibited farmers' efforts to respond to climatic stresses. According to the World Bank (2010b: 26), poverty is the number one factor that limits people's "access to entitlements, and resources, and directly shapes sensitivity to risks", thus increasing their vulnerability to climate change. In Zimbabwe, poverty is more pronounced in rural areas, where 76.9% of people are deemed poor, while individual poverty prevalence is 86% (Zimstat, 2019b:61). In addition, poverty is more common among people in Communal Lands, as shown in *Table 5.12* below (Zimstat, 2019b:62). People in Zimbabwe live in difficult circumstances, and climate change is likely to exacerbate their vulnerability and poverty levels due to the lack of physical, financial, and human capital that complicates their adaptation and recovery from climate variabilities (World Bank, 2010b; UNECA, 2013b; Zimstat, 2019b). For example, in rural Zimbabwe, a small margin of approximately 0.1% of people own a tractor, with less than 2.1 % having a water

pump, while approximately 1.1% of the total rural population is believed to have tractor-drawn implements (Zimstat, 2019a:69).

Land use area	Prevalence (%) of		Prevalence (%) of	
	Poverty	Extreme poverty	Poverty gap index	Poverty severity index
Communal lands	79.2	34.0	38.3	21.8
Small scale commercial farms	67.0	27.3	30.8	17.2
Large scale commercial farms	63.9	21.9	27.9	15.0
Resettlement areas	76.4	29.9	35.2	19.5

Table 5.12 Rural Poverty Head Count for Households by Land Use Sector. Adapted from Zimstat (2019b:62)

Furthermore, the majority of people in communal areas have limited access to key assets such as cattle that cushions people from livelihood stress and poverty, as shown in Table 5.13 below (Zimstat, 2019b:65).

Livestock	Mean household ownership (number of heads)			
	Communal lands	Small scale commercial farms	Large scale commercial farms	Resettlement areas
Cattle	2.3	3.3	3.7	2.9
Poultry	10.6	14.9	11.6	12.6
Pigs	3.8	5.6	12.1	3.4
Sheep	5.3	12.8	5.8	5.8
Goats	5.4	6.4	6.3	5.6

Table 5.13 Livestock Ownership by Land Use-Average Number Owned for Households Owning the Livestock (Excluding Zeros). Adapted from Zimstat (2019b:65)

This shows the highest level of poverty in Zimbabwe's communal areas, with the majority not having collateral security or access to financial institutions needed for them to invest in agricultural equipment and inputs needed for boosting their agricultural production (World Bank, 2019; Zimstat, 2019a; 2019b). In addition, rural poverty in Zimbabwe is rife among

women, children, and the elderly people who form the bulk of communal farmers who rely heavily on rain-fed agricultural production systems (Muzari *et al.*, 2013:1763-1764; Nyahunda & Tirivangasi, 2019: 7). This is a worrying situation for women in Zimbabwe, with limited access to irrigation facilities needed to support their agricultural production during this period of climatic stress. In most cases, the exodus of the young men, who happen to be the economically active age group in the labor-intensive agriculture sector, has led to the underutilization of arable land and, over-burdening of women who are usually left behind to take care of the fields and the family (Brown *et al.*, 2012: 13; Muzari *et al.*, 2013:1764).

Also, the high poverty rates in communal areas have rendered most government and donor-led social programs useless. Studies by Mtetwa & Muchacha (2013:19), also highlighted that due to high poverty cases in communal areas, most social protection programs in these areas have been ineffective in addressing the socio-economic challenges affecting people. Similarly, the data I collected from the field also showed that most districts across Zimbabwe are now overwhelmed with high poverty and food insecurity challenges. Two government officials working for the Social Welfare Department in Buhera and Chipinge said:

"There are approximately 27600 households in Buhera South West that are food insecure and accessing the Drought Relief Grain program where there are receiving a 50kg bag per month per household. These numbers might increase as we move away from the harvest period. The Social Welfare Department used to cater to 15000 households per season. but the numbers have since gone up due to climatic and weather patterns affecting farm production in the region" (Buhera, Government Official, 6).

"The number of food-insecure households in the region is increasing every year, as there is more request for food aid in most areas of the district. In April (2019) the district had 9000 cases of food insecure

and benefiting from our government food aid programs...each household is given a 50kg bag of maize grain per month for 1 year. However, these cases have since increased after the Cyclone Idai disaster and the government has asked for assistance from the international community since it does not have the financial capacity to feed everyone affected" (Chipinge, Government Official, 1).

I also observed that most of the climate resilience programs promoted by the government and the donor community, such as the Bonde Irrigation Scheme and Atikoreri Livestock Production Project in Buhera are suffering from poor numbers. As highlighted by one farmer,

"We have many small irrigation gardens in this ward, including the Bonde Irrigation Scheme that was established by the government, but these projects are only accommodating a few households given the fact that everyone is being affected by drought and hunger every year in this ward. For example, most of the irrigation gardens have a small carrying capacity of less 90 households and have also been suffering from lack of irrigation water and poor fencing as livestock usually break in and eat all crops...as for the Bonde Irrigation Scheme, most people who benefited from this scheme are outsiders and not from our ward 30... you find people coming as far as Murambinda and Birchnough and these people are government workers who are not needy candidates" (Bubera Male, 50s).

As a result, the country's social protection programs have been blamed for their low coverage, as they are only serving a few people and lack of transparency (Mtetwa & Muchacha, 2013:20; World Bank, 2016). In most cases, the needy people are being denied entry into these programs such as the cash transfer, and food aid programs, including other government/donor-funded community development due to high vulnerability cases and poor funding. One Buhera farmer said:

"As far as I know, we have the social welfare programs that are giving people grain and cash but getting into these programs is hard as they focus on elderly and widows though everybody has been affected by droughts in this region. These donor programs are accommodating few households, and I heard that in our ward only 5 households are benefiting from Cash Transfer Programs out of 7900 people and they are not receiving their monies on time. Lastly, the food basket offered is not sufficient to support lives... how can 150 households with an average of 5 members each expected to share 25 bags of grain (50kgs)? As a result, each household is taking home less than 2kgs of grain and how do you expect 5 people to survive with that? ...in the 1990s each family member used to get 10kgs of maize grain per head but this is no longer happening now. Lastly, these grain deliveries are not constant...instead of people getting their food commodities, it is taking more than 3 months for the government for this grain to reach households" (Bubera Male, 40s).

This all shows us that climate change adaptation policies were deemed to fail from the onset due to the prevailing high poverty levels in Zimbabwe's communal areas that are making adaptation difficult. Compounding to these challenges, the ineffectiveness of social programs has been hampered by lack of transparency and, limited funding from the government and donor community, a factor that has increased poverty and complicated the climate change adaptation process in these poor areas.

5.6.2 Lack of coordination among key stakeholders in climate change mainstreaming

Secondly, there is a lack of coordination between and within various government sectors in climate change policies in Zimbabwe (GOZ, n.d:7), a development that has exposed more rural people to climate vulnerabilities. In this case, lack of coordination stems from the sectoral

approach that was adopted by the government on its climate change programming agenda. The sectorial approach is clearly stated in policy documents such as NCP and NCCRS. For example, under the NCCRS, climate change mainstreaming and mitigation is done using three key sectors namely, (i) The Natural Systems, (ii) The Economic Systems, and (iii) The Physical and Social Infrastructure Sector (GOZ, 2015; 18, 31, 42; Brazier, 2017:95, 96). In this regard, each sector is given the authority to design and implement its climate change policies, strategies, and action plans in response to climate change in Zimbabwe. This has seen several Government departments such as the (i) The Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement, (ii) the Environmental Management Agency (EMA), and (iii) the Zimbabwe National Water Authority (ZINWA) being autonomous as they are mandated to design, mainstream and mitigate their climate adaptation policies in isolation. As a consequence, there is a lack of coordination among these key government departments and stakeholders. One government official highlighted this during one of my interviews in Harare. He said "there is poor coordination between sectors, for example, several government departments that include department of climate change, Agritex, EMA, and ZINWA are working in isolation, hence there is need for a robust approach in climate change management for effective adaptation to happen in this country" (Harare, Government Official, 2).

Similarly, there have been reported cases of policy repetition, and at times conflicts arising within various government departments. For example, as of now, there are several climate policies on promoting resilient food systems that are emanating from different policy documents produced by different government agencies such as the (i) Zimbabwe Draft Risk Management Strategy and Action Plan, (ii) the Environment Management Act, (iii) the National Food and Nutrition Policy, (iv) the National Food and Nutrition Strategy, (v) The Water Policy and, (vi) the Water Act (GOZ, 2017b:5). This simply shows us that climate

change in Zimbabwe is still being addressed in "uncoordinated sectoral policies, strategies and action plans" (GOZ, 2015:64), as there is no national policy that coordinates all these sectors (Mugabe *et al.*, 2013: 318). As highlighted by one government official, "...thus, there is a need to work signs, players, and policy together for effective climate change adaptation...Is the learning informing our actions on the ground because learning should inform action" (Harare, Government Official 1). This lack of coordination and information sharing among different sectors in climate change programming and mainstreaming has compromised national efforts in combating climate change effects (Piguet *et al.*, 2011:16; Gemenne, 2011:46; SADC, 2013b:27; (UNECA,2013a).

As highlighted by several scholars, there are no pre-defined mechanisms and boundaries for collecting and collaborating climatic data at national levels. Different organizations and sectors use different terminologies, concepts, and definitions in their analysis, thus complicating the whole process of collecting, consolidating, and analyzing this climatic data (Gemenne, 2011:46; Piguet *et al.*, 2011:16 & McLeman, 2013:604). According to one government official:

"Climate change is a cross-cutting phenomenon that affects many sectors, thus coordination is always a challenge. Firstly, the terminologies and technologies in climate change programming are difficult to define as they are context-specific. For example, what we call climate-smart in one area may not be smart in another area, and this shows us that there is no one size fits all, so we have to find what works where and what does not work there. Secondly, in monitoring, people are struggling to come up with indicators. For example, at the African Union, they have Vision 2025 where there are looking at 25 million farmers practicing CSA by 2025. This is a challenge because the CSA practices will be so different in every country, and coming up with indicators on what are we going to look for to say this is a CSA practice is going to be difficult. This gives a lot of challenges to reporting and monitoring

because indicators vary depending on the place and countries' specific goals. In a nutshell, reporting, documentation, and monitoring becomes a major challenge in climate change programming" (Harare, Government Official, 6)

Such data, information, and knowledge gaps were noted by the Government of Zimbabwe on its 3rd National Communications to the UNFCCC (GOZ, n. d:137). The report clearly states that effective reporting on GHG inventories was inhibited by "lack of disaggregated activity data, and consolidated information on national or sector specific socio-economic impacts of climate change" (GOZ, n.d:137). Furthermore, climate change observations are administered by different departments such as the Meteorological Service Department (MSD), ZINWA, Forest Commission; Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement; Ministry of Energy and Power Development and; Ministry of Health and Child Care (GOZ, 2015:64; GOZ, 2016b:114). This is all found in different policies and Acts that include: (i) Environmental Management Act No.13 of 2002, (ii) The National Water Act No 31 of 1998, (iii) The Zimbabwe National Water Authority Act No 11 of 1998, (iv) The Civil Protection Act No 10 of 1989, (v) the Meteorological Services Act of 1990, and the (vi) the National Policy and Program for Drought Mitigation, among others (Muzari *et al.*, 2013:1762). However, lack of coordination, and synergies among institutions, has led to overlaps in mandates, conflicts, duplication of roles, unclear mandates, and dissemination of different or "mismatch data" which is dangerous for regional, national, and subnational planning and policy formulation processes (SADC, 2013b; UNECA, 2013a; UNECA, 2013b; Kelsaite & Mach, 2015; Mburia, 2015). Similarly, most of these institutions cannot carry out their given tasks such as designing, implementing, and monitoring climate change programs, a development that has further complicated climate adaptation in the country. Furthermore, as highlighted by an international NGO official:

"There are institutional challenges in data collection, analysis, sharing, and dissemination of data across government departments. For example, the Zimstat is only mandated in collecting and reporting on migrant data but lacks analysis capacity. They only provide data stating the numbers of people moving with no description. They lack the technical data analysis skills of providing deep insights into what kind of stories the data will be telling us. We need more context into this, for example, the motives behind these people's movements" (International NGO Official, 4)

In this sense, lack of institutional capacities stems from poor government institutions that lack the know-how in climate change policy implementation in developing countries (Brown *et al.*, 2012:22). This lack of institutional capacities has been a result of poor climate change programming skills in key socio-economic sectors such as agriculture, health and, natural resource management (Brown *et al.*, 2012:22; World Bank, 2016). These capacity gaps constrain effective climate change adaptation (Muzari *et al.*, 2013:1762), as they require highly "coordinated government institutions that are able to translate higher level policy into plans" (Brown *et al.*, 2012:22).

Lastly, lack of coordination among various stakeholders in climate change programming in Zimbabwe has affected the smooth operation of most social protection programs in the country due to lack of diligent monitoring and evaluation, thus increasing vulnerability of communal farmers to climate changed-induced food insecurities. Similarly, these programs have failed to make positive differences in people's lives as have "no clear defined strategy, lacks on going monitoring and does not prepare beneficiaries for self-reliance" (Mtetwa & Muchacha, 2013:22). Given this, it is difficult to measure the impact of these programs on beneficiaries without proper monitoring and evaluation activities. Instead of reducing climate vulnerability among farmers, such programs end-up promoting laziness and disempowering most people in communal areas (Mtapuri, 2012: 369). This was also

captured during my interview with one senior district official who said "the donor dependency syndrome is very high in the region and that has made most people lazy... they are not working hard in their fields with the assumption that donors and the government will assist us...this has affected the climate change adaptation process" (Buhera, Senior District Official).

In a nutshell, climate change adaptation has been negatively affected by lack of coordination among key stakeholders responsible for designing, implementing, and monitoring climate change adaptation programs in communal areas as in most cases these programs are characterized by duplication, conflicts, and sometimes confusion among its intended users. As a solution, said an international NGO official, "there is need for stakeholder collaboration and partner-support from the government in the integration of climate change initiatives within a broader scale and working together for effective change to happen in Zimbabwe" (International NGO Official, 1)

5.6.3 Lack of community participation and overreliance on science and technology-based approaches to climate change adaptation

Thirdly, and on a related note, the formulation and implementation of climate adaptation policies and programs are often not compatible with the local context and generally have a lack of community involvement when being formulated. Participation, in this case, encompasses; collecting and analyzing data, project formulation, and evaluation among others in a collective manner (Laws et al., 2013:224). With meaningful participation, communities and groups are empowered by being given the chance to identify their food insecurity challenges caused by climate change, act on them, and adopt solutions that suit their local context (Latapi, 1998; Laws et al., 2015: 224). Furthermore, affected communities are presented with a chance to

come together, share ideas, control their development initiatives, decisions, and resources. Unfortunately, most climate policies in Zimbabwe suffer from lack of participation and this is despite participatory and inclusivity forming the fundamental principles of the NPC and the NCCRS, including the Gender Policy. Several studies show that the policy engagement process has only been limited to some climate experts who are officials in key government departments and members of the civil society while excluding the potential beneficiaries of these policies who happen to be small scale farmers (Brown et al., 2012:20; Doldman & Mitlin, 2015:227; Monjane, 2018:17).

From my fieldwork, all the farmers I interviewed indicated that they were never consulted in the formulation of these policies. By excluding small-scale farmers who represent the most vulnerable groups in the society from participating in these policies formulation, means that most decisions are done without their consultations, thus resulting in "conflicting desires, outcomes, and huge gaps" in climate change programming (Mburia, 2015:19; Monjane, 2018:8). The seats of these forums are usually reserved for men who take a central role in prescribing all climate change adaptation policies and programs in most societies (Monjane, 2018:7). The exclusion of women in these forums has had negative effects on climate change adaptation in developing countries as women (most affected and direct beneficiaries of these policies) are excluded from the planning process, thus exacerbating the already existing gender inequalities found in most communities (Brown et al, 2012:12; Monjane, 2018:7).

Furthermore, the government risks having these climate adaptation programs fail to address the real challenges affecting people on the ground. The danger is that "national adaptation formulated without the participation of those intended to adopt them will limit rather than facilitate adaptation and potentially cause maladaptation" (Brown et al., 2012:20;

Monjane, 2018:7). As indicated by Latapi (1988:132), participatory mechanisms empower communities and groups to discover issues that affect them, and possibly the actions needed to be undertaken to address them. Similarly, through participating, communal farmers are empowered by being given the chance to identify their food insecurity challenges caused by climate change, act on them, and adopt solutions that suit their local context (Laws et al., 2013:224; Nyahunda & Tirivangasi, 2019:7). Thus, "to understand the implications of adaptive measures for all people involved, it is necessary that all members of an adapting community should be represented in all climate change planning and government processes" (Muzari et al., 2013:1766). Failure to involve the affected communities may also lead to a lack of community buy-in in these climate change adaptation programs.

For example, the Climate Smart Agriculture strategy as a climate change adaptation strategy that was drafted by international institutions and being promoted by several governments from developing countries including Zimbabwe has suffered from a lack of participation, and several scholars blame its applicability in poor economies. This strategy relies on scientific strategies, and advocates for conventional forms of agriculture that support the (i) use of hybrid seeds and synthetic fertilizers, (ii) acquisition of weather tools necessary for informing farmers their cropping times, and (iii) purchasing of smartphones among others for farmers to comply with the requirements of geotagging needed to boost agricultural production in rural areas (Monjane, 2018:7; Newell & Taylor 2018:112). This strategy that was enforced on communities is well reflected in climate policy documents such as the National Climate Policy (NCP) and the National Climate Change Strategy Response (NCCRS) (GOZ, 2017a:5, 6); GOZ, 2015:34-38; Brazier, 2017:97). Similarly, other science and technology-led solutions being imposed on Africa that includes the growing of genetically modified (GMO) crops as a way of increasing incomes, mitigating the negative impacts of climate change, and

improving the food security situation in the continent has gathered momentum over the years (Schnurr, 2019: 4,5).

Without a doubt, the adoption of CSA strategies helps to improve soil nutrient management practices, water harvest and retention methods and, subsequently increased crop production (Bakarr et al., 2013; Muzari et al., 2013:1766; Klytchnikova et al., 2015; Phiiri et al., 2016). The challenge is on its applicability to an economy that is suffering from high poverty rates and economic instability. This is because the CSA strategy encourages communities to adapt to climate change using irrigation systems, fertilizers, certified hybrids and, improved pasture and livestock waste management (Klytchnikova et al., 2015; Phiiri et al., 2016) which are beyond the reach of the poor. Apart from the dangers associated with the excessive use of agrochemicals and fertilizers to sustain higher crop yields that include environmental deterioration, decreased soil fertility, and water pollution (Schnurr, 2019:11), the adoption of such technologies has been a major challenge for a poor country like Zimbabwe. According to a newspaper report, the USA Today, Zimbabwe is ranked among the 25 poorest countries in the world, with a GDP per capita of less than \$2 000, and with over half of its total population relying on the agricultural sector for their livelihoods (Stebbins, 2020, July 02). In addition, most communal farmers in Zimbabwe, as shown in Table 5.12 and 5.13 above, are in poverty and lack financial assets and these have been some of the major factors inhibiting such agricultural investments in rural areas.

These issues were also noted in various key informant interviews I conducted. One government official said, "the government needs to roll out earth observation systems, GIS and science technologies for extension officers to monitor climate data and help farmers mitigate climate disasters. Unfortunately, such innovations are negatively affected by lack of

funds, and capacity building among stakeholders on the use of this data (Harare, Government Official, 2). These high poverty cases found in rural Zimbabwe make it impossible for poor farmers to implement this strategy in climate change adaptation. Apart from the high costs associated with the CSA as a Climate Change adaptation strategy, these strategies are grounded on technological solutions that fail to acknowledge the political, ecological, and socio-economic factors that are crucial for effective climate change adaptation in Zimbabwe (Dodman & Mitlin, 2015, Schnurr, 2019:210).

Similarly, there are also growing fears in the international development field, as the modernization of smallholder agriculture will provide new land security challenges for most small-scale farmers. These fears stem from land consolidation policies that are being promoted by the modernization of the agricultural sector that will see most small-scale farmers losing their land to large-scale farmers, hence being displaced and forced to seek wage employment in other sectors (Schnurr, 2019:201). Furthermore, the vast array of social science scholarship questions the power relations that characterize these interventions and the implications for farmers in terms of consent, democratization, data ownership, decision making, and autonomy. The efficiency of this technology in smallholder agriculture has been marred by misrepresentation of facts especially by organizations and institutions that are leading the promotion of these interventions such as UN institutions, World Bank, Biotechnology, and Fertilizer organizations in pushing forward their agenda (Newell & Taylor, 2018:110).

According to Schnurr (2019:198), “the science of genetic modification is moving faster than the social science evaluation of technology’s capacity to achieve its lofty goals. The vast majority of studies that assess the potential for genetically modified crops to improve agricultural development rely on econometric models or large scale surveys”. Similar studies

posit that the research methodologies being used to assess the efficiency of modern technologies in reducing hunger and promoting agricultural development across the world, that include econometric models fail to recognize the context-specific issues that determine the absorption of such technologies by smallholder farmers (Schnurr, 2019:198). In addition, the CSA strategies fail to "recognize the importance of indigenous seeds and the production of small grains (pulses) as a way of climate change resilience practices" (Monjane, 2018:7). Also, some of the strategies encouraged by the CSA strategy that includes Conservation Agriculture (e.g. zero-tillage farming for soil water conservation) (Muzari et al.,2013:1766) has been criticized for being labor-intensive especially in drought-hit communal areas that are suffering from a high exodus of the economically active age groups.

Having said this, I argue that with better community participation in the formulation of these policies, communities are better positioned to mitigate the negative impacts of climate change. However, there is a need to protect minority groups (women, youths, and the elderly), as participatory platforms can be abused by the powerful groups (White, 1996:7) especially by men in patriarchal societies like Zimbabwe. In most cases, these vulnerable groups' views are usually looked down upon, hence, limiting their participation while exacerbating inequalities and poverty among these groups within the community (Laws et al., 2013:226). As highlighted by a government official working at the Crop Breeding Institute, "there is a need for participatory plan building in climate change programming. The government should tailor-made research to suite particular context in Zimbabwe's communities, that is moving away from the conventional system (top-bottom approach) that used to decide things in Harare, and bring them to farmers without consulting with them... some microenvironments need special treatments now" (Harare, Government Official 3). Similar sentiments can be used to explain the failure of science and technology-based innovations brought about by international

institutions in climate change adaptation in Zimbabwe. Such technologies are more suited for large-scale agriculture production, hence transferring them to communal agriculture which is a "completely distinct mode of production has failed" (Schnurr, 2019:194), as witnessed by the high food insecurity and human mobility cases happening in those marginal areas.

5.6.4 Macroeconomic challenges and poor climate, agricultural investments and financing

Fourthly, the perennial macroeconomic challenges facing Zimbabwe have negatively impacted all efforts in combating the challenges brought about by climate change in communal areas. These challenges emanate from (i) poor financing in agricultural investments, (ii) limited funding for agricultural research and development, and (iii) poor investments in climate monitoring technologies. (UNECA, 2013b; Muzari *et al.*, 2013; GOZ, 2015; Mburia, 2015; GOZ, 2016b; FAO, 2016b). The challenges in securing sustainable funding for its climate change adaptation programs have seen Zimbabwe extending its hand to external financial sources such as International Financial Institutions (IFIs), and this development has created more adaptation challenges for the country.

5.6.4.1 Poor financing in agricultural investments

Several studies show that the poor financial status in Zimbabwe has had negatively affected climate adaptation, thus frustrating every effort the country has made in tackling food insecurity, rural poverty, and investments in climate monitoring technologies that are crucial for safeguarding rural livelihoods (Mburia, 2015:20, 27; FAO, 2016b:6). Success stories on the correlation between high agricultural investments (especially on irrigation facilities and climate

technologies) and increased agriculture production and incomes among smallholder farmers have been well documented across the climate change and agriculture literature, including by studies done in Zimbabwe by Mano & Nhemachena (2007:22, 23). As noted by similar studies, not only do high investments in the agriculture sector improve production and incomes but it also helps in cushioning smallholder farmers from poor climatic conditions (Mano & Nhemachena, 2007:22, 23). However, in Zimbabwe, poverty, and food insecurity cases have been on the rise in rain-fed agriculture production systems as high tracts of arable land that has been left unutilized due to droughts and poor investments in the agricultural sector. Studies by FAO (2016b:4) show that more than 1.5 million ha of agricultural land has been underutilized due to poor investments in restoring the dilapidated water bodies across the country.

Similarly, fears are that without proper investment in irrigation systems, the country would have lost its physical sources of resilience as irrigation systems play a pivotal role in boosting agriculture production in drought-prone areas of the country (World Bank, 2019). All these strategies are found in the blueprints of policies such as the NCP, NCCRS, and ZDRMSAP that advocate for climate-resilient agriculture systems that are supported by (i) high investments in climate monitoring technologies (ii) investments in irrigation systems and water bodies (iii) investment in climate-resilient crop and livestock breeds (iv) investments in human capital and awareness programs and national and community level. Unfortunately, the underperformance of the Zimbabwe economy "characterized by macroeconomic imbalances such as the high budget deficit, balance of payment deficits, inflation and low economic growth" (Zimstat, 2019b:35) has resulted in poor investments in agricultural facilities and systems, thus exposing more and more people to socio-economic stresses due to increased climate vulnerabilities.

Furthermore, the financial constraints facing the country has seen limited investments in agricultural research and development. Studies show that countries that invest in agricultural research and development stand a better chance of addressing food insecurity. All over the world, there are several socio-economic and environmental benefits to farmers, especially for countries that have clear agricultural research and development policy that supports either the development or growing of improved seed. According to Muzari *et al* (2013:1765), improved seed varieties not only promote food security but also assist in environmental protection issues that curb land degradation and farmers are guaranteed high yields from farming small pieces of land (Muzari *et al.*,2013:1765). According to Schnurr (2019:5), “genetically modification is being advanced as a means or redressing stagnating yields, of alleviating poverty and hunger, of starving off the threat of population growth, and of mitigating the unpredictable effects of climate change”. Other studies have also shown that "agricultural research and development has high returns, averaging 43% in developing countries and 34% in Sub-Saharan Africa" (World Bank, 2019: 48).

Studies by Mano & Nhemachena (2007:22), and Muzari *et al* (2013:1765) have highlighted that, in Zimbabwe, where droughts are rife, the adoption of drought-tolerant seed varieties and livestock breeds would help in ensuring food security, improving rural incomes, and improving soil quality while reducing land degradation. In this case, agriculture research and development are also important in averting hunger especially in the country's poor agroecological regions that are characterized by sandy soils with poor water-holding capacities. Studies by the Department of Research and Specialists Services of Zimbabwe (DRSS) (2016) argue that the development of bio-fortification in maize hybrids helps in reducing the effects of abiotic and biotic stresses on the maize crop that are brought up by "droughts, heat, poor soil fertility, disease, insects and pests" (3). Not only does such development alleviate abiotic

and biotic stresses on the maize crops common in smallholder farming, but also helps in improving the nutrition of children (DRSS, 2016:3). Thus, for effective climate change adaptation in these marginal areas, research and development need to focus on the development of "seed varieties that stays on the soil for more time before the rains, as well as early maturity seeds" (Mano & Nhemachena, 2007:22).

Unfortunately, limited research and development due to financial constraints on improved seed varieties such as small grains that thrive well in these marginal areas by the Government of Zimbabwe have been blamed for the poor adaptation in these regions (Nyahunda & Tirivangasi, 2019:7). However, the current scholarship on agricultural intensification do not support these claims, and argues that science innovations in high yielding food crop varieties lead to (i) increases in yields at the expense of growing inequities among farmers, as large-scale farmers tend to benefit most from these arrangements (ii) over-use of agrochemicals which have long-term negative effects on the environment, and (iii) an increase of crop pests and diseases as a result of monoculture activities being promoted under such innovation (Schnurr, 2019:11).

Over the years, agriculture spending in Zimbabwe has been mainly focused on providing agricultural input subsidies instead of research and development, which happens to be the key driver for agricultural growth (World Bank, 2019:62). And this has seen the decline over the last couple of years in Zimbabwe, a development that has hampered the breeding of such varieties (Mugabe *et al.*, 2013: 318). For example, studies by the World Bank (2019:12) highlight that government expenditure on research and development which was on the rise by more than 50% between 2011-2014, suddenly took a nosedive over the last couple of years. Currently, Zimbabwe's investments in agricultural research and development are below 0.7%

of its GDP, and this is despite pledges by most developing countries in devoting approximately 1% of their GDPs on agricultural research and development (World Bank, 2019:14).

Poor investments by the government on agriculture research and development brought several challenges to farmers as most of them continue to use hybrids that do not suit their local soil and climatic context. In cases where these varieties exist, lack of information from the government and seed research institutions has been a major barrier for farmers to access these improved seed varieties (Muzari *et al.*, 2013:1765). For example, upon being faced with these challenges, most farmers have been prompted to buy and plant crop varieties available on the market that do not suit their particular context (Mano & Nhemachena, 2007:22). In addition, the lack of funds has prompted poor farmers to end up planting uncertified hybrids, thus causing serious production and food security challenges (Muzari *et al.*, 2013:1765). Similarly, the prevailing drought situation has limited the capacities of farmers to use certified hybrids as most farmers are in fear of purchasing certified seeds due to the "low onset of the season and unfavourable weather forecasts which discouraged farmers from purchasing seed" (New Zimbabwe, 2020, February 5: para 6).

The use of adapted varieties in these vulnerable regions does not only "removing this fear factor of reduced crop yields" but farmers are "inclined to invest in their crop and purchase fertilizers, or take other steps to improve soil fertility and conserve water" (Muzari *et al.*, 2013:1765). Given these challenges, the Government of Zimbabwe has to ensure that agriculture research and development in the country should promote the development and adoption of new crop varieties and hybrids, especially shorter season and drought-resistant varieties/breeds that suit the local climatic conditions (Mano & Nhemachena, 2007:22). Meaningful participation of farmers in the early stages of the development and varietal

selection is crucial for buy-in, empowerment, and effective climate change adaptation (Muzari *et al.*, 2013:1765). In this regard, farmers are given the chance to choose varieties that addresses their climatic and crop production needs (Muzari *et al.*, 2013:1765).

In a nutshell, effective climate adaptation in Zimbabwe has been hampered by limited funding on research and development capacity building, including awareness programs and to implement adaptation and mitigation options (GOZ, n.d:138). I argue that the lack of funding for agricultural research and development funding in Zimbabwe stems from the colonial and post-independence decisions such as the FTLRP that saw the country targeted for economic sanctions by Western countries. This led to serious economic challenges that have made it impossible for Zimbabwe to access international finance or fund its agricultural research and development programs. Similarly, these funding challenges on research and development can be viewed in the context of neocolonialism by developed nations and institutions that need to shape agricultural development in low income countries through increasing their control over seed varieties and other agriculture-based technologies. There is no doubt that this is a strategy by international institutions and cooperations that “...increases cooperate control over seeds and deepens farmer dependence on fertilizers and pesticides. Advance of genetic modification in Africa is part of nefarious plot on the part of international corporations to foster global demand for their product” (Schnurr, 2019:5).

5.6.4.2 Poor investments in climate forecasting and monitoring technologies

Limited climate financing by the Government of Zimbabwe has also compromised investments in climate monitoring equipment and technologies in the country. Studies show that efforts to combat the impacts of climate change on the agriculture sector have long

suffered from poor investments in climate monitoring technologies, such as Automated Weather Stations (AWS), including agriculture extension and technological services (UNECA, 2013b; GOZ, 2015:57; GOZ, 2016b:121, 138). Climate technologies involve the "facilitation of drought preparedness and mitigation appropriate technologies, including use of remote sensing, local weather forecasting, drought-tolerant crops, early warning information systems, irrigation technologies and the building of resilience in rural communities are essential strategies" Nyahunda & Tirivangasi, 2019: 6). These technologies provide farmers with up-to-date climate information on rain and temperature patterns including the types of crops to grow, thus enabling them to make informed decisions regarding their cropping season (Mano & Nhemachena, 2007: 22). With proper climate technologies, farmers are well informed about the nature of rainfall and temperature patterns that helps them in choosing the right crop varieties to grow (Muzari *et al.*, 2013:1765). Furthermore, climate information enables farmers to adjust their cropping practice and implement farming strategies that minimize their climate risks (Muzari *et al.*, 2013:1765).

However, lack of such investments in climate monitoring technologies in developing countries has made it difficult to (i) predict climate change-induced pests and diseases, (ii) predict extreme weather conditions, (iii) establish the right times to plant and harvest crops, and (vi) implement best climate change adaptation practices (UNECA, 2013b, UNECA, 2017). Effective climate monitoring systems require equipment and technologies such as a high-performance supercomputer system that helps improve climate forecasting in developing countries including Zimbabwe (Brazier, 2017:115). However, the poor investments in climate monitoring technologies still hamper the activities of the Zimbabwe Meteorological Service Department (ZMSD). Zimbabwe's disaster response mechanisms have been heavily compromised by malfunctioning equipment, given that responses to climate variabilities are

usually a product of early warning systems generated by these obsolete weather equipment (SADC, 2010: 27). Given this, the technological and underfunding at ZMSD has resulted in (i) poor database management due to systems incompatibilities with modern technology systems (ii) lack of coordination, including data and technological transfers between different agencies, and (iii) high exodus of key climate observation personnel (GOZ, 2015:57; GOZ, 2016b:120).

Given these challenges, the Meteorological Services Department has been failing in providing farmers with the required climate information for them to make informed decisions about their cropping season (Nyahunda & Tirivangasi, 2019:8), as the ZMSD concentrate on providing "long-range predictions for the whole nation" (Mugabe *et al.*, 2013: 318). Similarly, due technological constraints, there have been challenges "on systematic observation, climate change mitigation and adaptation and technology transfer" (GOZ, n.d: 137) The lack of downscaling of climate data to small scale farmers has been regarded as one of the major hindrances of climate change adaptation in the country (Brown *et al.*, 2012:22). In Africa, lack of climate information has created uncertainty among farmers and this has affected their climate change mitigation efforts (Nyahunda & Tirivangasi, 2019:8). And this has been the case for Zimbabwe, despite assurances by the government and civil organizations for providing communities with the required climate information needed for them to enhance their resilience and adaptive capacities (Nyahunda & Tirivangasi, 2019: 8). Most farmers are now reluctant to invest in their agricultural production systems due to a lack of adequate information on rainfall and temperature patterns (Muzari *et al.*, 2013:1765).

In cases where climate data is available, most farmers have challenges in interpreting the data due to high illiteracy rates in rural areas of Zimbabwe (Mugabe *et al.*, 2013: 318), hence there is "need for strengthening national and local capacities to manage climate risks, as they are currently understood" (Brown *et al.*, 2012:22). As a result of technological and data

management deficits in Africa, there is limited knowledge about the continent's climate, and the inability for the government and communities to deal with imminent weather challenges, which further hampers the region's coping mechanisms (Mburia, 2015:20). As noted in most studies, effective climate change adaptation in Zimbabwe requires farmers to have easy access to climate information (Mano & Nhemachena, 2007: 22). Furthermore, the country needs to invest heavily in climate monitoring and forecast technologies through purchasing "new, state-of-the-art equipment to collect quality data for climate forecasting" (Mugabe *et al.*, 2013: 318).

5.6.4.3 Overreliance by the government on external funding

As a last resort to these financial challenges crippling climate change adaptation, most developing countries, including Zimbabwe, have been forced to over-rely on external funding channels coming from developed countries and International Financial Institutions (IFIs) for their developmental, and climate change adaptation programs (Mburia, 2015:17). This is true for Zimbabwe, as the high civil service wage-bill, coupled with low revenue lines and misuse of government funds, has seen little investments being devoted to climate change adaptation programs across the country from the government (Doldman & Mitlin, 2015:228). As a consequence of constrained budget lines and low climate adaptation investments by the Government of Zimbabwe, the country is made to over-rely on external funders such as the United Nations Development Program (UNDP) and a few aid organizations on its climate change and adaptation programs (Doldman & Mitlin, 2015:228). For example, in 2016, the UNDP pledged USD 50 million on the Zimbabwe Resilience Building Fund to build resilience among small scale farmers in the country (UNDP, 2016, May 19). Similar funding that followed include the recent, USD 3 million from the Danish Government (UNDP, 2020, January 24)

and the USD26.6 million injected by the UNDP Green Climate Fund to support resilient programs in Zimbabwe (UNDP, 2020, March 11).

Despite being affiliated to several climate change bodies, and also has ratified several international conventions on climate change mitigation and adaptation, the country's programs are only funded by the UNDP with no other bi-lateral and multi-lateral agencies willing to invest in such programs in Zimbabwe (Doldman & Mitlin, 2015:229). This all shows that international politics play a bigger role in determining climate change adaptation program investments across the world (Doldman & Mitlin, 2015:229). According to Schnurr (2019:202), international institutions have the “financial, political, and legal power to create and perpetuate narratives that serve their interest... while any opposition is dismissed as politics”. In this case, independent countries that choose not to follow or go against their mandates are usually excluded from receiving funding from them (Schnurr, 2019:202). Similarly, the majority of developing countries have often been complaining about several hardships in getting this financial assistance from the donor community due to difficulties in navigating the severe bureaucratic challenges; "cumbersome conditionalities", complex donor reporting mechanisms and, mismatches between donor programs and national policies (UNECA, 2013a).

Furthermore, limited donor funding for developmental programs including climate change mitigation and adaptation programs in developing countries has also been derailed by the high levels of corruption cases found in these countries. Studies by Nyahunda and Tirivangasi (2019:7) show that most of the efforts in tackling the effects of climate change in Zimbabwe have been "held back by corruption, debt crisis, and non-transparency as well as conflicts". According to Transparency International's 2019 Corruption Perceptions Index,

Zimbabwe is ranked among the most corrupt countries occupying position 158 out of 180 in the world (Transparency International, 2020). Similarly, corruption in the country's public sector is also high with a score of 24 out of 100 (with 0 representing highly corrupt and, 100 very clean) (Transparency International, 2020), and this shows us how corruption is part of the country's culture. Given these high levels of corruption in Zimbabwe, it is sad to say that there are no genuine donors who are willing to invest in the country's climate adaptation programs.

Similarly, the over-reliance on external funding has led to most developing countries to lose their autonomy and development trajectories as most of their domestic policies become influenced by IFIs (Thomson et al., 2017:3; Mburia, 2015:17). As highlighted by Schnurr (2019), "the major obstacle is the linear technology pipeline; a mode of addressing urgent development needs by creating new products to meet the demand that is presumed rather than confirmed" (201). As a result, most developing countries are forced to change their development plans/policies to accommodate these new demands brought about by these international funding institutions. This is reflected through IFIs conditionalities that are usually attached to their funding/aid directed to poor countries, such as the ESAP as indicated above (Thomson et al., 2017:3). For example, at most international conventions dominated by developed countries, developing countries are under-represented and their decisions continue to be sidelined at the expense of international funding organizations, who have the financial power to override their decisions (Mburia, 2015). Also, external funders determine the projects they want to fund, and in poorly resourced countries such as Zimbabwe, this trend has resulted in conflicts among different government departments over donor investment choices (Brown *et al.*, 2012:22; Doldman & Mitlin, 2015:229). For example, the UNDP Climate Change fund in Zimbabwe has escalated conflict between the then Ministry of Environment, Water and

Climate (MECW), and Ministry of Finance and Economic Development over the ownership of the funds including the program (Doldman & Mitlin, 2015: 228).

Furthermore, conflicts between the Government of Zimbabwe and the donor community also led to the ban of NGO activities in 2008 as NGOs were vindicated for meddling into national politics (Brown et al., 2012:22). One International NGO official said:

"Conflicts between government and the international donors have been escalating since the country was slapped with economic sanctions in the early 2000s. Also, the government has a lot of arrears with most donor countries, as a result, these countries are not willing to work with the government. Furthermore, donor fatigue among donors has increased vulnerability on climate change adaptation programs in Zimbabwe, as most donors are not comfortable to work with a country under economic sanctions. All these developments have seen a limit in the flow of funds available for climate change adaptation in Zimbabwe" (International NGO Official, 1).

Also, lack of finance has affected the country's reporting and negotiations including learning at international climate change conventions, as in most cases there are limited funds to send delegates to represent or participate at annual climate conference such as the Conference of Parties (COP) (GOZ, n.d:138). If not resolved, the overreliance on external donors among developing will continue to hamper Africa's progress in mitigating the effects of climate change (UNECA, 2013a; Mburia, 2015). All in all, effective climate change adaptation in Zimbabwe's communal areas has been made more complex by a lack of climate change funding on agricultural development and climate monitoring and forecasting technologies, among others (Masud *et al.*, 2017: 699, 704).

5.7 Climate Change and Human Mobility

From the discussion above, it is clear that the intensification of climatic events such as droughts and floods, and lack of proper climate change adaptation policies in rural farming areas of Zimbabwe are already triggering a high prevalence of human mobility in these vulnerable areas. Based on my personal experience of working directly with farmers in communal areas, I discovered that these population movements have been exacerbated by (i) the continual exposure of food crops to extreme climatic conditions, (ii) deteriorating natural ecological conditions, (iii) limited income diversification activities among people, and (iv) climate policies that encourage people to adapt *in situ* in these vulnerable regions. Although the climate change and human mobility literature in Zimbabwe is still lagging, there is no doubt that population displacements in AER IV and V will be triggered by a combination of factors such as, the colonial history that led to the establishment of these areas in poor agro-ecological zones, and the contemporary climatic factors which are making life and adaptation difficult in these marginal areas. As indicated above, Zimbabwe's AERs IV and V continue to witness high decreases in cereal production as a result of reduced areas under crop production due to droughts.

Studies have highlighted that climate change is already worsening the existing food insecurities in Zimbabwe's communal farming areas, increasing their imperative to out-migrate as a way of coping with the adverse effects of climate variabilities (Brown *et al.*, 2012:4; Brazier, 2015:60). The most likely destination for these climate migrants will be AER I and II, and this is largely due to the favourable climate and agriculture conditions found in those areas. As highlighted in previous sections of this study, both pre- and post-colonial human mobility patterns in Zimbabwe have been determined by socioeconomic and political factors, such as

the colonial Land Apportionment Act and contemporary Land Reform and Resettlement Programs, ESAP including Operation *Murambatsvina* among others. Surprisingly, there is no mention of climatic factors as one of the major human mobility drivers in Zimbabwe in this equation, and this is despite the country facing numerous droughts and floods since independence. This on its own shows that there is a lack of peer-reviewed studies on climate change and human mobility in Zimbabwe, although preliminary indications (mostly from grey literature) indicate that climate change has become one of the primary drivers of human mobility in Zimbabwe. For example, reports by the Zimbabwean Newspaper indicate that "crops are failing, livestock is dying and clean water is becoming scarcer, forcing many people to abandon their traditional homes" (2014, July 02: para.1).

Similar reports by Reuters highlight that people are fleeing the drought-prone Western low-lying areas to the Eastern parts of Manicaland, mainly in Nyanga and Chimanimani which are characterized by abundant water sources and favourable agro-climatic conditions (Mambondiyani, 2015, August 27). An announcement by a government official from the Ministry of Local Government, Urban and Rural Development in Zimbabwe also highlighted that approximately 20,000 people have fled hunger and droughts from the western low-lying to the eastern regions of Zimbabwe (Mambondiyani, 2015, August 27). Furthermore, reports on the AllAfrica website indicate that small-scale grain and tobacco producers in marginal lands of Zimbabwe are contemplating relocating due to climate change stressed livelihoods (Tsoroti, 2016, May 19). These farmers have long been subjected to poverty in their drought-stricken barren lands which are also infested with diseases that are threatening their livestock, and are contemplating alternative livelihoods away from their traditional homes (Tsoroti, 2016, May 19). The choice of destination for these migrants is determined by various factors that include their social capitals and networks, including access to jobs in destination areas. Various

reports indicate that most migrants use their strong social capitals and networks to relocate to urban areas, mining towns, or neighbouring countries such as South Africa (Muzari *et al.*, 2013:1766; Tsoroti, 2016, May 19). In most cases, those migrants with limited social capital and networks may prefer moving within the country, especially to other farming regions to minimize the relocation costs.

Although economic and political factors dominate human mobility literature in Zimbabwe, studies by Crush and Tawodzera (2016:9) show that 44% of the total 1.6 million Zimbabweans in South Africa are believed to have fled hunger and food shortages from droughts. Interviews conducted by The Zimbabwean Newspaper on irregular Zimbabwean migrants in South Africa showed that most of them are from the small-scale farming communities who fled droughts and food shortages (2014, July 02). One Zimbabwean farmer claimed to have lost 15 cattle and suffered from multiple food insecurity periods due to droughts before his departure to South Africa (The Zimbabwean Newspaper, 2014, July 02). In addition, a Zimbabwean journalist based in South Africa was also interviewed and highlighted that the large influx of Zimbabweans into South Africa was largely due to climate change-induced livelihood stresses in their home areas (The Zimbabwean Newspaper, 2014, July 02).

The recent devastating effects caused by Cyclone Idai in Zimbabwe that killed thousands of people rendered 17 608 people homeless, displaced 2326 people and, destroyed agricultural fields on the way (Sibanda, n.d) shows that climatic factors are now major determinants of population movements within the country. Similarly, the Labour Force and Child Labour Survey Reports indicate that approximately 124,000 people left their homes in search of better agricultural land, with another 4,000 people reported being displaced by natural disasters between 2011-2019 in Zimbabwe (Zimstat, 2015c: 226; 2020:215). Although the

Labour Force and Child Labour Survey Reports capture the numbers of people leaving due to natural disasters and the need for better agricultural land across provinces, these reports fail to provide us with relevant details on how those human mobility decisions have been reached, except the numbers. Similarly, most of the internal human mobility patterns reported in Zimbabwe Census Reports have been restricted to data collected on (i) changes on residential address and place of residence, and (ii) data on people about their time residing at particular places within the country's borders (Zimstat, 2013:30).

5.8 Conclusion

From this discussion, it is clear that climate change has been problematic for most rural populations located in marginal lands, hence increasing their desire to move. These movements continue to be exacerbated by food insecurity challenges resulting from changes in temperature and rainfall patterns, the high frequency of tropical cyclones and hailstorms, and poor climate change policies in small-scale agricultural communities of Zimbabwe. Similar to other agro-based economies across the world, in Zimbabwe "any reduction in the available water due to climate change will have a huge impact on the country's economy, which has already witnessed cropping patterns being negatively affected by climatic variability while irrigated land has also been reduced" (GOZ, 2016b:132). Furthermore, these climatic changes have led to shifts in agriculture growing seasons, including shifts in crop growing varieties in these regions. In this case, impoverishments brought about by climate change have negatively affected rural incomes, constraining their purchasing power and capacities to maintain their food security status (FAO (2020, March 23). Given this, there is a need for serious consideration of climatic factors such as primary drivers of human mobility in Zimbabwe's communal areas.

This adaptation challenges are still happening despite the country ratifying several UNFCCC and regional climate conventions that include, the Kyoto Protocol, Paris Agreement and Sendai Framework for Disaster Risk Reduction, the SADC Climate Adaptation Strategy on Water and the Windhoek Declaration for Enhancing Resilience to Drought in Africa, to name a few. At the national level, the country adopted several climate policies that include, the National Climate Policy (NCP), the Zimbabwe National Climate Change Response Strategy (NCCRS), the Zimbabwe Draft Risk Management Strategy and Action Plan among other sector-wide policies and Acts to support its climate change mitigation and mainstreaming efforts. These policies promote CSA principles which are beyond the reach of poor resourced small-scale farmers in Zimbabwe. Similarly, CSA and other science and technology-based climate change adaptation strategies proposed by outsiders on the African continent are meant to promote western capitalism, foster global demand for their products (Schnurr, 2019:5), and “reinvigorate the status quo for the post-1980s neoliberal food regime” (Newell & Taylor, 2018:125). Furthermore, climate change adaptation policies are failing to improve climate adaptation in communal areas due to (i) high extreme poverty cases, (ii) poor coordination between stakeholders in climate management, and (iii) poor agricultural and climate monitoring investments, among others.

All of these complex factors have complicated the climate adaptation process in Zimbabwe resulting in increased vulnerability of food production systems, poverty, food insecurity, and subsequently high human mobility cases among the rural poor. Furthermore, these adaptation challenges have also made it impossible for the country to attain its SDGs (1,2, and 13 on zeroing poverty, hunger, and combating the impacts of Climate Change (GOZ (2017c). Hence, there is a need to tailor-made these climate policies for them to effectively address the plight of rural farmers which are making climate change adaptation difficult.

Consequently, all this has resulted in high cases of food-insecure households and subsequently people's movements in rural Zimbabwe. Fears are that the worsening climatic conditions projected for Zimbabwe, coupled with limited adaptation strategies, will continue to expose these marginal communities, leading to the displacement of several small-scale communal farmers in these affected regions (Chikodzi *et al.*, 2013:36). Recent grey literature reports indicate that the likely destinations of marginal farmers in AERs IV-V have been to regions in AERs I-III that guarantee them sustainable food supplies and incomes. All this confirms that climate change is now one of the primary factors of human mobility in Zimbabwe, despite being overshadowed by socioeconomic and political drivers over the years. Lastly, human mobility should be considered as a climate adaptation strategy in communal areas, since most rural households are undertaking it to sustain their livelihoods.

Chapter 6: The Patterns and Consequences of Human Mobility in Communal Areas of Zimbabwe

6.1 Introduction

Life has become increasingly difficult for most peasant farmers in communal areas of Zimbabwe. These miseries are largely due to the interplay of climatic and non-climatic factors that are responsible for shaping the food insecurity situation in these marginal areas. In response to these challenges, the majority of farmers have engaged in human mobility as a climate change adaptation strategy to safeguard themselves from the looming food insecurity challenges. In this case, the labour migrants send food remittances to support their families back home during periods of climate-induced food insecurity. As demonstrated by various participants, these human mobility patterns in communal areas take various shapes, depending on the socio-economic conditions available for each household. Under normal circumstances, communal households have either engaged in short-term or long-term migration depending on the availability of casual jobs and farming land in destination areas. Similarly, as highlighted from most of my interviews human mobility decisions are also determined by a household's social networks in communal areas.

Having said this, the following sections of this chapter reflect on the different views expressed by farmers and experts during my fieldwork which I conducted in Buhera and Chipinge Rural Districts of Zimbabwe between May-August, 2019. This discussion is limited to our understanding of (i) the types of human mobility patterns undertaken by households during periods of climate-induced food insecurities, (ii) the impacts of social networks including the importance of food remittances in encouraging climate adaptation in communal areas, and (iii) the socio-economic and environmental challenges brought about by human

mobility in communal areas. As highlighted above, all the views presented in this chapter are from migrant experiences.

6.2 Observed short-term human mobility patterns happening in communal areas

From the field studies, I observed human mobility patterns of people moving from non-productive agricultural areas to productive areas due to droughts, cyclones and high temperatures over the last couple of years in communal areas. The majority of people revealed that the worsening climatic conditions have been exposing them to food insecurity, low agricultural incomes, hence people opting to out-migrate to the areas that offered them better-living conditions. The interviews I conducted with various migrant farmers from the drier regions of Zimbabwe farming in Chipinge revealed the following information:

“I could not harvest anything in Bubera due to droughts, and I was left with no option but to try my luck in Chipinge where I am assured of good soils, good climate, and guaranteed good harvest unlike in Bubera” (Bubera Migrant Farmer, Female, 45)

“This is a big relief on my agricultural-based livelihoods as I can harvest more grain here unlike home where I barely harvested” (Bubera Migrant Farmer in Chipinge, Male, 40s).

“I came all the way from Bocha, in Marange Area searching for better climatic and agricultural land here in Chipinge...in Bocha, I encountered drought induced-food shortages every year. Before coming here, I had tried other areas in Headlands Areas hoping to get good lands and good harvest but I was disappointed as I suffered from the same challenges of poor agriculture production due to poor rains and agricultural soils that needed high investments in fertilizers which I did not have. But things

changed since I moved to Chipinge. Here I am realizing my full potential as I am now getting good crop harvest and good reliable rains and soils to support that. (Bocha Migrant Farmer in Chipinge, Male, 45).

"I left my 7 hectares of land in Masvingo for 3 hectares of land here in Chipinge. It was not my choice but I could not withstand the droughts, warm temperatures, and high crop losses I endure from the Fall Army Worm year-in-year-out in Masvingo. Here, I can harvest over 3 tonnes of grain per hectare compared to less than a tonne I realized from my farming land in Masvingo" (Masvingo Migrant Farmer in Chipinge, Female, 50s).

From these interviews, it is clear that AERs I and II of Zimbabwe have become hotspots for migrants from other drier regions of the country. These marginal farmers had endured many seasons of bad harvest before coming to Chipinge. However, the good soils and climatic conditions found in Chipinge have inspired most farmers to migrate to the region, as they are guaranteed food security, and higher yields per hectare, unlike in their home areas. This is true, given that the high veldt areas of Chipinge are located in AERs I, II, and III which are intensive farming regions with reliable rainfalls (FAO, 2006). Furthermore, the richness of the Chipinge area, including its rich biodiversity and abundant land left behind by the colonial farmers have attracted farmers from other marginal regions of Zimbabwe. This was said by two migrant farmers in Chipinge:

"This region (Chipinge) is way better than Buberu, here there are perennial rivers, reliable water supplies, and good agricultural soils that support agricultural production, unlike in my home area of Buberu which is dry and have sandy soils that are not conducive for agriculture production" (Buberu Migrant Farmer in Chipinge, Male 50s).

"I was tempted by the fertile lands, good rainfall patterns, and availability of land, and I am happy the land reform program allowed me to farm here. Furthermore, the area has a variety of fruits that people can survive on through selling without even engaging in the farming of grain (Bubera Migrant farmer in Chipinge, Male, 60s).

Interestingly, the majority of local Chipinge residents are aware of this high influx of migrants into their area, including the reasons behind these population movements. This was mentioned in one of my Focus Group Discussions with the local Chipinge people who said: "We know these immigrants are here because of the imminent food shortages in their home areas and they think they can have better lives in our areas though we are also facing similar challenges here" (Focus Group Discussion, Chipinge Female, 55). Some migrant farmers employ a mixture of mobility strategies in short term migration to work as a seasonal worker in Chipinge and other farming regions, while others engage in permanent migration patterns. A government official and senior district official in Buhera said:

"Seasonal out-migration is more common in this district, and it is usually men who are out-migrating to Chipinge and other areas in AERs III with Large Commercial Farms such as Wedza in Chikomba District to work in those farms. The general trend is that they seek short term farm jobs such as harvesting where they are paid in food grain and immediately come back with grain to feed their families, and this is the only viable option for households to supplement food deficit in the district at household level" (Buhera, Government Official, 6).

"Reports coming to our offices show that people are engaging in short term migration to other districts such as Chikomba, Chipinge, and Gutu for work. These are generally Large Scale Commercial

Farming Areas with irrigation schemes and they always encounter labour shortages during the weeding and harvesting periods, hence providing piece jobs for our people in exchange with food especially maize. These short-term movements usually happen during the districts' food problematic which extends from August to December, as most of the households would have finished their food stocks. The situation gets worse from December onwards and this is the period people often leave the district in search of casual jobs in Chipinge and Chikomba Districts” (Bubera, Senior District Official).

I also learned that most farm owners in Chipinge are well abreast of the food insecurity situation in poor areas like Buhera through their local contacts, and they often use this situation to their advantage to recruit seasonal farmworkers from these areas. These seasonal workers are hired to undertake various jobs that include weeding, and harvesting which they are paid with maize grain. My discussion with the labour migrants in Chipinge showed they prefer to be paid in food rather than money due to hyperinflation and, high food prices which makes their monetary wages valueless in the time of payment. Similarly, the high transaction costs associated with using mobile money agencies such as Ecocash have led most migrants to prefer to receiving their wage in the form of maize grain. A labour migrant in Chipinge said:

"We demand our payments in the form of food as money in Zimbabwe does not work at all. The moment you receive these bond notes (local currency) you won't buy anything with it ...the money is useless and worse still the food prices are increasing every day, making money useless. Also, if you get paid by Ecocash (local mobile money transfer platform) and want to send that money home, I tell you all your money will be consumed by the high transaction charges charged by money transfer agencies, and your family will end up receiving nothing. So I should get paid with food as my family is guaranteed of having more days with food on their table" (Bubera Labour Migrant in Chipinge, Male 40s).

However, I noticed that this form of payment is important in addressing the imminent food security challenges, but fails to cover other costs associated with non-food items, such as medical expenses, school and dip tank fees, and money for agricultural inputs, among others which are crucial for supporting rural livelihoods. These farm owners have local agents who recruit these workers for them. I coincidentally ran into one register with potential seasonal workers in Buhera who were waiting to be transported to work in Chipinge, and upon interviewing some of the people on the lists, I discovered that these seasonal workers are normally provided with transport and logistics to carry them including the accommodation and food in Chipinge was the responsibility of the farm owners.

Similarly, many traders engage in short term human mobility patterns from Buhera to Chipinge and other surrounding regions such as Birchnough Bridge, Nyanyadzi, Mutare, and Chimanimani. These traders regularly travel to these food-rich areas intending to look for grain to feed their families. The majority of the traders I spoke with carry with them meat products (beef, sheep, goat), firewood, doors mates made from tree barks which are in short supply in destination areas to trade with maize grains and other food crops such as potatoes. Their journeys usually last for 2 weeks and they return home as soon as their products and wares are sold. One female trader I spoke with said:

"I do not carry or accept cash when I go or trade-in Chipinge. I usually slaughter and carry my goat meat which I trade with maize grain or fruits (avocados, mangoes, guavas) which are abundant here in Buhera but in short supply in Chipinge...I normally get a 5-liter tin of maize grain for every kilogram of meat I carry, and this works for me because I will acquire enough grain to feed my family (Buhera Female, 40s).



Fig.6.1 Interview with Buhera Local Leader

This trade is made possible because of the climatic conditions in AERs I, II, and III that promote intensive crop production, while the extensive agricultural conditions found in AERs IV and V have a comparative advantage in livestock production (FAO, 2006). These conditions have created a demand for meat products in intensive farming regions (AERs I, and II), and maize grain demand in extensive farming areas (AERs IV, and V), necessitating trade between these regions.

These short-term human mobility patterns have also been common among the youth who leave drought-prone regions due to lack of economic opportunities to various destinations including large scale commercial farms in search of sustainable incomes. As highlighted by one potential migrant from Buhera: "there are no industries and jobs in Buhera, and we have nothing to live for here, however, the availability of jobs in large scale commercial

farming areas in Chipinge and Chikomba has attracted the majority of us with no passports...those with passports prefer destinations like South Africa (Buhera Male, 28). This shows that poor rural development coupled with limited income earning opportunities have been a major factor in driving human mobility decisions in these poor regions of Zimbabwe.

Apart from lack of employment opportunities, as mentioned in previous chapters, the current macroeconomic structure that has resulted in hyperinflation and high food prices, shortage of agricultural inputs coupled with extreme climatic and environmental challenges have also exacerbated human mobility issues in communal areas. As highlighted by several studies, the high annual inflation rates, increase in food prices, shortages of foreign currency that have hampered the importation of agricultural inputs, and high prevalence of drought condition have compromised the food security situation and facilitated population movements in communal areas (FAO, 2016b; UNDP, 2017; World Bank, 2019, October 13). These claims are hard to dispute, given that the country's history of underdevelopment has led to high poverty in these areas, thus prompting the majority of people to move to the areas that offer them better opportunities. These issues were also brought out during my discussions with the communal farmers and experts. They said:

"The Chipinge area is different from other areas...this used to be the home of White Farmers and there are lots of Tea and Coffee Estates and Plantations...the area is well developed with good road networks that used to serve the economic interest of these farmers. Now there are a number of people coming from marginal areas such as Buhera, Masvingo, and Chiredzi in search of casual jobs...and this largely due to lack of employment opportunities in those areas and the favourable climatic conditions and abundant farms and estates jobs here that attract laborers from different parts of the country" (Chipinge, Government Official, 2).

"The macroeconomic challenges have contributed to most of the rural-urban migration patterns especially among young people who leave their home areas to look for greener pastures. Secondly, the price economy is forcing people to leave depressed farm incomes in marginal areas into urban areas, as key crops are not fetching good prices" (Harare, Government Official, 1).

"The writing is on the wall for everybody to see, young people are leaving and they are leaving in big numbers...the major reason for their movements is droughts and economic challenges affecting everybody including us the working class. Food, grinding meal, and transport prices are going up every day. These young people are moving in any direction including to mining towns, farming areas, and urban areas hoping to get incomes and food for their families" (Bubera, Government Official, 4).

"Farming is no longer a viable business for most people in this area. It starts from buying expensive seeds and fertilizers which we have to go as far as Murambinda to get it due to shortages, then comes harvesting time, one produces two 50kg bags of maize grain because of the dry conditions here. Take note, you have a family to feed, school fees to pay, and livestock dipping fees waiting for you, how can a farmer survive in that environment? I am tired of this, and soon I will be leaving for Chimanimani to work in the Banana Plantations" (Bubera Male, 30s).

"Most people move from rural areas to towns and not necessarily because of climate change, but because the rural economy is not functioning, that is, people rely on cash, so they can not sell anything because no one has the cash to buy. On the other hand, droughts and the struggling economy, that is the cash crisis is exacerbating poverty and rural out-migration patterns (Harare, Government Official, 6).

The human mobility patterns arising from economic drivers are mostly short-term with people oscillation between their homes and the workplace. This assertion came from the various interviews conducted during field studies, and one government official said “most people who leave for work in Chipinge, Chimanimani or Chikomba in Large Scale Commercial Farms go for short periods and they usually return to their homes in time to prepare for the new farming season. Remember, most casual jobs in these farming areas are also seasonal as people usually go and help with weeding and harvesting" (Buhera, Government Official, 4). One thing I observed about most people in communal areas is that they always maintain their roots and homesteads. The labour migrants always maintain close contact with their families, including investing in their homesteads. This was said by a government official and Buhera farmer:

“People usually go and work in large commercial farms during the harvesting season and oscillate between their home and work areas here and there. I think they will be bringing food to their families, checking on them including their livestock” (Buhera, Government Official, 1).

“I do not usually go away for more than 4 weeks...I have to come back and provide my family with food/grain and money I would have worked for. Also, it will be the right time to come check my livestock and meeting my friends” (Buhera Male, 30s).

Given that these short-term population movements are usually confined within the rural perimeters, with households, neither engaging on long-distance or international migrations (Piguet *at al.*, 2011: 9, 11), the proximity between Buhera and Chipinge Districts have made it easier for people to engage in these short migration patterns.

6.3 Observed permanent or long-term human mobility patterns happening in communal areas

There have been cases where farmers reported to have migrated permanently to the areas of AERs I and II, especially to Chipinge, Chimanimani, and Chikomba districts. These farmers also highlighted the poor climatic and environmental challenges in their home areas as the major reasons for their departures. In supporting these claims, a senior government official said:

“These districts located in areas with better climatic conditions such as areas in Manicaland, Mashonaland Central, and Mashonaland East have seen many people moving into them either through the Land Reform Program or other various means. If you talk to these people you will find out that they came to these regions because of the good soils and rains, including abundant pastures for their cattle. It is known that they are mainly looking for areas where they can utilize rains for their agriculture which is not mechanized) (Harare, Government Official 1).

On this front, I observed two types of migrant households who have settled permanently in Chipinge are: (i) those households that came through the government-sponsored land reform and resettlement program and (ii) those households that came and negotiated for land to stay and farm using various channels. Those farmers who came to Chipinge through the government-led land reform and resettlement programs also highlighted poor agricultural productivity, poor lands, lack of biodiversity, and high population growths in communal areas as their reasons for permanent relocation from those areas. A government official shared his point of view on this type of mobility:

"A lot of people are moving across districts to seek land to farm, especially in districts that have land or large farms. The major reason behind people flocking for land in districts is because the government

advertised for the land reform and asked those who want the land to apply, and this is an indication that people need land. In this case, people are responding to calls by the government to fill vacant land in particular districts of the country...what we know is that when the land reform was done and considerations were made for those people in districts without commercial farms to be considered during the land reform exercise in districts with farms. So far no analysis has been done to verify where the land beneficiaries come from... but assumptions are that some people queuing for land are from areas with poor agricultural lands and looking for land in areas close to their homes to serve both interests, that is communal life and farm life" (Harare, Government Official, 7).

According to the Zimbabwe National Statistics Agency, approximately 482,621 and 50,715 households have settled permanently into A1 and A2 farming models respectively across the country (Zimstat, 2015a; 2015b). Similarly, the Labour Force Surveys show that approximately 126,000 people moved across districts looking for better agricultural land between 2014-2019 (Zimstat, 2015c: 226; 2020:215). Although there has been a drop on the total number of people looking for better agricultural land over the years, a study by Zimstat (2020) show that approximately 54,306 people are reported to have moved across the country in search of better agricultural land over the last five years (215). Interestingly, the field data I collected showed that approximately 4,602 and 1,961 people have moved out of Buhera, and within the AERs of Chipinge District, respectively in search of better agricultural land between 2014 and 2019, as shown on *Table 6.1* below (Zimstat official, personal communication, April 07, 2020). Assumptions are that the movements happening within Chipinge district are a result of people moving from the drought-prone low veldt areas to better lands in high veldt areas. Similarly, there were more cases of people being moved by natural disasters such as droughts and cyclones in Buhera than Chipinge, also shown in *Table 6.1* below.

Year	District	Main Reason for Movement	
		People looking for better Agricultural Land	Natural Disasters
2014	Buhera	2,047	-
	Chipinge	-	-
2019	Buhera	2,555	445
	Chipinge	1,961	-

Table 6.1 People Searching for better agricultural land and moved by natural disasters in Buhera and Chipinge Districts (Zimstat Official, personal communication, April 07, 2020)

Four farmers testified the benefits of their move to Chipinge:

"I am from Masvingo and got 5 hectares of land from the Land reform program and I have no plans of going back there because of droughts and hunger. The reliable rains here in Chipinge has given me a new lease of life and I thank God for that" (Masvingo Migrant Farmer in Chipinge, Female 60s).

"Sometimes I cry when I remember the suffering I experienced during my time in Buhera due to droughts and poor agriculture production. For example, in 1992 I lost all my crops and livestock in Buhera, but now I am enjoying a better life here in Chipinge. Thanks to the Land Reform Program that created abundant farming land and provided African farmers like me with fertile land which was scarce in communal areas" (Buhera Migrant Farmer in Chipinge, Male 64).

"The reasons for my departure from Sabi Valley are the persistent droughts that caused acute food shortages. The land reform program presented me with an opportunity to come to Chipinge where I am living like a king as I now realizing good harvest and have sustainable incomes to send my children to school and to live the life I need" (Sabi Valley Migrant Farmer in Chipinge, Male 60s).

“The current human mobility happening in communal areas have a historical component in it. Remember these people were placed in marginal lands with poor soils that are now exhausted and need massive fertilizer investment which I see not feasible due to their poor economic situation and economic imbalances. So why should these people continue to suffer when they used to have a good place to stay in their motherland? I tell you that is the major reason why people prefer to go back to their traditional lands before colonization, just to boost their socioeconomic statuses” (International NGO Official, 5).

Under certain circumstances, there are permanent human mobility patterns developing among labour migrants. This issue came out during my discussion with one government official and Focus Group Discussions with the elders in Buhera:

“Some movements are permanent, especially movements that are linked to economic issues on the farms, but if the economy picks ups, monetary issues are resolved, and agricultural markets start to be functional, people will go back to their farms as most of them have farm ownership. In this case, people are guaranteed of going back to their farms only if the macroeconomic situation is resolved” (Harare, Government Official 1).

“For some labour migrants who by any chance manage to obtain to a piece of land in Chipinge, their next steps will be to come back, take their families and livestock and leave this place for good (Buhera, Focus Group Discussion with Elders).



Fig.6.2 Chipinge small-scale farmers displaying their bumper maize grain harvests

On the other hand, there are observed reverse human mobility trends, where people are moving out permanently from better AERs (I and II) to marginal lands due to excessive rapid-onset disasters such as cyclones. These trends were observed and highlighted by Buhera’s senior district official and one key government official during fieldwork, they said:

"Many people are moving from Chimanimani into Buberu because of the cyclone Idai disaster that fell into them and destroyed their homes and agricultural fields. They found it much safer here in Buberu, and this is because of limited natural disasters of that nature in this district". (Buberu, Senior District Official).

"Interestingly, apart from the high out-migration rates within our districts, we also have people coming in and these are mostly people from Chimanimani who were displaced by Cyclone Idai. These people who are moving in are settling permanently and they acquire rights to use land and water from the village heads and the DA's (District Administrator's) Office" (Buberu, Government Official, 6).

Similarly, some entrepreneurs have taken advantage of the land and spaces left behind by the drought-stricken people who are moving out to other areas to claim land in Buhera and establish their business entities. As highlighted by one government official:

“Several households have left their homes for Chipinge and other districts because of drought-induced hunger, while other people are taking advantage of the vacant lands left behind to permanently settling here. These people are mostly from Harare, Nyanyadzi, and Chimanimani areas and they are mostly into the livestock production business. These people are well connected and they already have established markets of these products outside Buhera from the various Butcheries, Abattoirs, and Canteens across the country, especially in Harare. And they are usually allocated pieces of land in isolated or idle areas far away from the locals by the village heads after paying them” (Buhera, Government Official, 2).

Interestingly, while most poor households are vacating these drought-prone areas of Buhera, rich households who enjoy the benefits of being at the “upper end of the socio-economic spectrum” are using their strong capitals, and assets (McLeman, 2013:603) to cushion themselves from climate variabilities by moving into these marginal areas and establish livestock businesses.

6.4 The role of social networks on human mobility decisions in communal areas

Another major finding that came out from my interviews and discussions in Buhera and Chipinge districts is on how people are making use of social networks including their kinship ties to acquire jobs and agricultural land in better AERs of Chipinge. According to an International NGO Official,

“People make use of migrant networks such as family and friends who have migrated in the past and they facilitate communication through social media platforms including letters to say that there are better economic opportunities in neighbouring countries. Others move due to anecdotal perceptions and rumours that they are better opportunities elsewhere. Others move through schemes that tend to promote labor migration to another country” (International NGO Official, 4).

The majority of people I interviewed revealed making use of their social and kinship ties in Chipinge to gain access to information about good livelihoods in receiving areas including the availability of agricultural land, job opportunities, and products on demand for trading in receiving areas. As highlighted by Hungwe (2015:122), these migration networks help in disseminating valuable information to potential migrants relating to jobs, accommodation, food, and security among others that smoothen the migration process. My interviews with several farmers including an International NGO official below, highlight the various ways in which information is conveyed between migrants residing in different areas.

“My mother is from Chipinge and all my uncles are still live in Chipinge. Through my uncles, my family normally receives information about the good harvest in Chipinge and also information about casual jobs which we normally go and do during periods of poor harvest here” (Bubera Male, 40s).

“I discovered that the Chipinge has good rains and a good harvest after visiting my relatives here some years back. My parents also have strong connections here in Chipinge that made it easier for me to acquire the land I am using for farming. I have no plans for going back and settle in Bubera, as it will be like leaving Canaan the land of milk and honey for Egypt” (Bubera Migrant Farmer in Chipinge, Male 49).

"I visited my in-laws in Chipinge and this is when I discovered the richness of that area...I tell you, those people are living large, their granaries are always full of maize, they have abundant fruits like avocados, guavas, sugar cane, mangoes, etc. And since then I always go and trade my goat meat with food in Chipinge whenever we have food challenges here" (Bibera Female, 30s).

"Labour migrants coming to visit, especially during the Festive Season and other public holidays usually come with flashy materials displaying their good lifestyles in destination areas. This is enough to send a message to potential migrants living in communal areas" (International NGO Official, 1).

This shows that different migrants make use of their strong kinship ties that exist between migrants in sending and receiving areas in initiating their migration processes. Similarly, this practice is common among returning migrants who visit from international destinations during annual holidays (Hungwe, 2015; 127). These returnees usually bring expensive goods like new cars (mostly borrowed) and talk about how life is easy in destinations as a way of portraying an image of their lifestyles in destination areas, and this usually entices potential migrants to move (Hungwe, 2015: 127,128).

I also noticed the same from returnee labour migrants in communal areas. These returnees usually bring several bags of maize grain on their return from working in Chipinge. As highlighted by one female farmer in Buhera "we know there is a good life in Chipinge as most labour migrants usually return loaded with several bags of maize grain ...we always see their family members waiting for them by the roadside with cattle-driven carts and wheelbarrows to help carry their bags of food upon returning home" (Buhera Female, 60s). Furthermore, social connections have helped most households in marginal lands to acquire farming land in Chipinge. Two farmers I interviewed said:

"My family is originally from Chipinge and I managed to come back and farm in Chipinge after getting a piece of land from my in-laws who benefited from the land Reform Program in 2004. I was offered 3 hectares of land which I am using for housing and farming at no costs" (Bubera Migrant Farmer in Chipinge, Male, 80s).

"I got this piece of land through my church connections I made during one of the meetings we did in Bocha sometime back. Without that, it was going to be impossible to get this land (Bocha Migrant Farmer in Chipinge, 50s).

However, despite most migrants having easy access to land in destination areas using their social networks, the majority of people I interviewed highlighted that they are paying for using that land in various ways that include harvest sharing, working in landlord's farms, and working as caretakers for absent landlords.

"I had no choice but to run away from the persistent droughts and food shortages in Bocha. Luckily, I have some family members in Chipinge who helped me with land connections. They connected me with some landlords with excess farming land in Chipinge who needed caretakers for their land and livestock during their absence. We reached a verbal agreement, and they gave me the right to stay and farm on the 3 hectares of land in exchange for helping them in keeping their home and livestock. Given a choice, I would like to permanently stay and farm in Chipinge" (Bocha Migrant Farmer in Chipinge, Female 33).

"We have had reports of village heads and landlords with excess land who are charging new migrants for using the land. The figures demanded by the village heads vary from USD\$30-USD\$50 for using the land for a season...and those farmers with excess land who benefited from the land reform program

usually require new migrants to pay for their land through providing their labour on their farms or crop sharing at the end of the season” (Chipinge, District Official).

The majority of migrant farmers complained about this practice of helping landlords pay their government and council land rates and taxes. This issue also came out from the various Focus Group Discussions I had with the farmers in Buhera, as they complained that the rents charged were not sustainable for most migrant farmers as they outstrip all the harvest or incomes realized by these poor farmers come the end of the season.

Additionally, through social connections, most migrants have been able to receive information about casual farm jobs, including job connections with employers in Chipinge. The majority of people interviewed in Buhera revealed that they have benefited from job offers from their kinship ties. Two labour migrants from Buhera I interviewed said:

"My brother based in Chipinge connected me with some farm owners there who wanted help on their farms. These people phoned me and arranged everything for me including transport costs, accommodation, and food upon my arrival (Buhera Migrant Farmer in Chipinge, Female 33).

"My transition from Buhera to Chipinge was much easier because of my brother who lives in Chipinge. He provided me with traveling funds, food, accommodation, and job connections whilst I was there. I only had to work and send my family food back home without thinking of things like food, accommodation, etc." (Buhera Male,47).

From this, as highlighted by Faist & Schade (2013) and Hungwe (2015), we can learn that apart from job connections, social ties have also eased the relocation costs by helping most labour migrants with traveling costs, food, accommodation and other costs that smoothen the

relocation process. Similarly, as highlighted above, social networks have helped in facilitating trade between people in marginal lands and those in better agroecological through the flow of information from one end to the other on goods in scarcity or on high demand.

I also observed cases of people gaining access to work in Chipinge farming areas through using local agencies who have direct job links in receiving areas. These agencies usually post such job notices (mainly seasonal jobs) at various public places across the ward that include Dip Tanks, Borehole Areas, Local Clinics, Ward Centres, Shopping Areas, and through announcements at school assemblies. Similarly, most labour migrants with limited social networks usually acquire casual farm jobs through talking to village heads in destination areas, who then introduces them to employers in destination areas. Upon further inquiries on this strategy, I later discovered that this was somehow a political strategy used by the government to safeguard its rural support base from being infiltrated by opposition members. As a security measure, every labour migrant is expected to register with the village head with his/her national identification record, which is then kept at the village head house as a record for tracking purposes. Upon questioning this practice, the village heads said this practice was for assurances purposes to safeguard the lives of vulnerable rural households from strangers. One village head said:

"As local leaders, we have the responsibilities of guaranteeing the safety of our people from strangers who pretend to be here for good intentions but with bad intentions of stealing our livestock and impregnate our young girls and leave them. So, as leaders, we make sure that all visitors are registered by the village head and they should not spend more than four weeks...this exercise includes those migrants who come and seek jobs in our area" (Bubera Local leader 1).

Furthermore, information sharing between locals in Chipinge and potential migrants was made easier by recent communication technologies such as WhatsApp that allows people to either text or call each other, including sharing various media files at very cheap prices. The majority of people interviewed admitted to having been on WhatsApp and using the platform to communicate with their family members in and outside the country. One Buhera farmer and an International NGO official said:

"I am always in touch with my in-laws in Chipinge including my friends in South Africa. My in-laws always provide me with safety nets whenever my family faces food challenges here. We normally communicate on WhatsApp and I am assured of accommodation and food during my time doing casual jobs there. I consider myself lucky to have my people there unlike some people here who have to stress about hunger here then transport fare, accommodation, food, and jobs in destination areas" (Buhera Male, 30s).

"People make use of migrant networks, that is family and friends who have migrated in the past and they facilitate communication through social media platforms including letters and now WhatsApp to say that there are better economic opportunities in neighbouring areas and countries" (International NGO Official, 4).

This shows that technological advancements such as WhatsApp platform have made communication between migrants easier and cheaper as people are constantly communicating, giving each other updates, thus making the migration process easier. As highlighted by a senior district official in Chipinge:

"People were encouraged by the government to move during the land reform program. However, there are various ways people use to acquire (i) people bordering with those areas are aware of the good

climatic conditions in those areas, (ii) some have migrated from those areas due to variety of reasons and are aware of those areas, (iii) some have utilized from weather broadcasting forecast from the radios and other social media platforms to know about those areas, (iv) traders from Chipinge and Chikomba who come to trade their agricultural produce and lastly, (v) the District Administrators Office which usually posts land vacancies arising in large scale farming areas" (Bubera, Senior District Official).

This shows that people have benefited from technological advancements, and other forms of communication, especially about the information on jobs and agricultural land in destination areas through using their social capital and networks.

6.5 The impact of human mobility in coping with food insecurity challenges

All things being normal, the majority of households highlighted that they prefer to adapt *in situ* but are forced to engage in either labour migration as seasonal/casual workers or traders due to drought-induced food insecurities in their home areas. As highlighted in previous sections of this chapter, such movements are motivated by peoples' failure to adapt to food insecurities which happen to be exacerbated by the poor climate, and socio-economic challenges such as lack of jobs, shortage of fertile agricultural land, unavailability social protection programs, and land degradation, among others in home areas. Two farmers from Buhera and Bocha said:

"All things being equal, I need to stay home with my family, doing my field and gardening work and also taking care of my livestock. But I do not have that liberty because of hunger. As a result, I am forced to leave my family behind to look for food here (Chipinge) and if I do not do that my family will perish from hunger" (Bubera Female Trader in Chipinge, 30s).

"This is the third job I am doing (harvesting maize) during my three-week stay here in Chipinge. I move around the area looking for casual jobs where I acquire maize grain to feed my family back home. My coming here was a matter of life and death due to hunger in Bocha. I have a big family to feed, and as a man, I had to take the risk of venturing into the wilderness to support my family" (Bocha Male Casual Worker in Chipinge, 37).

From this discussion, human mobility can be viewed as a climate change adaptation strategy used by poor households for survival and coping with high food insecurities in communal areas (Faist & Schade, 2013; Rigaud *et al.*, 2018). On the other hand, several households attested that they either engage or send household members in short-term migration patterns to either work as seasonal/casual laborers or as traders in nearby areas in anticipation of food security threats posed climatic events. As highlighted by a Buhera farmer:

"We have lived long enough in this area to know whether it is going to be a good season or not. First, this area experiences high winds in January and we believe that these winds are the ones driving our rains away. Secondly, we are assured that if do not receive meaningful rains by mid-February, it is going to be a bad season for us and this is when most people start planning to go outside the district searching for casual jobs" (Buhera Male, 50s).

Besides human mobility being treated as an adaptation strategy, we have also seen that the majority of rural people make use of their Indigenous Knowledge Systems (IKS) to draw and analyze seasonal rainfall patterns and natural phenomena to effectively plan for their livelihood diversification option, including their crop production to withstand the foreseeable food insecurity situation brought about by climatic hazards (Rankoana, 2016:22). As highlighted by a government official, and Buhera Farmer:

"The use of IKS is more rampant in communal areas. These areas usually experience bad harvests due to poor rains and droughts, and people usually tap into their IKS, and through observing migrant birds and certain types of worms, these people receive a signal from nature on whether it is going to be a bad season or not. If it happens to be a bad season, people from these areas start crossing to other areas including international borders and this usually happens in January and February before the peak of the hunger season" (Harare, Government Official, 2).

"There are certain things that are not normal that happen when it is a bad season here. For example, the invasion of our fields by grasshoppers, armyworms, and certain types of birds simply tells us that this season is going to be hard and most people start planning for the looming hunger season" (Buhera Female, 60s)

Apart from pull factors such as abundant jobs and food supplies in destination areas playing an important role in influencing human mobility decisions, this study also discovered that other factors such as (i) the family, (ii) kinship ties and, (iii) distance also matter in human mobility decisions. Field interviews show that majority of households usually select active members who still have the energy to partake in the labour-intensive jobs in destination areas such as weeding and harvesting. According to my interview with one local leader and farmer in Buhera, they said:

"It is usually the male household head and young male family members who can work and able to withstand the harsh conditions in destination areas who are selected to go and work as labour migrants" (Buhera, Local Leader).

"We cannot all go to do casual jobs, some people have to stay behind and take care of school-going children, our fields and livestock and in most cases, such tasks are left behind for women" (Bubera Male, 57).

As highlighted by the New Economics for Labour Migration Theory, this practice is done to maximize the households' chances of obtaining double incomes in both sending and destination areas (Hagen-Zanker, 2015:70). Similarly, out-migration is often not an individual decision but a household decision that is tied to social networks such as family members and friends who play a pivotal role in determining a family members' areas of destination in times of climatic disasters (Murali & Afifi, 2014:33). I also observed that in most permanent migration patterns, households plan as a unit with the household head leaving first before other household members follow. This exercise is done to safeguard the family from unforeseen events in destination areas, as the household head has to and assess the job market, agricultural land, and the housing situation first in destination areas before bringing other members. As highlighted by two farmers:

"It's usually the Baba (household head) who goes first to seek permission from the landowners and local leaders in destination areas. Upon being granted permission to work temporary farm in that area, he will come back and collect the other family members" (Bubera Female, 66).

"The new migrants usually send the senior member of the family to negotiate with landowners for either casual jobs or land to farm. Upon the two parties agreeing, the landlord then negotiates on their behalf with the village heads who then grants them with the right to work or use their land for farming and this is how new migrants are integrated into our community" (Chipinge, Male 60s).

Unlike the Neoclassical Economic Migration Theories that views human mobility as an individual decision, migration, in this case, is a household decision, as highlighted by the New Economics for Labour Migration Theory, undertaken to benefit all members of the household (Hagen-Zanker, 2015:70). Similarly, as demonstrated by the Migration Network and Systems Migration Theories, involves the understanding of various factors that include job opportunities, availability of agricultural land, and governance issues in destination areas, among other issues.

Lastly, a major theme on the importance of food remittances and climate change adaptation in communal areas also came out in most of the interviews conducted during the field studies. According to the UNDP, “remittances are mostly used by households for everyday consumption purposes and access to basic services...they also may be a vital source of income for people whose livelihoods are threatened by natural disasters or other calamities” (2016, February 26:1). As highlighted by one key government official in Chipinge: “most people in marginal regions now rely on remittances from their relatives who have migrated to other farming areas including to South Africa and other big cities as they could not cope up with the persistent food security challenges and low incomes being realized from their agricultural activities. Thus, climate change is known to be a push factor for people to seek additional incomes in neighbouring districts, cities, and countries” (Chipinge, Government Official, 1).

In research study areas, I discovered that remittances sent by labour migrants and those farming in Chipinge to support household members in sending areas usually come in the form of food items such as maize grain, small grains, and potatoes. These food items have helped households in sending areas supplement the food and nutrition deficit created by climate change. Interestingly, there is still close contact between households’ members in

Chipinge who managed to permanently acquire farming land in Chipinge through the Land Reform Program, and those households still residing in communal areas. These strong kinship ties that exist between these households in diverse farming communities have managed to help ease the food security challenges being experienced by those households in marginal areas during periods of climatic stress. My discussion with both migrants in Buhera and Chipinge revealed the following information:

"I am from the Sabi Valley and I have been farming here in Chipinge since 2004. I am strongly connected to my roots back in Sabi valley as I still have 3 of my siblings there. I frequently visit them and every time I go there I always make sure I bring them maize grain for food. They always reach and visit me for maize grain every time there is a need, especially during drought years (Sabi Valley Farmer Farming in Chipinge, Male 60s).

"I can literally say that I have two homesteads, that is here in Chipinge and the other one in Buhera. Although I now consider the Chipinge home to be my permanent home after the land reform program, Buhera is still part of me as all my whole clan is still there including my parents. I am regularly in touch with my people in Buhera and I am always there attending all family meetings and gatherings. One thing I always do is sending my parents and my uncle's maize grain for food and during drought years I am entitled to send more grain to support my big family" (Buhera Farmer Farming in Chipinge, Male 50s).

"Every time I send my cries to my uncle who benefited from the land reform program in Chipinge for food assistance, he normally responds by sending me a few bags of maize grain especially when in seasons we harvest nothing from droughts here" (Buhera Female, 60s).

“My family is originally from Chipinge but I was married here in Bubera. It has become a tradition for us (me and my husband) to go to Chipinge and seek help in the form of food every time we face challenges from my parents” (Bubera Female, 30s)

6.6 Consequences of human mobility decisions in communal areas

Although human mobility has been adopted by several households in communal areas as a strategy to overcome their food and income security challenges, this strategy has also created several socioeconomic and environmental challenges for both communities in sending and receiving areas. The majority of households highlighted that they have experienced social/community break-downs and conflicts over productive natural resources due to the high number of people entering or exiting their communities. Firstly, from the responses I gathered during field studies indicated that the social fabric that bounded people together in Zimbabwe is now under threat and broken down due to persisting socio-economic challenges. These challenges are forcing people to move away from their traditional and societal roles to fulfill their food and income needs. These challenges were addressed by two government officials, a government official in Harare and a Chipinge district official during field studies. They said:

“Over the years we have witnessed patterns of people moving from drought-prone areas or areas not doing well in terms of agricultural production such as from Bubera to Chipinge, and Mutasa, among other areas due to climate. Although it is good practice for mitigation food security challenges in vulnerable areas, however, such actions come with several consequences especially on our societal values as Africans. For example, such practice has broken our social fabric as there are increased cases of women or child-headed families, early marriages among boys and girls, high delinquent among young

people because of lack of grooming and guardianship as most elders who are supposed to provide advice and support to young people have all migrated to other areas searching for greener pastures. Furthermore, there is nobody to take care of extended family members or help each other in times of need due to high migration rates caused by these economic hardships (Harare, Government Official 4).

“Due to the breaking down of the extended family and high rates of out-migration, most vulnerable children are now failing to go to school. And as a result, there are high cases of early marriage among girls in the district as they are exchanged with food” (Chipinge, District Official).

These challenges were also noted by the UNDP (2017), which argued that the large out-migration patterns being observed among males have now seen the Zimbabwean society being characterized by women and child-headed families as de facto and de jure household heads due to the effects of climate change on people's livelihood (2017: 45, 84). Consequently, there is a reversal of traditional gender roles, as women are now breadwinners, and have also assumed the roles of planning and providing food for the family in the absence of their male counterparts (Brown *et al.*, 2012: 13; UNDP, 2017:45, 84). This is true, my observations from the field study show that most women in communal areas are doing additional roles such as taking care of the fields, livestock, and taking care of the elderly. Sadly, this has resulted in “double burdening on women”, as these new roles piling on top of their daily household chores of cooking, fetching water, collecting firewood, gathering wild fruits, cleaning, and taking care of children. In a similar issue, as highlighted by a Buhera Local Leader, “the high out-migration of young people to Chipinge and other areas have seen them neglecting their young families or re-marrying in destination areas, a development that seen breaking up of

families and the spread of Sexually Transmitted Infections such as HIV and AIDS” (Buhera Local Leader).

Secondly, human mobility has led to serious conflicts and over-exploitation of productive natural resources, especially in destination areas. There is no doubt that population movements correspond directly with population increases in destination areas and this subsequently results in high demand for already scarce land and water resources in most areas. The majority of local people interviewed in Chipinge have witnessed patterns of the environmental deterioration caused by the high influx of people from drier regions. These claims are confirmed in various Environmental Management Agency of Zimbabwe (EMA) reports used by this study. According to one report, population increases in communal areas have resulted in the degradation of natural resources such as soils, wetlands, and biodiversity (Feresu, 2017:15). Similar reports were also brought forward by a Chipinge Senior District official during one of my discussions with him, and he said:

“There are several people who are settling illegally as squatters in the Highveld areas and has been one major challenge currently facing the government. In this case, these squatters clear large forest areas for setting up their homes and agricultural fields. Similarly, they are farming on river banks and waterways. On top of that, these squatters are using land, and water without permits. Since these people are legally recognized in the district they end up diverting water meant for supporting farming in resettled areas for their own use, and this has created conflicts with the locals. The council has been serving them with eviction orders and assisting landowners with establishing pounds, which are temporary accommodations used for keeping trespassing livestock.” (Chipinge, Senior District Official).

This shows us that upon being faced with imminent food insecurity and livelihood challenges, people partake every opportunity available to them, including depleting scarce natural

resources to survive (Dovers & Butler, n.d.). This survival strategy may include fighting with authorities, like what is happening in Chipinge where squatters and illegal migrants are fighting and resisting eviction orders from the government. This was highlighted by an international NGO Official who said “people are moving into state lands and they are currently facing evictions but there is resistance by these people. In some instances, these evictions became violent between the government and squatters, and there were some deaths recorded due to these incidents (International NGO Official, 6). On another related issue, there are high incidents of people clashing over ownership and usage of land-based resources in receiving areas where there are surges in population. According to Sherbinin *et al.* (2007:354), such conflicts are common especially in destination areas where the unexpected increase in the number of people has suddenly resulted in high demands of food and scarce resources.

Consequently, the new migrants end up moving into restricted and marginal lands reserved for livestock grazing (Sherbinin *et al.*, 2007:357). As highlighted by a district official:

“Disputes between locals and new immigrants on access to land and water resources are common in this area. Firstly, boundary disputes are happening between locals and new immigrants, as most locals are blaming new immigrants for illegally settling on their land and grazing lands. We currently received reports of new migrants being blamed for killing livestock belonging to A1 farmers for encroaching his field. Secondly, the locals blame new immigrants for the high erosion cases happening in the district as the district is awash with high deforestation and stream bank cultivation cases which are leading to the siltation of rivers and dams in the district. In this case, new immigrants are establishing gardens in waterways, thus disturbing the flow of water and not respecting the 30m rule imposed by the government and this has escalated into conflicts with locals (Chipinge, District Official).

Similar reports also emerged from my interviews with local farmers in Chipinge. One farmer alluded that:

“The new migrants are infringing on our property rights. They are establishing their fields and houses in our grazing, and state lands including all wetlands. We have reported the issue to the council and ministry and there is still no action taken. Also, these people are letting their livestock encroaching our designated farming lands and many farmers are complaining of losing their crops to these stray animals (Chipinge Local Farmer, Male 50s).

Interestingly, similar challenges are also being experienced in Buhera, as conflicts between the locals and new migrants have been escalated by (i) new migrants being accused of settling in grazing lands, (ii) new migrants being accused of cutting down trees for their woodlots and charcoal production and, (iii) greedy local leaders being blamed for distributing land temporarily left behind by temporary labour migrants without their consent. Furthermore, land ownership conflicts have also been noted in destination areas as most local people view new migrants as threats on their customary lands. This is despite new farmers legally obtaining land through the government-led land reform and resettlement program. One government official said, "the locals claim that new immigrants are invading the customary/traditional lands they inherited from their ancestors and this is despite most people getting land from the government-sponsored land reform programs" (Harare, Government Official 1). This information was confirmed in one of the interviews with one migrant farmer in Chipinge who said:

“The local Chipinge people do not like us here. Most of them are practicing stream bank cultivation and disturbing water resources. They claim that this land is theirs and they want to own all dams and

use them for their benefit. Some of them are in the habit of cutting down trees for the production of charcoal and they claim that it is their right as the owners of this place. There are several cases whereby locals are occupying portions of land given to people by the government. Also, conflicts are arising on food aid programs as most locals claim that the new migrants have no rights to claim aid given by donors and the government as their names are not known/registered at the District Administrators Offices" (Bibera Migrant Farmer in Chipinge, Male 60s)

6.7 Conclusion

This chapter reflected on the different views brought about by various participants concerning climate change and human mobility. These participants included communal farmers, government officials, and NGO members that were interviewed during fieldwork. The different views gathered by the study demonstrated that human mobility in communal areas takes various forms, either short-term (seasonal) or long-term (permanent) patterns. The majority of respondents highlighted that these human patterns are inspired by the looming food insecurity and livelihood challenges happening in sending areas. Similarly, the favourable agro-ecological and climatic conditions found in receiving areas have been attracting distressed communal farmers in marginal areas to out-migrate to these areas. As highlighted by the majority of respondents, these food security and livelihood challenges in communal areas have been worsened by the socio-economic conditions prevailing in the country that have made climate adaptation difficult in communal areas. Also, human mobility between these regions (Bibera and Chipinge) has been motivated by the different economic conditions found in these two regions. As highlighted by the majority of participants, Chipinge being a former white commercial farming area offers the farmers from marginal areas better economic

conditions. According to the majority of farmers interviewed, Chipinge is rich with abundant fertile lands that were made vacant by the white commercial farmers who left due to the land reform program, including many casual jobs that are found across the Tea and Coffee Estates/Plantations in the district. Lately, there have been observed reverse human mobility patterns in communal areas where several migrants from rich AERs I and II such as Chimanimani have been permanently settling in poor marginal areas in Buhera. These movements have been necessitated by the high prevalence of natural disasters such as Cyclones that killed people, destroyed properties, and agricultural lands.

Human mobility, in this case, as highlighted by most interviews is a household decision meant to avert hunger and all dangers associated with the loss of incomes during the periods of climatic stress. Household members who engage in human mobility as labour migrants support their family members with food remittances. Similarly, household members who are left behind, especially the women also play a bigger role as a de-facto household responsible for managing the homestead including taking care of the children, the fields, and livestock during the absence of the main household head. According to research participants, the food remittances sent by labour migrants, and kinship ties in destination areas have helped households members adapt to climate change-induced food insecurities. On the other hand, this chapter also demonstrated the importance of social capitals and networks in influencing human mobility decisions in communal areas. In this case, as argued by most people in communal areas, social networks have eased the migration process by providing information and linking potential migrants with jobs and farming land in destination areas. Furthermore, most migrants confessed that through their social networks they have been able to reduce the costs of their relocation, transportation, accommodation, and food. Communication between migrants has been made easier by technological advancement, through the use of social media

platforms that include WhatsApp. However, human mobility as an adaptation strategy comes with its challenges as well, which include (i) breaking down of the social fabric, (ii) overburdening women, (iii) transmission of diseases, (iv) overexploitation of land and other natural resources, and (vi) rising conflicts between migrants and locals over the use of productive resources

Chapter 7: Discussion, Conclusions and Recommendations

7.1 Introduction

This chapter is divided into three main parts. The first part is the discussion section will be highlighting the major findings that came out of this study. This includes a discussion on the various factors that include historical, local, global, national, and contemporary development factors that have made climate adaptation difficult in communal areas. This will then be connected to discussions on human mobility and climate adaptation in Zimbabwe's communal areas. In the second part of this chapter, which is the conclusion section, I will provide a summary of my study including a recap on the research problem, study objectives, research questions, and the research methodologies used in this study. In this chapter I will summarize the research findings, including the key arguments that came out of this study. In this section, I argued for the consideration of climatic factors as primary human mobility drivers alongside other non-climatic drivers in Zimbabwe. Secondly, I emphasized the need for understanding the country's historical development trajectory for effective climate change adaptation in communal areas. Also, human mobility needs to be incorporated into the country's national climate policy framework if the country is going to effectively address adaptation challenges in communal areas. The final section of this study identifies some possible areas of improvement. I offer some policy recommendations to the Government of Zimbabwe and other key stakeholders involved in the climate change and human mobility debate in the country.

7.2 Discussion

7.2.1 Complexity of understanding human mobility factors in Zimbabwe's communal areas

This thesis shows that human mobility in Zimbabwe's communal areas is determined by a variety of factors. This complexity stems from the multi-causal factors including climatic, environmental, economic, historical, and sociopolitical factors that continue to determine population movements.

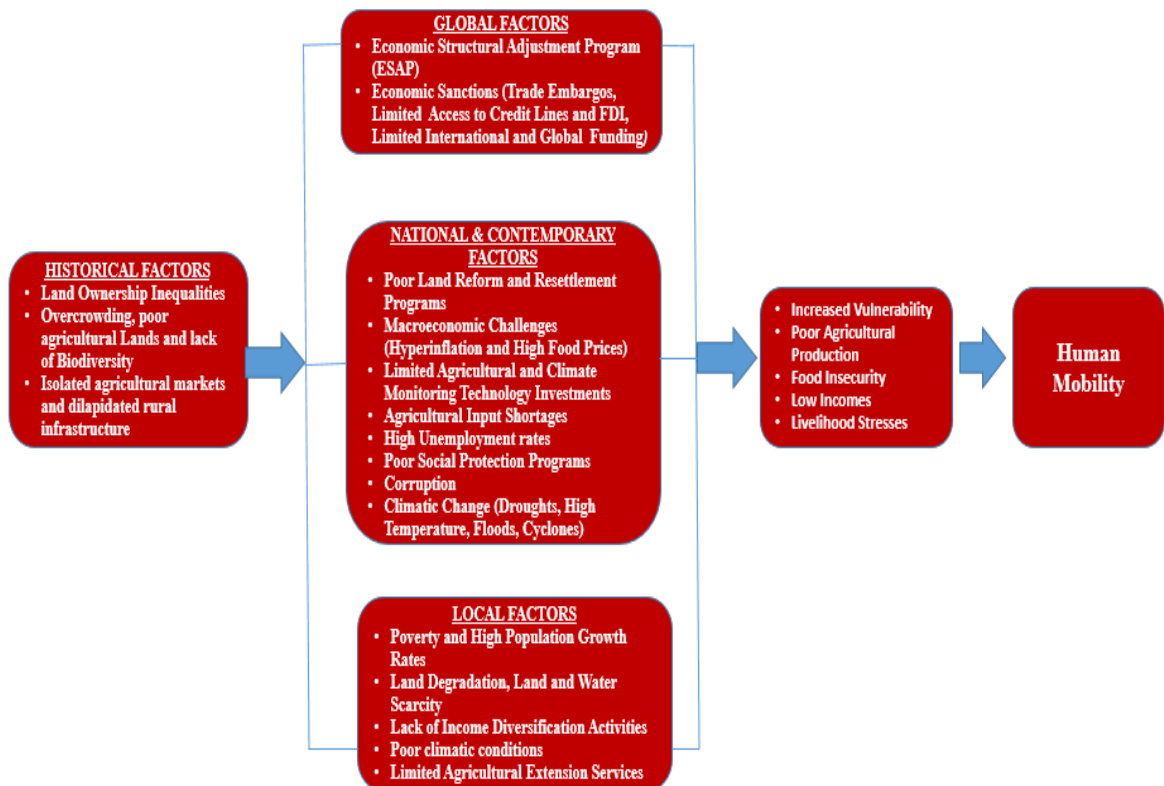


Fig.7.1 Factors influencing human mobility in Zimbabwe's communal areas (Author's interpretation)

As highlighted in the preceding chapters of this thesis, the high frequency of climatic disasters, including high cases of environmental degradation, sociopolitical factors such as lack of access to fertile lands, and the macroeconomic challenges affecting the country have exposed agricultural production systems to severe shock, leading to food insecurity and out-migration in communal areas, as illustrated in *Fig. 7.1* above.

From my discussions with communal farmers during field studies, I realized that historical and colonial factors that subjected them to poor agricultural lands are still relevant today, as they continue to expose farmers to climate vulnerabilities in these poor areas. As highlighted by one government official: “Colonial decisions led to serious overcrowding in communal areas, and these decisions are still having an impact on people’s livelihoods today, including increasing their desires to move. These areas have been overpopulated and overstocked for long and this has led to dire economic and environmental consequences stemming from high land degradation, erosion, and siltation of water bodies that continue to reduce the irrigation capacity of rivers” (Harare, Government Official, 2). Most of the lands used across generations by farmers are now exhausted and barren, leading to successively poor agricultural production. To date, the new Government of Zimbabwe has not made much progress in redeveloping and revisiting the land ownership issue in communal areas. The colonial policies are still depriving peasant farmers of their rights to meaningful agricultural production as the majority of them are still languishing in poverty with no financial support systems to invest in their agricultural production. This was highlighted in a UNDP (2017:42) study that claimed that the majority of communal farmers are still found in poor climatic and agroecological regions of the country, where they continue to be deprived of equal access to key resources such as “water, vegetation and ecosystem services” needed to support their livelihoods.

Similar to life in the colonial era, Zimbabwe's communal areas continue to lack biodiversity and are overpopulated, thereby resulting in increased competition over scarce land resources needed for both housing and farming purposes. As I observed during field studies, excess pressure on natural land and water resources has resulted in most people settling in grazing lands and engaging in unsustainable farming practices, such as farming on wetlands, streambanks, on hill slopes, and practicing monoculture. A Buhera senior district official said: "We are having serious environmental issues in this district (Buhera) due to overcrowding. People are overcrowded and lack suitable farming land and as a result, people are ploughing down the slopes and not constructing contour ridges. These unsustainable farming practices have exposed most lands to soil erosion and degradation. There are also cases of people with no farming land at all, unfortunately, these are the same people farming along the Save River Banks or occupying land in mountainous areas which further exposes them to extreme climatic events and hunger" (Buhera, Senior District Official).

Similarly, the demographic and climate change in communal areas have led to serious deforestation rates that have threatened the existence of other key natural species necessary for sustaining livelihoods (Masson-Delmonte *et al.*, 2019:458). These practices have exacerbated land degradation and food insecurity issues in communal areas. Households that fail to adapt under these difficult circumstances have resorted to out-migration as a last resort. Worse still, as reflected in most interviews, communal areas continue to suffer from underdevelopment and lack of agricultural markets which are necessary for supporting agricultural production. Most of the road network systems are in a state of despair, which has impacts farmers in the form of high transactional costs and significant delays in receiving and sending their agricultural inputs and outputs to market, including accessing aid materials (Muzara *et al.*, 2013:1763; FAO, 2016b:6; Chingarande *et al.*, 2020:11). Challenges created by

underdevelopment are further exacerbated by the high frequency of climatic disasters that continuously destroy rural infrastructure. As such, Chingarande *et al* (2020:11) blame the underperformance of the Zimbabwean economy and climatic factors on the poor state of most feeder roads and lack of investments in the countryside.

On the other hand, global factors such as the ESAP and economic sanctions imposed on Zimbabwe by Western countries have also worsened the socio-economic challenges leading to untold suffering in communal areas. Some of the economic challenges that came with global policies in the country include its isolation from the international community, limited credit lines and foreign direct investments, and trade embargoes, to mention a few. These restrictions led to the country's economic downturn, as it led to forex shortages, much needed to sustain operations in the industrial sector, limited financial and agricultural investments, agricultural input shortages, hyperinflation, high food prices, cash shortages, and the high exodus of key agricultural personnel. These economic challenges have resulted in serious food insecurity and out-migration decisions in communal areas. As highlighted in most discussions with farmers, these economic challenges are working in conjunction with climatic factors in destabilizing rural livelihoods, a development that has seen most households resorting to out-migration due to distressed livelihoods.

This volatile socio-economic and agricultural situation in communal areas has further been worsened by climate change, as shifts in climatic conditions such as erratic temperature and rainfall patterns have resulted in droughts that are negatively impacting crop and livestock production in these marginal areas. As highlighted by the majority of farmers in Chapters 5 and 6, climatic conditions have led to acute water shortages for both crops and livestock production, leading to poor yields and low incomes as a result of wilting of crops and increase in crop and livestock pests and diseases. This has subsequently resulted in long-term negative

effects of the socio-economic well-being of most communal farmers (GOZ, 2017b:6; UNDP,2017:49; Masson-Delmonte *et al.*, 2019:458; Zimstat, 2019:17). Unfortunately, these unfavourable climatic conditions are continuously affecting livelihoods in the country's marginal areas. It is no coincidence that these areas where African farmers were designated by the colonial government have a long history of poor agricultural production, poverty, and underdevelopment.

Sadly, the high frequency of droughts, coupled with the macroeconomic challenges happening in the country have negatively affected livelihoods for farmers who have no irrigation facilities to support their rain-fed agricultural production system. The low crop yields and reduced incomes have made it difficult for the majority of communal farmers to vaccinate, buy protein supplements or dose their cattle, and prevent infectious diseases which may affect their livestock diseases on their animals (UNDP, 2017:50). Under such circumstances, droughts have robbed communal people of their key assets (Livestock) needed to cushion them from future vulnerabilities, thus leaving them poorer and incapable of recovery (UNDP, 2017: 76; Charles *et al.*, 2019:6). These macroeconomic challenges, coupled with climate change, have seen most farmers contemplating trading off their agricultural livelihoods often characterized by high crop losses due to droughts, poor incomes, and increased food insecurities when compared with non-farm jobs (Chingarande *et al.*, 2020:13). Similarly, the lack of income diversification projects/activities in communal areas has also shaped human mobility decisions among farmers when faced with these socio-economic challenges.

Given this, I posit that the genesis of the country's macroeconomic challenges was the imposition of global development policies, including the economic sanctions imposed on Zimbabwe by the international political community which severely impacted food production systems and shaped subsequent human mobility decisions in communal areas. All this can be

traced back to the radical approaches implemented by the Government of Zimbabwe in what was an attempt to redress the socio-economic injustices of the colonial era. Studies show that these radical approaches taken by the government were in response to the failure of the proposed Willing-Buyer Willing-Seller Land policy that was introduced by the government in dealing with the land ownership imbalance issues in Zimbabwe in an amicable way (World Bank, 2019). Unfortunately, this policy failed to address the issues at hand, as reports show that the majority of white farmers held back on their fertile, arable lands while disposing only of infertile, inarable land, thus prompting the government to introduce hostile and more drastic land reform programs such as the FTLRP in the early 2000s. As a result, several white farmers were forcibly evicted from their farms, a development that saw Western countries imposing economic sanctions on Zimbabwe under the auspices of human rights violations. Sadly, despite efforts by the government to redress the land ownership inequalities, and implement various social protection programs intended to safeguard rural livelihoods, poverty remained widespread in Zimbabwe's communal areas. These programs have been rendered ineffective by most people, as they are marred by (i) high poverty rates, (ii) political interferences (iii) lack of transparency and accountability, and (iv) limited funding and overreliance on international funding which has been on the downtrend since the imposition of economic sanctions on Zimbabwe by the international community in the early 2000s.

In a nutshell, it is clear that human mobility decisions in Zimbabwe's communal areas are complex and must be understood within the context of the country's colonial history as illustrated in *Fig. 7.1* above. These socio-economic challenges go back to the lack of development that came through colonial land policies. These colonial policies created the poor living conditions in communal areas that have seen most African farmers being trapped in worse environmental and ecological conditions than those left behind by the colonial

government. The continued lack of meaningful development in communal areas by the government has brought untold suffering to the majority of people living in marginal areas. Farmers need capital to invest heavily in fertilizers and irrigation facilities for sustainable agricultural production. Unfortunately, such resources beyond the reach of many low-income households. Given this scenario, it would be impossible to resolve the climate change, food security, and adaptation impasse in Zimbabwe without first dealing with the political and historical contexts of the country.

7.2.2 Human mobility and climate change adaptation in Zimbabwe's communal areas

This thesis provides us with two divergent views regarding human mobility decisions in Zimbabwe's communal areas. The first view, as highlighted in most interviews with farmers, is that human mobility in the Zimbabwean context is a sign of failure by communal households to adapt to climate-induced food insecurities happening in those areas. This view is supported by several claims that argued that the interplay of multi-vulnerability factors in communal areas has led to several food insecurity challenges and livelihood stresses that have compelled farmers to move. By considering all these factors, as highlighted by Faist and Schade (2013:7), migration is a "result of exhausted coping capacities due to increased frequency of extreme weather events that does not allow for substantial recovery". Out-migration, in this case, is a result of failed support systems caused by climate variability which make it difficult for farmers to access their daily livelihoods and services that promote their social and economic well-being (Murali & Afifi, 2014:34).

The second view, that will be discussed in-depth on this section, is whether human mobility has been an effective strategy to adapt to food insecurity challenges brought about by

multi-causal factors in Zimbabwe's communal areas, as highlighted by the findings of this study. There is no doubt that the interplay of climatic and non-climatic factors in promoting human mobility in communal areas have been compounded by overpopulation, unequal land access, lack of income diversification activities, and ineffective social protection programs that have exposed people to several livelihood challenges. In addition, the climate change adaptation policies promoted by the government have not been easy on people, especially the Climate Smart Agriculture (CSA) program that is seen as an antidote to the country's adaptation challenges. These policies have failed to acknowledge and consider the country's high poverty levels and the macroeconomic challenges as a way of determining their applicability in the poor-resourced communal areas of Zimbabwe. In this case, building resilience or adaption as a migration strategy or as a consequence of climate change has not been integrated, despite migration being regarded as a product of climate change. This has been one of the major reasons there is a lot of migration in the driest provinces in Zimbabwe because there are not enough resources to undertake agricultural livelihoods in those regions. Furthermore, no research has been undertaken in terms of understanding the significance of that migration beyond the general assessment of whether or not the lack of resources to undertake agricultural livelihoods has been a major cause of migration in the country. The climate policy framework does not necessarily acknowledge migration as an adaptation strategy and has also not been well utilized in the country formally in policy frameworks. This is despite the growing recognition of migration as an adaptation to climate change at the international stage that has seen it incorporated in several conventions that include the UNFCCC, The Cancun Adaptation Framework, and the Warsaw International Mechanisms for Loss and Damage Associated with Climate Change frameworks (Rigaud *et al.*, 2018:2).

Climatic factors have played a pivotal role in pushing people out of communal areas, while the good agro-ecological conditions, including the abundant farm jobs and good infrastructure (irrigation systems, road networks, market systems) left behind by white commercial farmers in destination areas have attracted a lot of people from these poor areas. The favourable climatic and socioeconomic conditions found in destination areas have enabled most people from drier regions to realize their full potentials (Russel, 2013; Ahsan *et al.*, 2014; Castles *et al.*, 2014:28). As a result, people have taken various forms of human mobility, namely (i) short-term as seasonal workers, casual laborers and traders, and (ii) long-term where people have been settling permanently or farming full-time in destination areas. The importance of casual labour as a major income source for most rural farmers is highlighted by various studies that show that 26-30% of the total households in rural areas survived on incomes realized from casual labour between 2018 and 2019 (ZimVac, 2019:57). On the other hand, population movements into these rich farming areas (former white commercial farms) were made easier by the proximity of these two areas, unavailability of physical barriers and migration laws that prohibit such movements (Castles *et al.*, 2014:28). These factors enabled people to move freely between sending and receiving areas without incurring high transport costs.

Similarly, these movements are done by households to safeguard their members from adversities associated with food and livelihood related stresses. This relationship is explained by the New Economics of Labour Migration Theory, as it views migration as a form of “risk aversion” and income diversification strategy meant to cushion family members from hunger and uncertainties that households can endure during periods of climatic stress (Stark & Bloom, 1985; Russel, 2013; Hagen-Zanker, 2015: 69, 70). It has been argued convincingly that this strategy works and is important for safeguarding households from food and livelihood related stresses given the ineffectiveness of social protection policies in cushioning people from the

dangers associated with climate change in the country. Interestingly, I noted that most migration decisions are done at the household level, as members decide which members engage in labour migration. In the Zimbabwean context, it was the male household head and other active males, presumably once having completed school, who are mandated to go and seek additional incomes or food to support the family, while the female is left behind to take care of the homestead. In communal areas, this selection criterion for labour migrants is done considering various factors such as the abilities of family members to negotiate for jobs and land with landlords in destination areas, including the abilities to undertake the difficult jobs awaiting migrant households in destination areas such as harvesting, weeding, and other farm-related jobs.

As noted during field studies, these labour migrants are paid in food rather than money. These payment arrangements are a product of the macroeconomic challenges facing the country that have led to hyperinflation, high food prices, and high transaction charges from mobile money transfers (World Bank, 2019; Chingarande *et al.*, 2020: 17,18). These macroeconomic conditions have made incomes in the form of money worthless in Zimbabwe. In this case, food remittances are used to support family members back home during periods of climatic and economic stress. According to the Zimbabwe Vulnerability Assessment Committee, remittances continue to provide a lifeline for most food constrained households in rural Zimbabwe. Similar studies show that remittances within rural areas increased from 10%-16% between 2017 and 2019, and in Manicaland province only, remittances averaged between 11% during the same timeframe (ZimVac, 2019).

Furthermore, apart from cushioning household members from the adversities brought about by hunger in sending areas, labour migration has been effective in fulfilling the labour shortage gap experienced in large-scale commercial farming areas of Zimbabwe. As illustrated

by the Neoclassical Economic Migration Theory, the movements of people from poor areas (labour-abundant areas) to economically better off areas (labour-constrained areas) helps in absorbing excess/underutilized labour in poor areas to support production in highly industrialized regions (Melde, 2015; Hagen-Zanker, 2015: 62). This is true for Zimbabwe, as people in drought-prone regions are benefiting from the abundant jobs created in large-scale farming areas, that are also helping them improve their food security during periods of crop failure. On the other hand, large scale commercial farmers are also benefiting from the excess labour available from people in marginal areas, in their agricultural operations.

The role played by social networks and migration systems provided by the government and employment agencies in promoting human mobility decisions in communal areas should not be underestimated. As highlighted in previous chapters, most new migrants benefited from the information provided by their social networks, including kinships, friends, and relatives (Castles *et al.*, 2014:40). This social capital has been crucial in disseminating various information relating to jobs and land, including transport and logistics for new migrants that eased the costs and psychological pressures associated with relocation (Faist & Schade, 2013). As noted during the field discussions, social networks provide new migrants with food and accommodation costs in destination areas. Over the years, social networks have also been important sources of jobs in new areas for migrant workers, as shown in *Table 7.1* below. This table shows us the number of people that moved due to arranged jobs increased from 85,693 to 123,118 people between 2014 and 2019 in Zimbabwe (Zimstat official, personal communication, April 07, 2020). Similar changes were also noticed in Buhera and Chipinge Districts, as shown in *Table 7.1* below. Importantly, most migrants use various communication mediums, such as WhatsApp platforms and in-person communication to connect with their social networks who

provide them with the necessary information and updates about the standard of living in destination areas.

District	Main Reason for Moving: Arranged Jobs	
	2014	2019
Buhera	2,656	3,524
Chipinge	2,471	1,180
National	85,693	123,118

Table 7.1 Main reasons for people moving/ arranged jobs. Compiled by Principal Researcher using data collected from the 2014 and 2019 Zimbabwe Labour Force Survey Reports (Zimstat, 2015c; 2020)

In this case, new communication technologies “enhances social ties by putting users in more frequent contact with families and friends... using social networks... discuss social issues affecting the family” (Mutanana, 2016:63).

On the other hand, human mobility as an adaptation strategy to climate induced-food insecurities poses several social challenges to most rural people. Unlike the Western systems that place orphaned and vulnerable children into foster homes, and the elderly into home care centers, Zimbabwe is known for its strong extended family social protection systems that are used to cater to the needs of these vulnerable social groups whenever the need arises (Gwakwa, 2014; Mushunje, 2014). This social support system that has been in place over a number of centuries is built on the African principles of "Ubuntu" and is known to offer various forms of socio-economic support to vulnerable groups such as "cash, food, housing, care for the sick or dependent relative, the provision of material relief, labour and emotional support to destitute and bereaved" (Mushunje, 2014; 84). However, the deteriorating socioeconomic conditions and high out-migration rates have eroded the extended family ties, and with them a much-needed social safety net. In this context, the collapse of this system has been exacerbated by the socio-economic challenges that have seen most families struggling to make

ends meet finding it increasingly difficult to provide either food or monetary help to affected extended family members (UNDP, 2017:82).

Similarly, permanent human mobility patterns are detrimental to people's cultural and kinship connections. As noted by McNamara et al (2016:5), lack of kinship ties by migrants in sending areas often limits their accessibility to land and water resources that guarantee a households' survival in these new areas. As highlighted by several studies, the high population growth rates in Zimbabwe, if unchecked, will suddenly exceed the environment's carrying capacity, resulting in depletion of natural productive resources (Sherbinin *et al.*, 2007; Dovers & Butler, n.d.). As I noticed, and also reported by many respondents during field studies, due to lack of access to agriculture and housing land, new migrants have been settling in restricted areas such as waterways, grazing lands and mountain areas as squatters, thus further exposing themselves to extreme climatic conditions. In these reports, forest lands in receiving areas are converted into agricultural land pastures and these anthropogenic actions have had severe impacts on the environment (Sherbinin *et al.*, 2007: 351, 353; Feresu, 2017:15). Furthermore, population increases in the receiving areas have been responsible for the land-cover change, deforestation and agricultural land degradation. Unfortunately, these challenges have not gone unnoticed in the receiving area, as there are reported incidents of conflicts between new migrants, locals and the government. From the information I gathered from field studies, most irregular immigrants living on state land as squatters are reportedly living on borrowed time, as the government contemplates serving squatters with eviction orders.

7.3 Conclusion

7.3.1 General Summary

Small-scale farmers in Zimbabwe have long been subjected to poor agricultural production and food insecurity. This is largely due to colonial land policies, contemporary development challenges, and recent challenges in adapting to climate change. Over the years, climatic and non-climatic factors have been negatively affecting agricultural production in rural areas of Zimbabwe and exacerbating the food security challenges resulting in human mobility. These poor crop production trends have been common among marginal producers in Zimbabwe practicing rain-fed agricultural production under a communal farming system that was set up by the British colonial government in the 1930s (Mafa *et al*, 2015: 42). Today, more than forty years after independence, the majority of small-scale farmers who rely on crop and livestock production still have their livelihoods shaped by the colonial legacy of the communal farming system inherited by the new African Government. These socioeconomic and climatic challenges have been exacerbated by the country's failed land reform programs including the globally-induced economic development policies (ESAP), and economic sanctions imposed on Zimbabwe in the early 1990s and late 2000s. The interplay of these climatic and non-climatic factors have made the understanding of human mobility in Zimbabwe's communal areas. This complexity stems from the complicated colonial history that put small-scale farmers in the precarious situations that they find themselves in. As a result, these multicausal factors have increased climate vulnerability in communal areas and leading to high cases of human mobility decisions.

Unfortunately, the influence of climatic factors in motivating human mobility patterns in communal areas has been underreported in most studies including government papers. As a result, traditional human mobility drivers including, social, economic, and political factors have dominated the human mobility literature in Zimbabwe. Similarly, these traditional human mobility drivers of human mobility fail to understand the contextual, historical, and social dynamics of migration and climate change in Zimbabwe. Furthermore, despite human mobility being used as an effective adaptation strategy by most communal households in Zimbabwe, this strategy fails to be recognized in most climate policies that were adopted by the government. Given this context, this thesis sought to determine the interconnectedness of climatic and non-climatic factors such as colonial and contemporary development policies (including climate change) in shaping modern-day human mobility patterns in Zimbabwe's small-scale rural farming areas. The central research question for this study was: *How is the interconnectedness of climatic and non-climatic factors impacting contemporary human mobility patterns among small-scale farmers in Zimbabwe's communal lands, and what are their perceptions and responses to new forms of human mobility?* The five questions that guided this study were:

- i. What does shape the interaction between climate change and other factors of human mobility?
- ii. What are farmers' perceived versus actual alternatives to human mobility?
- iii. How do government and community interventions address climate change and human mobility patterns occurring in the study areas?
- iv. Are there any effective interventions for strengthening the resilience of agricultural/rural livelihoods against climate change disasters operating in Zimbabwe's communal areas?

- v. How do Zimbabweans understand the complexity of multi-vulnerability factors that will lead or compel people to move?

In answering these questions, this study employed a case study approach of Buhera and Chipinge Rural Districts of Zimbabwe. The two districts represent two distinct regions of Zimbabwe that went through different colonial development histories. Chipinge is a former white commercial farming area, and it benefited from massive agricultural support and economic development policies that came from the colonial government. On the other hand, Buhera was classified as a native reserve area and was used to house displaced African Farmers during the colonial rule. These areas suffered from underdevelopment, overcrowding, and lack of biodiversity. Also, these regions have two diverse agro-ecological conditions. Chipinge is under AER I and enjoys favourable agro-ecological and climatic conditions. Similarly, Buhera is in AER V and enjoys the worst agroecological and climatic conditions. In soliciting information from participants, this study employed qualitative data collection techniques and methods that include, Individual Household Interviews (IHHIs), Focus Group Discussions (FGDs), Key Informant Interviews, and Direct Observation. Similarly, the data collection process of this study made use of archival research on government and NGOs' databases, and journals to understand various issues concerning livelihoods and the food security situation in communal areas

The results of this study demonstrated that human mobility decisions in Zimbabwe's communal areas are determined by various factors that include socio-political, economic, and climatic factors. Multicausal factors leading to high food insecurity and human mobility cases in communal areas are directly tied to the country's colonial history. The colonial legacy that was created by the British government during the last century and inherited by the new African government after independence in 1980, led to the establishment of communal areas where

the majority of African farmers are located. These communal areas have a long history of poverty due to the poor agro-ecological and environmental conditions, overcrowding, and have long suffered from underdevelopment since the colonial period. These poor living conditions continuously subject farmers to poor agriculture production, poverty, and have increased people's vulnerability to climate change and human mobility. Compounding these vulnerability challenges in communal areas are the contemporary global and national development policies such as ESAP, economic sanctions, including the poorly planned and implemented Land Reform and Resettlement Programs and Social Protection programs. These policies have also brought several socio-economic, food production and, food insecurity challenges for the majority of communal farmers who rely on rain-fed agricultural production systems and with limited income diversification opportunities.

Climate change, which has been more pronounced since the turn of the 20th century in Zimbabwe, continues to act as a “threat multiplier” to these socio-economic challenges being experienced by farmers in communal areas. As highlighted by the majority of respondents during fieldwork, climate change has exacerbated rural poverty, and the food insecurity challenges leading to population displacements in communal areas. By relating the Risk-Hazard Model to the Zimbabwean context, a single climatic event such as a drought condition has often produced “multiple outcomes or impacts” such as (i) reduced crop and livestock production due to water shortages and increase in diseases and pests, and (ii) food shortages that have led to high cases of food insecurity, including high food prices in communal areas, among others. When faced with these looming food challenges, the majority of poor households without strong social, economic, and financial capitals resort to risk-averse behaviors that have long-term environmental and food security consequences.

Interestingly, the majority of farmers are aware of the interplay between climatic and non-climatic factors and their contribution to their food security challenges which are leading to their human mobility decisions. The majority of farmers have observed (i) changes in agricultural seasons that have become shorter, as they are now receiving erratic rainfall patterns, (ii) high frequency of mid-season droughts, temperature increases, and cyclones which were not common before, (iii) deterioration of environmental conditions and scarcity of land resources due to population increases, and (iv) macroeconomic challenges happening in the country that has led to a shortage of agricultural inputs and high food prices, leading to low crop production and food insecurity. Similarly, people are aware of the dangers posed by climate change on their agricultural production such as increased aridity in soils that have made agriculture and other land-based livelihoods impossible, a factor that has resulted in large-scale human displacements from these marginal areas. Also, the majority of people attributed the worsening macroeconomic challenges happening to the country to economic sanctions and the high frequency of climatic and environmental disasters, that have exposed them to poverty, thus making most government and NGO-funded social protection programs in the country ineffective.

However, I established that there are several governments and donor-led climate change adaptation and food security policies/programs operating in the study areas. These programs include the Bonde Irrigation Scheme, Atikoreri Livestock Production Programs, the Harmonized Social Cash Transfer Program, Drought Relief Programs, Command Agriculture, and Community Gardens, to name a few. Unfortunately, the effectiveness of these programs in promoting climate change adaptation in communal areas have been hampered by:

- Poor land and agricultural development policies that continue to expose people to poor infertile agricultural lands and underdevelopment in communal areas.

- Poor climate change adaptation policies such as the Climate Smart Agriculture (CSA) policies that are not compatible with the prevailing economic hardships and high poverty rates among communal people. Similarly, these CSA strategies are seen as an extension of neocolonialism ideologies by international institutions and organizations on the continent to further their science and technology-led development strategies to reshape Africa's agriculture (Newell & Taylor, 2018:113; Schnurr, 2019:14). Furthermore, these adaptation policies do not recognize human mobility as an adaptation strategy, and this is despite being used by most people in rural areas to mitigate climate change-induced food insecurities in communal areas.
- The high frequency of extreme climatic conditions such as droughts and cyclones that continue to negatively affect people's adaptive capacities and hampering agricultural production in communal areas
- The continual degradation and lack of equal access to natural ecosystems including land resources that provide people with food in communal areas
- Economic sanctions imposed on the country that continue to negatively impact on the country's agricultural development and investments.
- The country's macroeconomic challenges that have led to hyperinflation and high food prices resulting in high food insecurity and untold suffering in communal areas
- The high poverty rates coupled with limited government/donor social expenditures have contributed to the inefficiency of most social protection programs in the country. Despite the poor coverage, these programs suffer from accountability and transparency issues.

On the other hand, all things being equal, the majority of communal farmers highlighted that they preferred to adapt to these climate change-induced food insecurities *in situ*. This is due to their strong social and cultural bonds that create a sense of community belonging. As highlighted by Mutanana (2016:63), Zimbabwean families are generally known for their strong social systems that have a "collective identity... as a result of shared recollections of togetherness that are created as family members spend time together in shared meals, games and chatting" (Mutanana, 2016:63). The strong social capital embedded in Zimbabwean families enables them to act collectively (Woolcock & Narayan (2000) cited in Hungwe, 2015:122). It is only when such systems fail to cushion people from extreme climatic events that people resort to moving to areas that offer them better protection and livelihoods. The strong social capital envisaged by the Zimbabwean people has made such movements are made easier, especially for new migrants. According to Findlay (2011), In most cases, migrants follow prescribed routes that were used by their predecessors, and these areas are usually areas close to their homes that offer them better economic opportunities.

Sadly, from the fieldwork, I observed that social capital has been under threat in recent years from the contemporary climate change challenges that are leading to several livelihood stresses and human mobility. Similarly, as highlighted in various Focus Group Discussions during fieldwork, there is high resentment towards out-migration and relocation, especially among the elderly, who argued that they were the custodians of their ancestral lands and graves in sending areas. Furthermore, there is a great fear among the older generation over migrating to new areas. Most of them have become accustomed to living in the home areas that they fear they lack the capacities to deal with unforeseen events in destination areas.

Given this scenario, human mobility in communal areas has been practiced mainly by the younger generations to avert the looming food security challenges brought about by climate

change. Unfortunately, the macroeconomic challenges being experienced in the country have not spared urban areas either. Just like rural areas, these areas are suffering from high employment rates, high food prices, lack of housing facilities and, serious power outages. As a result, Zimbabwe's urban areas have become a no go zone for the majority of young people in Buhera. Whereas some would have available to them the option to relocate to South Africa, the lack of passports, high transport costs, and high living expenses, including lack of social networks, and job connections in South Africa, has resulted in most young Buhera residents settling for nearby farm jobs in large-scale farming communities in Chipinge, Chikomba, and other surrounding areas. This desire to move is pinned on their hopes of seeking better livelihoods in receiving areas, with food security topping their agenda especially during a period of climatic stress (Masson-Delmonte *et al.*, 2019:439). Thus, it is usually the droughts, land degradation, worsening macroeconomic conditions, lack of food, and income diversification projects in home areas that have contributed to the seasonal and permanent migration patterns being experienced by most people in communal areas. In this case, human mobility in Zimbabwe's communal areas is regarded as an adaptation strategy meant to cushion households from the socioeconomic challenges exacerbated by climate change through diversifying their farm incomes (Piguet *et al.*, 2011:15; Faist & Schade, 2013:11; Kelsaite & Mach, 2015:7; Bhatta *et al.*, 2015:4; Rigaud *et al.*, 2018:1).

As for Buhera farmers, the process of adapting to climate change-induced food insecurities using human mobility as an adaptation strategy has been made easier by:

- *Distance:* The proximity of Buhera to large-scale farming areas of Chipinge, Mutare, Chimanimani, and Chikomba which are located in AERs I and II, have made migration easier for most people due to low transport and relocation costs.

- *Abundant agricultural land:* Chipinge in particular boasts of having vast pieces of fertile agricultural lands that were left behind by white commercial farmers due to the land reform and resettlement programs. These agricultural lands are located in areas with favourable climatic and agro-ecological conditions that make agricultural production possible for most farmers.
- *Strong social capitals and networks:* The strong social and kinship ties that exist between people in Buhera and Chipinge and can be traced to the colonial era have made migration much easier. People from drier areas have used their strong social ties to get access to employment/casual jobs and agricultural land in receiving areas. Furthermore, social ties have been important in lowering transport and relocation costs such as food and accommodation in destination areas.

From my fieldwork, I discovered that human mobility as an adaptation strategy has been successfully used in helping communal households adapt to climate change-induced food stresses. In this particular case study, households have benefited from the food remittances sent back home by labour migrants in destination areas, and this has helped household members maintain their food security status during periods of climatic stress.

Having said this, I argue that:

- (i) Both climatic and non-climatic factors should be considered as the “primary drivers” of human mobility decisions in communal areas. Apart from the need to seriously consider the impacts of climatic factors in the human mobility literature in Zimbabwe, policymakers should stop looking at human mobility as something separate from climate change. By understanding that climate change is a huge contributor to human

mobility in the country, the government can come up with better policies and strategies that promote effective climate change adaptation in communal areas.

- (ii) If the people that are concerned with climate change recognize and understood the importance of the colonial legacy and other structural issues leading to poverty, underdevelopment, and food insecurity in communal areas, they could intervene more efficiently in the climate change and human mobility debate. For example, the environmental advocate would probably have more leverage speaking to the policymakers in Zimbabwe to understand the importance of the historical structural dynamics that are making climate change adaptation difficult in communal areas. Without addressing these complex political historical-structural issues, Zimbabwe has greatly reduced the chances of mitigating and adapting to climate change, including meeting its SDGs.
- (iii) if we frame human mobility not as some kind of unfortunate outcome but as an adaptation strategy to climate change, then the government can be more proactive and understanding how to respond to it by promoting “good human mobility” and discouraging “bad human mobility” rather than seeing it as an unfortunate anomaly.

7.4 Limitations of this study

Firstly, as a way of improving the reliability of information presented to me by farmers during fieldwork, I triangulated my data with a variety of methods that include Individual Household Interviews (IHHIs) and Focus Group Discussions (FDGs), which I later verified with the information I gathered from Expert Interviews and through Direct Observation. Apart from triangulating this data, I had no other control over the quality of information presented to me

by study participants. Hence, there was a need for; (i) reaching out to more people across the districts of Zimbabwe and, (ii) prolonging my fieldwork to capture as much data as possible.

However, all this was made impossible due to the shortness of my study program and limited funding to support my fieldwork. Secondly, since human mobility patterns vary from one region to another depending on the existing climatic, economic, and socioeconomic conditions in Zimbabwe, the findings of this study may not apply to other areas across the country. In this context, human mobility patterns in Zimbabwe vary depending on other factors such as:

- (i) The ever-changing socioeconomic, technological, and environmental conditions in the country, hence impacting each district/community differently
- (ii) The diverse climatic, agroecological conditions, including the cultural differences and human capital that exist across the different communal areas across the country
- (iii) The geographical location of particular communal areas, such as proximity to international borders or other major economic hubs such as mining towns and industrial areas, may force different people to exhibit different mobility patterns.

All in all, the results of this study are more applicable to areas that have the same climatic, environmental, economic, and sociopolitical conditions as the ones found in study areas.

7.5 Recommendations

As for the Government of Zimbabwe:

- Firstly, the "one size fits all" climate adaptation policies promoted by international development institutions that include UN agencies and the World Bank among others

that emphasize on science and technology based initiatives in climate change adaptation are not applicable nor appropriate for a country such as Zimbabwe. These strategies brought about by the international community on Zimbabwe that include CSA practices and Africa's Green Gene Revolution among others meant to enhance agricultural production and mitigate the dangers of climate change fail to acknowledge the various social, economic, political, and ecological factors (Schnurr, 2019:210) that are shaping vulnerability and human mobility in the country. Furthermore, the difficult colonial development history and cotemporary development challenges that the country endured makes it different from other developing countries. Hence, there is a need for the Government of Zimbabwe to tailor-make its climate adaptation policies to suit the prevailing climatic and socioeconomic development challenges happening in communal areas. Such climate adaptation policies should promote resilience among communal people by enabling their capacities to better respond and recover from their socio-economic and livelihood stresses brought about by these multi-vulnerability factors that go back to the colonial period. Given this context, the Government of Zimbabwe needs to align its climate change adaptation policies against the backdrop of this history that stems from "political tensions over environmental issues in different forms going back to the colonial era" (Doldman & Mitlin, 2015:227). This can be achieved by creating sound agricultural development policies that revisit and redress the land ownership imbalances and agricultural production challenges in communal areas. For this to be possible, there is need for meaningful involvement of community participation, especially communal farmers in the framing of these climate change policies that affect them most.

- Secondly, the current climate change adaptation framework in Zimbabwe fails to acknowledge human mobility as an adaptation strategy to climate-induced food insecurities. This is despite the strategy having been used by several households from the drier regions of the country to adapting to climate-induced food insecurities. Given this challenge, there is a need for the government to acknowledge climate change as a major driver of human mobility and regard human mobility as an adaptation strategy in its climate change adaptation policies. This process requires the government to meaningfully engage and consult communities in order to understand and determine climate change adaptation strategies that are working and not working in these marginal areas. This will help the government to build on adaptation strategies that are working in these marginal areas, while discouraging those strategies that promote bad adaptation. With this, rural communities are able to identify their own climate adaptation challenges and propose solutions that suit their local context and work for them. By acknowledging this, migrants are better guaranteed of relocation settlement support, such as access to fertile land, and water resources, including equal participation in food security and other development programs conducted by government and NGOs in destination areas. This also helps reduce conflicts between new migrants and local people in destination areas. Furthermore, a climate change adaptation policy that incorporates human mobility ensures that the government put in place tax policies and other structures that encourage migrants to send remittances (money and food) much cheaper and easier as a way of encouraging effective climate change adaptation in communal areas.
- Thirdly, given that the climatic and agroecological conditions in AERs IV and V are not conducive for maize production, which is the staple food for many, there is need

for the government to intensify its mandate of promoting the growth of small grains, such as Millet, Sorghum, Groundnuts, and Roundnuts, including Livestock Production which thrive better in these marginal areas. Although this issue has been addressed in most climate change policy documents, however, the transition from the “maize culture” to the growing of small grains has not been easy for most farmers due to:

- (i) lack of trust between the government and farmers, as there is growing uncertainty among farmers who do not believe that the growing small grains is a good livelihood options available for them.
- (ii) their historical and familiarity of growing and consuming maize grain, hence most farmers are resistant and not comfortable with the new taste posed by small grains in their diets.
- (iii) lack of markets for these new crops, including the excess labour required in growing, harvesting and, processing these crops.
- (iv) the colonial legacy that compelled them to rely on maize exporting and subject them to small pieces of land.

As a result, most farmers highlighted that it is a huge risk for them to make this transition given their small plot sizes and lack of financial support from the government and financial institutions. For this transition to happen the government should reflect on true partnership with the farmers, and be willing to step up and offer support and the insecurity that comes with making a vulnerable transition into the new product. This requires the government to take a step further by availing seed inputs of these crops to communal farmers through agricultural input support programs such as the Command Agriculture and the Presidential Agriculture Input Programs. Similarly, the government need to invest in

agricultural extension services that help teach farmers to grow of these new crops while also improving agricultural input and output markets for these crops (Schnuur, 2019:198). Also, the availability of such seed varieties to farmers can be ensured through high investments in agricultural research and development programs that focus on producing seed varieties that meet the local conditions for effective climate change adaptation in communal areas. Lastly, as highlighted by Schnurr (2019: 197,198), “investment in seed-based technologies must be accompanied by concomitant investment to ensure that supportive structural factors are in place in terms of credit, markets, extension, outreach, and education”. Without these changes and commitments by the government, the existing patterns will keep repeating themselves

- Fourthly, there is a need for the government of Zimbabwe to swallow its pride and re-engage diplomatic relations with the international community, especially the Bretton Wood Institutions and the European Union. Since members of the international community are willing to re-engage Zimbabwe after the exit of Robert Gabriel Mugabe in 2017, upon its commitment to readdress the human rights issues, the country should seize that opportunity with both hands and help mend its soured relationship with International Financial Institutions. By re-engaging the international community, the country will be enabled to access international credit lines including FDI needed for agricultural development and investments in communal areas. From the Zimbabwean context, high investments in irrigation systems, tractors, and other farm equipment, including climate forecasting and monitoring technologies will help resuscitate agricultural production in communal areas. This is true since agricultural production in Zimbabwe has long suffered from poor agricultural investments and

underdevelopment of communal areas due to economic sanctions imposed by the international community on Zimbabwe. Furthermore, by enacting non-discriminatory policies that eliminate corruption, the country is guaranteed of sustainable funding from its rich minerals which can be channeled towards economic development and investments of earth observation systems, Geographic Information System (GIS), and Science Technologies for extension officers to monitor climate data and help farmers mitigate climate disasters.

- Lastly, there is a need for improved coordination and information sharing among government departments especially the Departments of Climate Change, Agritex, Environmental Management Agency (EMA), and the Zimbabwe National Water Agency (ZINWA) for effective climate change programming in Zimbabwe. On a similar note, there is a need for improved community participation in climate change and social protection programming in Zimbabwe. Meaningful participation of the community helps in improving the efficiency of these policies/programs in climate change adaptation, as strategies will be tailor-made to address the needs of the people.

As for Non-Governmental Organizations (NGOs):

- There is a need for them to fine-tune their climate adaptation programs to address the needs of the people in the local context.
- NGOs need to ‘scale-up’ climate-change adaptation programs across the country since climate change is affecting all households across the country. Improved climate resilience among all the households across the country will help Zimbabwe meet its United Nations acclaimed SDGs.

As for Local Communities:

- There is a need for behavior change among communal people and move away from the “maize culture”, that is believing that the maize crop is the only major source of food for them. In this case, people should take technical advice given to them seriously by and produce small grains in drought-prone areas rather than maize crops to improve their food security.
- Furthermore, communal people should take advantage of climatic conditions found in their areas and concentrate on livestock production that thrive well under such climatic conditions than maize crops
- For those who engage in out-migration, there is a need for them to take advice from the local authorities to limit conflicts with locals or risk exposing themselves to further climatic and environmental dangers in destination areas.

As for the Research Community:

- Climate change and human mobility as a new field lacks empirical studies in Zimbabwe. There is a need for more studies in understanding the interplay of climatic and non-climatic factors in motivating human mobility patterns across the other districts of Zimbabwe.
- There is also a need for follow-up studies in understanding some of the challenges and struggles being experienced by new migrants, including understanding some of the strategies they are using to mitigate these challenges in destination areas.

7.6. Closing Remarks

This thesis has demonstrated that in order for effective climate change adaptation to happen in developing countries, there is a need for pro-poor climate policies that acknowledge the various factors shaping vulnerability. This entails a deep understanding of the underlying factors shaping food insecurity and human mobility in poor regions such as the country's colonial history, the national and global economy, and climatic factors. It is indisputable that the intensity and frequency of climatic factors are going to worsen by the end of this century, and no country will be spared by these worsening conditions. There is no doubt that the high temperatures and excessive flooding in global south countries will produce many climate migrants who will move into the coastal and inland areas of global north countries with favourable climatic conditions. Similarly, the impacts of climate change will be devastating in Africa where the majority of people are small-scale farmers practicing rain-fed agriculture and with no irrigation facilities. There is a need for serious consideration of human mobility as a climate change adaptation strategy for these low-income countries. This strategy has been successfully used for centuries by several communities in Africa, especially in East Africa during periods of climate-induced food insecurities. The failure to have such policies in place will have long-term negative impacts on the agro-based African economies, which in return will negatively affect future climate change adaptation efforts in the continent.

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