

Climate Change and Small-Scale Farmer Livelihood Adaptation in Rural Border
Communities in Southern Africa: A Case Study of Ezondweni Village in Mchinji, Malawi

By Kennedy Khuzwayo Simango

G15s4829

Department of Sociology

Rhodes University

Supervisor: Professor Kirk Helliker

K.helliker@ru.ac.za

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Abstract

Southern Africa is a region increasingly experiencing the detrimental effects of climate change and variability. The rural areas in particular face unprecedented climate change-induced challenges in relation to small-scale farmers being able to pursue household-based livelihoods, and these farmers seek ways of adapting to climate change and variability in doing so. Some rural communities exist along territorial borders and their attempts at adapting to climate change entails cross-border networks and activities. In this context, this thesis examines small-scale farmer adaptation to climate change and variability in the small village of Ezondweni in Malawi near the Zambian border. Analytically, the study draws upon the Sustainable Livelihoods Framework as well as social network theory and the theory of reflexive agency put forward by Margaret Archer. A qualitative research design entailed informal interviews with a small number of Ezondweni villagers, focusing on their perceptions of climate change and their practices of climate change adaptation. The study demonstrates the diverse activities pursued by villagers, both within Malawi and beyond, in seeking to maintain household-based livelihoods, as well as the significance of mutually-supportive social networks which facilitate these livelihood processes.

Acknowledgements

This thesis was inspired by both the personal desire and research interest. The personal desire is that of bringing the spotlight on Ezondweni, my family's home village. My research interest in climate-related issues around livelihoods and social networking helped drive the idea to merge these inspirations into a thesis. Firstly, I am thankful to God, who has guided me throughout this journey. I am thankful to my uncle, Patrick Simango, who took the time out of his schedule to help me acquire the research data needed to complete the thesis. I am grateful to the Ezondweni community members who participated in this research, giving time out of their day to do the interviews. I thank the Sociology Department at Rhodes University, for giving me the chance, platform and support needed to complete my research. To Juanita, thank you for helping get access to materials I needed from the department, especially during lockdown when I could not access campus. To my supervisor, Kirk Helliker, I am grateful for the support and feedback, in a year that has not been easy for anyone; you helped me a great deal in shaping this literature. To my brother Samuel Simango, thanks for always helping me whenever I am in need of thought-provoking ideas and discussions on a wide array of topics; our conversions helped contribute to this thesis both directly and indirectly. A special thanks to my beloved mother and father. I would not be here if not for you and I am grateful to have your unending love and support in my life. *Zikomo kwambilili nonse.*

Acronyms

AFDB	African Development Bank
AU	African Union
FRELIMO	Mozambique Liberation Front
FAO	Food and Agriculture Organisation
GBI	Green Belt Initiative
GMO	Genetically Modified Organism
GMS	Genetically Modified Seeds
IPS	Integrated Production System
NGO	Non-Government Organisation
SADC	Southern African Development Community
SAFGRAD	Semi-Arid Food Grain Research and Rural Development
SLF	Sustainable Livelihoods Framework
SNT	Social Network Theory
UN	United Nations
WHO	World Health Organisation

Contents

Abstract.....	i
Acknowledgements	ii
Acronyms	iii
List of Figures.....	vi
List of Tables	vi
CHAPTER 1: INTRODUCTION AND METHODOLOGY	1
1.1 Introduction.....	1
1.2 Context of Research.....	1
1.3 Research Objectives.....	5
1.4 Research Methodology	5
<i>1.4.1 Research Methods and Sampling</i>	<i>6</i>
<i>1.4.2 Research Ethics and Fieldwork Challenges</i>	<i>7</i>
1.5 Significance of the Research.....	9
1.6 Outline of the Dissertation	9
CHAPTER 2: THEORETICAL FRAMING	10
2.1 Introduction.....	10
2.2 Sustainable Livelihoods Framework	10
2.3 Social Network Theory	13
2.4 Margaret Archer’s Theory of Reflective Agency.....	14
2.5 Conclusion	16
CHAPTER 3: RURAL LIVELIHOODS, CLIMATE CHANGE AND BORDER COMMUNITIES IN SOUTHERN AFRICA	17
3.1 Introduction.....	17
3.2 Rural Livelihoods in Southern Africa	17
<i>3.2.1 Assets</i>	<i>18</i>
<i>3.2.2 Vulnerabilities and Shocks</i>	<i>19</i>
<i>3.2.3 Policies and Institutional Structures</i>	<i>21</i>
3.3 Rural Border Communities in Southern Africa.....	22
3.4 Climate Change in Rural Southern Africa.....	23
3.5 Conclusion	25
CHAPTER 4: CLIMATE CHANGE AND RURAL LIVELIHOODS IN MALAWI.....	26
4.1 Introduction.....	26
4.2 Overview of Rural Malawi.....	26
4.3 Economic Activities.....	27

4.4 Social Relations and Differentiation.....	28
4.5 Climate Change and Variability Implications.....	29
4.6 Institutional Responses	32
4.7 Conclusion	34
CHAPTER 5: EZONDWENI CASE STUDY	35
5.1 Introduction.....	35
5.2 Profile of Ezondweni Village and Villagers	35
5.3 Villagers’ Conceptions of Climate Change.....	37
5.4 Social Networks in Ezondweni.....	39
5.5 Pursuing Livelihood Adaptation.....	41
5.5.1 <i>Assets and Livelihoods</i>	42
5.5.2 <i>Crossing the Border</i>	44
5.6 Conclusion	45
CHAPTER 6: CONCLUSION.....	46
6.1 Introduction.....	46
6.2 Addressing the Subsidiary Objectives.....	46
6.3 Addressing the Main Objective	48
6.4 Areas of Further Research.....	49
References.....	50
Appendix A: Interview Schedule.....	69
Appendix B: Participant Consent Form	72
Appendix C: List of Interviews.....	74

List of Figures

Figure 1: Ezondweni and Surrounding Area.....	3
Figure 2: Sustainable Livelihoods Framework.....	10
Figure 3: Example of Social Network.....	14

List of Tables

Table 1: Ezondweni Participants.....	36
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CHAPTER 1: INTRODUCTION AND METHODOLOGY

1.1 Introduction

This thesis examines climate change and livelihood adaptation amongst rural border communities in southern Africa with specific reference to Ezondweni Village in Mchinji, Malawi, along the Zambian border. For the purposes of this study, ‘adaptation’ is defined broadly to encompass both livelihood coping and mitigation strategies vis-a-vis climate change and variation. These livelihood strategies are undertaken by households and communities in the face of the vulnerabilities arising because of climate change and variability (Food and Agriculture Organization of the United Nations, 2012). ‘Climate change’ refers to the broad trends in climatic conditions over an extended period of time, while climate variability refers to major shifts over the short-term, including drought episodes. This chapter sets out the context of the study (section 1.2), the thesis objectives (section 1.3) and the research methodology and design (section 1.4), and ends by detailing the significance of the thesis and the thesis outline (sections 1.5 and 1.6, respectively).

1.2 Context of Research

Climate change and variability affect rural communities and their livelihoods dramatically, especially when agriculturally-based livelihoods are at the centre of their activities (Naidoo *et al.*, 2013). About 60% of the population in the Southern Africa Development Community (SADC) live in rural areas, and are dependent on natural resources and access to land in order to sustain a living (Economic Commission for Africa Sub-Regional Office for Southern Africa, 2012: 4). This figure is even higher when looking in particular at Malawi, with over 80% of the population defined as rural (World Bank, 2018). Southern Africa especially is one of the world regions most likely to be affected by climate change in the coming years and decades (Southern Africa Development Community, 2011).

Any study of household-based livelihoods in Malawi or elsewhere involves a focus on pertinent social and political structures and networks, local histories and cultural dynamics, and the assets or resources which households draw upon in constructing and pursuing livelihood activities (Masunungure & Shackleton, 2018; Levine, 2014). The existence of climate change and variability over recent decades has served to complicate the pursuit of rural livelihoods in southern Africa by deepening household vulnerabilities. Adaptation measures become crucial in this regard, including for Ezondweni Village near the Zambian border. The

fact that Ezondweni is a border community adds a further dimension to the study, as the lives and livelihoods of villagers in Ezondweni transcend national boundaries because of cross-border movements and networks (Moyo, 2020). In this context, livelihood adaptation to climate change and variability has a transnational dimension.

Rural livelihoods in southern Africa tend to be orientated around small-scale subsistence agricultural activities as the dominant means of survival (World Bank, 2017), and in particular rain-fed agriculture. This is certainly the case with Ezondweni. These household-centred agricultural activities entail low technical skills with no modern equipment (Proctor, 2014). At times, rural households may be able to venture into (small-scale) market-based agriculture, and/or they may turn to non-agricultural activities such as informal trade or casual labour as additional means of survival (Mills *et al.*, 2017). This usually occurs during times of deep crisis when there is a need for diversification by adopting new livelihood activities (Mushizha *et al.*, 2017). Of course, rural communities and their livelihoods are not homogenous, and there may be variations across households in terms of levels of agricultural activity and forms of livelihood activities.

Most infrastructural support systems in rural southern Africa are undeveloped and insufficient which, in turn, limits access amongst rural households to key resources and economic activities (Africa Monitor, 2012). For instance, only 34% of rural Africans live within two kilometres of paved roads, while only 35% of sub-Saharan Africans have access to electricity (Africa Monitor, 2012: 1; Mills *et al.*, 2017: 73). Data such as this illustrate the many potential challenges to livelihoods that arise even during the best of times, as well as the deepening distress now existing due to ongoing climate change and variation, with households and communities unable to rely upon internal and external support systems (including government support). Climate change will continue to effect rural lives and livelihoods in multiple ways, including by lowering crop yields, increasing health problems and reducing levels of nutrition (Serdeczny *et al.*, 2015).

In the context of the local effects of climate change and variability on the lives of rural villagers in Ezondweni and the array of challenges they confront, this thesis therefore seeks to understand household- and village-based livelihood adaptation activities and strategies alongside the enabling and disabling conditions which configure these strategies.

The specific focus of the thesis is Ezondweni, a border village situated in Malawi along the main road linking Mchinji in Malawi with Chipata across the border in Zambia (see Figure 1). The community in this village, like those in surrounding villages, is patrilineal in culture in which men hold more political power at community level than women (such as being the chief).

However, there is shared gender duties and responsibilities when it comes to the main productive livelihood activity, which is small-scale subsistence farming.

Figure 1: Ezondweni and Surrounding Area



Source: Google Maps.

The shared cross-border ethnic identity as well as ethnic relations between Ezondweni villagers and the neighbouring villages and villagers across the border, and the constant toing and froing between Malawi and Zambia, makes it a porous border, despite the existence of border controls and securitisation. In fact, the governments of Malawi and Zambia are seeking to tighten border controls in order to regulate cash and trade flows, given the high level of informal cross-border trading taking place (The Mast, 2019; United Nations, 2019). Significant movement across the border abounds in both directions, including for trading purposes or for accessing social amenities such as health and education (Nshimbi, 2017). This is further facilitated by the presence of informal networks that are economic, cultural and kinship based. This is part of a broader process of cross-border movement in the border regions of Malawi (Anseeuw, 2016; Meredith, 2011) and southern Africa generally. For example, households in Chirundu (at the Zambia/Zimbabwe border) and Beitbridge (at the South Africa/Zimbabwe border) partake in small-trader activities such as selling goods to truck drivers and security and border officers situated at the border posts, in order to sustain a living outside of their small-scale farming activities (Ngarachu *et al.*, 2012; Nshimbi, 2019).

Overall, though, most livelihood studies do not focus on border communities and the significance of cross-border movements and interactions for rural livelihoods. Additionally, rarely is a study of border livelihoods combined with livelihood adaptation to climate change and variation. The thesis thus hopes to contribute to the prevailing literature through this multiple focus, and to understand the ways in which transnational ethnic networks interrelate rural villagers' efforts to adapt livelihoods in the face of climate change. Indeed, the border location of Ezondweni has specific implications when it comes to climate change adaptation strategies.

Analytically, the thesis makes use of the Sustainable Livelihoods Framework in combination with Social Network Theory and Margaret Archer's Theory of Reflective Agency. In doing so, the thesis seeks to contribute to this new and innovative way of theorising about livelihoods (Bhatasara, 2015; Misra *et al.*, 2014).

The Sustainable Livelihoods Framework (SLF) examines households as they pursue livelihood activities by drawing upon local resources and capabilities under structural conditions of vulnerability, which often emanate from the broader political economy. The available resources include natural, social, human, cultural, financial and physical capital, which are combined in fluctuating ways in developing livelihood portfolios. These portfolios might enhance household well-being or at least inhibit deepening levels of poverty. The conditions of vulnerability incorporate sudden shocks and systemic crises, including climate change and variability. Through livelihood portfolios, households try to cope with these on a short-term basis, or they may be able to adopt strategies of adaptation over the longer-term (Levine, 2014; Scoones, 1998; Serrat, 2017). In addition, there are national and regional organisational formations such as governments and NGOs that intervene in local contexts and thereby shape the capacity of households in terms of availability of resources and livelihood adaptation possibilities (Southern African Development Community, 2015).

The Framework has been subject to significant criticism because of its deficient notion of human agency (Scoones, 2009). Because of this, the thesis will strengthen the Framework by drawing upon the sociological understanding of agency put forward by Social Network Theory and Archer's Theory of Reflective Agency. Social Network Theory emphasises how the structure and strength of social ties (including ethnic ties) play a key role in members being able to make and pursue livelihood decisions (Borgatti & Halgin, 2011), and thus it deepens an understanding of the SLF's social capital. Archer (2010) speaks about reflexive agency and personal concerns and projects, and shows how agents engage in

reflective-based thinking and practices in attempting to negotiate the conditions which structure their lives.

Combined, Social Network Theory and Archer's Theory provide a nuanced interpretation of the relationship between agency and structure that facilitates an analysis of household-based decisions and actions around livelihoods in the face of high levels of vulnerability (Akram, 2012). In this way, the thesis will consider structural-based factors and agent-based factors which influence the short- and longer-term livelihood adaptation strategies of the Ezondweni community due to climate change and variation (Stringer *et al.*, 2010).

1.3 Research Objectives

The main objective of the thesis is to *understand livelihood adaptation strategies to climate change in the border community of Ezondweni Village in Mchinji, Malawi*. The subsidiary objectives include:

- to understand the local informal and formal socio-political and economic structures which shape the livelihood experiences and practices of Ezondweni villagers such as infrastructure and customs;
- to investigate the conditions, enablers, constraints and options that Ezondweni villagers have in adapting their livelihoods to climate change; and
- to examine the capacity of Ezondweni villagers to engage in livelihood adaptation to climate change.

1.4 Research Methodology

The research was guided by a qualitative methodology, which emphasises on the understanding of the perspectives, experiences and practices of the research subjects (i.e., the Ezondweni villagers) (Doyle *et al.*, 2009). Qualitative research is a “systematic scientific inquiry which seeks to build a holistic, largely narrative, description to inform the researcher’s understanding of a social or cultural phenomenon” (Astalin, 2013: 118). Qualitative research privileges the research participants’ point of view so that subjective meanings and understandings come to the fore as part of an insiders’ perspective (Coetzee & Schreuder, 2016). This helps with the understanding of how knowledge is constructed through social experience and social interaction (Jackson *et al.*, 2007). This is an important facet when dealing with perceptions and experiences of the Ezondweni villagers around climate change and livelihoods, which is the focus of this research.

The ontological basis or philosophy of social reality on which my research is based is constructivism, which regards reality as in large part internal to meanings and interpretations that people ascribe to their realities, with these interpretations influenced by cultural location and historical situatedness. In other words, social reality ‘comes into existence’ through our individual and collective perceptions or indeed constructions of it (Jackson *et al.*, 2007). The epistemological basis or philosophy of knowledge on which my research is based is interpretivism (Thanh & Thanh, 2015). Interpretivism speaks about understanding social phenomena rather than explaining them – hence, it stresses the significance of understanding how people make sense of the world around them and in the way that they do, and people’s cultural and social interpretations strongly condition and shape actual human practices (Ritchie *et al.*, 2013).

In summary, a qualitative research methodology is useful for this thesis in that it paves the way for ‘how’ and ‘why’ questions to be pursued rather than only ‘what’ questions. It reveals people’s interpretations which are shaped by subjective and contextual experiences of their environment (Letherby *et al.*, 2013). This means that interpretations may vary across research subjects, depending upon their life histories and contemporary conditions of life (Ritchie *et al.*, 2013) as well as factors such as age, gender or education. With regard to this thesis, interpretivism gives a richer understanding as to how the Ezondweni community members interpret and make sense of climate change and how they adapt based on their internalised reality or realities.

1.4.1 Research Methods and Sampling

The case study of Ezondweni was chosen on a purposive basis, arising from the researcher’s familiarity with the area and easy access to villagers. There is no claim that Ezondweni is representative of other small-scale farming border communities in Malawi or elsewhere. However, there are likely to be similar processes at work in comparable communities, which means that this study is relevant to border community studies in the region.

The selection of research subjects (six villagers) in Ezondweni was also based on purposive and convenience sampling (see Appendix C for list of interviews). In selecting the subjects, there was sensitivity to gender and age, with three men and three women selected between the ages of from 30 and the 70s. Evidence was collected through interviews during the month of January 2021.

Due to varying levels of educational backgrounds and different degrees of fluency in different languages amongst the research subjects, a fluid mixture of English, Chichewa and

Chisenga was used. This was meant not only to overcome communicational barriers but to ensure that participants are comfortable with expressing themselves fully in a language of their choice. Participants were interviewed one-on-one by a research assistant who is a member of the village. The interviewees were asked: (a) to give their understanding of climate change and variability, experiences with it and how they adapt to the challenges that it presents; (b) to detail the social networks that exist in Ezondweni and amongst the border communities (including on the Zambian side of the border); (c) to speak about the character and role of agency in their livelihood adaptation strategies; and (d) to discuss the use of various assets in their livelihood institutions and external structures that influence their livelihood strategies, including in the context of climate change and variability (see Appendix A for interview schedule).

The interviews, which all took place in Ezondweni, were audio-recorded with permission of the research subjects, and after receiving consent to proceed with the interview (see Appendix B for consent form). The recordings were subsequently sent to the researcher for translation, transcription and further processing. This arrangement helped to overcome geographic, resource and time constraints (Bolderston, 2012) and was necessary in the context of the COVID-19 pandemic as the researcher could not travel to the research site. The researcher ensured that the research assistant was properly trained in interviewing as a research method, and with sufficient knowledge about the focus and objectives of the study.

The interview instrument (or schedule) allowed for semi-structured, in-depth interviews. This interview format is beneficial in that it allows the research participants to speak their own mind and express their feelings or emotions with considerable flexibility (rather than being limited by close-ended questions) (Alshenqeeti, 2014). Semi-structured, in-depth interviews allow the interviewer to better understand the participants' way of thinking and how they understand the topic, which paves the way for more consistent data being obtained (Morris, 2015).

The data was thematically structured, categorised and coded according to the subsidiary objectives of the thesis. This enabled the presenting of the context, experiences and activities of the research participants by identifying, organising, describing and examining pertinent themes arising from the evidence (Nowell *et al.*, 2017).

1.4.2 Research Ethics and Fieldwork Challenges

To ensure that ethical standards were met and that no harm occurred to the research subjects, be it physical or psychological, they were informed about the nature and purpose of the study prior to becoming involved. The voluntary consent of research participants was a necessity,

with participants being made to understand that their participation was voluntary, to ensure that they were comfortable and did not feel coerced (Vilma, 2018). All measures were taken to ensure anonymity and confidentiality of data collected to protect the participants from stigma or harm such as experiencing shame or being persecuted within the community (Kaiser, 2009). Interviews were conducted in such a way so as to ensure that fairness and consistency amongst research participants took place (Department of Health South Africa, 2015). Participants were treated as agents within the research and any thoughts of theirs that they felt should not be included were not included, ensuring the data was not used to misrepresent the participants (Kaiser, 2009; Muwanga-Zake, 2009). The researcher followed a strict code of ethics and conduct that was applied to all the research participants (Hammond & Wellington, 2013).

The research received ethical clearance from the Rhodes University Ethics Committee (RUESC-HE) and abided to the ethics standards as set out by the university. Consent forms (Appendix B) were used and these briefly explained the purpose of the research. The interviews were conducted in a convenient environment for the participants, namely, within their homesteads in Ezondweni.

In terms of the fieldwork, as indicated, qualitative, open-ended and in-depth interviews were undertaken, which ensured flexibility in the conversation topics and the emergence of illuminating dialogues between interviewer and interviewee (Alshenqeti, 2014; Mohajan, 2018). I was not able to undertake the fieldwork and carry out the interviews because of COVID-19 lockdown disruptions, and trying to carry out the interviews via phone proved impossible because of connectivity issues. Using a research assistant was the only alternative. I recognise that this is not the ideal research process, but I do have confidence in the validity of the data based on the training given to the research assistant and listening to the professional and unbiased manner in which the research assistant carried out the interviews (in the tape recordings). Not being present at the research site, I was not able to witness the non-verbal cues and communications arising during the interviews. More importantly, I was not able to undertake observations within the natural setting of Ezondweni. This poses a problem in terms of not being able to view the actual livelihood experiences and practices of villagers and how these practices relate to their perspectives about these practices (Denzin & Lincoln, 2003). Hence, claims about actual practices could not be verified. Again, the current COVID-19 lockdown prevented this from taking place.

1.5 Significance of the Research

There is a growing body of literature on small-scale farmers and adaptation to climate change and variability, in Africa and beyond. This thesis adds to the prevailing literature on this topic in two main ways.

First of all, it focuses on a border community. Border communities have their own sets of dynamics because they straddle territorial boundaries, thereby affecting livelihood possibilities and constraints under ‘normal’ conditions. They are at the nexus of national-political entities and find themselves affected economically, politically and socially by external forces, be they human or natural. Due to Africa’s history of externally-imposed statehood and the disregard for pre-colonial forms of networks and relationships, complex issues arise for border communities especially when it comes to transnational activities such as trade and development (Vanyoro, 2019). In the case of climate change adaptation, border communities are affected by decisions such as migration policies and trade policies, and cross-border networks may perform a mediatory role in the formation of adaptation strategies.

Secondly, the thesis goes beyond merely using the standard Sustainable Livelihoods Framework for a livelihoods study by drawing upon other theories (including more abstract sociological theorising) which offer a more solid analytical basis for understanding climate change and livelihood adaptation. In this way, the thesis seeks to contribute theoretically to the prevailing livelihoods literature, no matter how limited that contribution might be.

1.6 Outline of the Dissertation

The following chapter (Chapter two) outlines the theoretical framework for the thesis. Chapters three and four, respectively, look at climate change, border communities and livelihoods in relation to southern Africa broadly and Malawi in particular. Chapter five focuses on the Ezondweni case study. Finally, chapter six concludes the thesis by bringing the main arguments together in a systematic manner.

CHAPTER 2: THEORETICAL FRAMING

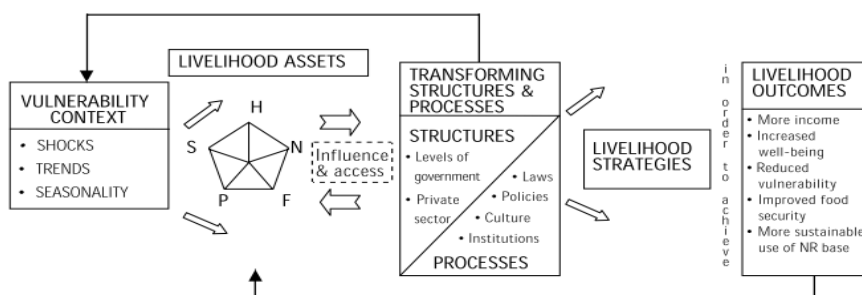
2.1 Introduction

This chapter outlines and discuss the theories that were used for the study. As a livelihoods study of rural villagers in Malawi, it is apt to draw upon the Sustainable Livelihoods Framework – as I detail in Section 2.2. However, the framework needs to be bolstered sociologically, which I seek to do by turning to Social Network theory and Margaret Archer’s theory of reflexivity (in Section 2.3 and 2.4 respectively). In providing a sociological grounding to the Livelihoods Framework, I seek to the strengthen the usefulness of the framework for this particular study of livelihoods in Malawi.

2.2 Sustainable Livelihoods Framework

The Sustainable Livelihoods Framework (SLF) is a method of analysing and understanding livelihood capabilities, processes and activities (Misra *et al*, 2014). The SLF is mainly used in the context of understanding rural livelihoods, and as a way of assessing the prospects for rural development (especially with regards to addressing vulnerabilities of communities and households) (Scoones & Wolmer, 2003). Programmatically, it is viewed as a people-centred approach to human development as it tries to find ways of maximising household capacities by identifying strengths and weaknesses that can be utilised and addressed for livelihood enhancement (Amalric, 1998; Krantz, 2001). Analytically, the SLF focuses on the broader context in which the households exist, alongside household assets, institutional processes, livelihood strategies and livelihood outcomes (Scoones, 1998). Because of shocks and crises, households at times need to adapt their livelihood activities and strategies to stay afloat.

Figure 2: Sustainable Livelihoods Framework



Source: Carney *et al* (1999: 9).

The context of livelihoods typically entails a range of vulnerabilities for a household (or community), including shocks, trends and environmental (locational and institutional) conditions which are actively causing or exacerbating the vulnerability (Scoones, 2009). This can involve historical, political, economic, demographic and factors which bring about livelihood challenges at household level (Mazibuko, 2012). Of particular significance for this thesis are the trends and shocks related to climate – climate change as trends and climate variability as shocks. This context of vulnerability affects the assets at the disposal of households, as changes in the context may for instance undercut certain household assets or bring to the fore the potential significance of other assets.

In this regard, livelihood assets (or capitals) are a household's resources (material, human and social) that are used to achieve, generate and maintain well-being (Kwami *et al*, 2018; Misra *et al*, 2014). Natural capital (such as land and natural resources) refers to the environmental resources that are used to derive benefits in order to sustain a livelihood (Elizondo, 2017). This might involve small-scale farming or fishing which entail the direct utilisation of natural capital. Climate change may undercut the importance of land as an asset (if crops cannot grow), such that other capitals (for example, financial capital) become more significant (Elizondo, 2017).

Economic (or financial) assets speak to the financial resources of households, including cash, credit and savings as a basis for pursuing livelihoods (Scoones, 1998). Social capital is the social resources that households use in order to sustain or diversify their livelihoods (Elizondo, 2017). These are social networks, associations, relations and affiliations that can be leveraged especially in times of crisis (Scoones, 1998). Human capital represents the abilities, experiences, skills, education levels, health and knowledge of household members, which are activated in livelihood activities (Elizondo, 2017). The physical assets are the service and support systems to which households might have access, including roads, transport, schools and clinics.

The asset or capital base of households may remain steady over an extended period of time, or they may be subject to considerable fluctuation as the context changes or as the composition of the household changes (for instance, through death) (Kwami *et al*, 2018). As well, there may be trade-offs between assets, as households seek to prioritise certain assets at the expense of others in deciding upon a long-term livelihood strategy (Levine, 2014). It is often the assets available that condition the possibility of specific livelihood activities, as well as the extent to which a household relies on only one, or more than one, activity.

Institutional processes are the formal and informal structures in existence, and these can configure access to livelihood resources by households (Scoones, 2009) and the household-based livelihood activities pursued. These include government institutions and programmes, and the broader political economy within which a rural community finds itself. These formal and informal arrangements may enhance or undermine livelihood capacities and the prospects of livelihood adaptation in the face of climate change. Also involved are a range of power dynamics related to the market and political processes and gender, class, race and ethnicity (Goldman *et al*, 2000).

Livelihood strategies that households adopt are based on the assets and institutional processes that affect them. In times of crises, households may intensify, diversify or migrate and move away from their current livelihood practices (Scoones, 1998). By intensifying their livelihoods, households invest in increasing their input in an attempt to increase output with regard to a particular livelihood activity, such as agricultural practices. In doing so, they may be assisted by external groups such as non-profit organisations and government, for instance by the introduction of new technologies. Under conditions of climate change, agricultural intensification becomes deeply problematic, unless there is a shift from rain-fed to irrigated agriculture (Mills *et al*, 2017). Diversifying livelihood practices requires adopting a wider array of activities that require investing in different forms of human capital, so that activities of a household can move away from relying upon one primary activity (for instance, agriculture) to partaking in multiple activities (notably, non-farming activities such as small-scale trade or manufacturing) (Mishi *et al*, 2020). If one livelihood activity fails during a particular period (for instance, a climate change-induced shock), then the household can hopefully rely upon the success of another activity not affected by the shock. Migration is a strategy that involves members of households or communities leaving where they live in order to find opportunities elsewhere so they can be able to reinvest in their community. This would take place through sending remittances or by permanently leaving (such as moving to find work away from rural areas to urban centres) (Lohert & Steinbrink, 2005; Scoones, 1998).

Finally, identifying livelihood outcomes are used to assess whether the desired outcomes have been met, or whether there is need for further assessment, adjustments and or interventions in adopting new livelihood strategies for households (Amaric, 1998; Scoones, 2009), including strategies of adaptation to climate change and variability.

There have been some analytical concerns about the SLF, including claims about insensitivity to the politics of livelihoods as well as their dynamic and multi-scalar character (Scoones, 2009). The question of politics refers to the existence of power differentials

embedded in the structural conditions and dynamics of households and how these differentials promote or limit household agency around livelihoods. It also relates to intra-household power differentials along gender lines. When it comes to scale, the SLF requires a deeper appreciation of the multi-level complexities of livelihoods and how global and national phenomena affect livelihoods and adaptation strategies if only indirectly (Scoones, 2009). The dynamic and fluid nature of livelihoods also requires more focused attention, to avoid claims about linear livelihood pathways and to highlight uncertainty and contingency regarding livelihoods. All these points in some way speak to important questions about structure and agency. For instance, failing to focus on power relations and on global and national processes leads to an underestimation of how structures existing beyond the localised reality of households, and even within households, condition their livelihoods.

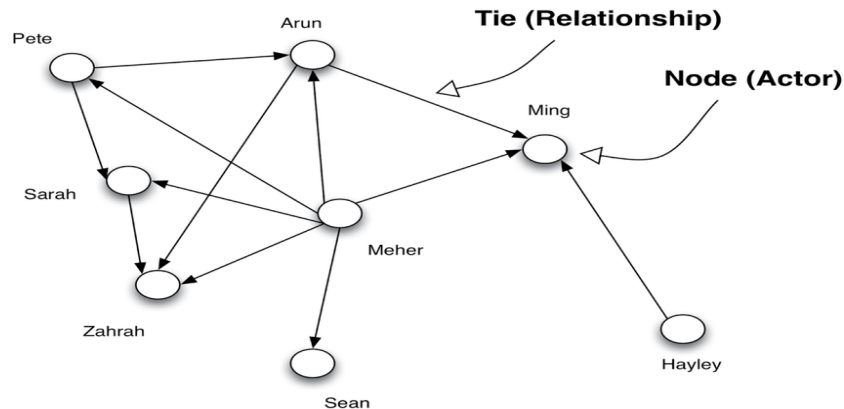
2.3 Social Network Theory

The Social Network Theory seeks to understand the relationships that exist within households and across households (i.e. within communities), the nodes in these relationships (i.e. the actors or members), the character and extent of these relationships, and the interests and challenges attached to these relationships (Borgatti & Halgin, 2011; Kadashin, 2012). With reference to the SLF, this theory relates specifically to social capital. It highlights the connections existing between households so that households are not treated as separate units but as, at least potentially, embedded in social networks. Understanding rural livelihoods fully, including assets, institutions and activities, requires a sustained focus on social networks as a critical relational resource (Misra *et al.*, 2014). Social networks are essential to the survival of households especially in the context of rural communities as, typically, they have high levels of reciprocal relationships and kinship ties which offer means of mutual support during times of crises and shocks (Marks & Stys, 2019). Figure 3 provides an illustration of the complexity of relationships which might exist between households, as represented by various first names.

Analysing the social network environment helps to establish an understanding of the social patterns are at play, who the actors are, what characteristics they have, the problems they face and what context essentially links the different nodes of the network together (Borgatti & Ofem, 2010). This is very pertinent in the case of livelihood challenges and the manner in which different forms of vulnerability bring community members together, including in accessing resources which they might not otherwise access (including material support, information and social services). Certain network members may be centrally placed in the network (almost as network bridges for other members), while others might be on the periphery

of a social network and hence more dependent upon it (Liu *et al*, 2017). Of course, the firmness of networks (or the thickness of the relationships) vary, and it may be that there are hierarchal relations and power dynamics embedded in a network (possibly leading to network exclusions) (Kadeshin, 2012; Food and Agriculture Organisation of the United Nations, 2018). This speaks to the status and direction of power or influence within the network (Marks & Stys, 2019).

Figure 3: Example of Social Network



Source: Tamaddon *et al* (2015: 4).

2.4 Margaret Archer’s Theory of Reflective Agency

Placing the SLF within a sociological theory which has a sophisticated understanding of agency and structure (and their relationship) in effect re-energises the framework (Akram, 2012). Archer’s Theory of Reflective Agency is an abstract theory which strengthens the SLF sociologically. Archer (2000) highlights the importance of human reflexivity in human practices, not only on an everyday basis but especially during times of crises. Human subjects, with agency, seek to understand and interpret social phenomenon and the world around them and, on that basis, make decisions about appropriate courses of action (Archer, 2000). This involves agents having concerns and pursuing social projects (for example, livelihood activities). At the same time, in reflecting on their world, human agents recognise that prevailing structural conditions inhibit or enable certain courses of action, so that human agency is not free-floating.

Archer holds the notion that, although agency and structure are distinct from one other conceptually, they are intertwined ontologically and thus mutually inform and condition each other. In terms of livelihoods, households are not simply borne along by structures, as the activities and strategies pursued arise from reflective thinking, as human agents attempt to

negotiate in and through the social structures conditioning their lives. Archer's theory thus emphasises a deliberate and conscious reflective-based agency, and argues against any view of agency based on habit or ingrained internalised dispositions that work themselves out unconsciously in our practices (Archer, 2003).

Archer's theory of reflexivity has four types of reflexivity (Archer, 2010). The first is Meta Reflexivity in which agents have internal conversations about their reflexivity, that is, they reflect upon their reflexivity (Archer, 2010). This allows an actor to establish self-criticism and devise a project of how s/he can achieve her/his objectives (for instance, livelihood adaptation) especially in times of crisis (such as climate change). Autonomous Reflexivity is the inner dialogues that lead to actors acting on their reflections even without confirmation with other members of the household or community (Archer, 2010). In relation to livelihoods, this might happen in the case of widowed or divorced household heads, male household heads or even young males in seeking to establish their own households (Koos & Neupert-Wentz, 2020).

Communicated Reflexivity is when actors communicate their ideas with other members of the household or community and seek confirmation in order to decide on whether or not to act (Archer, 2010). This is usually done by actors who are concerned with how their decisions affect other members or the are interested in involving others in their concerns and projects (Archer, 2010). It is also linked to the social ties within a household and community, with these ties (including the depth of these connections and their interdependence) affecting the need for confirmation from other – as is the case with decisions around adopting new farming techniques and technologies in farming households and communities (Obshar *et al*, 2010).

Fractured Reflexivity is essentially when an actors' ability to act is limited by their position in the structure and, even if they reflect on their situation and crisis, they opt not to act, are unable to act, or are deterred from acting (Archer, 2020). An example of this, in rural African communities, is the case of how climate change-induced crises are affecting the lives of women in particular and their capacity to adapt, in part because of low formal education or failure to migrate to urban centres due to rigid social norms which has deterred many from moving (Bozzoli, 1983).

Ultimately, the type of reflective agency adopted is determined by the nature of the structure, how open or closed it is in terms of hierarchy and power structures, and the challenges faced by the individual actor, household and community (Archer, 2010; Akram, 2012).

2.5 Conclusion

This chapter has sought to establish the theoretical framework for the thesis. It highlighted the significance of the Sustainable Livelihoods Framework in order to understand how it can be applied to rural livelihood adaptation in southern Africa in the context of climate change and variation, including the enablers and constraints which households experience. As well, the Social Network Theory and Archer's theory of Reflexivity have been discussed because, in their own ways, they strengthen the analytical capacity of the Livelihoods Framework. The next chapter examines rural livelihoods, climate change and border communities in southern Africa.

CHAPTER 3: RURAL LIVELIHOODS, CLIMATE CHANGE AND BORDER COMMUNITIES IN SOUTHERN AFRICA

3.1 Introduction

While the previous chapter provided the theoretical context for the thesis' case study, this chapter and the following chapter set the empirical context with reference to the central themes of the thesis – rural livelihoods, climate change and border communities. This chapter focuses on southern Africa broadly, and the next chapter focuses on Malawi. The first section in this chapter discusses the context of rural livelihoods in southern Africa (section 3.2), section 3.3 considers rural border communities in southern Africa, and section 3.4 examines climate change dynamics for rural livelihoods in southern Africa (Section 3.4).

3.2 Rural Livelihoods in Southern Africa

Rural-based livelihoods in Southern Africa entail the activities of small-scale farmers engaged in a shifting and often-precarious combination of subsistence and market-based agricultural production, alongside other livelihood practices such as informal trading and (casual and permanent) wage-labour (Mills *et al*, 2017). However, not all small-scale farmer communities are the same. There are semi-nomadic groups moving seasonally and sedentary agro-pastoralists, and there are those who consume what they produce and those that rely more heavily upon the natural environment (such as wild fruits and animals) to support their livelihoods (World Initiative for Sustainable Pastoralism, 2010). The lives and livelihood activities of specific communities vary depending on the geography of the area and its social history, with some communities living isolated lives vis-à-vis the mainstream economy compared to those more integrated in terms of for instance formal employment (Mills et al, 2020).

The agricultural-based livelihood activities in the region often rest upon land which is collectively owned or possessed by families, clans or tribes and other socially closely knit networks (Hall, 2014). Deeply-entrenched kinship relationships and local forms of 'traditional' (including spiritual) authority (involving customary networks and arrangements) are common, and these may act as social-protection safety nets for particularly vulnerable villagers (Bryccesson, 1999). Indeed, rural communities are not homogeneous and there are typically different forms of social differentiation including along wealth lines. Nevertheless, rural

communities tend to be dominated by high levels of poverty compared to the urban centres (Scoones, 2003; Ledger, 2016, Mills *et al*, 2017).

3.2.1 Assets

The resources and assets available to rural households in Southern Africa are the five highlighted in the SLF, namely, natural, social, human, physical and financial capital. A focus on these facilitates an understanding of the options, restraints and enablers that rural households and communities face in terms of securing and maintaining livelihoods (Goldman *et al*, 2000).

Natural capital for rural communities usually entails access to land and other natural resources that can be used for various purposes such as agriculture (crops and livestock), securing food and water via hunting or accessing rivers, resources for sanitation and firewood, and so forth (Millennium Ecosystem Assessment, 2005). Subsistence-based informal mining in rural communities in Zambia's platinum belt and rural artisan miners in South Africa are also examples of this (Ledwaba, 2017; Carmody, 2016). Social capital consists of many forms of living, including relying upon informal and reciprocal relationships and networks in order to access, secure and sustain livelihoods (Neves & Du Toit, 2013). This may have a 'traditional' or 'ethnic' component to it, involving informal relationships of exchange with people helping each other in ways such as sharing resources like land and livestock (Kaumbata *et al*, 2020).

Human capital in rural communities tends to consist of individuals with limited formal education and unskilled labour (Twineyo-Kamugisha, 2012), because of the lack of schools or the failure to ensure that children remain in school until the end of secondary education (Chakaninka *et al*, 2012). There is more emphasis on physical labour or the sheer capacity to labour considering the limited mechanisation and technology available (All Africa, 2020; Mrema *et al*, 2008; Ridley, 2011), though there is an abundance of local indigenous knowledge and skill-sets which are crucial to everyday living. At times, this lack of new agro-technologies may arise due to resistance from local communities (Ridley, 2011; Games, 2013).

The physical capital of rural communities relates to the underdeveloped infrastructure such as roads for transport, electricity and communications networks (Southern Africa Development Community, 2019). It is not uncommon to find 'traditional' healthcare systems prevalent in many rural parts of southern Africa due to a lack of clinics and hospitals in rural areas (Mahomoodally, 2013) and the bio-model health system more broadly (Oleyede, 2017). As a result, cultural customs and competencies are crucial to diagnosing and treating diseases in many rural communities (Oleyede, 2017). With rural communities in Southern Africa often being on the fringes of the formal economy, it is not surprising that financial capital (in terms

of monetary exchanges) is low (Meyer, 2015). Many rural communities still rely heavily on bartering for accessing essential goods, they do not have easy access to financial credit (even through mobile means), and they lack financial savings (Meyer, 2015; Lusaka Times, 2015). What little wealth they have may be ‘stored’ in livestock or other moveable assets.

3.2.2 Vulnerabilities and Shocks

Weaknesses and gaps, involving vulnerabilities and shocks, arise in all livelihood activities and systems at community and household levels in the rural areas in southern Africa. These vulnerabilities and shocks come in various forms. Ongoing access to resource stocks are crucial for rural livelihoods, including livestock, land, water and natural resources (Zeirvogel, 2018).

Typically, however, access to land is based on usufruct rights rather than on freehold title. Lack of title deeds to land has on many occasions made it comparatively easy for governments in the region to force rural communities off their land for large-scale agricultural and industrial projects, such as for mining projects in northern Mozambique and for the establishment of commercial farms in Zambia (Sitko & Jayne, 2014; The African Exponent, 2010). These regularly entail land grabs, as has taken place in Angola, Zambia, Zimbabwe and Malawi (Hall, 2011). Besides generating conflict, these displacements (due to vulnerability around land rights) undercut the short-term and even long-term viability of rural households.

Demographic factors like urbanisation also affect rural livelihoods because of the loss of assets including human labour. In the case of rural depopulation trends, Southern Africa is experiencing one of the highest urbanisation rates in the world, with many young people leaving the rural areas in hopes of securing opportunities in urban centres (Africa.com, 2020). This leaves rural communities devoid of able-bodied workers, with food production and security declining because of insufficient labour to engage sufficiently in cropping and livestock activities. Family members in urban areas often do not find meaningful work, such that the older family members remaining in the rural area do not receive remittances.

Gendered issues are also important when it comes to rural livelihoods and livelihood vulnerabilities-shocks. Agriculture remains as the main source of livelihoods for women in rural Southern Africa with over 50% of the adult population constituting women (African Union, 2019: 4). Despite this, women make up only 15% of primary landowners (or land possessors) in the region, and their agricultural activities are less productive than men because of problems in accessing land, financing, technology, and training (African Development Bank Group, 2015: 8; Maluleke, 2012). This creates unequal male-female power relations – women have a heavier burden to carry in sustaining a livelihood and they are more likely than men to

shoulder the cost of raising children. This puts them in a more precarious position when it comes to livelihood shocks, including the death of a husband or an extreme climatic event.

Further, political influences and changes can cause shocks. For examples, policies can be implemented by a new government that result in rural communities being affected dramatically. This happened in post-colonial Tanzania in the case of the villagisation schemes throughout the countryside, leading to massive displacements of villagers. As well, the effects of land alienation in former settler colonies (such as Namibia, South Africa and Zimbabwe), where the white minority had disproportionate ownership of land compared to the African majority (through forced removal and discriminatory policies) has led to land disputes and conflicts in the post-colony, many of which remain unresolved. This is also the case in Mozambique where there has been ongoing armed conflict since independence in the 1970s and resultant major disruptions of rural livelihoods, alongside different periods of land reform by Mozambique Liberation Front (FRELIMO) (O'Meara, 1991; Helliker & Murisa, 2011). At times, land tensions and instability in livelihoods emanates from ethnic claims, as in the case of Koaokaland in Namibia (Friedman, 2005).

Intriguingly, it is sometimes claimed that the predominance of indigenous knowledge can lead to vulnerability for rural communities in Southern Africa, with low levels of technological innovations at times leading to crises. Minimal food storage facilities, lack of complex irrigation systems, or early warning systems are features that may leave communities vulnerable in particular to climatic changes (Marwala, 2020; Munyua *et al*, 2009). The levels of indigenous knowledge still actively drawn upon depends in part on the degree of marginality of rural communities, with villages in deep rural areas existing at the margin of the state economy. When some distance from economic and state nodal points, rural communities may remain disconnected from these points when crises emerge, such as extreme weather events – access to support structures and emergency resources may be difficult under these circumstances (Mills *et al*, 2017).

When it comes to health and diseases, both non-communicable and communicable diseases are important issues in rural communities due to the lack of medical facilities and skilled health professions. This means that, in relying heavily on traditional or informal means of managing health, it may be problematic in dealing with or preventing certain health outbreaks around for example HIV and AIDs or cholera (Kabro & Murithi, 2017; World Health Organisation, 2014).

3.2.3 Policies and Institutional Structures

Government policies and institutional structures create and influence the environment in which rural communities can pursue livelihood strategies of adaptation (Misra *et al*, 2014). These condition the wider services and resources which are available to households and communities, which complement household-based assets (Van Rooyen *et al*, 2012).

In rural areas in southern Africa, traditional institutions (i.e. chiefly authorities) continue to play an important role, and the customary arrangements and practices underpinning them may affect the ability of households to cope with shocks to livelihoods (Seely *et al*, 2013). In many cases, traditional institutions such as chiefs and village headmen work with the local or national government to secure services and support systems (such as developing water reticulation and sanitation systems, and road infrastructure), which aid in the adaptive capabilities of communities (Mudombi & Montmasson-Chair, 2020). At the same time, because customary rights tend to prioritise men, there may be impediments for women when customary arrangements are mobilised to bring about local development or to respond and adapt to livelihood shocks (Seely *et al*, 2013).

Organisations such as the Development Bank of Southern Africa, Southern Africa Development Community, African Union, African Development Bank, World Health Organisation, Food and Agricultural Organisation as well as other local, regional and international organisations and institutions all seek to play a role in bringing about programmes that can facilitate the livelihoods of rural communities in Southern Africa (Development Bank of Southern Africa, 2020; Kabro & Murithi, 2017; Zihindula *et al*, 2019). The projects can range from collaborating over an extended period with local communities to foster and strengthen livelihood activities in the face to systemic vulnerabilities, to intervening merely in times of shocks (African Union, 2020; Muller, 2012). This can involve developing infrastructure such as roads, irrigation systems and better communication technology, or providing technical training and skills transfers for small-scale farmers (African Union, 2020; Southern Africa Development Community, 2019).

The private sector also plays a direct or indirect role in configuring the livelihoods of rural communities, whether through influencing macro-economic policies or setting up businesses in or near rural spaces where employment or household-based purchases may be possible, or where long-term livelihood patterns are disturbed (Hayson, 2016; Scheye & Peslar, 2020; Devereux *et al*, 2017). Corporations such as Shoprite have expanded throughout Southern Africa and are important for rural food systems in countries like Zambia. This has negative implications in disrupting local farming patterns and making villagers more reliant on

commercial or retail food than local produce (Carmody, 2011; Louw-Vaudran, 2015). Another example of this is the establishment of mining companies near the Xolobeni community in the Eastern Cape Province of South Africa, impacting detrimentally their cattle herding and small scale-farming livelihoods. Likewise, the uMgunduglovu community in the Wild Coast area fought a land claim against the establishment of a Sun International Casino Resort and wanted their traditional livelihoods restored (IOL News, 2018). Also significant are the large multinational corporations which dominant the global supply of fertilisers, herbicides and seeds, and ways in which they structure farming methodologies (African Centre for Biodiversity, 2015).

3.3 Rural Border Communities in Southern Africa

Many small-scale farming communities in southern Africa live along territorial borders as 'border communities'. While climate change and its devastating effects have no respect for borders, the livelihoods of (and adaptation possibilities for) border communities are conditioned by the border. Small-scale farmers living along borders often find themselves particularly vulnerable as they are at the margin of state power and presence, though this also gives them some leeway in engaging in practices unnoticed by the gaze of the state. At the same time, with kinship networks often transcending borders, these farmers are involved in cross-border social arrangements and livelihood activities (Gay, 2000; Ngwato, 2012; Haselberger, 2014). This is despite the fact that borders are subject to securitisation, including border controls that seek to monitor the movement of people, goods and resources (Heisler, 2002). Securitisation speaks to the state's fear that its centralised authority is undermined by local-level cross-national identities and relations (Brambilla, 2010; Flahaux & De Haas, 2016).

Rural communities also find themselves in the nexus of geopolitical activities and competition with border disputes and land seizures by local groups (rebels, rival tribes and communities), governments and corporations (both foreign and local) competing for land and resources (Butterbury & Ndi, 2018). This is an issue especially where land tenure security is uncertain due to lack of title deeds in rural communities, which in turn gives governments more impunity in taking away land, leaving many households and communities with limited or alternative livelihoods (Gbenenye, 2016).

In an era of nation-states and fixed territorial borders, citizenship and belonging as well as access to essential services (such as education and health) and to resources (for example, forests) become complicated for border communities (Mbiyozo, 2019). For instance, households in border communities at Chirundu (Zambia/Zimbabwe), Chiadzwa

(Mozambique/Zimbabwe) and Beitbridge (South Africa/Zimbabwe) partake in small-trader activities, selling goods to drivers that pass through the border post or engaging in cross-border trading themselves, in order to supplement and sustain their small-scale farming activities (Burgis, 2015; Chilya *et al*, 2012; Ngarachu *et al*, 2012). Though away from the gaze of the central state, they are at a close distance to the prying eyes of border security officials.

States in southern Africa tend to have multiple ethnic minorities, with many of these minorities living along borders and having a common ethnicity with dominant ethnic groups in the country across the border. The citizenship status of these ethnic minorities is sometimes questioned by the state. In fact, states often marginalise these minorities by declaring that they fall outside the boundaries of the nation and are hence considered as aliens. This can exacerbate ethnic, tribal or national tensions and affect the livelihoods of border communities, including disrupting the ethnic (and non-ethnic) social networks and bonds that cut across territorial boundaries (Haselberger, 2014). However, in an age of globalisation where cross border movement is common, attempts to separate cross-national ethnic networks and indeed communities is challenged by those who see them as arbitrary in relation to their everyday needs and realities (Adulsattar, 2013).

In southern Africa, climate change and adaptations to it may induce cross-border movements and thus heighten this concern on the part of the state (Cantens & Raballand, 2016). This is especially the case where stressors such as a food and water scarcity have spill over effects, and members of communities pursue adaptive strategies that require trans-local movements (Mpandeli *et al*, 2020).

3.4 Climate Change in Rural Southern Africa

Climate change and variability, with regard to rainfall and temperature, are affecting detrimentally the livelihoods of small-scale farmers in the region, and this compounds already-existing poverty levels in relation to – for instance – crop production, livestock health, food security and water availability (Mushizha *et al*, 2017). Southern Africa finds itself very vulnerable to climate change impacts due to the livelihoods centred around agriculture, pastoralism, fishing, forest users and other resources-based activities (Southern Africa Development Community, 2015). With various issues existing in southern Africa (such as poor economic performances, poverty and unemployment, food insecurity), climate change variability creates or exacerbates crisis (Bauer & Scholz, 2010; Bhatasara, 2018).

Climate-linked factors, including soil erosion, deforestation and pollution, also affect smallholder farming activities by devastating the resources they rely on, such as water and

arable land (Fayiga *et al*, 2018). This is further worsened if there is limited infrastructure, systems or services in place (for instance, vocational training facilities or formal employment opportunities) that can inhibit the effects of these factors by offering local communities alternatives to their current livelihoods, or help them mitigate the challenges now faced by these livelihoods (Butterbury & Ndi, 2018). As well, pre-existing health problems amongst villagers as well as new ones (such as emotional stress, non-communicable, communicable and vector-borne diseases) may weaken livelihood adaptation to climate change (Nwoke *et al*, 2010).

Local contexts, including historical experiences and cultural arrangements, condition the forms of livelihood adaptation adopted and pursued by small-scale farmers. Typically, farmers have deep historical knowledge about changes in local rainfall and temperature patterns as well as long-standing repertoires of tried-and-tested agricultural practices. These are intertwined with their cultural and spiritual landscapes, leading to particular perceptions of the character of climate change and its causes (Bhatasara, 2015; Hitayezu *et al*, 2017). In some cases, then, communities may opt to pursue cultural means of dealing with climate variability issues like drought, using rainmaking rituals rather than accepting the aid of government or other formal institutions (Ombati, 2017). These locally-generated perceptions about the causes of climate change also may be inconsistent with scientific data on climate change. However, the cultural rootedness of these climate-change perceptions often forms the basis for decisions around adaptation to climate change, and in a manner consistent with past agricultural practices (Nhemachena *et al*, 2014).

In this regard, climate change studies and interventions focus extensively on the statistical or aggregated scientific dimensions and implications of the phenomenon, namely, programmatic initiatives involving formal institutions and concentrated at the national level. This focus on national level downplays the significance of locally-generated perceptions, experiences and practices regarding climate change, that can come into conflict with local conditions and realities (Adedeji *et al*, 2014). As a process of readjustment and perhaps resilience (over the medium-term) to shocks and crises arising from climate change, livelihood adaptation must be characterised by a pronounced localised content. In southern Africa broadly, multiple adaptation activities have long existed amongst small-scale farmers, including agricultural or even livelihood diversification involving on-farm and off-farm activities (such as migration), alongside water and soil conservation techniques (Bryceson, 1999). In the end, adaptation to climate change and variability is essentially a result of multicausality, locality and problem-solving capacity (Swain *et al*, 2011).

Beyond cultural and historical factors, enabling and disabling conditions exist in the present in southern Africa, affecting what is possible and not possible in pursuing climate-change livelihood adaptation. These conditions often relate to the presence of supportive institutions for adaptation, including the programmes and practices of states and NGOs. States and NGOs may offer short-term relief packages or intervene more directly in offering longer-term agricultural support services (such as so-called conservation farming) to mitigate the effects of climate change and enhance adaptation possibilities (Herbst & Mills, 2015; Pechrova, 2015). However, to reiterate, households and individuals may opt to take matters into their own hands in order to access resources that can maintain their livelihoods, even if it goes against the policies of the state. This has been the case with using firewood as a source of energy supply in places where there is no coal or electricity, which has come into conflict with state conservation policies (Dovie *et al*, 2004).

In this sense, in southern Africa at least, there is a tendency for national policies and projects related to climate change to be out of touch with the climate change perceptions of rural communities (Muller, 2012). This illustrates how climate change policy and supportive programmes need to be better orientated to the needs and expectations of communities, otherwise they will exercise their own autonomy that goes contrary to the desired expectations (Bryan *et al*, 2009).

3.5 Conclusion

This chapter has examined the context of rural livelihoods in southern Africa and the role of important factors such as assets in restraining and enabling households and communities to adapt to vulnerability, particularly in the case of climate change and variability. It has also considered how rural communities in border regions in southern Africa find themselves in a peculiar position in the face of climate change vulnerability – while on the fringes of centralised national power, they are able simultaneously to draw upon cross-border resources during processes of livelihood adaptation. The next chapter focuses on Malawi specifically with regard to similar issues.

CHAPTER 4: CLIMATE CHANGE AND RURAL LIVELIHOODS IN MALAWI

4.1 Introduction

This chapter focuses on the context of climate change and rural livelihoods in Malawi. This deepens the lens further from what was discussed in the previous chapter. It provides an overview of rural Malawi (section 4.2) before discussing, more specifically, rural economic activities and dynamics (section 4.3) and social relations and differentiation (section 4.4). Section 4.5 examines the implications of climate change and variability for the country's rural areas, and section 4.6 looks at institutional responses to the challenges faced by rural communities in the context of climate change.

4.2 Overview of Rural Malawi

Malawi has an agrarian-based economy with limited national resources, with the government seeking to support agricultural livelihoods (African Development Bank, 2014; Makara, 2018; Mills *et al*, 2017). Maize dominates agricultural production as food such as Nsima (stiff porridge made from dry maize meal) forms an essential as well as cultural part of the typical rural Malawian diet (Food and Agriculture Organisation, 2016). The country has a population of over 18,000,000 as of 2020, with 84% residing in rural areas and 80% dependent upon agricultural activities such as small-scale subsistence farming (Mills *et al*, 2020; Munthali & Xuelian, 2020). Malawi is a poor nation with 40% living in dire poverty (most of these in the rural areas) (Mapila *et al*, 2012). It is one of the least electrified countries in the world, with only 4% having access to electricity in the rural areas. This means that accessing energy outside natural resources like firewood is limited for communities in pursuing rural livelihood activities (Sustainable for All Africa Hub, 2020).

Malawi's dependence on agriculture leaves the country very prone to food insecurities in the context of climate change and variability (Southern Africa Development Community, 2019). Indeed, pursuing small-scale farming in Malawi has become increasingly difficult because of climate change: with temperatures expected to increase by 4% percent by the end of the century, small-scale farmers are having to adopt various adaptation strategies to survive (Stevens & Madani, 2016; Joshua *et al*, 2016). In the Mchinji area, where Ezondweni village is located, there has been in recent history a mixture of severe water shortages and floods which have affected food security and access to clean portable water for household consumption, leading to cholera and other disease outbreaks (All Africa, 2019; Nyasa Times, 2016). Lack of

insurance for those engaged in rural livelihoods (especially farming and property insurance) further leaves many in rural households in precarious positions in times of crisis or uncertainty, including climate change-induced shocks (Nyasa Times, 2020). As well, because of relatively low levels of access to good quality health care, climate change and variability have compounded the health problems in Mchinji and elsewhere in Malawi. For example, a decade ago, it was contributing to the relatively high maternal mortality (between 800 and 1,200 maternal deaths per 100,000 births, due to communicable diseases) (Maula, 2009).

4.3 Economic Activities

The main mode of productive activities to sustain livelihoods in rural areas in Malawi is small-scale agricultural farming. However, there are artisan mining and small-scale fisheries activities that are undertaken in various communities (Limuwa *et al*, 2018; Matiya & Wakabayashi, 2005). Small-scale fisheries produce about 90% of Malawian fish for sale, and provide a cheap source of protein for Malawi's rural poor (Limuwa *et al*, 2018: 2). This entails the prevalence of informal market activities reliant on natural resources (such as fish) to sustain livelihoods (All Africa, 2020).

Producing crops and supporting livestock in Malawi involves rain-fed subsistence farming, with limited marketable produce. There is a lack of alternative irrigation farming methods such as drip irrigation due to the costs and technical skills required (United Nations Commission for Africa, 2019). In fact, overall, small-scale farming in Malawi is marked by low technology, efficiencies and productivity, which means that any crises (such as climate change) is very challenging in terms of viable adaptation strategies (Tchale, 2009). Some rural households have family members who occasionally or more regularly take on wage labour in order to provide a source of income, which allows these households to access certain foodstuffs (via the market) that they do not produce (Matiya & Wakabayashi, 2005).

Malawi is a donor dependent country, with significant aid relief provided. Rural infrastructure and support systems remain a problem, including basic road and transport networks (Meredith, 2011; Mills, 2014). This presents serious and ongoing livelihood problems with regard to addressing food security and nutritional health, and inhibits local capacities when it comes to resilience in the face of climate change (United Nations Commission for Africa, 2019).

4.4 Social Relations and Differentiation

The informal structure of most of Malawi's rural society means that social capital and networks play a very central role in everyday life as well as in dealing with vulnerabilities (Saruchera, 2019). Rural livelihoods in Malawi are generally supported by the existence of large family units, with the average fertility rate being 4.6 children (United Nations Commission for Africa, 2019). Large families allow for activities such as small-scale farming, which is labour intensive in rural Malawi (United Nations Commission for Africa, 2019). The extended family structure is likely the most important institution of society in rural Malawi (Walsh *et al*, 2018). At the same time, in order to access resources and services, people often rely on wider kinship relations and non-familial social networks (Hussien & Muriaas, 2013). Sharing resources (for example, food and cell phones) between households and neighbouring villages is a common trait of rural villages (DAI Global Digital, 2018; IFRC, 2012). This is useful in particular during 'lean' farming seasons or in times of crisis when access to food and information become more vital.

Gender inequality is very significant in rural communities in Malawi, with women faring worse than men in living standards and access to resources and services, despite their important contribution to agricultural labour (African Development Bank Group, 2015; World Bank Group, 2018). Malawi, though, has a strong matrilineal social structure and system in many rural areas where women hold significant influence, especially in women-led villages and households, where they can access and allocate resources more readily (Kaarhus, 2010). But, the power of women is more limited and restricted when it comes to formal institutions, including in relation to registering title deeds and securing finance for agricultural activities (Kaarhus, 2010). Low access to formal education and skills training for rural women exacerbates their low status in many rural villages in Malawi.

The inadequate health services (in the context of poverty) and the many diseases that plague rural communities (such as malaria) also affect women more so than men, given that they carry children, give birth to children and then care for children for extended periods (Makwero, 2018; Munthali & Xuelian, 2020). Poor health facilities mean that issues like child mortality and poor maternal healthcare arise and impact negatively on the productive capacity and potential of rural communities, and of specifically women (Phillipsborn, 2018; Yorlets *et al*, 2019). With climate change adding to these challenges, it is push factors such as these that result in women having to be very creative in pursuing and adapting their livelihoods. This is mostly done by finding odd jobs (also known as *Ganyu* in Malawi) outside of farming in order to secure food and resources for their households (Simtowe, 2009).

Low infrastructural development in rural Malawi also relates to communication networks, with the absence of proper equipment to support sophisticated communication (Makwero, 2018; Munthali & Xuelian, 2020). The limited access to modern communication technology means that most rural Malawians acquire their information through word-of-mouth or from radio (DAI Global Digital, 2018). About 29% of people in Malawi are illiterate and 39.7% are adults, most being in rural areas (United Nations Economic Commission for Africa, 2016). In the face of climate change, rural Malawians often turn to local information and knowledge in making decisions around adaptation. In this respect, the high level of respect for traditional leaders (i.e., chiefs) in many rural communities means that, in times of uncertainty and crisis (such as climate variability), villagers will possibly listen to traditional leaders for advice and direction regarding the way forward regarding livelihoods (Hussien & Muriaas, 2013; Simango, 2003).

4.5 Climate Change and Variability Implications

Malawi is one country most at risk to the effects of climate change and variability (Warnatzsch & Reay, 2019). An overreliance on natural primary resources is an issue that leaves the livelihoods of many rural households in developing nations vulnerable to shocks to the natural environment (Collier, 2007), and this is certainly the case with Malawi (Zulu, 2017). Malawi's rain-fed dependent rural communities are now experiencing increasing shocks to crop yields and livestock due to successive droughts, rising temperatures and irregular rainfall patterns (Oxfam, 2009). Natural disasters such as floods have destroyed homes and damaged ecosystems, thereby preventing people from accessing resources that are historically part of their livelihoods (Malawi Broadcasting Corporation, 2020; Oxfam, 2009; Reuters, 2016). These changes also give rise to crop damaging pests like army worms which make farming more difficult (Green Peace, 2017).

Due to the low electricity penetration in Malawi's rural areas, firewood is collected for purposes of cooking and heat as well as for selling for income (Malawi Broadcasting Corporation, 2020; New York Times, 2016). This is leading to the overuse of local resources and the depletion of vegetation and forests (Malawi Broadcasting Corporation, 2020). In the context of climate change, the selling of firewood is increasing to compensate for losses in agricultural activity. Likewise, there are increases in uncontrolled residue burning for hunting mice (as an alternative for meat to counter food insecurity), and thus causes similar problems for ecosystems (Ngwira *et al*, 2012). Rural communities are turning more and more to non-

agricultural livelihoods, including small-scale fisheries or artisanal mining as has been the case in Northern Malawi in places like Mzimba (Dakalira *et al*, 2017; Limuwa, 2018).

Livelihood shocks arising from climate change is at times leading to out-migration from rural villages. Migration as an option for livelihood diversification depends in part on whether a household lives near an urban centre such as Lilongwe or near territorial borders where it might be possible to migrate to neighbouring countries like Zambia, Tanzania and Zimbabwe (Lamberts, 2006). While this leads to a loss of able-bodied and youthful labour or human capital, it can result simultaneously in the flow of remittances into labour-exporting villages (The Africa Report, 2020). However, due to Malawi's low level of industry outside agriculture, work opportunities are few and far between, thus inhibiting outmigration (Mpaka, 2020).

Climate variability means that more children are regularly impacted from an educational stand point. There may be problems with paying any required school fees and, further, there may be more demand for children to be at home to help with farming (Aljazeera, 2020). This though adds to the food burden of village households, as schools sometimes are a source of food for children, especially regarding breakfast and even lunch. This can reduce the food strain for households that are suffering in climate-induced lean farming seasons (Human Rights Watch, 2020; International Labour Organization, 2015).

As well, child marriages tend to increase as parents seek to lessen the pressure on reduced resources by having the young married child move out of the homestead, or they want to claim any cash or cattle which is exchanged at the time of the marriage (Aljazeera, 2020). Sex for food and other resources also becomes a more frequent coping strategy pursued by people, especially women, as food insecurity and resource inaccessibility rise (The Humanitarian, 2020). Climate change and variability can have indirect secondary effects on women in the form of a rise in gender-based violence (GBV) (Internet Press Service, 2020; The Ecologist, 2020). Human trafficking is an additional a problem in Malawi, as rural households become desperate in the face of climate change.

Health issues increase with climate change and variability, as diseases such as malaria, tuberculosis and waterborne diseases like cholera emerge due to floods (Brickston, 2016). These weather events have numerous knock-on effects such as malnutrition, loss of key household assets and food insecurity. This was made evident after Cyclone Idai affected parts of Malawi and many livelihoods were impacted negatively, forcing some people to migrate and others to struggle in situ to restructure their livelihoods (UNICEF, 2019). The need to adapt to climate change vulnerability and shocks also results at times in rural households seeking to replenish their livestock (such as pigs, goats, chicken and cattle) by bringing them in from other

areas, which enables the spread of diseases such as Food Mouth Disease (FMD) and tick-borne diseases like East Coast Fever (ECF), affecting even the human capital of rural villages (Freeman *et al.*, 2008). As well, mental health in Malawi becomes affected as access to resources that help sustain livelihoods of rural households dwindles along with the overall standard of living (African Development Bank Group, 2018).

Resource violence as a result of climate change is a further issue that affects livelihoods, as competition over increasingly unavailable resources become more common in affected areas (Wallace-Wells, 2019). This climate change-induced violence is a result of the inability to successfully adapt through most conventional or socially acceptable ways (Jorskad & Webersnik, 2015). In rural communities in Malawi, this entails livestock theft amongst villagers as land grabbing and disputes over farming land access and ownership, especially amongst relatives and communities, increases as arable land and access to livelihoods decreases (Sidebottom, 2013; USAID, 2016). These conflicts can further deplete available resources (like firewood or food) as land degradation takes place through overuse of land, as households aggressively farm in an attempt to secure more resources than their competitors, in adapting to climate shocks (Kirui, 2016).

Land grabbing is not an uncommon practice amongst those that experience climate induced stresses because land becomes less available or is depleted of fertile soil (Chausuka, 2013). This is further exacerbated by the fact that, already, 70% of smallholder farmers are cultivating less than a hectare of land (Chinsinga & Chasukwa, 2012: 69). This marginalises groups such as the youth who end up having little access to land and experience severe limitations regarding livelihood activities and standards. They may resort to either setting up a small informal business that provides limited access to alternative livelihoods (such as selling goods) or they migrate elsewhere. Migration can cause social tensions with neighbouring communities, especially when it comes to competing for scarce resources (Jorstad & Webersnik, 2015).

In order to avoid conflict, rural communities such as those in the Lake Chilwa basin region of Malawi work together in cooperatives to access resources in bulk, diversify incomes streams, change farming patterns (in terms of when to plant seeds, for instance) and get involved in casual work – all this is meant to ensure that these communities, as collective entities, are able to better withstand climate changes (Jorstad & Webersnik, 2015). Migration can be limited if it is viewed as detrimental to the regional community as too much movement can cause social tensions with neighbouring communities especially when it comes to competing for resources (Jorstad & Webersnik, 2015).

Finally, in the case of Malawi, issues like albino attacks have been rising in recent years due to the superstitious beliefs held by many villagers in rural communities that their body parts bring good fortune, while others seek to make money through selling the body parts (VOA, 2019). In the midst of climate change and variability, including droughts and low crops, these perceptions and practices are likely to increase as people seek even immoral means of living. In playing out in the competition for access to various livelihoods, such tensions and violence can take numerous forms, including along ethnic or gendered lines (Bryceson, 2002).

4.6 Institutional Responses

Government policy plays a role in protecting rural livelihoods and promoting climate change livelihood adaptation. Malawi's government has established an explicit climate change policy and has institutional arrangements in place in trying to mitigate the negative consequences of climate change (Zulu, 2017). There is a national 'Adaption of Action' to increase climate monitoring while improving community resilience, agricultural production and preparedness for droughts, floods and other extreme weather events (Ministry of Natural Resources Energy and Mining Environmental Affairs Department, 2016). The government also has a Nutrition Surveillance Programme (NSP) that aims to monitor the nutritional levels of households and to better intervene in cushioning food security against the impacts of climate change and variability (Phiri, 2008).

As well, there are programmes such as seed and farming subsidies to help small-scale farmers produce hybrid seeds that enable their various crops to withstand more fully the effects of climate change (Chisinga, 2011). Seeds for hybrid maize, millet and sorghum are produced in collaboration with donors and local companies. However, complete acceptance of these genetically-modified seeds (GBS) and of GMOs more generally does not exist in rural Malawi, as there has been distrust from many small-scale farmers about these for some time (Chisinga, 2011). Further, to assist with deforestation and resources depletion in rural communities, the national government has set up Community-Based Forest Management (CBFM) to regulate the use of wood fuels so that more sustainable approaches to using forests can be practiced (Zulu, 2010; Mills *et al*, 2017). Through partnerships with the private sector, NGOs and government, integrated farming schemes have been implemented in places like Limpasa and Nkhata Bay in order to help small-scale farmers adopt irrigated farming systems and diverse crop and food diversity to better withstand climate variability (African and Latin American Resilience to Climate Change Project, 2013).

Micro-financing and access to quick credit are still challenges for rural households in Malawi, such that even insurance schemes are not available to most villagers when it comes to climate change impacts on fixed and moveable property (Hochrainer, *et al*, 2009). Land reform programmes have been pursued, but these have been marked by corruption (especially amongst political elite and traditional leaders), including selling land to private corporations at the expense of those most vulnerable (Chisinga & Wren-Lewis, 2013). This has occurred in Malawi's Green Belt Initiative (GBI) which favoured supporting the development of commercial farmers, more so than rural small-scale farmers (Chisinga & Chausukwa, 2012; Hall *et al*, 2015). Overall, despite the policies and projects in place, significant improvements in climate change adaptation have not been forthcoming, in part because – for an extended period – the Malawian government has overlooked the perceptions, desires and aspirations of small-scale farmers (Simukonda, 2008).

Government departments have overlapping mandates when it comes to climate change (such as the Ministry of Health and Ministry of Agriculture, Irrigation and Water Development) with government being stretched in effectively assisting the communities in need of climate change assistance (Saruchera, 2019). Government policies might align with global commitments, but this does not mean that they are consistent with the needs of local livelihoods (Mpasuka, 2013). This is clear in the government's energy policy, which promotes a centralised state-owned electricity grid without sufficient attention to green energy and at the expense of a decentralised energy grid in order to make it easier for rural communities to access their own energy (African Development Bank, 2019; Community Energy Malawi, 2018).

The use of Agricultural Extension Officers has been promoted to assist with knowledge sharing and skills transfers when it comes to climate change adaptation. This has had mixed results. While there have been successful cases, sometimes there is resistance – as local knowledge and perceptions of climate change are trusted more than that of the Extension Officers and other external agents (Kerr *et al*, 2017). In some cases, there have been social dynamics and tensions. For example, households with HIV-infected members or women-led homes at times receive less training and support because of cultural and social biases and attitudes held by the Extension Officers and even members of the local community (Kerr *et al*, 2017). This again brings to light the important role of perceptions and perspectives of small-scale farmers and rural households in the pursuit of climate change adaptation strategies (Bryan *et al*, 2009). The agency of rural villagers must be foregrounded in understanding the character of adaptation strategies and the differential degrees of commitment that villagers have to particular strategies (Peeters & Sterckx, 2014).

International organisations like the African Union (AU) seek to use its institutions like the Semi-Arid Food Grain Research and Rural Development (SAFGRAD) in collaboration with the Malawi government to build institutional capacities to improve the resiliency of agricultural livelihoods in rural communities (African Union, 2019). This relates to promoting developments like better management systems, skills promotion, improved farming systems, and enhanced technology, resources and information available to rural communities. It also entails working with local rural partners in climate change adaptation and overall rural livelihood development (African Union, 2019). International donors likewise contribute to climate relief funds to help Local Development Centres (LDC) support rural livelihood adaptation to climate change and variability (Nyasa Times, 2019). This gives rural households more external options in terms of access to institutional support for their livelihoods.

Finally, cross-national initiatives such as the Agricultural Productivity Programme for Southern Africa (APPSA) between nations like Zambia and Malawi are aimed at better integrating agricultural systems and helping small scale-farmers be able to share and exchange crops and seeds across borders to strengthen food security (The Southern African Times, 2020, World Bank, 2020). This helps border communities to better cooperate together and remain connected in times of crisis, thereby strengthening livelihood activities with reference to climate change (World Bank, 2020).

4.7 Conclusion

This chapter has focused on discussing rural livelihoods and climate change adaptation in Malawi. It has provided an overview of rural Malawi as well as rural communities' experiences of climate change in order to illustrate the unique and diverging realities, challenges, limitations and enablers the country offers for rural households in the face of climate change-induced adaptation. The next chapter (chapter five) focuses on the Ezondweni case study.

CHAPTER 5: EZONDWENI CASE STUDY

5.1 Introduction

This chapter discusses the research findings, drawn from interviews with Ezondweni community members, focusing on how they perceive and experience climate change and variability and how they adapt and react to the implications of this phenomenon. The first section (section 5.2) provides a general profile of Ezondweni and the interviewed villagers. The next section focuses on the villagers' perceptions and conception of climate change, as experienced (section 5.3). Section 5.4 discusses the Ezondweni community members' social networks in Ezondweni and the dynamics of support that flow from this. The following section (section 5.5) then considers the pursuance of local livelihood adaptations by exploring the households' assets and crossing the border.

5.2 Profile of Ezondweni Village and Villagers

Ezondweni is a small village located near Kachebere Catholic Mission, along the major road linking Malawi and Zambia. The village consists of under 50 people that permanently live in it. But the population fluctuates, as some people leave or move in. The majority of people who call Ezondweni their home do not live there (mostly living in urban areas) and may move back should push or pull factors occur. The village is located about eight kilometres west of Mchinji town on the Malawi side of the border and about four kilometres from the Mwami border control post. About two to three kilometres to the south of the village lie a range of hills which are increasingly becoming deforested. These hills, though territorially located in Zambia (since the border at this point is less than a kilometre from Ezondweni), are a source of firewood, grazing, game and wild fruit to the inhabitants of Ezondweni and the neighbouring (Malawian) villages. The livelihoods of the inhabitants of Ezondweni, like those of people in neighbouring villages in the area, show an interesting dual dependency on the two countries – Malawi and Zambia. The villages mostly sell any produce in Chipata (Zambia) which is less than 30 kilometres away. They send their children to a local school which is located in Malawi, and seek health services either at Mchinji hospital (in Malawi) or Mwami hospital (Zambia).

Like most areas in the Malawian countryside, there is an overdependence on rain-fed farming in Ezondweni (Gong, 2014; Food and Agriculture Organization, 2016). As a result, Ezondweni finds itself facing high vulnerability to food insecurity due to climate change and variability (Government of Malawi, 2020). This is not helped by the low industrial,

technological and infrastructural development of Mchinji, including the absence of electricity. Changing rain patterns are compelling Ezondweni households to make decisions about altering their farming patterns, including when and how to plant crops and when to store them. The absence of alternative livelihood opportunities in the area, including formal employment, heightens the challenges currently being faced by villagers. Additionally, though in the vicinity of the Kachebere River, Ezondweni is not near a major water source, as are villages near lake Malawi or Shire River – hence, fishing is not an alternative to rain-fed agriculture (Cong, 2014). Land grabbing is an issue in the region as competition over productive land rises, with women’s access to land being precarious in this context (Housing and Land Rights Network, 2020).

Table 1: Ezondweni Participants

Name	Gender	Age	Livelihood Activity	Education Level	Household Dependents
Respondent A	Female	72	Subsistence farmer (and retired nurse)	Post-High School (Nursing College)	0
Respondent B	Male	48	Subsistence farmer	High School	6
Respondent C	Female	50	Subsistence farmer	High School	2
Respondent D	Male	35	Subsistence farmer	High School	4
Respondent E	Male	48	Subsistence farmer	High School	5
Respondent F	Female	51	Subsistence farmer	High School	4

The table above (Table 1) provides the profiles of the six Ezondweni community members who participated in the research (see also Appendix C). Pseudonyms are used to ensure privacy of the participant’s identity. The village members who took part in the research are not necessarily representative of all the Ezondweni villagers. Three of the participants are male and the other three are females, and they were aged between 35 and 72 at the time of the

research. All of the interviewees are household heads. All of them are informally self-employed with only one, now retired, having ever had formal employment. They all rely on subsistence farming (through farming ground nuts, wheat, cassava, chickens just to name a few of the activities) as the dominant mode of securing a livelihood and well-being. They are reasonably well-educated, and there is considerable variation in household size, from one (a 72 year-old female) to seven (a 48 year-old male) members.

5.3 Villagers' Conceptions of Climate Change

When it comes to understanding climate change and variation, the interviewed villagers generally associated climate change with shifts in rainfall patterns, deforestation and soil erosion. Changes in rainfall were considered far more significant than changes in temperature. This is not surprising given that subsistence farming is rainfall dependent, and changes in patterns of rainfall have important repercussions on household food security. Climate change and the very character of rainfall patterns in particular are judged in terms of their effects on crop output and food availability. Climate change is highlighted if the crop fails to grow or is damaged because of an insufficient distribution of rainfall over the agricultural season. As one villager put it:

Climate change has several categories: There is change in rainfall patterns, ... As regards food, food supplies can be poor if you don't have good rains. Furthermore, if you have too much rain at the beginning of the season, it can damage crops. On the other hand, if you have moderate rain early in the season and heavy rain at the end of the season, the crop will already have matured at the time and it cannot be damaged/destroyed by the heavy rain. In that case there is no problem of food shortage. (Respondent B, Interview, 22 January 2021)

From Respondent B's response, it is clear that 'good rains' is not merely about the quantity of rainfall – it is also about when the rain does and does not fall, and in what quantities. The erratic character of rainfall is occurring more frequently in Ezondweni. Adaption strategies become significant in the context of this increasing irregularity of rainfall, including excessive rainfall at the wrong time in the crops' growing cycle.

The interviewees alluded to how excessive rainfall is leading to floods and the destruction of infrastructure, particular housing. However, they did not highlight how floods affect public infrastructure such as roads and clinics and how this turn complicates their livelihood strategies. This could be attributed to the fact that people tend to be more concerned with their own personal livelihood assets and belongings, especially when losses to these are perceived as existential threats to their livelihoods (The Conversation, 2020).

In Ezondweni, there are many potential sources of information about climate change, such as WhatsApp for those with internet phones, newspapers, word of mouth and community leaders. However, a huge portion of the news consumed in Ezondweni, just like other rural areas in Malawi, is via radio:

There is some information...If you are online you find that people have posted information – could be about this year or this month, something like that. But most of the time the source of information is the radio. (Respondent C, Interview, 22 January 2021)

In the end, though, villagers' understandings of climate change, including its causes and character, arise from their lived experiences. In this regard, all villagers believe that climate change and variability have been brought about by humans, and they considered the main immediate cause to be deforestation from excessive use of firewood by people.

This local focus on deforestation as a causal factor arises due to the lack of electrification in the area, such that people use firewood for cooking, heating and lighting. The use of wood is also for trade and artisan purposes as way of generating income and resources. At the same time, the climate change literature does speak about the significance of deforestation for climate change, by contributing to soil erosion and extreme weather events (Africa Geographic, 2019; DAI Global Digital, 2018). Hence, local perceptions and concerns about deforestation do tally with the broader scientific evidence:

Cutting down trees recklessly causes poor rains. Especially these days, people are destroying nature; if you look at the hills, you see trees have been cut recklessly and the hills are now clear. So, the rain....You know, trees help that we should have good rains. So, because trees are cut recklessly, sometimes we have poor rains. (Respondent C, Interview, 22 January 2021).

This explains why the respondents felt cutting down on the use of firewood and planting trees were the most important way to reduce and limit climate change. Indeed, the Malawian government has placed a high emphasis on planting trees to cope with climate change variability and to reclaim land (Afrik 21, 2020). The focus on deforestation by villagers also involves incorporating one possible way of addressing the climate crisis within the realm of their experiences and capacities – more specifically, just as they perceive themselves as the problem, as they visualise themselves as the solution. Thus, villagers from Ezondweni feel that climate change and variability can be directly controlled or mitigated by themselves.

There is also the strong belief that planting the same crops or deciding to change the crops planted would make no meaningful difference, if the soil remained eroded and climate patterns continued to be marked by extreme weather events. Because of this, they need to act with urgency:

We can also plant trees. It's important that when you cut trees, you plant other trees. That way, we will be replacing natural resources. This will ensure that we have good rains. In addition, trees protect the soil from erosion so that even when you have heavy rain, the soil should not erode. But if we cut trees recklessly, the soil is eroded [by the rain], such that no matter what crops you grow, they don't do well. (Respondent C, Interview, 22 January 2021)

The villagers do, however, realise that planting trees alone is insufficient, particularly given that this is a medium-term project. Meanwhile, their immediate livelihoods are under severe threat.

Nevertheless, this illustrates the way in which small-scale farmers in Ezondweni have perceptions of climate change, on the basis of which they develop their personal concerns and projects around climate change and livelihoods (Chen *et al*, 2017). In other words, they act upon their perceptions, within the confines and constraints of their locality and household circumstances.

5.4 Social Networks in Ezondweni

Most of members of Ezondweni community are related either by marriage or blood, with few originating from outside the village or area. All the research participants who took part in the interviews, except one, are related and there are close-knit relationships between the villagers. All community members interact with each other, making the social networks highly decentralised as everyone seems to have easy access to everyone else. This extends to the local chief as well, despite his presence as the most important authority in the village. The villagers in fact were somewhat perplexed when asked about whether they had access to the chief if and when necessary, as they intimated that there was a flat organisational structure in the community. Overall, the chief plays an advisory role only, giving villagers significant freedom and flexibility when it comes to livelihood activities such as farming. Thus, the chief does not dictate to villagers what crops should be grown and the manner in which their crops should be farmed, as these are household-based decisions:

He [the chief] tells us things like “look, maize had a poor yield, try hard to grow [other crops] like cassava or perhaps potatoes. You should also grow these crops so that we reduce instances of hunger.” He tells us. (Respondent A, Interview, 22 January 2021)

Due to the decentralised character of Ezondweni's social networks, with their pronounced kinship-base, reciprocal and mutually-supportive relationships prevail in the village. Hence, it is not uncommon for villagers to help each other with regard to coping with poor crop yields and food shortages due to climate change. There was also mention of taking

someone to hospital or collecting firewood for those who are ill or in need of assistance. As per social network theory, this emphasises the importance of deeply-connected actors and reciprocal relations as the foundation for a high level of bonding social capital (Rockenbauch & Sakdapolrak, 2017). Even though each Ezondweni household prioritises the needs of its own members, there is a marked tendency to reach out to others through for instance donating and sharing food with particularly vulnerable households. Of course, the fact that Ezondweni villagers as a whole experience the negative repercussions of climate change means that the capacity to help is limited and tenuous. As one villager put it:

When someone comes and begs, well you give them – like a plateful. Because you can't give them [food] that will last for a long time. (Respondent D, Interview, 22 January 2021)

Though it might appear as insignificant, sharing food across households is an adaptation strategy or, more aptly, a short-term coping strategy.

There is some unevenness in terms of the capacity of particular households to share food, or to assist in other ways. This in part depends on the number of dependents in a household, and the ability of dependents to labour and contribute to household livelihoods, including by seeking work elsewhere and sending remittances back home. For instance, Respondent B has six dependents living in the village and Respondent A has none. But, Respondent A is retired and relatively old and, because of this, requires assistance from other households at times. Limitations on leaving the village for a long period to find alternative work was conditioned by the health of the household member, such as having a core morbidity:

Yes, there is [an infirm dependent]. Especially Henry who has asthma. He depends on me so much because each time he has an attack I must stop whatever I am doing and take him to the hospital, even if it is at midnight. (Respondent E, Interview, 22 January 2021)

Besides local assistance, Respondent A has a support system beyond the village in the form of financial remittances from immediate family members who live in the urban areas (in Mchinji the town) or on the Zambian side of the border (Chipata).

There were no references made to the role of the local chief or even the regional and paramount chief in assisting with livelihood shocks in the face of climate change and variability. This does not indicate a complete absence of chiefly support systems. However, it further exemplifies the significance of the local in terms of the functioning of the village, with the everyday realities of Ezondweni villagers linked closely together and external support systems of less importance.

5.5 Pursuing Livelihood Adaptation

Beyond the importance of countering deforestation, villagers consider thoughtfully any ways by which they could possibly cope with, and adapt to, climate change and variability. This might take the form of for instance crop diversification or casual labour. Though extensive social networks exist in Ezondweni, these are not typically activated when it comes to household decisions about altering livelihood activities. There may be informal discussions between various households where information, advice and ideas are shared, but village-wide discussions and decisions only arise during extreme weather events, like the floods in 2018. Outside of extreme weather events, recommendations on what needs to be done to mitigate and adapt to climate change may circulate around the village, but the final decision still rests within the household:

Mostly we discuss this in our house, but not telling the whole village. But casually we can tell someone that this year I want to grow this crop or that crop. (Respondent A, Interview, 22 January 2021)

However, there are significant constraints in pursuing alternative livelihood options. Certainly, casual (let alone regular) work opportunities are few and far between, thereby compromising food security. As one interviewee highlighted:

Finding food is usually a big ask because we just stay with nothing to do. It's a question of trying to find odd jobs here and there in order to find food. (Respondent E, Interview, 22 January 2021)

Others opt to diversify the crops, so that if one crop grown is affected negatively by climate variation in a particular season, another crop might be more resilient and bountiful. This way, villagers can more likely meet their subsistence needs and, as well, the surpluses from one successful crop can be sold to buy other necessary foodstuffs. As one villager put it:

As regards food shortages, it is important to grow different crops at a time, be it maize, groundnuts, soya, etc., so that if maize has not done well, soya has done well or groundnuts has done well; you can sell [your soya or groundnuts] and get money. That means that when maize fails, and there is hunger, you take the other crop [that has done well], sell it to get money and buy the foodstuff you need. That way life is better. (Respondent C, Interview, 22 January 2021)

New farming methods beyond diversifying crops are not adopted, certainly methods which require capital outlays on technological equipment because of the expenses entailed. There was no mention of hybrid seeds by participants, though there is government support in the form of the provision of fertilizer and seeds – which are of value insofar as suitable rainfall patterns ensue during the cropping season. The Malawi government provides support by providing needed agricultural services to the village, as noted in the following quotation:

We don't discuss with other people regarding modern seeds. However, when Agricultural Extension workers are here to distribute coupons, we get a chance to discuss with the experts who advise us on which crops or the type of seeds that would have high yields. With regards to using ploughs we don't have those: we use bare hands and farm using hoes. They, bring bags [of maize seed], say ten or more, and so we figure out which family is in most need and decide on how many buckets should be allocated to the family/families. (Respondent B, Interview, 22 January 2021)

Again, it is notable that a local ethic of caring for other villagers exists in Ezondweni.

5.5.1 Assets and Livelihoods

In relation to natural assets, the dominant one available is land. All interviewees have their own allocation of land to farm on. The only natural water source available is the nearby river (Kachebere River), which may be used for cooking purposes and other uses – though its volume and flow has been decreasing over the years. Various wild fruits, which are collected, contribute to households' nutritional sources and are increasingly important due to climate-change vulnerabilities. Likewise, wild animals (for example, rabbits) are hunted; though, because of deforestation and the depletion of trees and bushes, some villagers indicated that it is increasingly uncommon to see wild animals in the vicinity of the village. One interviewee spoke about hunters in large numbers using hunt-dogs as a cause for the disappearance of wild animals in the area:

Wild animals are finished because there are too many hunters and some of them use dogs – so the animals ran away from this area. (Respondent D, Interview, 22 January 2021)

Firewood, as noted, is becoming increasingly difficult to access due to over use and villagers are travelling further distances in order to get access to it, sometimes even on the Zambian side of the border.

Access to land allows Ezondweni villagers to keep livestock, including cattle, chicken, pigs, goats. As with crops and the use of fertilisers or herbicides, villagers do not make use of veterinary medicines for their livestock because of the excessive cost (unless provided by the government). Using more cost-effective methods, like traditional healing methods, is the typical response by vulnerable rural villagers to climate change experiences (Niles & Salerno, 2018). By necessity, any strategies of adaptation can only take place within the means and capacity of the villagers, with villagers in Ezondweni focusing on food security and household consumption of basic foodstuffs. Overall, it appears that villagers have been able to maintain a

sufficient level of food intake despite climate change challenges. Hence, when it comes to dietary adaptation, the respondents stated that they had not changed their diets:

I would say mostly we don't change. We eat in the same way. (Respondent A, Interview, 22 January 2021)

Well, in my house we don't change our eating pattern. (Respondent F, Interview, 22 January 2021)

At times, as indicated already, this is taking place because of inter-household food sharing. Hence, the means of maintaining dietary requirements entails increasing dependence on supportive social networks locally.

Financial institutions such as banks are not available in the village but exist in Mchinji town eight kilometres away and on the other side of the border. None of the interviewees spoke about using formal banks or having bank accounts as a means of engaging in commercial transactions. With the cash-economy system being dominant (including for food), Ezondweni villagers seek to earn cash through their various livelihood activities (for instance, casual work, remittances, trading activities, farm-sales).

Villagers rely heavily on their existing human capital when pursuing livelihoods in the face of climate change. In and around Ezondweni, as highlighted by the villagers, there are no formal training programmes available for enhancing their skills and knowledge. However, there is a government agricultural extension office locally. There are officials (Agriculture Extension Officers) stationed in the village who play an advisory role to the community members with regards to how they should adapt their farming methodologies. Health workers at the nearest clinic or hospital also provide advice and information to community members about general health concerns and those that might be a byproduct of climate change and variability:

As regards modern methods of farming, we get some tips from Agricultural Extension experts. As regards health matters it only happens when I and my wife go to the hospital when a child is sick. So, whilst waiting to be assisted, we engage in a conversation with health workers. (Respondent E, Interview, 22 January 2021)

Physical capital such as infrastructure is available in the form of a paved road (due to the village's proximity to the main road that links Mchinji, the Mwami border post and Chipata in Zambia). This benefits villagers in that they have a more permanent route they can use for when they travel for services and other activities outside of the village. There is a borehole available in Ezondweni that villagers make use of, and this reduces the reliance on the river and offers an alternative water source. This borehole was provided through government

support. There are health centres some distance away (Mwami Hospital, which is the clinic at the border) and nearby Mchinji Hospital.

Social capital is particularly significant for Ezondweni villagers in the context of capitals (or assets), and hence this was discussed previously under section 5.4. The social fabric that pervades the village is central to the overall tenor of livelihood strategies in the village.

5.5.2 Crossing the Border

Going to Zambia is a common practice for the Ezondweni villagers, as various foods not produced within the village are easier to obtain on the Zambian side of the border. As well, the closest market in Zambia (in Chipata) is larger than the corresponding market in Malawi, so that the prices of goods at the Zambian market tend to be cheaper. In travelling to Zambia to purchase items, Ezondweni villagers will also take items to Zambia to sell:

Well, we sell things. Thereafter, if there is something that we want, we buy it right there. For now, I can say soap, buying it in Zambia is cheap; even [maize] flour, it is cheaper to buy it in Zambia; and other things. (Respondent, Interview B, 22 January 2021)

Several of the respondents indicated that going to Chipata (in Zambia) through the border is fairly easy, either by going through the formal channel (the border) or informal channels (through Kachebere or another unregulated back route known as Mgabi):

Most of the time we just pass through [i.e., without being checked] but, when we see that there are immigration officials further on, that is when we remember to get border passes [from the Malawi office] and then we get these stamped by the Zambian immigration officers and then we go to town [Chipata]. (Respondent E, Interview, 22 January 2021)

The ease of going to Zambia (and returning to Malawi) is helped by the strong diplomatic relations that the Zambian and Malawian government have established as well as the official realisation that there are strong historical and social ties across the border.

At the same time, overall, formal border controls are quite lax, with the official border post being unbureaucratic and multiple unofficial entry and exit points existing. This provides for high levels of unregulated cross-border movement, whether travelling across the border for commercial or social purposes, with some villagers travelling more often than others. This is important, as it means that the villagers are not limited to the resources on the Malawi side of the border when in need of external support systems. The Malawian government's support for Ezondweni villagers entails infrequent and unpredictable measures, so that access to relatives across the border, and cheaper commodities there as well, becomes important because of this. As one interviewee said:

Yes, we have [support from Malawian government] this time. It's been quite some time – it was five, six years without receiving anything. During that time, we relied on buying for ourselves.
(Respondent F, Interview, 22 January 2021)

Accessing Zambia offers important alternative means of accessing resources that can help in ordinary times and in times of livelihood shocks such as those that come from climate change and variability, especially when the Malawi government is not able to meet or support the needs of the village. Alternative means of adapting are what strengthen a household's or community's ability to sustain itself over an extended period of time (Lan *et al*, 2018). Thus, the border plays a key role in the lives and livelihoods of villagers.

5.6 Conclusion

This chapter focused on the livelihood activities of the Ezondweni villagers in the face of climate change, including their variability adaptation strategies. It set out the manner in which the villagers perceive and conceptualise climate change and variability, including the significance of deforestation in their lives as a marker for the effects of climate change. For the Ezondweni community, climate change is clearly linked as well to their experiences of rainfall patterns and how these affect levels of crop productivity. The chapter considered the assets, social networks and agency of the villagers as they pursued livelihoods under conditions of extreme vulnerability. Their location at the Malawi-Zambian border gives them access to livelihood opportunities and a degree of livelihood flexibility that is not available in villages further away from the Zambia border. This also demonstrates their ongoing reliance on cross-border movement initiatives as a basis for livelihood options, implying a comparatively minimum dependence on the Malawian government by the Ezondweni villagers in relation to livelihoods support.

The next and last chapter (chapter six) offers an overall conclusion to the thesis, including with reference to the objectives of thesis and the contribution of the theoretical framework for addressing these objectives.

CHAPTER 6: CONCLUSION

6.1 Introduction

This final chapter concludes the thesis by focusing on how the case study on Ezondweni has addressed the objectives of the thesis about rural livelihoods, climate change and border communities. Section 6.2 discusses the three subsidiary objectives, before section 6.3 considers the main objective, which is about understanding the livelihood adaptation strategies to climate change in the border community of Ezondweni Village in Malawi. In doing so, reference will be made to the value of the theoretical framework used in pursuing the objectives of the thesis. The chapter will conclude by discussing the need for future research in the area of study (section 6.4).

6.2 Addressing the Subsidiary Objectives

The thesis consisted of three subsidiary objectives that indirectly and directly addressed the main objective.

The first subsidiary objective was to: *Understand the local informal and formal socio-political and economic structures which shape the livelihood experiences and practices of Ezondweni villagers such as infrastructure and customs.*

In Ezondweni, the internal informal networks, dependent on kinship, are the dominant driver of when and how village members adapt to livelihood shocks, more so than external institutions like government and NGOs which play a more peripheral or indirect role. This is also influenced by Ezondweni's diffused and decentralised character in relation to power differentials and decision-making, including when coming to terms with livelihood shocks. This enables members of the village to be flexible and have autonomy in deciding upon strategies of adaptation (such as when to find and where to work, and what to grow) without always needing to abide to the conditions and guidelines set by a centralised authority existing locally. Overall, existing at the margins of formal state and economic institutions in Malawi, the Ezondweni community goes about its livelihood activities (including adaptation to climate change) with relative independence from mainstream structures like formal banks, NGOs, state agencies and traditional authorities. Because villagers are not reliant on external institutions and do not fall under rigid hierarchical structures, there is significant local livelihood initiatives and strategies pertaining to adaptation, including by making use of prevailing social networks

and by way of cross-border movements. In the case of Ezondweni, horizontally-arranged social networks are central to livelihood strategies, therefore the importance of drawing upon social network theory in emphasising the importance of the social capital raised by the SLF.

The second subsidiary objective was to: *Investigate the conditions, enablers, constraints and options that Ezondweni villagers have in adapting their livelihoods to climate change.*

The conditions, enablers, constraints and options existing in relation to the Ezondweni community, in adapting to climate change trends and shocks, are not just influenced by the structure of the social networks but by the various assets available as well as the types of institutions and policies conditioning the lives of villagers. Using the SLF enables an understanding of the assets available to households in Ezondweni and the manner in which climate change and variability is bound to reconfigure access to these assets. Certainly, natural capital, because of its close connectedness to climate change, is extremely susceptible to the ravages of climate change. Villages like Ezondweni, where access to natural capital is not mediated by advanced technologies (i.e. villagers rely exclusively on rain-fed agriculture) are bound to suffer immediately and harshly as rainfall patterns change and extreme weather events become more frequent. In Ezondweni, this is seen in the case of the drying up of the local Kachebere River and the decreasing number of wild animals like rabbits. In coping and adapting, villagers rely upon components of natural capital (notably, wild fruits) still thriving, turn increasingly to mutually-supportive social capital, try to access financial capital (through casual work, informal trading or remittances from household members in urban centres), or hope perhaps against hope for some sort of short-term or longer-term government assistance (by way of health and agricultural offices, for instance). These options are not available to all or, at least, there is differential availability across households. Ultimately, all options exist with a degree of uncertainty and unpredictability, leading to very precarious, contingent, fluctuating and dynamic livelihood trajectories. The fact that, in these circumstances, Ezondweni villagers may depend more deeply on cross-border options demonstrates not only the multi-local character of rural livelihoods but their multi-national character – for border communities. Hence, in using the SLF, it is critical to recognise the importance of both temporal fluctuations and multi-spatial dimensions regarding livelihood strategies of adaptation.

The third and final subsidiary objective was to: *Examine the capacity of Ezondweni villagers to engage in livelihood adaptation to climate change.*

Agency plays a key role in the decision-making capacity in adapting to climate change. On the one hand, villagers are at the margins of state power, even with the presence of a border

post in the area – as, generally, border control is very porous, allowing for the ease of movement. This gives villagers a degree of autonomy in navigating and adapting their lives and livelihoods through climate change and variability. But, this also means that, though embedded in social networks, they are in effect on their own and any household problem (such as severe illness or death) will dramatically undercut – even further – the viability of the household. On the other hand, if the village and villagers were more forcefully integrated into state and market structures, these structures might constrain the prevailing form of agency. But, the structures would also act simultaneously as structural enablers in supporting the capacity of villagers to engage in livelihood adaptation – through for instance state support. In the meantime, villagers continue to go about their lives with relative freedom. Members of the Ezondweni community are not limited by traditional customs such as women being prevented from owning land and property or being forced to stay in the village when there is a need to diversify livelihoods. As well, border policies are relaxed enough for people to be able to use the border to pursue their livelihood adaptation strategies. In general, then, Ezondweni villagers are actively involved in reconfiguring their livelihoods in the face of climate change, without this necessarily leading to viable household-based livelihood strategies.

6.3 Addressing the Main Objective

The main objective of the thesis was to: *Understand livelihood adaptation strategies to climate change in the border community of Ezondweni Village in Mchinji, Malawi.* Indirectly, addressing the three subsidiary objectives has led to addressing the main objective. In drawing upon the reflexivity theory of Margaret Archer, it is clear that Ezondweni villagers had perceptions and concerns about climate change, and that they acted upon these perceptions and concerns with significant reflexivity in pursuing projects – namely, livelihood adaptations in the face of climate change.

Like other rural villages in Malawi and elsewhere in Africa, Ezondweni villagers are dependent on rainfall for farming. Thus, climate change and variability (involving irregular rainfall patterns, floods, droughts, temperature increases and soil erosion) affect negatively their crop and livestock production. For these villagers, the impact on food security is understandably at the heart of livelihood adaptation strategies when it comes to climate change and variability. The Ezondweni villagers believed that climate change was human induced and therefore it was necessary for them to act to try to counter its effects on their lives. They also argued that climate change was having important effects, as evidenced by changes in rainfall patterns they experienced and noticed, and as demonstrated by poor crop yields. The severity

of its effects, for the villagers, was encapsulated in the significant deforestation taking place in the area, as if deforestation signified climate change in their minds. All this meant that the villagers were inclined to act as decisively as possible, and hence they spoke about the importance of crop diversification, planting more resilient crops and planting trees.

It is important to emphasise that not all changes in livelihood activities by Ezondweni villagers are reducible to climate change adaptation. Declines in the national economy likely also contributed to certain changes though, as indicated, the village tends to be isolated comparatively speaking from such broader structural changes. As well, certain livelihood activities (such as casual work and remittances) pre-date climate change, and hence are not new phenomena – however, their importance has increased with climate change. Further, it remains somewhat unclear if climate change (long-term) trends or short-term climate variability (for instance, a seasonal flood) is more important when it comes to villagers seeking to adapt their livelihoods, though it is likely a combination of both.

Finally, in considering Archer's categories of reflexivity, regrettably the depth of the evidence collected is insufficient for coming to any definitive conclusions about whether a particular category prevails amongst Ezondweni villagers in relation to livelihood adaptation. No doubt, however, the household heads interviewed engaged in internal conversations and reflections (involving both meta and autonomous reflexivity) in making decisions about the way or ways forward. However, given the centrality of social networks in the village, it is likely that communicated reflexivity (involving conversations with others) is also central.

6.4 Areas of Further Research

This thesis only goes so far in being able to capture the complexities of climate change adaptation amongst rural villagers living along territorial borders in southern Africa. Certainly, understanding the local perceptions of climate change requires a more in-depth study, in particular to capture any differentiation amongst villagers around perceptions and perhaps the dynamic character of these perceptions. It is also important to recognise that climate change is just one factor currently configuring rural livelihoods such that, in future studies, it might be best to include climate change as one factor amongst others (for example, economic changes). In this way, the relevance of climate change can be better identified and understood as part of a broader study. This would lead to knowledge that can contribute more fully to livelihood intervention strategies and policies that are better suited to rural villages like Ezondweni.

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Appendix A: Interview Schedule

Kennedy Khuzwayo Simango G15s4829

Professor Kirk Helliker (Supervisor)

Application of Sustainable Livelihood Framework to Climate Change Variability Adaption in Rural Border Communities in Southern Africa: A Case Study of Ezondweni Village in Mchinji, Malawi

Interview questions for Ezondweni community members

- Greetings and Introduction
- Research explains about confidentiality and anonymity of research
- Researcher explains interview is for academic purposes only
- Ask for permission

The main objective is to understand the *application of Sustainable Livelihood Framework to climate change variability adaption in rural border communities in Southern Africa in the case of Ezondweni Village in Mchinji, Malawi*. The subsidiary objectives include;

A. Investigating the Ezondweni communities members' understanding and experiences of Climate Change Variability

- What is your understanding Climate Change, what does it mean to you?
- How have environmental issues affected you? (Pollution, deforestation, livestock shortage etc.)
- Do you think the environmental issues are man-made or a result of something supernatural?
- Do you think you can do anything to deal with climate change when it affects you? Why?
- Where do you get most of your information about Climate Change? Word of mouth? Newspapers, Cellphones, radio?

B. Examining the Social Networks that exist in the Ezondweni village and communities on the other (Zambian) side of the border

- Do you have relationships with all members of the community? Who is the most important authority of the community?

- Do you have access to access to the Chief and do you need them to make decisions about what to food to produce and how to produce it?
- Do you share resources like food and resources with other community members outside your house?
- Do you have someone who depends on you that prevents you from leaving or the village to find other ways of working?
- Are you dependent on anyone in the community or another household on the other side of the border for resources like food, money and tools? Can you explain?

C. Understanding how agency is exercised in Ezondweni.

- How much of a say do you have in the affairs of Ezondweni with dealing with resource (livestock, water, food) shortages?
- Are you allowed to leave and go find work in the cities or go to Zambia if you want to leave during tough times? Do you go and is it temporary or a short time?
- Do you have to discuss with other members of the community if it comes to farming on the land (tilling the soil, using machinery or different farming seeds)? Or do you have your own land within Ezondweni?
- Do you have an illness that prevents you from working when there is an environmental crisis like food and water shortage? If yes, how do you manage to get food and what you need?
- Do you have someone who is dependent on you that limits your ability to work? If yes, how do you deal with this?

D. Examining the capital assets available to the Ezondweni community members

- What natural resources do you have access to resources like water a well, river, livestock, is it all the time?
- Do you have access to finance outside Ezondweni? Such a job, money to buy equipment or doing non farming activities?
- Do you have access to skills training and education facilities? That can help you deal with climate change? Such as new farming techniques or health education?

- Do you have access to health facilities (traditional or clinics and NGOs) and medicine to deal with malaria or water borne diseases like cholera? Is money a problem?
- Do you have access to physical infrastructure like roads, electricity, cellphone network, government departments? Do these help you in times environmental or food crisis?

E. Assessing the external support structures and institutions that affect the ability of the Ezondweni Village to adapt to Climate Change

- What do you go to the Zambian side of the border for? Economically, relationships, cultural or religious reasons?
- Do you buy or sell goods and services from the other side of the Zambian border. If so, how often?
- Do you use the Mwami Border Post to get to Zambian or do you there by passing through other villages and communities?
- Do the Malawi and Zambian governments make it hard for people to get into Zambia? By policing the borders or needing permits and documents.
- Does the Malawian government support you when there is an environmental, providing access to water, supplying fertilizers, or building infrastructure?

Appendix B: Participant Consent Form



Department of Sociology
Prince Alfred Street, Grahamstown, 6139, South Africa
PO Box 94, Grahamstown, 6140, South Africa
t: +27 (0) 46 603 8361
f: +27 (0) 46 603 7549

www.ru.ac.za

Name of researcher: **Kennedy Khuzwayo Simango**

Dear Participant,

I am a Master of Social Science in Industrial and Economic Sociology student at Rhodes University undertaking an academic research titled “**Application of Sustainable Livelihood Framework to Climate Change Variability Adaption in Rural Border Communities in Southern Africa: A Case Study of Ezondweni Village in Mchinji, Malawi.**”

The research focuses on the local effects of climate change and variability on the lives of villagers and the array of challenges they face, the dissertation will seek to understand village-based livelihood adaptation strategies as well as the enabling and disabling conditions influencing these strategies.

I kindly request for your participation in the interviews. It will take no longer than 45 minutes of your time. I have confidence that this research will contribute to the body of knowledge on how rural border communities adapt their livelihoods in the face of climate change variability.

Participation is voluntary and information regarding the goals of the study will be provided. Participants are free to withdraw their consent at any given time and for any reasons and also withdraw previous information given. The information you contribute is completely confidential and it will be treated with anonymity such as your name, age or specific mention of your migrant status if provided. Data will be safely stored and only accessed by myself as the researcher to ensure total confidentiality of participants.

Declaration

1. I confirm that the purpose of the research and the nature of my participation have been explained to me verbally or in writing.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason - however I commit myself to full participation unless some unusual circumstances occur, or I have concerns about my participation which I did not originally anticipate.
3. I understand that data collected during the study, will be used by the researcher and that my personal details gathered during this research, especially my name or identity, will be kept private. All responses will be anonymised through the use of pseudonyms.
4. I agree to be interviewed and to allow audio or video recordings and transcriptions to be made of the interview.
5. I have been informed by the researcher that the tape recordings will be erased once the report is written. OR
6. I give permission for the tape recordings to be retained after the study and for them to be utilised for academic purposes only.

Name of Participant

Date

Signature

Name of Researcher

Date

Signature

Appendix C: List of Interviews

Kennedy Khuzwayo Simango G15s4829

Professor Kirk Helikker (Supervisor)

Application of Sustainable Livelihood Framework to Climate Change Variability Adaption in Rural Border Communities in Southern Africa: A Case Study of Ezondweni Village in Mchinji, Malawi

Dates and Places of Interviews with Ezondweni Community Members

Name	Date	Place
Participant A	22 January 2021	Ezondweni (Mchinji, Malawi)
Participant B	22 January 2021	Ezondweni (Mchinji, Malawi)
Participant C	22 January 2021	Ezondweni (Mchinji, Malawi)
Participant D	22 January 2021	Ezondweni (Mchinji, Malawi)
Participant E	22 January 2021	Ezondweni (Mchinji, Malawi)
Participant F	22 January 2021	Ezondweni (Mchinji Malawi)