CHINHOYI UNIVERSITY OF TECHNOLOGY

EMERGING THREATS AND THE SOCIO-ECOLOGICAL RESILIENCE OF LOCAL COMMUNITIES, SOUTH-EAST ZIMBABWE

BY

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A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in Natural Resource Management in the School of Wildlife and Environmental Sciences at Chinhoyi University of Technology, Chinhoyi, Zimbabwe

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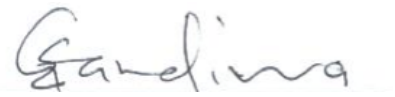
APPROVAL FORM

The undersigned certify that they have read and recommended to the School of Wildlife, and Environmental Sciences, Chinhoyi University of Technology, for acceptance, a thesis titled, **"EMERGING THREATS AND THE SOCIO-ECOLOGICAL RESILIENCE OF LOCAL COMMUNITIES, SOUTH-EAST ZIMBABWE.**": Submitted by Itai Dhliwayo in fulfilment of the requirements for the Doctor of Philosophy degree in Natural Resource Management.



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ABSTRACT

Threats to livelihoods for people living in the Great Limpopo Transfrontier Conservation Area (GLTFCA) continue to put stress on communities. These threats include climate change, food security crisis, plant pests and diseases, and human-wildlife conflict. As the magnitude and impact of emerging threats increases, aggravated by growing poverty, more households and communities become less able to absorb, recover and adapt. There is a growing and unsustainable reliance on natural resources, food aid and remittances, and an increasingly tense relationship between livestock production, wildlife ranching and conservation in the study area. Without information about communities living within the GLTFCA, policy makers are faced with challenges when the need to address poverty in areas adjacent to protected areas arises. This study analysed the emerging threats that affect local communities living on Zimbabwe's part of the GLTFCA in Chiredzi Rural District (Sengwe), Save Valley Conservancy (Gudo community) and Beitbridge Rural District (Matibe), and the social and ecological resilience processes communities adopt in response to these numerous threats encountered. Mixed method design was adopted in this study where data collection instruments including focus group discussion, semi structured interviews and questionnaires were used and data was quantitatively and qualitatively analysed and presented. Local communities are faced with increasing numerous and complex threats starting from displacement as they were relocated to pave way for the creation of the park, the majority have negative perceptions towards the establishment and conservation initiatives, while a few are beginning to appreciate the positive impacts of Transfrontier Conservation Area (TFCA) initiatives of enhancing livelihoods and promoting biodiversity on the peripheries. Community involvement and participation in conservation initiatives is key and this enhances local community resilience to threats through community capacitation and improves relationships between the people and the park management. The existing socio-ecological resilience systems, mechanisms, strategies and pathways are weak and cannot measure up to the changing and multiplying facets of threats in the GLTFCA. Generally, threats are on the increase and livelihoods have been undermined in the GLTFCA as local communities are finding it difficult to adapt mainly due to incapacitation. It is concluded that the majority of the people in the study area regard their relationship with protected area management in a negative way, there is limited participation by local communities in wildlife conservation projects. While there are conflicting relationships between the local community and protected area management, co-existence and harmony is

still achievable. The study contributes towards strengthening and improving local resilience and adaptation to emerging threats in the study area. It is recommended that local communities be capacitated to be able to manage their own natural resources and sustain their livelihoods.

Key words: communities, emerging threats, GLTFCA, livelihoods, resilience, socio-ecological, Zimbabwe

DECLARATION

I declare that this thesis is my own original work and has not been submitted for a degree in any other university.

Signature  Date: 05/08/2023

Itai Dhliwayo

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DEDICATION

I dedicate this thesis to my late father Mr Henry Musariyarwa Dhliwayo. He always wanted me to be a headmaster, unfortunately he was promoted to glory when I was still climbing this academic ladder but I am convinced his spirit lives on and is witnessing this great piece of achievement. To my mother, Chomusaona Mugwani, I know you never stepped a foot in a classroom, this is your book, I have done it for you. To my kids Ama and Myra, you have to emulate this. To my wife Regina Mufari you endured Daddy's absence, keep this book for the whole family.

"ORDER PRECEEDS LIBERTY IN HISTORICAL SEQUENCE".

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ACRONYMS

AGRITEX: Agricultural Technical and Extension Services

BIPPA: Bilateral Investment Promotion and Protection Agreements

CAMPFIRE: Communal Areas Management Programme for Indigenous Resources

CBNRM: Community Based Natural Resource Management

CCDI: Community Conservation Development Initiative

CIFOSUDE: Community Initiatives for Sustainable Development

DFID: Department for International Development

FAO: Food and Agriculture Organisation of the United Nations

FGD: Focus Group Discussion

FMD: Foot and Mouth Disease

FTLRP: Fast Track Land Reform Programme

GDP: Gross Domestic Product (GDP)

GCT: Gonarezhou Conservation Trust

GLTFCA: Great Limpopo Transfrontier Conservation Area

GLTP: Great Limpopo Transfrontier Park

GNP: Gonarezhou National Park

HDI: Human Development Index

HWC: Human–Wildlife Conflict

IMF: International Monetary Fund

IUCN: International Union for Conservation of Nature

LPD: Livestock Production Department

NGO: Non-Governmental Organisation

PA: Protected Area

RM: Resilience Model

SADC: Southern Africa Development Community

SES: Socio Ecological Systems

SLF: Sustainable Livelihoods Framework

SPSS: Statistical Package for Social Sciences

SVC: Save Valley Conservancy

TFCA: Transfrontier Conservation Area

UNDP: United Nations Development Program

ZPWMA: Zimbabwe Parks and Wildlife Management Authority

ZIMSTAT: Zimbabwe National Statistics Agency

ZINWA: Zimbabwe National Water Authority

ZIMVAC: Zimbabwe Vulnerability Assessment Committee

CHAPTER 1

GENERAL INTRODUCTION

1.1 Background to the Study

More than a billion people in the world's population are currently living in abject poverty (Jaiyeola and Choga, 2021). The past two decades have witnessed human livelihoods surviving in the face of grievous and numerous emerging threats that have left communities more vulnerable (Kumar, 2014). Worldwide, an estimated 2–5 billion people depend primarily on agriculture (FAO 2015). Numerous reports from the United Nations Development Programme (UNDP), International Monetary Fund (IMF-2015) and the Zimbabwe National Millennium Development Goal Report (MDG 2012-2015) have indicated that poverty remains a major policy challenge, especially in Sub-Saharan Africa (Dercon, 2005; UNDP, 2007; FAO, 2015). Poverty undermines livelihoods, it weakens response strategies and mechanisms of communities, making it very difficult for local communities to sustain their livelihoods and achieve sustainable growth and development (Leach et al., 2021). Threats by nature are complex and multifaceted, thus they range from demographic to environmental dynamics While efforts to address demographic and environmental dynamics are in place, emerging threats continue to significantly impact on livelihoods and undermine previously achieved gains. For example, over 40 million people in the Southern African Development Community (SADC) region alone are facing food deprivation (Entholzner and Reeve, 2016; Lian et al., 2021).

In Zimbabwe, three quarters of the rural population was poor in 1995, and severe poverty was increasing, growing from 17% to 37% during the 1990s in rural areas. Poverty was widespread in semi-arid regions of the country and the prevalence of poverty in Zimbabwe was estimated at 63% with 16% estimated to be extreme poverty. A total of 30% of rural people are extremely poor compared to 6% in the urban areas (Bird and Shepherd, 2003). In southern Zimbabwe, local communities living adjacent to the Great Limpopo Transfrontier Conservation Area (GLTFCA) were first threatened by displacement as they were relocated and pushed to the peripheries paving way for the creation of the wildlife sanctuary. This was then exacerbated by perennial threats of disasters such as floods, storms, fires, successive droughts and disease outbreaks (Andersson and Cumming, 2017; Chiutsi and Saarinen, 2019).

Climate change, food chain crisis, transboundary plant pests and diseases and human and wildlife conflict have impoverished rural communities bordering conservation areas in southern Zimbabwe (Ntuli et al., 2019; Salerno et al., 2021). As the magnitude and impact of these threats increase, aggravated by growing poverty, more households and communities become less able to adapt (Hallegatte, 2016; DeFries et al., 2019).

Communities living in the GLTFCA were legally denied access to the land and their resource as they were relocated paving way for the creation of the park. There is biodiversity loss, poverty and unsustainable land use within the GLTFCA, and since its inception in 2002, local communities are still living under abject poverty (Muzeza, 2013; Zanamwe et al., 2018). Emerging threats continue to undermine livelihoods and national development within the GLTFCA and have significantly impacted on the ecosystem critical for sustaining local communities in the GLTFCA plunging them into a cycle of poverty (Whande, 2010; Whande and Suich, 2012; Muboko, 2017).

1.1.1 Emerging livelihoods threats in the GLTFCA

The emerging risks and impacts of climate change and extreme weather events on forest ecosystems present significant threats to agriculture and forest-based livelihoods (Chisale et al., 2021). Biodiversity loss has far-reaching consequences, damaged ecosystems exacerbate climate change, undermine food security and expose local communities to risks. Protected areas such as the GLTFCA face a range of threats, however, little information is available about the type, pattern and extent of these threats (Mengistu, et al., 2017). With 40% of the global population adversely affected by land degradation, the GLTFCA is not an exception. Forest-dependent communities are among the most vulnerable peoples to global climate change (Bayrak and Marafa, 2016). New and emerging threats to semi-arid landscapes have changed over the past decades and are expected to continue to evolve in the future (Shackleton, 2018).

Farmers in semi-arid Zimbabwe prioritise climate variability as their major agricultural productivity-reducing problem (Ariom et al., 2022). Farmers perceive climatic and weather patterns to have changed over the past decades as indicated by erratic rainfall patterns, decreased rainfall and temperature increases, leading to crop productivity decline and increased livestock morbidity and mortality (Moyo, et al., 2012; Banerjee, 2015). The increasing frequency and severity of droughts are characterised by the shift in the onset of the rains, and

increasing frequency of mid-season dry spells, drought in particular has led to death in several wildlife species (Murungweni et al., 2011; Kupika et al., 2017). Understanding these threats is crucial in prioritising conservation strategies and to take appropriate mitigation measures for effective socio-ecological conservation strategies (Dickman, 2010). People living within protected areas are not only threatened by wildlife but also by displacement (Wale et al., 2017). Common emerging threats in the GLTFCA include human-wildlife conflict (HWC), disease, climate change; droughts, floods, water stress, grazing stress, storms, cyclones and heatwaves (Anderson et al., 2007; Kupika et al., 2017; Mpofu, 2020).

There is an increased interface between wildlife and domestic animals, because rural households move their cattle into the game park in search of grazing and watering resources. Development is also putting animals and humans in closer contact increasing the risk of zoonotic diseases to spread (Jori et al., 2016; Matope et al., 2023). About 60% of human infections are estimated to have an animal origin. This creates opportunities for inter-species transmission of infectious diseases, including zoonoses like brucellosis and tuberculosis, which may also pose a health risk to the local rural communities (Brown at al., 2018; Carpenter et al., 2022). Globally, millions of people are at increased risk of floods and hurricanes because of coastal habitat loss and, because of its geographical location, part of the GLTFCA in south-east Zimbabwe is not an exception to floods and cyclones (Stolton, 2006).

Extreme dry and wet events have increased over recent decades in this part of the GLTFCA and cyclones, unprecedented floods and very severe droughts have been recorded over the past years, that is in the years; 2000, 2013, 2016 – 2017 (Kupika et al., 2017; Mudzengi et al., 2022). Such disasters have caused serious declines in nature and biodiversity in this southeast part of the GLTFCA and this has continued to undermine progress towards the key targets of Sustainable Development Goals (SDGs) related to poverty, hunger, health, water and climate (Mutanga, 2017; Mpofu, 2020). Resilience thinking and Sustainable livelihoods approach have been combined to understand the effects of these numerous threats to local communities in the GLTFCA (Cumming et al., 2015; Ntuli et al., 2021).

The Sustainable Livelihoods Framework (SLF) coupled with the Resilience model (RM), as key theories anchoring this study actually give a simplified summary and demonstration of everything which concerns all the factors affecting vulnerable communities on the GLTFCA. These two theories, have been put together in this study to form hybrid livelihoods resilience strategies and pathways that help communities in this part of the GLTFCA in southeast Zimbabwe to recover and overcome prevalent complex and increasing threats and have sustainable livelihoods (Cumming et al., 2017; Caron et al., 2022).

1.1.2 The Characteristics of Natural and anthropogenic Disasters in the GLTFCA

The GLTFCA is characterised by heterogeneous communities with diverse livelihood pursuits (Anderson et al., 2013; Makamuri et al., 2017). Common disasters that negatively impact livelihoods in communities located on the edges of the GLTFCA include drought, floods, storms and diseases (Kupika et al., 2017; Mpofu, 2020). Communities are already vulnerable to these multiple stressors, and the impacts of climate change further exacerbate their vulnerability. The GLTFCA, become increasingly fragmented by growing human populations and their associated ecological impacts, adaptive foraging options for wild and domestic herbivore populations are correspondingly limited, resulting in declining wildlife populations and impoverished pastoral societies (Fynn et al., 2016; Muluneh, 2021; Fynn and Provenza 2023). In addition, competition for grazing by expanding domestic herbivore populations threatens the viability of wild herbivore populations occupying similar grazing niches (Heermans et al., 2021).

Climate change is similarly emerging as a potential serious driver of change in semi-arid landscapes affecting livelihoods and other species (Shackleton, 2018). Rising temperatures, shifts in seasonal weather patterns and water shortages have begun to impact negatively on the GLTFCA. Desertification is also an apparent threat most of which is human induced as communities continue to expand their land seeking to accommodate the growing population and clearing land for cultivation. Climatic variability is be expected to increase thereby impacting the livelihoods of subsistence farmers due to erratic and declining productivity. Flooding events alternating with persistent drought leading to wildlife and livestock deaths are also on the increase (Murungweni, 2011; Giller et al.,2013; Ubisi et al.,

2017). Climate change and its impact on ecosystems and community livelihoods has become a global challenge with vast consequences which can lead to animal and plant extinction (Dube et al., 2016). Survival on the fringes of protected areas is now proving to be a challenge as it is often dependent on the low and erratic rainfall regimes that usually characterise these areas (Alexander et al., 2018). Reconciling conservation and people's livelihoods has been met with multiple challenges particularly prominent in human inhabited protected areas with high levels of poverty and vulnerability to climate adversities, and the Save Valley conservation conflicts which is also part of the GLTFCA is a good example (Ayele, 2019).

Diseases transmitted between wildlife and livestock have significant impacts on local farmers' health, livestock health and productivity, overall national economies, and conservation initiatives, such as Transfrontier Conservation Areas (TFCAs) in Southern Africa (de Garine et al., 2013). Human populations living at the periphery of conservation areas in tropical regions, which are considered as "hotspots" for potential future emergence are thus particularly at risk of being infected by emerging pathogens (Brook and McLachlan 2006; de Garine et al., 2013; Mwakapeje, 2019). The absence of formal policies on animal disease control in the GLTFCA which is also a governance threat on its own also negatively impacts on public health, agriculture, commerce and conservation itself (Maron et al., 2013). The increasing contact between populations of wildlife, domestic animals and people increase the risk of the emergence or resurgence of diseases. Bovine tuberculosis and other diseases can spread between buffalo populations across national parks, community land and countries that are posing risk to animal and human health in surrounding wildlife areas (Cleaveland et al., 2001; Cumming et al., 2007; Caron et al., 2022). Foot and Mouth Disease (FMD) causes severe economic losses within infected countries and is arguably the most important trade restricting livestock disease in the world and with the progressive expansion of TFCAs, the risk of FMD outbreaks is expected to increase (Jori et al., 2016).

Wildlife has been confirmed as a source of major emerging diseases such as highly pathogenic H5N1 or SARS viruses that have resulted in pandemics during the past decades. Wildlife related diseases may cause indirect mortality or reduce productivity of livestock as they are also indirectly responsible for reduced marketing opportunities (Liu and Zhu, 2014; Hurtado and Giraldo-Ríos, 2018). TFCAs have been promoted throughout the region as a way to reconcile conservation and development objectives, simultaneously contributing to global biodiversity conservation, regional peace and the sustainable socio-economic development of African communities, through increased cross border collaboration and ecotourism. However,

the expected increase of movements of people and animals across the boundaries of "re-connected" conservation areas continue to present new challenges for both public and animal health (Berrian et al., 2016; Andersson et al., 2017; Chitakira et al., 2022).

1.1.3 The Coping Mechanisms and Strategies adopted by communities in the GLTFCA

Rural households in semi-arid areas of southern Africa are confronted with numerous hazards that threaten the household food base (Murungweni et al., 2014). Local communities in the GLTFCA adopt several resilience strategies based on their local ecological knowledges to try and counter the emerging threats which have been on the increase. The threats have become so complex that the coping mechanisms by communities also need to be enhanced. Contests over scarce and shared natural resources underlie most conflicts across the world's geographic regions. The TFCAs concept gained widespread acceptance as a promising and practical conflict management strategy (Muboko, 2017) The TFCAs are expected to be safety nets for local communities in these changing times. Local communities are expected to cope once they start to benefit from the TFCAs particularly from their participation and involvement in conservation projects.

Livelihood resilience draws attention to the factors and processes that keep livelihoods functioning despite negative change and thus enriches the livelihood approach which puts people, their differential capabilities to cope with shocks and how to reduce poverty and improve adaptive capacity. People living in most semi-arid regions of southern Africa must be able to deal with threats posed by wildlife through conservation policies that empower local communities (Andersson et al. 2017; Natarajan et al., 2022). Livelihoods strategies on the peripheries of the GLTFCA comprise of a range and combination of several activities and choices that people make in order to achieve their livelihoods goals but they have to be sustainable so that whenever communities encounter threats they are able to measure up and match (Cochrane, 2007; Liu and Xu, 2016). The coping mechanism should therefore be understood as a dynamic process in which local people combine activities to meet their various needs at different times (Eriksen et al., 2005). Small scale crop and animal production are the main livelihood options for subsistence farmers living in the communal lands in the GLTFCA (Bourgeois et al., 2023).

Resilient socio - ecological systems incorporate diverse mechanisms for living with and learning from change and unexpected shocks. Small irrigation revitalisation programs and the growing of drought resistant crops are key coping strategies that local communities in the GLTFCA have adopted (Adger et al., 2009). It is very important that local communities build resilience and have sustainable income projects mainly from within their surroundings other than relying on diaspora remittances, thus, the system's resilience needs to be considered in terms of the attributes that govern the system's dynamics (Walker et al., 2011). Protected areas offer a fundamental approach to conserving ecosystems, but they are also socio-ecological-systems whose ecological management and sustainability are heavily influenced by people (Cumming and Allen, 2017). The establishment of protected areas remains one of the most fundamental tools available to conservation, and it is important that protected areas are developed in a way that is ecologically, economically, and politically sustainable. It can only be economically sustainable once it prioritises the capacitation of local communities (Cumming et al., 2017).

The concept of resilience originated from ecology and is defined as "a measure of the persistence of systems (Holling, 1973) and their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables". Local communities in the GLTFCA have failed to maintain both their status and relationship in the face of threats, and this has led to an increase in conservation conflicts on the peripheries. Without capacitating local communities, building their resilience to changes, relations and livelihoods on the peripheries will continue to deteriorate. Social resilience being the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental changes should be fostered on local communities in the GLTFCA (Adger, 2005; Kais and Islam, 2016). Ecological resilience is a requirement in the GLTFCA as it envisages a sustainable and stable system which can therefore maintain itself and does not fall in the face of disturbances (Holling, 1973; Gunderson and Pritchard, 2012; Adger and Hodbod, 2014).

Traditionally, communities in the GLTFCA heavily relied on the abundant natural resources that surrounded them for their survival (Fabricius, 2004; Machaka, 2021) and this means every change in their surroundings, be it natural or human induced, leaves them vulnerable as their only source of income will be under threat. Threat on the environment in the GLTFCA is equally threat on livelihoods since resilience is measured by the magnitude of disturbance that can be absorbed before the system redefines its structure by changing the

variables and processes that control behaviour (Holling, 1996; Gunderson et al., 2012). TFCAs were created to achieve the promotion of biodiversity conservation while at the same time offering better living conditions for local residents, most of them struggling to live from subsistence agriculture in semi-arid savannas. In southern Africa, TFCAs were created with the dual purpose of protecting biodiversity and enhancing livelihoods (SADC, 2020; Caron et al., 2022).

Local communities, governments among other stakeholders are increasingly embracing TFCAs in recognition of their role in conserving biodiversity and promoting a culture of peace and development in transboundary areas of southern Africa (Andersson and Cumming, 2017 ; Nkomo, 2020). Classical Protected Areas (PAs) were conceived as areas that would be set aside to maintain a natural state with minimal human influence, however, global environmental change and growing cross-scale anthropogenic influences mean that PAs can no longer be thought of as ecological islands that function independently of the broader socio-ecological system in which they are located (Cumming et al., 2015; Machaka, 2021). For TFCAs to be resilient and contribute to the broader concept of socio-ecological resilience, they must be able to adapt to changing social and ecological conditions over time in a way that supports the long-term persistence of populations, communities, and ecosystems of conservation concern (Cumming et al., 2015).

TFCAs represent an opportunity to achieve conservation and production goals in remote and semi-arid transboundary landscapes characterized by good quality and relatively abundant wildlife and with subsistence agriculture societies barely reaching food security (Chitakira et al., 2022). Frequently, when wildlife conservation initiatives suffer, the economic and social well-being of local people is impaired, local support for conservation declines and development efforts meant to offset costs of living near a protected area may be impeded (Cumming et al., 2017). Local communities bear most of the costs of conservation but get few benefits in return. Substantial incomes are invested into biodiversity conservation in TFCAs but very little is invested in the development and well-being of local communities thereby compromising the long term sustainability of both social and ecological systems (Caron et al., 2022). The health of ecosystems within TFCAs depends on interacting social and ecological processes (Munthali et al, 2018).

People are part of the natural world; they depend on ecosystems for their survival and continuously impact the ecosystems in which they live from the local to global scale

(Almedom, 2008; Folke et al., 2016). In the past two decades, adoption of TFCAs by African governments as a panacea to the management of wild resources that transcend political boundaries has been on the increase (Sibanda, 2015). The implementation process, however, has effects not only on the proliferation of the tourism industry and improved conservation of natural resources, but on the livelihoods of local people (Duffy, 2006; Muboko, 2017). Long-term vision and 'durable solutions' approach for the reintegration of displaced people and the sustainable management of an enabling environment is fundamental to fostering resilience in the GLTFCA and this requires integrated policies and strategies to address national and local development priorities that are climate-smart, environmentally friendly and gender-sensitive, and that address the drivers of displacement (Twigg, and Calderone, 2019). Resilience is a property of these linked social-ecological systems and resilience-building and livelihood approaches in fragile and volatile environments need adaptive management and flexible programming, innovation, experimental learning, projects tailored to fit local contexts and a readiness to pilot new ideas and learn from failure can be key success factors (Baral, 2014).

The links between resilience and livelihoods are clear, a successful livelihood strategy must incorporate mechanisms for coping and bouncing back when difficulties emerge (Twigg and Calderone, 2019; Manyena et al., 2019). When resilience is enhanced, a system is more likely to tolerate disturbance events without collapsing into a qualitatively different state that is controlled by a different set of processes (Adger and Brown, 2009). Since 2015, TFCAs have been viewed as pathways to achieving SDGs, mainly Goals 1 (no poverty), 2 (zero hunger), and 3 (good health and wellbeing). Furthermore, resilience in socio-ecological systems has the added capacity of humans to anticipate change and influence future pathways. Resilience often refers to measures designed to make citizens better able to cope with sudden changes in their surroundings by expanding capabilities and training conducts, reinforcing infrastructure or encouraging networks of mutualism and cooperation (Folke et al., 2003; Vrast and Michelsen, 2016). A resilient socio-ecological system is synonymous with a region that is ecologically, economically, and socially sustainable (Holling and Walker, 2003). Sustainable management of TFCAs is dependent on the availability of an eco-agriculture framework that promotes integrated management of conservation mosaics in terms of food production, environmental protection or the conservation of natural resources, and improved human livelihoods (Chitakira et al., 2022).

1.2 Statement of the problem

Local communities living in the GLTFCA are facing complex and numerous threats that have reached to an extent of undermining their livelihoods. Threats to communities include; water scarcity, grazing land, food scarcity, natural disasters, infectious diseases and population displacement. While communities are becoming weaker and weaker in terms of response, threats have continued to intensify, they have multiplied and have become stronger and very complex in nature. This has now threatened the natural resource base upon which the majority of the rural populations living within and outside the GLTFCA depend upon. Numerous emerging hazards have affected communities within the GLTFCA in various ways resulting in droughts, thus threatening the food security of these local communities. Food chain crisis has led to depletion of grazing land and competition for the few resources remaining has increased. This competition is attributed by some authors such as Kock et al. (2010), de Garine et al. (2017), and Bourgeois et al. (2023) to contribute to the spread of trans- boundary plant pests and diseases such as armyworm, four worm, foot and mouth disease, anthrax, pathogens among other diseases affecting livelihoods. According to Myers and Patz (2009) and Chirozva (2016), the growth of both human and wildlife population in the GLTFCA has exacerbated pressure on the socio-ecological resilience strategies by communities who are now vulnerable and poorer. One of the key challenges is that; the systematic documentation and the understanding of the impacts of these emerging threats remain a pressing and unsolved problem across the GLTFCA. This warrants attention in order for the generation and collation of information needed for strategic decision-making processes, hence this study.

1.3 Study objectives

1.3.1 Overall main objective

The aim of this study was to establish the socio-ecological resilience of local communities in response to emerging threats within the GLTFCA in Chiredzi and Beitbridge districts, south-east Zimbabwe.

1.3.2 Specific objectives

The specific objectives of this study were:

1. To establish trends of present-day threats to community livelihoods in the GLTFCA in the south-eastern part of Zimbabwe,
2. To assess the current status of livelihoods and community perception of threats and the impact of emerging threats on livelihoods in south-eastern Zimbabwe part of the GLTFCA,
3. To analyse the coping mechanisms and strategies used by local communities to emerging threats in south-eastern Zimbabwe part of the GLTFCA, and
4. To examine how initiatives such as TFCAs influence socio - ecological resilience of local communities and develop the socio-ecological resilience mechanisms, pathways and strategies for local communities living within south-eastern Zimbabwe part of the GLTFCA.

1.4 Research questions

1. What are the present-day threats to community livelihoods in south- east Zimbabwe part of the GLTFCA?
2. What is the current status of livelihoods and community perception of threats and the impact of emerging threats on livelihoods in south-east Zimbabwe part of the GLTFCA?
3. What are the coping mechanisms and strategies used by local communities to emerging threats in south-east Zimbabwe part of the GLTFCA?
4. How do initiatives such as TFCAs influence socio-ecological resilience of local communities and develop the socio-ecological resilience mechanisms, pathways and strategies for local communities living within south-east Zimbabwe part of the GLTFCA?

1.5 Theoretical and Conceptual Frameworks

1.5.1 Threats to community livelihoods in the south-east Zimbabwe part of the GLTFCA

The sustainable livelihoods approach improves understanding of the livelihoods of the poor. It ranks factors that constrain or enhance livelihood opportunities and illustrate their relatedness while the resilience model focuses on the capacities of local communities to respond to threats. A livelihood is defined as; adequate stocks and flows of food and cash to meet basic needs, and comprises the capabilities, assets, and activities required for a means of living (Chambers and Conway, 1991; Niehof, 2001; Habib, 2020). The concept of livelihood is about individuals, households or groups making a living while attempting to meet consumption and economic

necessities, copying with uncertainties and responding to new opportunities (Small, 2007; Mutenje et al., 2010). There are numerous threats emerging in the GLTFCA which have continued to undermine livelihoods on the peripheries. It is therefore important to analyse the trends of these threats so as to come up with resilience mechanisms that suit each particular threat so that sustainability is achieved.

1.5.2 Livelihoods and community perceptions of threats in part of the GLTFCA, south-east Zimbabwe

A livelihood is deemed sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities without undermining the natural resource base (Rakodi, 2014; Serrati and Serrati, 2017; Chambers and Conway, 1992). Livelihoods of local communities in the GLTFCA cannot be deemed sustainable as communities are finding it difficult to recover when they have experienced shocks and they also lack the capacity to cope or match with the threats they often encounter. Community perceptions of threats in the GLTFCA have been influenced by their lived experiences.

Sustainable refers to maintenance or enhancement of resources' productivity on a long-term basis (Chambers and Conway, 1991; Kumar et al., 2019) and this has been a core conceptual framework for community development (Nathan and Reddy, 2008; Lew, 2020). The sustainable livelihoods approach is a way of appraising the objectives, scope, and priorities for development activities (Serrat and Serrat, 2017). The livelihoods approach was a response to overtly technical approaches to rural development, which primarily focused on improving the efficiency and productivity of agricultural practices in developing countries (Levine, 2014). It helps formulate development activities that are people-centred, responsive, participatory, dynamic and sustainable.

Vulnerability emerges when human beings must face harmful threats with inadequate capacity to effectively respond. The vulnerability context frames the external environment in which people exist. The classic SLF begins with the vulnerability context. The most usual approach to understanding livelihoods or justifying a livelihoods intervention is to start by addressing the context that shapes them (Levine, 2014; Patria et al., 2019). The original SLF consists of six inter-linked elements namely: vulnerability context, livelihood assets, influence and access, transforming structures and processes, livelihood strategies and livelihood

outcomes (Natarajan et al., 2022). Critical trends as well as shocks and seasonality, over which people have limited or no control have significant influence on people's livelihoods and on the availability of common resource assets (DFID, 2000; Ayele, 2019).

1.5.3 Coping mechanisms and strategies used by local communities to counter emerging threats in south-east Zimbabwe

Resilience is a property of a system that describes the capacity to continue performing critical functions through disruptive events (Marchese et al., 2018). Resilience is defined as the ability to recover from or easily adjust to misfortune or change (Webster 2013; Cooper et al., 2020). Resilience is characterized by four abilities: to plan/prepare, absorb, recover from, and adapt to known and unknown threats. Livelihood systems must adapt to local and regional climatic change (Annarelli and Palombi, 2021). This study developed a simplified and suitable community-based Resilience Matrix combined with a simplified Sustainable Livelihoods Framework which can address threats and challenges encountered by communities living on the edges of the GLTFCA in southeast Zimbabwe. Local communities have to first of all understand the nature of threats and find suitable adaptation strategies that help them to recover and sustain livelihoods.

Communities living in the GLTFCA in south-eastern Zimbabwe have been subjected to frequent disruptive events such as floods, droughts, storms, disease outbreaks among other challenges (Arnaud et al., 2019). Stakeholders operate in a context of vulnerability, within which they have access to certain assets (Mpofu, 2020). According to Kollmair and Gamper (2002); assets gain weight and value through the prevailing social, institutional and organizational environment (policies, institutions and processes). This context decisively shapes the livelihood strategies that are open to people in pursuit of their self-defined beneficial livelihood outcomes. The vulnerability context frames the external environment in which people exist (DFID, 2000).

1.5.4 The socio-ecological resilience mechanisms, pathways and strategies for local communities living within south-east Zimbabwe

The livelihoods approach is primarily concerned with the people and seeks to gain an accurate and realistic understanding of people's strengths (Faiz et al., 2012). Livelihood approaches can generally be defined as programmatic interventions that enhance people's income-generating capacities by increasing their assets through the provision of cash transfers, infrastructure, support services, market expansion activities and training (Udoh et al., 2017; Zakir et al., 2018). The approach is founded on a belief that people require a range of assets to achieve positive livelihood outcomes (Asante et al., 2014). It is crucial to analyse how people endeavour to convert these strengths into positive livelihood outcomes (Tham, 2015). Therefore, the SLF identifies five types of assets or capitals upon which livelihoods are built namely; human capital, social capital, natural capital, physical capital and financial capital (Fahad et al., 2023). The response strategies adopted by local communities in this part of the GLTFCA are not comprehensive enough to match the numerous and complex threats they are encountering. It is from this study that communities are therefore encouraged to adopt new and informed socio-ecological pathways and strategies that enhance their resilience capacity and produce desired livelihoods outcomes. Local communities are exposed to changes in the external environment, if people have better access to assets, they can adopt better livelihood strategies and have more income that enhance their livelihoods outcomes and attain socio-environmental sustainability. combination of shock and vulnerability produces disasters which the communities are failing to address adequately (Peng et al., 2019). The shape representing disasters is tilted depicting that responses (coping mechanisms) are not comprehensive enough to deal with the vagaries of climate change (Ribot, 2017).

1.6 The Conceptual Framework of this Study

The sustainable livelihoods-resilience framework (RESIDAPT model, Figure 1.1) shows resilience and adaptation by local communities in the GLTFCA. The term RESIDAPT is derived from resilience and adaptation. RESIDAPT model draws analogue/inference from a wind bending tree to describe coping mechanisms by community members in relation to changing environments. Human and Wildlife Conflict (HWC), climate change, floods, drought, low levels of income and poor farming methods are listed as some of the common shocks/hazards threatening livelihoods in the GLTFCA south-east Zimbabwe. Despite all these threats, local communities have to respond to these hazards and shocks for their survival and attain sustainable livelihoods using different pathways. Pathways are a series of actions,

defined routes and interaction plans local communities adopt so as to overcome and mitigate the severity of threats to livelihoods. The combination of Pathways, mitigation resilience strategies and coping mechanisms produces a stronger and resilient community which is able to recover from the adversaries of threats and have a positive livelihood outcome that is the Sustainable and Resilient Livelihoods. Pathways also feed direct to livelihoods outcomes and resilience mitigatory strategies as shown by the broken arrows. Resilience and adaptation of local communities to emerging threats is to the protection of biodiversity in the GLTFCA. The protection of biodiversity and the maintenance of livelihoods is achievable through the application of the RESIDAPT conceptual framework in Figure 1.1 which is an integration of all elements critical for adaptation and resilience in order to have sustainability in the GLTFCA.

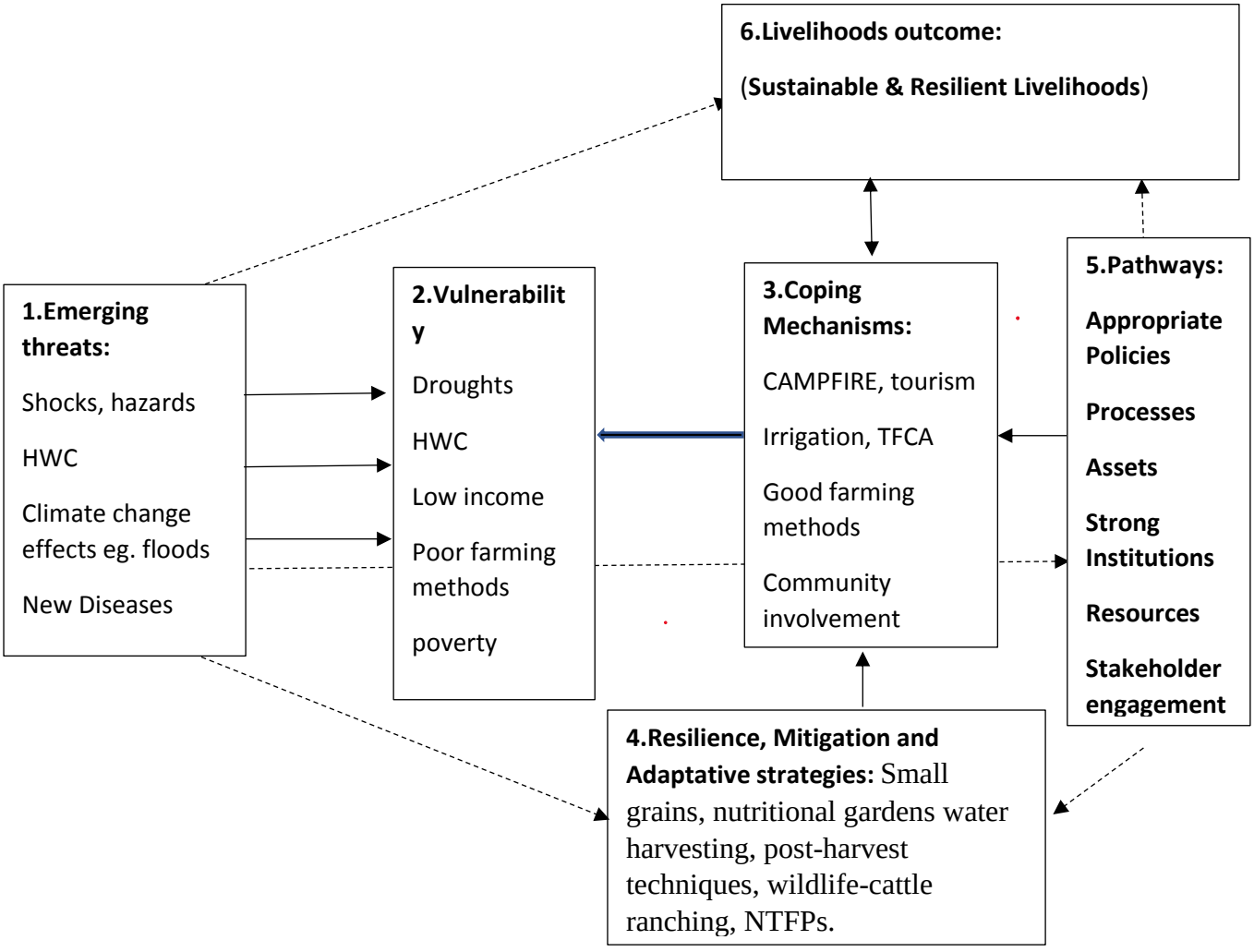

Figure 1.1: Study conceptual framework - the RESIDAPT model showing the emerging threats and response strategies of local communities. Notes: HWC (Human & Wildlife Conflict)-; CAMPFIRE (Communal Area Management Programme for Indigenous Resources)

-; TFCA (Transfrontier Conservation Area) -, NTFPs – Non-Timber Forest Products) Adapted from Holling (1973) and DFID (2000). In the framework, the bigger solid and black arrow represent strength, broken arrow represents inadequacy and less strength, the solid arrow represents direct and high impact influence.

1.7 Justification of the Study

1.7.1 Scientific contributions

The study was able to trace the trends of threats, assessed the vulnerability of local communities and established their capacity and suggested solutions for sustainable livelihoods in the GLTFCA in south-east Zimbabwe. The study therefore, generated new data particularly from an area that has not received much attention by attempting to look at the relative severity of threats and response strategies of local communities in the GLTFCA south-east Zimbabwe. The study is mainly anchored on two theoretical frameworks which are the sustainable livelihoods framework and the resilience-based framework (Plummer and Armitage, 2007; Serrat and Serrat, 2017; Sharma et al.; 2022). Integrating and connecting these two key theoretical frameworks helped to analyse, understand and appreciate the nature, dynamics and impacts of threats to local communities and measure their response capacity levels, and further provides a framework that assist in addressing local communities' challenges in the GLTFCA in south-east Zimbabwe (Faulkner et al., 2020; Fullerton et al., 2021; Tabares et al., 2022).

The study provides local communities with alternative ecological strategies that enhance their capabilities and capacities to match and overcome threats. The study recommends local communities to collectively perceive threats and develop a collective community action plan aimed at addressing and neutralising challenges in a resilience related agency. The study contributed towards developing some community-based livelihoods and resilience strategies that enhance their socio-ecological resilience mechanisms and pathways within and around the GLTFCA (Miller, 2023).

1.7.2 Practical solutions to communities

The resilience of agricultural livelihoods is key for sustainable development and the GLTFCA communities are a good example of communities whose challenges should be assisted by

studies of this nature. (Newll et al., 2019; Li and Zhou, 2022). In order to grow the country's Gross Domestic Product (GDP), it is important to first address the socio-economic challenges local communities encounter. Monitoring and evaluation studies such as the Rural Livelihoods Assessment (RLA) that are carried out annually under Zimbabwe Vulnerability Assessment Committee (ZIMVAC) tend to focus on understanding poverty levels and food security while negating local livelihoods and emerging threats of these local communities and their resilience strategies in the face of adversity (Mavhura et al., 2021). Without information about communities living around the TFCAs; policy makers are faced with challenges when the need to evaluate biodiversity indicators in order to address poverty in areas adjacent to protected areas arises. Without such comparable biodiversity surveys, it is difficult to measure poverty trends.

The study, therefore. contributes in assessing the sustainability of the existing local social and ecological resilience systems within the study area. By identifying the prevalent emerging threats in the GLTFCA and demonstrating how they are undermining livelihoods, the study then helps in coming up with local and applicable social and ecological resilience systems that could be adopted by communities for survival (Kunjuraman, 2022). The study encourages co-existence by examining feasible initiatives which can benefit local communities and help society to understand threats and responding strategies all focused on livelihoods resilience building. TFCAs protect biodiversity, safeguard ecosystem health, and provide an array of ecosystem services, such as fresh drinking water, places in which to relax, storehouses of genetic material, and reservoirs of wild plants and animals that can contribute to species populations in surrounding areas (Hockings et al., 2003; Quinn, 2012). TFCAs also house human communities, providing livelihoods and sustenance (Bourgeois et al., 2023). From this study, the sudden increase in human population and settlement on the edges of protected areas in semi-arid landscapes should not be seen as a threat to biodiversity. Instead, through this study, the growth of human population and expansion of human settlements should be positively viewed as a promotion of the maintenance and preservation of biodiversity that will culminate in the protection of living species within and around the GLTFCA.

There is, therefore, an urgent need for local communities living on the peripheries to build resilience, adopt some coping mechanisms and adapt in the face of these emerging threats so as to achieve both sustainable livelihoods and wildlife conservation (Kupika et al., 2019; Fahad 2023). This study is situated in the bigger and broader comprehensive context of ecology, it sought co–existence between wildlife and communities, it calls for and demands for

focused development, development that enhances the living standard of communities who have found themselves living in the corridors and sharing space with wildlife. It helps in building resilient communities while on the other hand protecting biodiversity in the new configuration of landscapes, emerging threats and the broader livelihood needs to build resilience and sustainability. Very few studies on livelihoods have pursued the agenda of how local communities on the edges can cope with and recover from stress and shocks and the reliance analysis that this would entail (De Haan and Zoomers, 2005). This study also contributes in developing socio-ecological resilience mechanisms, pathways and strategies that would enhance and ensure sustainable livelihoods on the edges while at the same time maintaining biodiversity.

1.8 Limitations of the study

The study focused on a component of Zimbabwe's the GLTFCA, which limits the general application of the study findings to other semi-arid landscapes where people and parks co-exist. The study captures community perceptions to threats in a conservation environment making findings also difficult to generalise when dealing with communities in different settings. There was no secondary data obtained to assist in establishing the trends on livestock killings and this was another limiting factor and future research can also focus on this in order to fill this gap. Notwithstanding, these were not significant enough to impact the overall quality and outputs of this research.

1.9 Thesis outline

This thesis uses the hybrid approach comprised of data chapters which are presented as research manuscripts and the traditional chapter presenation giving a total of seven (7) chapters. Chapter 1 covers the general introduction and literature review of the study, Chapter 2 presents the study area and the brief methodology of the thesis whilst Chapters 3 to 6 present the data from the original research and Chapter 7 presents the general discussion, conclusion and recommendations.

CHAPTER 2

OVERVIEW OF STUDY AREA AND METHODS

2.1 Introduction

This Chapter gives a general description of the study area followed by study design, data collection methods and analysis for the respective objectives are given in respective Chapters.

2.1.1 Description of the study area

Zimbabwe is a landlocked country located in the southern region of Africa with land approximately 390,000 km^2 (Tembani et al., 2014). About 69% of Zimbabwe is covered by forests and rangelands, where forests and woodlands constitute 42% while protected park and other conserved sites is 13% and rangeland account for 14% (Nyoka, 2002; Tembani et al., 2014). The country shares the border with Zambia in the North, Botswana in the West, Republic of South Africa in the South and Mozambique in the North East and South East. Zimbabwe's population is about 16 million and out of this total, about 67, 7% of the entire estimated population live in the rural areas where their source of livelihoods is mainly from the rangelands and forests (ZIMSTAT, 2022; Villholth et al., 2013). As animal population grows, the demand for agricultural land grows and this raises competition for resources; water, land for grazing, agriculture and settlement (Meshesha et al., 2016; Kraham, 2017).

The study was carried out in two districts in southeast Zimbabwe which fall under the GLTFCA which was formally established in 2002 (Chiutsi and Saarinen, 2019), i.e., Beitbridge Rural District and Chiredzi Rural District and focused on communities living adjacent to the GLTFCA. The study area therefore covered Save Valley Conservancy (SVC), Sengwe communal lands in Chiredzi Rural District and Matibe communal lands in Beitbridge Rural District (Fig 2.1). The Sengwe community (Ward 15, Chiredzi Rural) has a total population of 9, 458 (Males 4,270 and females 5,188) and is dominated by the *Tsonga/shangani*, and part of the Save Valley Conservancy (Ward 24) has a total population of 26, 188 (Males 12,754 and females 13,434) and is predominantly occupied by *Ndau* speaking people while the Matibe

communal lands (Ward 1, Beitbridge Rural) has a total population of 5, 272 (Males 2,455 and Females 2, 817) and is dominated by the *Vhenda* speaking people (ZIMSTAT, 2022). The study area is of interest in the sense that the three culturally diverse communities share a common resource which is the GLTFCA. The study area is low lying, less than 600m above sea level, sparsely populated and the average normal rainfall in this region ranges from 400 to 600 mm per annum (FAO 2004). The rainfall pattern for the past 10 years in this area has been quite erratic with some flash floods occurring and temperatures are often very high in summer (Mushawemhuka, 2021; Chanza et al., 2022). Local residents in communities adjacent to Gonarezhou practice a combination of subsistence, cash crop farming and livestock production (Gandiwa, 2012). Soils are often sandy, stony, and infertile on interfluves or heavy, natural fertile black vertisols are that difficult to manage with hand tillage or animal traction. On floodplains along river courses, cropping fields are often concentrated on the more fertile alluvial soils (Giller et al., 2013).

Figure 2.1: Location of the study area, i.e., southeast Zimbabwe within the Great Limpopo TFCA. Source: https://cheetahconservationinitiative.com/the-greater-limpopo-transfrontier-conservation-area-gltfca/

2.2 Methods

2.2.1 Study Design

This study adopted a case study approach so as to capture the historical and present-day threats encountered by local people living within and around the GLTFCA with the broad aim of coming up with the socio-ecological resilience mechanisms and strategies that communities can adopt for survival. The case study approach allows in-depth, multi-faceted explorations of complex issues in their real-life settings (Tassone et al., 2022; Crowe et al., 2011). Case study research method is an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used (Rowley, 2002; Zainal, 2007; Muboko, 2011). The case study design was chosen because it is a robust research method particularly when a holistic, in-depth investigation is required as in this particular study (Zainal 2007; Ebneyamini and Sadeghi Moghadam, 2018). The case study approach is particularly useful to employ when there is a need to obtain an in-depth appreciation of an issue (Yin, 2003), event or phenomenon of interest, in its natural real-life context (Crowe et al., 2011). Case study research scientifically investigates into a real-life phenomenon in-depth and within its environmental context (Schoch, 2020). This research design aims at specifying gaps or holes in existing theories with the ultimate goal of advancing theoretical explanations (Yin, 2014; Ridder, 2016). The approach helps in explaining both the process and the outcome of a phenomenon through complete observation, reconstruction and analysis of the cases under investigation (Aithal, 2017; Schoch, 2020).

2.2.2 Data collection and analysis

A preliminary desk study was conducted and initial site visits to the study areas were carried out to obtain insight on the scientific problem of the research. Table 2.1 shows the sampled population drawn from three Wards (Wards 15 and 24 of Chiredzi district and Ward 1 of Beitbridge district with a total of 15 villages and 676 participants). The sample can sufficiently be regarded as a full representation of the local communities under study as the study used a sample size of 10–20 % per strata, village or theme. Each sample size was adequate for a phenomenon under study and the data collected was robust, diverse, valid and captured the

depth and nuances of the issues studied and this demonstrated data validity. All critical issues and insights were gathered in thematic areas (Hennink and Kaiser, 2022). Thematic saturation approach was then adopted to make sure that all issues relevant to the study are focused on during the data collection process (Braun and Clarke 2021). Ghaderi et al., 2023 used similar approach when establishing community participation and behaviour towards conservation in Touran National Park (TNP). Permission to carry out this case study was granted by the three Chiefs in the respective jurisdictions namely, Sengwe, Gudo and Matibe. Data were collected through semi-structured interviews, self-administered questionnaires and focus group discussions. Field data collection was conducted from 2017 to 2021 through key informant interviews selected through purposive sampling and focus group discussions (FGDs) The FGD questions were drafted so that they sufficiently incorporated existing demographic characteristics, feelings and emotions of respondents (Appendix 1). In addition, participants were assured of the confidentiality of information they provided and advised that it was strictly for academic purposes. Respondents were given the liberty to withdraw from participating at any given point during the proceeding without implications. An ethical clearance letter from Chinhoyi University ethics committee was shared with local authorities and local leadership. In addition, questionnaires were administered per village in sampled Wards. The data collection method used in each specific Ward, the total number of villages, the number of participants and gender are given in Table 2.1.

Table 2.1: Sampled population of research respondents and data collection methods used

Data collection method	Ward Number	Number of Villages	Respondents/ participants		
			Males	Females	Total
Semi-structured interview	24	-	10	10	20
	15	5	30	46	76
	15 1	5 5	- 7	- 3	- 10
Focus Group Discussion	24	-	51	40	91
	15	5	37	28	65
	15 1	5 5	50 34	63 76	113 110
Questionnaires (self-administered)	24	5	35	45	80
	15	-	3	8	11
	15 1	- 5	10 35	10 45	20 80
Grand total	3	15	302	374	676

This study opted for a mixed methods approach which incorporates quantitative and qualitative data processing. To establish the historical and present-day threats to livelihoods and communities in the study area; structured interviews were used targeting community leaders such as chiefs, household heads, Ward councillors, and wildlife and conservation institutions. A set of predetermined questions were given to selected groups and individuals for in-depth interviews and in these questions aimed stakeholder understanding of TFCA dynamics and motivations and the respective results presented.

The observation method was used to assess the impact of emerging threats on food production in the areas under study with some structured questionnaires targeting selected groups, individuals and relevant institutions and government officials (Stacey et al., 2021). Both closed and open-ended questions were used to elicit discussions and responses and evaluate community perceptions on emerging threats as well as assess how communities have developed coping strategies in building resilience. Guided questionnaires were administered to sampled households to determine the current status of livelihood perceptions on emerging threats. Sampled households in each of the 10 villages that responded to the questions were given sufficient time to read and understand the questions and then write their answers in the provided spaces. A combo chart was used to show the current status of livelihoods and community perception to threats for each sampled village in the Ward.

To understand coping mechanisms and strategies to emerging threats by local communities, this study made use of focus group discussions (FGDs) which were held in each village in the Wards. A literature survey coupled with structured observation that selects important data and relevant topics was used together with participant observation to verify statements given by informants regarding local community adaptation. Targeted interviews that assure and allow participants' freedom to share their own perspectives and experiences and respecting the importance of their inputs regarding wildlife conservation initiatives were conducted. In targeted research interviews, the researcher will be aiming at interviewing a special group of people or individuals with special set of skills or characteristics which are important and help the researcher to obtain specific information about a phenomenon. They are different from general interviews which can be responded to by anyone in the study area as long as the respondent is a participant (Young et al., 2018).

Case studies on selected CAMPFIRE initiatives within the five villages of Ward 1, Beitbridge rural district were carried out to make informed observations and examine the contextual trends of emerging threats therein. Intensive investigations on the 5 selected CAMPFIRE areas were carried out to obtain details of how communities benefit from these conservation initiatives and their views on poverty as a major threat in the study area. A line chart was used to show how each TFCA initiative influences socio-ecological resilience among the Wards sampled.

Transfrontier Conservation Areas are critical biodiversity areas for the conservation and sustainable use of biological and cultural resources while promoting regional peace,

cooperation, and socio-economic development (Chitakira et al., 2022). A possible way forward is to consider environmental justice as a central element of the two pillars of the TFCA concept, i.e., nature conservation and socio-economic development (Murungweni et al., 2014) (Bourgeois et al., 2023). Farming systems which remain the pillars of the economic and social structure of these communities and rely on indigenous knowledge systems, face the risk of change and disappearance through external and global forces and changes (Bourgeois et al., 2023). The survey highlighted local initiatives and mechanisms, pathways and socio-ecological strategies developed by communities to build resilience in the face of threats. It is important for individual Wards and districts to develop their own positions as resilience strategies and mechanisms differ from location to location. Focus group discussions were in each Ward and questions on how communities develop resilience were asked and comparisons made between areas and recommendations made. Charts and bar graphs were used to show how different villages have developed resilience pathways and strategies.

The mixed approach research methods adopted in this study combines both elements of qualitative and qualitative research. The integration of both methods helps in giving detailed insights and enhances validity and credibility of the study offering a deeper data set that can capture the diversity and complexity of the research phenomenon. The mixed approach also allows for exploration and explanation, thus enhancing the interpretation or understanding of the study by addressing gaps of one approach with the strength of another. Various authors have used this mixed approach method in their studies for example Ntuli et al. (2022) in their study on "*institutions and environmental resource extraction within local communities in Mozambique*" effectively used this mixed approach method. Wilson and Antony (2023) also made use of this approach in a research titled "*Opportunities and Barriers to Monitoring and evaluating management Effectiveness in Protected Areas within the Kruger to Canyons Biosphere Region, South Africa.*

Thematic content analysis was used to establish the nature of park-people relationships based on the focus group discussions and key informant interviews in Chapter 3. Thematic analysis is a widely accepted qualitative data analysis approach. Previous studies including KC (2021) used thematic analysis in examining a community-based homestay in the buffer zone community of Bardia National Park (BNP), Nepal. Socio-demographic data were descriptively analysed whilst content analysis was used to analyse qualitative data. Responses from key informants were placed in two categories: positive and negative and analysed using methods and relevant software packages (Caufield, 2019). In Chapter 4, secondary quantitative data on

livestock and crop yield were analysed using simple regression analysis in Microsoft Office Excel. Questionnaires from key informants were checked for completeness before being coded and Microsoft Excel was used to analyse the perceptions of farmers in relation to climate change and variability. In Chapter 5, a thematic content analysis was used to analyse data recorded from semi-structured interviews and cross tabulation method was used to analyse the association and frequency of variables

In Chapter 6, descriptive statistics were used to summarize the nature of the focus group discussion and interview response data. Data on local livelihoods and benefits in the 5 villages in the Ward were presented and analysed by showing the patterns of revenue received over the ten-year period between 2011 and 2021. The responses were recorded transcribed into English language and exported into a Microsoft Excel database for processing.

2.3. Conclusion

This Chapter presented an outline of the study area and details of the mixed research methods that enabled the researcher to address the four specific objectives stipulated in this study.

CHAPTER 3

Park-People Relationships and Local Community Perceptions on Wildlife Conservation in the Sengwe Area, Chiredzi District, Zimbabwe

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Abstract

This study assesses park-people relationships and local community perceptions regarding wildlife conservation in the Sengwe area, a community within the Great Limpopo Transfrontier Conservation Area (GLTFCA), Chiredzi District, near the Mozambican border in southeast Zimbabwe. The study examines the existence of perceived and actual conflicts between local communities and conservation (protected) area management. These conflicts mostly arise from an unshared vision of protected areas and lack of effective community engagement in conservation projects. Most Sengwe villagers report that they were denied access to, and control of, local resources, and were sidelined from wildlife projects, including employment opportunities and tourism promotion. This was also the case with the state-driven Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) projects. Data were collected in September 2021 and October 2021 with five (5) focus group discussions held in 5 villages, semi-structured interviews were conducted with seventy-six (76) community members and key informant interview held with eleven (11) sampled key informants. Most villagers believe that the land in the protected area should be used for agricultural production as land-based wildlife conservation is failing to enhance their rural livelihoods. Lack of participation is a key driver that resulted in the local community members having negative perceptions towards wildlife conservation and this has caused the encroachment of people into

the park. Consistent with similar studies, we recommend that local community participation and engagement in conservation-based projects and decision-making processes be promoted and enhanced in rural Zimbabwe through involvement of locals to ensure a symbiotic relationship in terms of human livelihoods and biodiversity conservation benefits.

Key Words: *Biodiversity, Chiredzi, conservation, GLTFCA, wildlife-human conflict*

3.1 Introduction

According to the International Union for Conservation of Nature (IUCN) parks covered 11.5% of the earth's land surface by 2005, compared to 3% in 1962 (IUCN, 2005).' This indicates a significant increase in protected area land and seascape across the globe. In addition, national parks have become the centre-piece of international conservation strategies, especially in developing countries (Mombeshora and Le Bel, 2009). Over the last few decades, the establishment of protected areas has constituted the principal system supporting conservation strategies (Ruiz et al., 2010). The eastern and southern African region in particular is one of the world's most biodiversity-rich areas consisting of many protected and conserved areas managed by a wide range of stakeholders, such as governments, nongovernmental organisations (NGOs), local communities, the private sector, and partnerships among these entities (ESARO, 2020). In Zimbabwe, about 13.7% of the total area of the country is set aside as state protected areas for wildlife. These areas are administered by the Zimbabwe Parks and Wildlife Management Authority (ZPWLMA), and include National Parks (53.1%) of the total protected area), Safari Areas (37.2%), Recreational Parks (6.9%), Sanctuaries (2.6%) and Botanical Reserves and Gardens (0.2%) (Monks, 2008).

However, in many countries, park authorities have often directly displaced rural communities and curtailed their access to natural resources that they traditionally used to sustain themselves from (Schulz, 2007; Skonhoft, 2007). For example, the Shangane people of Chiredzi, Zimbabwe, where this study took place, have experienced repeated shocks to their lives because of land acquisitions and removals arising from conservation projects (Chaumba, 2006). Since the colonial era, these people have had their citizenry compromised and their livelihoods disrupted through imposed conservation initiatives and forced relocations (Ndlovu, 2022). In this context, protected areas can exist with people through fractious, uneasy and conflict-ridden relationships, especially in cases where the establishment of the protected area

alienated wildlife from the people, hence transforming a valuable natural commodity into a threat and a nuisance to the local people (Negendra, 2010; Johannesen, 2005).

To better understand the relationships between protected areas and local communities, it is important to obtain knowledge on protected area management, local peoples' experiences and perceptions about that relationship (Gandiwa et al., 2014; Jalilova and Vacik, 2012). Though conversation areas, or PAs are mostly viewed in biological or ecological terms, their relationship to local communities is crucial including with reference to human welfare (Tomicevic et al., 2010). We examine this through a case study of Sengwe in Chiredzi District, a community within the Great Limpopo Transfrontier Conservation Area (GLTFCA).

3.2 Context

The livelihoods of most rural people in southern Africa are dependent on the use of natural resources and ecosystem-centred goods and services (Lucrezi etal., 2019; Everard and Everard, 2020). It is therefore difficult to separate park resources from people and people from parks, especially in situations where the adjacent local communities were displaced to pave way for the establishment of a PA (Katerere et al., 2001; Smith et al., 2021). The relationship between PA management and local communities, including in Transfrontier Conservation Areas (TFCAs), is shaped by many factors including local community views about their environment (Gandiwa et al., 2014; Mutanga et al., 2021). These views are informed by several issues which include the history of the PA, the level of community engagement and participation in conservation decision-making and nature-based economic projects (Mutanga et al., 2015; Mudzengi et al., 2021; Gordon et al., 2021). It is well documented that most PA developments entail displacements, dispossession, and subsequent lack or loss of access to resources for local communities (Cumming and Allen, 2017; Mandudzo, 2019; Vengesai and Schmidt, 2018). Displaced people are exposed to a variety of impoverishment risks and this stokes up animosity towards PAs, particularly where the people concerned strongly feel that they should be part of it. While the expansion in the network of PAs has enabled conservation of biodiversity and habitats, the establishment of most of these PAs has often ignored the interests of local and displaced communities (Mombeshora and Le Bel, 2009; Ndhlovu, 2022).

The character and siting of PA boundaries can have embedded ecological (Andrade and Rhodes, 2012), social, and economic impacts (Stone and Nyaupane, 2018; Mathevet et al., 2016). These impacts include issues relating to human-wildlife conflict, competing claims for

resources, the flow of ecosystem goods and services, the dynamics of source sink systems and a full range of rural development and health issues (Cumming, 2016). Conflicts are particularly inevitable and common near protected area boundaries because of societal and ecological needs that diverge and converge (Rechciński, et al., 2019, Thapa, 2010; Pérez and Pacheco, 2006). The divergent social and ecological goals of the land and conservation sectors result in competition if not conflicts, which often lead to delays in the process of resolving land and resource issues (Kepe et al., 2005; Hoole and Berkes, 2010). Conflicts, such as human-wildlife conflict, affect relations between park management and communities, and this has even negatively influenced local community perceptions towards PAs and TFCAs (Ramutsindela, 2009). Consideration of perceptions and local community-PA interfaces thus becomes more important as conservation activities increasingly depend on the actions of interested groups of people (Mutanga et al., 2017, de Groot and de Groot, 2009).

Concerns over the place of people in PAs have been the main source of conservation conflicts. There have been growing concerns mainly regarding four major issues. First, when the unilateral establishment of such PAs take place, they will be often associated with forceful evictions of indigenous people from their traditional lands (Neumann, 2002; Walpole and Goodwin, 2001; Bobo and Weladji, 2011). Secondly, there exists the denial of access to resources in such PAs (land, wildlife, and forest products) upon which local communities depend for subsistence needs, as well as criminalisation of their practices when accessing such resources (Bobo and Weladji, 2011). Thirdly, there is wildlife damage such as crop damage or costs inflicted by crop raiders and dangerous wild animals, and wildlife attacks on livestock and humans (Kepe et al., 2001; Madden, 2004). The fourth point relates to the unknown 'place' of people in those PAs (Adams and Hutton, 2007). More specifically, it is not entirely clear whether and how local people should be involved in the governance of PAs, and hence their so-called 'place' in conservation remains unclear if not unknown (Thapa, 2010; Bobo andWeladji, 2011).

Such concerns lead to thoughts on how to build and sustain conducive relationships with local communities, particularly those living adjacent to protected areas while also addressing their concerns over PAs. The developing consensus is that, while PAs are recognised as essential for maintaining biodiversity, their survival, particularly in the global South, depends on whether they address these human needs and concerns (Hammill and Brown, 2008; Madden, 2004; Madden and McQuinn, 2014). To address these, the conservation and socio-economic activities currently promoted by PAs and the TFCA concept encourage

the formation of alliances between different stakeholders (for example, governments, the private sector, local communities, and non-governmental organisations) as a means of developing a fuller consensus and harnessing social capital to promote sustainable land use, enhancing biodiversity conservation, alleviating poverty in rural areas and minimising conflicts (Muntali, 2007).

Although studies on park-people relationships and community perceptions on wildlife are well documented (Allendorf et al., 2019; Matseketsa et al., 2018; Bhatasara et al., 2013) these relationships and perceptions differ from place to place as they are area-specific and shaped by prevailing circumstances. This is the case with the Sengwe community where there is a dearth of information on the type of relationships existing between parks and adjacent community members and on local community perceptions of wildlife conservation (Whande and Suich, 2012). Previous studies in the area regarding wildlife covered issues focusing on economic benefits, tourism, and wildlife conservation (Chirozva, 2016; Chiutsi & Saarinen, 2017). In this light, the objectives of the study were to: (i) determine the nature of park - people relationships in Ward 15 Sengwe Communal Lands, which forms part of the Great Limpopo Transfrontier Conservation Area (GLTFCA), and (ii) assess local community perceptions of wildlife conservation within the TFCA framework.

3.3 Study Area

The area of study, Sengwe Ward 15, is located in Chiredzi District in southeast Zimbabwe and forms part of the GLTFCA (see Figure 3.1). This area is found at relatively low altitude, that is, below 900 metres above sea level for the greater part, with a few areas ranging between 400–600 metres above sea level (Gandiwa and Kativu, 2009). It is characterised by a hot climate and experiences mean annual temperatures averaging between 25ºC and 32ºC, and rarely do temperatures drop below freezing point even in winter (Andersson et al., 2013). The landscape is generally dry with a short rainy season spanning from November to March, with mean annual rainfall being about 500mm per annum (Tagutanazvo and Bowora, 2019). The study area is located adjacent to the Gonarezhou National Park, the second largest park after Hwange National Park in Zimbabwe. There are no longer barriers separating the protected areas from the adjacent communal land as veterinary fences previously erected along some sections of the national park for foot and mouth disease control are now extensively damaged by wildlife and humans (Andersson et al., 2013). From the last human population and housing

census of 2022, Ward 15 had 55 villages with a population of 9,458 people with a total household of 2064 (ZimStat, 2022). The people in the study area who are predominantly Shangane became strategic crop producers specialising mainly in drought-resistant crops, such as sorghum (*mabele*), millet varieties (such as *mahuvu* and *mpowo*), and cassava. They, however, also excel in maize (*xifake*), sweet potatoes (*muhlate*), and groundnuts (*timanga*) production which they adapted to the extremely hot weather and low annual precipitation (Tavuyanago, 2017).

Figure 3.1: The Study Site (Ward 15, Sengwe Communal Lands). Source: Chirozva (2013)

3.4. Study Design

A stratified random design was adopted, with the Ward 15 community divided into five strata based on direction (north, south, east, west, and central). Despite the smaller standard errors in this design, stratified random sampling is generally more flexible for augmenting an existing sample and provide precise regional estimates. Similar studies, e.g., Niemiec et al. (2022) made use of stratified random design when they documented rapid changes in public perception toward a conservation initiative in Colorado. Stratified random design is a method of sampling that involves the division of a population into smaller sub-groups known as strata, the strata are formed based on members' shared attributes or characteristics, such as income or education attainment. The method gives a sample population that best represents the entire population being studied. Stratified random design is a widely used sampling technique for approximate query processing and provides the flexibility to emphasise some strata over others by controlling the allocation of sample sizes (Nguyen et al., 2021). The method was used in this study so as to ensure that there was wide coverage of the Ward, which makes it acceptable to generalise findings for the entire ward.

The Ward centre (community hall) was used to determine direction, given that it is the central point in the Ward. There are 55 villages in the Ward and each stratum had an average of 11 villages. From each stratum, one village was selected through a simple random sampling method. This was used so that all villages have an equal chance of being selected. Permission was sought from the Chiredzi Rural District Council (which is the responsible authority) to carry out a survey in Ward 15. Further, permission was sought from traditional leaders to carry out a survey in their respective villages.

3.5. Data Collection

A mixed method data collection method involving both qualitative and quantitative techniques was adopted. In this study, tree methods were used to collect data. Firstly, five (5) focus group discussions were held with community members in five villages with a total of 65 community members (37 females and 28 males) participating in the discussions (see Table 3.1). The participants were selected through the convenient sampling method and participation was voluntary. Under this method, the researcher includes those participants who are easy or

convenient to approach and the technique is useful where the target population is defined in terms of very broad categories (Alvi, 2016). This sampling method was used also because it saves time and is an affordable way of gathering data (Taherdoost, 2016). The community leaders assisted the researchers in organising and mobilising people to attend the focus group discussions. One of the researchers facilitated conversation during the focus group discussions and this helped in ensuring that all members in all the focus group discussions were given equal opportunities to participate. During focus group discussions, some questions asked related to: the people's views regarding wildlife conservation, the benefits they get from wildlife conservation, the challenges they face in relation to wildlife conservation, and recommendations about what needs to be done to address the challenges. In two villages, the services of a local interpreter were sought because most people spoke the Shangaan language while Shona (the language of the researchers) was spoken in the other villages. The interpreter helped in translating responses by the locals who were responding in their local Shangaan language (Llewellyn and Lee, 2014).

Table 3.1: Composition of Focus Group Discussants

Village	**Participants**			**Total**
	Traditional leaders (Village Heads)	**Village Development Committee (VIDCO) Members**	**Ordinary community members**	
Mugiviza	1	3	9	13
Gwaivhi	1	2	9	11
Samu	1	4	7	12
Chishinya	1	3	10	14
Chigalo	1	2	12	15
Total	5	14	47	65

Secondly, semi-structured interviews were held with 76 community members (30 males and 46 females) who were selected through the convenient sampling method. Convenient sampling for interviews was used in this study after considering a number of logistical factors which included accessibility, the geographical proximity of respondents, their availability at a given time and also their willingness to participate in the study following (Etikan et al., 2016). The researchers held semi-structured interviews with participants who were readily available and willing to participate. The participants were met in their homesteads. Semi-structured interviews were advantageous as they ensured a high rate of response and helped in probing respondents for more information. An average of 15 minutes was taken for each interview session. Table 3.2 shows the demographics (sex, age range and education level) of the interviewees.

Table 3.2: Socio-Demographic Profiles of the Interviewees

Variable	Description	Number (%)
Sex	Male	30 (39)
	Female	46 (61)
Age (years)	20-29	5 (7)
	30-39	11 (14)
	40-49	28 (37)
	50-59	22 (29)
	60+	10 (13)
Education	None	9 (12)
	Primary	27 (35)
	ZJC	4 (5)
	Ordinary	26 (34)
	Advanced	0 (0)
	Vocational	4 (5)
	Tertiary	6 (9)
Total (Participants)		76 (100)

Thirdly, key informant interviews were held with 11 key informants (3 males and 8 females) drawn from Malipati Development Trust, Gonarezhou National Park, Chiredzi Rural District Council, Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement, Ministry of Local Government, Public Works and National Housing, and safari operators. The key informants were purposively selected, and an interview guide was used for data collection. Purposive sampling is a form of non-probability sampling in which decisions concerning the individuals to be included in the sample are taken by the researcher, based upon a variety of criteria which may include specialist knowledge of the research issue, or capacity and

willingness to participate in the research (Jupp, 2006). The key informants were selected based on their knowledge, work experience and position held in the place of employment.

3.6 Data Analysis

Descriptive statistics and thematic content analysis were used to analyse data. Thematic content analysis provides a descriptive presentation of qualitative data and portrays the thematic content in interview transcripts (or other texts) by identifying common themes in the texts provided for analysis (Anderson, 2007). To determine the nature of people-park relationships in Ward 15, each of the responses from semi-structured interviews regarding the participants' relationship with Parks Management was recorded under one of the five categories: very bad, bad, fair, good, very good. Microsoft Excel was used to compute the responses per category. Data were summarised using descriptive statistics, where frequencies were used to determine the scores in each category. Thematic content analysis was used as well to establish the nature of park-people relationships based on the focus group discussions and key informant interviews. In the case of focus group discussions, negative and positive perceptions and relations for community members were identified. Negative perceptions/experiences refer to those views against the idea of wildlife conservation, while positive perceptions/experiences involve desirable views, outcomes, and benefits regarding wildlife conservation for community members. Responses from key informants were analysed using thematic content analysis and were placed in two categories: positive and negative.

3.7. Results

3.7.1 Nature of People-Park Relationships in the GLTFCA

About 51% (*n = 39*) of the 76 interviewed respondents rated their relationship with the Parks Management as bad, 24% (*n = 18*) rated the relationship as very bad, while 15% (*n = 12*) rated their relationship as fair. Only 7% *(n = 5*) of the respondents rated the relationship as good, while just 3% (*n = 2*) rated the relationship as very good. From the results, it is clear that most people regard their relationship with parks management in a negative way. In focus group discussions, most participants also viewed their relationship with parks management negatively. During a focus group discussion, one of the traditional leaders said the following:

(Respondent 1) *We do not harvest anything from our fields because elephants destroy our crops. We have suffered too much, and we do not have food because elephants destroy our crop. There is no peace here.*

Only a very small minority of the respondents, including key informants, viewed their relationship with Parks Management to be positive. One of the key informants said,

(Respondent 2) *We have a good working relationship with the parks - management. It's unfortunate that our local community members do not appreciate the efforts of parks management.*

3.7.2 Local Community Perceptions of Wildlife Conservation

The photographs appearing under Figure 3.2 demonstrate the contempt that villagers have towards the park and its management. The communities have encroached into the park clearing vegetation for settlement and land preparation. There is a broken-down fence as domesticated animals cross into the park searching for pastures. Generally, the community members had negative perceptions towards wildlife conservation and these were categorised into five themes: limited participation, loss of livelihoods, loss of productive land, elitism, and no employment quota.

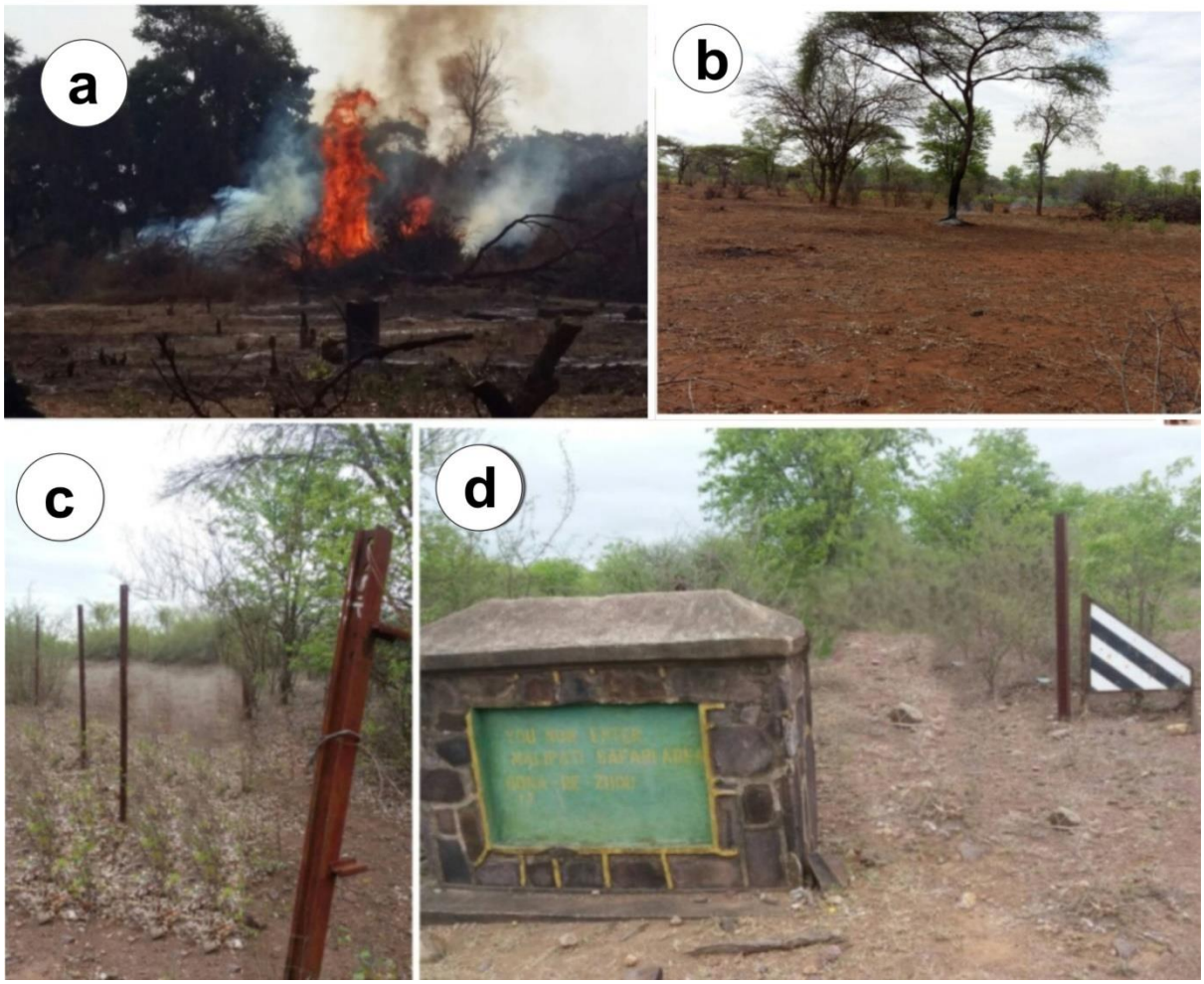

Figure 3.2: Environmental and Infrastructural Degradation at the border of Sengwe Communities and Protected Areas (A&B: Land adjacent to the protected area being cleared for farming. C & D: A removed fence separating protected area and communities). Photo Credits: Authors

About 88% (n = 124) of the interview respondents and focus group discussants combined reported that they were not allowed to participate in any issues concerning wildlife conservation. One of the participants pointed out this during the interview:

(Interviewee 1) *We are not involved in planning and decision making. We are not told anything and no one listens to us. We do not have a platform to raise our concerns.*

In relation to loss of productive land, the majority (90%; n = 127) of these participants pointed out that they viewed wildlife conservation in a negative way as they think it is a waste of productive land. One of the interviewees said,

(Interviewee 2) *This land being used for wildlife conservation could have been used for growing crops. Look, we have small pieces of land and the bigger pieces of land are being used for wildlife conservation. How can they prioritise animals over human beings?*

Elitism is one of the negative perceptions expressed by participants. In this study, 70% (n =99) pointed out that wildlife conservation only benefited the elite (i.e., that only powerful people benefit, and ordinary people are sidelined). One of the community members said the following:

(Interviewee 3) *We do not benefit anything from wildlife conservancy. It only benefits the owners of the wildlife conservancy.*

Another participant said,

(Interviewee 4*) This* [wildlife conservation] *is for the rich; we are sidelined. They don't regard us as equal human beings.*

Related to responses on positive perceptions, four themes were identified: promotion of tourism, cultural diversity, employment creation and CAMPFIRE projects. In relation to employment creation, only 18% (n = 14) of the interviewed community participants mentioned that wildlife conservancy creates employment for local people. However, 64% (n=7) of the key informants pointed out that employment creation is one of the benefits of wildlife conservancy. It was found out that there is no quota system in relation to employment of local people in the Gonarezhou Conservation Trust. Gonarezhou National Park is now called Gonarezhou Conservation Trust after a public-private partnership was established. Further, the results show that the community in Ward 15 Sengwe area had some positive perceptions on Gonarezhou Conservation Trust (GCT) initiatives, with the promotion of tourism being the most important at 70% (n = 99). During a focus group discussion, one of the community members said,

(Respondent 3*) What we can only see as a benefit of this* [wildlife conservancy] *is the idea of tourism. We always see white people visiting this area and I think it's good to have visitors coming to our area. Some of the tourists buy some local products, and they pay in United States Dollars.*

In relation to tourism, it was also found out that cultural sharing is one of the benefits of wildlife conservation as the Sengwe people through Community Conservation Development Initiative (CCDI) usually host some cultural festival with communities from neighboring Mozambique and South Africa exchanging notes and experiences, sharing transboundary challenges and success stories of living on the boundaries of Protected Areas. Having local CAMPFIRE

projects was one of the benefits of wildlife conservation, and it was mentioned by 28% (n=21) of the community members during interviews. CAMPFIRE, or the Community-Based Natural Resource Management Programme, is a long-term programmatic approach to rural development anchored on the assumption that involving local people in economic benefits and management of wildlife will help ensure the sustainability of wildlife resources and their habitat and, in turn, enhance rural livelihoods. CAMPFIRE projects have greatly assisted in educating communities and have also helped in the management of human-wildlife conflict (Taylor, 2009; Shereni and Saarinen, 2021).

A community member during the interview stated that CAMPFIRE projects' construction of classroom blocks and clinics benefited the local community members. However, this community member pointed out that, although CAMPFIRE projects are good, there is a lack of transparency. The community member said,

When CAMPFIRE projects started in this area, it was really good, and everything was transparent. As community members, we were involved in all the stages, but this is no longer the same situation. We do not know how much is allocated to our area. Everything is controlled by people in authority.

This has been a common criticism of CAMPFIRE projects in the study area.

3.8 Discussion

This study established that the relationship between local communities and park management was generally bad. This was because local communities perceived that they were sidelined and did not benefit from the wildlife conservancy. Communities were displaced from the park to pave way for the creation of wildlife conservation (Chirozva, 2016). The creation of Protected Areas (such as Gonarezhou National Park) since the 1930s resulted in the displacement of Shangaan communities who were at the time located in some parts of the park's area (Musakwa et al., 2020). Conflicts in Sengwe arise when communities search for scarce resources in the protected areas. Some of the resources include food, grazing pastures, water and wildlife. Elephants (*Loxodonta africana*) have a tendency of moving from the park to villages raiding crops grown by communities on the edges of the park. Tavuyanago (2017) likewise reports a sour relationship between the community members and the Parks Management which is detrimental to the success of conservation and other initiatives like the GLTFCA. Livestock

rearing has also been made difficult by the prevalence of carnivores such as lions, leopards and hyenas that frequently roam adjacent villages (Matanzima and Marowa, 2022).

The local community perceptions towards wildlife conservation have become so negative that just a few key informants were able to speak of the positive impacts of wildlife conservation in Ward 15 in any meaningful way. Their positive conceptions go contrary to the daily experiences of villagers, which affects perceptions of Gonarezhou Conservation Trust by locals in the Sengwe area (Anderson et al., 2013). Any benefits of living on the edge of the protected area in Sengwe Ward 15 are simply outweighed by the costs of human and wildlife conflict, the spread of livestock diseases and the making of a zone of competing claims and opportunities (Cumming et al., 2017; Gandiwa et al., 2013). Human-wildlife conflict in the area has worsened in the contemporary period as a result of the growing human population and the increase in numbers of wild animals (Matanzima and Marowa, 2022).

Conflict is often at the heart of protected area and local community establishment. In part, this is because of clumsy top-down approaches by states that fail to appreciate, or work with, local practices and interests (Walpole and Goodwin, 2001; West et al., 2006). Inclusive participation is increasingly seen as a mechanism to promote integration of protected areas and local stakeholders, minimising existing conflicts and negative impacts (Cumming et al., 2017; Mannigel, 2008). As Stankey and Shindler (2006) point out, the people- park relationship is critical to achieve conservation objectives because the future of PAs depends on the cooperation and support of local communities. As such, building and sustaining good relationships with local communities has become an important consideration for Protected Areas management. In this regard, if the objectives of the Great Limpopo Transfrontier Conservation Areas are to be attained, the Parks Management should strive to ensure that the community members are regarded as one of the key stakeholders.

Our findings about the bad relationship between the park and communities in Ward 15 echo well with the findings of others. For instance, the study by Ramutsindela (2009) shows that local communities do not have direct access to Protected Area resources, and it calls for a deeper understanding of relationships between local communities and TFCAs and the outcomes of those relationships, beyond statistical assessment of revenue from ecotourism in TFCAs. Further, our study findings resonate fully with the conclusion of Mutanga et al. (2015) that participatory approaches and collaboration between protected area staff and communities promote positive PAs– community relationships. Our results also corroborate those of Bennet

and Dearden (2013) who carried out an almost similar study in Thailand which captures park-people relationships. Bennet and Dearden (2013) concluded that, the relationship between parks management and local communities was fractured and that this would undermine the success of conservation initiatives in transboundary conservation areas. This is consistent with previous research on PAs in southern Africa (Cumming et al., 2017). It is clear therefore that, at least in theory, understanding the perceptions of local communities can help predict their likely responses to a new policy or conservation programme before it is implemented (Gelcich et al., 2005), so as to ensure more conducive and mutually-beneficial relationships between parks and people.

3.9 Conclusion and Recommendations

Most people in Ward 15 Sengwe Communal Lands regard their relationship with parks management in a negative way as they see no strong justifiable reasons for co-existence with protected areas. A minority of the respondents including some key informants and those specifically in leadership positions viewed their relationship with parks management to be positive. Lack of participation was recorded as a key driver that resulted in the local community members having negative perceptions towards wildlife conservation and this has caused the encroachment of people into the park leading to conservation-centred conflicts. As well, few local people are employed in the Park, CAMPFIRE projects benefit a limited number of local elites, and Sengwe people view wildlife conservation as a wastage of land that could have been utilised for crop cultivation for human consumption. While conflicting relationships between the local community and protected area management exist, co-existence if not harmonious relationships are possible. In this context, this study recommends the following: (i) enhanced involvement and consistent engagement of local communities in establishing and managing wildlife conservation projects so as to improve their livelihoods and promote conservation within the edges of protected areas; and (ii) the development of strategic multi-sectoral partnerships between protected areas and communities for sustainable biodiversity and effective management of wildlife by all stakeholders.

CHAPTER 4

Climate variability impacts and coping strategies in Malipati Communal Area, Chiredzi District, southeast Zimbabwe

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Abstract

The spatial and temporal impacts and coping strategies to climate variability vary across human communities. Focusing on Malipati Communal Area in Chiredzi District, southeast Zimbabwe, and the study analysed the impacts of climate variability and coping strategies adopted by local communities. Data were collected between May and June 2018 in five (5) villages in Ward 15 of Malipati Communal Area where a total of 133 participants were involved through focus group discussions, questionnaires and key informant interviews. The results showed an increase in livestock mortality and in contrast no significant changes in crop yields. Further, the study established that local communities have negative perceptions towards the adaptive coping strategies to climate change especially on the production of small grains. Although production of small grains was being promoted, community members have not fully embraced it due to negative attitude towards small grain production. There is need for other innovative strategies to enable communities to continuously buffer the impacts of climate variability inclusive of diversifying economic activities.

Key Words: *Adaptation, Climate Change, Communities, Variability*

4.1 Introduction

Climate change is rapidly emerging as one of the most serious global problems affecting many sectors in the world. It is considered to be a serious threat to sustainable development with adverse impact on the environment, human health, agriculture, food security, economic activities, natural resources and physical infrastructure (Global Food and Water Security Research Programme, 2012; Moore et al., 2017; Malhi et al., 2021). Climate change refers to a statistically significant variation in either the mean state of climatic patterns or in its variability, persisting for an extended period, typically four (4) decades or longer (Henderson et al., 2015). Whereas, climate variability refers to variations in the mean state and other statistics such as standard deviations and the occurrence of extremes of the climate variables at all temporal and spatial scales beyond that of individual weather events (Moore et al., 2017a; Wagner et al., 2021). Besides an increase in average temperature, climate change and climate variability cause significant changes in rainfall patterns, and an increase in extreme weather events giving rise to floods and droughts (Buras et al., 2020; Magadza, 1994). Floods and droughts affect a cross-section of sectors including agriculture. Bhattacharya (2008) points out that globally, rain fed agriculture is practiced in 80% of the total physical agricultural area and generates 62% of the world's staple food. Tadross *et al*. (2005) explained that climatic conditions may become erratic, extreme and uncertain as a result of global climate change thereby altering the biophysical environment in which crops grow.

Climate change and climate variability are a major threat to food security in Africa and many regions of the developing world, which are largely dependent on rain-fed and human labour-intensive agricultural production (Wagner et al., 2021). In Sub-Saharan Africa, agriculture plays a very important role in providing food and income for most of the population (Hertel & Lobell, 2014). Over 75% of rural populations within Sub-Saharan Africa rely on rain fed smallholder agriculture (Skoet and Stamoulis, 2006). Mapfumo et al. (2010) reported that climate change and variability in African smallholder farming systems can be considered as an additional threat and burden to pressures of population, poverty and killer diseases. As part of southern Africa, Zimbabwe is experiencing significant effects of climate change as evidenced by increased temperatures and rainfall variability, posing threats to agricultural, environmental and socio-economic priorities that feed into the sustainable development goals (Kupika *et al*., 2019).

Agricultural production in rural communities in Zimbabwe has largely declined in the past three decades with climate change being attributed as being one of the main contributing factors mostly in the form of extreme weather events like erratic and sub-normal rainfall amounts, droughts, floods and lately cyclones (Thomas, 2010; ZimVac, 2020). For instance, due to the drought of the 1991/1992 season, maize crop production in Zimbabwe decreased by almost 75% leaving a large percentage of the population food insecure (ZimStats, 1992). The 1991/1992 drought was associated with a huge die off of livestock. This drought scenario was again experienced in 1993, 1994, 2002, 2004 and 2012 seasons causing food and nutrition insecurity in most parts of Zimbabwe (Global Food and Water Security Research Programme, 2012; ZimVac, 2020).

In Chiredzi District, southeast Zimbabwe, where Malipati Communal Area is located, changes of over 2.5 °C could be experienced (Magadza, 1994). Already sustained warming and increasing rainfall variability have incrementally negatively affected key sectors of Chiredzi District's agriculture-based economy. For example, over the last 30 years, Chiredzi District has experienced a trend towards reduced rainfall with intermittent periods of heavy rainfall accompanied by floods or cyclones, negatively affecting agricultural production and human livelihoods (Magadza, 1994; GoZ, 2013). Such extreme weather events now form an integral part of the semi-arid climate of Malipati Communal Area.

It has been observed that while there is a lot of research in relation to the subject of climate change, little is known regarding factors hindering coping mechanisms in response of climate change. It is against this background that this research was undertaken to achieve the following objectives: (i) to assess the impact of climate variability on crops and livestock production for the period 1990 to 2018, and (ii) to analyse the coping strategies adopted by Malipati community in response to climate variability with a focus on agriculture.

4.2 Materials and Methods

4.2.1 Study Area

Malipati Communal Area covers Ward 15 of Chiredzi District and is located to the south of Gonarezhou National Park (GNP), south-east Zimbabwe (Fig. 4.1). Malipati Communal Area, GNP, and other surrounding areas form part of the Great Limpopo Transfrontier Conservation Area (GLTFCA). As part of the south-east lowveld of Zimbabwe, Malipati Communal Area lies in agro-ecological natural region V and is characterised by low elevation, high temperatures, and low and erratic rainfall which averages < 600 mm/year (Gandiwa & Zisadza, 2010). The major vegetation type is typical of semi-arid mopane (*Colophospermum mopane*) woodland and is predominantly dry deciduous savanna woodland of varying types (Ndiweni et al., 2015). Chiredzi Ward 15 recorded a lower human population density in 2012 (over 12 people per km^2) when compared to the Zimbabwe national average of about 33 people per km^2 with a population growth rate of 2.4% for the period 1992 to 2012 (ZimStat, 2013). The Government of Zimbabwe notes that this study area is generally marginally suitable for dry land cropping and extensive livestock production or game ranching GoZ, 2010).

The main crops produced are maize (*Zea mays*), sorghum (*Sorghum bicolor*), tomatoes (*Solanum lycopersicum*), sugar cane (*Saccharum officinarum*) and vegetables (Mashapa, Mhuriro-Mashapa, et al., 2021). Livestock mainly in the form of cattle (*Bos taurus*) and goats (*Capra hircus*) are kept usually for meat and milk production. Livestock density is relatively high (53 cattle/km^2 and 95 goats/km^2) (Rukuni et al., 2006) given the nutritious nature of the pastures and ranges of southeast Zimbabwe (Dunham et al., 2003).

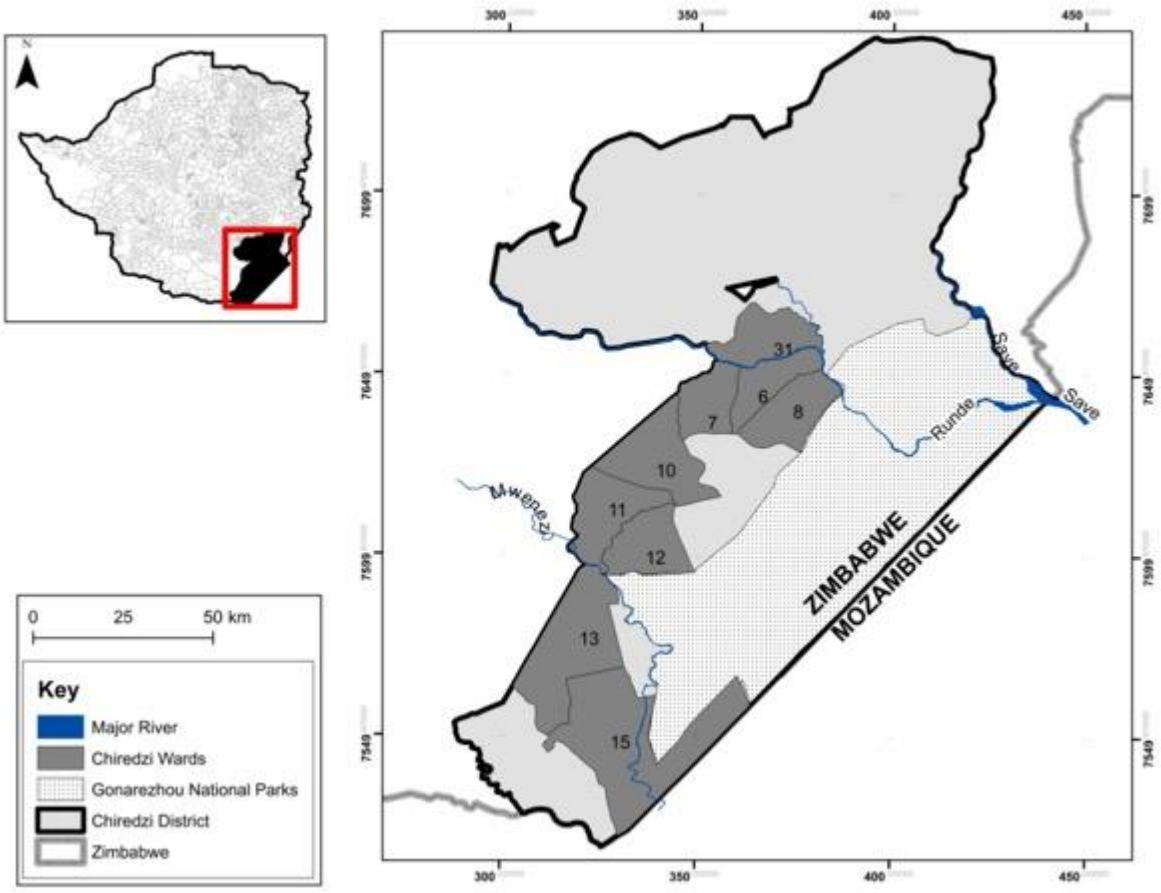

Figure 4.1: Location of the study area, i.e., Malipati Communal Area (Ward 15), southeast Zimbabwe. Source: Mwera (2020).

4.2.2 Research Design and Data Collection

A case study design was used, where Malipati Communal Area was selected as the case. A case study is an in-depth, detailed examination of a particular case (or cases) within a real-world context, the study integrates well with mixed methods, which seeks a more complete understanding through the integration of qualitative and quantitative research (Guetterman and Fetters, 2018). A case study approach was the appropriate design for this study because it allows a researcher to gain concrete, contextual, in-depth knowledge about the local communities and the geography under which the study was conducted. The approach allows for the generation of an in-depth, multi-faceted understanding of complex issues around real-life experiences. Several previous studies have used this approach and Deng et al., (2017) adopted this design when assessed people's perceptions and climatic disaster experiences, how they influence adaptation to climate change. The selection of Malipati Communal Area was based on the fact

that people in this area rely on crop production and livestock rearing but incessant droughts have negatively impacted on their livelihoods (Defe and Matsa, 2021). Yin (1993) notes that a case study provides an empirical inquiry about a contemporary phenomenon which result in one arriving at valid findings, conclusions, and recommendations. Crowe et al., (2011) points out that a case study uses several different research methodologies. Using diverse methodologies in research enables one to gather data in different forms (quantitative or qualitative).

Mixed methods were used to collect data in this study. First, secondary data on livestock and crop yields were collected from Agricultural Technical and Extension Services (AGRITEX) and Veterinary Department in Chiredzi District in May 2018. The departments have reliable information and have the technical expertise in the subject under study. Second, a questionnaire was administered to 20 selected key informants (Appendix 2) in Malipati Communal Area who comprised 10 purposively selected district officials and 10 conveniently selected irrigation committee members from Manjinji and Magogogwe Irrigation schemes in June 2018. Questions in the questionnaire included number of irrigation schemes (functional and non-functional), number of boreholes in the Ward (functional and non-functional), coping mechanisms in relation to drought. The key informants were given questionnaires (Appendix 2) and completed them at their convenient time. A total of 20 (100%) completed questionnaires were collected from key informants. The questionnaire focused on assessing perceptions in relation to climate change and variability, coping strategies and factors constraining coping mechanisms. Third, in focus group discussions, the perceptions of farmers towards small grain production were recorded on a three-point Likert scale: positive, neutral, and negative. A total of five focus group discussions were held with an average of 22 people participating in each focus group discussion. The focus group discussions comprised traditional leaders, irrigation committee members and ordinary community members. Fourth, an observation method was used during visits to the area. During the survey, the researchers were observing dry water sources including dams, rivers and boreholes. Pictures of the study area were also taken showing the impacts of climate change and variability.

Overall, the study sample size comprised of 45% (n = 60) males and 55% (n = 73) females (Table 4.1). Data were collected between May and June 2018. Permission to conduct the survey was granted by Chiredzi Rural District Council, Chief Sengwe and clearance from Chinhoyi University of Technology. Participation was voluntary and participants gave consent before participating in this study. Prior to data collection, a pilot study was conducted in Ward

22 in Chizvirizvi village in Chiredzi district to assess if the questionnaires and interview guides were measuring what they were intended to measure, that is, the impact of climate change and coping strategies. Carrying out a pilot study enabled researchers to make necessary changes to the questionnaire and interview guides and issues including poor translation and length of interviews were corrected.

Table 4.1: Participants' demographics in the present study

Variable	Number (%)
Sex	
Male	60 (45)
Female	73 (55)
Age (years)	
20-29	5 (4)
30-39	27 (20)
40-49	52 (39)
50-59	38 (29)
60+	11 (8)
Marital status	
Single	3 (2)
Married	83 (63)
Widow/er	39 (29)
Divorced	8 (6)
Education level	
None	13 (10)
Primary	69 (52)
Secondary	30 (22)
Advanced level	2 (1)
Vocational	9 (7)
Tertiary	10 (8)

4.3 Data Analysis

Statistical content analysis was used to analyse to analyse trends and patterns of threats and establishing their impact to biodiversity and livelihoods. The approach important as it produces valid results. Alaminie et al., (2021) used the same approach when evaluating past and future climate trends scenarios in Ethiopia. Secondary quantitative data on livestock and crop yield were analysed using simple regression analysis in Microsoft Office Excel. Questionnaires from key informants were checked for completeness before being coded. Coding was done on all questions for easy of analysis using the Statistical Package for Social Sciences (SPSS) version 23.0 for Windows (SPSS Inc., Chicago, USA). Close-ended questions were pre-coded given that they are given over a range of anticipated responses. Key informant data were descriptively analysed. Regarding climate change and variability, the participants' views were put into three categories: negative, positive and neutral. Microsoft Excel was used to analyse the perceptions of farmers in relation to climate change and variability. Thematic content analysis was used to analyse data obtained in relation to coping mechanisms.

4.4. Results

4.4.1 Changes in crops and livestock production between 1990 and 2018

Our results showed no significant changes in crops and livestock production in Chiredzi between 1990 and 2018. For small grain harvest for a 10 year period, i.e., 1991 to 2000, in Chiredzi district no significant change in yield was recorded over the study period (r = 0.20; $F_{1,8}$ = 0.35, P = 0.572, R^2 = 0.04; Fig.4.2), with a harvest mean of 0.55 ± 0.39 ton/ha per annum. The same was recorded for larger grains like maize which had a mean harvest of 0.56 ± 0.54 tons/year. Overall, there was no significant change in yield for maize for the study period (r = 0.42, $F_{1,8}$ = 1.18, P = 0.213, R^2 = 0.19; Fig.4.2). On average, 3633 ± 3032 livestock mortalities have been recorded annually for the period 2015 to 2017 in Chiredzi district. Statistics show that livestock deaths in Chiredzi district were on an increase with 1200 livestock deaths in 2015, 2972 livestock deaths in 2016 and 7000 livestock deaths in 2017.

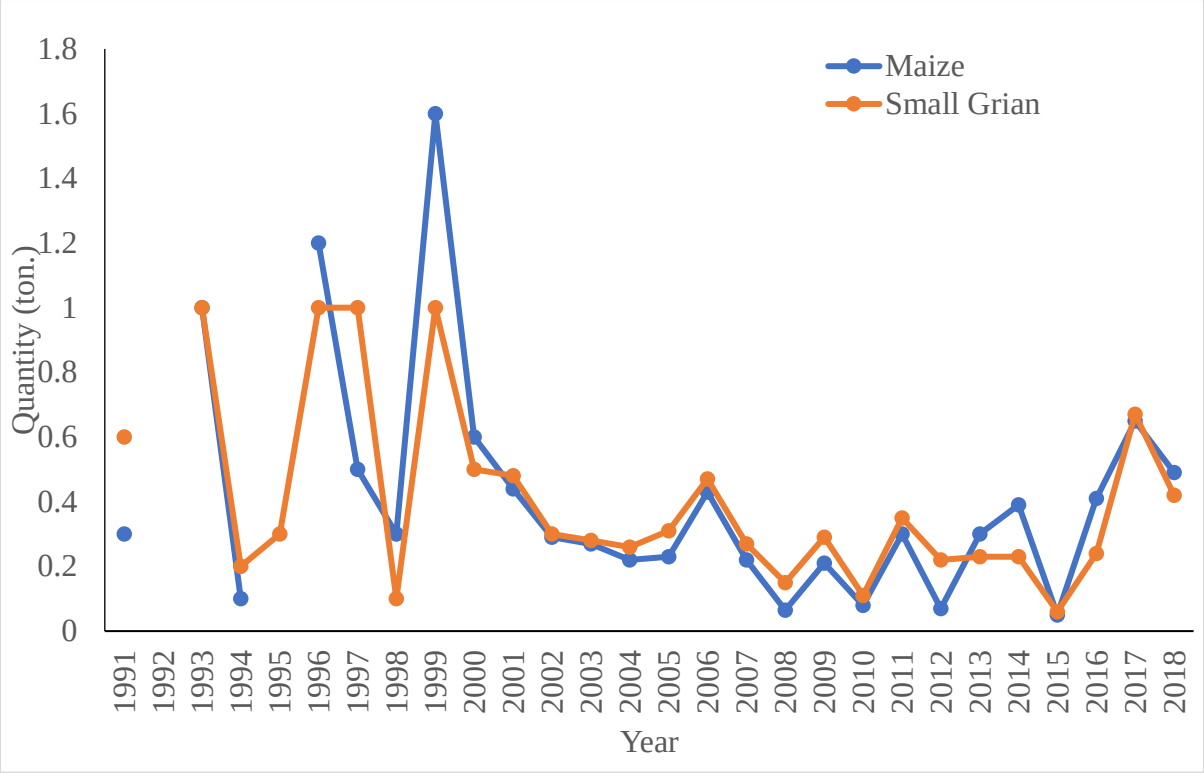

Figure 4.2: Crop production trends in Chiredzi district from 1991to 2018. Source: Agritex Department - Chiredzi District.

Some respondents 18%, (*n =23*) reported that the water availability was a challenge with more droughts having been witnessed between 1990 and 2018, attributed to changing climate. The study recorded only two major sources of energy in use in the study area, i.e., firewood 97%, (*n =129*) and electricity from the national grid 3%, (*n* = 4). Hence, the uptake of solar energy and petroleum, e.g., paraffin was still very low in the study area. However, of concern was the challenge of overreliance on firewood as this would lead to deforestation and land degradation.

Observations from field work showed that all the rivers in Malipati Communal Area were dry, an indicator that the area had received low rainfall. Mwenezi River, for example, was observed to be having the challenge of siltation (Fig.4.3) and this has negatively impacted on the availability of water for irrigation schemes. Mwenezi River used to be the only reliable source of water for the irrigation schemes in Malipati Communal Area, but this had changed due to recurrent droughts. This impacted negatively on crop production under irrigation schemes. In response to water shortage in Malipati Communal Area, boreholes were sunk but most of them could not provide adequate water throughout the year because the water table was mentioned by key informants to be very low. It was also observed that the grazing areas

were bare grounds due to overgrazing and poor rainfall. There was poor vegetation cover and most trees were observed to be dry.

Figure 4.3: Siltation of Mwenezi River which is the only convenient source of water for the two irrigation schemes in the study area, (b) small garden sustained by a shallow well in Muhlekwani village, (c) a defunct borehole in Ngwenyeni village as the water table was reported to be very low due to climate change and variability, and (d) World Food Program project partnering communities in resuscitating an irrigation scheme. Photo credits: Joseph Antipas, 2018.

4.4.2 Coping mechanisms by community members in Malipati Communal Area

The growing of drought resistant crops, such as small grains which included sorghum was reported by 31% (n = 38) of the respondents as one important coping mechanism that the local

people adopted in the study area. The respondents who grew the small grains 31% (n = 38) reported that they were mostly guaranteed of a modest harvest despite the low rainfall and frequent droughts in the study area. On the other hand, 69% (n = 92) said that they were not interested in growing sorghum because it is considered to be labour intensive and less palatable. It was found that there were balanced views on embracing the growing of small grains by the respondents with 31% (n = 38) reporting interest, 36% (n = 44) reporting no interest and 33% (n = 41) were neutral. Respondents, however, acknowledged the important role the small grains could play in mitigating the negative effects of climate change as these were generally drought resistant.

Investment in livestock was reported by 54% (n = 46) of the respondents as another coping mechanism as these provided 'insurance' during the drought years as people would sell these and procure food in addition to paying for children's' school fees. The respondents explained that rearing small livestock including goats was a preferred coping mechanism. Small livestock are resistant to drought and have high quick returns unlike cattle. The respondents 54% (n = 46) pointed out that cattle rearing was no longer a favourable activity in the area due to frequent droughts; cattle are less resistant to drought in comparison with small livestock.

To buffer against unpredictable rainfall and reduced surface water, irrigation was adopted for growing all-year round horticultural and cereal crops (Fig. 4.4). Two irrigation schemes, i.e., Magogogwe and Manjinji were observed in the study area and these were established to be partially functional at the time of this study.

A total of 54 boreholes were drilled and installed in the study area. However, only 56% (n = 30) were still functional at the time of this study with the rest being non-functional due to various reasons. Some of the non-functional boreholes were reported to have been filled up during the 2000 Cyclone Eline whereas others lacked maintenance. Accordingly, some respondents 44% (n = 37) reported that most local people use unsafe water sources such as rivers and consequently, disease outbreaks such as cholera and typhoid are common. However, 5% (n = 4) of respondents also reported that surface water dwindled during the summer due to increased siltation and evapotranspiration with reduced flow in rivers. According to 42% (n = 36) of the respondents, the other important coping mechanisms were remittances and food support received from family members, especially, those from neighbouring countries.

Figure 4.4: (a) Community members pulling resources together that includes the human capital to resuscitate Magogogwe irrigation scheme. (b) Wilting legume crops failing at the partially functional Manjinji irrigation scheme. Photo credits: Joseph Antipas, 2018.

4.5 Discussion

Although this study recorded non-significant changes in crop production, there was, however, some evidence that showed an increase in the death of livestock between 2015 and 2017 which could be attributed to climate variability, particularly, local droughts that would negatively impact on forage resources (ZimVAC 2020). During the survey it was found that most communal farmers in this area have low knowledge about feedlots or fodder for animals. This study established that farmers in Malipati Communal Area are still indifferent regarding climate change and variability and as a result, they have not fully embraced ideas to cope with climate change and variability. It was foundout that coping strategies including production of small grains, having feedlots and growing fodder crops have not yet been embraced by farmers in Malipati Communal Area. Hence, there is need for the construction of cattle feedlots, creation of an animal feeding facility where communities could easily access fodder for their animals during dry seasons.

The farmers in Malipati Communal Area were sceptical about small grains production and they regard it as labour-intensive. This could have a negative bearing on food security in Malipati Communal Area. Unganai and Murwira (2010) reported that sorghum and millet are drought-resistant crops of great importance for food security in the semi-arid tropical

environments of Sub-Saharan Africa. Eldakak et al. (2014) explains that knowing the threats of a system is the first step toward controlling the drought losses and minimizing the gap between attainable and actual yields. There is need for a shift in mind-set; F armers need to embrace the idea of growing small grains because they are drought resistant. The study also established that most farmers in Malipati Communal Area prefer maize production, despite that it is not drought resistant, because they consider it to be more palatable to sorghum.

Previous sensitivity analysis on crops recorded that Malipati Communal Area is becoming unsuitable for the local staple crops like maize, sorghum and millet production under the worst climate change scenario where temperatures would rise by up to 5°C and rainfall would decline by about 50% by 2050 (UNDP, 2007; ZimVac, 2020). Rising mean temperature is the most direct and observable signal of climate change for agricultural regions around the world, with many regions showing robust trends that are distinct from the signal of natural variability (Hartmann et al., 2013).

Despite having two irrigation schemes in Malipati Communal Area, it was found that the irrigation schemes were partially functional. This impacts negatively on food security in the area. Irrigation schemes play a critical role in enhancing food security in areas which cannot rely on rainfall for crop production. Frequent droughts have severely strained surface and ground water systems, contributing to the country's deteriorating water supply. Surface water (mostly rivers and dams) is the major source of water in Zimbabwe accounting for 90% of supply (Brown et al., 2012). According to Oweis and Hachum (2006), in the dry areas, water, not land, is the most limiting resource for improved agricultural production. Maximizing water productivity, and not yield per unit of land, is therefore a better strategy for dry farming systems. Irrigation schemes play a critical role in enhancing food security since relying on rainfall for crop production is now a challenge due to frequent droughts and unpredictable rainfall patterns. However, drought conditions created by climate change are expected to reduce run-off, further reducing the water levels required to support the operation of dams (Brown et al., 2012). This study also aligns well with (Mano & Nhemachena, 2007) who in their findings indicated that irrigation is an important adaptation option to help reduce the impact of further changes in climate.

The study found that there is over reliance on firewood by communities as a source of energy and this is a threat to environmental sustainability while on the other hand worsening climate change and variability. In the 21st Century, communities are encouraged to shift to

environmentally friendly energy sources like solar. The literature on energy and climate change focuses largely on the potential of 'green' technology to contribute to a new low-carbon economy (De Gouvello et al., 2008). Dependence on firewood as the major source of energy poses a threat to environmental sustainability and disrupts the ecosystem. As a way of adapting to climate change and preservation of the environment, there is need to resort to clean and environmentally friendly sources of energy such as solar. This is possible in Chiredzi district given that the area has high temperatures throughout the year. However, communities in Ward 15 are yet to fully embrace this idea.

4.6 Conclusion

The study showed that there was an increase in livestock deaths likely due to shortage of pastures caused by climate variability, and no significant changes in crop yields. Further, respondents in Malipati Communal Area were not fully aware of potential climate change phenomenon in the area. The study has also established that the community members have negative perceptions regarding small grains production and people are failing to adequately cope with these changes. There is need to (i) educate people about the importance of small grains production and the government should consider distributing small grain inputs; (ii) educate community members about the importance of fodder crop production to reduce the number of livestock deaths, and (iii) rehabilitate and expand irrigation schemes in Malipati Communal Area to enhance food security.

CHAPTER 5

An assessment of local community engagement in wildlife conservation: a case study of the Save Valley Conservancy, South Eastern Zimbabwe

This Chapter is submitted and under review as:

Dhliwayo, I., N. Muboko, N., G. Matseketsa & Gandiwa, E. An assessment of local community engagement in wildlife conservation: a case study of the Save Valley Conservancy, South Eastern Zimbabwe. *Nature Conservation.*

Abstract

In southern Africa, human and wildlife interactions have significantly increased over the past decade resulting in complex conservation conflicts. For instance, conservation conflicts in the Save Valley Conservancy (SVC) in the southeast lowveld of Zimbabwe have grown to a level of drawing the concerns of various players, both within and outside the protected area. However, these players are of diverse opinions and interests calling for an inclusive, effective and multi-integrated stakeholder engagement strategy that addresses these needs and opinions in a transformative conservation framework. As humans and wildlife share space, stakeholder engagement becomes a critical component of wildlife management and transformative conservation. In this study, we analysed the conservation conflicts in the SVC. Data were collected between April and May 2020 through focus group discussions and interviews with 20 key purposively sampled informants. The results revealed a lack of an effective, inclusive, integrated multi-cross-sectional stakeholder engagement plan as one of the major contributing factors to the existence of conservation conflicts in the SVC. It is concluded that, there is limited participation by community members and generally no shared views among the community members on viable land use options in the SVC. This study proposes an integrated cross-sectional stakeholder working framework that not only informs conservation practitioners but also fully addresses the prevailing conservation conflict scenarios emanating from the exclusion of humans from protected areas and the encroachment of wildlife in human settlements.

Key Words: conservation conflict, Save Valley Conservancy, stakeholder engagement, transformative conservation, wildlife conservation.

5.1 Introduction

In the year 2000, Zimbabwe embarked on a fast track land redistribution exercise that sought to address the historical colonial imbalances by ensuring that most of the landless people were resettled in gazetted farms. This Fast Track Land Reform (FTLR) program implemented represents one of the key radical redistributive land reforms in Zimbabwe (Moyo, 2011; Chambati, 2013). It reversed the racially skewed agrarian structure and discriminatory land tenure system inherited from the colonial rule whereby over 6,000 large - scale white farmers and a few foreign and nationally owned agro-industrial estates controlled most of the prime land, water resources and bio-reserves while relegating the majority of the indigenous population to marginal lands (Chipika and Malaba, 2016; Mapfumo, 2015).

One of the key aspects of the 2000 land reform programme was an emphasis on the direct redistribution, equity and land for crops, with little attention on wildlife management (Wolmer, et al., 2004). The attempt to incorporate inherently extensive wildlife management into resettlement schemes runs directly counter to the rhetoric and technical biases of land reform programmes in Zimbabwe (Wolmer, et al., 2004). Hence, a new political terrain rapidly unfolded with new actors and institutions (Chaumba, et al., 2010). This intentionally or unintentionally resulted in the 2000 land reforms significantly transforming all the affected areas such as the Save Valley Conservancy (SVC) and in certain circumstances converted wildlife areas into agricultural land. The formation and evolution of SVC and other conservancies depended on several catalytic and enabling factors, and teamwork among various stakeholders (Lindsey, et al., 2012). Save Valley Conservancy was formed as a result of a number of circumstances which included an epic drought (1991 -1992) that brought an end to cattle ranching and agricultural endeavours in the area, it was therefore realised that wildlife was the only viable enterprise in the area.

Following the formation of SVC, some ranchers decided to retain livestock, pursuing a mixed species production system. However, in 1991–1992, the South East Lowveld experienced the worst drought on record, forcing ranchers to sell cattle at greatly reduced price.

During the drought, a strategic planning meeting was held by conservancy members and a decision was taken to completely remove cattle from SVC and to develop a multi-use wildlife production system for high-quality wildlife tourism. The area was generally sparsely populated because of low rainfall, lack of permanent water and the danger to people and crops from wild animals. Currently, several factors continue to undermine development in the Save Valley, impacting the SVC and local communities that mainly rely on dry subsistence farming, and end up trapped in a vicious cycle of poverty.

The SVC consists of a diverse set of owners and operators. In the northern part, which was not affected by the land reform, most properties there are supported by Bilateral Investment Promotion and Protection Agreements (BIPPA) (Kreuter, and Warner, 2010). In the southern part of SVC, the land reform brought significant changes, with large settlements in the western and eastern areas, with wildlife areas transformed into crop and livestock spaces (Scoones, et al.; 2012). The other remaining wildlife pockets in the SVC are now under the custodianship of the Zimbabwe Parks and Wildlife Management Authority. However, local communities also face challenges in making a living from agriculture and livestock production without irrigation in the semi-arid climate.

The human-livestock-wildlife interface is multifaceted and has both positive and negative implications for health, the environment and economics (Kock, 2005). The wildlife conservation efforts need to actions to reduce the decline of species and habitats; key among them is to shift from operating under a framework focused predominantly on a narrow set of wildlife interests, to a social-ecological paradigm and concomitant approach to wildlife conservation that embraces the interests and participation of a broader public (Decker et al., 2016; Jacobson et al., 2010). Therefore, the objectives of this study were to: (i) document stakeholder engagement platforms in SVC, (ii) establish the nature and causes of HWC in SVC, and (iii) assess community members' perceptions regarding wildlife conservation and other land uses in SVC.

5.2 Theoretical framework

5.2.1 Transformative conservation

This study is anchored on the transformative conservation framework. Transformation is a substantial, profound and fundamental change, which requires a paradigm shift in how we

relate to and manage the environment (Massarella et al., 2021). The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) defined transformative change as a fundamental, society-wide reorganization across technological, economic and social factors and structures, including paradigms, goals and values (Díaz et al., 2019). It emphasises the need for society-wide, structural change through specific transitions, it includes both the indirect drivers of biodiversity loss and the values underlying these indirect drivers. This concept of transformative change also represents the underlying causes of biodiversity loss, which includes both the indirect drivers and the paradigms, goals and values underlying societies that determine the behaviour of individuals and society at large (Kok et al., 2022).

The Framework envisages a multi-stakeholder approach to enhance wildlife conservation in the SVC (Mashapa et al., 2021). Transformative biodiversity governance focuses both on the generic and regime-specific underlying causes of sustainability problems. This means governance mixes need to include instruments designed to realize transformative change both within specific regimes and in society more broadly The multi-stakeholder approach maintains a main focus on environmental justice declarations but aims further, primarily, to enable and sustain constructive stakeholder interaction at the local level (Basson et al., 2018; Hovardas, 2021). Inclusive multi-stakeholder engagement, together with sustained and systemic knowledge exchange, can support the co-design and co-production of integrated and sustainable policies and management plans that align the objectives of multiple landscape actors (Favretto et al., 2021). Inclusion is only one among several principles of justice that transformative governance needs to take into account. Many conservation initiatives call for ‘transformative change’ to counter biodiversity loss, climate change, and injustice (Buscher et al., 2022). More broadly, the pursuit of justice speaks to another key feature of transformative governance, which is that it must be integrative in seeking synergies and minimizing incoherence not only across sectors, institutions and policy instruments, but also across societal goals, including justice and sustainability (Pickering et al., 2022). The term connotes fundamental, broad, and durable changes to human relationships with nature (Fougeres et al., 2022).

Efforts to pursue transformative biodiversity governance need to acknowledge socio-ecological complexity, expose existing conditions of injustice and embrace opportunities to overcome them. Justice and equity are fundamental to the complex choices that societies need to make to achieve transformative change (Bennett and Roth, 2019). The framework connotes

fundamental, broad, and durable changes to human relationships with nature. It points to the fundamental reorganization necessary for global conservation initiatives to stem ecological catastrophe (Fougeres et al., 2022). Transformative conservation rethinks the relationships between nature, society, individuals, and risk in light of nature's contributions to people, equity and justice, and sustainable development goals. The transformative approach is premised on the need to change societal arrangements profoundly, transforming relationships between humans as a necessary condition for required changes in relationships between humans and nature (Martin et al., 2023). The approach restructures systems to create durable change at large geographic, ecological, politico-economic, and demographic scales; and ultimately conserves biodiversity while justly transitioning to net negative emissions economies and securing the sustainable and regenerative use of natural resources (Fougeres, 2020).

Transformative conservation requires supporting practitioners and stakeholders to mobilize and take collective action. This includes especially those who live and work where conservation occurs (Fougeres et al., 2022). A transformative framework which recognizes the diversity of human values and relationships with nature, and how nature contributes both directly and indirectly to good quality of life is fundamental (Lundquist, 2021). Transformative conservation should therefore be understood as a long-term process, requiring both individual agency and collective action by societies and should combine both food production and biodiversity conservation strengthening the socio-ecological systems and address adaptation by communities to global change. Conservation actions most often occur in peopled seascapes and landscapes (Colloff et al., 2017; Bennett & Roth, 2019; Mupepele,2021).

The conservation community is moving towards more integrative and collaborative approaches to conservation (Cumming et al., 2015; Guerrero et al., 2015). Conserving wildlife today requires a change in orientation to and understanding of conflict, as well as the capacities and approaches needed to achieve long-lasting success. A good transformative conservation process should give attention to the dialogue and relationship-building needed to foster dignity, respect, and trust among stakeholders, as well as to support more effective decision-making around and commitment to tangible solutions (Decker et al., 2012). Engaging local stakeholders is a central feature of many biodiversity conservation and natural resource management projects globally (Sterling et al., 2017). Thus, the overall objective of engaging stakeholders in SVC needs to improve the livelihoods of rural communities through sustainable and climate resilient management of natural resources which is well in line with the context of the United Nations 2030 Agenda for Sustainable Development (Bleischwitz et al., 2018).

Over the past decade, national governments, international bodies, non-governmental organizations, and donors have shown an increasing interest in promoting good governance for protected areas, because good governance is a prerequisite for protected areas' long-term future (Alcorn, et al., 2005). The survival of both indigenous peoples and the natural world lies in the ability of people concerned with the two sets of issues to find common ground and work together (Redford, and Painter, 2006). During the land reform exercise in the year 2000, parts of SVC was transformed into agricultural land impacting negatively on wildlife conservation.

Resettlement communities in Zimbabwe have been documented to have complicated institutional settings due to overlapping powers amongst; *de facto and de jure* institutions (Mbereko, et al., 2015). These institutions and their interactions over time influence the way individuals and communities experience the plethora of stressors that confront them rendering them vulnerable (Mbereko, et al., 2015). However, beliefs and attitudes of local people towards protected areas are increasingly being considered in conservation planning (Anthony & Moldovan, 2008). Access to basic social services in these settlements is limited including health, water, sanitation and education. Infrastructure is limited; there are high human wildlife conflicts (HWC), which besides the threat for humans also impacts on crop and livestock production. Conflict management requires parties to recognise problems as shared ones, engage with clear goals, transparency, and an awareness of trade-off opportunities (Redpath et al., 2013).

Most HWC stem from differences in land use practices between various stakeholder groups, especially where the wildlife in question is a resource that can be exploited for economic or cultural benefit, or where the conservation of wildlife is at odds with human population growth or development pressure (White and Ward, 2011). While the rhetoric goes on, local communities surrounding and surrounded by wildlife continue to be vulnerable in particular to food insecurity and diseases and this therefore calls for a transformative stakeholder engagement approach to conservation that gives relief to humans and wildlife co-sharing space in the SVC. Greater involvement of those living in and around protected areas can contribute to protected areas and landscape conservation (Whande, et al., 2003). Engaging local stakeholders is a central feature of many biodiversity conservation and natural resource management projects globally (Sterling, et al., 2017). Core to the planning–implementation gap in conservation is the failure to achieve the necessary shared vision and collaboration among typically diverse stakeholder groups to translate conservation assessments and plans into sustained on-ground outcomes for conservation (Biggs et al., 2011).

5.3 The transformative stakeholder engagement approach

Transformative biodiversity governance must be inclusive, strategic and purposeful, with an aim of focusing on actors that want to influence the indirect drivers of biodiversity loss (Kok et al., 2022). The underlying hope is that, it will lead to the achievement of biodiversity goals: preservation of the resources, coexistence as well as livelihood improvement, bringing wider benefits to the pastoral community (Durant et al., 2022). Transformation towards sustainability requires interventions on system level, where addressing root causes of unsustainability in current systems should be sought for. Consequently, a wide range of aspects are suggested to be addressed, from institutions, structures, economic and financial systems, policy and regulatory systems and power relations, to world views, beliefs, mindsets, lifestyles and values (Luederitz et al., 2017).

Transformation can be guided, for instance through addressing problem solving in multi-stakeholder settings and providing spaces allowing for experimentation where the learning outcomes are incorporated into standard activities (Polvora et al., 2020). Multi-stakeholder involvement is needed, the decision of who to involve and to what extent is difficult but acknowledged of central importance and a distinction must be made between involvement and influence: involving stakeholders does not necessarily mean allowing them to influence decision-making (Waligo et al., 2013). Thus, different stakeholders can be invited to participate with different expectations on engagement and involvement. The value of involving a wide range of stakeholders from diverse backgrounds is commonly acknowledged when addressing issues of sustainability (Maczka et al., 2021). It is therefore important to involve community and ensure collaboration between different actors. Once decisions are made on who to involve and to what extent, one needs a set of appropriate tools for stakeholder involvement; interviews, feedback sessions and dialogue (Pomeroy and Douvere, 2008; Islam et al., 2020).

5.4 Stakeholder Engagement Parameters

Environmental problems are typically complex, uncertain, and multi-scale and affect multiple actors and agencies (Reed, 2008). This demands transparent decision-making that is flexible to changing circumstances, and embraces a diversity of knowledges and values. To achieve this, stakeholder participation is increasingly being sought and embedded into environmental decision-making processes, from local to international scales (Antunes et al., 2015; Howarth

& Monasterolo, 2017). Stakeholder engagement is usually 'understood as practices the organization undertakes to involve stakeholders in a positive manner in organizational activities (Greenwood, 2007). Stakeholder engagement is traditionally seen as corporate responsibility in action, the more an organisation engages with its stakeholders the more it becomes responsible. Stakeholder engagement in environmental management is a process where stakeholders, i.e. those directly or indirectly affected by and able to affect a decision, take active roles in research, planning, and actions impacting their lives (Plummer et al., 2017).

Stakeholder engagement describes a range of practices where organisations take a structured approach to consulting with potential stakeholders. The dimension of inclusive governance suggests focusing on "empowering and emancipating those whose interests are currently not being met and who represent values that constitute transformative change toward sustainability (Bidwell and Schweizer, 2021). Engagement is initiated and led by stakeholders and/or publics, communicating with decision-making bodies, often via grassroots networks and social media, to persuade them to open their decision-making process to scrutiny and engagement (Reed, et al., 2018). This development towards stronger involvement of non-state and sub-national actors is not uncontested and has at least two dimensions. empowering stakeholders to join experts in decision-making enables learning, builds relationships, strengthens capacities, and fosters the coordination required to address complex environmental problems (Eaton et al., 2021). It requires working with non-state actors with the power and ability to induce ownership and leadership to work for biodiversity as well as addressing vested interests that may resist transformative change (Bull et al., 2020). Those leading the process may consult with publics and stakeholders to better understand and represent their views and demonstrate buy-in and support, and so increase their capacity to influence decision-makers or overturn decisions (Reed et al., 2018).

The opposite of stakeholder engagement is the traditional top-down approach and this is increasingly being replaced by inclusive multi-stake holder approach (Conallin et al. 2017; Warner, 2016). The top down process is led by Governments and their official representatives, supported by scientifically trained specialists, with those affected by the conflict often relegated to the role of data gatherers and passive recipients of information and instructions (Reed et al., 2015). Engagement is initiated and led from the top-down by an organisation with decision-making power, consulting publics and stakeholders (but retaining decision-making power) or simply communicating decisions to them (Reed, et al., 2018). Rather than resolve conflict, these top-down approaches have often inflamed conflicts in Protected Areas while the

stakeholder engagement approach mediates controversial conservation issues and the approach has the capacity to avoid, cope with or resolve conservation conflicts (Reed et al., 2015; Schoon et al., 2021). A successful stakeholder engagement process, entails that, the actors possess a cultural affinity, recognise each other's legitimacy, dedicate time to building trust and are willing to accept incremental gains (Lopez et al., 2020).

5.5 Materials and Methods

5.5.1 Study Area

This study was conducted in Ward 24 of Chiredzi district which covers the greater part of SVC in southeast Zimbabwe (see Lindsey et al., 2009; Matseketsa et al., 2019) for detailed description of SVC). The SVC (20° 22´ S and 31° 56´ E) is located along Save River stretching from the Birchnough Bridge in Chipinge District to Chiredzi District, southern Zimbabwe (Mashapa et al., 2018). The SVC is located in natural agroecological region IV which is one of the driest regions in Zimbabwe. It occurs at an elevation of 480-620m, with deciduous woodland savanna, low and variable rainfall (474-540 mm per annum) and poor-quality soils (Lindsey et al., 2009). The SVC is the largest model of amalgamated privately owned ranches devoted to wildlife production in Africa (Du Toit, 2017). The original SVC comprised of 24 properties with a total area of over 3500 km^2 (Lindsey et al., 2012). These properties consolidated into the SVC fall into two Districts; Bikita in the north (1,631 km^2) and Chiredzi to the south (1894 km^2). The SVC also forms the northern part of the Great Limpopo Transfrontier Conservation Area (GLTFCA) (Makumbe et al., 2022; Mahed et al., 2022).

The SVC is bordered primarily by high-density communal lands (of between 11 and 82 people per km^2), with some commercial agriculture to the south and east (Pole, 2006). The commercial land of the SVC is surrounded by communal land on which some 119 000 communal farmers (try to) make a living (Wels, 2000). During the Fast Track Land Reform Programme (FTLRP), people were settled in some parts of the Ward which used to be part of the wildlife conservancy areas. Local communities in the SVC are making a living from farming sorghum (*Sorghum bicolor*), cotton (*Gossypium herbaceum*) and livestock. Sugar cane (*Saccharum officinarum*) and citrus are planted successfully on irrigated land and is key economic driver in the region (Lindsey et al., 2012; Matseketsa et al., 2019). Low rainfall restricts the land uses to irrigated crop production, commercial cattle and game ranching on

extensive privately owned ranches, safari hunting on state land and communal lands, and dry land subsistence farming in the overcrowded communal lands (Mashapa et al., 2021).

5.5.2 Study Design

A mixed methods approach was adopted in this study. This is a methodology for conducting research that involves collecting, analysing, and integrating (or mixing) quantitative and qualitative research (and data) in a single study. In this mixed method approach, both qualitative and quantitative research are combined in order to provide a better understanding of a research problem or issue (Almeida, 2018). de Bisthoven (2020) used the mixed method approach when they made a socio-ecological assessment of Manyara basin in Tanzania. The mixed methods approach to research provides researchers with the ability to design a single research study that answers questions about both the complex nature of a phenomenon from the participants' point of view and the relationship between measurable variables (Williams, 2007). The use of mixed methods makes it possible to overcome the limitations of either the qualitative or the quantitative methodologies when applied singularly, allowing the researcher to get rich information that could not be obtained using each method alone (Almeida, 2018). The qualitative approach helped in explaining the phenomena, while the quantitative approach was important in examining collected statistical data. Participation in stakeholder analysis is often presented as a 'good' thing and a fairer way to represent views and opinions outside narrow confines of interest and expertise (Bell et al., 2012). A stakeholder analysis was carried out in the study area, all actors were put into a matrix which indicated their roles, interests, and influence and justified their existence in the area (Reed et al., 2009). Stakeholder participation in environmental decision-making has been increasingly sought and embedded into national and international policy (Reed, 2008). Stakeholder participant in this context, is individual, group, or organization who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project, program, or portfolio (Pandi-Perumal et al., 2015). These individuals are brought together to interact and relate to execute the project with the aim of achieving set standards and thus have a common interest of project success. The interaction and involvement are therefore, in this study referred to as participation (Eaton et al., 2021).

Table 5.1 show a typical stakeholder analysis in the case of SVC. There are many stakeholders in the study area and some have grouped into camps for example the War veterans in SVC preferred to be treated separately but for this study, they were treated as part ~~o~~f the

community. Indigenous safari operators were also included in the bracket of Safari operators. The selected local stakeholders were key and suffice to achieve the objectives of this study as it incorporated all the minority and majority groups and interested partners. Since most of the stakeholders in the study were key and were directly affected by developments in the SVC, their interests and impact as shown on the table were on the high scale. Interested partners; these included individuals, groups, private cooperates, trusts and non-governmental organisations who might not have direct influence on the SVC projects but they have interests in investing and seeing wildlife conservation and biodiversity growing and livelihoods improving in the area.

ZimParks as the authority carrying Zimbabwe's mandate to conserve wildlife heritage through effective, efficient and sustainable utilisation of natural resources for the benefit of present and future generations has high interests and high impact on the SVC (Mushonga, 2018). The community, is a very key stakeholder with high interests and influence as they are directly affected by any kind of developments in their area, side-lining them, will lead to conservation conflicts difficult to resolve. Their contribution is recognised and they have potential to block the success of the project as captured in the matrix in Table 5.1. Farmers (Subsistence and A2) surrounding the conservancy are also key, they are directly affected by the project either way. Stray animals like elephants destroy their crops hence the need for harmonious co-existence.

Table 5.1: Stakeholder Engagement matrix for SVC

Stakeholder Name	Impact How much does the project impact them (Low, Medium, High)	Influence How much influence do they have over the project (Low, Medium, High)	What is important to the stakeholder?	How could the stakeholder contribute to the project	How could the stakeholder block the project	Strategy for engaging the stakeholder
ZimParks	High	High	Wildlife & Biodiversity conservation	Protection of Biodiversity	Going on strike	Quarterly meetings, and monthly feedback meetings
A2 Farmers	Medium	Low	Land and crop protection	Cooperation with other players	Overlapping into the PA.	Monthly engagements.
Safari Operators	High	High	Tourism & biodiversity conservation	Protection of biodiversity	By not investing in environmental conservation	Monthly feedback meetings
Government	High	High	Tourism & Development	Policy planning	Repressive policy and conservation laws	Annual conferences and quarterly feedback meetings
Community	High	High	Conservation benefits, protection from predators	Linkage between government & community	Poaching, competing with wildlife for resources	Information & feedback meetings

Chiredzi Rural District Councils, Bikita Rural District Council	High	Medium	Revenue from wildlife conservation	Coordination and creation of a conducive conservation environment	By not creating a conducive environment for the project	Quarterly feedback meetings
Zimbabwe Tourism Authority (ZTA)	High	Medium	Tourism promotion & conservation	Strategising and proper planning in Tourism promotion	Inhibiting tourism strategies that discourage Tourism	Annual & quarterly conferences
Nyangambe Wildlife Project	High	High	Conservation benefits	Biodiversity protection	Overlapping & not abiding to the rules of biodiversity conservation.	Quarterly feedback meetings
Interested Partners	High	Low	Community development	Invest towards conservation and community development	Negatively Influencing community perceptions	Quarterly planning meetings

5.5.3 Sample size and data collection

A survey was carried out in Ward 24 of Chiredzi district and data were collected in April and May 2020. Focus group discussions were held with the seven (7) member committee (farm chairpersons), 84 randomly selected community members and traditional leaders. Semi-structured interviews were conducted with 20 key informants who were purposively selected. The main focus group discussion was held at the Ward centre on the peripheries of the conservancy under Chief Gudo. Key informants were selected based on their knowledge, background and positions held in society and these included the Ward Councillor, the government extension staff in relevant departments and village heads.

Data collected focused on an assessment of the stakeholder engagement platforms available in the SVC, the nature and causes of HWC and the perceptions of community members towards the SVC. To understand the nature and causes of HWC in SVC; focus group discussions were held in each area (Masapasi, Levanga, Mkwasine Ranch, Chegwite and Senuko). These parameters help in understanding the transformative conservation in the SVC. Permission to conduct the survey was sought from the Chiredzi Rural District Council and village heads. Semi-structured interviews were held with 20 key informants–purposively selected based on their knowledge, background and positions held in society and these included the Ward Councillor, the government extension staff in relevant departments and village heads. Secondary data used in this study were collected from the Livestock Production Department (LPD) in Chiredzi district and gave us all the data on HWC. As shown in Table 5.2, a total of 111 (55 females and 56 males participated).

Table 5.2: Sample size and data collection methods

Category	**Number of participants**			**Data collection method**
	Male (%)	**Female (%)**	**Total (%)**	
Farm Chairpersons	7(13)	0	7 (6)	Focus Group Discussion
Community members	36 (64)	48(87)	84(76)	Focus Group Discussion
Key informants	13(23)	7 (13)	20(18)	Semi-structured interview
Total	56(50)	55(50)	111	

5.6 Data Analysis

The thematic content analysis method was used to analyse qualitative data in this survey. For thematic content analysis, a six-step process: familiarisation, coding, generating themes, reviewing themes, defining and naming themes and writing up (Caufield, 2019). Data was analysed through themes that were created and relevant to the subject under study such as

human wildlife conflict, stakeholder engagement platforms and community land use perceptions. The approach is flexible in to generating new insights and concepts derived from data patterns. Further, a cross tabulation method was used to analyse association and frequency of variables. Samal and Dash (2022) used a similar approach when they sought to understand the convergence and divergence of ecotourism, biodiversity, conservation and livelihoods in Peru.

5.7 Results

5.7.1 Stakeholder engagement platforms in SVC

The results showed limited platforms for community members to participate in stakeholder engagement activities in the SVC. The majority of participants as shown in Table 5.3 indicated that 98% (*n* = 89) stated that they had never participated in consultative meetings; only 2% (*n* = 2) said they participated in consultative meetings. Annual planning meetings, Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) meetings and community share ownership meetings were the available stakeholder platforms in SVC. However, 98% *(n* = 89*)* of participants had no knowledge of this platform and only 2% (*n* = 2) were in the know. On the other hand, 100% *(n* = 91*)* were not aware of CAMPFIRE meetings and all of them (100% (*n* = 91*)* had no knowledge about the existence of community share ownership in SVC. One of the respondents had this to say: (Respondent 1) *We have never been invited, consulted or participated in any planning meetings even at Ward level to talk about the community share ownership. We are not even aware if those meetings are being conducted.*

Table 5.3: Engagement platforms in SVC and responses by participants

Platform	Knowledge of the platform		Participation	
	Yes (%)	No (%)	Yes (%)	No (%)
Consultative meetings	2(2)	89 (98)	2 (2)	89 (98)
Annual planning meetings	4 (4)	87 (96)	0	91 (100)
CAMPFIRE meetings	0	91 (100)	0	91 (100)
Community share ownership	0	91 (100)	0	91 (100)

The results (Table 5.4) showed that elephants (*Loxodonta africana*) constituted the highest number of reports on problem animals with 385 reports received from the period 2014-2018 A total of 316 reports on lions (*Panthera leo*) were received within the same period, a total of 15 animals were killed, 2 people were injured and 1 person was killed. A total of 261 reports on buffalo (*Syncerus caffer*) as another common species under problem animals were recorded within the same period 2014–2018. Overall, 1201 reports were received and 13 people were killed and 19 were injured, 187 cattle were killed while 224 goats and 38 donkeys were killed by wildlife in SVC within the same period. One operator who was interviewed had this to say:

(Interviewee 1) *A lasting solution needs to be sought as a matter of urgency so as to curb poaching and encroachment by communities into private properties if we are serious about promoting tourism, improving livelihoods of local people and conserve our biodiversity. The situation needs intervention as people are settling themselves closing the corridor and some communities have settled on traditional wildlife tracks to water sources.*

Table 5.4: Deaths and injuries caused by wildlife

Species Involved	Reports Received 2014-2018	Problem Animals Killed 2014-2018	People Killed/Injured 2014-2018		Domestic Animals Killed 2014-2018		
			Killed	Injured	Cattle	Goats	Donkey
Elephant	385	57	0	0	0	0	0
Hippo	120	19	2	0	0	0	0
Buffalo	261	93	2	7	0	0	0
Lion	316	15	2	1	165	174	29
Crocodile	74	12	6	9	0	1	0
Hyena	33	11	1	2	20	38	9
Leopard	12	1	0	0	3	12	0
Total	1201	208	13	19	187	224	38

Source: Chiredzi District Livestock Production Department, 2022, Human and Wildlife Conflict data – Chiredzi Rural Development Council - Environment Department, 2022

5.7.2 Human wildlife conflict in SVC

It was evident that, HWC in SVC were pervasive and this is caused by a number of factors. Communities in SVC have no other income generating sources besides exploiting resources within their surroundings. The illegal harvest of mopane trees (Fig. 5.1) to extract charcoal was also on the increase. Domestic animals had to scramble for pastures in SVC leading to increased reports on communities losing their livestock to wildlife and also people losing their lives during the process. Increased population in SVC has seen communities expanding their settlements into protected privately owned properties and this entails the clearance of large tracts of land for settlement (Fig. 5.1). The cutting down of trees has reduced space and the natural habitat for wildlife in SVC. One local farmer interviewed had this to say:

(Interviewee 2) *I lost 5 of my cattle in one night to lions after they broke into my kraal and I don't think there are any plans from the park authorities to compensate me. That was my only source of income since we have not received any meaningful rains in this part of the district or the past three years.*

Figure 5.1: A disturbed cattle owner standing beside his cow which had fallen victim to lions in SVC. (b) An arrested poacher in SVC (c) Charcoal bags loaded in a truck ready for sale after being extracted from mopane trees in SVC. (d) Land being cleared for farming and settlement in SVC. (e) Burning mopane trees to extract charcoal in SVC. Photo credit: Authors 2023.

5.7.3 Community members' perceptions on the SVC

The majority of community members and traditional leaders 74% (*n = 67*) had negative perception towards the idea of wildlife conservancy and only 14% *(n = 13*) had positive perception and 12% (*n = 11*) were neutral (Table 5.5). Those who had negative perceptions on wildlife conservation said that they didn't like the idea because it was a waste of land and some of the wild animals are a threat to them besides destroying their crops given that there are no secure boundaries.

Table 5.5: Community members' perceptions on land use in SVC

Land use	Participant category		
	Community members (%)	**Farm Chairpersons (%)**	**Key informants (%)**
Crop production	53(48)	4 (4)	1 (1)
Ranching (livestock)	7 (6)	1 (1)	4 (4)
Wildlife conservancy	0	0	11 (9)
Mixed	24 (21)	2 (2)	4 (4)

The majority of community members, i.e., 48% (n = 53), preferred the land to be used for crop production while 21% (n = 24) pointed out that they preferred mixed land use and 6% (n = 7) opted for ranching. None of the community members reported that they wanted the land to be used for wildlife conservancy. The views of traditional leaders regarding land use were comparatively the same as those of community members. The majority of traditional leaders 57% (n = 4) would like the land to be used for crop production while 4 *(*n = 2) said that they prefer mixed land use while 1% (n = 1) preferred ranching. From the key informants, (10%; n = 11) said that the land should be used for wildlife conservancy, 4 % *(*n = 4) opted for ranching, 4% (n = 4) thought of a mixed land use approach with only 1% (n = 1) reporting that it should be used for crop production. During the focus group discussions, one community member had this to say:

(Respondent 2*): we regard wildlife conservancy as a waste of land and we are proposing that that the land be divided amongst ourselves for settlement and cultivation as we are not benefiting anything from wildlife, our crops are destroyed by elephants - year in year out, thus why we are having poor yields.*

5.8 Discussion

The study established that community participation in wildlife conservation projects in the SVC is very limited. The two traditional leaders who said that they participated in the consultative meetings explained that it was just once off and there was no proper structure to coordinate meetings. Stakeholder engagement in the SVC can only be realised if community members are provided an opportunity where they discuss issues with operators of wildlife conservancies. Engagement will bring common understanding and goes a long way in addressing a plethora of challenges being encountered in the study area (Moser, 2014; Lawrence et al., 2022). The participation of a diverse group of people in a systemic process of collecting, discussing, and analysing scenarios builds shared understanding (Peterson et al., 2003).

Stakeholder engagement is not only key but is the missing ingredient to conservation conflicts which have been so rampant in SVC. Biodiversity conservation would be difficult to achieve in SVC if there are still such pockets where communities and wildlife could not share space in harmony. Human settlements in the park threaten conservation efforts, and mixed views on the proposed game fence were observed (Muboko and Bradshaw, 2018). Some protected areas remain settled or have recently been partially settled by people with prior claims on the area (Mombeshora and le Bel, 2009; Milgroom, 2012).

It was also established that there was no effective communication strategy between stakeholders in the study area and the few consultative and planning meetings have registered poor attendance thus affecting community participation which could help in resolving conservation conflicts in SVC. Communities and other stakeholders should be made aware of each and every program and planning meetings. The attendance and contribution of each and every stakeholder is vital so that there is a shared view and common understanding of the main issues that affect development in SVC. Lack of an effective communication strategy in SVC has also affected decision making processes as communities are not even aware of the reporting and governing structures. There is need for the facilitation of a working framework showing the organogram and reporting procedure in the SVC. The current arrangement is so ambiguous that no one knows who is responsible for what and who must be leading others towards a common goal.

The study recorded that HWC was widespread in SVC mainly because wildlife and human populations coexist, they share and compete for the scarce resources available. Conflicts

between humans and wildlife have occurred since the dawn of humanity. In Africa, these conflicts have become more frequent and severe over recent decades as a result of human population growth, extension of transport routes and expansion of agricultural and industrial activities which together have led to increased human encroachment on previously wild and uninhabited areas (Lamarque et al., 2009; Makonen, 2020). Large areas of woodlands which used to be habitats for wildlife have been cleared for subsistence farming within SVC (Lindsey et al., 2012). Frequently, wildlife poses a direct threat to the lives of people irking out an existence in or close to their habitat, hence, wildlife has no value outside the protected areas, and it dwindles and disappears either through active persecution, loss of habitat or competition with livestock (Prins et al., 2012). HWCs occur around the edges of protected areas where there are high human and wild animal interactions (Matseketsa et al., 2019). Such is the case with SVC where reports of human and wildlife confrontations are increasing.

The removal of portions of the perimeter fence by the settler farmers has greatly increased HWC in neighbouring communal lands (Lindsey et al., 2012; Mashapa et al., 2017). In SVC, the conflict has been manifested by fatal encounters between humans and wildlife, crop damage and livestock depredation (Le Bel et al., 2016). In response to crop damage, several elephant bulls are killed in problem-animal control operations every year, significantly reducing potential revenues from trophy hunting each year (Lindsey, 2012). Settler farmers living in the conservancy no longer employ traditional (conflict-reducing) husbandry techniques employed effectively elsewhere and as the lion population increases, complaints of livestock losses appear to be increasing in frequency, resulting in the risk of predators being poisoned by affected farmers (Lindsey et al., 2012). Expansion for agricultural purposes and the growth in human population are key contributing factors to HWC in SVC (Matseketsa et al, 2019). HWCs are one of the biggest obstacles for community-based natural resource management in Zimbabwe, this situation has been exacerbated by the 1999 land reform which resulted in indigenous local people settling on former white owned commercial farms, as well as game safari land and sections of protected areas (Le Bel et al., 2011). Wildlife species damaging crops can cause substantial losses to farmers and at the same time create negative attitudes against wildlife and conservation efforts that may result in negative interactions against wildlife and lead to HWCs (Gross et al., 2018).

Emphasizing and building shared understandings of fundamental assumptions regarding wildlife conservation could enhance the participatory process, improve ecological understandings, and aid conservation success (Heisel et al., 2021). Very few are realising

benefits from wildlife conservation proceeds in SVC which has strained relationships. The nature of this perceived poor relationship is attributed to a host of factors, key among them being, lack of wildlife-related benefits and escalation of wildlife-induced costs, which are crucial in determining local community–support for conservation (Matseketsa et al., 2019; Zibani, 2019). Identifying solutions for the coexistence of humans and wildlife requires an understanding of both environmental and social dimensions (Konig et al., 2020; 2021). Being semi-arid, SVC has no meaningful crop cultivation activity which could be carried out without irrigation and this leaves cattle ranching and wildlife conservation being the most favourable options which needs to be considered and hence the need to engage the same communities for their support (Matseketsa et al., 2019).

The study revealed the need to educate all stakeholders on the importance of wildlife conservation emphasising much on its positive contributions to the country's Gross Domestic Product (GDP) and how communities could directly and indirectly benefit from such initiatives. Local people's knowledge about natural resources conservation are influenced by education and awareness programmes, services and benefits local people receive from conservation related projects (Gandiwa et al., 2014; Jalilova and Vacik, 2012). Wildlife conservation efforts have not fully addressed poverty within communities and this is influencing communities to have negative perceptions towards conservation initiatives. Interviewed communities' members raised a number of issues where they pointed out that they have been denied access to natural resources, there is no employment for them in the park and stray elephants are raiding their crops. Evidence based on reports points to local communities' hatred of parks and dismissed the poverty alleviation benefits as an illusion given the huge social capital loss accentuated by involuntary relocation and spike on HWCs (Gadd, 2005).

Our findings corroborate those of Mbereko et al. (2017) who also made similar observation that some institutions involved in the management of the Protected Areas are failing to promote the participation of the local community in the decision-making processes. This has often led to communities not sharing the same view with other stakeholders on wildlife conservation in SVC. Our study showed that communities in SVC continue to have negative perceptions towards wildlife as they still think they could not share space with wildlife.

Communities juxtaposed to protected areas disproportionately accrue the costs of conservation, but they can also receive benefits from the existence of a protected areas (Matseketsa et al., 2018). The extent to which local communities benefit or incur costs as a

result of residing next to protected areas is of interest to conservationists and policy-makers. Local communities should be involved from the planning phase of community-based tourism projects, which were meant to benefit them socio-economically, while also empowering them to participate actively in the conservation of local environmental assets (Hlengwa and Maruta, 2020). All players in SVC need to find a very even common ground and engagement platform where each and every stakeholder big or small is regarded as key and is allowed to be heard, given equal opportunities to participate, and equally contribute to the development of communities and promote wildlife conservation.

Protected areas can no longer be thought of as ecological islands that function independently of the broader socio-ecological system in which they are located (Cumming et al., 2015). The study found out that communities in SVC are not seeing the benefits of wildlife hence there is need to start regular engagements and consultative meetings with communities, initiating and implementing programs and projects in the area that are sensitive to the plight and challenges faced by communities in the area. Failure to link conservation and development in SVC may not be without consequences. The long-term future of the core protected areas within SVC is likely to be compromised if not threatened, unless those living on the edge are consulted, involved and participate in all the planning and implementation processes of wildlife and biodiversity conservation.

After recognising the severe loss of biodiversity, soaring reports of HWC and failure to co-exist, no shared views on conservation, no enhanced livelihoods and no significant efforts to promote conservation in the SVC, the study advocates for a more integrated and inclusive approach that could enhance and address the challenges in SVC. Inclusivity fosters meaningful participation of new or previously unacknowledged and/or underrepresented human and non-human voices. Inclusivity values diverse contributions to change, and shared leadership in sustained and equitable outcomes (Wyborn et al., 2020). Narrative approaches can complement objectivist scientific understandings of biodiversity with those entangled with human emotion, meaning, and culture. Stakeholders are people or groups who have direct or indirect benefit and influence in the outcome of a project (Sterling et al., 2017).

5.9 Conclusion

The study concludes that there is limited involvement and participation of community members as key stakeholder in issues of conservation in the SVC. There are limited platforms for

participation in SVC. HWC is still pervasive in SVC. Community members have negative perceptions towards wildlife conservation in SVC. There are no shared views and linkage between the community members and the wildlife conservation projects in the SVC. Although there are platforms to participate in SVC, the study established that the majority of community members are not aware and/or are not invited to such platforms to enable them to participate. Given this, SVC's activities were viewed negatively by community members and regarded as a waste of land that could be used for farming activities. The study observed that; it is of paramount importance for community members to participate and get involved in wildlife conservation initiatives so that they can embrace and support all plans and implementation processes towards sustainability in SVC. Without meaningful participation by community members, wildlife conservation initiatives are likely to fail. One of the major challenges in SVC, as highlighted in the study, is HWCs, and this is mainly caused by a lack of shared understanding and vision. There is need for meaningful engagement of community members regarding wildlife conservation. This can be realised by having regular consultative planning and review meetings with key stakeholders recognising and respecting each other's roles, interests and contributions. Further, there is a need for community engagement regarding the issue of boundaries in SVC.

CHAPTER 6

Local perceptions on poverty and conservation in a community-based natural resource programme area: a case study of Beitbridge district, southern Zimbabwe

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Abstract

This study was conducted in a local community, namely Ward 1 of Beitbridge district, southern Zimbabwe, with the following objectives: (i) to assess local perceptions on poverty in a Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) environment, (ii) to assess whether CAMPFIRE initiatives have enhanced livelihoods, and (iii) to analyse the involvement of local people in CAMPFIRE programs. A mixed methods approach was used to collect data between September and October 2022, with 80 randomly selected participants being interviewed, 110 randomly selected discussants participating in Focus Group Discussions which were held in all the five villages of Ward 1, and 10 purposively sampled key informants. Data were quantitatively and qualitatively analysed. The results showed that some villages were benefitting more than others from the conservation programs and variably contributing to the quest of local communities in fighting poverty. Most respondents in Ward 1 rely on subsistence farming as the major source of livelihood. Further, most respondents highlighted that they were not participating in the natural resource management and allocation processes. However, communities still view CAMPFIRE as a panacea to poverty in the Ward. Full participation of local people in–decision making in CAMPFIRE is important. There is also a need for education and capacitation of community conservation committees in the study area.

Key Words: CAMPFIRE, Community, Conservation, Perceptions, Poverty

6.1 Introduction

Conservation areas managed by local communities remain the basis and foundations underpinning environmental management and preservation, especially outside designated protected areas (Gardner et al., 2018). The International Union for Conservation of Nature (IUCN) describes a protected area as a designated terrestrial ecosystem which is authorized and controlled through legal or other effective systems, with the overall objective of conserving nature, ecological requirements, and anthropological values (Zhang et al., 2017). Africa's geographical spaces remain salient when it comes to the protection of the mainland ecosystem, if not alone sufficient to conserve it (Vargas et al., 2019). Anthropological threats to environments in developing countries usually manifest in areas where poverty intersects with areas where a wide variety of species and significant organisms exist (Fisher and Christopher, 2007). There is increasing acknowledgment of the importance of local people in the sustainable maintenance and governance of established communal protected or conserved rangelands and their significance (Corrigan and Hay-Edie, 2013; Garnett et al., 2018).

Community-based natural resource management (CBNRM) is a solution to the knitted adversities of poverty and conservation, especially when it is underpinned by comprehensive and integrated management values, including fairness and accountability (Child, 1996; Chok et al., 2007; Gohori and van der Merwe, 2022). CBNRM entails matters of entitlement and obligations, ownership, traditional and contemporary knowledge, appropriate establishments, and the allocation of expenses and profits (Armitage, 2005; Addison et al., 2019). Extensive deliberations and discussions have been raging on concerning the underlying interpretations of the overlap of high biodiversity areas and existential poverty, leading to varied thoughts on how poverty in such typical environments could be alleviated (Naughton et al., 2005; Visseren et al., 2012; Plagerson, 2020).

For the past 30 years, community growth initiatives have repeatedly been pressing for poverty mitigation agendas that are focused on capacitating biodiversity protection programmes. This is only effective and maintainable if they have a dual role of enhancing rural livelihoods and maintaining the environmental ecosystems (Agol et al., 2014). The key fundamental goal of identifying effective processes and systems for conservation areas is to enable the establishment of effective protection measures, develop, preserve species, and maintain various existing habitats. Worldwide, community conservation areas managed by local people often have maintained very high standards of environmental protection and

livelihood improvement (Leiper et al., 2018; Schuster et al., 2019). There have been some lively engagements and consultations of local communities in debates and deliberations about these defined geographical spaces and environmental protection from regional to global forums (Duncan et al., 2018).

The Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) is a conservation initiative focused on protecting nature (flora and fauna) while at the same time enhancing livelihoods within the surroundings in rural communities in Zimbabwe. CAMPFIRE is established and implemented through local and established governance structures, i.e., the Rural District Councils (RDCs) have the Appropriate Authority to manage and use local resources, particularly wildlife and derive economic benefits that are then transparently shared with the local communities (Muchapondwa, 2002; Tchakatumba et al., 2019). Thus, CAMPFIRE helps the local people on how to manage and utilise their own resources to alleviate poverty and enhance their livelihoods (Tichaawa and Mhlanga, 2015; Shereni and Saarinen, 2021).

Zimbabwe's Government introduced CAMPFIRE in marginal peripheral areas where agriculture was not viable in 1989 (Child, 1996 ;Taylor, 2009; Jani et al., 2019). It has taken long for local communities in Zimbabwe to embrace CAMPFIRE with only a few groups recording success in CAMPFIRE initiatives and this has been largely caused by several factors including, culture (not flexible to change), governance (centralised political and economic institutions), local politics, the people and the scales of benefits and costs (Chiutsi and Saarinen, 2017; Zanamwe et al., 2018). CAMPFIRE projects have a key role in developing rural economic and resource management institutions through the effective, transparent, and sustainable use of natural resources (Gandiwa et al., 2013; Tichaawa and Mhlanga, 2015).

The benefits accrued from CAMPFIRE help rural communities to address some of the challenges they face while at the same time developing their surroundings. Therefore, CAMPFIRE's fundamental objective is that of mitigating rural poverty, which is achievable by giving the rural communities control and ownership of their resources. CAMPFIRE also demonstrates to local people that wildlife should not always be perceived to be confrontational to human endeavors, especially in agricultural activities but should be seen as a critical resource that should be managed, protected, and cultivated to provide income and food (Logan and Moseley, 2002; Shereni and Saarinen, 2021).

CAMPFIRE helps in building an understanding of the various positive conservation objectives which could have been difficult to be recognized by the majority in society (Infield and Namara, 2001; Rutebuka et al., 2012; Armitage et al., 2020). Its introduction was necessitated by the understanding that communities surrounding protected areas have suffered for long. They have lost their livestock to predators, they have recorded huge harvest losses due to crop-raiding animals with no compensation and or any benefits for co-existence with wildlife (Jani et al., 2019). It is, therefore, important to note that; poverty alleviation and the sustainable use of natural resources are intertwined and are best explained and understood when they are discussed together in a comprehensive process as they complement and dependent on each other (Kangalawe et al., 2012; Ota et al., 2020).

The development of community conservation projects has helped to clarify and clear conservation conflicts where rural communities surrounding conservation areas were always finding it difficult to embrace or should continue to fight for their own survival and individual development through the illegal exploitation of local resources (Vargas et al., 2020). Communities consequently remain very key to the establishment and sustainability of every biodiversity project since they play a leading role in the protection and maintenance of all biodiversity management plans being undertaken in their areas (Sterling et al., 2017; Adom et al., 2020). This active participation by local people in natural resource management, as well as the sharing of their inherent local conservation strategies, gives huge proceeds to any conservation initiatives (Vierros, 2017). Accordingly, CAMPFIRE is a community-based initiative anchored on the hypothesis that; the consultation and participation of the indigenous people in projects that positively impact the community's development agenda will have long-term effects in sustaining the natural resource habitat and rural development (Harrison, 2015; Tchakatumba et al., 2019).

CAMPFIRE aims at improving livelihoods, and this is built on solid principles; a strong connection needs to exist between poverty and environmental degradation/wildlife hunting so that once the environment is improved and degradation is addressed, so does livelihoods performance (Batool and Hussain, 2016). Poverty has always been measured by how much a person earns per day as in total income, and those who earn less than US$1 per day are deemed to be poor (Akindola, 2009). In this study poverty as defined as a condition where local communities do not own, have access, control and make use of the natural resources to enhance their livelihoods. Poverty indicators are so multidimensional, this study focused on droughts and disasters affecting communities, vulnerability of local communities to threats, access to

resources (water, food, land), literacy levels, low income, unemployment and the involvement and participation of local communities in income generating projects (Parven et al., 2022). However, the Human Development Index (HDI), developed by the United Nations Development Programme (UNDP), has extended the poverty bracket to also include the health and education statuses and various poverty assessment frameworks have been developed and they do capture the broader and detailed concept of poverty, for instance, the HDI recognises that; poverty is not simply a matter of income alone (Seth and Villar, 2017), the framework has incorporated other variables like the natural, human, social and physical capital. This has been incorporated using an array of indicators starting from income, access to resources and basic infrastructure, to the vulnerability of populations, and level of community organization (Shackleton and Gumbo, 2010).

Southern Africa faces some threats of increasing incidences of poverty compounded with changing climate, and for Zimbabwe, the most vulnerable areas being the rural districts with abundant biodiversity where the same resources can greatly reduce rural poverty (Muchapondwa, 2002; Ntuli et al., 2020). The perception that there is an inverse proportion (when conservation initiatives increase, poverty decreases, and when poverty increases, conservation efforts are undermined/decrease) between poverty and wildlife conservation is anchored on three carefully interconnected CAMPFIRE goals, which are: (i) to reduce poverty as a necessary (if not sufficient) condition for wildlife conservation and (ii) to transform the structure of resource control from state to communal ownership and (iii) to manage wildlife as a means of reducing poverty (Tichaawa and Mhlanga, 2015 ; Gidebo, 2023). At the core of this argument, there is poverty alleviation, wildlife conservation, and management which are seen as interdepending, with each standing as a complement to the other and each feeding off the other (Murphree, 2004; Tichaawa and Mhlanga, 2015). Consequently, conserving natural resources can have significant, quick, and direct positive outcomes/benefits on livelihoods, especially in communities where they exist (Fedele et al., 2021; Fisher, 2005).

The majority of the rural population in Beitbridge district relies on the natural resources, and the most common resources being exploited include vegetation, wild animals, river basins providing water, and wood (firewood and shelter constructions). It is, therefore, difficult to detach local people from their traditional environments, beliefs, and way of living (Carroll and Ray, 2021). However, despite the dependence on abundant natural resources, local communities are threatened by poverty. Poverty undermines the performance of livelihoods, and where livelihoods performance is low or poor, households fall, and the result of such

performance is what is termed or measured as poverty (Sunderlin et al., 2005; Shackleton et al., 2010). Previous studies conducted in Beitbridge district focused on CAMPFIRE and economic benefits, ecotourism and the protection of biodiversity without considering community perceptions, community benefits, costs and the impact of these conservation initiatives on poverty and livelihoods (Zanamwe et al., 2018; Tchakatumba et al., 2019). This study is therefore grounded on the concept that there is a relationship between livelihoods, poverty, and conservation and that conservation initiatives contribute towards alleviating rural poverty. Focusing on one of the local communities, i.e., Ward 1, Beitbridge rural district, this study sought to: (a) assess local perceptions on poverty in a CAMPFIRE environment, (b) assess whether CAMPFIRE initiatives have enhanced livelihoods, and (c) analyse the involvement of local people in CAMPFIRE programs.

6.2 Materials and Methods

6.2.1 Study area

Ward 1 of Beitbridge Rural District, southern Zimbabwe is located within the Great Limpopo Transfrontier Conservation Area (GLTFCA). In Zimbabwe, a Ward is made up of a number of villages and therefore it is bigger in size than a village and these Wards form a district. The study area is of interest given that Beitbridge RDC is one of the pioneer RDCs to initiate, embrace and implement CAMPFIRE, despite a number of factors affecting the effectiveness of this once viable project (Child, 1996; Chirozva, 2016). Beitbridge Rural District has a spatial extent of about 7,000 km^2 of communal land. The meandering Limpopo River on the south marks the border with South Africa, while on the West, the Shashe River naturally creates the western border with Botswana. Fauna habitation is predominantly found within and along the river basins, next to privately owned game ranches, Safari Areas and National Parks in South Africa (Metcalfe, 1996). According to ZIMSTAT (2022), Beitbridge Rural District has an estimated population of 49,642 females and 44,358 males. Ward 1 of Beitbridge Rural District has a total of 1,207 households with 2,817 of the Ward population being female while 2,455 is male giving a total of 5,272 people (ZIMSTAT, 2022).

Ward 1 falls in a dry semi-arid area situated in the southerly direction from Beitbridge Rural District Headquarters and the district has a total of 15 Wards (Figure. 1) The district's annual average temperature is 23.0°C, with a monthly average temperature varying by 10.7°C and a mean annual precipitation of ±333 mm (Chikwiramakomo et al., 2021). Ward 1 shares boundary with Ward 15 of Chiredzi district on the North and all the two Wards share

their borders with both South Africa and Mozambique. Ward 1 Beitbridge has 5 villages with a sparsely populated settlement pattern that surrounds Protected Areas. Incessant droughts, low rainfalls, flash floods and high temperatures continue to threaten livelihoods in this Ward and its surroundings. Limpopo River soils have a high pH and workability and trafficability remains a challenge. Vegetation varies from bushy savanna where soils are fertile to shrub savanna in sand rocky areas with common tree types comprising of baobab (*Adansonia digitata*), mopane (*Colophospermum mopane*) and different species of *Combretum* and *Acacia*. Light and scarce grassland cover consists largely of *Sporobolus* spp. (love grass) and *Cynodon dactylon* (Dube et al., 2017; Matsa and Dzawanda 2019). The foliage of the southern lowveld is mostly those plants that shed their leaves during periods of drought or in the dry season (ZIMPARKS, 2011). Farming activities include livestock rearing which is one of the major agricultural activities and the most common domesticated animals are: cattle (*Bos Taurus*), goats (*Capra hircus*), donkeys (*Equus asinus*), sheep (*Ovis aries*) and pigs (*Sas scrofa domesticus*) followed by small-scale crop production for subsistence (Matsa and Matsa, 2021).

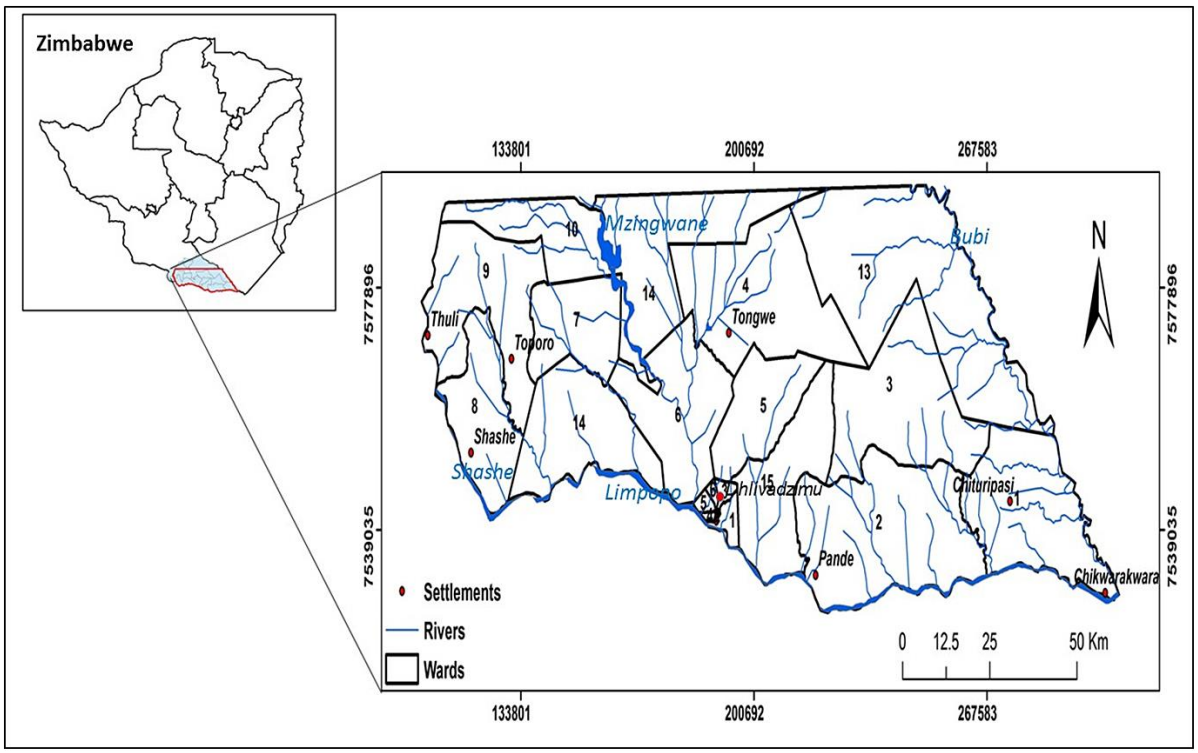

Figure 6.1: Location of Ward 1 of Beitbridge Rural District, southern Zimbabwe. Source: Chikwiramakomo et al. (2021).

6.2.2 Study design and data collection

The study adopted a descriptive-interpretive research design with the aim of assessing community views regarding poverty in a CAMPFIRE environment. Anshuka et al. (2021) used descriptive-interpretive design to document how vulnerability shape risk perceptions and influence adaptive strategies to hydro–meteorological hazards in Indo–Fijian farming communities in South-Asia. The descriptive-interpretive research design is considered the appropriate approach for this study as it provides an understanding of individuals' reflections of their experiences as they occur (Alase, 2017; Creswell et al., 2007). A purposeful method of sampling was employed to come up with key informants who responded to questionnaires while random sampling was also conducted to select participants for focus group discussions. We obtained authorization to carry out the study from the Chief overseeing the area. The local authority (Beitbridge RDC) also approved our request to conduct our study in their area of jurisdiction. After the researchers had advised and informed would be participants of the purpose of the study and the importance of their roles, the research participants gave voluntary consent to take part in the study. The demographic composition of participants in this study shows that there are no minors who participated and all participants were above 20 years.

The participants were also informed that they had the right to withdraw from the research at any time without any prejudice or risks, and the consents were verbal since written consent was not required as we stood guided by the traditional laws from the Chief overseeing the area, who assured us that his authorization was enough, allowing us to undertake the research and interact with his people (Budin-Ljøsne et al., 2017; Giraudeau et al., 2012). A CAMPFIRE committee meeting chaired by the Ward councilor was convened to elicit community opinions and attitude pertaining to CAMPFIRE and poverty. The observation method was also used to establish what was obtained on the ground and translate it to paper in comparison with what was captured from the structured and semi-structured interviews. This was done through some transect walks conducted from the Ward centre to the furthest village, recording and assessing yields of cultivated/arable land, soil fertility, grazing pasture availability, and water points distribution. This enabled researchers to gain the exact reflection of the CAMPFIRE impact on livelihoods in Ward 1. A pilot study was carried out at the centre with the assistance of the CAMPFIRE committee members to ascertain time taken to complete the questionnaire, and make relevant translations from English to Vhenda which is the local language used in the Ward.

The researchers also assured the respondents that the findings would then be disclosed to the Ward CAMPFIRE committee. An inception meeting chaired by Ward 1 Councilor was

held at the Ward centre together with Village CAMPFIRE committees and a total of 75 participants attended the inception meeting. The Village CAMPFIRE committee consisted of the following: Village heads, the Water point committee and resource monitors. Every village has a CAMPFIRE committee and all the five (5) villages were represented in the meeting which came up with the way forward on how we were to administer questionnaires (Appendix 2), conduct our focus group discussions and carry out our interviews. The 10 key informants were selected from this main meeting and the contents of the questionnaire were explained together with the objectives of the whole data collection process so that it became clear to the participants. This inception meeting allowed the data collection process to roll out. Village heads were also instrumental in mobilizing communities for focus group discussions. Table 1 shows the demographics (sex, age range and education level) of participants who contributed in the study.

Table 6.1: Socio-demographic profiles of the study participants

Variable	**Number (%)**
Sex	
Male	41 (20%)
Female	159 (80%)
Age (years)	
20-29	8(4%)
30-39	32(16%)
40-49	76(38%)
50-59	46(23%)
60+	38(19%)
Marital status	
Single	4(2%)
Married	133(66.5%)
Widow/er	52 (26%)
Divorced/ separated	11 (5.5%)
Education level	
None	6(3%)
Primary	116 (58%)
Secondary	56(28%)
Advanced level	0
Vocational	12(6)
Tertiary	10 (5%)
Total	**200 (100%)**

Data on community perception on poverty and CAMPFIRE were collated through focus group discussions conducted in the five (5) villages of Ward 1, i.e., A, B, C, D and E between September and October 2022. A total of 110 discussants (local people) were targeted for focus group discussions, 80 people responded to structured interviews while 10 key informants from various sectors in the district responded to semi structured interviews and these included the Department of Women Affairs and Gender, AGRITEX, traditional leaders, local authority (RDC), Non-Governmental Organisation (NGO) representatives and other relevant Ministry Department Agencies (MDAs). This sample size can be considered to be representative enough and makes it acceptable to generalize findings of the study to the entire target population in the area. Participants in each focus group were drawn from the five villages in the Ward and this comprised of 76 females and 34 males giving a total of 110 participants. Pre-testing of the research instruments was carried out at village F in Ward 2, outside of the study areas (Van Teijlingen and Hundley, 2002; Mikuska, 2017). This was meant to ensure that there were clear and valid questions (Table 6.2). Permission was sought from the Chief overseeing the area to carry out the interviews and we made use of the Ward Councillor for accurate translations, correct and consistent phrasing of questions. The interviews took approximately 35 minutes to complete.

Table 6.2: Drafted key questions and some examples of answers

Questions	Options provided
What are your views on poverty and CAMPFIRE?	Open
Have you ever benefited from CAMPFIRE projects?	Yes/No
Do you agree that CAMPFIRE can alleviate poverty?	Agree, disagree, strongly disagree, indifferent
What do you expect from CAMPFIRE?	Open
Have you ever participated in CAMPFIRE meetings?	Yes/No
What are the visible developments brought by CAMPFIRE in the Ward?	Open

Semi-structured interviews were held with 10 purposively selected key informants drawn from Ward 1 and this consisted of seven (7) males and three (3) females. Interview questions were formulated, and a short interview guide prepared, Selection of key informants was done in

consultation with the main Ward CAMPFIRE committee before bookings were made. Interviews with key informants were then booked and scheduled a day before. Scheduling was done in agreement with the key informant's willingness, flexibility and convenience. The researchers represented by the corresponding author would then request for the key informant's indulgence as the interviews could take nearly one (1) hour to complete. The researchers were accompanied by the research assistant, village CAMPFIRE secretary and the Councilor who was also acting as the translator. During interviews, the researchers took down adequate notes according to specified questions as formulated and some follow up questions where there was need and probe further where the response was not clear. Data were then analysed and checked for reliability and validity through a participant validation process. The validation was done by checking consistence on the data which was captured against the participants' interpretations and translations, tallying them with the descriptions as also observed on the ground. Table 3 shows the sample size, data collection method and gender of all the participants in this this study.

Table 6.3: Sample size and data collection methods

Data gathering method	**Number of respondents/ participants**		
	Female	**Male**	**Total**
Focus group discussion (randomly selected)	76	34	110
Structured questionnaires (randomly selected)	45	35	80
Semi-structured interviews with key informants (purposively sampled)	3	7	10
Grand total	**159**	**41**	**200**

6.3 Data analysis

Content analysis approach was used in this study. Statistical content was used in determining the perceptions in relation to CAMPFIRE on poverty, Ward 1. Content analysis approach made it easier to analyse local people's discussions in one focus group and compare them with the views of different groups. Islam et al. (2022) used a similar approach when analysing stakeholder perceptions on conservation outcomes of forests protected area co-management in Bangladesh. Data on local livelihoods and benefits in the five (5) villages in the Ward were presented and analysed by showing the patterns of revenue received over the past ten years between 2011 and 2021. Data on participation and involvement in conservation projects were qualitatively analysed by capturing the number of local members employed in the CAMPFIRE and those who could have participated in some development projects benefitting them either as individuals or as a community. This data was then grouped according to the answers obtained and aggregated by response option. The responses obtained were noted on an information page and then transliterated into English and then captured into a Microsoft Excel database. Where we received various responses especially on open-response questions, data are presented as the percentage (%) and in some instances may sum up to over 100% depending on each response and how it is presented.

6.4 Results and Discussion

6.4.1 Local perceptions on poverty in a community conservation area

Only seven (7) out of the 22 participants (31%) showed satisfaction on employment creation by CAMPFIRE projects in village A and three (3) out of 22 participants (13%) indicated satisfaction on the poverty alleviation role of CAMPFIRE in Chituripasi village (Table 4). All the participants in village D that is 22 of them (100%) and in village E 22 participants (100%) were not satisfied with the poverty alleviation and infrastructure development role of CAMPFIRE. As shown on Table 6.4 below, there was a low satisfaction D in village where mean was 2.2 (standard deviation = 3.34) and in village E where mean was 2 (standard deviation = 1.87) as compared with other three villages. Village A the mean was 10.4 (standard deviation = 5.45) and in village C where the mean was 8.8 (standard deviation = 3.44). The first three villages recorded higher satisfaction than the last two villages.

Table 6.4: Perceptions in relation to CAMPFIRE on poverty, Ward 1, Beitbridge Rural (*n = 110*)

Village	Variable						Mean	Standard deviation
	Employment creation	Infrastructure development	Community participation	Poverty alleviation	Wildlife conservation	Total sample		
A	7	15	16	3	11	52	10.4	5.45
B	8	13	10	4	9	44	8.8	3.27
C	6	14	11	5	8	44	8.8	3.44
D	2	0	1	0	8	11	2.2	3.34
E	1	0	2	0	7	10	2	1.87

When asked for their views on poverty and CAMPFIRE, mixed responses were received. One interviewee had this to say:

Interviewee 1*: We are suffering here, we have never received any benefits from the CAMPFIRE program, we were told to open a CAMPFIRE account where our funds will be deposited as a village. We did all what is required of us and we created our village CAMPFIRE committee but up to now we are waiting for our allocation, we are in deep poverty, this conservation project should rescue us, we don't have clean water, roads, clinic and a school in our village, we travel long distances to access these services.*

Whereas the other respondent said*:*

Interviewee 2: *We have seen this area benefitting us for the past years except in the last three years 2019, 2020 and 2021 where there has been no hunting conducted in our ward. We have seen the road from Chituripasi to Beitbridge being graded using CAMPFIRE funds, boreholes being drilled and classroom blocks constructed at villages A, B and C.*

6.4.2 Local livelihoods in a community conservation area

Villages A, B and C benefited under CAMPFIRE up to 2018 and there was no benefit recorded in the last three years (2019, 2020 and 2021) as depicted in Table 5, mainly due to human interference which has stalled hunting. The CAMPFIRE area was being used as a safe passage by people illegally crossing to and from South Africa making hunting difficult. In 2011, the three villages had to share equally an allocation of a total of US$2 593.5) and the same amount was also shared in 2018 amongst the same villages. In 2013, the Ward recorded a good hunt and the same three villages shared a total of US$3 855.72.

Table 6.5: Revenue received by villages A, B and C CAMPFIRE committees from the Beitbridge RDC between 2011 and 2021

Year	Chikwalakwala (US$)	Chipise (US$)	Chituripasi (US$)
2011	839	839	839
2012	1086	1086	1086
2013	1298	1298	1298
2014	839	839	839
2015	936	936	936
2016	622	622	622
2017	668	668	668
2018	839	839	839
2019	0	0	0
2020	0	0	0
2021	0	0	0

Source: Beitbridge RDC, Villages A, B, C CAMPFIRE committees, databases.

The years 2019, 2020, 2021 recorded zeros in all the five villages as hunting has been stopped in the CAMPFIRE area citing human interference as people movement through the park area

has increased. It is the CAMPFIRE's plan that benefits accrued from wildlife conservation could be used to address challenges local communities are facing and contributing to the development of their surroundings (Mutandwa and Gadzirayi, 2007; Tichaawa and Mhlanga, 2015; Jani et al., 2019). Below is an excerpt given by one respondent who was asked to share what they have benefitted as a community so far from CAMPFIRE?

Respondent 3: *We have managed to build classroom blocks here at Chituripasi through some CAMPFIRE funds allocated to us, the last time we remember getting our CAMPFIRE allocation as a village was between 2017 and 2018, may be Council is yet to give us our share, but the information we got is that, hunting has temporarily stopped because of frequent migration through our CAMPFIRE area by people going and coming from South Africa.*

6.4.3 Community participation in a community conservation area

A 100% (*n = 16*) response was recorded on the conservation awareness question in villages A and C while village B recorded 94% (*n = 15*). Villages D and E recorded zero responses on livelihoods support, and very low responses on participation while the first three villages (A, B and C) all recorded above 50% (*n = 8*). There was 0% (*n = 0*) responses on Employment in Malabe village and 6% (*n = 1*) in village D on the same variable. It is important to get commitment from local communities to protect, preserve and conserve biodiversity and this can only happen when local people are engaged, consulted and participate in conservation initiatives in their villages (Vodouhe et al., 2010; Venter, et al., 2018).

Table 6.6: Responses (frequency) given by community members in structured questionnaires. A total of 16 questionnaires were administered in each study village

Variable Indicator	Village				
	A **22 participants**	**B** **22 participants**	**C** **22 participants**	**D** **22 participants**	**E** **22 participants**
Employment	10 (63%)	8 (50%)	11 (68%)	1 (6%)	0 (0%)
Livelihoods support	7 (44%)	9 (56%)	7 (44%)	0 (0%)	0 (%)
Infrastructure development	13 (81%)	12 (75%)	14 (88%)	7 (44%)	0 (0%)
Participation	9 (56%)	11 (68%)	15 (94%)	3 (19%)	4 (25%)
Resource management	13 (81%)	14 (88%)	12 (75%)	5 (31%)	3 (19%)
Conservation awareness	16 (100%)	15 (94%)	16(100%)	11 (68%)	13 (81%)

Another 4th respondent recorded had this to say when asked what should be done to promote CAMPFIRE in their Ward?

Interviewee 4: *If we want CAMPFIRE projects to succeed in this Ward, we should consult, engage and involve local people in everything we do, be it high decision making meetings where hunting quotas are being allocated, employment of locals in the park, the allocation of CAMPFIRE funds, the channeling of funds to community projects, we should involve local people, they are the key stakeholders, they are equally the owners of these resources hence their participation and involvement is vital.*

Key informants provided some valuable insights on the best conservation practices and what should be done. As raised in the earlier interview; it is important to consult and involve the locals in decision-making processes with regard to conservation projects taking place within

their surroundings. Failure to come up with instruments on how to effectively control and manage resources in CAMPFIRE communities was suggested from existing literature as the main root generating all the other challenges and difficulties encountered in the sustainable utilisation of natural resources in rural environments (Child, 1996; Gohori and van der Merwe, 2021; Gohori and van der Merwe, 2022). Once involved, the indigenous people are therefore able to operate, conserve and preserve their wildlife, receiving benefits from direct sales and then begin as they will be seeing the value rallying everyone behind the sole goal of conservation. Communally owned resources and local community involvement in CAMPFIRE has reinforced their positive perceptions about biodiversity conservation (Mutanga et al., 2017; Shereni and Saarinen, 2021).

The results show that the three villages in the Ward which have been benefitting more from CAMPFIRE have positive views towards poverty while the other two villages who are yet to see the benefits from the wildlife conservation projects have negative views on poverty. The two villages (D and E) have little to show as benefits from CAMFIRE initiatives and as a result their livelihoods continue to deteriorate. The other three villages (A, B and C) have remarkedly benefited from the conservation programs and they view CAMPFIRE as a panacea to poverty. There were some indications that, communities were not receiving cash direct from the rural council, communities were benefitting through approved projects like expansion of clinics, procurement of drugs, construction of classroom blocks and irrigation rehabilitation. Moreover, results from this study also revealed that; there is a decline in the revenue received in the last three years and this has been caused by the increased movement of people migrating to and from South Africa through the CAMPFIRE area. This has reduced or discouraged hunters from operating in the area thereby affecting revenue flow. No hunting has been recorded in the past three years in the CAMPFIRE area and this is affecting livelihoods and stalling development in the Ward.

The findings of this this study corroborates with those of Lonn et al. (2018) from their evaluation of contributions of community based ecotourism to household income and livelihood changes in Cambodia where they outlined that community perceptions of livelihoods changed after the establishment of a community based ecotourism project and the household incomes and characteristics between those who were not in the ecotourism projects and those who were in the projects were so different. Further, those who were not in the community ecotourism project were poorer while those in the tourism project were better off and this also influenced their perceptions on conservation and poverty with those involved in

the community ecotourism projects having positive perceptions and those not involved maintaining negative perceptions. Lonn et al. (2018) also established that there was a huge difference in the socio-economic growth in the areas which had implemented ecotourism projects recording significant economic growth than those areas which had not implemented such projects. Elsewhere, Stormer et al. (2019) in their study of the effects of community-based conservation on attitudes towards wildlife in Namibia, argued that CBNRM can deliver tangible benefits to local communities and positively impacts attitudes of local communities towards conservation depending on the type and magnitude of benefits and costs that individuals experience from conservation projects.

6.5 Conclusion

Local community perceptions on poverty were strongly related and influenced by what communities have benefited from the CAMPFIRE over the past years. Communities from three villages (A, B and C) showed positive perceptions whereas those from the two villages (D and E) showed negative perceptions on poverty. CAMPFIRE initiatives were perceived to have positively enhanced livelihoods in three villages in Ward 1 (A, B and C) whereas they were perceived to have not significantly improvement in livelihoods as recorded in villages D and E due to lack of significant benefits that accrued to local households from CAMPFIRE projects. The results suggest that there is generally less participation by local communities from the Ward in decision-making processes related to natural resources management. Basing on the findings from this study, we recommend that: (i) there is need to undertake resources management awareness campaigns on the CAMPFIRE programme, its objectives and operational framework, and (ii) local people need to be engaged, consulted, involved in CAMPFIRE program activities and decision-making processes including distribution of proceeds among the project beneficiaries.

CHAPTER 7

General Discussion, Conclusion and Recommendations

7.1 Introduction

The study analysed the socio-ecological resilience of local communities in response to emerging threats in southeast Zimbabwe with an overall objective aimed at establishing and developing the socio-ecological response mechanisms, strategies and pathways of local communities within the GLTFCA in Chiredzi and Beitbridge districts, Zimbabwe. The specific objectives were (i) to establish trends of present-day threats to community livelihoods in the GLTFCA in the south-eastern part of Zimbabwe (ii) to assess the current status of livelihoods and community perception of threats and the impact of emerging threats on livelihoods in south-eastern Zimbabwe part of the GLTFCA,(iii) to analyse the coping mechanisms and strategies used by local communities to emerging threats in south-eastern Zimbabwe part of the GLTFCA, and (iv) to examine how initiatives such as TFCAs influence socio - ecological resilience of local communities and develop the socio-ecological resilience mechanisms, pathways and strategies for local communities living within south-eastern Zimbabwe part of the GLTFCA. Chapter 7 therefore presents the major findings of the research focusing on results from Chapters 3–6 and discussions on the scientific relevance of the study and its implications to conservation.

7.2 Summary of Findings and Discussion

Chapter 3, examined the existence of perceived and actual conflicts between local communities and protected area management in Sengwe Ward 15 located on the peripheries of the GLTP in south-east Zimbabwe. The chapter assessed the park-people relationships and local community perceptions regarding wildlife conservation. It further looked at the GLTFCA context, its characteristics and Human and Wildlife Conflict as one of the major threats to livelihoods. The Chapter traced the historical threats of displacement and established that communities on the peripheries were displaced from their original homes and relocated on the peripheries paving

way for the creation of the GLTFCA which came into effect in 2002 (Bochinno, 2008; Muzeza, 2013; Chiutsi and Saarinen, 2019).

Chapter 3 further showed that conflicts in this area arise from an unshared vision of protected areas and lack of effective community engagement in conservation projects. Mhuriro-Mashapa et al., (2018) also highlighted on the impact of HWC on agriculture-based livelihoods in the periphery of Save Valley Conservancy and their findings showed that conservation conflicts were also on the increase and this was mainly caused by communities not having the same view and perceptions towards wildlife conservation. If local communities share the same vision with park management in the GLTFCA, it will be easier to address threats faced by communities, be they natural or human induced. The park management has a role to improve livelihoods in surrounding communities while communities have a key role in owning and protecting biodiversity (Chiutsi and Saarinen, 2019). HWC is one of the major threats to livelihoods in the south-east Zimbabwe part of the GLTFCA as identified in Chapter 3. Without understanding the nature of threats, it will be difficult to find solutions that are applicable to address challenges local communities are facing. This can only be done by incorporating the Resilience Livelihoods model proffered and developed in this study (Figure 7.1). The model shows the experienced threats by local communities and match with the socio-ecological resilience strategies available. Improved park-people relationship capacitates local communities and enhances resilience thereby promoting biodiversity in this part of the GLTFCA. Chapter 3 therefore calls for a collective adaptation strategy that sees local communities sharing the same vision with park management and this is what the desirable model developed in this study seeks to achieve.

Chapter 4 analysed the impacts of climate variability and coping strategies adopted by local communities in the GLTFCA (Murphree, 2009, Andersson et al., 2017). Climate variability is an emerging threat affecting livelihoods on the periphery of the GLTFCA and this therefore calls for communities to adapt, cope, and find strategies which facilitate resilience (Adger et al., 2003; Rahman and Alam, 2016). In addition, the Chapter explored the frontiers of climate change and variability, focusing on possible threats that are adverse impacts of climate change. Climate variability affects crop production, livestock production, conservation initiatives, and even undermine the coping strategies by local communities (Reid et al., 2019). Kupika et al., (2017) looked at climate change and variability and their impact on local livelihoods in the GLTFCA and the resilience strategies adopted by some selected communities.

Like other previous studies, Chapter 4 encourages local communities to adapt, build resilience and overcome threats so as to have sustainable livelihoods (Murungweni, 2011; Kupika et al., 2017). Crop raiding, livestock predation and poaching are known threats in the GLTFCA and these have been worsened by issues of climate change and variability which have continues to expose communities making them unable to cope (de Garine et al., 2017, Konono, 2021). In Chapter 4, communities are therefore encouraged to adopt and employ some socio-ecological resilience mechanisms that can help them to fight drought and become self-reliance (Machaka, 2021). Without achieving food security on the peripheries of the GLTFCA it will be difficult to have resilience livelihoods (Cumming and Dzingirai, 2017). Threats in the GLTFCA are therefore encountered by local communities with limited capacity, knowledge and capabilities to overcome them. (Bourgeois et al., 2023). Climate variability has to be matched with sustainable livelihoods adaptation strategies as proffered in Chapter 4. If such threats are encountered when communities have adequate response strategies, the communities will be in a position to recover and live a normal life without feeling the disturbances. The tilted orange shape in (Figure 1.2) shows inadequate capacities by local communities whereas the straight orange shape in (Figure 1.7) which is the desired model developed by this study shows resilience and ability–of local communities to stand against emerging and complex threats in part of the GLTFCA south-east Zimbabwe.

Chapter 5 analysed and assessed community views on poverty in a protected area. Since humans and wildlife share the same geographic space, stakeholder engagement is a critical component of wildlife management and transformative conservation (Konig, et al., 2020). In the establishment and management of protected areas (PAs), human communities that have coexisted with the plant and animal communities within the same landscape. Communities are often not equally considered as essential elements of the biodiversity to be protected (Scherl, et al., 2004; Abukari and Mwalyosi, 2020). The possible repercussions of such perspectives in conservation decisions can be the loss of biodiversity through human pressure on PAs. Decisions to support livelihoods of communities adjacent to parks often come as afterthought and in response to anthropogenic pressures (Ashley et al., 2006; Gupta et al., 2020). Local community engagement in conservation. Community engagement is an important pathway that enhances conservation and promote biodiversity on the edges of protected areas (Carol et al., 2022).

Chapter 5 managed to show that communities can move beyond resilience and start to share the same vision of protecting, owning and managing their natural resources (Garcia et

al., 2023). The same element of community involvement in natural resource conservation was also highlighted by Bardosh et al., (2017), as very important in addressing community vulnerability, building resilience and adaptation in the context of global change. Stakeholder matrix which this Chapter crafted, helps to know and respect the roles and capacities of each and every individual, group, organisation and all other players in biodiversity conservation (Chirozva et al., 2013; Maluleke, 2018; Nkomo 2020). Once roles are clear, it is therefore easier to address challenges and threats faced by all interested parties in the TFCAs (Muboko, 2017; Bourgeois et al., 2023). This is an important pathway that strengthens the existing socio-ecological systems and enhances livelihoods and biodiversity in the GLTFCAs (Caron et al., 2022). Stakeholder engagement is the new resilience governance that helps to capacitate communities and enhance their participation and involvement thereby building their capacity to counter emerging threats and help them to attain sustainable livelihoods in this study area as highlighted in Chapter 5. Without the involvement and participation of local communities, it will be difficult to apply the resilience livelihoods model developed in this study.

Communities and parks need to be integrated so that local people start to develop resilient strategies by getting some insights from their participation. With communities at the centre no emerging threat will dominate their local resilience strategies and responses. Through community engagement, the desired Livelihoods Resilience model empowers and places local people at a position where they will be able to stand, recover and overcome threats. Chapter 6 assessed local perceptions on poverty in villages under CAMPFIRE and established whether CAMPFIRE initiatives have enhanced livelihoods in the area, The Chapter further analysed the levels of involvement of local people in CAMPFIRE programs present in their local contexts (Biggs et al., 2019; Rodríguez-Robayo, 2020). The main highlights in this chapter are the findings which showed that villages which benefited from the CAMPFIRE program have positive perceptions on poverty as compared to those which are yet to benefit. The chapter concludes that, community conservation projects can enhance biodiversity and improve livelihoods.

CAMPFIRE as highlighted in Chapter 6 is one of the key conservation initiatives that can therefore enhance livelihoods of local people living in the GLTFCA (Zanamwe et al., 2018). These initiatives help in developing the socio-ecological resilience, pathways and strategies for communities living in the GLTFCA. Biggs et al., (2019) also confirm with the highlights in this chapter arguing on the important role of CAMPFIRE in strengthening community ownership of their natural resources. CBNRM is an escape route from poverty, and

the chapter managed to show this through comparison between villages that are benefitting from CAMPFIRE and those that are yet to benefit (Caron et al., 2022). The local people's difference in perceptions is very clear in this chapter, poverty remains a perennial threat to livelihoods in the GLTFCA and this can be easily addressed by involving the same communities to lead in the conservation of their own natural resources (Ntuli et al., 2019). CAMPFIRE capacitates communities, it enhances livelihoods and promotes conservation and co-existence (Tchakatumba et al., 2019). Enhancing livelihoods and promoting conservation is the core aim the simplified Livelihoods Resilience model developed in this study (Murungweni et al., 2014; Ntuli et al., 2021). With the desired Resilience Livelihoods model, vulnerability of local communities is addressed as they are capacitated through their benefits from CAMPFIRE proceeds.

The development of such socio-ecological systems that enhance livelihoods and conservation is the whole essence of this chapter (Andersson et al., 2017; Henley et al., 2023). CAMPFIRE offers the much-needed socio-ecological resilience as it structures the conservation governance and considers local communities as owners of their resources. It changes perceptions of local communities on conservation and poverty by capacitating and empowering them as key beneficiaries of biodiversity conservation. The result is resilient communities, communities that can transform, adapt, and attain sustainable livelihoods. This fosters co-existence; thus, local communities will therefore be able to deal with changes and lead in developing their own areas and surroundings. This outcome is only attainable if the simplified hybrid "Sutainable Resilience Livelihoods model" is applied during the analysis of emerging threats in this part of the GLTFCA, south-eastern Zimbabwe.

7.3 Scientific relevance of the study findings

By tracing the historical trends of threats through an analysis on the people-park relationship and local perceptions on wildlife conservation in Chapter 3, the study managed to highlight the livelihoods improvement of local communities and biodiversity conservation in the GLTCA. The thesis also highlighted issues to do with disasters where it touched on climate variability impacts and coping strategies of local communities in (Chapter 4). Pathways, resilience building and natural resource management through the involvement of local people were also analysed and assessed in detail in Chapter 5 and community engagement in wildlife conservation was at the centre of discussion. Poverty reduction was also at the centre of

discussion in this study and this was clearly demonstrated in Chapter 6 where the chapter focused on local perceptions on poverty and conservation in a CAMPFIRE area. The study calls for focused conservation development with the view of enhancing the living standards of communities living within the wildlife corridors. Livelihoods become sustainable when they can respond to and recover from stresses and shocks (including enhancing present and future assets and capabilities) without undermining the natural resource base (Chambers and Conway, 1992).

Figure 7.1 below depicts, a resilient community with adequate coping mechanisms, resilience and strong adaptive strategies. Local communities (4) living on the peripheries of protected areas (5) have to match and overcome the pressure exerted by shocks (1), vulnerability (2) and disasters (3). The have cope (6), build resilience (7), adapt (8) and attain sustainable and resilient livelihoods (9). The broken arrows pointing straight from shock and vulnerability to adaptive strategies and coping mechanisms shows that threats can also directly attack adaptive, resilience and coping mechanism adopted by communities. The bolded arrows show coping mechanisms joined with resilience strategies plus adaptation forming a stronger community that can withstand shocks, recover quickly from disasters and sustain their livelihoods while at the same time protect biodiversity. The above scenario is achievable if adequate measures, processes and appropriate policies are put in place to support livelihoods on the peripheries.

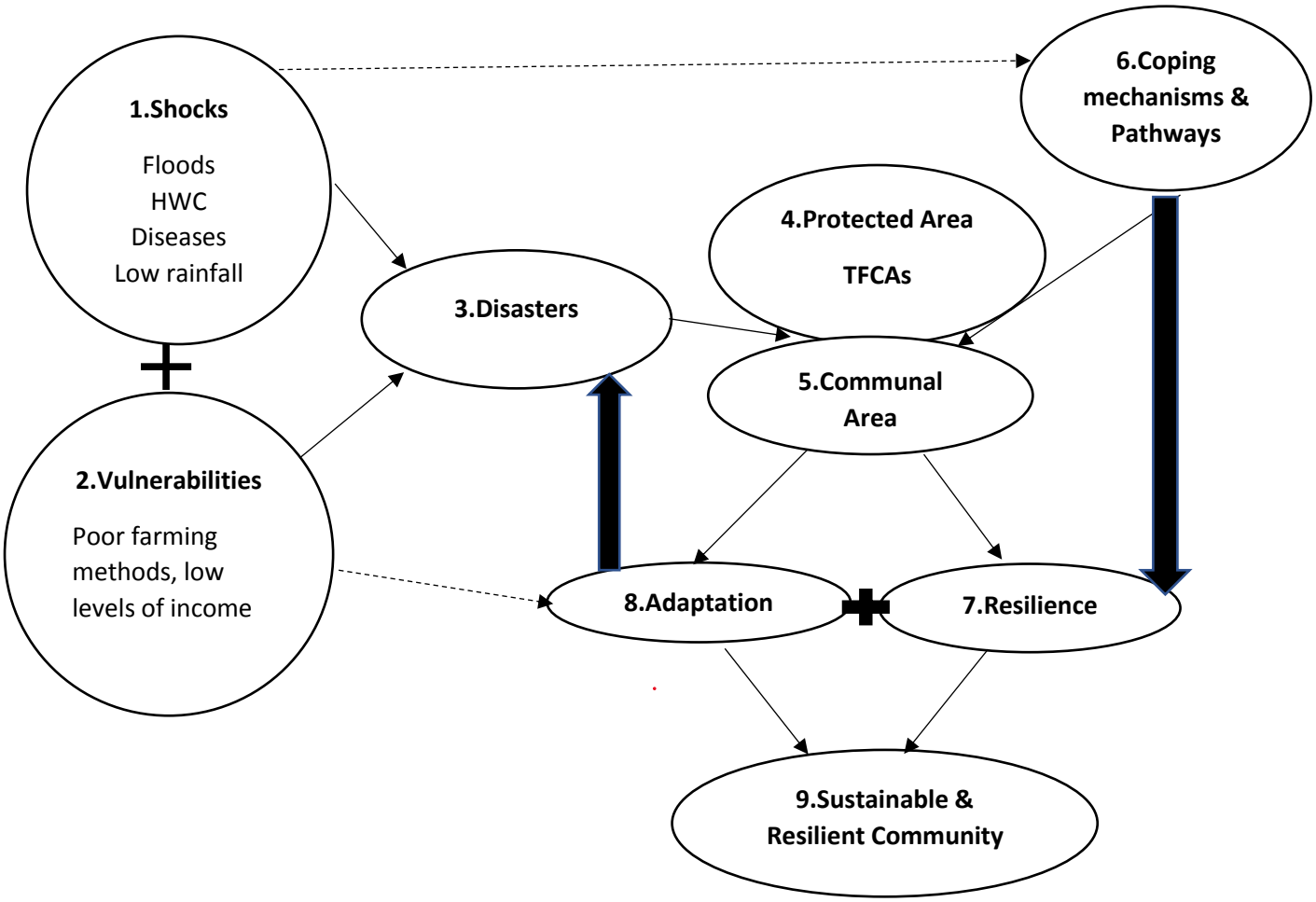

Figure 7.1: A simplified Livelihoods Resilience Model for the local communities in the GLTFCA south-east Zimbabwe. Notes: HWC: Human and Wildlife conflict, TFCAs s Transfrontier Conservation Areas. The broken arrows represent a weaker impact and influence, while big black solid arrows represent stronger impact and influence, the solid arrows represent direct influence and the plus sign joins two components to form a much stronger combination.

Livelihoods are deemed sustainable when communities can cope with and recover from stresses and shocks as shown in the simplified model (Figure 7.1). Sustainable livelihoods should maintain and enhance its capabilities, assets, and activities both now and in the future without undermining the natural resource base. Vulnerability in the new simplified model emerges but human beings have the strategies and mechanisms in place to face the harmful threats or shocks with adequate capacity to respond effectively. To ensure

sustainability, communities should become resilient to emerging threats, be able to recover quickly from shocks through established socio-ecological systems and pathways (Chambers & Conway, 1992; Lew et al., 2016; Nasrnia and Ashktora 2021). By coming up with simplified Livelihoods Resilience model, this study helps in enhancing the appreciation, understanding, and increases the strengthening of other already existing theories. This particular simplified model suits very well when applied to local communities in part of the GLTFCA south-east Zimbabwe. The models encourage and proffers local resilience strategies and mechanism that communities in the GLTFCA can use in the face of disasters. An important part of adaptive management and governance is to encourage communities and local organizations to interact with one another (Fabricius and Currie, 2015). Ecological resilience presumes the existence of multiple stability domains and the tolerance of the system to perturbations that facilitate transitions amongst stable states (Mitra, et al., 2015; Gunderson, 2000).

7.4 Implications on conservation, management and society

Chapter 3 calls for the harmonious relationship between park management and local communities (Mutanga et al., 2015). The study may be useful to ecological science, conservation, livelihoods and human wildlife conflict mitigation. HWC has been on the increase in the GLTFCA and this has negatively influenced perceptions on Wildlife conservation (Dube, 2020). Communities in the GLTFCA have been largely forced to view wildlife conservation in a negative way hence the need for some continuous engagement with local communities and develop some strategic partnerships between park management and the local communities.

Strategies that are not sustainable are strengthened and communities encouraged to adapt and overcome threats and this is the key recommendations carried in Chapter 4 where vulnerable communities are encouraged to develop some resilience mechanisms and coping strategies that can help them to overcome climate variability impacts and enhance their livelihoods. The Chapter gave a number of drought mitigation measures which when taken into consideration and implemented fully and these include rehabilitation of small irrigation schemes, growing of small grains and fodder crop production can be of assistance to communities in the GLTFCA and this will find communities overcoming threats key among them being drought (de Garine et al., 2017).

The study also managed to come up with a Stakeholder Matrix (Chapter 5) that places communities on the fore regarding conservation of natural resources found within their surroundings. This is important to conservation since it addresses a number of complex issues that were arising in wildlife conservation conflicts and promotes co-existence. Communities in this regard will be realising benefits of protecting their natural resources and have a sense of ownership and there will be harmony and co-existence if issues of boundaries are addressed and agreed upon between stakeholders involved. Meaningful participation by local people in all wildlife conservation initiatives is very vital also and every participant should be recognised and allowed to participate (Cooney et al., 2018).

Local people need to be consulted and engaged every time and making sure conservation benefits are shared equally with the community and this helps to enhance livelihoods and build resilience by capacitating communities (Ebersöhn, 2019). Perceptions of communities on conservation and poverty are also influenced by this engagement and benefits sharing processes. As a result, management is able to tackle and address issues that communities are facing from an informed scientific position and engage with communities to enhance their knowledge, livelihoods and biodiversity conservation (Abukari and Mwalyosi, 2020).

7.5 Conclusions

This study concluded that (i) the emerging threats in the GLTFCA south-east Zimbabwe are increasing, unpredictable, numerous, dynamic and so complex in nature and have continued to undermine livelihoods, (ii) the response strategies by local communities in the GLTFCA south-east Zimbabwe are not adequate, (iii) the majority of people living in the GLTFCA south-east Zimbabwe regard their relationship with parks management in a negative way, (iv) there is a lack of community involvement, consultation and limited participation of local people in conservation projects within the GLTFCA south-east Zimbabwe, (v) conservation initiatives have significantly enhanced community perceptions, resilience and livelihoods in the GLTFCA south-east Zimbabwe, (vi) community based natural resource management can influence communities to have positive perceptions on poverty and conservation in the GLTFCA south-east Zimbabwe, and (vii) coping mechanisms, pathways and resilience strategies of local communities living in the GLTFCA south-east Zimbabwe need to be strengthened.

7.6 Recommendations

This study recommends the following:

a) The need for improved involvement, consultation and engagement of local communities in establishing and managing wildlife conservation projects,
b) Capacitation of local communities by protected area management is important and need to be prioritised in community-based conservation enterprises,
c) There is need to come up with flexible conservation laws that encourage local communities to adapt to changing environments, and
d) Emerging threats need to be continuously monitored and assessed so as to maintain the checks and balances on livelihoods resilience by local communities.

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APPENDICES

Appendix 1: Focus Group Questionnaire

Title Page

Focus Group Topic

Conducted on

Date

Prepared by

Respondents Information

Number of Participants

Describe group composition (gender, age, educational background, marital status)

List of Respondents

Respondent

Full Name

Before the discussion

Inform respondents about the purpose and goal of the focus group discussion.

✔

✖

Stress confidentiality to ensure that respondents' details, ideas and insights will be kept for the purpose of the focus group discussion.

✔

✘

Have respondents introduce themselves to the group.

✔

✘

Discussion

How familiar are you with the Great Limpopo Transfrontier Conservation Area?

How do local communities in the GLTFCA perceive threats?

Do communities recognise the importance of Protected Areas?

Do communities in the GLTFCA have their own local - indigenous adaptive mechanisms to threats?

What are the impacts/influence of TFCA towards the socio – ecological resilience of local communities?

What should be done to enhance livelihoods and biodiversity on the edges of TFCAs?

What else do they want to add besides what has been asked by the moderator?

Completion: Thank everyone for coming to discuss these issues. Your opinions have been given an excellent insight into this research outcome.

Name and Signature of Focus Group Moderator

Appendix: 2

Key Informant interview Questionnaire

General information (to be filled by the assessor)			
Nr	**Assessor's name:**	**Assessor's organisation:**	
1			
2			
3			
Date of interview (dd/mm/yy):		**Location/site name:**	
Name of key informant:		**Role of key informant:**	
Contact details of key informant:			
Informed consent:			

Good morning/afternoon, my name is _ _ _ _ _ _ _ _ _ _ _ _ _ _ _, I work for _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ (name of organisation), and I'm accompanied by my colleague _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ who works for _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ (name of organisation).

I am a DPhil student from **Chinhoyi University of Technology** (School of Wildlife & Environmental Sciences). I am carrying out a research study on "' The socio – ecological resilience of local communities in response to emerging threats in south eastern Zimbabwe.

The aim of this whole exercise is to collect data on:

1. The trends of threats affecting livelihoods in this area
2. The current status of livelihoods and community perceptions to threats
3. Coping mechanisms and strategies adopted by communities to threats
4. Are these coping strategies by communities adequate?
5. What do you think should be done to enhance these coping mechanisms and strategies by communities so as to have sustainable livelihoods?

It is therefore very important that we get your honest opinions and ideas.

The consultation also includes questions related to livelihoods and resilience s as to have a better appreciation on community capacities, challenges and understanding of threats.

You have been selected to participate as a key informant based on your expertise and experience in working with the communities here in the Ward/village.

We would appreciate if you could also provide us with additional information or references that we can use for our review during this interview or at a later date.

Please rest assured that your answers are confidential and will not be shared with other community members, it will be strictly for academic purposes and the results will be shared with you through the Chinhoyi University library whenever requested.

The interview will take around 1 hour. Do you agree to proceed to the questions?

Yes [ ]

_____ _____

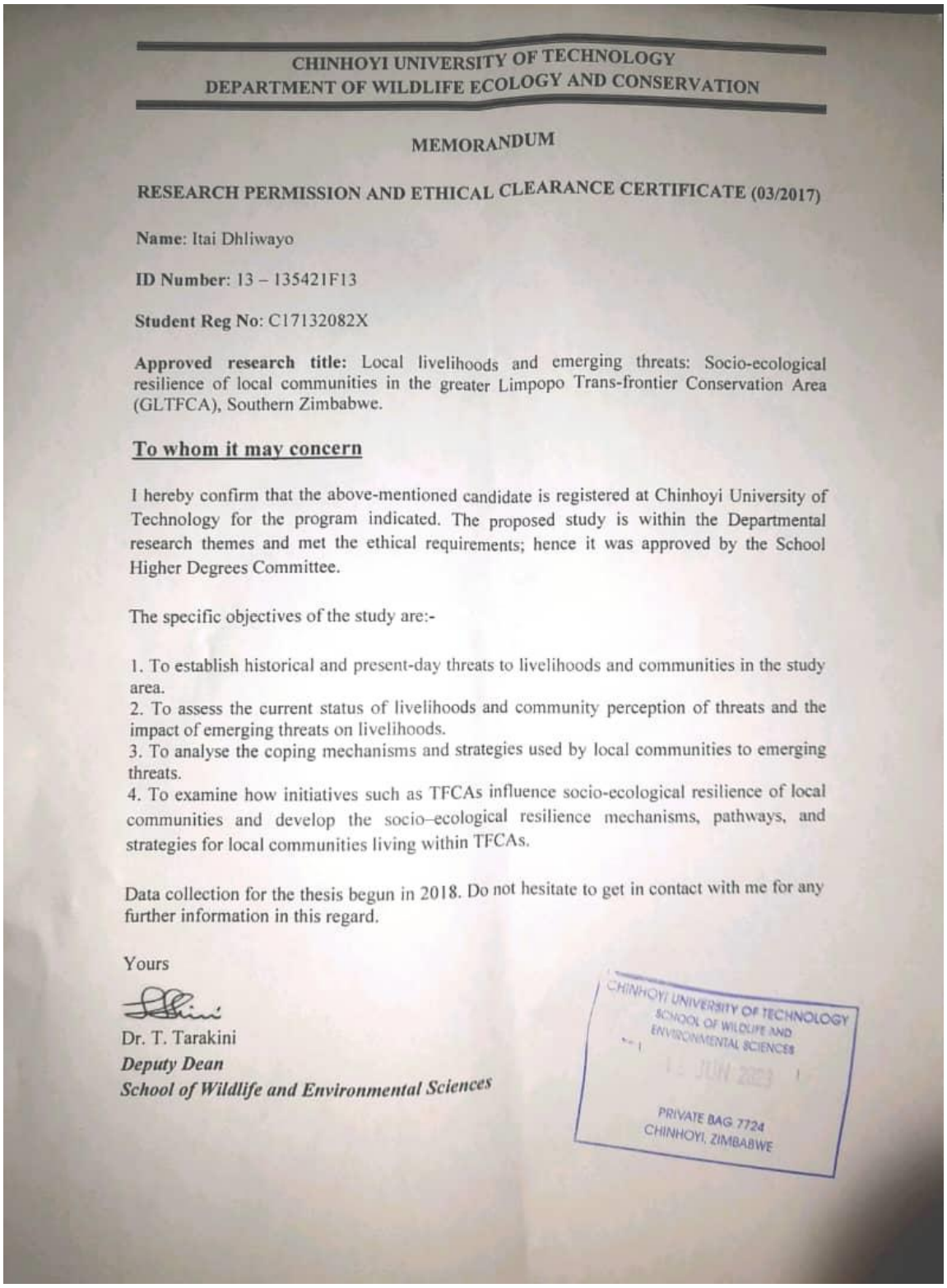
Signature Date

No [ ] – if no, can we visit you at a later date/time?

Interview questions
1. What do you think about conservation?
2. **How would you describe your experiences here, living closer to protected areas?** a. What are the common livelihood threats here? b. How do you describe the historical and present-day trends of threats in this area? C. How do you describe the current status of livelihoods and community perceptions to threats in this area? **3. What are the coping mechanisms and strategies adopted by local communities here whenever they encounter threats?** a. Are these coping mechanisms to threats adequate from your own view? b. What can you recommend as a solution to address these challenges faced by communities that can enhance their livelihoods, promote co - existence while at the same time protecting biodiversity? **4. Are communities participating in TFCA projects underway in this area and if they are participating what are the benefits accruing on the community side?** a. What are the livelihoods opportunities that came with the introduction of these conservation initiatives? b. Are local people able to recover quickly after disaster has struck and if not, what could be the reasons?
5. Are there any limitations or risks that affect local peoples' ability to participate in livelihoods and income-generating activities?

Closing
6. Do you have any other questions, feedback or concerns that you would like to share with us?

Appendix 3: Ethical Clearance Certificate



CHINHOYI UNIVERSITY OF TECHNOLOGY
DEPARTMENT OF WILDLIFE ECOLOGY AND CONSERVATION

MEMORANDUM

RESEARCH PERMISSION AND ETHICAL CLEARANCE CERTIFICATE (03/2017)

Name: Itai Dhliwayo

ID Number: 13 – 135421F13

Student Reg No: C17132082X

Approved research title: Local livelihoods and emerging threats: Socio-ecological resilience of local communities in the greater Limpopo Trans-frontier Conservation Area (GLTFCA), Southern Zimbabwe.

To whom it may concern

I hereby confirm that the above-mentioned candidate is registered at Chinhoyi University of Technology for the program indicated. The proposed study is within the Departmental research themes and met the ethical requirements; hence it was approved by the School Higher Degrees Committee.

The specific objectives of the study are:-

1. To establish historical and present-day threats to livelihoods and communities in the study area.
2. To assess the current status of livelihoods and community perception of threats and the impact of emerging threats on livelihoods.
3. To analyse the coping mechanisms and strategies used by local communities to emerging threats.
4. To examine how initiatives such as TFCAs influence socio-ecological resilience of local communities and develop the socio–ecological resilience mechanisms, pathways, and strategies for local communities living within TFCAs.

Data collection for the thesis begun in 2018. Do not hesitate to get in contact with me for any further information in this regard.

Yours

Dr. T. Tarakini
Deputy Dean
School of Wildlife and Environmental Sciences

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