GOVERNANCE, INFORMALITY AND AGENCY IN THE MAKING OF CROSS-BORDER MOPANE WORM LIVELIHOODS IN SOUTHERN AFRICA

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DECLARATION

I, **James George Sekonya**, hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

Signature:… Signed by candidate

Date:……

DEDICATION

This thesis is dedicated to all those who came before me.

BabinaKwena ba ga Sekonya! Ke ra lena Babinatilo.
Lena Dikwena badiba batho bao ba tšwago ga Mongatane Mashabela,
Kua ga tamatise ga e lewe gobane ke thola.
Lena le Dikwena tša tilo tšeo di bowago modupe mapalakateng,
Ge le tsena Modupe la hwetša noka e tletše ge le e tshela.
Ba ena lehlaka, lehlaka la bo Mantshehleng ke lle,
Ke ra lena bana ba Mankatudu le Phaahla lena bana ba Mphel'a Repo.
Lena bana ba podumo e tala Morwamosehlane,
Bana ba Maeleletši Kamela le Morwamosehlane.
Ga ke tšhabe kgati, ke tšhaba baditi.

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ABSTRACT

The utilisation of wild products is a mainstay of household livelihoods for millions of forest and rural dwellers worldwide. While many are used for subsistence purposes, some wild products are also exploited commercially. Commercialisation has often coincided with state-led conservation strategies that have brought previously unregulated resources under state regulation. Mopane worms are a caterpillar phase of the *Imbrasia belina* moth, used as a household food source and, increasingly, part of a lucrative cross-border trade in southern Africa. Across Botswana and South Africa, the statutory regulation of these resources is overlaid upon customary forms of governance that continue to regulate resource access and use. The effectiveness of such interactions is important for the success or failure of different governance arrangements and resource-based livelihoods. Using the cross-border trade of mopane worms as a lens, this research examines the ways in which actors navigate different governance systems, including the complexities of informal trade. In doing so, the research aims to improve understanding of the implications of the interplay between different governance arrangements and informality and their influence in configuring access to resources and cross-border markets. A key finding is that the inadvertent consequence of integrating multiple forms of governance and resultant interactions has led to the emergence of constraints that impact resource users across the cross-border trade chain. Interactions between statutory and customary governance systems have, in turn, led to the emergence of informality as an adaptive strategy across the trade. The study demonstrates that the informal and cross-border nature of mopane worm trade compels actors to use their agency to adopt multiple strategies to navigate complex governance arrangements. This in turn results in an uneven distribution of constraints and opportunities across the trade chain. Power imbalances shape diverse and complex forms of social relations, affect access to resources and markets, and marginalise destitute actors. Fragmented governance arrangements benefit actors with privileged access to market information, knowledge, capital, and resources, enabling them to navigate the constraints and incompatibilities that characterise informal cross-border trade. The study underscores the need to streamline statutory, customary, and informal governance approaches particularly as the three systems are not separate but dynamic, and to pursue an unambiguous, pro-poor agenda, focused on safeguarding informal, resource-based livelihoods and the sustainable use of mopane worms.

ACRONYMS

ARC	Agricultural Resources Conservation Act
BURS	Botswana Unified Revenue Service
BWP	Botswana Pula
CBD	Central Business District
CBRNM	Community-Based Natural Resources Management
CLGF	Commonwealth Local Government Forum
CoGTA	Cooperative Governance and Traditional Affairs
DEFF	Department of Environment, Forestry and Fisheries
DFRR	Department of Forestry and Range Resources
DWNP	Department of Wildlife and National Parks
FAO	Food and Agriculture Organisation of the United Nations
GDP	Gross Domestic Product
IDP	Integrated Development Plan
ILO	International Labour Organisation
ITCZ	Intertropical Convergence Zone
ITTO	International Tropical Timber Organization
LED	Local Economic Development
LEDET	Limpopo Department of Economic Development, Environment and Tourism
MEC	Member of the Executive Council
MENT	Ministry of Environment, Natural Resources Conservation and Tourism
NEMPAA	National Environmental Management: Protected Areas Act
NFA	National Forest Act
NGO	Non-Governmental Organisation
NTFPs	Nontimber Forest Products
SADC	Southern African Development Community
SARS	South African Revenue Service
SASSA	South African Social Security Agency
StatsSA	Statistics South Africa
TFCA	Transfrontier Conservation Area
UN	United Nations
UNDP	United Nations Development Programme
ZAR	South African Rand

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CHAPTER 1: INTRODUCTION

1.1 Introduction

The use of wild products is a mainstay of household livelihoods for millions of forest and rural dwellers worldwide. Across developing countries, rural households pursue multiple livelihood strategies, including the collection of non-timber forest products (NTFPs). The Food and Agriculture Organisation of the United Nations (FAO) defined these products as 'goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests' (FAO, 1999). An estimated 80% of the population in developing countries use NTFPs to meet health and nutritional needs (FAO, 2020). The NTFPs are significant for livelihoods as they allow households to derive benefits, including direct consumption, income generation, safety net functions, supporting cultures and spirituality, as well as cash saving (Shackleton & Pandey, 2014). Moreover, natural resources contribute to improving livelihoods (Marshall et al., 2003; Belcher et al., 2005) and trading opportunities (Shackleton & Shackleton, 2004). While many wild product species are used for subsistence purposes, some are also exploited commercially (Sunderland et al., 2004).

Commercialisation has opened opportunities for rural and urban people to harvest and collect wild products for local and global markets (van Niekerk & Wynberg, 2012; Choudhary et al., 2014). Evidence shows that profits earned from such sales provide a valuable income source for households (Hansis, 1998; Marshall et al., 2003). In India, wild product trading is estimated to contribute US$27 billion per year (ITTO, 2007). Similarly, across Africa, the contributions towards household income are noteworthy. In Ethiopia, wild product trade was found to constitute 27% of household income (Babulo et al., 2009), while in Benin, Heubach et al. (2011) reported an average contribution of 39% towards annual household income. Comparable contributions to income have been observed in Zimbabwe (Cavendish, 2000). Studies in South Africa show that NTFP trade income constitute between 15% and 30% of households' incomes across urban and rural areas (Kaoma & Shackleton, 2015; Mugido & Shackleton, 2019). Limited studies have attempted to quantify NTFP trade and its contribution to households across Botswana. Increasingly, these products are gaining popularity for providing raw materials in industrial processing for export commodities. Globally, the FAO

estimates that 150 NTFPs are incorporated in international trade networks for pharmaceutical, cosmetic, and novel food products (FAO, 2020).

Although global NTFP value chains are known to generate considerable incomes, the harvesters and collectors of these products are among the most impoverished and powerless people in the chain (Neumann & Hirsch, 2000). In many contexts, harvesters and collectors operate in asymmetric power environments alongside companies to whom they supply raw materials (te Velde et al., 2006; van Niekerk & Wynberg, 2012). To a large extent, these power imbalances dictate the 'terms of participation', which are typically more favourable to exporters, wholesalers, and retailers while marginalising harvesters and collectors (Choudhary et al., 2014). These inequities and how they manifest raise questions about the flow of benefits and mechanisms through which resources are accessed, especially by impoverished harvesters and collectors.

Across southern Africa, mopane worm harvesting, and use have become part of a lucrative cross-border trade growing on a regional scale. Mopane worms are a caterpillar phase of the *Imbrasia belina* moth, used as a household food source in rural households across southern Africa (Makhado et al., 2014). Historically, mopane worms have been harvested and consumed at the household level, with surplus used in barter trade to meet other household needs or to be shared with family (Stack et al., 2003; Lucas, 2010). Increasingly, mopane worms are gaining popularity among consumers in large cities and outside their natural range (Palgrave, 1983; Styles, 1996; Kozanayi & Frost, 2002; Makhado et al., 2014). An increasing rural-to-urban migration has driven the growing popularity as urban consumers reconnect with their rural lives. As a result, a vibrant trade has emerged, leading to commercialisation concentrated in urban centres. Estimates show that mopane worm trade generates between US$39 million and US$100 million per year, depending on the quality of the outbreak and prevailing weather conditions (Potgieter et al., 2012; Makhado et al., 2014). In South Africa, this market is concentrated in peri-urban contexts and is supplied by imports from Botswana and Zimbabwe (Moruakgomo, 1996; Kozanayi & Frost, 2002; Ghazoul, 2006). Most of this value accrues to traders than harvesters. According to Kozanayi & Frost (2002) two factors are influential. First, market prices have been shown to increase exponentially in times of shortage from June to November, long after harvesters had sold off their stock at lower prices. Second, traders

increase profits through exporting to markets in South Africa where demand far exceeds supply from local harvest. This significance of mopane worm resources raises critical questions regarding its cross-border commercialisation processes, which have been neglected in the literature.

The cross-border commercialisation of mopane worms in southern Africa is occurring alongside other forms of crossborder resource utilisation and management. The flagship is the transfrontier conservation areas (TFCA) program adopted by a number of countries in the Southern African Development Community (SADC) (Hanks, 2003; Ramutsindela, 2007). The TFCA discourse as championed by nation states and influential conservation nongovernmental organisations (NGOs), is often tied to notions of peace, regional connections, and exploitation of tourism markets (Ramutsindela, 2007). The TFCA shares certain features with crossborder natural resource commercialisation and use, such as the crossborder management of natural and cultural resources, ensuring better conservation and socioeconomic development across international borders (SADC, 1999). Nonetheless, a unique feature of mopane worm crossborder commercialisation, which sets it apart from TFCAs, is the organic genesis of the trade as championed by ordinary local resource users. This is often without state intervention and thus in contrast to other crossborder initiatives involving high-value wildlife.

While mopane worm trade and use have been the subject of studies in Namibia and Zimbabwe (Kozanayi & Frost, 2002; Makhado et al., 2012; Potgieter et al., 2012; Thomas, 2013), limited research has been done on the cross-border trade. This paucity in research is evident where studies investigated the trade inwardly within each country, in rare instances alluding to the existence of the cross-border trade. In Zimbabwe, this approach was taken by Kozanayi and Frost (2002), Stack et al. (2003) and Gondo et al. (2010) in reporting on mopane worm access, use, trade and regulation. Lucas (2010) and Moruakgomo (1996) followed a similar direction in investigating the access, harvesting, and trade of mopane worms in Botswana, mentioning that the South African markets attract some of the harvests. This approach continued in Namibia with Thomas (2013) and in South Africa with Makhado et al. (2012) and Wolbers (2018). Although these scholars studied mopane worm regulation, access, use and commercialisation, the focus on the cross-border aspect is extremely limited.

Mopane worm trade incorporates various activities that include harvesting and processing, trading, and export to meet the growing demand. The trade is characteristic of an informal economic activity because of the limited reach of state regulation over some activities (Chen, 2006; Guha-Khasnobis et al., 2006; Koçer, 2016). Despite the largely informal nature of mopane worm trade, the diverse and complex regulatory systems across the trade create challenges for actors. For example, access to resources from forests under customary governance systems often requires navigating customary and statutory forms of regulation (Brown & Lassoie, 2010a; Laird et al., 2010; Sekonya et al., 2020). These plural governance systems have introduced complex tools and frameworks that actors must navigate to access and use resources. Access rights of local communities, power, and wealth inequities, as well as regulatory constraints, may compel actors into forum shopping scenarios where they choose to avoid compliance with cumbersome rules in favour of the law, custom, or convention that will favour their own objectives (Ribot & Peluso, 2003; Larson & Soto, 2008; Pacheco et al., 2008). Similar drivers are influential over market access dynamics. Wealthier actors are better positioned to facilitate access to resources and dominate markets, while poorer actors are often limited in their capabilities (Kepe, 2002; Ambrose-Oji, 2003; Paumgarten & Shackleton, 2009). These dynamics have the potential to be amplified, given the regional footprint of mopane worm trade and the limited effort to investigate how the co-existence of multiple governance systems impacts access to resources, markets and livelihood crafting, particularly in cross-border contexts. A theoretical gap has emerged on how the co-existence of multiple governance systems impacts access to resources, markets and livelihoods in the cross-border commercialisation of wild products. There is also a poor understanding of the peculiarities of governance interactions and informalities across the trade. A natural progression arising from this gap is to critically interrogate the governance arrangements that govern and confront actors and the outcomes of these different forms of governance in cross-border trade.

1.2 Problem Statement

The increasing commercialisation of mopane worms, accompanied by cross-border trade between Botswana and South Africa, attracts actors searching for means to support their livelihoods (Moruakgomo, 1996; Ghazoul, 2006; Makhado et al., 2014). Commercialisation has

often coincided with state-led conservation strategies that have brought under state regulation the resources that were managed under common property systems, largely administered by traditional authorities. The scholarship on common property regimes has been instrumental in analysis of natural resource management and role of property rights in the management (Swallow & Bromley, 1995; Agrwal, 2001; Hasan 2002;). While the CPR literature has been useful in the study of the commons and natural resources, the present study utilizes the governance scholarship to understand the dynamics that characterises interactions between resource users and the plural forms of governance. This analysis will be guided by the concept of interactive governance (Jentoft & Bavinck, 2014) as discussed in chapter 2.

The statutory regulation of the use of these resources is typically overlaid on customary forms of governance that continue to regulate resource access and use (Lucas, 2010; Thomas, 2013; Sekonya et al., 2020). Throughout the trade chain, the interplay between these diverse regulatory approaches leads to the emergence of access arrangements that have inconsistent and diverse implications for resource users and traders, leading to 'winners and losers'. This case study investigated the roles of informality in influencing compliance with different frameworks for access to resources and markets.

This knowledge gap was examined by investigating emerging governance arrangements in mopane worm cross-border commercialisation and associated livelihood outcomes. These governance interactions are crucial in shaping the adaptive responses of actors necessary to access and use resources. Informal economies place a high value on interactions at an individual level to facilitate the flow of benefits and capital. Therefore, the study also interrogated the role of marginalisation, access, and power as they shape relational outcomes among actors and regulatory institutions. Across Botswana and South Africa, the statutory regulation of wild products is overlaid on customary forms of governance (Lucas, 2010; Sekonya et al., 2020). Such interactions are essential for effective governance and resource-based livelihoods. To this end, it is pertinent to undertake a critical analysis of how actors navigate different governance systems, including the complexities of informal trade. The study evaluated the social relations, power dynamics and informal arrangements spanning the cross-border trade to enhance understanding of governance implications for resource users and cross-border trade.

1.3 Aim and Objectives of the Research

Using the cross-border trade of mopane worms as a lens, the thesis examines how harvesters and traders navigate different governance systems, including the complexities of informal trade. In so doing, it aims to elucidate a conceptual understanding of interactive governance approaches and wild product commercialisation.

The objectives are:

a) To identify key actors across the mopane worm trade chain;
b) To investigate the role of social relations among resource users in navigating different governance systems;
c) To analyse the governance arrangements that affect the harvesting, dealing and cross-border trade of mopane worms;
d) To examine power dynamics in relation to actor interactions; and
e) To propose a framework to understand the livelihood implications of the interplay between different governance arrangements and informal trade.

1.4 Significance of the Study and Justification

This study contributes to understanding the interplay between governance and informality in configuring access to resources and markets in cross-border trade. This entails understanding the myriad ways in which resource users navigate regulatory spaces at the interface between statutory, customary, and informal approaches. This is complemented by understanding the contribution of social networks, power inequities and regulatory frameworks in cross-border commercialisation. As a point of departure, the study built on the resource governance literature, which acknowledges that the plurality of governance regimes creates multiple and complex issues for resource users related to participation and access to resources, markets, and benefits (Armitage, 2008; Armitage et al., 2009; Hysing, 2009; Sowman & Wynberg, 2014a). The political-economic processes of natural resource commercialisation inherently create winners and losers within the community of resource users and actors. Such outcomes are inevitable because of local socio-economic contexts, power inequities and political dynamics, and the multi-level institutional processes known to introduce varying degrees of constraining

and enabling contexts (Sowman & Wynberg, 2014a). In dealing with these outcomes, resource users adopt numerous strategies to navigate constraints and opportunities that can derail their livelihood ambitions.

The study explored how actors navigate the constraints and opportunities emerging from governance interactions across scales at an individual and household level. The importance of a household focus is that restrictions and opportunities affecting access and use of resources are influential in configuring household livelihoods. Therefore, understanding the barriers and enablers across the trade provides a basis to understand the policy interventions needed to address bottlenecks in natural resource commercialisation. The study explored how institutions and regulations influence actors differently, impacting livelihoods and natural resource commercialisation at a policy level. The notions of informality to which livelihoods are linked are often associated with illegality, carelessness, and unsustainable practices (Benson et al., 2014). Negative perceptions of informality in wild product utilisation can delegitimise livelihoods at the policy level. This can have severe ramifications for households who depend on access to natural resources for their wellbeing. Guha-Khasnobis et al. (2006) noted that the self-organising capabilities that communities can produce without the interference of state bureaucracy demonstrate that informality is not synonymous with negativity. Understanding the various ways in which governance approaches facilitate and constrain livelihoods and resource commercialisation is pertinent to reforming governance institutions to enable the support of sustainable practices that fit local contexts and support livelihoods.

Although mopane worm livelihoods have been the subject of multiple studies, limited research exists on cross-border commercialisation in southern Africa, particularly between Botswana and South Africa. An exception includes studies on marketing and utilisation (Kozanayi & Frost, 2002; Stack et al., 2003), but these allude only to the existence and growth of the cross-border trade. Studying cross-border commercialisation is relevant and necessary for several reasons. First, the growing cross-border trade demonstrates the emerging economic significance of mopane worms beyond the relative obscurity with which the resource has been perceived. Second, trade demonstrates the intricate connection between formal and informal livelihoods. These connections emerge from the 'double-dipping' between statutory and customary institutions that characterise informal economies (Guha-Khasnobis et al., 2006;

Kanbur, 2009; Williams et al., 2016). Third, growing commercialisation has inspired new ways of accessing resources and markets, necessitating novel regulatory approaches. Fourth, the increasing interest in wild-harvested mopane worms raises questions about sustainable use of resources and rural livelihoods in the countries of origin. Lastly, insights from this study contribute to the limited literature on the cross-border commercialisation and plural governance of mopane worms (see Kozanayi & Frost, 2002; Stack et al., 2003; Sekonya et al., 2020).

1.5 Governance of Informal Wild Products Trade

The role of governance arrangements in influencing wild product access and commercialisation is a central feature of this study, particularly as wild products are ordinarily regulated by a combination of rules and frameworks that are not always in harmony. Trade in wild products is often characterised as informal and deemed insignificant for livelihood activities (Shackleton & Pandey, 2014). However, the prominence of statutory regulation alongside customary systems in regulating products raises questions about the true nature of wild product trade. Similarly, the multiple and diverse ways in which resource users interact with governing actors suggest that the conceptualisation of wild product trade as purely informal ignores the trade's nuances (Shackleton et al., 2011).

Since its emergence and popularisation in the early 1970s, the concept of the informal economy has provided an analytical lens to understand the relationship between regulatory frameworks and livelihoods (Hart, 1970; ILO, 1972; Gerry, 1974; Bienefeld, 1975; King, 1975; Papanek, 1975). However, scholars such as Chen (2006; 2016), Guha-Khasnobis et al. (2006) and Kanbur (2009) have argued that in practice, the informality of economic activities cannot be neatly delineated; instead, it is relative to the extent and reaches of state regulatory powers. This notion informs the conceptualisation adopted in this study and is pertinent for unravelling the relationship of statutory institutions to natural resource commercialisation. A vital feature of the informality continuum is acknowledging that economic activities may contain characteristics that simultaneously encompass formal and informal traits. Access to resources, use and trade, comprises stages at which varying levels of compliance exist, such that the reach of government is strong in some respects while weak in others.

Asymmetric interactions at the interface between the state, customary institutions, and local actors impact resource access and use outcomes. In practice, the effort required to regulate resources using multiple forms of governance is a complicated and messy business comprising dynamic and diverse institutional arrangements, norms, and practices (Wiersum et al., 2014; Ndeinoma & Wiersum, 2016). Commercially traded wild products are often regulated in a mechanical approach comprising centralised state-led control using permits and quotas (Larson & Soto, 2008; Ingram, 2014). In the rural areas where traditional authorities maintain a presence and influence, resource governance remains dominated by the traditional authorities, especially where state reach is limited. Therefore, the inability of state machinery to enforce compliance in remote rural areas, either due to lack of resources or interest in NTFPs, has in some contexts thrust chiefs and traditional authorities into an enforcement role (Pahl-Wostl, 2009). The presence and popularity of traditional authorities in rural parts of southern Africa as legitimate power holders mean that their governing powers can be duplicated or lead to overlaps. The questions of how these statutory and customary institutions interact, and the outcomes of such engagements are significant for mopane worm commercialisation, given its socio-economic importance for users, especially in rural harvesting areas.

Despite the clear overlaps in roles over resources, efforts and initiatives to decentralise power and control over resources are often shunned by authorities and other governing actors because of their inherent complexity and threat to vested interests (Armitage, 2008; Nuesiri, 2014). In the absence of effective regulation, actors have developed practices that regulate interactions. For example, market traders may have rules that fill voids created by the lack of capacity in the municipalities to uphold informal trading bylaws and policies. Similarly, the breakdown of customary governance systems and lack of focus on wild products by the government creates a regulatory vacuum (von Maltitz & Shackleton, 2004; Mwalukomo, 2009; Shackleton, 2009). In South Africa, the breakdown in customary governance systems can be attributed partly to persistent legitimacy contestations. In filling these voids, people's agency fuels the innovation to create informal processes and rules that guide everyday practices and interactions. This raises questions about the relevance and fit of these self-crafted institutions in providing a framework for regulating actor practices and behaviours.

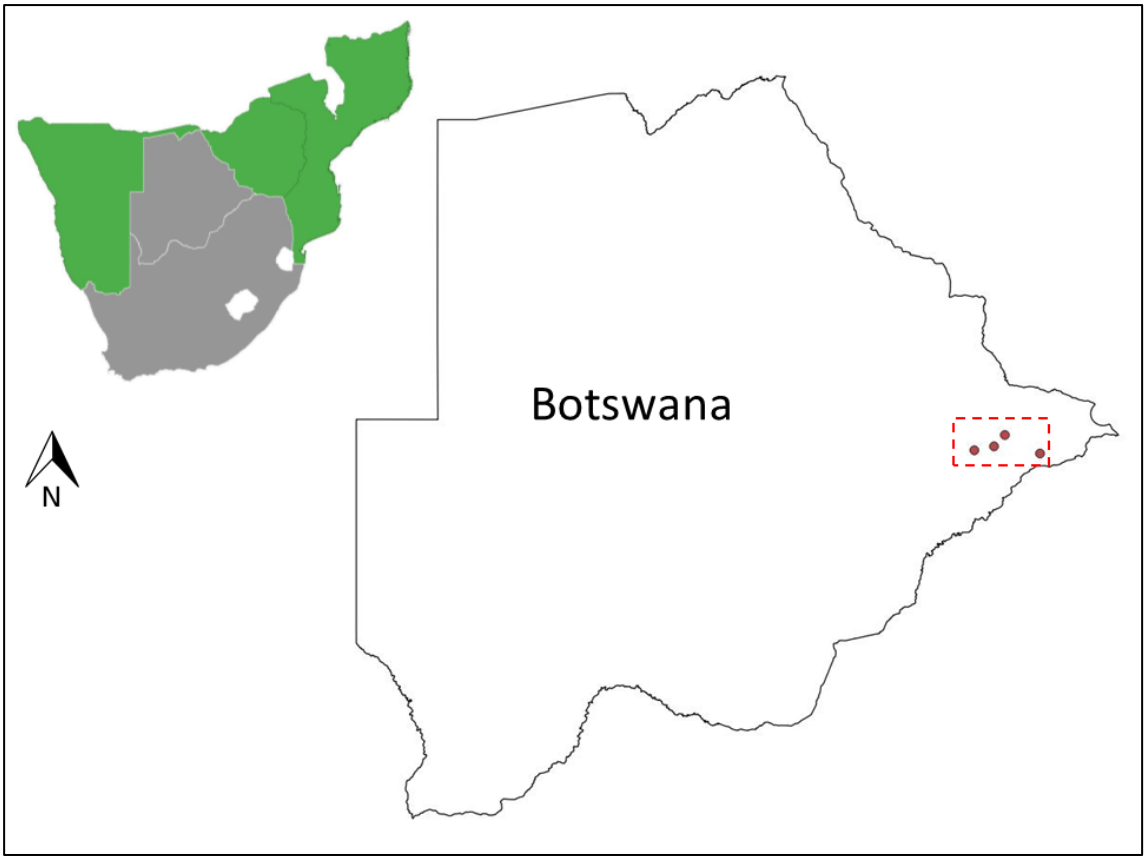
The concept of governance concerns itself with steering and guiding societal action to pursue solutions for common societal problems (Kooiman et al., 2005). Governance imbues political, institutional, and cultural approaches and constituent state and non-state institutions to coordinate and control diverse interests in natural and cultural resources (Cronkleton et al., 2008; Sowman & Wynberg, 2014a). This diversity of actors and arrangements is indicative of the challenges centred around power, knowledge valuation, actors' social influences and constructions of nature (Armitage, 2008). The governance of natural resources is closely related to marginalisation, access, and the embeddedness of social action and power. Therefore, the effectiveness of governance arrangements is indicated by resultant access regimes through which resource users derive benefits (Wiersum et al., 2014). In practice, these are mechanisms through which people gain, control, and maintain access to resources (Ribot & Peluso, 2003). Such mechanisms may manifest in the form of capacity to affect others' actions through bundles of powers, negotiation and influence based on social relations and the embeddedness of social action (Berry, 1993). The notion of embeddedness acknowledges that social action does not happen in a vacuum and has the power to influence the nature of social relations and institutions (Giddens, 1984; Granovetter, 1985). These dimensions of resource governance are crucial as they mediate ways in which resource users craft livelihoods. Also, the informality with which livelihoods are associated equips users to navigate the complexities of resource governance through adaptive ways, including forum shopping. The thesis engages with the myriad ways in which the convergence of governance approaches, informality and resource commercialisation configures resource access and use regimes across wild product trade chains.

1.6 Methods and Study Sites

A combination of qualitative methods was used in this study, which adopted a case study approach, purposive snowball sampling and multi-sited ethnographic approaches to locate and follow the participants and mopane worm trajectories across the study area (Voicu & Babonea, 2011; Cox, 2015). Given the extent of the study area, comprising four villages and five towns across two countries, and the logistical challenges involved, there was a need to apply a method that allowed hard-to-reach populations to be sampled without an extensive fieldwork team.

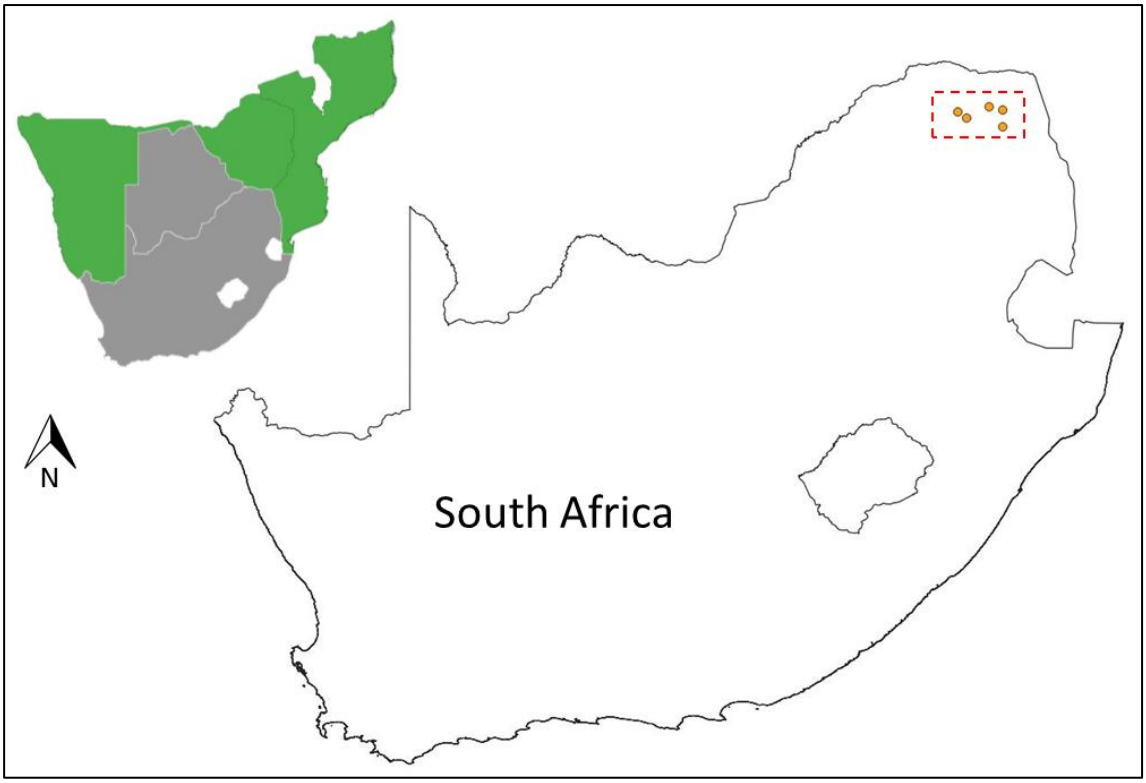
The data was collected through 70 interviews comprising unstructured, semi-structured and key informant interviews and through non-participant observations in harvesting villages and urban markets. The participants included harvesters, dealers, cross-border traders, vendors, traditional leaders, and officials from the forestry department, customs and municipality. A detailed discussion of the research design and methodology used in this study are revisited in chapter 3.

The study was undertaken in the Central District of Botswana and the Limpopo Province of South Africa. The two areas are well-established in the mopane worm cross-border trade chain. In Botswana, the focus was the Bobirwa subdistrict and included Mogapi, Mogapinyana, Sefhophe, Tsetsebjwe (Figure 1.1). These areas fall into the region popular for mopane worm harvesting and are preferred by cross-border traders for sourcing stock for export (Lucas, 2010). In South Africa, towns in the Vhembe and Mopani districts were chosen as they are used extensively for mopane worm cross-border trading (Figure 1.2) (Kozanayi & Frost, 2002; Makhado et al., 2014). Thohoyandou, Giyani, Malamulele, Makhado, and Elim were chosen explicitly to locate different categories of dealers, traders, and vendors of mopane worms, particularly those who import mopane worms from Botswana. Harvesting and related processing occur in Botswana, while bulk trading and vending are more concentrated in the South African markets. A detailed discussion of the study sites across Botswana and South Africa is presented in chapter 4.



Sources: George Sekonya

Figure 1.1 Location of the study area in Botswana



Source: George Sekonya

Figure 1.2 Location of the study area in South Africa

1.7 Structure of the Thesis

This thesis comprises 10 chapters. This introductory chapter defined the study problem, introduced the aim and objectives and outlined the significance of the study and its relevance. The chapter also introduced debates on natural governance and provided an overview of the methods used and the study sites.

The next chapter, chapter 2, presents a literature review that informs this study's theoretical grounding. The chapter's theoretical debates focus on the evolution of the conceptualisation of informality, natural resource governance discourses, and their relevance to resource-based livelihoods in African contexts. The review also includes key concepts that expand resource governance notions through the lens of political ecology.

Chapter 3 presents the research approach, design, and methodology that were adopted for the study. The chapter further describes the qualitative research methods used in data collection,

analysis, and triangulation. The discussion of the ethics and limitations of the study concludes the chapter.

Chapter 4 describes study sites in Botswana and South Africa and gives an overview of the local governance context, economic practices, and mopane worm trading patterns. The chapter begins with a description of critical livelihood activities and the local governance context of the villages in the Central District in Botswana. The chapter further describes the markets and the prevalence of informal trading patterns across several towns in the study area in South Africa.

Chapter 5 presents an overview of the cross-border trade of mopane worms, including the institutional and individual actors and their roles in Botswana and South Africa. The chapter also analyses the enabling and constraining effect of the actors' roles and their impact on configuring interactions and participation patterns across the trade chain.

Chapter 6 highlights the role, influence and nature of social relations and benefits drawn by traders and harvesters to pursue their livelihoods in contexts where traders and harvesters negotiate access to resources and markets. The chapter further analyses how social networks contribute to the capacity of actors to navigate the regulatory frameworks.

Chapter 7 discusses the interactive arrangements between statutory and customary forms of governance in regulating mopane worm access, marketing and trade in Botswana and South Africa. The chapter analyses the complexities of navigating mechanisms for access, use and trade.

Chapter 8 draws insights from various interactions among actors and governance frameworks to develop a typology of the influences and power dynamics in mopane worm trade. The typology seeks to elucidate the underlying clandestine and overt influences that shape the overall flow of benefits, which lead to the emergence of domination and marginalisation of actors across the trade.

Chapter 9 presents a discussion of the main findings of the study. The discussion contextualises the findings with the theories and literature on informality, governance, and political ecology framing discussed in chapter 2. It also gives insight into how actors navigate fragmented governance arrangements. The implications of these arrangements for NTFP livelihoods are explored.

Chapter 10 concludes the thesis by presenting a summary of key findings, the study's contributions to the literature on governance of wild product commercialisation, informal economy, and interactive governance, and concludes with policy recommendations.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter discusses debates that have informed the understanding of informal economies, natural resource governance, and political ecology. It also introduces and discusses the theoretical and conceptual frameworks related to governance and the informality of livelihoods. First, the chapter summarises the theoretical debates on the concept and typologies of informality, which provides a useful framing of the relationships that emerge between resource users and forms of governance. Second, an understanding of the concept of governance is developed. The governance debates centre this thesis, as the theories engaged in the chapter demonstrate the relevance of different arrangements in mediating access to and the use of resources. Third, the chapter discusses the study's theoretical framework, which is anchored on the concept of interactive governance in plural legal systems (Jentoft & Bavinck, 2014). Fourth, the chapter outlines political ecology perspectives that are relevant in situating the study in its broader context.

2.2 Conceptualising Informality

Conceptualisations and definitions of the informal economy have been varied and diverse in literature. The genesis of the informal economy as a concept can be traced to the early 1970s, when Keith Hart made a distinction between formal and informal employment based on wage and self-employment, among others (Hart, 1970; ILO, 1972; Hart, 1973). Hart argued that wage-earning employment is characteristic of the formal sector, while self-employment is synonymous with the informal sector (Hart, 1970; 1973). This conceptualisation was widely adopted in studies investigating this phenomenon in developing countries in the 1970s (Hart, 1970; ILO, 1972; Gerry, 1974; Bienefeld, 1975; King, 1975; Papanek, 1975). The notion of the informal sector has since expanded to activities that were previously ignored in theoretical models of development and national economic accounts (Renooy, 1990; Swaminathan, 1991; Anderson, 1998). The evolution of the informal sector conceptualisation took a turn with the seminal work of de Soto (1989). This work highlighted the role of regulatory frameworks and institutions in proliferating the informal sector. According to de Soto, people are driven into

informal economic activities to circumvent the cumbersome and complex legal frameworks, institutions and policies which prevent ease of entry into the formal sector (de Soto, 1989; Wilson, 2011). Consistent with this conceptualisation, informal economic activities are seen through the continuum of the reach of regulatory frameworks in different economic activities (Guha-Khasnobis et al., 2006).

2.1.1 Typologies and the characterisation of informal economic activities

In the literature, informal economy discourses have evolved to recognise four broad schools of thought, which are pertinent to natural resource commercialisation. Chen (2012) outlines these as the dualist, structuralist, voluntarist, and legalist paradigms (Chen, 2012; 2016). The dual economy school of thought argues that the organisation of the economic system has led to a two-sector organisation comprising of monopolistic and competitive sectors (Hart, 1970; ILO, 1972; Hart, 1973; Sethuraman, 1976). Fundamentally, the dualist school acknowledges limited connections and interactions between the formal and informal economy (Clement, 2015). Thus, the informal sector is depicted as comprising of marginal activities which only provide incomes and serve as safety nets for poor households (Fields, 2009). The dualist school assumes that a lack of economic development and opportunities drive low-skilled rural-to-urban migrants to resort to earning a livelihood in any way they can manage. This creates an impression that informal sector activities are different from and not linked to the formal sector (Chen, 2012; Clement, 2015). While this notion of the informal economy has inspired considerable empirical literature, it has since been rejected by many scholars. This is partly due to the dual conceptualisation's neglect of the structural drivers of marginality, which impact access and exclusion (Clement, 2015).

The structuralist paradigm holds that the informal sector acts as subordinate units of the formal economy. The proponents of this paradigm argue that informal enterprises and workers serve to reduce the labour and production costs of the formal sector businesses and thus increase their competitive edge (Moser, 1978; Castells & Portes, 1989; Chen, 2012; Clement, 2015). According to this school of thought, formal economy and capitalist economic practices are leading to marginalisation and thus give rise to informality in the economy. Therefore, the exploitative asymmetric relationship between formal and informal sectors drives this marginalisation. Chen (2012) notes that some of the tactics employed by capitalist actors are

as follows: the attempts to reduce labour costs and increase competitiveness through casualisation of the labour force; the reaction of formal firms to the power of organised labour and state regulation of the economy; global competition; and the process of industrialisation.

The voluntarist theory suggests that participants in the informal economy engage in economic activities by choice to avoid registration and tax laws, which the formal economy actors must comply with (Chen, 2012). The proponents of this school of thought maintain that the deterrent effect of taxes, rents, and other costs motivates entrepreneurs to operate enterprises informally (Igudia et al., 2016). However, this theory is not to be confused with the legalist ideology, which blames the switch to the informal sector on bureaucracy (de Soto, 1989). Instead, the voluntarist theory focuses on the decision-making process of entrepreneurs. According to the voluntarist theory, informal sector actors engage in informal economic activities voluntarily and consciously after undertaking some form of cost-benefit analysis (Clement, 2015). The analysis helps people, through means such as forum shopping, to determine the sector which holds the potential for higher returns on their investments with lower compliance costs (Igudia et al., 2016). Among others, the reasons for opting to operate informally include flexibility, which allows time to tackle household chores, time for other activities, happiness with the current job, and lack of desire for requirements to be formalised (Maloney, 2004).

The legalist school of thought contends that the emergence and persistence of the informal economy is a direct result of 'unnecessary, slanted, and superfluous legislation' (Wilson, 2011, p. 206), which effectively constrains emerging entrepreneurs. It is the rebellious acts of frustrated entrepreneurs against cumbersome policy and institutional frameworks, which leads to the counter-hegemonic characteristic of the informal economy (de Soto, 1989; 2000). Therefore, by designing regulations that favour elites in the economic system, the mercantilist state has inadvertently given a strong impetus to the informal sector (de Soto, 1989; 2000; Wilson, 2011; Chen, 2012). It is argued that informal entrepreneurs opt for this *modus operandi* to cut the costs, time and effort associated with complying with the regulatory requirements (Clement, 2015; Chen, 2016). However, this still deprives them of crucial property rights, which are necessary to convert their assets into legally recognisable assets (Chen, 2012).

The theories expounded assume a distinctive 'formal' economy that can be neatly separated from the 'informal'. However, there exist underlying reasons which initiate the emergence of 'informality' in response to challenges of the formal sector. Significantly, given the diversity of the stakeholders in regulatory matters, the dualistic compartmentalisation of formal and informal economy takes a narrow view of diverse interactions between actors and the regulatory frameworks. In practice, such interactions make it harder to make a clear distinction between the formal and informal. Owing to this critique, this study conceptualises informality in the form of a continuum (Chen, 2006; Guha-Khasnobis et al., 2006; Koçer, 2016). The continuum describes the relationship between statutory regulatory mechanisms and economic activities from one end of high level of state reach to another of low levels of reach.

To gain a thorough understanding of this phenomenon, Kanbur (2009) proffers a continuum framework of understanding informality based on the relationship between economic activity and specified regulation instead of a binary categorisation. The framework comprises of four categories, namely: (a) regulation applicable and compliant, (b) regulation applicable and non-compliant, (c) regulation non-applicable after adjustment of activity, and (d) regulation non-applicable to the activity (Kanbur, 2009, p. 1). The continuum conceptualisation rejects the binary dichotomy between the formal and informal sectors in three ways. Firstly, formal and informal realms are not functionally separated. In practice, the two are functionally connected to co-exist interactively and with fluidity (Guha-Khasnobis et al., 2006; Koçer, 2016). Secondly, in accepting the continuum conception, it follows that the two cannot be divided by a clear boundary (Guha-Khasnobis et al., 2006). Instead, it should be envisaged as a grey zone of interaction or connection containing the two states as the extremes (Koçer, 2016). The two extremes are connected by a region within which various forms of evasions and compliances with regulations occur. Thirdly, informality can also exist and persist based on social networks and norms, which allow informal actors to exploit the social embeddedness of the economy (Guha-Khasnobis et al., 2006; Koçer, 2016). This conceptualisation presents an analytical lens through which to gain an understanding of the basis upon which perceptions of informality enlighten emergent governance arrangements.

Considering the propensity of governing institutions to position informal economies as chaotic and thus needing policy intervention to formalise, in the continuum model, Guha-Khasnobis

et al. (2006) argue that informality should not be misconstrued to imply lack of structure or manifestation of chaos. The limited reach of state regulation at the informal end of the continuum should not constitute grounds for inviting policy intervention. A vital feature of the continuum with relevance to wild product commercialisation and governance is acknowledging that economic activities may contain characteristics that simultaneously encompass both formal and informal traits (Guha-Khasnobis et al., 2006; Kanbur, 2009; Williams et al., 2016). Access to resources, use and trade, comprise stages at which varying levels of compliances exist, such that the reach of government is strong in some respects while weak in others. Of relevance to this study is that the extent and forms of interactions with the regulations and their impacts on the cross-border commercialisation of mopane worms are currently poorly understood.

The 'grey zone' of interaction suggested in the Kanbur (2009) continuum offers a starting point to analyse the structural and relational mechanisms which drive actors to comply with regulatory frameworks or not to comply. However, the continuum is under-researched with regard to the interactions between the statutory, customary, and informal regulatory arrangements that influence the ways in which natural resources are accessed and used. This creates a theoretical blindspot on the utility of informality scholarship to provide a nuanced explanation of the drivers of informal natural resource commercialisation. This scholarship also is inadequate in accounting for the role of marginalisation and access on the extent to which resource users choose to comply with certain regulations while ignoring others. Therefore, it is imperative to address this theoretical and knowledge gap, particularly as it undermines the insightful and nuanced understanding of the key factors that configure pathways to livelihood making through wild product commercialisation. The next section discusses the interplay of wild product livelihoods and informality.

2.3 Wild Products and Informality

Wild products are invaluable in households for income generation, household provisioning, livelihood security and wellbeing (Shackleton & Shackleton, 2004; 2006; Belcher & Schreckenberg, 2007; Shackleton et al., 2007; Heubach et al., 2011). The consensus among scholars is that poor households in rural areas have a higher dependence on NTFPs than

wealthier households (Neumann & Hirsch, 2000; Shackleton & Shackleton, 2004; Viet Quang & Nam Anh, 2006; Kemkes, 2015). In a review of wild product commercialisation, Neumann and Hirsch (2000) concluded that the harvesting, processing, and marketing of wild products are dominated primarily by impoverished rural women, predominantly in the global South.

According to Neumann and Hirsch (2000)**,** the strong association between wild products extraction and rural poor people results from two key factors. First, wild products extraction requires minimal capital investments or input costs (Neumann & Hirsch, 2000). Although input costs may be high in some instances, other motivations may be significant enough to encourage local people to engage in extraction. Bhuiyan (1995, in Neumann & Hirsch, 2000) noted that wild products extractors sometimes had to invest considerable capital in accessing distant harvesting areas. Another reason that encourages poor people to engage in wild products extraction stems from the economic and geographical exclusion in remote areas (Neumann & Hirsch, 2000). The reinforcing effect of economic and geographical marginalisation of indigenous people often results in people engaging in wild product extraction as a lifestyle with minimal alternatives (Neumann & Hirsch, 2000). Sunderlin et al. (2005) attribute this poverty-forests convergence to the deep-rooted history and tradition of a forest-dwelling lifestyle, which predates modern social change. This implies that for resource users, informal use and trade of wild products can be attributed to being an extension of the complex relationship that exists between society and nature. Nonetheless, as Guha-Khasnobis et al. (2006) argued, this phenomenon does not in any way imply the unstructured and chaotic exploitation of natural resources.

Although wild product livelihoods are widespread in rural communities, they are nonetheless not limited to rural households. NTFPs are also essential components of thriving urban livelihoods and support households within urban areas (Petersen et al., 2014; Shackleton et al., 2017). Among the drivers for NTFP use are wild foods, medicines, and materials for the wellbeing of urban families (Poe et al., 2013; Petersen et al., 2017). For example, in Cape Town, urban households forage wild products for profit-seeking, household provisioning, cultural purposes and indigenousness (Petersen et al., 2017). Studies have shown that such uses are just as widespread in urban areas across the sub-Saharan African countries (Musisi & Sekhwela, 2006; Murwendo, 2011; Davenport et al., 2012; Schlesinger et al., 2015; Humphrey &

Shackleton, 2015; Mollee et al., 2017). These uses often may not invite regulatory effort even in urban areas. Of relevance to this study is the significance of resource access mechanisms in any context, which, although deemed insignificant by regulators, play a crucial role in household wellbeing.

As outlined above, governance institutions are spread across the formal-informal continuum (Guha-Khasnobis et al., 2006; Koçer, 2016), with fluid compliance dependant on the relationship between economic activity and specified regulation (Kanbur, 2009). Therefore, a realistic conceptualisation of wild products governance and trade should account for these nuances that emerge across the trade (Shackleton et al., 2011). While early conceptualisation made a distinction between wage and self-employment as differentiating factors between formal and informal economies (Hart, 1970; 1973), these have had limited utility for understanding the political economy of wild products commercialisation, their interactive governance approaches, and livelihood outcomes on resource users. For example, wild product trade chains are characterised by exploitative relationships, power asymmetries and monopolistic practices, which are leading causes for marginalisation, exploitation, and inequity (Wynberg, 2004; van Niekerk & Wynberg, 2012; Choudhary et al., 2014). The next section discusses the concept of governance and its various forms within the natural resource management discourse.

2.4 Governance as a Concept

As demonstrated in the preceding discussion, the relationship between governance and informality is relational. This is pertinent because the strength and proximity of interactions between governance frameworks and livelihood activities shape the nature of livelihood outcomes. While this relationship shapes the forms of informality, it is also pivotal in influencing the emergence of new and hybrid forms of governance (Armitage, 2008). This is despite the existence of regulatory tools and frameworks around which people create ways of 'getting things done' (Pacheco et al., 2008). Governance is a complex yet popular concept in the scholarly literature on natural resource management. This popularity has spurred a notable academic effort of developing frameworks for analysing and refining the conceptualisation of governance (for example, Ostrom, 1990; Kooiman, 2003; Fischer et al., 2007; Kooiman et al.,

2008; Jentoft & Bavinck, 2014; Sowman & Wynberg, 2014a). Broadly, governance is accepted to be a broad, complex, multifaceted, and layered concept, which at its core involves multiple institutions and actors, respect for human rights and participation of all relevant actors in decision-making processes (Kooiman et al., 2005; Armitage, 2008; Sowman et al., 2014). In the context of natural resource management, governance has been a critical area of focus for debates on the role of the state and non-state actors, the nature of interactions, institutional design, and the plurality of legal systems (Kooiman et al., 2008; Jentoft & Bavinck, 2014). This focus has been agitated by the shift from government to governance which broadened participation to include multiscalar non-state actors and institutions in natural resource management (Lockwood et al., 2010).

The shift is aptly captured by Hysing (2009, p. 647), citing Sørensen (2006, p. 99): as 'a transformation from hierarchical governing by nationally organised political institutions (i.e., government) to modes of governing in which a multitude of public and private actors from different policy levels govern society through networks and soft policy instruments – in other words, governance'. The shift grew within the context of increasing complexity and dynamic change (Kooiman, 2000; Armitage et al., 2009; Lockwood et al., 2010); the need for alternative and innovative ways to deal with 'wicked problems' (Rittel & Webber, 1973; Armitage, 2008; Armitage et al., 2009); and shifts in power from the state to both supranational and subnational scales (Pierre, 2000; Hansen et al., 2014). The shift to governance brought into the spotlight the distribution of power, public decision-making, and citizen stakeholder engagement (Sowman & Wynberg, 2014a). Conceptually, governance calls for greater cooperation, coordination, and communication among interdependent multi-level actors in natural resource management (Armitage, 2008; Lockwood et al., 2010).

In line with this evolution, governance is defined as 'the interactions among structures, processes and traditions that determine how power and responsibilities are exercised, how decisions are taken, and how citizens or other stakeholders have their say' (Graham et al., 2003, p. ii). Central to this definition is the prominence of non-state social actors and stakeholders in the exercise of power, mediating relationships, and accountability in decision-making. This conceptualisation demonstrates that the mere existence of statutory rules, institutions, and processes is insufficient to mediate the relationship between state and social actors. Although

rules, institutions and processes are useful means of steering societal interactions, their limited utility has proven insufficient to solve complex, wicked environmental problems (Lockwood et al., 2010). Therefore, the mere existence of policy and institutions seldom translates into effective resource governance, especially in instances where key stakeholders and role players are excluded from decision-making and participation (Acheson, 2006).

In the worst-case scenario, poorly conceptualised governance approaches have been detrimental to livelihoods and sustainable use of resources (Sowman & Wynberg, 2014b). Out of this realisation, several notions of have emerged, which advance principles such as legitimacy, transparency, accountability, inclusiveness, fairness, integration, capability, and adaptability (Lockwood et al., 2010). Other notable principles advocate for the respect of human rights, free and informed prior consent, institutional accountability and transparency, subsidiarity, benefit sharing and sustainable resource use and development (UN, 2009; Sowman & Wynberg, 2014b). The Ostrom design principles (Ostrom, 1990) are among the most prominent in natural resource management and commons scholarship. The Ostrom design principles include clearly defined resource commons boundaries and rightsholders to the resource; commons management rules that are appropriate to local conditions and context; unambiguous arrangements for managing collective decisions, through collective negotiations; gradated sanctions; widely accepted and cost-effective conflict mechanisms; and the exclusion of unwarranted regulatory interference (Ostrom, 1990; 2005). The princincples are important particualrly in highlighting the importance of social isntitutions as guide crfating istitutions to manage commons. However, these principles have been criticised for their failure to account for the external and country-specific drivers and factors that influence governance approaches and outcomes (Grindle, 2004; Nanda, 2006). Sowman and Wynberg (2014b) argue that other factors which influence and shape natural resource governance practice include weak institutions and rigid participation mechanisms, limited capacity, political and economic interests, power asymmetries, and the plurality of normative and legal systems. External factors of significance include globalisation, capital accumulation, foreign direct investment, and the global conservation agenda (Ferguson et al., 2014; Sowman & Wynberg, 2014b).

For the African context, the existence of customary governance institutions adds a further dimension to the governance discourse, which is not captured by the principles of good

governance. Traditional authorities continue to play an essential role in governing access to resources, especially in contexts where state reach is limited (Kajembe et al., 2003; Thomas, 2013; Brown et al., 2016). The long history of local people co-existing with customary forms of governance continues to give credence to these institutions. In most African states, governments have formally recognised customary forms of governance and have incorporated traditional institutions into local government structures (Hope, 2000; Mashele, 2004; Ubink, 2008). Further, the co-existence and interactions between statutory and non-state actors have led to the emergence of new forms of governance, which go beyond hierarchical, science-based, and resource-centred management approaches (Sowman et al., 2014) and are localised and context-specific across the African continent.

2.4.1 Forms of governance

The governance of natural resources has taken various forms and configurations in the literature, commonly including hierarchical, markets, networks, voluntarism, and self-governance (Lemos & Agrawal, 2006; Sowman & Wynberg, 2014b). These forms of governance are anchored around the strengths and influence of the dominant actors in each configuration. For example, state authority was assumed to possess the capacity to mobilise action; market forces were thought to be essential in incentivising human action; while the deployment of relationships and local knowledge of communities has been viewed as a panacea for resource management (Ostrom et al., 1993; Lemos & Agrawal, 2006). Hierarchical governance is centred on the use of administrative orders and sets of rules. This form of governance is associated with the states and governments' exercise of authority. Command and control modes of governance result from the near-monopoly of state power in regulating natural resource use. Such an arrangement often results in conflict between government and resource users (Kronsell & Bäckstrand, 2010). Although states may possess the capacity for action necessary for resource management (Jentoft & Bavinck, 2014), the unilateral execution of state authority often marginalises social actors (Acheson, 2006). Armitage et al. (2009) argue that the central bureaucratic nature of command and control has limited capacity to respond to dynamic and complex environmental issues. Therefore, the state requires the meaningful participation of other non-state social actors as it is incapable of addressing the multiple facets, interdependencies, and scales of contemporary environmental problems (Acheson, 2006; Lemos & Agrawal, 2006).

Market governance is based on the notion that the market forces self-organise to regulate the social behaviour of resource users. A vital feature of market governance is the interactions between civil, public, and private actors (Kooiman et al., 2008; Ngeta, 2014). However, the private sector plays a crucial role and is often seen as an essential player in market governance. This form of governance is often contrasted with state-dominated hierarchy and is emerging as influential in environmental governance arrangements (Petersen, 2003; Gill, 2005; Murphy, 2005; Kronsell & Bäckstrand, 2010).

Network governance relies on cooperation and dependencies between private and public actors (Kooiman et al., 2008; Ngeta, 2014). This form of governance closely resembles co-management as they both call for close cooperation and involvement of state and resource users in the governance of natural resources (Plummer & Fitzgibbon, 2004). Co-management has been defined as involving 'the sharing of power and responsibility between government and local resource users' (Berkes et al., 1991, p. 12). Economic, political, or informational resources may be the basis for the networks of cooperation in which information exchange, cooperative attitudes, and unhindered communication aid deliberation between role players (Kronsell & Bäckstrand, 2010). This shift towards co-management differs significantly from the notions of governance that had preferred centralised state control (Kooiman, 1993; Box, 1998; Plummer & Fitzgibbon, 2004). A fundamental justification for this form of governance is the view that 'increased stakeholder participation will enhance the efficiency and perhaps equity of the intertwined common property and resource management and social systems' (Castro & Nielsen, 2001, p. 231).

Due to its complexity, natural resource governance is seldom a linear process, and the outcomes of resource governance endeavours are rarely guaranteed (Armitage et al., 2009). In pursuit of perceived ideal outcomes, actors often enter governance arrangements that are more dynamic and complex. As such, these may not be accounted for through compartmentalised notions of resource governance as explained above. The literature is generally in agreement that common features of good governance include inclusive decision-making, widely accepted legitimisation, increased capacity and learning through complexity and change (Enevoldsen, 1998; Meadowcroft, 1998; Klooster, 2000; Castro & Nielsen, 2001; Chaskin, 2001; Armitage

et al., 2009). The universality of these outcomes in solving resource management issues and, importantly, protecting livelihoods has been questioned, especially given persisting problems such as ecosystem degradation, biodiversity loss and climate change (Plummer & Fitzgibbon, 2004; Lemos & Agrawal, 2006). Thus, such a normative perception of governance outcomes may not hold in some contexts. Resource governance is characterised by a degree of hybridity in arrangements that must encompass and account for the unique realities of various contexts, change, and power dynamics (Armitage et al., 2009; Jentoft & Bavinck, 2014). In the contexts where multiple actors compete for control and authority over resource use and management, the outcomes as envisaged in co-management strategies may be vulnerable to influence and capture (Tyler, 2006; Plummer et al., 2012).

On participation, Jentoft (2000) warns that the risks of cumbersome and less flexible decision-making processes may frustrate users. Similarly, Castro and Nielse (2001) caution about unrealistic expectations of the potential of indigenous knowledge and capabilities of diverse users because of too much representation. While participation and representation are progressive steps, striking a balance between too little or too much can be crucial in minimising or eliminating conflicts (Castro & Nielsen, 2001; Plummer & Fitzgibbon, 2004).

On legitimisation, Jentoft (2000) outlines three challenges to the normative view that increased legitimisation encourages compliance. First, the increasing discrepancy between the ideals of policymakers and the realities of resource users. Second, 'the lack of opportunities for users to collectively take on a proactive and responsible role in the management' (Jentoft, 2000, p. 146). Lastly, Jentoft (2000) argues that the legitimacy crisis may emerge as an outcome of the radical change of established local institutions. In instances where established customary practices and institutions are altered and threatened with radical transformation, governance interventions may face legitimacy questions from resource users. Therefore, institutional restructurings are likely to change the resource landscape such that there would be lesser or greater access for specific users. In such cases, local resource users are likely to ignore or push back against intended institutional change.

Plummer and Fitzgibbon (2004) criticise the notion that increased capacity and empowerment are outcomes of co-management arrangements. The devolution agenda of co-management

envisages increased capacity and empowerment among key outcomes, particularly in CBNRM initiatives (Shackleton et al., 2002). In practice, power-sharing between state and non-state actors in resource management is much more challenging. The power asymmetries entrenched by class, ethnicity, gender, and other relational mechanisms may result in dysfunctional governance arrangements (Armitage, 2008; Armitage et al., 2009; Jentoft & Bavinck, 2014). As a result, powerful actors are likely to benefit significantly more than the poor and marginalised (Shackleton et al., 2002). The deceptive devolution of state power over natural resources seldom results in appreciable power-sharing (Ribot et al., 2006). It has been argued that the consolidation of state power through delegation of power to local branches of the central government authorities has cast doubt on the commitment to devolution (Castro & Nielsen, 2001; Shackleton et al., 2002). Common strategies include a limitation on the powers that central governments may grant to non-state actors and a tendency to choose local institutions that are likely to answer to the interests of the central government (Ribot et al., 2006).

At its core, governance is about 'steering and guiding society and the economy through collective action to address problems and achieve common goals' (Sowman & Wynberg, 2014c, p. 1). In pursuance, the effort has been expended on defining governance design principles and prescriptive ways which could lead to the realisation of desirable social goals as outcomes of good governance (Ostrom, 1990; UNDP, 1997; Graham et al., 2003; Kaufmann et al., 2003; Court, 2006; Lockwood et al., 2010). The development and emphasis on these governance principles have been influenced partly by the emphasis on economic growth as the basis for development. Donor organisations spearheaded this effort in setting conditions on which aid was based (Nanda, 2006; UN, 2009). This approach to good governance creates a 'one size fits all' model to governance which neglects the unique local conditions on the ground. As Davidson et al. (2006) note, the outcomes of this discourse were such that prescriptions that are inappropriate to non-Western political-cultural contexts were applied universally with unrealistic conditions. While notions of market efficiencies and 'adherence to the rule of law' may be desirable from the perspective of international donor organisations, these seldom lead to improvements for local livelihoods and customary practices (Sowman & Wynberg, 2014c). When access to a resource is a matter of life and death, many ways are often developed to facilitate access to resources. Therefore, the intermingling between statutory, customary, and informal forms of governance may prompt fluid actions and ways to contend

with this complex regulatory landscape. In recognition of these questions, which grapple with access to and use of resources, this study seeks to unravel the understanding of these complex regulatory frameworks and institutions by way of a framework that expands the notions of informality and incorporates the multiple forms and levels of governance that are central to regulating access and use of natural resources.

In Africa and much of the global South, access to and use of natural resources is crucial for households' survival and well-being (Ahenkan & Boon, 2011; Shackleton & Pullanikkatil, 2019). Therefore, resource governance regimes must be sensitive to local contexts to ensure equitable access and sustainable use of resources. Given the complexity and diversity of governance, 'good governance' would inherently mean different things to different people. Sowman and Wynberg (2014c) make a compelling argument that promoting justice and environmental sustainability in a sub-Saharan African context needs to be central to any governance endeavour given the complex histories of domination and power relations. The re-emergence of traditional leaders as regulators and their influence in natural resource governance sharply highlights the shortcomings of the western conceptualisations of governance (Kozanayi, 2018).

Notably, the intermingling of statutory and customary governance frameworks creates a unique context that requires an appreciation of context-specific plural socio-cultural and legal systems (Sowman & Wynberg, 2014c; Sunde, 2014; Kozanayi, 2018). Other problems of appropriation of resource management powers by governments resulting from inevitable overlaps in institutional roles between state and non-state and resource users further complicate the governance landscape (Bäckstrand et al., 2010; Armitage et al., 2012). Therefore, understanding the interactions among different forms of governance offers a useful lens to unravel the challenges which confront actors in natural resource commercialisation.

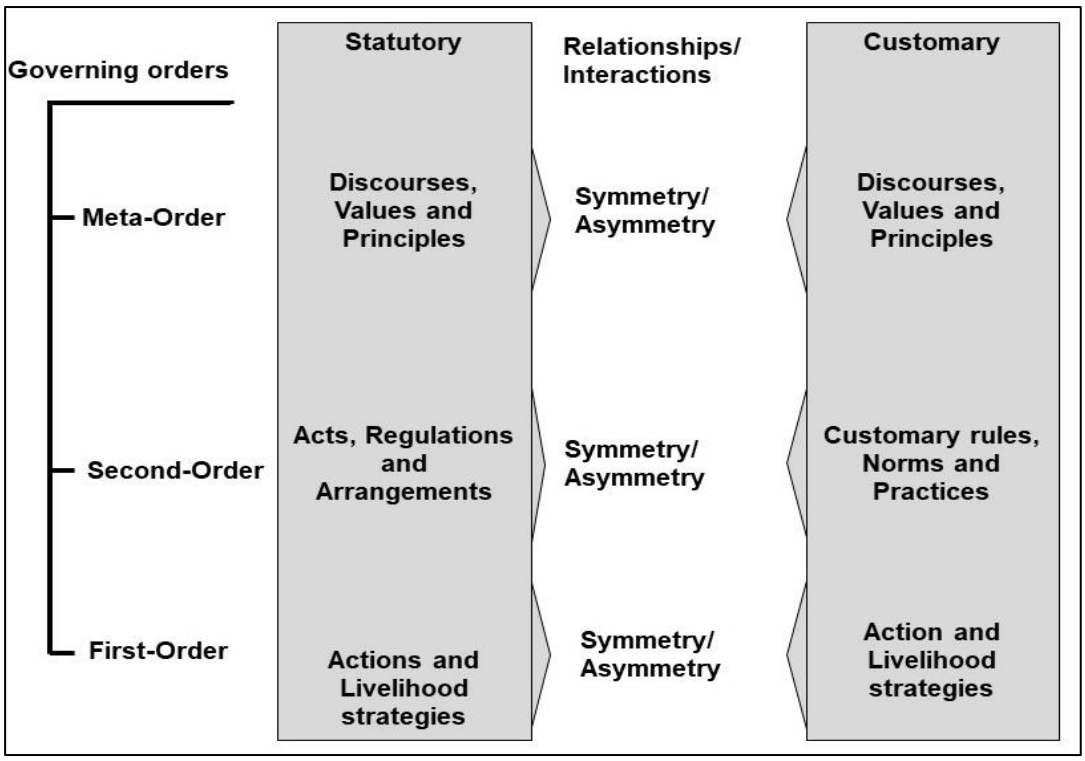
2.5 Interactive Governance of Natural Resource Management

Natural resource governance is a complex and dynamic endeavour that is distinct from the government (Hysing, 2009). A key feature of governance is that it requires the participation of multiple role players comprising of both the state and non-state actors (Lemos & Agrawal,

2006; Armitage et al., 2009). A thorough understanding of this phenomenon requires adopting a framework that considers the multiple actors within and outside the ambit of the state. Scholars have developed frameworks intended to understand resource governance (Hardin, 1968; Ostrom, 1990). Similarly, attempts have been made to establish principles that, if applied, would lead to desired outcomes and good governance (Graham et al., 2003; Court, 2006; Lockwood et al., 2010). However, these frameworks and principles pay little attention to the integral role of non-state actors such as traditional authorities and other social actors in the governance of natural resources. In African societies, where these institutions have a long history of co-existing alongside state machinery in a plural legal system, one cannot simply wish them away (Sunde, 2014).

Despite the abrasive relationship that traditional authorities may have had with colonial administrations, traditional authorities continue to thrive among local people and have a responsibility to regulate the use of resources (Zinhiva & Chitakira, 2017). The dynamic relationship between the state, traditional authorities, and resource users exposes the scarcity of frameworks to capture this interactive and dynamic and legally pluralist governance landscape. This pluralism refers to the existence and application of different legal systems to the same situation or society field (Jentoft & Bavinck, 2014). The prevalence of legal pluralism requires a dynamic approach that integrates the vertical scale and horizontal dynamism. The outcomes of the interactions in this pluralistic context constrain certain actors while enabling others.

The interactive governance framework developed by Kooiman et al. (2005), and Jentoft & Bavinck (2014), as shown in Figure 2.1, holds promise to understand horizontal and vertical governance interactions at the interface between state and non-state actors. It distinguishes three orders of governance: first order, second order and meta order. According to Kooiman and Jentoft (2009, p. 820), the three orders comprise of fundamental forms of societal governance activities, namely, 'problem-solving and opportunity creation; design, care and maintenance of governance institutions; and the formulation and application of norms and principles for all other governance activities'. The discussion of the orders is presented below.



Source: Jentoft and Bavinck (2014)

Figure 2.1 Interactive governance perspective on legal pluralist systems

2.5.1 Meta order governing: principles, norms, and values

The meta order of governance deals with the values, norms and principles that underlie and evaluate resource governance (Kooiman, 2008; Kooiman & Jentoft, 2009). Within statutory governance, such principles include the resource conservation principles and ideals which guide conservation goals and objectives at the national level (Jentoft & Bavinck, 2014). Principles that guide meta order governance include those that are more applied: rationality, efficiency, effectiveness, or performance and the more fundamental: equity, responsibility, or justice (Kooiman, 2008). Within customary governance, traditional beliefs and norms provide the overarching approach and perceptions that shape the relationship between natural resources and users (Mawere, 2014; Sithole, 2016). The informal governance approach hinges its values on informal rules, norms, and practices. These are ordinarily fashioned out of existing ideals modified to suit the local prevailing and influential contexts (Pacheco et al., 2008). The meta order is a vital part of governance as far as it guides institutional and problem-solving choices and lays a conceptual foundation of how the world is assumed to work and how it should work (Kooiman & Jentoft, 2009; Jentoft & Bavinck, 2014). On this basis, institutions

and rules are fashioned to give effect to governance values and ethos. The interactive governance framework offers the platform on which the principles underlying the origin of governance ideas and choices can be discussed, defended, and evaluated before underpinning the choices made (Kooiman & Jentoft, 2009). Therefore, it is of significance that governing actors are explicit about their fundamental assumptions and world views when formulating a reasoned and coherent set of norms and principles (Kooiman & Jentoft, 2009). The principles, discourses, and values espoused in the meta order inform the design, care and maintenance of governance institutions which comprise the second-order of governance.

2.5.2 Second-order governing: plural institutions

The second order of governance comprises governance institutions. These are systems of agreements comprising rules, rights, laws, norms, roles, and procedures guided by the meta-governance principles. These institutional arrangements provide frameworks for everyday governing in the first order (Kooiman & Jentoft, 2009). The statutory governance approach uses conservation legislation and enforcement authorities to facilitate the realisation of the goals and ideals encapsulated in the metaorder principles and values. Within the customary realm, the institutions include an array of traditional authorities, customary rights, norms, and practices. While these may be based on beliefs, sometimes they may exist in the form of unwritten 'living' customary law and practices which mediate human-nature interactions (Mawere, 2014; Sunde, 2014). The dynamism, diversity, and complexity of society are reflected in this order, comprising state, market, and civil society (Kooiman, 2008). Of importance at this level are the rights and entitlements that communities enjoy over resources, especially access rights (Jentoft & Bavinck, 2014).

The codification of customary law means that the divide between statutory and customary law may be blurred. This phenomenon is common in African countries where statutory and customary governance systems co-exist alongside each other, sometimes in a hybrid dual political system. In South Africa, the genesis of this system can be traced back to the apartheid

era in the Bantustan[1] homelands. In these areas, traditional authorities were responsible for managing resources with low commercial value and in some communal areas such roles remain relatively intact. (Mwalukomo & Patel, 2012; Sowman et al., 2014). Although traditional authorities have been criticised as being enforcers of colonial powers (Mamdani, 1996), most post-independence African states have embraced a co-existence approach with chiefs (Ribot, 1999; Beall, 2006; Ainslie & Kepe, 2016). In both Botswana and South Africa, traditional authorities are recognised as governance institutions, especially at the local governance level (Hope, 2000; Mashele, 2004; Dipholo et al., 2014; Brown et al., 2016). In practical terms, this may introduce the unintended encroachment of one body of law over the other. Encroachment and pluralism further introduce ambiguity and confusion for resource users who are forced to comply with multiple governance approaches simultaneously (Buchy & Maconachie, 2014). In Zimbabwe, Murombedzi (1998) concluded that the effect of state encroachment on customary forms of governance had contributed to the degradation of natural resources in communal areas.

The informal institutions of governance include informal associations, kinship groups and 'rules of the game'. While operating and existing outside the formal recognition of state laws, these institutions are useful to ensure conformity and consistency in informal actors' interactions and fill gaps that exist in the formal statutory and customary governance framework (Ayres, 2017). In some instances, such informal institutions may be used to advance the interest of informal actors. For example, most of the unwritten 'rules of the game' serve to protect established dealers and cross-border traders while simultaneously creating barriers of entry to prospective actors. When conflict with statutory regulations arises, actors utilise informal institutions to adapt their practices. By rendering regulations futile, informal actors can continue with livelihoods with the least resistance (Pacheco et al., 2008). However, this does not imply the absence of other forms of governance. On the contrary, informal institutions provide that necessary regulation. This happens when informal institutions are

[1] Bantustan homelands were reserved territories for black South Africa citizens under apartheid systems pre-1994.

used to weaken the transparency, accountability, and legitimacy of formal institutions (Lauth, 2012).

Others have argued that such types of institutional interactions occur when resource governance relies less on bureaucracy due to the emergent 'wicked problems' which require not only state institutions but also customary and informal institutions (Armitage et al., 2009; Klijn & Koppenjan, 2016; Ayres, 2017). Community cooperatives contribute to this cocktail of institutions that carry governance functions beyond just the state (Lemos & Agrawal, 2006; Kooiman, 2008; Jentoft & Bavinck, 2014). The literature on institutions and commons theory has demonstrated that institutional design is useful for resource governance (Ostrom, 1990; Berkes et al., 1991). While institutions create a sound basis for regulating behaviour, ecological systems are highly dynamic and complex. They require a high degree of adaptability to managing changes in human and biophysical ecologies (Blomquist, 2009). These debates demonstrate the need for institutions to be adaptive and resilient simultaneously (Armitage, 2008; Armitage et al., 2009) by taking cognisant of change, uncertainty and diversity of knowledge systems and renewal of social and ecological systems (Folke, 2006; Blomquist, 2009). The diverse institutional frameworks which comprise the second-order of governance manifest in varied daily practices within the first-order of governing.

2.5.3 First-order governing actions and strategies

The first order of governance refers to the day-to-day actions and tools employed by resource governors and users. At this order of governance, rules and institutions directly impact the behaviour of resource users (Kooiman & Jentoft, 2009). Equally, the way people respond to rules affects the relationship between resource governance and livelihoods, as postulated by Giddens' (1984) theory of structuration. First-order governance can be likened to an arena in which different legal systems are applied and, in turn, interact simultaneously. First-order governing deals with the practical details of exercising governance, including dynamic processes of identifying problems, developing solutions, and creating opportunities that respond to social reality (Kooiman, 2008; Kooiman & Jentoft, 2009).

The diversity of actors and institutions that interact and which are characteristic of this order of governance presents both challenges and opportunities for governing. Jentoft and Bavinck

(2014) argue that how bureaucrats adjust and modify statutory rules along the customary institutions to fit local contexts and how people respond indicates the essence of first-order governing. This gives rise to institutional overlaps and confusion among resource governors and users. In these contexts, the effect of breaking one set of rules while attempting to comply with another is the manifestation of the conflict between and resistance against various forms of governance that play out in first-order governance (Jentoft & Bavinck, 2014). In statutory governance, the widely applied tools and actions for natural resource governance include permits and licences, rigid regulation of access to resources, and strict trade control. Customary governance actions include mediating livelihood conflicts, upholding customary rights and enforcement of customary rules. The preferred tools and actions in informal regimes include gatekeeping, manipulation, and collective action (Jentoft & Bavinck, 2014).

Although the interactive governance framework is invaluable in analysing resource governance issues at the interface between the statutory and customary forms of governance, the complexities arising from the interface cannot be fully accounted for by this framework. For example, the framework does not fully account for the relational mechanisms that configure interactions at the actor level. Instead, power issues and similar drivers are considered in the context of the interaction between legal systems. Ribot and Peluso (2003), argued that the framing of forms of governance in an interactive framework takes a simplistic conceptualisation, given that governance is more complex and comprises more than just state and customary systems of governance. In addition, the interactive governance framework for analysing legal pluralism by Jentoft and Bavinck (2014) significantly omits the role of informality in the governance of resources and markets, which is distinct from customary governance. This thesis seeks to address this theoretical gap by exploring how interactions between forms of governance configure resource utilisation. To fully understand how users are impacted, this study adopts political ecology approaches to understand the real and hidden costs and the invisible and hidden powers that shape resource use discourses. As an approach, political ecology calls for a focus on the broader political economy of resource management discourses that go beyond narrow ecological assumptions. Related concepts which provide insights on the dynamic relationships that characterise resource governance are discussed below.

2.6 Political Ecology Perspectives

A political ecology approach was adopted for this study to provide a lens to understand the socio-political, economic, and ecological underpinnings of governance and its outcomes for mopane worm commercialisation. This approach combines ecology and political economy concerns to understand the complex nature-society relationship through an analysis of forms of access, control and management of resources and their implications for livelihoods (Robbins, 2004; Armitage, 2008; Bassett & Gautier, 2014). In practice, this entails a critical perspective to interrogate the questions around the politics of access, control, management, and natural resource degradation (Bassett & Peimer, 2015). This is a departure from the environmental degradation discourses, which pursue narrow simplistic explanations of environmental change without regard for the political dimensions, which force people to undertake activities that cause resource degradation without alternative choices (Robbins, 2004). The emergence of political ecology perspectives marked the departure from Malthusian philosophies by linking environmental problems with broader political-economic constraints (Wolf, 1972; Watts, 1983; Blaikie, 1985; Peet & Watts, 1996).

The focus of political ecology on the politics of access and control has come under some criticism (Vayda & Walters, 1999; Bassett & Zimmerer, 2004; Walker, 2005). In a critique of the approach, Vayda and Walters (1999) suggest that due to its increasing focus on the politics of natural resources access, control and use, political ecology has inadvertently missed the complex and contingent interactions of factors contributing to environmental change. In their argument, Vayda and Walters suggest that biophysical factors should be prioritised rather than social, political, and economic factors to pursue explanations for environmental change and resource degradation (Vayda & Walters, 1999). Nonetheless, political ecologists have a consensus on the role of political-economic systems on human-environment interactions (Robbins, 2004; Bloomer, 2009; Neumann, 2009). One such emphasis comes from Blaikie (1985, p. 89):

> 'It is when the physical phenomenon of soil erosion affects people so that they have to respond and adapt their mode of life that it also becomes a social phenomenon. When this response affects others and brings about a clash of interests - and it usually

does except in areas of extreme remoteness and low population density - it becomes a political phenomenon as well'.

In the dismissal of the criticism of political ecology by Vayda and Walter (1999), Robbins (2004) outlines how land degradation, global conservation efforts, environmental conflicts and emerging environmental movements are intertwined with the broader social, political and economic discourses in any given context. Such interactions are often a result of complex networks that organise to produce new contextually unique environments over time. Therefore, a political ecology approach appreciates that through complex human/nonhuman relationships, unpredictable outcomes are produced in environmental problems (Robbins, 2004). As a result, the relegation of socio-political factors to a lesser status when studying environmental problems would be a serious flaw. Hence political ecology brings the social and discursive politics of access and control by drawing attention to '(a) the role of power, scale, and levels of an organisation; (b) the positioning of social actors; (c) social constructions of nature and the policy narratives that shape governance; and (d) knowledge valuation' (Armitage, 2008, p. 22).

In advancing the political ecology approach on human-environment relations as well as criticising neo-Malthusian theories, three key propositions were proposed by Peet and Watts (1996). First, the concept of marginalisation within the political, economic, and ecological contexts is self-reinforcing. Therefore, social marginalisation and resource degradation are reciprocally a cause and result of each other (Bloomer, 2009). Second, the production pressures on natural resources are diffused onto the environment through socio-political relations in various deprivations (Peet & Watts, 1996; Ribot & Peluso, 2003). Third, given the multiplicity of perceptions and explanations, there will always be a contestation of the facts surrounding degradation. As argued by Peet and Watts (1996, p. 6), 'one person's degradation is another's soil fertility'. In approaching any research problem, political ecology holds that costs and benefits related to natural resources are distributed unevenly among the actors and dependant on the context (Bryant & Bailey, 1997). This could either reinforce or reduce existing social and economic inequalities, which has political implications for the power of actors over other actors. With this outlook, political ecology research has been instrumental in uncovering the

real and hidden costs and invisible and hidden powers that shape the environmental and resource use outcomes (Ribot & Peluso, 2003; Robbins, 2004; Gaventa, 2006).

2.6.1 Marginalisation

The concept of marginalisation has been defined as the process that leads to simultaneous and increasing impoverishment and resource degradation among the global poor (Blaikie, 1985). It marks the convergence of the notions of margin from ecology, political economy, and neo-classical economics. In a political ecology context, marginalised communities refer to communities that are pushed to the edges of social power and thus possess little bargaining power in the market or political decision-making spaces (Blaikie, 1985; Robbins, 2004). Marginalisation may be according to gender, class, tribal and ethnic groups, leading to increased competition and conflict for access to resources (Robbins, 2004; Ambinakudige, 2011). This often results in increased demands for productivity on marginal ecosystems and a dwindling resource base. Outcomes from Derek Armitage's (2002) study of socio-institutional dynamics and the political ecology of mangroves in Indonesia provide an excellent example of how the convergence of loss of access, environmental degradation and conflict can exacerbate the effects of marginalisation among rich and poor communities. Armitage (2002) argues that environmental degradation resulting from pollution, fisheries decline, and coastal erosion combined with the loss of access to natural resources sparked and heightened tension and conflict among marginalised coastal communities. Another perspective on marginalisation is added by Susman et al. (1983, p. 278) that 'the process of underdevelopment is intimately linked with the control and exploitation of indigenous resources by the governing elite and outside interests. The underdevelopment process forces the peasantry into a more vulnerable position, which, in turn, directs them to look for another source of livelihood in areas where security may be less and hazard more severe or to change their resource use in ways that exacerbate vulnerability'.

As NTFP livelihoods are incorporated into commercial networks and multi-level governance regimes, political ecology provides an encompassing approach to extend the analyses of natural resource commercialisation, access, environmental change, and livelihoods production beyond the local scale (Ros-Tonen, 2012). The interface of NTFP livelihoods and political ecology best illustrates the previously underappreciated role of global environmental change, economic

constraints, institutional dynamics, and politics in influencing the ability and extent to which households can create livelihood options. Bloomer (2009) uses this approach to illustrate that uptake in extra-legal cannabis (*Cannabis sativa*) livelihoods in Lesotho is influenced by much stronger multi-level and multiscalar factors, which appear to mitigate against the deterrent risk of arrest for the producers. According to Bloomer, the pressures on agricultural land, the rise and collapse of the migrant labour system, and political instability were the pushing factors for smallholders to adopt cannabis production (Bloomer, 2009). This appreciation of distant influential factors on local livelihoods is central to this study. Hence, this study's main thrust is to explain how constraints are imposed on resource users and understand the adaptive strategies adopted to mitigate the impact in the context of wild products commercialisation.

2.6.2 Access

Political ecology and governance scholars have grappled with the notions of access, especially where conservation policies alienate local livelihoods and disenfranchise resource users (Duffy, 2000; Brockington, 2002; Bennett & Dearden, 2014; Sowman & Wynberg, 2014a). Despite the existence of institutions and frameworks of governance, the paramount consideration for resource users is the accessibility of resources for securing livelihoods. At the core of natural resource governance are the issues of effectiveness and equity of governance processes to ensure that ecosystems contribute to human wellbeing and the sustainable use of resources (Sowman & Wynberg, 2014a). Normatively, governance norms, institutions and processes determine the distribution of power and responsibilities, decision-making, participation, and benefit-sharing from natural resources (Campese et al., 2016). This is an essential function of steering societal action for addressing problems and achieving common goals (Kooiman et al., 2005; Sowman & Wynberg, 2014a). Despite this function, access to resources and benefits are seldom uniformly distributed among users (Ribot & Peluso, 2003).

In their seminal paper titled 'A theory of access', Ribot and Peluso (2003) conceptualise the ability to benefit from resources as the range of powers exercised through various mechanisms and processes which shift and change over time. They define access as the 'ability to benefit from things' (2003, p. 155). However, such an ability is seldom static or fixed as it involves the processes and institutional arrangements which enable and prevent people from benefitting from resources (Ribot & Peluso, 2003). Access to resources or lack of it is often a matter of

life and death for impoverished communities whose livelihoods depend on the harvesting, trading, consumption, or utilisation of natural resources (Shackleton et al., 2011). The issues of who benefits from what resources, in which period and for what purpose, are political in some contexts. To be able to gain and maintain access, users require enabling bundles of powers. Such powers may manifest in the form of the capacity to affect the actions of others through social relationships, which impact the ability of users to access resources (Ribot & Peluso, 2003; Bassett & Gautier, 2014). Access may be regulated through statutory and customary institutions by a combination of mechanisms, processes, and social relations (Ostrom, 1990; Ribot & Peluso, 2003).

When regulated through statutory institutions and processes, access is often paralleled to property rights. In new institutional literature, property rights are central to the notion of access, and thus, the enforceability of rights is seen as an essential factor in regulating access (Ostrom, 1990; 1992). Schlager and Ostrom (1992) regard access and the withdrawal of resources as fundamental property rights for the governance of common-pool resources. This school of thought defines access as the 'right to enter a defined physical property' and withdrawal as 'the right to obtain the products of a resource' (Schlager & Ostrom, 1992, p. 250). Such conceptualisation assumes a local context in which resource boundaries and communities of users would be clearly defined and, thus, enforceable. In cases where property rights are not clearly defined, calls have been made for privatisation to increase the efficiency of resource use (Mendelsohn, 1994). A similar assumption formed the basis of Ostrom's (1990) institutional design principles, which require a clear delineation of the resources and the users entitled to use them. While this conceptualisation of access and use rights has been widely applied in the study of common-pool resources, it is incompatible with tenurial regimes in communal areas. Resource users in these areas have historically enjoyed access to natural resources without the nature of rights definition championed by new institutionalism proponents (Sekonya et al., 2020).

A more holistic and nuanced understanding of access requires an appreciation of the complexities that go beyond narrow rights and territorialities (Bassett & Gautier, 2014). To this end, Ribot and Peluso (2003) argue that an analysis of access requires the identification and mapping of the benefits flowing from the resource of interest; uncovering the tactics with

which users gain, control and maintain the flow and distribution of benefits; and an analysis of the power relations which are underlying the mechanisms of access. They further provide that the rights-based, structural, and relational mechanisms facilitate gaining control and maintaining access to resources (Ribot & Peluso, 2003). Rights-based access mechanisms are those sanctioned by either law, custom or convention. This also includes the unsanctioned mechanism of illegal access. Rights-based access mechanisms are based on property rights which can be achieved by permits, deeds, and licences. Ordinarily, rights holders may enforce their rights by denying access to non-rights holders.

In communal and open access tenurial regimes, coercive enforcement is less prevalent (Sekonya et al., 2020). This results from the dominance of custom, convention, or social acceptance, which are the guiding principles for the circumstances through which users gain access to resources (Weber 1978, cited in Ribot & Peluso, 2003). Illegal mechanisms of access are defined as the enjoyment of resource benefits outside the socially sanctioned mechanisms. Ribot and Peluso (2003) contend that access can be gained, controlled, or maintained illegally using force or coercion. However, when access is facilitated illegally or through an unsanctioned process, rights holders or other legitimate users may justify their rights through laws, customs, and conventions (Ribot & Peluso, 2003).

Ribot and Peluso (2003) also comprehensively discussed the structural and relational mechanisms that regulate access to resource use and privilege certain resource users over others. Known as bundles of power, these are access to technology, capital, markets, labour and labour opportunities, knowledge, and authority. These categories of powers are inherently heuristic and, in specific contexts, may conflict with, complement, or enable other forms of access. Thus, actor relationships, proximity, conflicts, and power dynamics may shape the final form of access. Ribot and Peluso (2003) note that some actors may pool powers and complement each other's bundles of power to assert greater control to maintaining resource access. This framework also provides a nuanced analysis of access arrangements and processes. It requires an appreciation of the alliances and clashes between actors and institutions that control various forms of access. The framework also calls for attention to the policies, markets, technologies, knowledge, and identities shaped by social contexts (Ribot & Peluso, 2003). This access framework provides a robust theory to analyse the complexities which mopane worm

harvesters, traders, exporters, and vendors navigate when statutory and customary governance regimes are involved in resource regulation.

2.7 Conclusion

This study aims to improve understanding of the implications for livelihoods of the interplay between governance arrangements and informality in configuring access to resources and cross-border markets. This calls for a framework that incorporates the interactive governance dynamics, notions of informality and the political economy of wild product use. A nuanced understanding of the complex constraints and opportunities that emerge as resource users interact with governance institutions is crucial in understanding the factors that configure the cross-border commercialisation of wild products. As argued in the chapter, the concept of informality is fluid and thus comprises multiple progressive phases of compliance with context-specific regulations within a continuum. Informality across mopane worm commercialisation influences the governance arrangements, which in turn affects how users access resources and markets. The literature on informality and resource governance reveals the weaknesses of formalised governance approaches. They inadequately account for the heterogeneity of the agency among resource users in navigating the constraints and creating opportunities between multiple forms of regulations. The study uses empirical evidence to understand the dynamic relationships between informal wild products trade, interactive governance institutions and the roles of access and marginality on configuring livelihood outcomes in wild products cross-border commercialisation in the global South.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presents the methods used for this research and the steps followed to collect, analyse, and interpret the different data sets to answer the research questions. This study was guided by a methodology that underpins the aims and objectives and the data analysis approach. The chapter comprises five main sections and presents the methods and procedures followed in collecting and analysing the data. The first section presents the research design, discusses the philosophical underpinnings of scientific research, and locates the critical theoretical assumptions of the study. The research design provides a framework that links the research aim, objectives and questions to the approaches, methods, and techniques for data collection. The second section describes the sampling design and sources of the empirical data. The third section presents the techniques which guided the collection and analysis of the primary and secondary data. The fourth section discusses the ethical considerations of the study, and the final section presents the limitations of the study. In the conclusion, reflections on the methods used are provided.

3.2 Research Design

Creswell (2009) advises that in any research endeavour, the choice of the research design should be guided by the 'worldview assumptions the researcher brings to the study; procedures of inquiry (called strategies); and specific methods of data collection, analysis, and interpretation' (2009, p. 3). de Vaus (2001) concurs that 'the function of a research design is to ensure the evidence obtained enables us to answer the initial question as unambiguously as possible' (2001, p. 9). Accordingly, Creswell (2003) advises that in crafting the research design, three fundamental areas need to be addressed; namely, the knowledge claims being made by the researcher, strategies of inquiry informing the procedures, and methods of data collection and analysis. This study utilises the research design framework developed by Creswell (2003) to demonstrate the interrelationship between the philosophical assumptions central to the study, the research strategy, and the specific research methods.

3.2.1 Philosophical underpinnings of the study

An investigation of the worldviews and perceptions of resource users regarding their livelihoods involves subjective construction of reality. The two main philosophical dimensions of research paradigms are ontology and epistemology. These philosophical assumptions shape how social science research is undertaken (Burrell & Morgan, 1979). They are used to frame a person's worldview; in other words, the 'personal biography' of the researcher (Denzin & Lincoln, 2005). According to Neuman (2014), ontology deals with the issues of the nature of reality. Within the ontology paradigm, the two different ways of perceiving reality are realism and subjectivism. In terms of the realist worldview, reality and the real world exist externally and independent of individual actors, waiting to be discovered (Saunders et al., 2009; Wahyuni, 2012; Neuman, 2014). This contrasts with the subjectivists, who contend that social actors construct reality (Wahyuni, 2012). Therefore, social phenomena are merely a result of the social actors and individuals who create meanings (Wahyuni, 2012; Neuman, 2014).

Epistemology concerns itself with the nature of the relationship between the researcher and the knowable. It provides the philosophical basis for deciding which kind of knowledge is possible and how to legitimate and equate them (Guba, 1990; Crotty, 1998). According to Wahyuni (2012), epistemology deals with the beliefs on how to generate, understand and use knowledge. This entails the questions of what is knowing, what is known and what is knowledge? These give the ontological grounding on how one can learn about the world (Stone, 2008; Neuman, 2014). There has been an effort to distinguish research paradigms into unique categories which reflect people's worldview and perception of reality. These are positivism and interpretivism (Guba, 1990; Guba & Lincoln, 1994; Avramidis & Smith, 1999; Wahyuni, 2012; Neuman, 2014). Positivism is embedded in the realist ontology, which believes that reality exists somewhere driven by immutable natural laws waiting to be discovered. The ethos of this paradigm is such that science can discover reality in its true nature. Therefore, science can predict and control reality and knowledge (Guba, 1990). The positivist ontology assumes that everyone experiences the world similarly and places emphasis on cold hard facts. The positivist ontology has, over time, morphed into several varieties such as logical empiricism, post-positivism, naturalism and behaviourism (Neuman, 2014).

According to the interpretivist worldview, reality and knowledge exist subjective to the experiences that people have of the external world. This paradigm holds that reality is a social construct, and therefore, reality and knowledge cannot be divorced from social actors. According to Neuman (2014), interpretivism is rooted in an empathetic understanding of people's experiences and daily lives in a specific context. The goal of any interpretive inquiry is to disentangle and interpret the meanings that people give to their actions as a way of understanding social reality (Bhattacharya, 2008; Smith, 2008). The methodological approaches of interpretivist research entail extended periods of personal contact between researchers and the people they study. This approach requires qualitative techniques of participant observations and field research (Neuman, 2014). Accordingly, an ethnographic interpretive researcher may live among the people who are subject to the study to gather rich qualitative data to acquire an in-depth understanding and interpretation of how people create meaning in their everyday lives (Neuman, 2014).

This study adopted an interpretivist approach to investigate the governance arrangements, informality, and commercialisation of mopane worm. The nature of this study justified the adoption of interpretivism as it places greater emphasis on human interactions and allows researchers to interpret what they see, hear, and understand (Creswell, 2009). These conditions are conducive for an inquiry that seeks to tease out the nuanced meanings and interpretations of mopane worms in the social lives of individual and institutional actors in the harvesting, use and trade. The importance of this approach was such that the research had to interpret what could be seen, heard, and understood within the context of mopane worm livelihoods.

3.2.2 Research approaches

There are different interpretive approaches for data collection, analysis and writing within the qualitative research arena (Denzin & Lincoln, 2005; Creswell, 2009). These include, among others, case studies, ethnographies, grounded theory, participatory action research, and discourse analysis. Creswell (2009) notes that this diversity of approaches allows researchers to study objects and individuals, explore processes, activities, and events, and learn about the broad culture-sharing behaviour of individuals or groups. Given the geographical extent of the study area, the multiplicity of contexts, and the various trajectories of mopane worm trade chains, this study combined two approaches: case study and multi-sited ethnography. The

combination of the three approaches offered an advantage of studying the cross-border trade holistically. The approaches also guided the processes of identifying and locating participants, collecting data, sorting, and constructing the analytical image of mopane worm cross-border trade.

3.2.2.1 Case study

The case study approach is particularly useful when undertaking comprehensive, multi-faceted studies of complex issues in their actual setting. Thomas (2011) defines a case study as 'analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems that are studied holistically by one or more methods' (p. 513). A vital feature of the case study is the intensified focus upon a single phenomenon in its natural setting. According to Creswell (2009), a case study is a research strategy in which the researcher or the study focuses in-depth on a specific program, event, activity, process or one or more individuals. Unlike other approaches, especially within the postpositivist realm, the case study approach emphasises the variables of interest rather than the number of data points (Crowe et al., 2011). Such focus enables case studies to utilise various data collection tools and methods to collect detailed information concerning the subject over a sustained period (Stake, 1995; Creswell, 2009). The case study approach was appropriate to study the governance of mopane worms as a complex social phenomenon in a holistic manner. This allowed the researcher to gain in-depth insights into the politics and informality of the cross-border trade by focusing on mopane worms as an object of interest at harvest communities and trading markets. Multiple sources of data were pursued to build a thorough understanding of the mopane worm trade. The experiences, relations, activities, and interactions of actors within the trade were interrogated through qualitative methodologies to understand the nature of mopane worm use, harvest, sale, transportation, and marketing.

Case study research approach is known to have some limitations which require careful consideration in a research exercise. Several reasons have been advanced for the criticism case study approach, these include delimiting the boundaries of a case to study; the collection of voluminous data; lack of rigour; limited basis for generalisability (Yin, 1984; Hodkinson & Hodkinson, 2001; Creswell, 2007; Zainal, 2007). This criticism and other limitations of the case study are purported to result from the dependency of investigations on single cases. As a

result, such focus on single cases limits the generalisation, and restricts sampling cases and sample size (Yin, 1994; Tellis, 1997; Zainal, 2007). In response to these limitations and criticism, Flyvbjerg (2006) argues that the limitations and related criticism are misunderstandings about case study research. Accordingly, Flyvbjerg (2006) holds that the incremental contribution by meticulously executed large number of case studies are invaluable to the systematic production of exemplars of knowledge. In recognising the debates on case study approach and this study uses multisited ethnography to overcome the methodological and analytical limitations which were heightened by the extent of mopane worm cross-border trade. this approach is introduced below.

3.2.2.2 Multi-sited ethnography

The study utilised the multi-sited ethnography (Marcus, 1995) in following the trajectories of the mopane worm. This marks a departure from the traditional intensive single-site location ethnographic research approach; instead, a multi-sited approach can adapt to different contexts constructed by a wide range of actors (Marcus, 1995). Moreover, this approach allows for assessing the networks of relations and influence involving the research subject (Herrero et al., 2015). This approach was a useful tool to trace the movement of mopane worms across geographical locales, tracing their trajectories and the resulting transformation along and within the situated multiple sites of activity (Marcus, 1995). This offers the potential of investigating the object of study within a broader network of relations (Herrero et al., 2015). As noted by Herrero et al. (2015), several critics of multi-sited ethnography argue that this approach compromises the depth of ethnographic research, and thus, the very nature of ethnographic research work. This argument, however, falls short of appreciating the ability of multi-sited ethnographic research to provide a dense description of the actors, processes, places, practices, discourses, and meanings of networks. Such capability contrasts with single-site ethnography, which focuses on nodes (Herrero et al., 2015). Within the context of mopane worm harvesting, use and trade, this approach was useful in tracing the linkages between the harvesters, dealers, traders, and exporters. The adoption and application of multi-sited ethnography in this study provided a guiding framework to follow mopane worm trajectories from harvesting grounds in the Central District of Botswana to informal markets in Limpopo Province, South Africa. The 'following' served as a useful supplementary methodological instrument to guide the

sampling and data collection. In practical terms, the tracing and locating of relevant informants and study sites complemented the snowball sampling techniques of the study.

3.3 Selection of Participants and Sources of Data

3.3.1 Sampling of study participants

A purposive snowball sampling approach was used to locate participants. Snowball sampling is a nonprobability sampling method where participants are asked to recommend and recruit subsequent participants into the study (Voicu & Babonea, 2011; Cox, 2015). This technique was useful for studying heterogeneous actors knowledgeable about mopane worm use and trade and uncovering various interactions between the actors. Given the size of the study area and the logistical challenges involved in conducting a study covering two countries, there was a need for a method that would allow for sampling hard-to-reach populations without an extensive fieldwork team. Snowball sampling was useful in aiding the identification of participants and study sites, especially in Botswana. The fieldwork for the study was conducted between March 2018 and December 2019. During this time, the researcher visited and spent varying periods at several sites within the study area, as shown in Table 3.1 below. The data sources for this study comprised both primary and secondary sources, which are discussed below.

Table 3.1 Sampling sites in South Africa and Botswana

South Africa – Limpopo Province	**Botswana – Central District**
Thohoyandou	Mogapi
Sibasa	Mogapinyana
Makhado/Louis Trichardt	Sefhophe
Giyani	Serowe
Malamulele	Selebi Phikwe
Elim	Tsetsebjwe
Beitbridge	Martins Drift
Groblersbridge	Maokatumo

3.3.2 Primary data collection

The study utilised both primary and secondary sources of data. Primary sources include transcripts of interviews, field notes from observations and eyewitness accounts of events collected first-hand by the researcher (Hox & Boeije, 2005). Semi-structured interviews, key informant interviews, and market surveys were used to collect primary data. The interviews were conducted with the harvesters, dealers, traditional leaders, Department of Forest and Range Resources (DFRR) officials, conservation, and revenue service officials. The total number of participants and key informants interviewed in each country is shown in Table 3.2 below.

Table 3.2 Total number of respondents in South Africa and Botswana

Nationality	Role					
	Cross-border traders	**Harvesters**	**Vendors**	**Traditional leaders**	**Government officials**	**Total**
Motswana	2	43	-	4	3[2]	52
South African	6	-	7	-	1[3]	14
Zimbabwean[4]	2	-	2	-	-	4
Total	**10**	**43**	**9**	**4**	**4**	**70**

Source: Primary data

3.3.3 Secondary data collection

Secondary data are preexisting sources of data that are not connected to the primary sources. These include data that exist for other purposes and not primarily for the research at hand, and in some cases, collected by someone besides the researcher. Secondary data may exist in the form of databases, archives and institutional records, official statistics, administrative records, reports and other documents which may have been commissioned for another study or administrative purposes (Hox & Boeije, 2005; McGinn, 2008). Although there are clear

[2] Officers in the Department of Forest and Range Resources in Botswana

[3] Collins Chabane local municipality

[4] The Zimbabwean nationals interviewed in this study were all trading at markets in South Africa.

benefits to using secondary data for supplementing the primary data (Marshall & Rossman, 2006), there are some dangers of utilising secondary data in qualitative studies. Neuman (2014) identifies such dangers as the inappropriateness of the data, misunderstanding of the topic of the original research, and outdated statistics. Hox and Boeije (2005) further point out the difficulty of locating useful data sources and retrieving good quality data. McGinn (2008) raised other ethical issues, including the diminished ability of individuals who provided the original data to provide consent to the present study. Cognizant of these benefits and pitfalls of secondary data in qualitative studies, the study included newspaper articles, municipal Integrated Development Plans (IDPs), bylaws and policies, vendor permits, books, journal articles and other internet sources. These documents were useful for improving the contextual understanding of the study area and key stakeholders. In addition, they also assisted in mapping the statutory regulatory landscape.

3.4 Data Collection Techniques

For this research, interviews, nonparticipant observations and document analysis were conducted to collect the data. This combination of multiple data collection techniques was crucial for triangulation of the data for reliability, validity, trustworthiness and credibility of the findings and conclusions of the study. According to Denzin (1978), triangulation entails using multiple methodologies to investigate the same phenomenon. Triangulation as a strategy is crucial to a qualitative inquiry as it adds rigour, breadth, and depth for more objective and valid results (Jonsen & Jehn, 2009; Denzin, 2012). A thorough triangulation exercise requires that throughout the study, the researcher must ensure continual cross-check on concepts, descriptions, methods, data, participants (Jonsen & Jehn, 2009). As a researcher's way of thinking throughout the study, triangulation was recognised to have three key functions. First, to reduce biases and increase the reliability, validity and minimise distortions. Second, to increase the study's comprehensiveness and richness and achieve a more holistic understanding of the phenomenon under study. Third, the increased confidence about findings and conclusions (Jonsen & Jehn, 2009). Accordingly, this study adopted three data collection techniques as described below.

3.4.1 Interviews

Interviews are a mode of systematic qualitative inquiry in which participants are encouraged and prompted to talk in-depth about a given topic. Brinkmann (2008, p. 470) defines an interview as a 'conversational practise where knowledge is produced through the interaction between an interviewer and an interviewee'. In using the interview as a tool to produce knowledge, the researcher may need to prepare either predetermined, focused questions or questions focused on the domains of experience of the participants and how they relate to the topic or subject under investigation (Cook, 2008). This is useful to serve the research goal, which may be external to the conversation (Brinkmann, 2008). Interviews are powerful tools to capture the participants' experiences and feelings, as they focus on the subjective narratives and perspectives of the participants to understand how they think, speak, and organise reality within their settings (Neuman, 2014). Interviews are undertaken in diverse ways, depending on the nature and objectives of the research. The common interviews in qualitative research are structured, semi-structured and unstructured (Cook, 2008; Brinkmann, 2014). The study utilised a combination of semi-structured and unstructured interviews.

3.4.1.1 Semi-structured interviews

Semi-structured interviews are a qualitative data collection tool that utilises predetermined but open-ended questions. This gives the researcher some degree of control over the direction of the conversation while allowing the participants the range to express themselves (Ayres, 2008a). In keeping with the flexibility of semi-structured interviews, the researchers may utilise an interview guide with specific questions or a list of topics to be covered subject to the participant's answers. This is a powerful feature of this type of research as it ensures that the resultant data is a collaboration of the investigator and informant (Ayres, 2008a). This knowledge-producing potential is crucial as it elevates both the researcher and participant as knowledge producers.

Furthermore, semi-structured interviews provides the researcher with the flexibility to focus on the issues that may not have been deemed necessary before the interviews (Brinkmann, 2014). Although unstructured interviews were conducted opportunistically with various actors, semi-structured interviews were the primary data collection tool for the study. The choice of semi-structured interviews was motivated by the need for flexibility between structure, focus

and freedom to explore concepts and issues that the participants brought up. A set of open-ended questions was prepared and tailored for the participants and key informants in Botswana and South Africa. The interviews were conducted in the natural setting of the participants, inclusive of homes, harvesting camps, markets, and workplaces. The interviews covered various aspects, such as access issues, power dynamics, the flow of benefits, exploitation, and the daily lives of the actors. Further interviews were conducted with conservation officials in Botswana and local government officials in South Africa, focusing on the permitting processes and regulating harvesters and traders.

3.4.1.2 Unstructured interviews

Unstructured interviews are based on the lack of structure when undertaken. Using this type of interview, qualitative researchers use open-ended questions to explore a topic of interest without superimposing their perceptions onto the participant (Firmin, 2008). This type of interview deals with aspects that cannot be known beforehand, thus limit the ability of the researcher to prepare for specific answers. As such, unstructured interviews are found to be useful for investigating life stories. Firmin (2008) notes that when an unstructured interview is used, the researcher may begin the interview with vague questions, which offers the participants little clues about the researcher's intended direction of the conversation. In such a scenario, the primary purpose of the researcher is to remain a listener while asking sporadic questions for clarity (Brinkmann, 2014). In this study, unstructured interviews were conducted to gain insights which the researcher had no prior knowledge of and had not anticipated. This is a research technique in which the researcher first employs unstructured interviews and then progresses to more structured interviews focusing on specific issues (Firmin, 2008). Unstructured interviews were also utilised when encountering participants who would otherwise not participate in a semi-structured interview due to time constraints. These interactions were useful to clarify some of the common features of mopane worm trade, perceptions of the governance systems and the population dynamics of mopane worms.

3.4.2 Observations

This technique allows the researcher to systematically use their senses to look and hear to learn about the topic of interest. Observations were used to capture the reality of participants' experiences and behaviours in their natural settings. In this technique, the researcher was not

limited by predetermined notions of what is to be expected during observation. This allowed the researcher to observe concepts or categories that appear meaningful to the subject (Adler & Adler, 1994). Nonetheless, observations have considerable weaknesses such as the inability to observe cognitive processes; requiring substantial time and other resources; and findings may have transferability issues and observer bias. Although these weaknesses of observational research cannot be ignored, they can be mitigated through triangulation by using multiple data collection methods simultaneously to improve the reliability of the research outcomes. In South Africa, direct observations were undertaken at the markets and taxi ranks in the various towns, Beitbridge and Martins drift border posts. This technique was used to gather data to describe the nature of interactions between the cross-border traders and border officials during the declaration of goods, among the various traders and their clientele and, between traders and municipal officials. These interactions were observed through the daily activities of transaction negotiations between traders, the attracting of customers by the vendors and bulk traders, and the processes followed by the cross-border traders at the border posts.

In Botswana, observations took several forms as they had to be done from multiple perspectives to understand the underlying drivers which encourage people to act the way they do. The researcher accompanied the DFRR, local police and dikgosi raids on harvester camps in Mogapinyana and Mogapi. To gather information on the tactics used by the DFRR, local police and dikgosi in enforcing veld products regulations and related customary law on mopane worm access and harvesting, the researcher accompanied the officials on all the sanctioned raids conducted for a week in December 2019. The daily itinerary included a courtesy visit to the local village kgosi to introduce the team and the purpose of the visit. A uniformed police officer accompanied the team on all the raids at the request of the DFRR officials. For the raids in Mogapinyana and Mogapi, the dikgosi accompanied the DFRR officials. Participation in these raids was a valuable opportunity to observe the interface between customary and statutory law, i.e., dikgosi, DFRR and the police working together to uphold two different legal systems. There were some notable inconsistencies, deviations from prescribed sanctions and confusion on compliance with the regulations that were noted. Other useful information that was yielded by the observations concerned the sensitive issues around the inefficiencies of the current regulatory regime and its implementation by the DFRR. Other participant observations included the monitoring surveys of mopane worm outbreak in Lerala.

3.4.3 Document analysis

Documents and texts review presents a method of collecting data relevant to the contextual and historical account of contexts and phenomena independent of the researcher's intervention (Corbetta, 2003). As sources of data, documents are regarded as essential sources of information. Researchers are interested in the meaningful messages in the documents and other formats such as maps, architectural plans, films, and photographs (Prior, 2008). Documents analysed as part of the study included Acts, regulations, municipal planning documents, bylaws, and policy documents. Also, the researcher considered newspaper articles sourced from major publications. The articles were used to map the trajectory of the government public rhetoric, policy standpoints, evolution of public perceptions, and inform the researcher about the previous public debates about mopane worm regulation. Moreover, the documents were helpful to collate information about the crimes reported, incidents of harvester disappearances, conflicts and the growing disillusionment with foreign harvesters and traders, especially in Botswana.

3.5 Data Analysis

Data analysis entailed systematically disentangling and categorising raw data into broader categories, followed by examining and manipulating the categories to identify any meaningful patterns (Neuman, 2014). Flick (2014, p. 5) defines data analysis in qualitative research as the 'classification and interpretation of linguistic (or visual) material to make statements about implicit and explicit dimensions and structures of meaning-making in the material and what is represented in it'. This process can be undertaken through a quantitative, qualitative or mixed-method approach and is informed by the research design. A qualitative data analysis involves sorting, organising, and interpreting raw interview data in the transcripts, field notes and visual data (van den Hoonaard & van den Hoonaard, 2008). Such a process aimed to build a new theory that creates a realistic picture of social life and not necessarily test causal hypotheses (Neuman, 2014).

Data analysis in this study employed the thematic analyses techniques for the analytical process (Braun & Clarke, 2006). Ayres (2008b, p. 867) defines thematic analysis as a 'descriptive

strategy that facilitates searching for patterns of experience within a qualitative data set'. A thematic analysis exercise achieves this in an iterative process that segments, categorises, summarises, and reconstruct the qualitative data to highlight the critical concepts in the dataset (Braun & Clarke, 2006). An essential outcome of thematic analysis is a description of the ideas, patterns and the overarching design that unites them (Ayres, 2008b).

The recorded interviews were transcribed, and observation notes were typed and summarised. The qualitative data were coded into themes using NVivo® 11 software package (NVivo qualitative data analysis software; QSR International Pty Ltd. Version 11, 2015). Any identified gaps in the transcripts and field notes were followed up on with the participants for clarity. In line with the principles of grounded theory research (Glaser & Strauss, 1967), the gathered data and emerging themes were iteratively compared with the research aim and objectives to guide the subsequent data collection and analysis.

During the data collection and analysis phases, this study adopted persistent observation as a method of iteratively reading and comparing the interview transcripts, codes, themes, and categories. According to Lincoln & Guba (1985) persistent observation in a qualitative inquiry enhances the researcher's focus on the features of the research object in greater detail to improve the depth of the inquiry. In addition to triangulation (Denzin, 1978), adoption of persistent observation in this study ensured the gathered data received requisite attention to tease out salient characteristics of mopane worm cross-border trade and the governance dynamics. With the use of triangulation and persistent observation, the study findings are drawn from credible and valid interpretation of participants' original views and perceptions of reality.

This iterative and snowballing process helped identify additional stakeholders and participants, sites, and specific governments entities that could be incorporated into the study to provide more insights to answer the research questions. More interviews were conducted where necessary to fill any emerging gaps, and sites were repeatedly visited to gain deeper insights into the cross-border trade. The thematic data were categorised and sorted according to similarities, patterns, and concepts. These were interpreted by building and narrating the story on various aspects of mopane worm trade, harvesting and use, as presented in this study. The

presentation of the results was done from a narrative perspective. This provided a compelling account of the participant's reality and meanings descriptively, with excerpts from interviews, field notes, and secondary sources without altering the situation studied to provide a vivid and memorable account (Gilgun, 2005; 2014).

3.6 Ethical Issues

The University of Cape Town (UCT) Research Ethics Code Research Ethics Code guided the ethical considerations in this study for Research Involving Human Participants. As per the University standard procedure, ethical clearance was applied for and obtained from the Science Faculty Research Ethics Committee, with the approval code FSREC 15 – 2018 (Appendix 1). In line with the UCT Research Ethics Code, the participants involved in the research were given reasonable and enough background information about the study. Prior informed consent was obtained, in writing or verbally, from all the research participants, and they were informed of their right to terminate the interview at any given stage without penalty or prejudice. This included consent to have the interviews recorded on a portable audio recorder. The participants were made aware that no compensation in any form was to be expected from their participation in the study. Participants' identities were kept confidential, and where necessary, pseudonyms were used during the data collection, analysis, report writing and in any research outputs to avoid harm resulting from this research. Before data collection in Botswana, a research permit (Appendix 2) and clearance (Appendix 3) were obtained from the Ministry of Environment, Natural Resources Conservation and Tourism (MENT) and DFRR, respectively.

Despite the research permits and clearances which were obtained from authorities, it is important in local customary practices for an outsider to seek permission and consent of kgosi to access communities for research purposes. This step is vital for ethical research as it demonstrates respect for community practices and honesty on the part of the researcher. Such importance is emphasised by the notion that research in communities is undertaken with communities and not about the communities (Chatfield et al., 2018). To facilitate introduction of the study to the local authorities, the research team visited each of the local tribal authorities' offices in all four villages to meet with dikgosi. Each kgosi was requested to recommend local

assistants to join the research team while in the village. The local assistants helped the research team to gain the trust of the potential participants. Since the local assistants were volunteers at the tribal authority offices, their presence with the research team further demonstrated to participants that kgosi had granted permission for the study. Where necessary, the volunteers helped to explain the consent which kgosi had granted. All the volunteers who were recruited in the villages were remunerated. After the interviews in each village, the research team visited dikgosi offices to give feedback on time spent in the area. This opportunity was also used to get suggestions from dikgosi on villages that could be included in the study. All dikgosi extended invitations to the researcher to report the findings of the study once it is concluded. To this end, the findings will be shared in the following ways. First, the copy of the thesis will be lodged with the government of Botswana, as per conditions of the research permit (Appendix 2). Second, the summary of the findings will be shared at the villages and relevant government departments in Botswana.[5] Dissemination of the findings in South Africa has been partly conducted by publishing a newspaper article in a regional publication in the Vhembe district. Additional dissemination will be conducted in the markets among traders and local economic development (LED) officers in the concerned municipalities.

The researcher accompanied the DFRR officers, local police and dikgosi during the conduct of enforcement in harvesting areas. Cautionary measures were taken to ensure that participation was limited to observing the interactions between officials and harvesters. Furthermore, any information known to the researcher concerning the harvesters were kept confidential and not shared with the authorities to avoid violation of confidentiality and ethical provisions of the research clearance issued by UCT.

3.7 Limitations of the Study

The research was not without limitations. Two fundamental limitations emerged during the study: language barriers and the reluctance of government officials to participate in the research. Firstly, there were language barriers between the researcher and most of the

[5] Given the COVID-19 restrictions on international and local travel in both Botswana and South Africa, this will only be undertaken when it is safe and permitted by the authorities.

participants whose primary language was Tshivenda (13), Xitsonga (4), or Setswana (51).[6] The researcher speaks Sepedi/Northern Sotho as the first language and, therefore, was able to communicate effectively with Setswana-speaking participants. Although the researcher had a basic command of both Tshivenda and Xitsonga, these were advantageous as they allowed for cordial exchange greetings and introductions between the researcher and participants. To ensure unconstrained communication, the researcher used the services of local translators, who were recruited to assist with the translation of data collection tools, transcripts and conducting interviews throughout the data collection phase. However, relying on the translators was not without limitations because it creates a distance between the researcher and the participants (Brinkmann et al., 2014). To overcome the challenges of language barriers, the researcher employed translators who had worked on similar studies in the years preceding the study. To improve the quality of the interview data, the researcher reviewed the transcribed interviews for any inconsistencies. When identified, these were compared to the recorded interviews to correct any errors and omissions that may have been introduced during the transcription process.

The second limitation was that local government officials in South Africa and conservation staff in Botswana were reluctant to participate in the study, despite numerous attempts that were made. In South Africa, email requests were sent to relevant officials in the local municipalities. From these invitations, responses ranged from declining participation outright or deferring participation at a later stage, while other invitations were not replied to at all. Mopane worm trade is seen as an insignificant economic activity by local government officials. From this, it could be concluded that some of the officials deemed it not worth their while to participate in the study. In Botswana, very few officers and key informants were willing to participate, most preferring to share their knowledge on the subject matter but not to be formally interviewed. Natural resource governance issues are political as much as they are

[6] Batswana is used as an umbrella term which is acknowledged to include various tribal groups found in Botswana. However, the major ethnic groups in the country are Tswana, Kalanga, Batswapong, Babirwa, Basarwa or Bushmen, Bayeyi, Hambukushu, Basubia, Baherero and Bakgalagadi. Other ethnic subgroups are Bamangwato, Bakwena, Bangwaketse, Batawana, Batlokwa, Bakgatla, Barolong and Balete.

about livelihoods. The reluctance to discuss politics, especially in the period of elections, may have played a role, especially in Botswana. Despite these limitations, the primary and secondary data collected for the study was adequate to provide a robust and holistic picture of the various issues on the trade, harvesting and use of mopane worms between Botswana and South Africa.

3.8 Conclusion

This chapter has explained the data collection and analysis techniques used in the study across the study sites in Botswana and South Africa. The data gathering process across the border involved locating and interviewing a sample of stakeholders involved in the trade, harvesting and use of mopane worms. Using the multi-sited ethnography approach and snowball sampling, various study sites were visited more than once to conduct follow-up interviews with certain participants, particularly cross-border traders, bulk traders, and government officials. These follow-up interviews were necessary to understand issues that had emerged in the other interviews to build a case study of mopane worm trade and livelihoods. The data-gathering exercise also involved observing the harvesters, bulk traders, cross-border traders, and vendors in their daily activities in various contexts and settings. The observations included taking notes on occurrences, events and taking photographs to complement the text-based data. Observations served a crucial role in verifying the reported facts, incidents, and stories in the interviews and other sources. Given the contextual differences between the three countries, methodological modifications on the data collections tools and approaches were necessary to maximise the collection of context-specific and relevant data for the study given the political and socioeconomic differences across the borders of the two countries. For consistency and data collection integrity, key themes were used in cross-border data collections to compare and contrast critical processes, events, and activities in the trade, harvesting and use. The next chapter describes the study area in both Botswana and South Africa.

CHAPTER 4: OVERVIEW OF THE STUDY SITES

4.1 Introduction

This chapter describes the study area in terms of the local context and prevalence of economic practices in each locality in both Botswana and South Africa. In Botswana, the harvester communities were in the Central District (see Figure 1.1). These are communal areas in which mopane worms were harvested and traded for export to South Africa to sell in urban markets. The chapter begins with an overview of the mopane worm bioregion and a justification of the selected study sites. This is followed by a description the Central District and the villages which were part of the study, the critical livelihood activities, and the local governance context in Botswana. The third section describes the study area in Limpopo Province, South Africa, as shown in Figure 1.2. The study area includes several towns in Vhembe and Mopani Districts which are lucrative markets for mopane worms imported from Botswana. The description of these towns includes the prevalence of informal trading patterns, which are critical for mopane worm marketing. Conclusion of the chapter articulates the pull effect of informal markets from local and cross-border dealers.

4.2 Mopane Worm Bioregion

Mopane worms are found in northern South Africa, southern Zimbabwe, and eastern Botswana (Kozanayi & Frost, 2002; Stack et al., 2003). This region, covering approximately 555,000 km^2 of land, forms part of the mopane woodland which extends across several countries in southern Africa (Makhado et al., 2021). The choice of the study sites in Botswana and South Africa was influenced by the researcher's knowledge of the source areas and existing studies (Sekonya 2016). Lucas (2010) has also confirmed the Central District as an important harvesting area due to the consistent seasonal outbreaks which attract thousands of Batswana harvesters looking to capitalise on the growing cross-border trade of mopane worms.

Previous studies have shown that the regional cross-border trade of mopane worms involves significant imports into South Africa from Botswana and Zimbabwe (Allotey et al., 1996; Kozanayi & Frost, 2002; Makhado et al., 2014). This is partly due to a combination of the

steadily increasing demand and dwindling harvests in South Africa (Sekonya et al., 2020). The five study sites selected in South Africa included some of the lucrative markets that attract cross-border traders particularly from Botswana and Zimbabwe (Sekonya, 2016). In South Africa, mopane worms are part of the diets of VhaVenda, VaTsonga and BaPedi. Markets for mopane worms trade are thus concentrated in the north and north-eastern part of Limpopo Province. Although Zimbabwe is another important source of mopane worms imported to and marketed in South Africa (Kozanayi & Frost, 2002; Mutopo, 2010), its inclusion in the study was marred by logistical impediments and security uncertainty that hindered data collection. A significant hindrance to inclusion of and data collection in Zimbabwe for the study were the events of concern including explosion at rally in Bulawayo on 23 June 2018, killing two and violent post-election demonstrations on 1 August 2018 (Fitiwi & Kidane, 2018; Sithole, 2020).

4.3 Description of the Study Area in the Central District, Botswana

In Botswana, the study area was in the Central District. The district is in the eastern part of Botswana, where it shares a border with Matebeleland North Province of Zimbabwe and Limpopo Province of South Africa in the south-east (see Figure 1.1). Within Botswana, the Central District neighbours the north-East district in the northeast, Kgatleng in the south, Kweneng in the southwest, Ghanzi in the West, and North-West (Ngamiland) in the northwest. The district is the largest of the 17 administrative districts in the country and covers 147,730 km^2, with a population of 638,604 (Global Data Lab, 2020). The Central District is divided into seven subdistricts, namely Palapye, Mahalapye, Boteti, Tutume, Bobirwa, Serowe and Tonota. The district councils administer local governance at the district level. These councils comprise elected and nominated members with a district commissioner, traditional leaders and chairperson of the land board included as ex officio members (CLGF, 2017). The local government framework of Botswana incorporates the tribal administration systems. At the village level, traditional leaders form part of traditional leadership, which is part of the rural administration. This administration arrangement comprises the judiciary (kgotla tribunal) headed by the kgosi and administrative units led by the tribal secretary. The tribal administration is further supported by the Customary Court of Appeal and the House of Traditional Leaders as the custodians of customary law (CLGF, 2017).

The villages which formed part of this study lies in the eastern part of the Central District, namely: Mogapi, Mogapinyana, Tsetsebjwe and Sefophe. This region falls within mopane woodland of the Savanna biome in Botswana. The mopane woodland is part of the Subtropical Savannas dominated by trees, shrubs, and grasses. Some of the dominant tree species in this area include *Colophospermum mopane, Combretum apiculatum, Sclerocarya birrea, Dichrostachys cinerea.* The Central District lies in hot semi-arid climates zones with an annual rainfall of 424 mm and an average temperature of 20.1 °C (climate-data.org, 2012). The south-eastern part of the Central District around Mogapinyana falls within the granitic gneiss region of the hardveld with undulating rolling plains with frequent koppies and almost flat pediments. The rest of the southern portion, which includes Mogapi, Tsetsebjwe and Sefophe, is characterised as gently undulating to undulating plains with eroded valleys (De Wit & Bekker, 1990). Although many rural households practise subsistence farming, most of the rivers are seasonal, resulting in conflicts between subsistence livestock farmers and other biodiversity uses (Singh, 2011). Such conflicts become prevalent during harvest seasons when harvesters camp in or around livestock grazing areas.

4.3.1 Mogapinyana

Mogapinyana village (-22.366382, 27.592223) is in the Madinare constituency of the Central District (see Figure 1.1). The village lies 60 km east of Palapye in the Central District, with an estimated population of about 1 528 (Statistics Botswana, 2011). The common livelihood activities included subsistence poultry and livestock farming, river sand mining, brick moulding and handicraft (Statistics Botswana, 2005). Harvesting and trading of natural resources were widely practised partly due to the lack of economic opportunities for the residents. Mopane worms, firewood, thatching grass, and wood for handicraft and construction provided an essential basis of livelihoods for most rural dwellers (Statistics Botswana, 2005). The tribal administration in Mogapinyana was headed by the headman, who also served as head of the village customary court.

4.3.2 Mogapi

Mogapi (-22.324068, 27.829177) is a village in the Central District of Botswana with a population of 1 939 (Statistics Botswana, 2011). The village is located along a major route

connecting Palapye and the mining town of Selebi-Phikwe. Local subsistence activities in the village included tuckshops and general dealers, harvest and trade of natural resources, agriculture activities, and small-scale manufacturing enterprises. The village administration was headed by a headman who is also head of the local customary court and the tribal police.[7] The veterinary office supported the local agricultural sector and an agricultural demonstrator known colloquially as *Molemisi* (Statistics Botswana, 2005).

4.3.3 Tsetsebjwe

Tsetsebjwe (-22.416231, 28.397768) is a village in the Bobirwa subdistrict of Central District in Botswana with a population size of 4 848 (Statistics Botswana, 2011). The main agricultural activities in the area included crop and livestock farming activities, including cattle, poultry, and piggery farming. These were supported by a grain mill, communal cattle crush, agricultural marketing cooperatives, a veterinary office, and an agriculture demonstrator (Statistics Botswana, 2005). Similar to other villages in the study area, the village administration was headed by the headman, who doubled as head of the customary village court and tribal police (Statistics Botswana, 2005). Small-scale manufacturing enterprises in the area included welding, sewing and textiles and brick moulding. Other livelihood activities practised in Tsetsebjwe included river sand mining and quarry, brewing and trading of sorghum beer, harvest and trade of mopane worms, and firewood production (Statistics Botswana, 2005).

4.3.4 Sefophe

Sefophe (-22.184989, 27.963982) is a village in the Central District of Botswana, located 40 km south-east of Selebi-Phikwe, within 100 km of the borders with Zimbabwe and South Africa. The population size was 6 062 (Statistics Botswana, 2011). The subsistence activities in Sefophe mirrored those of the other villages in the Central District. The common subsistence activities in the village included harvest and trade of forest products, brewing, and selling sorghum beer, tuckshops, general dealers, and auto mechanics. Agricultural activities in Sefophe were more inclined to trading than in other villages in the study area. The veterinary

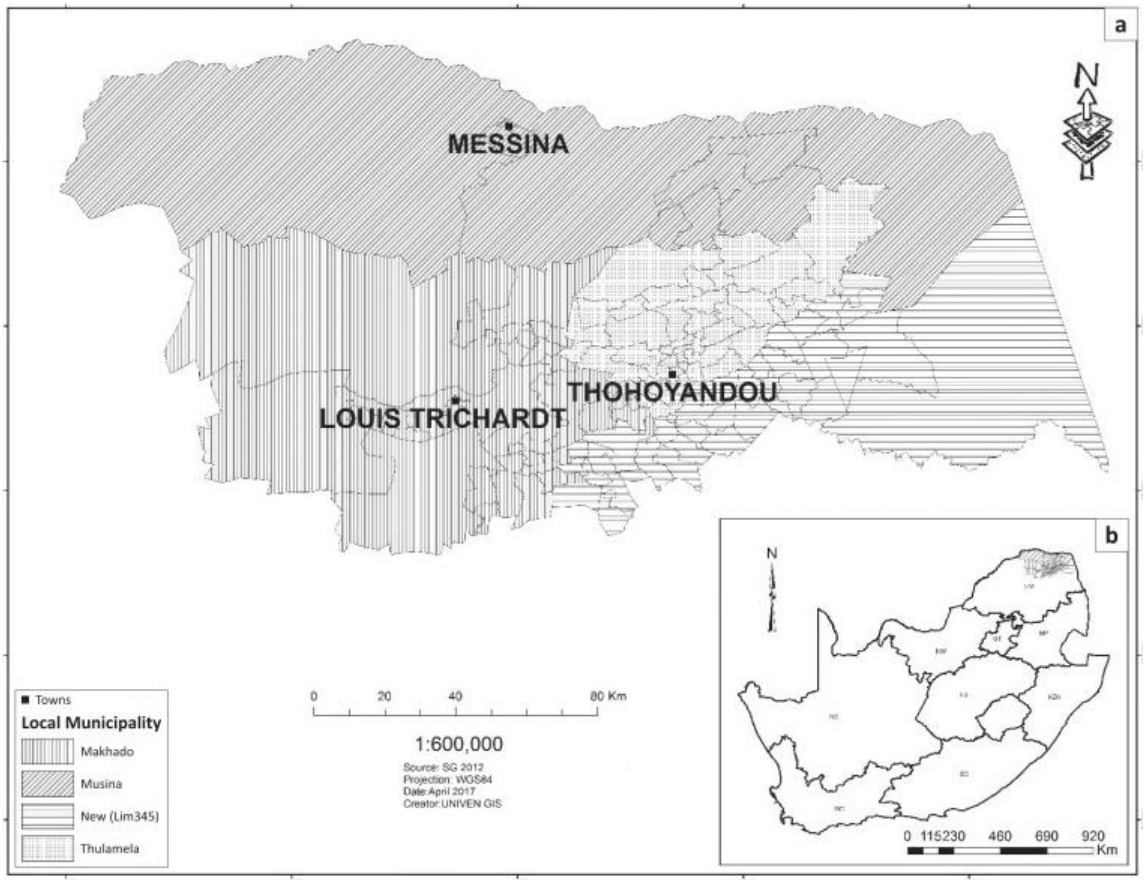
[7] These are 'local police force', under the authority of traditional leaders. They operate outside the authority of the Botswana's national police force and are established by the *Local Police Act*

office supports vegetable production and animal husbandry, an agricultural demonstrator and grain miller known locally as *Tshilo*. The tribal administration in Sefophe was headed by the village headman, who also presided over the customary court and tribal police (Statistics Botswana, 2005).

4.4 Description of the Study Area in Limpopo Province, South Africa

The Limpopo Province is the northernmost province of South Africa and lies in the far north-eastern part of the country, sharing borders with Zimbabwe in the north, Mozambique in the east and Botswana in the west (see Figure 1.2). The study area encompasses four towns in the Vhembe District and one in the Mopani District. Although mopane worms are gaining popularity as a food source in larger towns and cities, the two districts remain an essential market for mopane worms. The area falls within the mopane bioregion of the Lowveld in the northeast of South Africa, sharing borders with Zimbabwe in the north and Mozambique in the east. Culturally, the Lowveld is a remarkably diverse region. Giyani and Malamulele are dominated by VaTsonga, while those living near the town of Thohoyandou are VhaVenda. Elim and Louis Trichardt have a varying combination of VaTsonga and VhaVenda. Rainfall is concentrated in the hot summer months, while winters are temperate and frost-free.

Household use of NTFPs was among the essential livelihood strategies in the study sites. The dominant strategies are based on subsistence crop, livestock farming and forest-product use (Ofoegbu et al., 2019). The harvest and trade of NTFPs for household subsistence includes firewood, wild fruits and spinach, construction wood, thatch grass, edible insects, medicinal plants, and honey. Trade of these products at town markets and villages is a source of household income. However, the common practice is to use the products for subsistence and safety nets in times of shocks (Paumgarten & Shackleton, 2011; Ofoegbu et al., 2019).



Source: Sinthumule and Mudau (2019)

Figure 4.1 Local Municipalities and majors towns within Vhembe District, Limpopo Province.

4.4.1 Louis Trichardt

Louis Trichardt[8] (-23.0502, 29.8834) is a low-density town with a population of 25 360 and 7 129 households (StatsSA, 2011a). The town is the economic hub of the Makhado Local Municipality. The town's economic mainstay is agriculture, which is supported by the fertile region on the foothills of Soutpansberg. Commercial farming in the area produces and supplies for local and export markets. Informal trading throughout the town is prevalent, especially at taxi ranks, along walkways and at entrances to major supermarkets. The municipality grants informal trading permits on the day of application to provide a conducive environment for the sector (Makhado IDP, 2019).

[8] The town is also known locally as Makhado. The name is shared with the local municipality.

4.4.2 Elim

Elim (-23.156428, 30.055976), also known as Waterval, is a residential township in Makhado Municipality with a population of 16 538 and 4 508 households (StatsSA, 2011b). The village lies adjacent to the historical Elim District Hospital, from which it got its name. Swiss missionaries founded the Elim hospital in 1899 (Van der Merwe, 2001; Staehelin, 2008). The area was proclaimed a township[9] in 1980 by the Gazankulu homeland[10] government. With the abolishing of apartheid, it was later incorporated into South Africa and formed part of the Makhado Municipality. The township is 830 m above sea level, warm and temperate, with dry winters and wet summers. The average annual temperature in Elim is 19.6 °C and receives an average annual precipitation of 851 mm (climate-data.org, 2012).

The township's main economic activities include retail and services at two malls. The Elim District Hospital is also an essential facility in stimulating local trade and demand for goods and services in the area. Informal trading is a vital part of the local economy in Elim provides goods and services that are in demand to meet the immediate needs of the community (Makhado IDP, 2019). Many vendors, including those of mopane worms, can be found at the Elim shopping mall and along intersections of main roads leading into the mall and to Elim District Hospital.

4.4.3 Thohoyandou

Thohoyandou (-22.9758, 30.4717) is the largest town in the Vhembe District with a population of 69 453 and 17 345 (StatsSA, 2011c). The town is the central economic hub in the northeast part of Limpopo Province and the administrative centre of both Thulamela local and Vhembe District municipalities. Thulamela Municipality is one of four local municipalities in the Vhembe District in the north-eastern part of Limpopo Province, as shown above in Figure 4.1. The municipality lies between latitudes 22° 15' and 25° 45' south and longitudes 29° 50' and 30° 31' east, at an altitude of 240 m, within a subtropical climatic region characterised by

[9] Township is a colloquial South African term for underdeveloped racially segregated urban areas that has been reserved for Indians, Africans, and Coloureds until the end of apartheid in 1994.

[10] homeland refers to regions across South Africa into which black population were moved out of the urban areas.

hot, humid summers and mild winters. The area also receives seasonal summer rainfall of 638 mm a year, much of which falls between October and March (Sinthumule & Mudau, 2019). The subtropical climatic characteristics of this area are influenced by the inter-tropical convergence zone (ITCZ) (Kabanda, 2004). To the east, Thulamela shares a boundary with Kruger National Park.

Before the abolishing of apartheid in South Africa, Thohoyandou was the capital of the Venda Bantustan. The town had its beginnings in 1977 when it was established on the portions of Mbaleni village. The establishment of the Venda Republic in 1979 was followed by constructing government buildings that augmented the existing infrastructure (Anyumba, 2019). With the fall of apartheid and the dissolution of Bantustans in 1994, Thohoyandou was absorbed into South Africa (StatsSA, 2011c). As a small town, the Thohoyandou central business district (CBD) was anchored on government services, wholesale and retail outlets, taxi ranks and bus stations. The Thohoyandou CBD is currently dominated by commercial buildings, as shown below in Figure 4.2 (Anyumba, 2019). The growth in Thohoyandou has been steady, with a new shopping mall recently completed and operational. Such growth has been undoubtedly positive for retail, wholesale, and informal traders (Anyumba, 2019).

Informal trading was prevalent within Thohoyandou. Informal businesses played an essential role in the economic and social lives of people in and around the town, primarily due to limited formal employment opportunities. Informal traders line up along streets in the CBD, at taxi and bus ranks, and adjacent to popular supermarkets. The main mopane worm open market was found at a converted parking lot on the Main Road, an adjoining fast-food outlet and a major shopping plaza (white box in Figure 4.2 below). Other mopane worm traders were found throughout the town, often trading mopane worms along with fruits and vegetables.

Source: Anyumba (2019)

Figure 4.2 Location of mopane worm open market in Thohoyandou CBD.

4.4.4 Giyani

Giyani (-23.308120, 30.687124) is a small town in the Greater Giyani Municipality with a population of 25 954 (StatsSA, 2011d). The town is situated in the heartland of the Limpopo Bushveld, on the banks of the Klein Letaba River, west of Kruger National Park. This area lies in the hot semi-arid Lowveld region characterised by low rainfalls with an annual average of between 200–400 mm. The low rainfall results in greater dependence on groundwater in the area (Greater Giyani Municipality, 2020). The town was established in 1969 primarily as the administrative capital of Gazankulu, which was mostly reserved for the VaTsonga people. With the demise of apartheid and the dissolution of the homelands policy in 1994, Gazankulu was incorporated into South Africa along with other Bantustan homelands (StatsSA, 2011d).

The Greater Giyani Municipality's economic profile comprises informal and formal small-scale agriculture, services transport, and retail activities (Greater Giyani Municipality, 2020). The role of informal trading as a source of employment and livelihood is pronounced in the Giyani local economy. Hawkers are widespread in the taxi ranks and along pavements in the town.

Giyani has formal agreements with the hawkers through official hawker permits or membership to the hawkers association. However, there is minimal infrastructure, such as sanitation and water, to support hawkers in the CBD. Informal trading was estimated to contribute more than 20% of the gross domestic product in Giyani, positioning it as a crucial economic sector (Greater Giyani Municipality, 2020).

4.4.5 Malamulele

Malamulele (-23.004938, 30.686349) is a town in the newly established Collins Chabane Local Municipality with a population of 13 070 and 3 205 households (Collins Chabane Municipality, 2020). The town was part of the Thulamela Municipality until 2016, after the local government election. This area falls in an arid region of humid subtropical climate with long hot and rainy summers and short cool and dry winters. The area has a local variable annual rainfall of between 401 mm to 600 mm in the east and 601 mm to 800 mm in the west, much of this rainfall occurring during midsummer (Collins Chabane Municipality, 2020). With limited formal employment opportunities in Malamulele and the surrounding areas, informal trading and small businesses accounted for more than 50% in employment across trade, construction, and manufacturing. Such contributions to local economic activity demonstrated that the informal sector is vital for livelihoods in the area.

4.5 Conclusion

This chapter introduced and described the study sites in which this research was undertaken. Given the geographical extent of this study area which includes communities in Botswana and South Africa, the chapter also described local factors relevant for governance and trade, harvesting and use of mopane worms. In Botswana, a higher degree of NTFP use as part of rural livelihoods drives strong participation of mopane worm harvesters during the outbreak. Similarly, in the South African study sites, the prevalence of informal trading in the various towns has provided a solid basis for a vibrant marketing network of traders. This has been further stimulated by increasing unemployment, which forced people to find alternative ways of earning income. This is particularly prevalent in Thohoyandou, a key economic hub of the north-eastern part of Limpopo province, attracting local and foreign traders to supply the

burgeoning demand for mopane worms. The next chapter outlines and discusses mopane worm trade chain, which links harvesting areas in Botswana to markets in South Africa.

CHAPTER 5: THE MOPANE WORM TRADE CHAIN

5.1 Introduction

The previous chapter described the study sites and the livelihood activities associated with mopane worm use and trade. This chapter shifts attention to the mopane worm trade chain. Despite its informality, the mopane worm trade is a truly regional trade that links markets in South Africa to the harvesting grounds in Botswana. The regional trade chain comprises multiple actors contributing to the harvesting, aggregation, exportation, distribution and hawking of mopane worms. Regulators and institutions are also critical to the functioning of this trade chain to facilitate the movement of the mopane worm stock and support rural livelihoods. This chapter presents a description of these actors and their roles in the trade chain. The enabling and constraining effects of these roles are described as they impact the extent to which actors can make a living out of the trade. The key actors in the trade include harvesters, cross-border traders, bulk traders, and vendors. The regulating institutions in Botswana include the forestry department, traditional authorities, the revenue service, and immigration. In South Africa, key players regulating the trade of mopane worms are municipalities; additional role players are the immigration and revenue services. The interplay and overlaps between the multiple roles of regulatory actors raise numerous constraints and opportunities with which harvesters, dealers and traders engage across the trade.

5.2 Key Actors in the Mopane Worm Cross-Border Trade

Actors in the cross-border trade were closely aligned to significant value addition stages. An analysis of the actors and their roles in the trade chain highlights the main activities critical for value addition and ease of movement of the resources and commodities. Across the mopane worm trade chain, main activities taken at each stage were discernible, namely harvesting, processing, transport, storage, and bulking; trading; exportation and vending. Other critical roles included regulatory responsibilities of the formal and informal institutions, including forestry departments, traditional authorities, municipalities, customs, and immigration authorities. In this context, the trade involved the movement of mopane worms from Botswana, as one of the main producing countries, into South Africa, for marketing and

trading. Therefore, an analysis of harvesting and related activities focused on Botswana, while trading focused on South Africa. This South African-bound exportation was driven by two key factors: lucrative South African markets and the inability of local harvest in South Africa to meet the demand. A description of the actors and the cross-border trade chain are presented in Table 5.1 and Figure 5.1 below.

Table 5.1 The types and characteristics of actors in the cross-border trade of the mopane worm value chain

Actor type	Role	Permit type	Client type	Trade quantity	Supplier type	Place of business
Harvester	Harvesting; Processing	Harvester permit	Dealers; Cross-border traders	12-litre buckets	-	Own homes; Harvest camps; Roadside stalls
Dealer	Dry stock aggregation	Dealers permit; Export permit	Bulk traders; Cross-border traders	Various bag sizes	Harvesters	Own homes; Markets
Cross-border trader	Exportation	Hawker Permit; Export Permit; Dealer Permit	Consumers; Vendors; Bulk traders	Various buckets and maize meal bag sizes	Harvesters; Dealers;	Town markets; Streets
Bulk Traders	Deal in bulk quantities	Hawker Permit	Consumers; Vendors	Different buckets; maize meal bags	Cross-border traders	Town markets; Taxi & Bus ranks; Streets
Vendors	Trade in small quantities	Hawker Permit	Consumers only	250 ml cups	Bulk traders; Cross-border traders	Town markets; Streets
Regulators	Regulate harvesting, immigration, duty, and street vending	Issue Harvester, Dealer, Export, and Hawkers' permits	Harvesters, Dealers, Cross-border traders, Vendors	-	-	Forestry departments offices; municipalities; Border posts

Traditional Authorities	Regulate access, harvesting and use according to customary law and practices	Declares harvest season; Grant consent for access	Harvesters, Dealers, Cross-border traders	-	-	Tribal Authority office/Kgotla/Musanda

Source: Primary research data

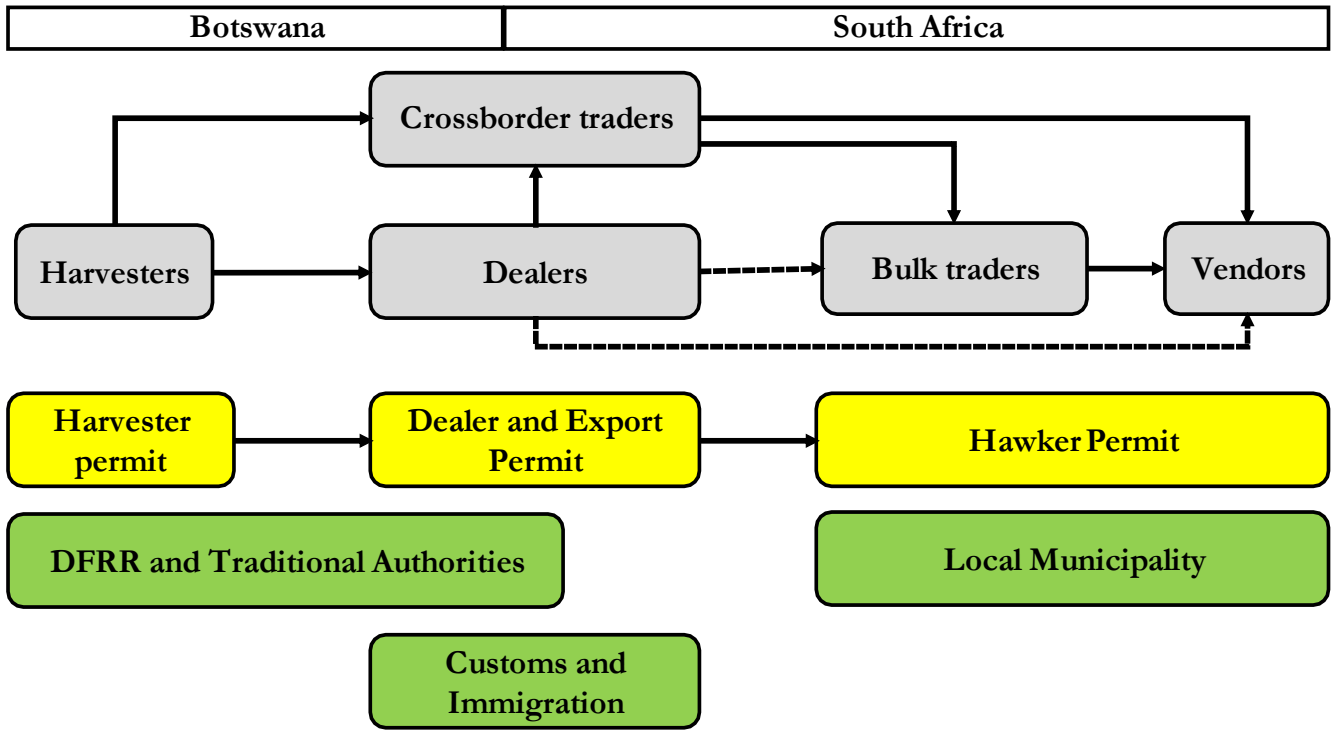


Figure 5.1 Schematic diagram of mopane worm cross-border trade chain and associated permit requirements

5.2.1 Harvesters

The harvesters comprised of villagers in Botswana who were taking advantage of mopane worms to earn a living through seasonal harvesting. The majority of the harvesters were unemployed people whose knowledge and use of mopane worm resources had been part of their upbringing. These are people who had harvested mopane worms consistently every season from childhood since the introduction by their parents. For them, mopane worms continue to be a critical part of rural livelihoods for household consumption. However, the increasing commercialisation of mopane worms has encouraged many rural households to harvest them for trading purposes. The next section discusses the roles of harvesters in consideration of their livelihood strategies, mopane worm value addition and trade.

5.2.1.1 Livelihood options and economic status

Market demand primarily drove harvesting both in Botswana and across the border in South Africa. Harvesters combine mopane worm harvesting and other livelihood activities for income generation, household provisioning and safety net purposes. Table 5.2 presents the alternative livelihood sources of the harvesters in Mogapinyana, Mogapi, Tsetsebjwe and Sefophe. Up to 31% of the 49 harvesters interviewed had no other alternative sources of income. These individuals were unemployed and therefore had no reliable source of income. Livestock keeping and subsistence farming were among the common livelihood activities in rural areas across Botswana and the study sites. Dependency on government social security programs was strong among the harvesters. Incomes from the old-age pension and Ipelegeng program[11] were mentioned by 20% (10) and 12% (6) of the harvesters.

Given that the P330 (US$ 31)[12] pension amount can barely provide for some households, some of the older people harvested mopane worms to supplement their income. The lack of security from Ipelegeng employment meant that people still had to find alternative livelihood means.

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[11] Ipelegeng is a Setswana word for self-reliance. The Ipelegeng programme is an initiative of the Botswana government intended to provide short term employment support and relief for poor households through community development projects that have been identified and prioritized through the development planning process.

[12] Exchange rate of BWP 1=US$ 0,094 at 28/02/2020.

Livestock keeping and cash crop farming provided some relief for the harvesters, but erratic rainfall was a challenge for these subsistent livelihoods. The apparent lack of economic activities in the villages was highlighted by the dependency on activities such as piece jobs, selling artefacts and thatching grass, and operating tuckshops.

Table 5.2 Harvesters' subsistence livelihoods in Mogapi, Mogapinyana, Tsetsebjwe and Sefophe

Livelihoods Sources	% (n)	Remarks[13]
None	31(15)	People expressed that they were unemployed and had no sources of income.[14]
Pension	20(10)	Some pensioners deemed the pension inadequate and thus needed supplementary income. However, the physical demands of harvesting limited their earning potential.
Ipelegeng	12(6)	Work on this program was rotational; many people have only found employment on one or two occasions through Ipelegeng.
Subsistence farming	10(5)	Subsistence farming comprised of livestock and cultivation, out of which some people sold the produce and surplus.
Traditional beer	8(4)	This is a popular activity for older women who are renowned as expert brewers. Brewers were able to hold off brewing for a week or two to focus on mopane worm harvesting.
Piece jobs	4(2)	This included a variety of basic jobs, for example, bricklaying, refuse collection, mosquito spraying, and selling firewood.
Selling artefacts	4(2)	Setswana traditional handmade artefacts are incredibly popular with tourists and visitors.
Selling grass	4(2)	The seasonal nature of grass harvesting and trading meant that these people needed to find other means of income.
Tuckshop	4(2)	Running a tuckshop is a full-time occupation. Some people often leave children in charge of the tuckshop during the harvest season.
Property rental	2(1)	Renting a property allows flexibility of time for the people to harvest mopane worms for as long as they can without worrying about the daily tasks of managing the properties.
Grand Total	**100(49)**	

Source: Interview data and fieldnotes

[13] This table presents other livelihood options in addition to mopane worm harvesting and trading as reported by the participants. All participants in Table 5.2 generate income through harvesting, exporting and/or trading.

[14] Some harvesters had other means of earning income but were not willing to discuss them.

Although the quick income-earning potential of mopane worm harvesting attracted young people, pensioners were dominant among the harvesters. The average age of the harvesters was 51 years, signalling the higher concentration of older people in harvesting. Mopane worm harvesting was also closely intertwined with other subsistence livelihoods (see Table 5.2 above). This close relationship enables rural households to switch among various activities seasonally. The advantage of combining different livelihood activities is attractive for households as it increases their income-earning potential throughout the year. Other harvesters are opportunistic and harvest mopane worms while actively participating in other activities when the opportunity arises. For example, livestock farmers harvest mopane worms while on their daily duties of herding livestock. Although mopane worm harvesting may not be an essential part of household livelihoods for most opportunistic harvesters, the value is notable. This notion is seen through the case of a pensioner harvester of Mogapi below.

Tau is a pensioner who lives with his wife in Mogapi. He lived in Gaborone for all his adult life but returned to Mogapi in 2013 after retirement.

As a pensioner, he had plenty of time to devote to his subsistence farming activities. As a widely practiced livelihood strategy, livestock keeping and farming were widespread in Mogapi and many other villages in the Central District. Harvesting mopane worms has been part of his life since he was a young boy. This livelihood activity continued even during his adult years, in which he would harvest mopane worms if his home visits coincided with the harvest season, either in December or April. Presently, he harvested during his spare time as he herds livestock at the cattle post or at his fields to inspect the crops. Any harvested mopane worms were sold off to the traders for additional income. Tau shared that he harvested and sold mopane worms due to having spare time, the presence of mopane worms at his cattle post and his aversion for eating mopane worms. Tau regards himself as an opportunistic harvester because his primary focus is on livestock and crop farming. However, this is not unique from other harvesters, who take time from their livelihood activities during the outbreak to earn income from available seasonal resources.

5.2.1.2 Value additions

The harvesters provided an essential role in adding value to mopane worms by transforming caterpillars into tradeable commodities. The value addition consisted of labour-intensive yet straightforward activities. These included picking, gut cleaning, and cooking for preservation and extension of shelf life. At the outset of the harvest season, harvesters travelled to the areas known to have mopane worm outbreaks. Since the extent of the outbreak varied every season, harvesters often had to collate information and liaise with friends and families across the Central District to establish the areas with potentially good harvests. From the camps, harvesters went into the forests with containers to pick caterpillars beginning from sunrise till noon, and then they returned to the campsite to process the caterpillars. During picking, older and more experienced harvesters selectively pick mopane worms that had reached maturity and were ideal for trading purposes. However, the increasing participation of novice harvesters often resulted in indiscriminate picking practices wherein caterpillars of all sizes were collected. This trend was expressed by the forestry officials and traditional leaders who criticised the unsustainable harvesting practices.

Following picking, the processing involves straightforward stages of cleaning, cooking, and drying. The harvesters eviscerate the caterpillars by squeezing the gut contents using hands or applying rolling pressure using a plastic bottle or similar objects. Cleaned caterpillars were quickly cooked to avoid spoilage. The cooking process entailed boiling in salty water and rapidly drying in the sun, as shown in figure 5.2 below. The drying was critical, and to expedite the process, some harvesters dried the cooked mopane worms on top of plastic sheets. The harvesters learned through the process of trial and error that plastic sheets were able to heat faster and maintain high temperatures in the sun. An added advantage of using plastic sheets is that it prevented contaminating mopane worms with soil and plant matter. Cooked mopane worms were dried for several days to reduce the moisture content of the dried stock and avoid spoilage. Once dried, the caterpillars were temporarily stored in maize bags, ready for transportation.

Source: George Sekonya, Mogapi, 12/12/2019

Figure 5.2 Cooking and drying mopane worms in Mogapi.

Some harvesters who resided far from the Central District often opted to sell dry stock to dealers and intermediaries while still in the camps. This strategy lessened the burden of transporting large quantities of mopane worms to their homes for storage, as this often attracted exorbitant transportation costs. For harvesters who successfully sold to dealers while engaged in harvesting, the continuous processing and selling for over two to three weeks resulted in high income. However, for those whom the dealers employed, the burden of transportation was eliminated. Usually, the dealer would make transportation arrangements for the stock as soon as the harvest concludes. At that stage, the price of mopane worms would be around P200-350 per 12-litre bucket. Most harvesters indicated that they sold off their stock locally because the quantities will be insufficient to justify travelling to South Africa for trading. Their clients were usually the South African cross-border traders or local dealers who may trade locally to cross-border traders or bulk up their stock for exporting to South Africa.

5.2.1.3 Trading

Trading of mopane worms starts soon after harvesting begins in the camps. Harvesters explained that cross-border traders begin to inquire about the outbreak and availability of mopane worms. Upon receiving confirmation, cross-border traders would then plan their trips to visit the villages to purchase mopane worms. For harvesters, this would mark the beginning of the intense harvesting period in anticipation of the traders. Trading mopane worms in the forest to prospective buyers is becoming more common. As a result, most harvesters opt to sell their harvest to cross-border traders while still harvesting in the forest to eliminate the need to transport bulk quantities of mopane worms back to their homes. An added advantage of this strategy was that the harvesters would also earn higher incomes by ensuring a steady flow of mopane worms to the cross-border traders throughout the harvesting period. However, the unintended consequence of this 'race against time' was the oversupply of the traders, which affected prices during the negotiations.[15] As a result, prices are seldom static. More commonly, prices range between P200 and P350 (US$ 19 and 33)[16] for a 12-litre bucket of dried mopane worms at the beginning of the harvest season and gradually increase towards the end of the harvest season. Notably, the prices often increase fourfold towards the end of the year when suppliers and traders run out of stock while demand peaks. The negotiations between harvesters and dealers drive the price fluctuations, which can be unstable.

Overall, dealers offered lower prices than what harvesters deemed fair compensation for their effort and toil. Figure 5.3 below shows that dealers offered prices ranging between P200 and P350. However, harvesters preferred to trade at prices between P300 and P600. While the price differences were substantial, some harvesters would reluctantly accept lower offers from dealers. On average, harvesters earned P2100 (US$188)[17] per season. These income levels depended on the maximum stock harvested and negotiating abilities of the harvesters. Those who were able and willing to drive a hard bargain were able to sell at higher prices. However, not all harvesters were willing to go toe to toe with dealers when negotiating prices.

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[15] Although prices are agreed upon by the harvesters at the beginning of the harvest season, the final trade price is ordinarily negotiated between the buyer (trader) and the seller (harvester).

[16] At exchange rate of BWP1- US$0,094 at 28/02/2020.

[17] At exchange rate BWP1 = US$0,09 on 28/02/2020

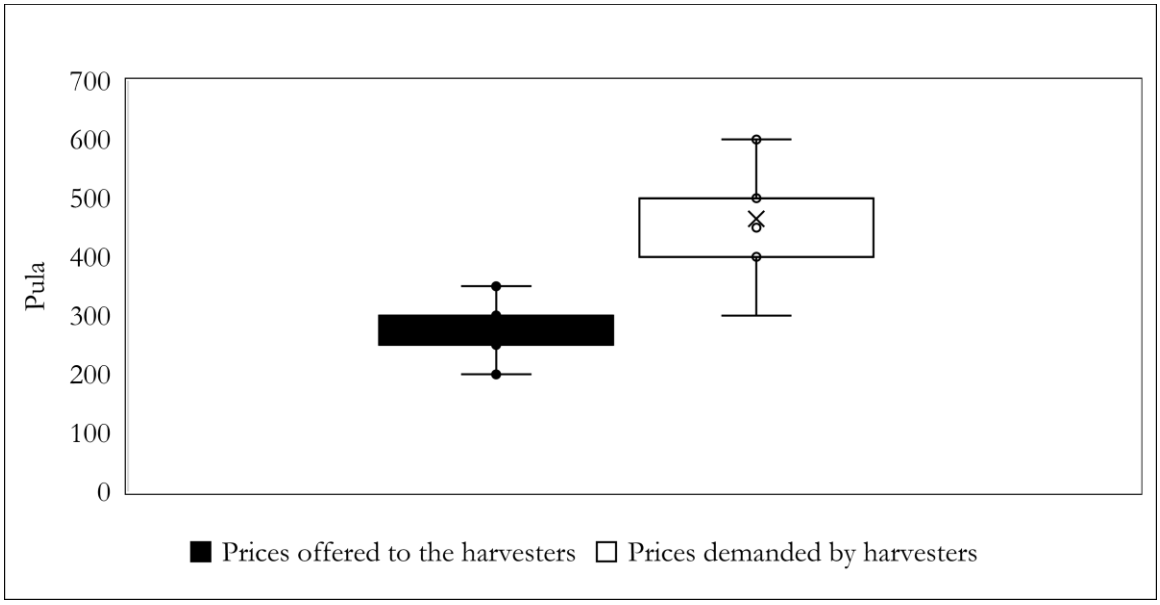
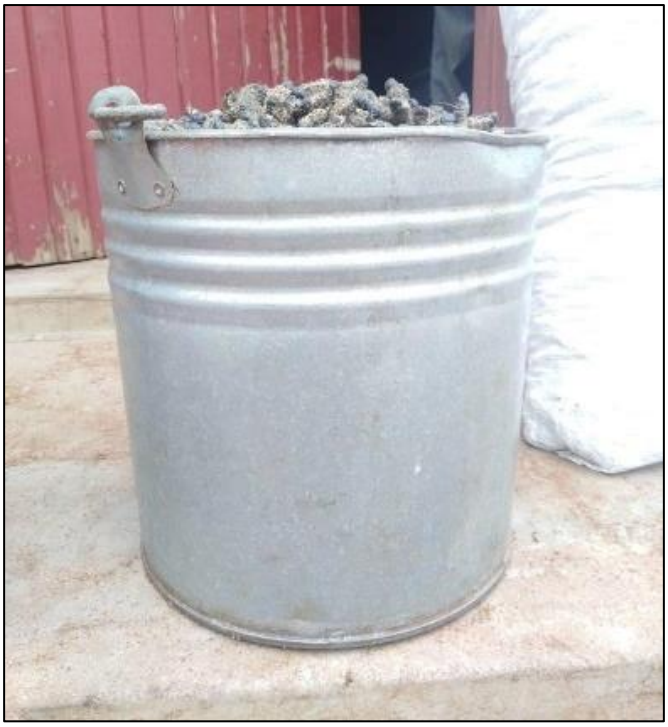


Figure 5.3 Boxplot of prices negotiated among harvesters, dealers, and cross-border traders in Botswana.

Traditionally, harvesters use a 12-litre galvanised bucket (Figure 5.4), known colloquially as *phoisele,* to measure quantities for trade. Although the galvanised bucket was used widely as a primary measure for bulk trading, there were disagreements between harvesters and cross-border traders on how the bucket should be filled to constitute a 'full bucket'. A bucket is considered full when the contents are at par with the top rim, as shown in Figure 5.4 below. However, the traders preferred a heaped bucket before purchasing.



Source: Joshua Sekgala 06/01/2019

Figure 5.4 A 12-litre galvanised bucket used by harvesters for transactions with cross-border. traders

5.2.2 Dealers

Overall, mopane worm cross-border trade was primarily driven by individual traders and dealers. Table 5.3 below presents a breakdown of actors, roles, and outputs in cross-border trade. The nature of the trade suggests that only those who could successfully navigate the obstacles could gain a foothold. Such obstacles included the high costs of entry, lack of information on markets and source areas, and access to resources such as vehicles. Given the constraints that harvesters must overcome, most trade their stock to dealers, whose role is explained below.

5.2.2.1 Dry Stock Aggregation in Botswana

In Botswana, critical players in the cross-border trade were harvesters and dealers. The harvesters provide a dry stock of mopane worms, usually at low quantities, depending on the harvesting capacity, which is ordinarily between two and four buckets per harvester. For those working in large groups, harvest quantities may reach up to a couple of 50-80kg maize meal

bags. Dealers source dry stock from harvesters by going into the villages and looking for any harvesters willing to trade. Traditional leaders in Mogapinyana, Mogapi, Sefophe and Tsetsebjwe had in the past suggested that such trading should be regulated. Such regulation was envisaged to compel trading at the village kgotla and letting the kgosi set trade prices. The key intention for this suggestion was to minimise the incidents of exploitation, robbery and unfair treatment, which were claimed to be perpetrated by dealers against harvesters.

Table 5.3 Functional analysis of mopane worm trade chain

Actors	Roles	Outputs
Harvesters	• Harvest and process	• Dried mopane worm stock
Dealers	• Employ locals to harvest on agreed trade terms • Aggregate stock at the village level	• Bulk stock at the village level • Export subject to access to sufficient stock • Trade to exporters/cross-border traders
Cross-border traders	• Source stock from dealers and harvesters in Botswana	• Export to South Africa • Trade to bulk traders and vendors in markets
Bulk traders	• Source from exporters at markets • Supply vendors and consumers	• Mopane worms delivered to vendors and consumers
Vendors	• Trade directly to the consumers at markets in several towns	• Trading
Traditional authorities	• Traditional leaders: Regulate access and management of mopane worms through customary rules and norms	• Declaration of the commencement and closure of the harvest seasons
Regulators	• DFRR: Regulate access, marketing, and trade through the permits system	• Issue harvest, dealer, and export permits
	• Local municipalities: Regulate trade and marketing at urban markets in South African	• Issue street trading permits

Source: Primary research data

The key role of the dealers was to aggregate the dry stock from multiple villages at which outbreaks occurred. Since export was dependent on the quantities that one individual can aggregate, not all dealers could export to South Africa. A minimum of a truckload of mopane worms was sufficient for exporters to break even. A failure to aggregate enough quantities

resulted in some dealers trading off the dry stock to specialist cross-border traders. At each harvest season, cross-border traders from Botswana and South Africa visit various villages across the Central District in Botswana to purchase dry stock in large quantities for export. The scale of trading for export required cross-border traders to have the capability to transport large quantities of dry stock over long distances.

The cross-border traders use trucks and bakkies, which enable the transportation and movement of dry stock. In Botswana, cross-border traders preferred to procure dry stock from dealers who had large, aggregated volumes. This offered benefits of reducing periods spent sourcing supply across various villages and thus served as a cost-cutting measure. Although this was the case, cross-border traders who procured in Mogapi, Mogapinyana, Tsetsebjwe and Sefophe purchased from anyone willing to negotiate acceptable terms, including harvesters and dealers. The preference to purchase directly from harvesters was that cross-border traders could eliminate the 'middleman' and purchase cheaply from harvesters. However, another consequence of this phenomenon was that it left harvesters at the mercy of South African cross-border traders who had a reputation of being ruthless businesspeople. Harvesters shared that the South African traders were exploitative and manipulative in their dealings. As a result, they were compelled to trade only because of a desperation for income (cf chapter 8).

Trading with cross-border traders was necessary for the livelihoods of mopane worm harvesters in the Central District. Over time, the harvesters build relationships with cross-border traders who are essential for their livelihoods. Another explanation for this phenomenon was that despite their ruthlessness, South African traders were known to pay higher prices than their Batswana counterparts. Higher trading prices means that harvesters could earn high income for their dry stock. This was emphasised by harvesters who felt cheated when South African cross-border traders were prevented from visiting their villages for trading in some seasons. One responded highlighted this phenomenon:

> '*We used to trade directly with the South African cross-border traders without any problems, but later, Batswana stopped them from coming here to purchase. They barred the Venda people because they were paying good prices. They used to purchase a bucket for P500. We do not see any South Africans coming to this village anymore. Our relationship and cooperation were good. They paid good prices which Batswana could not match*' (Interview, Mogapinyana, Marry, 02/02/2019).

Sourcing dry stock in Botswana is a cumbersome task for cross-border traders; as a result, maintaining relations with dealers and harvesters in Botswana was vital to lessen the burden. For example, traders used their contacts in Botswana to access information on the outbreak across multiple villages and liaise with regular clients to reserve stock. Such contacts and ties are important to minimise potential financial losses and increase efficiency in the trade.

5.2.3 Cross-border bulk traders

Cross-border traders mainly import mopane worms into South Africa from Botswana. They serve as an essential link in the cross-border transfer of mopane worms. These individuals provided a connection between the source areas in Botswana and the markets in South Africa. At the onset of the outbreak season, the cross-border traders visited harvesters in their villages of residence to pursue any person selling mopane worms. Purchasing directly from the harvesters and eliminating any middleman assists the cross-border traders in minimising the costs. By removing the intermediaries, cross-border traders could use the extra cash to pay for the necessary permits in Botswana. The traders had developed some friendships and rapport with the harvesters over the years. Traders pointed out that such bonds did not necessarily lead to any favours when negotiating prices. The associations were meaningful for the traders to get information about mopane worm availability in Botswana. Such social capital and its importance to cross-border trade ensures that there were frequent interactions between harvesters and cross-border traders. For example, the cross-border traders at the Thohoyandou open market were willing to share the names of harvesters from whom they purchase.[18]

[18] This study too benefitted from such connections. For example, during data collection all the harvesters were unconvinced about the researcher's intentions and objectives of the study, even after the introductory explanation. However, most of the harvesters in Botswana were happy to take part in the study when I informed them that I am from Limpopo in South Africa and have been to Thohoyandou to meet cross-border traders and that some of them have been to their villages for purchase mopane worms.

5.2.3.1 Importation and value addition

Cross-border traders played a crucial role in supplying mopane worms to the bulk traders and vendors spread across villages, small towns, and cities in the Limpopo Province. For some well-established traders, the clients were also based in larger cities such as Johannesburg and Pretoria in Gauteng Province. The traders supplied mopane worms to these various clients in bulk quantities, which including 50kg and 80 kg maize meal bags. For locally based clients, the traded volumes included 5kg and 9kg buckets. This combination of trading quantities was intended to maximise profitability and speed the trading. Since cross-border traders could increase their seasonal profitability depending on their annual trade volume, it was imperative to increase the volumes through trading with a variety of clients. Some of the cross-border traders explained an innovative way of supplying clients in distant places as follows:

> '*My customers come from all over Vhembe and Mopani Districts. Some come from as far as Polokwane, Seshego, Phalaborwa, Tzaneen, and other places. I trade in bulk to both vendors and other traders who are not able to go to Botswana or do not see a need to go to Botswana because of the expenses and planning. Some of my customers are unable to go to Botswana because they do not have vehicles*' (Interview, Thohoyandou, Tshilidzi, 29/08/2018).

Unlike the harvesters who pick, eviscerate, cook, and dry mopane worms, there was little value addition done by the dealers and cross-border traders in the form of actual physical changes to mopane worms stock. However, exporting mopane worms into South Africa increased the stock value significantly due to the price differences. For example, 2,1kg of mopane worms cost an average of P270 (R379) in Botswana (as shown in Table 5.4 below). These prices are adjusted for trading in South Africa to increase the profit margin. Therefore, the dealers and cross-border traders had to keep the purchasing prices in Botswana as low as possible, as shown in Figure 5.3 above. These prices can be as low as P200 (R280).[19] The annual gross income for cross-border traders ranged from R3500 to R15000. Overall, the average seasonal profits of the cross-border traders were R9250. These incomes were supplemented by traders selling produce. Of all traded quantities, the 4kg tin with 1,2kg of mopane worms was the most

[19] At exchange rate of BWP1=ZAR1,41 (02/03/2020).

profitable. The 4kg tin (1,2 kg mass of mopane worms) is sold at R300, which is an increase of 20% of the stocking price in Botswana.

Table 5.4 Mass and Prices of mopane worms for harvesters in Botswana and traders in South Africa

In Botswana		**In South Africa**	
Unit (Mass)	**Harvesters' Selling Price**	**Unit (Mass)**	**Traders' Price**
12 litre bucket (2,1kg)	P270	**1 cup (0,06 kg)**	R 30
		4 kg tin (1,2 kg)	R 300
		20-litre bucket (5,7 kg)	R 600
		50 kg maize bag (20 kg)	R 3600
		80 kg maize bag (36 kg)	R 6000

Source: Interview data

5.2.3.2 Marketing

The local cross-border traders plied their trade at various markets within several towns in the Vhembe district. Most of the markets and makeshift stalls were located along busy streets (Giyani, Makhado, Elim), adjacent to chain supermarkets and malls (Thohoyandou) and well-known trading sites (Sibasa).[20] The market sites were chosen purposely to expose the traders to a broader range of customers. In Thohoyandou, the open market was across the road from Game Mall, adjacent to KFC restaurant and at the intersection of the main road leading traffic out of the town. Also, the market location was easily accessible on foot to pedestrians due to its vicinity to the main roads. In Giyani and Thohoyandou, the cross-border traders also operated along busy streets in the town CBD. The location of cross-border traders in Sibasa was an exception to this trend. The traders operated from a secluded accommodation property. This location was nonetheless widely known within the trader circles as the location at which

[20] The site in Sibasa is an overnight lodge which at the time of the study was rented exclusively to Zimbabwean cross-border traders. The property is exclusively occupied by cross-border traders of mopane worms and other agricultural produce such as beans, maize, and nuts. The property is well-known among locals as a location at which one can find Zimbabwean traders.

Zimbabweans were found. However, the secluded nature of the property did not adversely affect the trading since the Zimbabwean traders supplied clients in Makhado, Malamulele, Giyani and some in Gauteng province.

Besides trading in their hometown markets, cross-border traders had also developed strategies to trade with clients in other towns within and outside of Limpopo Province. Those only focused on towns outside the Vhembe district, such as Senwabarwana (Bochum) and Polokwane, were among those with strong links to traders. Traders who had clients in these areas shared that although delivering supplies to the clients was always challenging, the additional sales were necessary for survival in the rapidly saturating markets, especially in Thohoyandou. One such trader was Moses, originally from Mozambique and currently based in Sibasa (Interview, Sibasa, Moses, 28/03/2018). Moses has developed a marketing and distribution strategy of harnessing the minibus taxi network to transport mopane worms to his clients. Upon receiving a request for delivery and payment, Moses dispatched the dry stock on long-distance minibus taxis at a nominal fee. The clients collected the deliveries at taxi ranks or any prearranged location communicated between the taxi driver and client. The long-distance taxis facilitated the easy distribution of the mopane worms. In the past, Moses used taxis to transport mopane worms to clients based in Johannesburg.

5.2.4 Bulk traders

The bulk trader category is made up of market-based traders who specialised in trading bulk quantities. The traders plied their trade similarly to the cross-border traders, with the sole difference being that they do not source mopane worms in Botswana. Instead, the cross-border traders supplied bulk traders in South Africa. The divide between bulk traders and cross-border traders was very fluid. Individuals often changed their strategy every season, depending on whether they had any appetite to go to Botswana. In some years, they restricted themselves to purchasing from cross-border traders, while in others, they went on buying trips to Botswana to import mopane worms into South Africa.

5.2.4.1 Marketing and customer reach

The majority of the bulk traders were based in Makhado, Thohoyandou and Giyani, which are the larger urban centres with customer reach extending far beyond the towns. The bulk traders

had clients from small farther towns who depended on their supply. This client reach was similar to that of cross-border traders who had regular clients in Polokwane and as far as Johannesburg in Gauteng province. The client base included vendors based either in the same town or out of town. This kind of reach also depended on the extent to which the bulk trader had built rapport and reputation among vendors. Such connections and popularity allowed some bulk traders to play a distributor role, especially when cross-border traders saw no need to trade in quantities of 5kg buckets or less. Although the cross-border traders supplied bulk traders, they were also in direct competition for customers among vendors and other traders. This competition was a tell-tale sign of the fierce rivalry which was characteristic of the mopane worm trade.

5.2.4.2 Trading

Bulk traders sell mopane worms in both large and smaller portions. The large amounts such as 50kg and 80kg maize meal bags simplified the transactions with other traders who required the supply in much larger quantities to enable trading elsewhere. The smaller quantities, usually buckets and cups, were sold directly to the consumers. All the bulk traders in Thohoyandou, Giyani, and Makhado were trading in quantities ranging from 1kg, 5kg, and 9kg buckets as well as 25kg, 50 kg and 80kg maize meal bags (see Source**:** George Sekonya, Elim, 05/04/2018 Figure 5.5 showing various trading quantities). Although this was the case, some traders were always looking for opportunities to maximise their profits, and some would trade to consumers who ordinarily purchased only a 250 ml cup. This strategy was unpopular among bulk traders. It was deemed to be slow and unprofitable. The majority of the bulk traders preferred bulk sales due to their quick turnaround, which allowed them to quickly sell-off and procure more stock in a relatively short period.

Source: George Sekonya, Elim, 05/04/2018

Figure 5.5 Mopane worm buckets on display for trading at Elim, Limpopo Province.

Source: George Sekonya, Thohoyandou, 28/08/2018

Figure 5.6 Mopane worm bags on display at an open market in Thohoyandou.

5.2.5 Vendors

Vendors operate at the end of the mopane worm trade chain. Ordinarily, they were based at street markets and stalls along busy routes to take advantage of pedestrian traffic for customers. While mopane worms were lucrative for vendors as a trading commodity, they traded agricultural products all year round to ensure steady incomes when mopane worms supplies were difficult to replenish. The roles of vendors are discussed in the context of their livelihood strategies, mopane worm trade and street permits.

5.2.5.1 Livelihoods options

The preferred livelihood of vendors was to traded products that were always in demand from consumers. These include tomatoes, onions, dried morogo, nuts, beans, and fresh fruits. Due to this diversity, most vendors did not depend on mopane worms for income. However, the income from mopane worms surpassed that of other products during periods of peak demand. Such peak trading periods coincided with long weekends and holidays when people from cities visited their families in the smaller towns in Thohoyandou, Elim, Makhado, Malamulele and Giyani. Trading was an important livelihood source for vendors. Only one of the nine vendors interviewed had an alternative income source besides trading, in the form of the South African Social Security Agency (SASSA) old-age grant. Vending was a full day job with no other income-earning activities involved. Only one of the vendors still harboured ambitions of finding employment elsewhere, while the rest had given up on any prospect of wage employment. This high dependency on mopane worm trading was a result of many years of trading. The average number of years of trading mopane worms was nine, with one person having been in the trade for more than 20 years within Thohoyandou (Interview, Thohoyandou, Lufuno, 26/03/2018).

5.2.5.2 Trading and value addition

This category typically represented the last stage of the mopane worm trade chain. Unlike other actors, vendors trade exclusively to the consumers. For example, harvesters may sell their harvest to cross-border traders, vendors, or consumers, while cross-border traders may sell to bulk traders, vendors, or consumers. Similarly, bulk traders supplied other bulk traders in other towns, as well as vendors. Selling exclusively to consumers meant that vendors sold in lower quantities than the traders who had diverse customers. Because the vendors traded only to the consumers, they utilised only 250ml cups as a standard portion sold at R30. Some vendors were willing to trade in quantities such as 2 kg and 4 kg buckets (see Source: George Sekonya, Thohoyandou, 25/08/2018

Figure 5.7). In a competitive market in which traders are openly competing for customers, some vendors explained that they opted to trade in small quantities due to their inability to compete with bulk traders. In addition, most customers preferred smaller quantities as they were more affordable. For individuals who could only manage to purchase a maximum of a

50kg bag at a time, vending provided an opportunity to trade without the need to take up unaffordable credit for increased trade volumes.

Mopane worm vendors were supplied in several ways. Both cross-border traders and bulk traders supplied the vendors in Thohoyandou. The choice of supplier was based on existing relations between vendors and traders. In this regard, Batswana traders supplied some vendors. The decision was influenced by the willingness of Batswana traders to offer mopane worms on credit, lower prices than the local traders and the superior quality mopane worms they supplied. Local vendors were persuaded by the willingness of the Batswana to offer preferential terms. One vendor explained in this way:

> '*We cannot always be able to pay cash. Sometimes people may not have the full amount but are willing to trade mopane. Hence, we like Botswana traders because they do agree to give mashonja* [mopane worms] *and pay afterwards when I have generated enough money. They tell us about the date on which they will be heading back to Botswana so that we know when to pay back*' (Interview, Thohoyandou, Lufuno, 26/03/2018)

Source: George Sekonya, Thohoyandou, 25/08/2018

Figure 5.7 Mopane worms at a vendor stall.

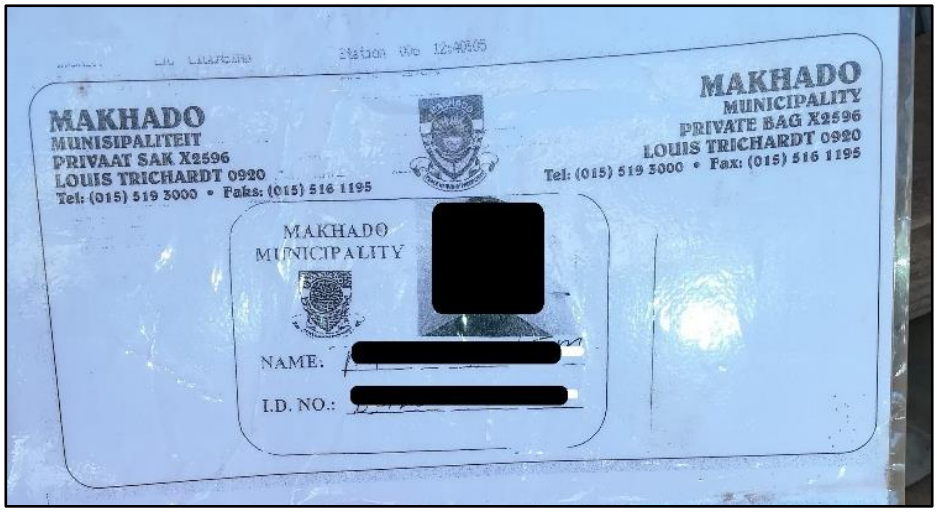
Vendor stalls were located mostly along busy streets with high pedestrian traffic and adjacent to popular chain stores. This choice of location ensured that vendors got maximum exposure to the patrons, pedestrians, and other potential customers. In Thohoyandou, the vendors operated along major streets and shops such as Shoprite, Jet and Game. This pattern was also observed in Giyani, in which the Spar supermarket, taxi rank and popular local shops were preferred locations. This category was exclusively made up of local traders, except for a few Zimbabwean vendors based in Thohoyandou, Malamulele and Makhado. No other foreign traders were encountered outside the three towns. There were no Batswana who were involved in vending. This nonparticipation may be attributed to the slow turnover rate of vending when compared to bulk trading. This is partly because vending requires the individual to spend much time at the markets to trade, which foreign traders cannot do due to the time limitation on their visitor visas. The foreign vendors were either illegal, on asylum refugee status[21] or semi-permanently based in South Africa.

5.2.5.3 Street trading permits

According to the street trading bylaws in Thulamela, Makhado, Giyani and Collins Chabane local municipalities, vendors were required to obtain street trading permits from the municipalities annually (see Figure 5.8 for a street trading permit issued in Makhado). The licenses contained the necessary identification details, including full names, identification number and a photo of the permit holder. The conditions and purpose of the licenses were like those of the bulk traders. The permits ensured that vendors utilised the designated trading zones for which they had applied and thus aimed to eliminate any conflicts between them. The permits were also used to identify vendors when law enforcement conducted raids to distinguish any unpermitted traders, who would then be fined for illegal trading. Ownership of a street trading permit was an essential consideration for any vendor. Thus, there was a high degree of compliance among the vendors, especially in Giyani, Thohoyandou and Makhado.

[21] One Zimbabwean vendor in Malamulele revealed his asylum refugee status during data collection. The participant revealed that most of his compatriot vendors were either in South Africa on a similar status or illegally in the country.

Although law enforcement efforts were not consistent across all the municipalities, the vendors were cognizant that they were better off when they were compliant. Vendors shared that the risk of incurring financial losses due to stock confiscation and fines deterred any chances of noncompliance.



Source: George Sekonya, Makhado, 03/04/2018

Figure 5.8 A hawker permit issued by Makhado Local Municipality.

5.2.6 Traditional leaders in Botswana

The traditional leaders in Maokatumo, Mogapinyana, Mogapi, Tsetsebjwe and Sefophe fulfilled their regulatory roles according to customary laws, practices, and norms. The roles included ensuring that anyone who sought to access and harvest mopane worms did so in a way consistent with the established norms and rules. The process unfolded in two ways. First, the DFRR consulted with traditional leaders to evaluate the extent of the outbreak before deciding on the issuing of permits. Dikgosi were also responsible for maintaining the lawful conduct of the harvesters in their authority. Secondly, dikgosi were mandated to grant consent for access to any prospective harvesters before applying for harvest permits from DFRR. For the locals in villages where mopane worms are harvested, dikgosi encouraged harvesters to refrain from harvesting until harvest season is declared by both the kgosi and the DFRR. Upon declaration of the harvest season, harvesters were required to approach DFRR offices for permits. Dikgosi also discouraged camping before the declaration of the harvest season. Additionally, dikgosi

played a dispute resolution role among harvesters and traders whenever disputes are brought to the kgotla.

5.2.7 Regulatory institutions

This category is an umbrella grouping of a variety of institutional actors whose participation in the trade chain served to regulate the actions of others. The crucial institutions for regulatory roles are DFRR, revenue authorities, immigration institutions, conservation departments and local municipalities. In their respective roles, these institutions enforce statutory regulations to regulate the behaviour, actions, and roles of any other actors in the trade chain. The functions of these institutions across the trade chain are discussed below.

5.2.7.1 The Department of Forest and Range Resources in Botswana

The DFRR role in the trade chain was significant and influential. As the sole institution with a statutory mandate to regulate access, harvesting and trade of mopane worms in Botswana, DFRR was an important regulatory actor. The DFRR roles included conducting assessments of outbreaks, determining the commencement of harvest seasons in consultation with traditional leaders, and administering and issuing permits to various kgotlas. DFRR also issues dealer and export permits to exporters to facilitate the cross-border trade of mopane worms. The regional offices in Serowe and Selibe Phikwe and, to a lesser extent, Mahalapye in the Central District were those frequently inundated with harvesters, dealers, and exporters searching for permits. Although the DFRR had sole mandate and authority for mopane worm regulation, the officials still worked in collaboration with traditional leaders for the decision-making and management of mopane worms (cf chapter 7). For example, the forestry officials consulted with traditional leaders to coordinate field assessments, administration, and issuing permits and dissemination of any information to the communities. Where necessary, traditional leaders may provide the necessary resources and capacity to aid the DFRR. In the 2019 outbreak season, dikgosi in Maokatumo, Mogapinyana, Mogapi volunteered to accompany DFRR officials in law enforcement raids at harvest camps within their authority. Similar collaborations have occurred in the past seasons in Elibi, Seokeng and Moletemane. The DFRR also used the assistance of Botswana Police during the law enforcement raids for the arrest of perpetrators and confiscation of mopane worms.

5.2.7.2 Revenue authorities

Revenue authorities played the role of collecting customs duty on mopane worm imports. In Botswana, cross-border traders are required to own a DFRR-issued export permit for declaration and consignment processing by Botswana Unified Revenue Service (BURS) officers at the border posts. On the South African side, South African Revenue Service (SARS) is responsible for collecting the customs duty on importation. Therefore, cross-border traders only need to declare the consignment to the SARS officers for calculation of the customs duty as there are no requirements for any import permits in South Africa. According to the traders, failure to pay the customs duty resulted in being refused to exit one country to enter the other. While incidents of consignment confiscation were rare, some traders, on a few occasions, found themselves stuck at the border due to a lack of funds to pay for the customs duty. This often happened when rates are adjusted and not communicated to the cross-border traders in time. The calculation of the levy was a straightforward process, and it is primarily based on the weight of the consignment, as shown in Box 5.1 below.

To determine the total weight and customs duty of mopane worm consignment:

- Weigh one or two bags, then multiply the initial bag weight by the total number of bags to derive the total consignment weight.
- Alternatively, the officer may weigh each of the bags in the consignment to derive the total weight of mopane worms.
- Total consignment weight is multiplied by the cost per unit (kilogram) rate to determine the customs duty.

Source: Interview Data

Box 5.1 Calculation of SARS Customs duty

This process of weighing and calculating customs duty remains open to manipulation and thus leading to under-declaration and bribery. Over the years, many cross-border traders who frequently travelled between Botswana and South Africa had developed friendships with the border customs officials. These friendships also became the basis for illicit activities in the border areas. To cut costs and improve profits, some cross-border traders have devised ways to reduce their potential customs duty by offering bribes to customs officials. The participating

officials would then record a lower consignment weight and, thus, less duty payable. Out of this, the traders would have to 'buy a cool drink'[22] for the officers. One cross-border trader discussed the illicit activities in this way:

> '*Yes, you have to get them something for a cold drink. The good thing is that sometimes you may find a person who knows you very well and has seen you cross the border on many occasions. So, it will be easier to get assistance and understanding from such a person*' (Interview, Thohoyandou, Azwindini, 29/08/2018).

5.2.7.3 Immigration

The immigration sections at the borders are managed by the home affairs departments of both Botswana and South Africa. Although the two institutions have no dedicated regulations for mopane worm export and import, their regulation of the movement of travellers influenced the cross-border traders. For example, all cross-border traders were required to own a valid passport to enter and exit either of the two countries. The ownership of a passport enabled cross-border traders to ply their trade. Similarly, the lack of passport ownership limited the ambitions of prospective traders who wished to export mopane worms to South Africa from Botswana.

5.2.7.4 Municipalities

The local municipalities in Thulamela, Makhado, Collins Chabane and Greater Giyani regulated the street trading of mopane worms through bylaws. According to bylaws, all vendors and bulk traders were required to have street trading permits (cf Chapter 7:). Within the existing regulatory framework, street trading permits could only be obtained by residents within a given municipality's authority. This made the permits inaccessible to people residing out of those municipalities and foreign traders. In Thohoyandou, Giyani and Malamulele, all traders who sought to obtain a street trading permit were required to join a hawker's association before the municipality considered their permit application. In Thohoyandou, this

[22] "Buying a cool drink" refers to offering a bribe to an individual acting in their official capacity. This colloquial term is used mostly interaction with law enforcement such as traffic police and police officers.

sparked a conflict between local traders and foreign nationals. The perceived lack of regulation of foreigners, especially Batswana, was a source of discontentment among South African traders who believed that strict rules like those applied in Botswana should be applied in South Africa.

5.3 Conclusion

Although mopane worms were traded across borders between South Africa and Botswana, trade remained precarious. The increasing commercialisation of mopane worms attracted harvesters and dealers who were looking for ways to earn income. In Botswana and South Africa, mopane worm trade has led to a thriving cross-border trade that employed large numbers of actors seasonally. This is particularly the case during the harvest season for harvesters and throughout the year for vendors and traders The precarious nature of the trade meant that there were multiple constraining and enabling factors that were introduced throughout the trade chain. This chapter discussed the various roles of mopane worm trade actors and how they may impact the trade chain. The roles of the regulatory and institutional actors were also discussed in the context of the trade. As demonstrated in this chapter, the multiple constraints push the actors to devise alternative ways of gaining and maintain access to resources and markets. The capacity to be adaptive is crucial; however, harvesters were particularly constrained and, as a result, vulnerable to exploitation by dealers and cross-border traders. The precarious nature of informal economic activities is highlighted by the hierarchies and asymmetries which influence multilevel interactions among actors, institutions and governance systems which may force some actors to adopt desperate strategies in their daily endeavours. This precarity is discussed in the context of informality scholarship in chapter 9. Furthermore, the overlaps in roles among dealers, bulk traders, and cross-border traders intensified the competition, which incentivises the adoption of clandestine practices to circumvent regulations and governance frameworks to stay ahead of the competitors. Although the regulators, specifically DFRR and the municipalities, were important in ensuring adherence to access and trade regulations, the shortcomings in these institutions undermined the statutory governance regulations with wide-ranging implications across the trade chains. The next chapter discusses the role of social networks, kinship ties, informal relations and how they manifest in the trade.

CHAPTER 6: SOCIAL RELATIONS IN MOPANE WORM TRADE

6.1 Introduction

The previous chapter examined the key actors and their roles across the cross-border trade chain. This chapter focuses on the numerous ways in which social ties, informal relations, and networks manifest in the mopane worm trade. The social networks within the trade are inherently multi-layered and multifaceted, characterised by acts of sharing, opportunism, and independence among the actors. These characteristics effectively act as the enablers and barriers of entry for prospective traders. In the context of mopane worm trade, the success or failure of individuals to source supplies with relative ease, on favourable terms, and access to credit depends on how well they are connected and established. This chapter examines the role, influence and nature of social relations and benefits drawn by traders and harvesters to pursue their livelihoods. Following the introduction, the second section deliberates on the social motivations for harvesters, cross-border traders and vendors who venture into mopane worm commercialisation. The third section discusses the nature of the social capital drawn to support the marketing and trading of mopane worms. The fourth section focuses on how the social benefits manifest beyond trade-related activities. The conclusion draws key lessons on the role of social capital in aiding actors to seamlessly transition along the informality continuum to support their livelihoods

6.2 Socio-economic Motivations

This section presents the social motivations and factors which encourage actors to venture into mopane worms harvesting and trading. The social interests for harvesting and trading mopane worms were prominent for harvesters in the Central District of Botswana and traders in Limpopo Province, South Africa. These included, among other things, the desire to earn income to support the household, the need for employment, encouragement by peers and parents, family livelihoods and poverty alleviation (see Table 6.1). For the harvesters, mopane worm harvesting was part of the social upbringing in which families would undertake harvesting excursions during outbreaks. The inspiration and motivation drawn from the harvesting excursions lingered long into adulthood for most harvesters. Other cited social

motivations included the need to earn an income to provide for the household; divorce resulting from a failed marriage, particularly in the case of female harvesters who needed to fill income shortfall; the death of a spouse or a breadwinner; and in some cases, the need to diversify trading commodities to increase incomes. Some traders were encouraged by friends and family to become mopane worm traders after noticing the profitability of the business. The various social motivations are discussed below.

Table 6.1 Socio-economic motivations for harvesting and trading mopane worms

Motives to harvest and trade	**%(n)**
Income	39(24)
Other[23]	19(12)
Family livelihood	18(11)
Poverty	10(6)
Unemployment	9(6)
Profitability	3(2)
Encouraged by peers	2(1)
Total	**100(62)**

Source: Interview Data

6.2.1 Household income generation

Earning an income was a strong motivation for harvesters, especially parents and household heads (see Table 6.1 above). The need for household income placed a responsibility to proactively seek income sources to meet the household needs. A total of 39 % (24) of all harvesters and traders cited the desire to generate income to support their families. For the harvesters, mopane worm harvesting provides an attractive and lucrative income source partly due to the relative ease of entry and minimal input costs. Rural households in Mogapi, Mogapinyana, Tsetsebjwe, Sefophe and other areas in the Central District in Botswana have taken advantage of the perceived ease of entry to earn desperately needed income.

[23] This category includes opportunistic motives such as harvesting as a hobby, harvesting for consumption but trade if there is justifiable surplus, and harvesting if the individuals found motivation or company to harvest on specific days. ?? not sure what the last part means?

For the local harvesters who began trading mopane harvest from childhood after an introduction by parents, the income-earning potential was always apparent. Such harvesters would sell any surplus harvest to South African livestock farmers in the 1990s, and the realised profits were used for household needs, notably school uniforms and Christmas clothes.[24] Some harvesters shared that this was an act that taught them the income-earning potential of mopane worms.

> '*I started harvesting as a young girl because I needed money to buy things like Christmas clothes. This continued even in my adult life as I had to look after my family. So, the motivation came from the desire to earn income*' (Interview, Mogapi, Millicent, 06/02/2019).

For traders, earning income and providing for their families was a source of pride and restored their sense of responsibility as parents and breadwinners. Anna, one of the pioneers of mopane worm trading in the small town of Elim, began business soon after her failed marriage resulted in divorce. Facing the reality of raising her children as a single parent, without any prospects of employment, Anna decided to start a hawking microbusiness at Elim. With pride, she explained that, when she began working as a hawker, all other traders within the market and the town were selling fruits, vegetables, and other foodstuffs. Though profitable at the time, Anna realised that the competition among the traders was increasing. She had to find something else that would earn her reasonable profit with reduced competition. In explaining her motive to trade mopane worms, Anna said that:

> '*I was married, and at the time, I used to sell sorghum beer, tripe and intestines. When my marriage failed, I came to Elim and got a stall in town to start trading so that I can take my children to school. I raised my children with the income from trading*' (Interviews, Elim, Anna, 03/04/2018).

The desire to generate an income in the household, in any possible way, leads people to try their hand in several activities. Some individuals quickly earned profit which improved household income stability. Others were forced to keep trying and, at times, combine different

[24] This is a practice in which parents purchase new clothes for their children to be worn specifically on Christmas day.

strategies. This contrast of fortunes demonstrated, to an extent, the desperation which some of the traders confront due to joblessness. However, given the popularity of mopane worms, this presented an obvious choice for most new traders. This popularity was noticed through the dominance of mopane worm traders on the streets of several towns in the study area. In Giyani, this was a cue that prompted Nyiko to explore the potential of the mopane worm business. Having lived her entire adult life in Giyani and frequenting the markets on countless occasions, Nyiko noticed no mopane worm traders in the town, unlike in Thohoyandou, where the trade was flourishing. This absence seemed an oddity as mopane worms were immensely popular among VaTsonga. Nyiko further hinted that during her travels, she noticed that mopane worms were traded widely, and traders seemed to be generating enough income to sustain their businesses. Notwithstanding her lack of insights into the trade, Nyiko concluded that becoming a trader would help her to generate enough income to look after her family instead of continuing to look for employment. When commenting on the topic, she mentioned that:

> '*I saw people trading and wished to join them too because I had no job. I had a desire to have my microenterprise*' (Interview, Giyani, Nyiko, 04/04/2018).

While this turning point was crucial in Nyiko's trading endeavours, it also turned her into one of the pioneers in her hometown. When she began trading, she was among only a few people even though mopane worms are a delicacy and popular among VaTsonga people in and around Giyani (Makhado et al., 2014; Baiyegunhi et al., 2016). After trading for over 15 years, Nyiko decided to move her stall to a busy location in the town centre. This move exposed Nyiko to a more significant number of potential customers who were patrons of the supermarket. Nyiko enjoyed more success than she could have hoped for when she began trading mopane worms. This forced her to seek an additional location to trade and avoid the pedestrian traffic at the supermarket parking lot, which started to be a nuisance for nearby shops near her stall. During the interview, Nyiko proudly shared:

> '*I was the first person to sell mopane worms in Giyani. All these people here saw me trading, and then they decided to join after copying me. I used to sell at Spar. However, I have moved to this location because there is plenty of space here, and I can also get customers driving on the main road*' (Interview, Giyani, Nyiko, 04/04/2018).

For some participants, harvesting or selling mopane worms appeared to be a destiny influenced by a parent or family. A total of 18 % (11) of the harvesters and traders cited family livelihood as a source of motivation to harvest and trade mopane worms for a living. Indeed, the narratives of mother-daughter and sister-sister connections were found to be very prominent. Such links enable novice actors to quickly learn the trade and establish themselves by embedding themselves in pre-existing ties and networks. Moreover, the mentoring and guidance from parents was critical for traders. In Makhado, Gogo, a Zimbabwean importer and vendor, established a thriving business anchored on family cooperation and support. While Gogo trades along a busy street within Makhado town centre daily, which she had been doing for over 25 years, her two daughters were involved in importing her stock from Zimbabwe. Gogo's other two daughters (Lilian, a participant in this study) occupy a similar stall in other parts of town. Lilian explained her mother's role in this way:

> '*I guess when my mom moved here, she realised that there is a market for these things. She started talking to and interacting with people and realised that she could make money out of these things. Then she started like that, and it grew. Anyone who sells mopane worms in this town learned that from her* (Interview, Makhado, Lillian, 03/04/2018).

Lillian further explained that all her siblings, aunts and uncles got interested and subsequently involved in mopane worm trading because of the influence that her mother had in the family. However, the influence was beyond family circles. According to Lillian, strangers within the town of Makhado drew inspiration from the successful traders whom they had seen in the town for many years trading at her stall. To demonstrate her mother's influence, Lillian explained that new entrants to the trade and everyone alike sought advice from her mother as and when necessary. Lillian explained that:

> '*In this town, my mom is quite influential. Everyone learned from her; everyone tries to get advice from her when it comes to the business. If something is wrong or not going well, they all go to her because she is the most experienced one. So, she is quite influential*' (Interview, Makhado, Lillian, 03/04/2018).

In her own words, Gogo's journey to mopane worm trading was influenced by a deceased close friend of hers from Zimbabwe. Gogo came to South Africa as a trader dealing with clothing. She explained that she bought her clothing stock at Marabastad in Pretoria to sell in Zimbabwe and locally in South Africa in years gone by. However, as the profit margin gradually

declined, she sought a way to increase her profitability. After a brief period of considering different options, Gogo got interested in mopane worm trading. To pursue this ambition, she had to revert to her mopane worm harvesting skills and knowledge taught by a friend in Zimbabwe. The introduction, at the time, was to earn an income. Gogo did not realise that this would turn into a lucrative cross-border business one day and that she would build a reputation around it as an influential trader in Makhado. She explained her introduction to mopane worm trading in this way:

> '*I had no money to send the children to school, and I saw a friend of mine selling mopane; she is now late. She was from the area where they get mopane worms, then she taught me how to catch and stock from other people and sell them. That is how I got involved. The place is in Matopo in Zimbabwe in the Matabeleland*' (Interview, Makhado, Gogo, 03/04/2018).

For Lillian, job-hunting had been incredibly stressful and unsuccessful. Although she holds a university honours degree in international marketing, she struggled to find employment in Zimbabwe. Over time, she realised that her effort to find employment might not yield any positive results. As a result, she moved to South Africa to join her family (mother, sister, brother-in-law, cousins) in search of better opportunities. After a few years of unsuccessful job-hunting, Lillian decided to assist her mother and sister with vending duties. Although she had been aiding when needed, Lillian still harboured the ambition of finding formal employment someday. Her contribution to the family business is clear; she takes up mopane worm trading duties when the need arises and if she is free from her job-hunting activities.

6.2.2 Poverty and unemployment

The second motivation was lack of employment opportunities and poverty. To mitigate the impacts of poverty and unemployment, people earned alternative income from Ipelegeng, old age pension, selling produce, farming, and doing menial jobs (see Table 6.2). The high levels of unemployment due to a lack of skills and job opportunities in the rural communities in the Central District of Botswana resulted in most people harvesting and trading mopane worms. For some, such income was reinvested in other income-earning livelihoods to increase the household livelihood portfolio. For example, reinvestment in purchasing or paying for subsistence farming inputs and services were shared. Other assets included livestock, donkey carts, and in rare cases, pick-up trucks. One harvester discussed the importance of the income reinvestment for the creation of self-employment in this way:

'*I drew my motivation from life; having mopane worms is especially important because it helps us have income. If you have mopane worms and can sell them, you can pay school fees and pay for other things that you may need in your household. I can buy food, clothes and pay for the tractor until my fields*' (Interview, Sefophe, Tshenolo, 08/02/2019).

Table 6.2 Alternative sources of income for harvesters and traders

Alternative income sources	**%(n)**
None	41(28)
Pension	16(11)
Farming related	12(8)
Informal business	12(8)
Ipelegeng	9(6)
Piece job	7(5)
Accommodation rental	3(2)
Husband salary	1(1)
Total	**100(69)**

Source: Interview data

Unemployment and the need to provide for their families were also shared as motivations by other traders. Some participants indicated that their job-seeking efforts were hampered by the limited opportunities available to them. The difficulty to find employment and secure income had debilitating consequences on household well-being. Most participants cited reasons for their inability to look after their children and to pay school fees and meet household financial obligations. Some of the sentiments shared by the traders on the question of unemployment included:

'*I struggled to look after my children. It was difficult, and I had to find something to do, which will help me earn money for my household*' (Interview, Thohoyandou, Maria, 28/03/2018).

Both female and male traders shared unemployment-related motivations. For example, Joe, a Zimbabwean vendor at Malamulele, explained that the reason to take up mopane worm trading was due to his inability to find wage employment upon his arrival in South Africa. Joe came to

South Africa from Zimbabwe in search of better opportunities. He left Zimbabwe due to the worsening economic situation and political upheavals, seeking refugee status in South Africa. His arrival in South Africa did not turn out as he had hoped. As was the case with locals, Joe struggled to find employment. However, his context was slightly different because he had no effective support system while he was job-hunting. He had to urgently start earning money to sustain his stay in South Africa. Having grown up eating mopane worms in his home country, Joe decided to start a trading business after realising that mopane worms were popular in Giyani and Malamulele area.

A common narrative shared among male harvesters and traders was the desire to get employment or find a job to provide for their families. Some of the differences in the motivations between male and female traders seem to suggest that males placed more emphasis on wage employment. This emphasis on the specific type of income source highlights entrenched perceptions in the rural and semi-rural contexts. Men are expected to find employment as a precursor to providing for their families. This could imply that men prefer wage employment to prove their ability to provide as the head of the household. Thus, the unemployment of men in a household undermines their perceived stature as household heads and breadwinners.

6.2.3 Introduction and encouragement by kin

Introduction by kin to mopane worm harvesting and trading was a third motivation for the respondents who were introduced to mopane worms both as a source of food and a trading commodity. For some, this occurred through accompanying and assisting parents during the harvest season. This early introduction to the trade taught the young harvesters the importance of mopane worms as a livelihood activity. However, for some of them, trading was not a significant motivation for harvesting at the time. Nonetheless, the increasing commercialisation of mopane worms has turned out to be a motivation to continue harvesting. For example, for harvesters like Nomsa, the inspiration had been part of her upbringing, in which mopane worm harvesting was a seasonal household activity. She had participated in numerous harvesting excursions with her parents and other villagers, although she had no idea that someday mopane worms could be traded for an income. This all changed in the 1990s when South African livestock farmers began to visit villages in the Bobirwa subdistrict in

Botswana to purchase mopane worms as protein fortification for livestock feed. This led to the realisation of the trade value of mopane worms by the harvesters. Although farmers have since stopped, cross-border traders are the main buyers to supply markets in South Africa.

The potential to earn an income through harvesting and trading a readily available and accessible forest resource proved to be a strong lure for many rural communities. Individuals who had initially been reluctant to harvest felt that they were missing out after witnessing relatives trade successfully. Maggy from Mogapinyana, for example, was initially uninterested in the harvest and trade of mopane worms. This later changed when the frequency and number of prospective cross-border traders were visiting their village every season to pursue mopane worms. Maggy shared that her interest was sparked when she realised that members of her family and other villagers could earn income which went a long way to enhance their household income. This served as a motivation to begin harvesting mopane worms in Mogapinyana and the surrounding areas during the outbreak season. Although trading mopane worms would later become an essential source of income in her household, earning her P2500 to P3000 per season, Maggy also earned additional income from brewing and selling *Bojwala jwa Setswana* (traditional sorghum beer). She explained the importance of mopane worm trade income as follows:

> '*I use that income for all the household expenses. If we have run out of something, such as food, I will use that income to purchase whatever had finished. However, in seasons that I miss harvesting, it gets tough for a few months till the next harvest season. I had plans to plaster my house, but I had to put those plans on hold until I get money*' (Interviews, Mogapinyana, Maggy, 03/02/2019).

For some present-day traders, the common narrative was that they were attracted to mopane worm trading through persuasion by a friend or close relative. The case of Sefako, a cross-border trader, based in Thohoyandou shared below, reveals the complicated journey marred by uncertainties, mentoring, and calculated risk-taking.

The Case of Sefako

When Sefako developed an interest in cross-border trading, her first thought was to work through a friend to import a consignment of mopane worms from Botswana. In the beginning,

this idea did not seem to be a problem for both. Sefako's acquaintance had agreed to purchase mopane worms in Botswana for Sefako whenever she undertook a trip to purchase her supply as part of their arrangement. Due to their social proximity, the two parties did not see a need for Sefako to compensate her acquaintance for the service. In turn, Sefako would provide the capital for the supply. Indeed, Sefako's acquaintance was able to deliver mopane worms from Botswana on several occasions. Although this arrangement continued for some time, it proved to be burdensome for Sefako's acquaintance. The comment below illustrates the evolution of this trading arrangement:

> '*There was a person who introduced me to the trade. When I got interested, I asked the person to buy some mopane worms in Botswana for me. Initially, they had no problem doing that, but they later told me to obtain a passport and go along with them on the trip. The reason that was given to me at the time was that buying mopane worms in Botswana is labour intensive and therefore it would be more appropriate for the owner to be more involved in order do their fair share of the work*' (Interview, Thohoyandou, Sefako, 29/08/2018).

The story of Sefako's entry into the trade is not unique. Many other traders shared their experiences of entry into the trade by association or proximity. However, the case of Sefako demonstrates a few issues which make such arrangements unsustainable. The financial costs and physical burden of undertaking a purchasing trip to Botswana meant that the arrangement between Sefako and her supplier would have to be rearranged. It was not beneficial to the acquaintance. Instead, the acquaintance was incurring costs that she was unwilling to pass on to Sefako, as she was 'doing her a favour'. Costs incurred in such supply purchasing trips to Botswana are provided in Table 6.3 below.

Nonetheless, the above-mentioned rearrangement of their cooperation allowed Sefako to transition into an independent cross-border bulk trader. There are three key reasons which contributed to the transition. First, Sefako was obtaining her supply at the bulk stock price. This eliminated the mark-up which other traders pay when supplied by the cross-border traders in Thohoyandou and other urban markets. This also meant that her supplier was losing out on the profit that she would have earned had she supplied Sefako in the same manner as she does to all her customers. While this arrangement presented an incentive for Sefako to continue, it

made no financial and logistical sense for her acquaintance to transport 40 kilograms of mopane worms over some 350 kilometres and not make any profit out of that consignment.

Table 6.3 Purchasing trip costs incurred by cross-border traders in Botswana

Item	**Estimated cost**
Fuel	R1 300,00
Food and refreshments	R600,00
Vehicle border levies	R200,00
Currency conversion fees	R150,00
Export permit fees	R2 612,00
Traders permit fees	R391,80
BURS Customs	R653,00
Total estimated cost	**R5 906,80**

Source: Interview data

Second, the personal safety considerations during the purchasing trip were enormous for the cross-border traders. It was simply too risky to continue importing the consignments on someone's behalf without fair compensation for the effort and risks. If one trader had an agreement to buy for somebody else, that increased the amount of money and mopane worm stock they would carry. For example, if a cross-border trader planned to purchase R20,000.00 worth of mopane worms, the additional money in their possession would increase if they had to purchase and deliver for somebody else, in addition to their consignment. This increase in hard currency in their possession and mopane worms increased the risk of robbery and theft. Talking about this issue, another interviewee said:

> '*We all know that each trader should embark on the purchasing trip to Botswana on their own. It is well known among us that you do not wait for others when you leave or inform them about your plans. Each trader may decide to go on their own to stock mopane worms in Botswana. Although we may be aware that some people are planning to go to Botswana or are indeed going to Botswana, we still do not agree on a date to travel together*' (Interview, Thohoyandou, Tshilidzi, 29/08/2018).

Third, the logistical challenges involved in the purchasing trip are exhausting for the cross-border traders. The traders must endure long-distance travel, sometimes on gravel roads, to reach their destinations. This is followed by queueing for long periods to cross the border and days spent looking for harvesters in the villages, cattle posts and sometimes at harvesting camps, negotiating, and buying mopane worms to bulk their stock. Furthermore, traders must navigate the regulatory processes of obtaining the Trading and Export permits[25] from DFRR in Botswana. All these circumstances made it difficult for cross-border traders to procure mopane worms on behalf of other persons without a legitimate expectation of profit or compensation for their effort. Although the prospective traders often sought and got initial assistance from more established actors, they inevitably needed to undertake the purchasing trip to establish themselves as traders firmly. This section has demonstrated that entry into, and participation in mopane worms trade is embedded in the social networks, which are intertwined with the lives of the participants. As shown empirically, the networks provide important mechanisms for the actors to navigate the constraints across the trade chain and those emerging from the backgrounds of the actors.

6.3 Social Capital in Marketing and Trading

This section turns attention towards the role of social networks in marketing and trading. A common occurrence in mopane worm microenterprises was the entanglement of personal relations and social networks, which provide a basis upon which traders market mopane worms. For some traders, these relations and networks were beneficial. The benefits outweighed the costs and liabilities of maintaining ties. These relations and networks ranged from simple partnerships between two individuals to family-based cross-border trade with significant turnover. Nonetheless, other traders deemed the social networks to be burdensome to their livelihoods and microenterprises. This section discusses how social networks configure mopane worm trade and the interrelationships among the traders.

6.3.1 Cooperation and assistance

[25] Permit required in terms of the *Agricultural Resources Conservation Act* Ch. 35:06 of the Republic of Botswana.

The traders in open markets in town felt that any assistance from other traders made daily business trouble-free and tolerable and equally offered reciprocity to fellow traders. As a result, all traders requested daily assistance from fellow traders, mainly if the trader had to run an errand or visit a toilet. In Elim, the nearest toilet facilities for the traders were located some 200 metres away at a shopping complex. A similar lack of ablution facilities for traders was observed in Thohoyandou, Giyani, Malamulele and Makhado. Traders in all these towns use facilities in the nearest accessible shopping complexes or malls. This involved leaving one's trading stall for a period during which a potential customer or opportunistic thief may visit the stall. To minimise the apparent risk of falling victim to robbers, the traders had to depend on the cooperation and assistance of their colleagues to keep watching their stalls. This kind of assistance and cooperation was based on trust and reciprocity. Each trader knew and understood that they would be required to cooperate with their neighbour when their help was required, and such assistance would be offered in reciprocity. Talking about this issue, one trader in Thohoyandou said:

> '*We generally assist each other if such required assistance is reasonable. When a trader is not at their stall and asks the nearby one to look after their stock, we would help to look after the stuff*' (Interview, Thohoyandou, Azwindini, 29/08/2018).

A recurrent theme in the narratives of the traders was their collective responsibility to maintain good relations with their counterparts at the market. This responsibility required the traders to be cordial, although they may prefer to work alone throughout the day. The importance of cooperation and assistance forged a sense of solidarity among the market traders. This, in turn, created an environment for nurturing social capital. In recognition of the importance of good relations, traders often avoid conflict and confrontation with colleagues hoping to reap the benefits for their daily market and trade activities. A key outcome of good relations is reciprocity, with which traders understand that by helping a fellow trader, such help would be returned when needed in future.

6.3.2 Retaining customers and sharing information

Mopane worm traders are a closely-knit group, a network of actors in which family ties, established connections, and trust emerge as critical factors in regulating the behaviour, ability to procure stock, and access to financial assistance and information sharing. The success of a

trader in plying their trade depends on these factors. Given that stock marketing is typically through word-of-mouth, traders needed to tap into their social capital to gain a competitive edge. The social networks may be sources of information about customer preferences, demands, sharing information about bulk stock supply and planned deliveries by cross-border traders to the markets. Three factors were critical for retaining customers and flow of information among the traders, namely multiple suppliers and clients, trust, and customer relations.

6.3.2.1 Multiple suppliers and clientele

Procuring supply and trading it quickly is a strategy pursued by most of the traders to outcompete fellow traders in the urban markets. Cross-border traders and vendors maintain a portfolio of regular customers and suppliers to enable quicker sourcing and selling. This is partly due to the networks and social capital which facilitates the close interactions between harvesters, cross-border traders, and vendors across international boundaries. Bulk traders from both Botswana and South Africa shared close contact with their clients and harvesters from whom they procure. Often the contact sought to maintain ease of flow of information on the demand and supply dynamics of mopane worms in the markets. Inevitably, the suppliers have built vast clientele networks with whom they have exchanged information about stock availability. This type of information sharing assisted bulk traders in recruiting customers, planning itineraries and facilitating transactions. The South African based bulk traders have adopted a similar strategy of sourcing from multiple actors simultaneously. In most cases, such sourcing and marketing involve suppliers with whom traders had previously done business.

The multiple supplier strategy is not maintained solely for ensuring quick supplies. Some traders indicated that they source from different suppliers to minimise supply costs due to the close correlation between price and perceived quality of mopane worms. Suppressing costs involves sourcing bulk batches of cheap low quality and the pricier good quality mopane worms for mixing. After mixing the batches, the traders would then sell their stock at a higher price, purporting it to be of good quality. This was driven by consumer perceptions that mopane worms from Botswana were of superior quality, while those of Zimbabwean origin were inferior. Nonetheless, traders sourced and mixed the Botswanan and Zimbabwean sourced batches. This was a profit-enhancing strategy as it allowed the traders to procure at a

low cost while trading at a higher price and a direct result of the diffuse nature of mopane worm trade. The maintenance of networks of diverse suppliers appeared to be enabling this practice.

6.3.2.2 Trust

The established ties between one trader and their customers can be crucial in securing future transactions due to the mutual trust built over a long period of interaction. The convenience of vendors arranging mopane worm supply through a phone call to the supplier is one of the critical benefits of these ties and relations. Mopane worm transfer and trading take place on a regional scale. For example, much of the mopane worm market is supplied by stock that is sourced from Botswana. To travel over these long distances in either direction, cross-border traders need constant communication with harvesters and bulk traders to determine the appropriate time for importation and delivery. The bulk traders and cross-border traders need some assurance of transactions before embarking on a cross-border journey to buy and transfer the worms into South Africa. This phenomenon is also present in the bulk transfer of mopane worms from Thohoyandou to other towns within Limpopo Province. Moses, a bulk trader, based in Thohoyandou, explained how he taps into the ties he has with his clients to arrange transactions and transfer mopane worms over hundreds of kilometres due to social capital and effective communication with his clientele:

> '*Some customers call me while others come here to buy. Others, when they call, I must deliver, such as in Malamulele and Giyani. However, I can say that I reach the whole of Limpopo. People from Louis Trichardt come here. When the mopane worms are scarce, they come here, because when they are scarce, we can go to a place like Zambia and buy from there then sell when no one has them*' (Interview, Thohoyandou, Moses, 28/03/2018).

The traders, much like any business enterprise, need to invest energy and effort in building networks to secure potential future sales or clients. With the increasing popularity of mopane worms, formal supermarket retailers in Thohoyandou, Makhado, and Vuwani have begun to stock and sell mopane worms (see Figure 6.1). However, traders have taken it upon themselves to compete with retailers in the best way they know. By maintaining cordial relations with their customers, traders already offer a human touch to their products and trade, which formal retailers do not do best. By tapping into the social capital with their customers, traders have

devised a way to ensure the survival of their microenterprises against the retail competitors. Other traders shared these sentiments, who expressed that the communication between traders and their customers must be maintained at regular intervals. This also ensures that the trader does not lose customers to competitors working in the same town. For example, in Thohoyandou, mopane worms are supplied by cross-border traders from Botswana and Zimbabwe. Thus, reciprocal trust is crucial for the supplier to watch their client base. For Moses, this is especially apparent when maintaining contacts with his clients:

> '*The traders in Giyani and Malamulele have a good relationship with me. They call me whenever they need supplies, and I also call them to check if they need me to supply them. I must check on my customers to supply them before anyone can when they need mopane worms*' (Interview, Thohoyandou, Moses, 28/03/2018).

Source: George Sekonya, Thohoyandou, 28/03/2018

Figure 6.1 Mopane worm sachets on display in a retail shop

6.3.2.3 Customer familiarity

The role of social relations has become increasingly crucial for the mopane worm trade, so much so that securing daily sales relies on these relations. During the observations and

interactions with the respondents at the town markets in Thohoyandou, customers approached traders with whom they were familiar, related, or had some interactions in the past. The greetings and salutations between the customers and the traders resembled acquaintances who had not seen each other for some time. One trader indicated that it is becoming challenging to trade in Thohoyandou open market because of the increasing number of traders. As a result, customers end up buying mopane from traders that they know. According to Julia, it has become difficult for novices, especially in the presence of long-serving traders who have a substantial customer base with healthy relations. The comment below illustrates the importance of social relations for the traders:

> '*Relations are especially important because, like many people who are selling mopane worms nowadays. So, you are only able to sell to those that know you. It is hard for strangers to buy from you. So, it is important to have the relations and know people so that they can buy from you*' (Interview, Thohoyandou, Julia, 26/03/2018).

Regular communication between traders and their clientele serves to market the products and retain customers by maintaining their ties. For traders who cannot utilise sophisticated tools for marketing their businesses beyond their hometowns, the outcome of such relations and ties is crucial for their microenterprises. In this context, the influence of social ties and networks could be a deciding factor for the sustainability or failure of the microenterprise, particularly as it pertains to on-market activities.

6.3.3 Loans and credit

One of the most challenging aspects of the informal economy concerns the lack of access to credit and loan facilities by the actors (Tsai, 2004). The mopane worm trade is no exception. This section discusses the limited access to capital as a hindrance to traders who had ambitions to import in bulk. To overcome this challenge and ensure business sustainability, some traders resorted to a microloan system. As a result, traders could loan each other cash when in need and sell mopane worm on credit to other traders and consumers. Most of the vendors interviewed were involved in some form of credit transactions with their suppliers. The traders agreed that the credit system worked better than loans from 'loan sharks'. Colloquially known as *mashonisa*, this term metaphorically implies a person who depletes others of their financial resources. The 'loan sharks' or 'mashonisa' are a type of microlender who offer loans to their

clients at exorbitant rates. The loans were perceived to be convenient and reliable relief, especially when a trader cannot obtain financial assistance from financial institutions. The flow of credit was extended to both traders and the consumers discussed below.

6.3.3.1 Credit to traders

There was a greater reliance on friendships and trust for cross-border traders who offer stock on credit. Such willingness was apparent when the transactions were between the South African vendors and Batswana cross-border traders. With no written agreement of the transaction and debt, traders depended on the trust that they had in their clients. Cross-border traders offered mopane worm supplies to vendors at a credit payable in a stipulated period, usually two weeks to a month. Equally, the vendors understood that they had an obligation to pay back the full credit amount for mopane worms. Repetition of this kind of credit arrangement has created a prevailing credit system that was valued and benefited the cross-border traders and vendors. These findings demonstrate the strength of the trust that exists between the bulk traders and local vendors. Ordinarily, Batswana bulk traders have a limited period to spend in South Africa selling their stock, usually up to 90 days.[26] By offering mopane worms on credit, they are confident that their local clients would generate sufficient profit to pay back the debt during the trader's limited stay in South Africa. One explanation for this healthy relationship may be the intimate understanding of the local market patterns and knowledge that the debt would be settled.

6.3.3.2 Credit to consumers

The utilisation of credit is not only limited to the bulk traders and their clients. Vendors also expressed that they too offered mopane worms on credit to the consumers. However, unlike the more liberal transactions that exist between bulk traders and vendors, in this case, the credit transactions are only limited to regular customers. Some traders expressed concern about giving mopane worms on credit to people who are not their regular customers. In cases where the customer is a regular, some of the vendors use the credit to retain customers to ensure that

[26] All foreign cross-border traders entered South Africa on an ordinary visitor visa which had validity period of 90 days.

they would buy from them. However, there was caution expressed when offering mopane worms on credit to the consumers. According to the traders, the challenge emanates from tracking down the customers since they do not visit the market frequently. Instead, the traders opted for stricter control on the customers to which credit can be extended and the value of the debt. This acts as a mechanism to limit the trader's exposure to customer debt and non-payment, which can severely impact their business. This, however, must be a delicate balancing act. For example, the trader would try not to anger the customer by declining the credit request, mainly when a customer has been a regular client. To maintain the existing relationship between the trader and customers, individual traders utilise only a specific quantity for credit sales, such as a 5-litre bucket. In such cases, any transaction that involves quantities exceeding 5-litre buckets would have to be purchased in cash. Commenting on the topic, one trader said:

> '*For that, we use quantities such as a bucket because we are dealing with money. When you give a person a bag of mopane, the person can sell and get money then disappear. Usually, I would give a bucket or two. I cannot give bags*' (Interview, Thohoyandou, Moses, 28/03/2018)

6.3.4 Trust, ties, and reciprocity

The interactions between harvesters and traders contained elements of trust, relational ties, and reciprocity. These features were expressed in most of the interactions between the different actors. Such trust-based exchange systems often required traders to forego self-interest in their interactions in return for money, information or assistance benefits stemming from the trust and reciprocity of the fellow traders. Trust, relational ties, reciprocity, and established norms are crucial in trading contexts as not all aspects of the trading or the assistance required for the daily mundane tasks can be contracted or monitored (Riet, et al., 2018). Therefore, to a certain extent, actors depend on their counterparts and drawing on those relationships regularly for their daily trading activities. These reciprocal relationships can vary from assisting traders with managing their stalls, extending loans or credit to procure stock, participation in stokvels, information sharing and resource pooling. A vital contribution of these reciprocal interactions is entrenching kinship among the actors. As a social capital coping strategy, kinship is attractive to the traders. Paumgarten and Shackleton (2011) observed that maintaining kinship within the NTFP context requires no capital outlay and is a coping strategy of choice available to households regardless of wealth status or household head. For traders, kinship support enables access to information on mopane worm availability, supplier

movements, financial assistance and loans, labour, resource pooling and costs sharing. Such support is reciprocal, with the traders returning the favour when needed. Although the nature of the interactions between family members differs from those among vendors and bulk traders, there is a clear contribution of kinship on the nature of these interactions. The practice is used widely across the market by the harvesters, cross-border traders, and vendors for cost reduction to improve competitiveness.

6.3.4.1 Cooperation to cut costs

Social ties, such as family relations, were useful and helpful in the trade, especially for cost-saving. For families involved in the trade, members often synchronised their bulk stocking trips to share the transportation costs. When arranging a trip to stock bulk supplies, the need to 'pool' was critical for cost reduction. All cross-border and bulk traders cited transportation costs as the single most crucial factor influencing mopane worm prices. The transportation costs become more magnified with the vast distances involved in travelling to and from Botswana to the various towns such as Giyani, Makhado and Thohoyandou. Therefore, the involvement of the immediate and extended family in the trade provided invaluable benefits, especially for the traders who could leverage cost-saving from the social capital. A widespread practice among the traders, especially in large markets such as Giyani and Thohoyandou, was to share transport and other related costs through pooling when procuring bulk supplies. This method was employed by traders who could not afford to import mopane worms alone from Botswana or purchase bulk quantities such as 50kg or 80kg maize meal bags from cross-border traders. In the case of vendors, a group of individuals would contribute equal amounts of money to raise an amount to purchase a 25kg or 50kg maize meal bag of mopane worm (Figure 6.2). This practice was more prevalent among vendors and other traders whose trade quantities did not justify incurring the costs of mopane worm importation singlehandedly. One such vendor was Joe in Malamulele, who sells mopane worms, groundnuts, peanuts, maize seeds, brooms, and other items. Most of Joe's trading wares were supplied by cross-border traders based in Sibasa, Thohoyandou. To procure the supply from the cross-border traders, Joe and his sisters and in-laws arranged to purchase a combined bulk order in which his family got their stock in one transaction to minimise expenses. The comment below illustrates the importance of resource pooling for Joe and his family:

The assistance I get from them involves that if someone is going to stock, then I can ask them to bring me a bucket too to reduce the transport costs. Buying mopane worms together in the same bulk order reduces costs that are incurred when transporting mopane (Interview, Malamulele, Joe, 02/04/2018).

Source: George Sekonya, Thohoyandou, 26/08/2018

Figure 6.2 Mopane worms in 50kg maize bags on display at Thohoyandou market.

Harvesters similarly cut costs related to harvesting excursions through sharing transport costs, camping together with acquaintances and sharing consumables such as food, water, and salt. It was common among the harvesters to camp with familiar people in every season. Besides the security assurance resulting from this, the cost-sharing arrangements were beneficial for the poorer harvesters. This was common when harvesters had to arrange transportation to go to Elibi, Moletemane, Lerala and other areas where mopane worm outbreaks were deemed healthy. Over time, rapport and loyalty built between harvesters and some transport providers had developed, allowing harvesters to negotiate preferable terms with the transport providers. As a result, harvesters entered arrangements that minimise additional expenses. For example, the arranged transport would pick up harvesters from their homes instead of a central point. This eliminated the need to arrange secondary transportation for the harvesters. This section discussed the utility of social networks to minimise constraints in the marketing and trading of mopane worms. The networks in which trading and social relations are enmeshed were utilised

for retaining customers, information sharing and accessing financial resources. Strategies were useful for new entrants as well as established actors.

6.4 Embedded Social Networks of Support

This section moves to the forms of support that is drawn for labour, diversification of informal trading and social clubs. The role and participation of family members in the harvesting and trading happened in different ways. Traders often utilised the various networks which involved their families to their advantage. These kin networks typically included instances in which several members played different roles in the mopane worm trade. In the case of harvesters, these would include children providing additional labour to assist parents in maximising their harvest. This could include the division of labour, in which one or two children may remain at the campsite to cook and dry the caterpillars while the rest of the family set out to pick mopane worms during the day. A similar phenomenon was present among the traders. A common practice involved a scenario in which some family members would be responsible for buying and selling in bulk quantities, while others imported mopane worms from source countries. As described earlier, one such family was encountered in Makhado, in which the matriarch of the family was a vendor along with her two daughters. In contrast, her other daughter and her husband were bulk importers operating through the Beitbridge border post (Interview, Makhado, Gogo, 03/04/2018). In a different scenario, two or more family members could play the same role in a different location to maximise the family's trade volume. In Giyani, one such family was encountered in which both the mother and the daughter were vendors at different locations in the town (Interview, Giyani, Tirhani, 04/04/2018). This section analyses the various personal and family relations in which mopane worm trade is embedded. This section also teases out ways in which traders derive benefit and value from the personal and family relations in support of their microenterprises.

6.4.1 Provision of labour

6.4.1.1 Provision of additional labour for harvesting

Harvesting, cleaning, and cooking mopane worms are physically demanding tasks. To lessen the workload, often parents worked with the assistance of their children to increase productivity. Except in cases where transportation costs might inhibit participation, children provided an essential source of additional and cost-effective labour for harvesters. Assigning takes such as collecting firewood, cooking, and drying caterpillars had a positive effect of freeing precious time for the adults to harvest for longer hours in a day. One harvester discussed the role of their children in this way:

> '*I harvest with my children; they give me all the help that I need. We harvest together till we are satisfied, but sometimes we may come home early and leave their father in the cattle post*' (Interview, Mogapi, Interview, Tebogo, 06/02/2019).

Family members often provided an incentive for additional labour on a seasonal basis or as a replacement when the leading trader, usually the parent, could not take up their duties due to illness or other commitments. Some household members operated from an additional location or home while the primary trader operated in the town. This phenomenon of letting children or spouses participate in trading to improve income was shared within the mopane worm trade. In Giyani, Josephine, a small quantity trader, opted to have her child get involved in the trade by obtaining an additional stall. Josephine's daughter Tsakani operated the additional stall as though she was an entirely independent trader. She had to comply with the permit regulations of the municipality and all other requirements applicable to traders. Although Tsakani and her mother Josephine operated independently at the markets, the two stalls have one. They both traded stock from one household, with Tsakani fulfilling the role of an additional labourer. The parallel permitting was done solely to circumvent the municipality regulations, which prevented one person from legally owning two or more trading stalls. According to the municipal bylaws, it is not permissible for a vendor to have more than one permit. Since each permit is dedicated to one trading stall, this regulation prevents traders from owning more than one stall. As Josephine demonstrated, such bylaws can be easily circumvented through the assistance of the family. In the process, her household could increase their potential income twofold by increasing the quantities that they trade between the two stalls. A similar observation was made in Giyani CBD. The couple owned two stalls; in the arrangement, the

wife worked as a bulk trader while the husband dealt in small quantities. By occupying two different roles in the value chain, the couple increased their profitability.

6.4.1.2 Provision of additional labour for home trading

Another common feature in the trade of mopane worms was the utilisation of the household as a trading place. In addition to trading in urban markets, some traders used their homes to trade within their communities. An essential benefit of this approach was that it allowed ease of access to the local community and neighbours. Parents often let children trade to the neighbours and the community from home while the mother plied her trade in the town for the rest of the day. Although this strategy was not widespread among traders, they acknowledged that these practices increased their profitability. More importantly, the trader's influence in terms of customer awareness of their business increased too. Commenting on the benefit and importance of including family members in the trade, Maria from Thohoyandou said:

> '*Yes, there are close members who are involved in the trade. They trade in larger quantities than I do. Unlike me, they do not sell at the market, but they sell from home, and they sell to the people in the village. They can sell at home while I am in town*' (Interview, Thohoyandou, Maria, 28/03/2018).

6.4.2 Family support

Another recurring theme for the traders was the participation of family members in a networked manner. Family support takes various forms. Gaining access to the trading markets and owning a market stall are the first and most essential steps in becoming a trader. Knowing someone, either as a family or acquaintance, also smoothened the process of gaining access to the trade. In addition, a general introduction into the trade has been cited for having been facilitated through a friend or individual who had some form of relations with the prospective trader. An indication of the importance of a family embedded trade network is explained below.

The case of Gogo

Based in Makhado, Gogo from Zimbabwe has been plying her trade as a vendor for over 30 years. In the three decades, she has been trading various items, including clothes, curios, foodstuffs in several towns in South Africa and importing clothes into Zimbabwe. In mopane trade, her influence has led to the creation of a genuinely family-run cross-border trading network. In the present day, Gogo works as a vendor along a busy street in Makhado CBD. Her business influence has attracted her two youngest sisters, who relocated from Zimbabwe to join the vending business in Makhado. Gogo's influence has motivated her children to join the thriving family business.

Importation and bulk trading

The profitability of mopane worm trading depended on the role of the trader in the broader value chain. For example, vendors at the end of the chain who sell directly to the consumers took longer to realise their profit due to the small quantities and lower trading volumes. On the other hand, bulk traders had a higher turnover and quicker turnaround of their stock because of the large volumes. Therefore, where conditions allow, traders would instead be involved in bulk trading as it allowed them to generate more profits quickly with reduced risks of spoilage of the stock. However, it was not all doom and gloom at the vending end of the trade; some participants indicated that respectable profits could be earned while vending to the consumers, although this happened quickly. While Gogo was vending at her stall in Makhado, together with her two daughters, the family sent other members into Zimbabwe to buy and deliver bulk stocks of mopane worms back into South Africa. With a full complement of at least seven members, the family were involved in the bulk importation and vending of mopane. They, therefore, completely dominate the chain which was responsible for their supply. Gogo's daughter Lillian confirmed the family's multiple roles in the trade, with the motivation for this multiplicity of roles in the value chain to maximise profit-making:

'*We do sell in large quantities, depending on what the person who comes to us wants. If they want something big, then we supply them in large quantities. If they order something small, we offer in small quantities too. We cater to everyone, and you can never be fussy about where the money comes from*' (Interview, Makhado, Lillian, 03/04/2018).

Group importation

Bulk importation of mopane worms can be costly, with transport costs as deciding factors on whether to self-import or buy from the cross-border traders. However, by utilising their family-owned vehicles, Gogo's family can absorb much of the costs. If any of her children cannot import mopane

using family vehicles, the family often resorts to sharing transport costs. Commenting on what it takes to import mopane as part of her family business, Gogo indicated the following:

'*All my daughters have got cars, these are the ones that are helping me now, but if I do not have a car, I just put my stock in the same car with other people (traders). We negotiate with the owner of the cars, and then we split the cost among ourselves to pay him. We then bring the stuff in* (*to South Africa*)' (Interview, Makhado, Gogo, 03/04/2018).

Diversified cross-border trading

Gogo's daughter shared how her family business has expanded beyond mopane worm trade to include other goods during the interviews. While the family's business started from mopane worm trading, Gogo's daughters saw an opportunity to expand by buying clothing merchandise, food items and other consumables in South Africa for trading at informal markets in Zimbabwe. This cross-border movement of goods from between countries, with profits from the trade, used to buy different goods in the opposite direction is shared among the cross-border traders.

'*This is not the only thing we do. So, my sister does another business with my elder sister; they stock other goods here and supply that to Zimbabwe. These include groceries business. She does have houses in Zimbabwe that she rents out for my mom, so this is not her only source of income*' (Interview, Makhado, Lillian, 03/04/2018).

A diversified portfolio of trading goods enables the traders to improve the resilience of their business given that mopane worm trade is highly seasonal, with clear variation between the outbreak season and the rest of the year. However, in the case of Gogo, the diversification strategy included using mopane worm profits to procure high-value goods for trading in Zimbabwe. This strategy demonstrated the potential of mopane worms trade to provide important capital for establishing a lucrative business.

6.4.3 Social clubs/stokvels

This section focus on the social clubs as an adaptive strategy to access financial resources for informal traders. Most of the stokvels shared characteristics which include formation for monetary gain; membership expected to act with rationality; members are expected to make fixed and regular contributions; funds are distributed in rotation to benefit equitably; and membership is voluntary (Verhoef, 2001). These associations are central to the traders'

livelihoods for several reasons, the key of which is the inculcation of a savings culture. These associations are also critical for ensuring and improving access to microcredit for the traders. They would otherwise not access such services from formal financial and banking institutions (Mashigo & Schoeman, 2012). In the absence of formal banking and financial services and but for the unfortunate exclusion of the traders from these services, it would be plausible to conclude that rotating credit and savings organisations are the real banks of the unbanked.

Within mopane worm trade circles, stokvels are more prevalent among long-time friends who have built trust and relationships enabling such financial dealings. One of the essential aspects of the stokvel is that it forges companionship among the traders. This creates a platform and space for traders to share experiences and advice on financial discipline. Financial discipline is crucial for the traders due to the precarious nature of the trade and as the sole source of income. The need for discipline stems from the fact that financial recklessness could have a devastating effect on business and their households, given the often low and irregular incomes earned. For example, lack of access to financial services means that traders manage their finances wisely to keep enough reserves to source supplies while being able to utilise the profits for household benefit. Participants expressed a positive attitude towards the *stokvel*. Notably, the stokvels ensured the availability of funds for the trader at a given time. For some traders, the stokvels were a savings scheme, which enabled saving and a predictable withdrawal for the person whose turn it was to receive the disbursement. Commenting on this issue, one trader said:

> '*We influence each other to save and use money wisely. We are playing a Stokvel in which only traders can participate. This encourages us to be very disciplined with the money so that we do not get to a situation where you have finished your stock and have no money to resupply*' (Interview, Thohoyandou, Maria, 28/03/2018).

Participation in the stokvel is more than just a financially driven ambition. The vendors tap into the commitments that come with membership of these clubs as a motivation to continue to ply their trade. Vendors have demonstrated a sense of self-pride in their work, especially as it allows them to earn incomes and provide for their families. In some cases, especially in large groups or when the contribution amount is higher, stokvel members can save more money which may be invested in significant household purchases or home improvement projects.

Among the harvesters in Botswana, stokvels are known as *Motshelo*.[27] As part of this practice, often, a pair of harvesters would set out to pick mopane worms in the morning, and all the morning excursion's harvest would be given to one member of the pair. The same pair would go out to harvest again in the afternoon, after which all the afternoon's harvest would go to the second member of the pair. This group may, at a time, be up to three people. This method of labour sharing among the harvesters closely resembles the stokvels clubs of the traders, although the currency of exchange among the harvesters is labour and not money. According to the harvesters, the extent of cooperation needed to work together in *Motshelo* requires the pair to be closely related either as family, friends, or acquaintances. This gives extra motivation for the harvesters to work consistently throughout the day, regardless of whether the harvest would be given to them or their partner.

This section has shown that the broader networks of kinship and family are used and repurposed as resources to facilitate entry into and participation in mopane worm trade. The increased capacity through assistance and additional labour derived from family was utilised to improve profitability. This was useful for overcoming constraints that characterise mopane worms trade.

6.5 Conclusion

This chapter presented the encounters of social capital in mopane worm harvesting and trade. Social ties, relations, interactions, and networks play a crucial role in analysing mopane worm trade and trader livelihoods. Specifically, they impact the ability of the traders to enter the trade, increase competitiveness and ensure access to the necessary networks support and assistance. The chapter highlighted the vital contribution of next-of-kin to businesses through assistance to the leading traders and harvesters. This is made possible by providing additional labour, which increases harvest quantities for harvesters and trading working hours for traders in urban markets in Thohoyandou, Giyani and Makhado. The chapter has also shown that the

[27] In Setswana, "motshelo" is a colloquial term used to describe a voluntary rotating communal fund to which members contributes an agreed-upon amount, which is then given to a rotating member of the group at a stipulated period.

social considerations of the actors, to a greater extent, influence the entrance into mopane worm harvesting and trading. The encouragement from the next-of-kin, desire for employment and income, and the need to meet household needs served as motivations for the harvesters and traders to ply their trade in harvesting and trading mopane worms. Both in Botswana and South Africa, these motivations are intricately linked to the socio-economic challenges resulting from high unemployment and non-existent economic activities in the localities in which local people depend on mopane worm harvesting and trading.

The chapter further highlighted the additional benefits derived from the social circles, which all are beneficial for marketing and trading. These benefits result from the social capital and rapport created among the traders and continue to strengthen the social networks among the traders. Although mopane worm harvesting and trading are often centred around an individual, or at times family members, the contribution of social capital in the entrepreneurial success of the harvesters and traders demonstrates interconnectedness among the actors. Such interconnectedness often serves as a basis for access to information; capital; credit and loans; and labour, critical to trader competitiveness. However, not all traders and harvesters used their social capital to leverage business success. Their success depended partly on how the actors may be influential among their peers and their overall role in the value chain. This chapter shows the various ways in which social capital in the form of networks serves as a resource for aiding actors to navigate the constraints associated with mopane worm commercialisation. Importantly, social capital allows actors to minimise the impact of marginalisation and restrictions on access to resources and markets by providing a system of support within which actors are embedded. Drawing from the informality conceptualisation outlined in chapter 2, the insights from this chapter demonstrate that social capital aids actors to seamlessly transition along the informality continuum to support their livelihoods. The insights from this chapter further demonstrate that human agency not only provides power for powerless actors (Foucault, 1980; Hocker & Wilmot, 2014), but enables use of creativity (Cleaver, 2002; De Koning, 2011; Ingram et al., 2015) and dynamism to navigate constraints across the trade chain (Giddens, 1984; Kooiman & Bavinck, 2005). This allows actors to navigate the governance arrangements and maximise the opportunities therein. The next chapter discusses the statutory and customary regulation of mopane worm trade and the ways in which they configure access, harvesting and marketing.

CHAPTER 7: ACCESS, HARVEST AND TRADE REGULATION OF MOPANE WORMS

7.1 Introduction

The previous chapter discussed the ways in which social capital manifests in providing capacity to actors across mopane worms trade. This chapter focuses on the statutory and customary regulations that govern access, harvesting and marketing of mopane worms. Conceptually, governance influences how people access and use resources. In practice, multiple governance actors, approaches and overlapping mandates lead to far more complex arrangements, which create constraints and opportunities differently actors that trade chain. This chapter builds on the governance theories outlined in chapter two to analyse the governance arrangements over mopane worm access and trade.

The chapter pays attention to the strategies used by DFRR, dikgosi and livestock farmers in Botswana to control and sanction mopane worm access, harvesting and marketing. The chapter further examines the role and importance of customary rules and norms observed by harvesters and traders, which impact the use and trade patterns of mopane worms. These include taboos, other societal norms and rules developed over time among the actors in the trade chain. On the governance of markets and trading, attention is paid to the various ways in which traders and dealers navigate through the legal and informal rules and regulations of the trading markets within five towns in Limpopo Province, South Africa. The chapter is organised into four sections. The first section provides details of the statutory frameworks on mopane worm regulation in Botswana and South Africa. The second section discusses the implementation of statutory regulations and their challenges across four villages in the Central District in Botswana. The third section discusses the customary rules and practices of regulating the access to mopane worms and their enforcement in Botswana.[28] The fourth section focuses on the regulation of markets and trading in Makhado, Thulamela, Collins

[28] The customary governance of mopane worm harvesting in South Africa was not the focus of this research. For a discussion of the topic see Sekonya et. al. (2020).

Chabane and Greater Giyani local municipalities in Limpopo Province, South Africa. The conclusion contextualises the constraints across the trade and imformal arrangements particularly in contexts where statutory and customary governance systems are either absent or unenforced

7.2 The Statutory Governance of Mopane Worm Harvesting and Trade

This section focuses on the statutory frameworks that mandate the regulation of harvesting and trade of wild products. The mopane worm trade governance in both countries involved multiple institutional frameworks, rules, decision-making processes, and measures that regulated access, harvesting, and marketing. Through formal rules and the relevant institutions, the state remained a crucial player in both countries. In South Africa, essential laws for regulating mopane worm access and trade are the *National Forest Act* (*No. 84 of 1998*)*, National Environmental Management: Protected Areas Act* (*No. 57 of 2003*) (*NEMPAA*), *Customs and Excise Act* (*No. 91 of 1964*) and the municipal street trading by-laws. In Botswana, the relevant statutory frameworks are the *Agricultural Resources Conservation Act* (*No. 17 of 1979*), *Forest Act* (*No. 8 of 2005*)*, Bogosi Act* (*No. 9 of 2008*), *Customary Law Act* (*No. 51 of 1969*) and the *Customs and Excise Duty Act* (*No. 22 of 1970*).

7.2.1 Statutory frameworks in South Africa

A central principle in the South African legal framework was promoting sustainable use of biodiversity and redress for disadvantaged communities. The principle flows from the environmental clause of the *Constitution of the Republic of South Africa*, *Act 108 of 1996*. The principle seeks to promote sustainable access and use of biodiversity by impoverished communities. Section 24(a)(iii) of the Constitution provides for the right to secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development. However, the statutory regulatory framework for NTFPs in South Africa is characterised by many policy measures and provisions for resource use and access rights, prohibition, and species-specific regulatory regimes. Some of these policies have overlapping mandates and objectives and have been criticised for creating complexities and confusion among regulatory institutions and resource users (Shackleton, 2009). The complexity and unique nature of NTFPs result from the diversity of plant and animal species,

diverse ecologies, livelihoods, market niches, and management related to the NTFP value chains (Wynberg et al., 2012). Although mopane worms were not endangered, listed, or prohibited species for use, their access and trade were still indirectly subject to numerous laws. See Table 7.1 below for an overview of the legislation and provisions with relevance to mopane worm livelihoods.

The regulatory tools employed by the Makhado, Thulamela, Collins Chabane and Greater Giyani Local Municipalities shared some common features across all the jurisdictions. All these municipalities required the hawkers and/or vendors in their urban centres to apply for and obtain traders' permits. The permits make no distinction between the foodstuffs or products being traded by the hawkers; thus, all types of street hawkers are expected to comply with the same trading bylaw in the respective municipalities. According to the Thulamela municipality bylaw[29] on hawker permits, these are implemented to regulate the hygiene, location, density and keep account of all traders in the designated areas within their authority. The permit regime has continued to receive a lukewarm reception by the hawkers with reservations about the fairness of the regime. Some traders complained that the municipalities were focused on enforcing the permits upon locals while ignoring the foreign nationals traded without any permits.

[29] Thulamela Municipality Street Trading Bylaw, Provincial Notice 109 of 2017

Table 7.1 Statutory framework for the regulation of mopane worms in South Africa

Legislation	**Implementing agency**	**Provisions with relevance to mopane worm livelihoods**
National Forests Act (No. 84 of 1998)	Department of Environment, Forestry and Fisheries (DEFF)	Provides for the issue of access permits for domestic use of state forests[30]
National Environmental Management: Protected Areas Act (No. 57 of 2003)	DEFF	Promotes sustainable management and use of mopane worms in protected areas
National Environmental Management: Biodiversity Act (No. 10 of 2004)	DEFF	Provides for the management and conservation of biodiversity, including indigenous biological resources in a sustainable manner
Customs and Excise Act (No. 91 of 1964) (as amended)	SARS	Provides for the calculation of custom duty levied on mopane worm imports
Municipal Street Trading By-laws[31,32,33]	All municipalities	Regulation of permit requirements for mopane worm traders
Traditional Leadership and Governance Framework Act (No. 41 of 2003)[34]	Cooperative Governance and Traditional Affairs (CoGTA)	Provides for the recognition, functions and roles of traditional leaders according to customary law customs of the traditional communities
Limpopo Environmental Management Act (No. 7 of 2003)	Limpopo Department of Economic Development, Environment and Tourism (LEDET)	Provides for the protection and conservation of the environment within Limpopo Province

[30] s23(1)(d)

[31] Thulamela Municipality Street Vending Bylaw, 2004

[32] Collins Chabane Local Municipality Street Trading By-law, 2019

[33] Makhado Local Municipality Trading, Street Trading Bylaw, 2012

[34] As amended by Traditional Leadership and Governance Framework Amendment (Act 23 of 2009)

7.2.1.1 National Forest Act

The National Forest Act (NFA) (No. 84 of 1998) aims to promote the sustainable use of forests. The Act contains provisions for consumptive and non-consumptive use of state forests (including woodlands).[35] The NFA allows unrestricted yet regulated access to state forests for subsistence use by local communities. According to a proclamation published under the Act, members of the communities who live in proximity of State forests and whose livelihoods depend on the forests were exempted from licences for access and forest resources in State forests. Access under this Act requires that the prospective users reside within 10 kilometres of the forest; that NTFPs harvested should be utilised for domestic, cultural, health or spiritual purposes. The proclamation gives limited powers to forest officials to set additional restrictions in pursuit of sustainable forest management and utilisation (Republic of South Africa, 2008a). This Act applies to mopane worm harvesting, especially in state forests.

7.2.1.2 National Environmental Management: Protected Areas Act

The *National Environmental Management Protected Areas Act* (NEMPAA) (*No. 57 of 2003*) regulates the conservation, management and use of biodiversity in protected areas. The Act sets out to promote the sustainable use and participation of local communities in protected areas. While mopane worm harvesting remains restricted in protected areas, conservation authorities have in the past piloted access and harvesting under the provisions of this Act in the Kruger National Park (Swemmer et al., 2015; Sekonya et al., 2020).

7.2.1.3 National Environmental Management: Biodiversity Act

The *National Environmental Management: Biodiversity Act*, (NEMBA) (*No. 10 of 2004*) regulates the management and conservation of biological diversity. The Act applies within and outside protected areas thus encompassing any human activity affecting South Africa's biological diversity. The relevance of this Act to mopane worm use is its promotion of sustainable use of indigenous biological resources in a fair and equitable manner among stakeholders.

[35] s20; s23(1); s24(6); s26; s27

7.2.1.4 Customs and Excise Act

Although mopane worm imports are not subject to phytosanitary restrictions, their importation is subject to the *Customs and Excise Act* (*No. 91 of 1964*) (as amended). Therefore, any person who imports mopane worms into South Africa is required by law to declare the consignments at the border. The standard practice is that such declarations are made at the ports of entry. The *Customs and Excise Act* provides for the determination and calculation of the customs duty required. The customs officials at various border posts weigh and calculate the monetary value of mopane worm consignments, then determine the customs duty levied on the imports. For cross-border traders, this is the first tariff regime encountered upon arrival in South Africa, followed by a suite of municipal permit tariffs.

7.2.1.5 Municipal Street Trading By-laws

Mopane worm street trading in Elim, Makhado, Malamulele, Giyani and Thohoyandou is regulated through the street trading by-laws of the respective municipalities. The by-laws are similar across the municipalities and regulate street trading (including mopane worm trading) similarly. The by-laws prohibit any trading without a valid Council-issued permit. Vendors and cross-border traders are required to apply for the permits under these by-laws for authorisation to trade mopane worms in a designated kiosk or approved location. The by-laws further set out a procedure for issuing the permits, which includes, among other things, consulting with the hawker associations and leasing trading stalls. Some municipalities have simplified the application process to avoid complexities that may deter traders. For example, in Makhado, street trading permits are issued on the same day of application, provided relevant by-laws have been complied with (Makhado IDP, 2019). For traders utilising the municipality trading stalls, an additional monthly rent is charged, payable to the municipalities (Table 7.2).

Table 7.2 Street trading permits in Makhado, Thulamela, Giyani, and Collins Chabane Municipalities

Permit Type	Local Municipality	Cost
Street Trading Permit	Makhado	R240 Market stall rental fee
		R200 permit fee
	Thulamela	R250 permit fee
	Greater Giyani	R184 permit fee
	Collins Chabane	R250 Permit fee
		R100 Market stall rental fee

Source: Interview Data, 2018

7.2.1.6 Traditional Leadership and Governance Framework Act

The *Traditional Leadership and Governance Framework Act (No. 41 of 2003)* seeks to formalise the recognition, functions, and roles of traditional leadership within South Africa. For cooperative governance, the Act provides principles that guide the provincial or national government to provide administrative roles to traditional leaders regarding several thematic areas, including arts and culture, land administration, environment, and management of natural resources. The Act requires that such allocation be consistent with customary law and customs of the traditional communities to which the traditional leaders belong. The Act also requires the traditional leaders to perform their functions and roles in terms of customary law and practices of their traditional communities. Given that the traditional leaders customarily lead natural resource management in many rural communities in South Africa, this Act seems to be entrenching that approach for NTFP regulation.

7.2.1.7 Limpopo Environmental Management Act

The *Limpopo Environmental Management Act* (LEMA) (*No. 7 of 2003*) seeks to promote the sustainable use of natural resources and protect the environment in Limpopo Province. The Act also gives effect to the environmental clause contained in section 24 of the Constitution of South Africa. The Act makes provisions for the declaration of provincial parks, their management, and conditions for extraction of NTFPs for subsistence by local communities. This Act prohibits the collection or harvesting of biodiversity without a permit issued by the Member of the Executive Council (MEC). However, the Act does not include harvesting and

use of mopane worms. Of relevance to mopane worms is that the Act empowers the MEC or a delegated authority to provide a framework for managing biodiversity in provincial parks.

Overall, the statutory framework in South Africa provides a basis for a comprehensive system of governing wild products access and use. However, none of the frameworks has any specific focus on mopane worms and unambiguous provisions regulating the trade of mopane worms. This feature of the South African statutory framework accords little attention to mopane worms despite the significant contribution of mopane worms to livelihoods. In practice, this implies that mopane worms are regulated collectively like any other NTFPs despite the diversity of the products, trade dynamics and livelihoods associated with them. A key outcome of such an approach to governance is confusion and lack of clarity in terms of the roles of governing actors (Shackleton, 2009).

7.2.2 Statutory framework in Botswana

This section discusses the regulatory framework in Botswana. Similar to South Africa, many laws characterise the statutory regulation of NTFPs in Botswana. The central theme of the various NTFP-related laws in Botswana is premised on prohibiting or restricting the access and use of NTFPs. These laws impose permitting requirements for users, set conditions under which specific resources may be harvested and traded, and accord certain privileges to residents and communities in designated districts across Botswana. The central laws in this context are listed and discussed in Table 7.3 below, which provides an overview of the legislation and provisions relevant to mopane worm livelihoods.

Table 7.3 Statutory framework regulating mopane worms in Botswana

Legislation	**Implementing agency**	**Provisions with relevance to mopane worm livelihoods**
Agricultural Resources Conservation Act (act 17, 1979) Utilisation of Veld Products Regulations (S.I. no. 59 of 2011)	DFRR	Prohibits harvesting, trade, and export of mopane worms without a valid permit Imposes a penalty of P1000 or 1-year imprisonment for transgressors
Forest Act (Act 8, 2005)	Department of Wildlife and	Prohibits any harvesting of NTFPs and timber products in a Forest Reserve

	National Parks (DWNP)	Permits harvesting NTFPs on State land[36] only for private household use or consumption
Natural Resources Protection By-laws (Cap. 40:01)	District Councils	Prohibits NTFP harvesting without a permit issued by the Secretary of the District Council
Customs and Excise Act (Cap. 50:01)	Botswana Unified Revenue Service (BURS)	Provides for the calculation and collection of customs duty on mopane worms exports from Botswana
Customary Law Act (Act 51, 1969)	Traditional Authorities	Permits the traditional authorities and customary courts to settle civil matters arising between community members
Bogosi Act (Act 9, 2008)	Traditional Authorities	Provides for a traditional leader to uphold customary law according to their community

7.2.2.1 Agricultural Resources Conservation Act

The *Agricultural Resources Conservation Act (Act 17, 1979)* regulates the access and trading of mopane worms and other NTFPs in Botswana. The current *Agricultural Resource Utilisation Regulations 2006* (amended in 2011) prohibit any persons from harvesting, trading, and exporting mopane worms without a valid harvester, dealer, or export permit. Regarding harvesting, the regulations require harvesters to obtain a permit if the amount to be harvested exceeds 10kg per person per month. Dealers and exporters are required to obtain permits from the forestry department before commencing with any trade or exportation of mopane worms regardless of the intended trade or export volume (see Table 7.4 for permit types in Botswana). Offences, which include contraventions or making a false statement to obtain a permit, are punishable by a fine not exceeding P1000 (US$ 90,59)[37] or imprisonment for up to a year or both.

[36] State land is defined in the *State Land Act (Cap: 32:01)* as any unalienated state land and reacquired state land and includes any land outside Botswana ownership whereof is vested in the Republic

[37] At the exchange rate of BWP1 equivalent to US$ 0,091 (07/10/2019)

Table 7.4 Permit types in Botswana for access and trade of veld products

For Local Batswana			
Permit Type	Price	Permit restriction	Purpose of the permit
Harvest Permit	P52	10 kg or above restricted to local Batswana harvesters	Required for harvesting and trading the harvest
Dealers Permit	P50	Restricted to local Batswana dealers	Required for dealing only
Export Permit	P500	Restricted to local Batswana exporters	Required for exportation only
For Foreigners			
Dealers Permit	P300	Authorises foreign holders to purchase from harvesters and traders	Required for dealing only
Export Permit	P2000	Authorises foreign holder to export	Required for exportation only

Source: Primary Data, 2018-2019

7.2.2.2 Forest Act

The *Forest Act* (*Act 8, 2005*) makes provision for the better regulation and protection of forests and forest produce. Accordingly, the Act prohibits NTFP harvesting in forests, forest reserves and state land, subject to a permit and household use of the harvested products.[38] However, the Act permits the harvesting and use of forest resources for inhabitants of gazetted towns and settlements. The currently gazetted settlements are Kasane, Kazungula and Lesoma to access forest produce in the Kasane forest reserve.[39]

7.2.2.3 Natural Resources Protection By-laws

The Natural Resources Protection By-laws are intended to guide the District Councils to enact and regulate the use of natural resources, including firewood, thatching grass, veld products and river reeds. Accordingly, the bylaw restricts the utilisation of any natural resource except per the terms and conditions of a removal permit issued by the District Council. The by-law

[38] s13(1)(b)(i).

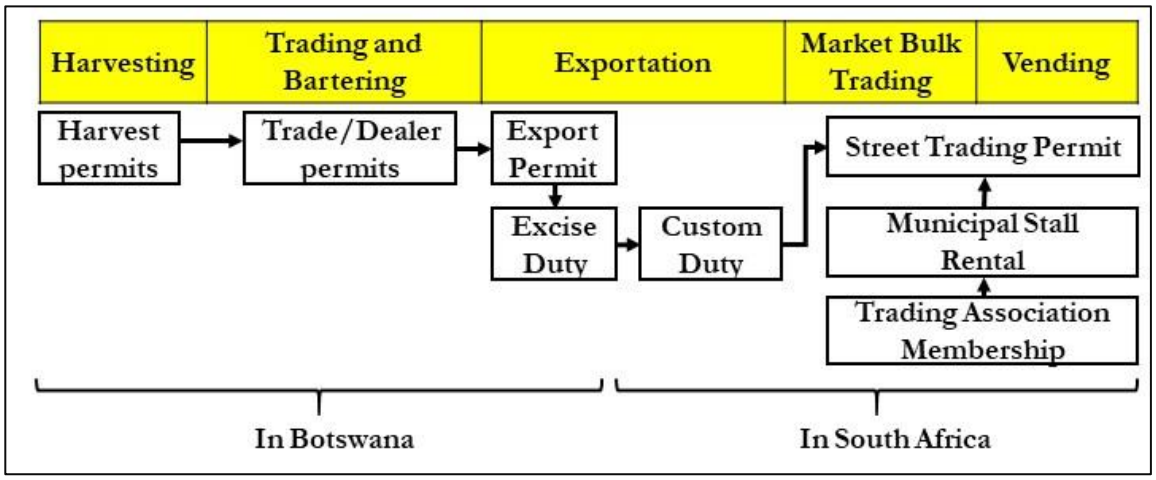
[39] Forest (Exemption of Certain Villages from Prohibited Acts in Forest Reserves) Order s2 & 3.

further requires the council to issue permits for resources harvested within its authority by residents.

7.2.2.4 Bogosi Act

The *Bogosi Act* (Act 9, 2008) provides for the powers and roles of traditional leaders in terms of customary law in Botswana. Under the Act, dikgosi are empowered to exercise powers to promote the welfare of their communities and preside over cases in terms of warrants issued by customary courts. The Act also criminalises undermining a lawful instruction of kgosi, and empowers kgosi to enforce the customary governance of resources through issuing decrees and declarations, which promoting sustainable harvesting practices, and ensure adherence to customary and statutory regulations and rules.

Overall, the governance framework contains a specific focus on mopane worms access, use and trade (see figure 7.1 below), which provides a useful basis for streamlined regulation. However, the regulations are inherently restrictive and thus introduce bottlenecks and constraints for resource users. Given the importance of mopane worms for households incomes and subsistence use, such bottlenecks have negative impacts. Moreover, the effect of these bottlenecks on resources is varied such that impacts are not uniform. The practical implications of the regulations are discussed in the section below and revisited in chapter eight.



Source: George Sekonya

Figure 7.1 Mopane worm trade and applicable compliance requirements along the trade chain in Botswana and South Africa

7.3 Challenges of Formal Regulation Implementation in Central District, Botswana

This section turns attention to the myriad challenges that beset the statutory regulation in the Central District, Botswana. The focus is specifically on the Central District as an important source region for mopane worm that is exported into the markets in South Africa. Therefore, governance arrangements and their outcomes have an effect in the cross-border trade. The implementation of regulatory frameworks in Botswana has not been a smooth process for the authorities, and equally, their uptake by harvesters and traders has shown an inconsistent trend. For harvesters and traders, circumventing the formal regulations has become more widespread and increasingly normalised, with some harvesters openly declaring their opposition. The objections to the formal regulations were rooted in the belief that the regulations have hampered the ability of the harvesters and traders to access mopane worms. Five broad themes emerged from the analysis. These included notions of regulatory overburden, inconsistencies in information sharing, cost liabilities, inefficient permit administration, and the incapacity of the institutions to administer the permit system. Details of the challenges are discussed hereunder.

The cross-border transfer of mopane worms from Botswana into South Africa presented a high cost for the traders both in terms of effort and financially. When moving across the border, traders had to comply with many laws, regulations, and policies, sometimes inconsistent between the countries. Mopane worms are a regulated species in Botswana. As a result, harvesting and dealing in mopane worms can only be conducted by permitted individuals. At the time of research, Botswana had three different types of permits applicable for the local actors. These were harvest, dealers, and export permits. The harvest permit was only issued to local Batswana. It allowed the holder to harvest mopane worms in communal areas anywhere in Botswana, subject to obtaining permission from local kgosi. Holders are also required to obtain express permission from landowners before harvesting on privately owned farms. The dealer's permits were be issued to any individual and permitted the holder to purchase and trade mopane worms within Botswana. The export permits were issued to any person for the sole purpose of exporting mopane worms from Botswana to any country. This

permit was required by customs officers during the declaration of consignments when exiting Botswana. Several aspects are discussed in turn.

7.3.1 Regulatory overburden and overlaps

Access to mopane worms in Botswana required the careful negotiation of statutory and customary regulatory regimes. At the time of this research, most of the harvesting in Mogapi, Mogapinyana, Tsetsebjwe and Sefophe occurred in communal areas and under a communal access regime. Additionally, some harvesting occurred in privately owned ranches, cattle posts, and fields. The standard legal requirement with which all harvesters needed to comply in all these tenurial regimes was a harvest permit from DFRR. The department was thus the single most important institutional actor in regulating the harvest and trade of mopane worms. Most of the participants were aware that DFRR did essential formal regulation duties. Harvesters affirmed the role of DFRR in issuing harvest and trade permits as vital for the trade. Declaring the commencement of harvest season positioned DFRR as the single most important regulatory actor. The overall responses of the participants on the question of DFRR's role demonstrated that the department is a pivotal player in the implementation of the statutory regulation regime.

Harvester awareness about the permit regulations and the issuing authority did not necessarily translate into acceptance and compliance. Harvesters in Tsetsebjwe, for example, were adamant that the formal regulation was unnecessary, costly, and burdensome. This created a disincentive for compliance. The disincentive was also partly due to weak enforcement, which allowed some people to get away with harvesting without permits. Other concerns centred around perceptions that the permits were unfair, irrational, time-consuming, and inaccessible. The perceived irrationality of the regulatory regime was centred on the lack of consultation before the enforcement of the permits system. This was expressed in frustration by kgosi of Lerala, who was concerned that the DFRR showed a lack of urgency in distributing permits at the Kgotla, although mopane worms were at a suitable stage for harvesting. In Mogapi, harvesters questioned the decision to force poor people and pensioners to travel 200 km to Francistown to obtain the permits unavailable at Serowe and Selebi Phikwe DFRR offices.

The role of dikgosi is determined by customary law, which confers custodianship of tribal

norms and rules on dikgosi. Some of the essential roles included declaring the commencement of harvest season and regulating the harvesting activities according to custom. At the time of data collection, these roles were undertaken in liaison with DFRR. For example, in some seasons, dikgosi may seek the assistance of the DFRR and police to enforce the rules. However, harvesters expected their dikgosi to be doing more than law enforcement duties. A principal concern for the harvesters was that dikgosi were not doing enough to persuade the DFRR to issue permits at the Kgotla at the onset of the outbreak. Some harvesters indicated that dikgosi should actively regulate access to the harvesting areas and the influx of nonlocal harvesters in tribal areas. Although the prospective harvesters were required to have permits, most reported that the local kgosi still required them to introduce themselves and seek permission upon arrival at the intended place of harvest, after which the harvesters would be granted or declined access. This rule was more strictly enforced in Elibi and Moletemane and restricted the perceived influx of nonlocal harvesters in the area. The harvesters felt having permits should suffice in securing access to mopane worms. The DFRR and dikgosi confirmed that harvesters need to seek consent from kgosi wherever they intended to harvest according to Setswana custom before applying for the permits. Also, the permit holder was required to obtain consent from a traditional leader in any area that they wanted to harvest. Notably, such locality would have to be indicated on the permit.

The customs authorities played a regulatory role by enforcing regulations on custom duty within the trade. Cross-border traders who frequently travel between the Central District in Botswana and Limpopo Province in South Africa were required to pay a customs duty to the BURS and SARS. In Botswana, the BURS customs officials required the export permit before processing the consignment to calculate the customs duty. Further, the cross-border traders were required to obtain an export permit at the border, although it was unclear if this was a permit or just a duty. On the South African side, the exporters had to pay customs duty, calculated based on consignment weight.[40] The existing regulatory regimes created multiple regulatory bottlenecks along the trade chain, especially the costs of obtaining all the permits.

[40] The rate was R10 per kg of mopane worms on 28 March 2018.

7.3.2 Information and communication constraints

Inaccessibility to information on the implementation of Veld Products Regulations in Botswana was noted as a source of anguish for harvesters. Although the introduction of permits caught harvesters by surprise in 2011,[41] the lack of clarity in the purpose of the permits was what concerned most harvesters and traders. It appeared from their comments that the government was perceived to have introduced the permits as a revenue stream instead of as a measure to ensure sustainable use of resources. This view was shared by one harvester as follows:

> '*We just saw them implementing the permits, but they did not tell us what the end goal of these permits regarding the commercial trade of mopane worms would be*' (Interview, Mogapi, Tebogo, 06/02/2019).

The information and communication void inadvertently led to the build-up of resistance to permits which potentially undermined the efficiency of the formal regulatory system. This point was emphasised by harvesters who shared that they had no formal rules to comply with until recently. Instead, applicable customary rules which were understood by the harvesters and easy to follow were applied. However, this was no longer the case because they were informed that they had to comply with permit regulations, about which most harvesters had no prior knowledge. Officers from DFRR confirmed that the regulations had been in existence since 2006 with the release of S.I. 89 of 2006. However, enforcement was not implemented until 2013 (Modikwa, 2013).

Some of the concerns of harvesters pertained to the restrictions which were imposed through the permits. For example, the permits stated limits on quantities that each permit holder could harvest and a restriction on the day on which harvesting could commence. A key concern was that permit holders were obliged to comply with these restrictions. The nonpermitted harvesters were at liberty to harvest as much as they could manage and often commenced harvesting long before the season was declared open by the forestry department. According to the harvesters, this created an unfair disadvantage for the permitted harvester and the

[41] The regulations were introduced in 2006. However, strict enforcement seemed to have begun in 2011 according to experiences shared by the harvesters.

unpermitted harvesters. However, the restrictions contained in the conditions of the permit were not explained to the harvesters. Thus, most permit holders were always involuntarily in violation of the conditions.

7.3.3 Costs

Another motivation for noncompliance was the cost difference between mopane worm harvest permits and other NTFPs such as thatching grass. While a combined harvest and trade permit cost P52 for mopane worms, a thatching grass permit cost only P5. Mopane worm harvesters saw this cost difference as an unfair and inhibitory restriction by the forestry department. Moreover, some of the harvesters were aggrieved because the department made no distinction between harvesters and traders. According to the harvesters, it was unfair to levy the same price to harvesters and traders, although their profits differed significantly. Accordingly, some felt that charging mopane worm harvesters a low fee or no fee at all would be a reasonable alternative. This narrative resonated with poor harvesters who had minimal prospects of employment, and who eked a livelihood out of harvesting and selling or bartering mopane worms in addition to other activities. Some of the staunch opponents of the indiscriminate application of harvesting regulations expressed motivation of their noncompliance in this way:

> '*The problem is that they do not differentiate between the harvesters and the traders. They treat us all the same. A harvester pays P52 for a permit, and the commercial trader also pays P52 for the permits. This makes no difference for the harvesters and is of no value. The permits should be for the traders and not the harvesters*' (Interview, Mogapi, Tebogo, 06/02/2019).

The DFRR was adamant that the rationale for regulating access and trade of mopane worms through the permits and other measures were intended to facilitate a culture of sustainable use and promote conservation and management of NTFPs. While mopane worm harvesters felt unjustly targeted, the DFRR's approach was to ensure that NTFPs were used sustainably to protect livelihoods and users and not only those who were trading mopane worms (Olga, DFRR Officer, *pers. comm*., 18/12/2019).

Harvesters lamented that the regulation of harvesting through permits created a system that forced them to travel to the regional offices in Serowe, Selebi Phikwe or Francistown to get

permits. As a result, only those who could afford the costs could obtain the permits and legally access and trade mopane worms. For some, this was an insurmountable hurdle as they could not afford the permit price and the transport. The limitation and exclusion had consequences for access to mopane worms, a vital livelihood resource in rural areas of the Central District. The respondents felt that the lack of adequate outlets at which harvesters could obtain permits was a critical barrier to accessing the permit. Harvesters, especially in Mogapi, Mogapinyana and Tsetsebjwe, expressed their desire for the forestry department to use their local Kgotlas as the permit-issuing sites during the outbreaks. According to the suggestions, this would eliminate the costs of travelling to either Serowe or Selebi Phikwe. These concerns were exacerbated by the fact that the forestry department had set up such issuing centres in other villages but could not do the same in Mogapi, Mogapinyana and Tsetsebjwe.

When asked about the justification for the permit costs, participants were unanimous in the view that the forestry department should consider waiving permit fees for the harvesters entirely. Respondents emphasised that the lack of distinction between harvesters and traders assumed that everyone who purchases the permit had the ambition to trade and succeed in trading their harvest. Some suggestions indicated that a worthwhile exercise in the regulation of mopane worm harvesting and trader would be to focus on the available administrative and enforcement resources on regulating the dealers and exporters instead of including the harvesters. The motivation for this suggestion was that harvesters were generating a low income from trading their harvest; therefore, any additional costs were further eroding their already low income. For example, at P52, the permit fee comprised about 20% of the P250 asking bucket price of mopane worms in Botswana. The inability to sell in some seasons turned the permit into a costly liability for the harvesters.

7.3.4 Permit administration

The harvesters and traders noted the late issuance of permits and declarations of the harvest seasons as among the critical challenges for formal regulation. According to the harvesters, they know the right time to harvest mopane worms by observing the caterpillar growth regularly. Some harvesters alluded to the fact that even if their observations were wrong, the declaration by kgosi would guide them to determine the commencement of the season. The harvesters felt that the timing of the forestry department was inaccurate every season. Some

believed that the forestry department opened the harvest season for an unjustifiably brief period. However, according to the forestry department, due diligence and ecological assessments were necessary before declaring the seasons. These were required to determine that the outbreak justified authorising harvesting and the harvest limits to be imposed per person. This had in the past involved coordinating with the police to undertake enforcement raids in the forests and woodlands (P. Kgomo, DFRR Officer, *pers. comm.*, 14/02/2019). However, harvesters felt that the forestry department delayed the commencement of the harvest and opened it for a brief period to increase the likelihood of more caterpillars burrowing underground. Some harvesters conceded that even if the delay strategy was a correct approach to protect mopane worms from overharvesting, the unintended consequences were that some people resorted to destructive harvesting practices to compensate for the lost harvest time. The comment below illustrates that while some harvesters were not dismissive of the permits, the implementation remained challenging.

> '*The problem is that the forestry department issues them* [permits] *late when the caterpillars are already burrowing. They should start issuing the permit when the moths are laying eggs or give us permanent permits so that when the harvesting seasons commence, we would have the permits. However, the current system prevents us from going into the forest because we must wait for the permits. We are losing precious time while waiting, and caterpillars are also leaving in that period*' (Interview, Mogapinyana, Tumi, 02/02/2019).

Most interviewees shared concerns regarding non-compliant harvesters. The overall perception was that the delays in issuing the permits provided an opportunity for illegal harvesters to harvest unhindered in the areas surrounding Sefophe and Tsetsebjwe. Aggrieved harvesters felt that people from urban areas such as Gaborone, Francistown and Maun were the main perpetrators of unsustainable harvesting practices because mopane worms were not an essential part of their livelihoods. Therefore, nonlocal harvesters never heeded the forestry department declaration. The local harvesters who opted to avoid harvesting pending the declaration of the forestry department felt cheated and increasingly began to question the rationality of the regulatory restrictions.

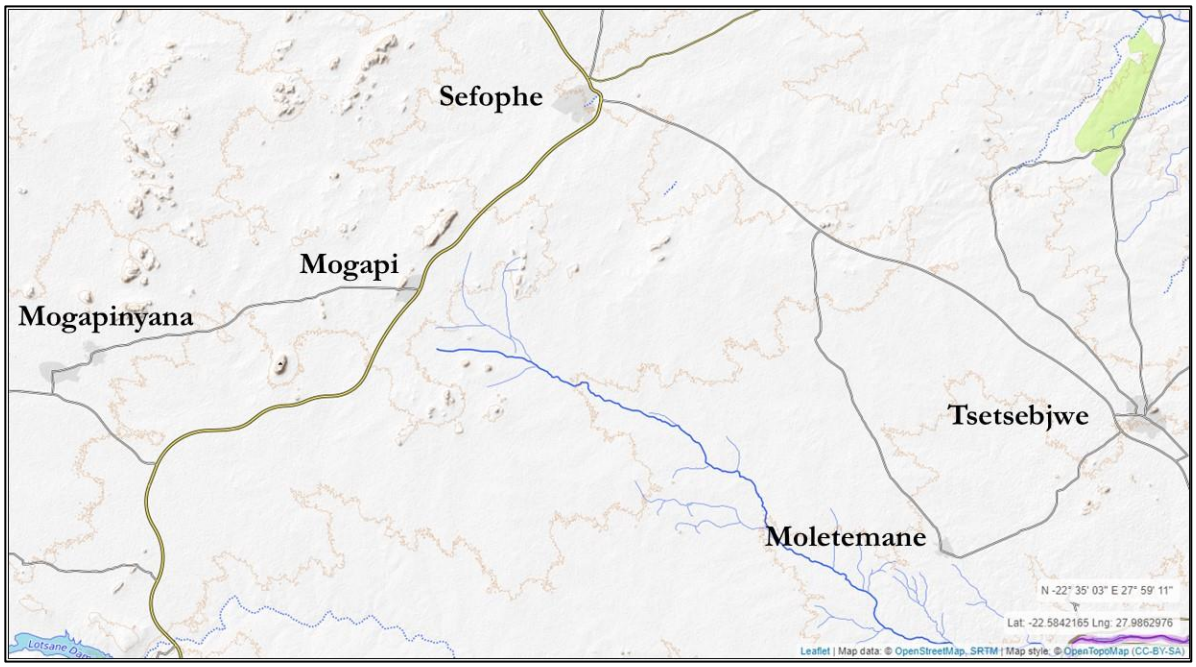
7.3.5 Institutional capacity

The responsibility to enforce formal rules remains the exclusive domain of the state actors. The areas which required concerted effort included enforcing harvester and dealer permit compliance, exportation and customs regulations, hawkers permit and immigration. These covered the cross-border movement of harvesters and traders in Botswana and South Africa. Although DFRR was responsible for issuing harvest and trade permits, participants felt that DFRR was implementing this mandate inconsistently. A view of DFRR was that the lack of resources and capacity to enforce the permit regulations were critical impediments (P Kgomo, DFRR Officer, *pers. comm.*, 14/02/2019). In their seasonal raids in forests and woodlands, DFRR often invited the participation of Botswana police to improve their capacity. Participants believed that the police and DFRR conducted raids at the instruction of dikgosi and were unfairly restricting harvesters who had legitimate claims to access and harvest mopane worms. Such incidents were observed in Mogapinyana, where dikgosi routinely sought the assistance of the DFRR and the police to assist in removing harvesters from the camps in the forests (see Figure 7.2 below).

Source: George Sekonya, Mogapinyana, 11/12/2019

Figure 7.2 DFRR and Botswana Police officers raid unpermitted harvesters' camp in Mogapinyana, Botswana.

Mopane trade role players questioned the capacity of the forestry department to manage the formal regulatory system, attributed to staff shortages and the lack of resources such as vehicles. Obakeng (DFRR Officer, *pers. comm.*, 11/12/2019) pointed out that the challenges facing DFRR in enforcing compliance were twofold. First, the DFRR had a limited vehicle fleet. As a result, providing transportation for the officials to the various sites across the Central District to evaluate the seasonal outbreaks was not feasible and practical. The second challenge was that the lack of vehicles limited the number of revenue collectors who could be dispatched to various Kgotlas to distribute the permits to prospective harvesters. To overcome these two issues, the DFRR had in 2018 utilised Moletemane Kgotla as a distribution point at which harvesters from neighbouring villages could access permits (P. Kgomo, DFRR Officer *pers. comm.*, 14/02/2019). Moletemane lies about 22km to Tsetsebjwe, 27km to Sefophe, 91km to Mogapi and 131km to Mogapinyana (see Figure 7.3). These efforts were seen by harvesters in Tsetsebjwe as exclusionary and only meant to benefit Moletemane harvesters. Although the distance between Moletemane and Tsetsebjwe is shorter compared to other villages, harvesters cited the lack of public transport, cost of arranging their own transport and lack of assurance of obtaining a permit upon arrival among the deterrents.



Source: OpenStreetMap contributors (CC-BY-SA)

Figure 7.3 Locations of the villages relative to each other.

Harvesters in other villages were also of the view that permits should be issued in their villages. A strong suggestion was that the DFRR should devolve the permit issuance to traditional leaders. According to the proponents of this alternative, the traditional leaders were best positioned to administer the permits since they interact daily with the local villagers and are thus more in touch with their communities. Secondly, Kgotlas are accessible and render other government services such as satellite police stations, Ipelegeng program, offices for the Village Development Committees (VDCs) and the venues for ministers and the president to hold village meetings. However, it transpired during several engagements with the DFRR officers that the senior managers in the department were reluctant to sanction frequent field excursions such as conducting raids, inspections and providing updates to dikgosi and communities (Obakeng, DFRR Officer, *pers. comm.*, 11/12/2019). Some junior officers believed that the reluctance was motivated by the need to cut operational costs of the regional offices. However, this compromised the strategic objective of the DFRR, which is to promote sustainable use and protection of forest/natural resources. An official explanation was that DFRR lacked financial and human resources to conduct frequent monitoring operations. The DFRR cited the poor attendance of community meetings by the villagers as another reason for inefficiencies in the system (Olga, DFRR Officer, *pers. comm.*, 18/12/2019).

The challenges associated with statutory regulation were centred around poor acceptance and rejection of the regulations. This was partly due to the poor localisation of the governance arrangements and the ease with which non-compliant users could maintain access, thus disincentivising compliance. The key constraints such as compliance costs, bottlenecks due to ineffective information flow and incapacity of the DFRR led to the fragmentation of statutory regulation, which encourages clandestine ways of accessing resources.

7.4 Customary Governance of Mopane Worms

The customary governance system in Botswana places the institution of traditional leadership at the centre of mediating disputes to ensure consensus and compliance in applying communal rules, norms, and traditions. Regulating access and use of natural resources, including mopane worms, are some of the responsibilities of traditional leaders in many African customary law

systems (Mwalukomo & Patel, 2012; Mawere, 2014; Sowman et al., 2014). The sections below discuss the customary practices used in the regulation of mopane worms access and use. Table 7.5 below summarises the role of traditional leaders as perceived by the participants in various villages.

7.4.1 Access and harvesting enforcement across villages in Botswana

The role of traditional leaders in Mogapi, Mogapinyana, Sefophe and Tsetsebjwe included mediating between the customary norms and the statutory regulations to regulate access to mopane worms in their villages. Although according to some, the role of traditional leaders was clear in terms of the established norms, the exercise of the powers was not uniform. This may be a result of the interplay between statutory and customary norms. Harvesters often found themselves conflicted during the complex interplay between the two governance regimes. The section below discusses perceptions of harvesters towards the participation of the traditional leaders in regulating mopane worm access, the application of customary norms of access to mopane worms, and how the customary norms have been eroded by noncompliance and the effect of statutory regulations enforced by the government.

Table 7.5 Summary of Batswana harvester perceptions towards the role of traditional leaders in regulating mopane worms access and harvest

Perceived roles of Dikgosi	**% (n)**
Actively regulate harvesting or trading	47 (19)
Do not know/ Not involved in the regulation	38 (15)
Minimal involvement	15 (6)
Total	100 (40)

Source: Interview Data

7.4.1.1 Restrictive regulation of access and harvesting

The customary regulation of mopane worms in Botswana included determining the commencement and closure of the harvest season, setting rules on camping in the forest or cattle posts, controlling ownership of mopane worms on cattle posts and fields, controlling the influx of nonlocal harvesters, and preventing littering in the forests and woodlands. A combined 47% of the harvesters across Mogapi, Mogapinyana Sefophe and Tsetsebjwe (see

Table 7.5) concurred that the dikgosi were actively involved in applying and enforcing customary rules on accessing and harvesting mopane worms. A common concern for the Dikgosi in Tsetsebjwe, Sefophe, Mogapi, and Mogapinyana were the unsustainable harvesting practices of the harvesters.[42] These include premature and late harvesting, littering and unsanctioned camping in the forest. These concerns are centred around the need to allow the caterpillars to reach maturity before harvesting and cease harvest season when the caterpillars begin burrowing. The perceived inefficiency of DFRR has members of the house of traditional leadership lobbying for dikgosi to be accorded more power to regulate access and harvesting according to customary rules to mitigate against unsustainable harvesting.

In the 2018 harvest season, the kgosi of Mogapinyana village had sought actively to regulate the commencement and closure of the harvest season. He announced at a Kgotla meeting that no harvesters should set up camps in the forests. Instead, people should camp in the cattle posts. Those who could not successfully negotiate agreements with cattle post owners were told to find accommodation in the villages. The announcement was intended to achieve two objectives. First, to mark the beginning of the harvest season. This was even though harvesters were still required to obtain permits from DFRR. Secondly, to conscientise the harvesters about the risks of harvesting juvenile caterpillars and digging pupae or burrowing caterpillars. Other issues discussed at the Kgotla meeting included warning harvesters on personal safety and avoiding littering in the forests. This intervention was necessitated by previous incidents of missing people, robberies, stock theft and other criminal acts in other popular harvesting areas, including Mathathane, Seletswe and Botshabelo, some of which had caught the attention of news outlets (Modikwa, 2010; Mokgethi, 2017).

Kgosi of Tsetsebjwe made interventions to instil some order in the conduct of nonlocal harvesters concerning harvesting practices, littering at the camps and impact on livestock animal wellbeing. As part of the interventions, kgosi had turned back these harvesters and refused them access because mopane worms had not reached the harvestable size; therefore,

[42] These concerns were consistently expressed by the respective traditional leaders when the research team visited their offices to introduce the study and seek permission to conduct interviews in the villages.

harvesters had to leave the camps and go back to their homes. Despite the enforcement of customary rules and norms, harvesters continued to defy the authority of these institutions. For example, in Tsetsebjwe, harvesters sometimes refused to leave the camps in defiance of kgosi. Another harvester from Tsetsebjwe shared this view and said:

> '*Some of the harvesters told the kgosi that he does not own the land; instead, every Motswana has a right to access the resources anywhere. Kgosi tries to curb the influx of nonlocals who crowd the forest and the village in the harvest period*' (Interview, Tsetsebjwe, Leticia, 11/02/2019).

7.4.1.2 Partial regulation of access and harvesting

A standard view amongst interviewees was that dikgosi were only partially regulating mopane worms according to customs. These respondents raised several concerns, including that their dikgosi were merely providing encouragement to observe the rules and did not sanction any enforcement in their villages. Four broad themes emerged from the analysis of harvester narratives in Tsetsebjwe and Mogapi, namely: trespassing cattle posts and fields; forest camping; trading at Kgotla; and the declaration of the harvest season. Harvesters have gained a bad reputation for invading farms and cattle posts to access mopane worms without seeking the permission of the property owners. While most of the harvesters indicated that they would seek consent from landowners, some felt that if no one were present, they would just enter the farms and harvest mopane worms. Kgosi of Tsetsebjwe shared that sometimes harvesters invade his farm. Harvest camps were regarded negatively because they resulted in pollution of grazing land, facilitated the uncontrolled influx of harvesters, and resulted in criminality acts. Increasingly, dikgosi preferred the harvesters to arrange accommodation in the villages and go into the forest only during the day. However, the DFRR officials confirmed an increase in the amount and sizes of camps that are raided every year (Obakeng, DFRR Officer, *pers. comm.*, 11/12/2019). As a result, the locals had grown impatient with what they call the inaction of their leaders to enforce customary rules. Trading at the Kgotla is one way of ensuring that cross-border traders and dealers would not coerce harvesters. From time to time, dikgosi encouraged harvesters to trade mopane worms at the Kgotla every season. However, when harvesters did not take heed of this call, dikgosi also abandoned the idea. Most of the harvesters believed that their combined bargaining power would be beneficial if all harvesters were to trade at a single market. However, the lack of implementation of this idea was blamed on dikgosi as the leaders of society.

The declaration of the harvest season when the caterpillars are at maturity is a crucial step to promote sustainable harvesting and protect the population of mopane worms. However, some harvesters no longer heeded the pronouncements of the traditional leader on the declaration of the harvest season. This development arose from confusion as to who the real regulator was between dikgosi and DFRR. While leaders undertook raids and issued announcements to curb the prevalence of premature harvesting, some local harvesters still felt that the efforts were inadequate. In Tsetsebjwe, some villagers demanded that their kgosi take a bold step of expelling nonlocal harvesters for noncompliance with customary rules and norms. According to the respondents, this would motivate nonlocals to comply with the established rules of access and harvesting mopane worms. This view was canvassed on the belief that the possibility of losing access to mopane worms would provide enough of a deterrent factor to transgressors. There was also a sense in Tsetsebjwe that although the kgosi was opposed to transgressions such as premature harvesting and camping in the forest, he was still not willing to expel any transgressors.

Another reported problem was that of harvesters who camped in the forest long before the kgosi declared the commencement of the season. Although camping is not necessarily a problem if harvesters are compliant with customary rules and statutory regulations, harvesters were worried that early camping by the nonlocals often results in premature harvesting of caterpillars. Nonetheless, the nonlocal harvesters whose camps were raised during the data collection expressed that although they transgressed by camping before harvest season commenced, they were careful to avoid harvesting juvenile caterpillars and other destructive harvesting practices. Harvesters believed that the traditional leaders had to play a leading role to curb the rising number of people who camp before caterpillars reach maturity. Residents in Mogapi were critical of their kgosi's perceived reluctance to assert his authority to regulate transgressing harvesters.

7.4.1.3 Non-existent customary regulation

A combined 38% (15) of harvesters in Mogapi, Mogapinyana, Tsetsebjwe and Sefophe felt that their leaders were either not playing any role or had not seen any effort by their traditional leaders (see Table 7.5). Common themes in this category ranged from those who believed that

dikgosi were not interested in regulating harvesting to those who believed dikgosi had no control; therefore, they could not do anything. Issues related to the lack of control were particularly prominent among harvesters in Mogapinyana and Sefophe. While discussing the influence of the kgosi in Mogapinyana, harvesters indicated that the local kgosi had no interest in assisting local harvesters against the influx of nonlocal and other transgressors. The lack of interest was shared by some of Mogapinyana harvesters who felt that the kgosi was not sufficiently engaging with DFRR to issue permits at the local Kgotla. However, the powers of the kgosi are limited in influencing the decision of DFRR to issue permits. Among other things, DFRR had to consider the areas with a significant outbreak and centrally located villages as distribution sites to maximise their limited fleet and human resources. Harvesters shared similar expressions of the lack of interest of the kgosi in Sefophe. However, there was a sense amongst interviewees that the traditional leaders had opted not to interfere with the harvesting and trading of mopane worms.

The discontentment of the harvesters with the perceived minimal role of the kgosi in Sefophe was indicative of the overall ceremonial role of the kgosi in the present-day Botswana context. Some of the harvesters felt that they could no longer say that they have a kgosi interested in protecting their livelihoods and addressing their grievances. More than anything else, the decline in the influence of traditional leadership over NTFP regulation can be attributed to the regulatory framework governing NTFP harvesting and use in Botswana. The forestry department is the sole authority with powers to grant harvest and trade permits. This regulatory shift has taken any powers to govern mopane worms away from the dikgosi. Although customary influence remains, the lack of statutory powers to enforce any formal rules means that dikgosi cannot sanction any punishment to any transgressors regardless of rule violation. One respondent commented:

> '*We tried to inform the kgosi to regulate the commencement of harvesting season and closure. That has not been effective. We have also said that people who camp in the forest waiting to harvest, although the local people are still waiting for the worms to reach maturity, must be chased away*' (Interview, Mogapinyana, Mogau, 06/02/2019).

This section has shown that despite the continued active role of traditional leaders in local government matters in Botswana, their influence over NTFP regulation is waning. The decline

is partly due to the usurping of the regulatory powers by the DFRR. Overlaying statutory regulation over customary forms of governance was central to the confusion among local resource users who expected traditional leaders to regulate the harvesting and trade of mopane worms.

7.4.2 Customary governance practices

The customary governance of natural resources in Botswana has relied upon customary practices and norms to manage natural resources. As part of the customary governance systems, these practices include a locally designed system of rights to resource ownership; authority to sanction access, harvesting or restriction to resources. Customary resource governance systems and many restrictions central to resource use are embedded within the taboos and ritual practices of the local communities (Johannes, 1978). For the communities who consider these practices to be an obligatory way of life, these rules, principles, notions, schemes of meaning comprise the living customary law which governs resource use (Benda-Beckmann, 1981; Bennett, 2008; Sunde, 2014). Customary practices governing the access and use of mopane worms occur widely due to Setswana cultural norms. Such rules and norms are often based on firmly held beliefs and taboos, where people believe that misfortune or harm would be cast on to the transgressors. Several taboos and beliefs govern the conduct of harvesters, the timing of harvest and the exclusion of specific harvesters. The common taboos relevant to mopane worm harvesting are related to women's menstruation, miscarriage, and abortion. Others included taboos on digging pupae and harvesting juvenile caterpillars. These taboos and beliefs are discussed below.

7.4.2.1 Early camping for harvesting (Go baya botsetsi)

Improper harvesting practices such as camping in the forest and woodlands to wait for the caterpillars to reach maturity (go baya botsetsi) and the actual harvesting of juvenile caterpillars are prohibited acts according to the taboos and norms of Setswana. According to the harvesters, no one should be allowed to camp in anticipation of the next harvest. This is prohibited because it encourages harvesters to begin harvesting juvenile caterpillars unmonitored and unrestricted. Concerns expressed by the harvesters were that harvesting juvenile caterpillars increased the harvesting window period as this would increase the overall quantity of caterpillars that the harvesters would collect. Such harvesting practices were

believed to lead to overharvesting. Other concerns were that the nonlocal harvesters who camped earlier than the locals would harvest all the caterpillars. These concerns were shared mostly in Mogapinyana and Tsetsebjwe. These harvesters felt that disregard of these critical taboos was contributing to the gradual decline in mopane worms. Some felt that the kgosi must proactively enforce the norms.

7.4.2.2 Menstruation, abortion, and miscarriage taboos[43]

A widely held belief among the harvesters is that it is taboo for a woman who had recently given birth, miscarried or aborted pregnancy to harvest mopane. According to Setswana customs, such women need to observe a period of confinement in which they do not engage in most ordinary daily activities. It is also believed that a woman who had just given birth is ill. Although the perceived illness requires no treatment and has no symptoms, the new mother must spend between a month to three months in confinement. They can encounter no one except the caregiver and close members of the family. Thus, such a person cannot leave their household for harvesting mopane worms.

Similarly, a woman who had just had a miscarriage or abortion is considered unclean and believed to 'pollute' anything and anyone they encounter. Such women are required to have a cleansing ritual. According to the interviewees, the purpose of restricting such women from harvesting mopane worms is that they will induce miscarriages in any pregnant cows which they may come close to in the cattle posts, forests and woodlands while harvesting. As a protective measure for the livestock, it is believed that such women should not harvest mopane worms. Harvesters across all the villages widely acknowledged this taboo. One interviewee commented:

'*Yes, there are some beliefs and norms that we must abide by, and most people are aware of them. For*

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[43] The discussion of this topic during the interviews was an uncomfortable exercise between the researcher, translator, and the interviewees. This was a result of the fact that the researcher and the translator were both males and younger than most of the female interviewees. This proved to be an insurmountable obstacle for many traditionally inclined elder women to discuss topics related to female reproductive issues and related cultural taboos. Nonetheless, the younger interviewees discussed the topics and taboos related to menstruation, abortion, and miscarriage.

example, a woman that has recently had a miscarriage is not supposed to harvest mopane worms. The belief is that if such a person gets close to livestock in the forest, the animals will miscarry too' (Interview, Mogapinyana, Jane, 02/02/2019).

According to the interviewees, women on their menstrual periods should not engage in harvesting mopane worms. Although the interviewees did not clarify the relationship between mopane worms and menstrual events, it was taboo. Taken together, these views on miscarriage, menstruation, and abortion taboos reflect the entrenched views in the broader society. Overall, topics around menstruation, abortion and miscarriage are never spoken about at ease and with freedom. Often, adults would treat such topics in secrecy and be limited only to women, with men seldom discussing such topics. The secrecy created a sense of embarrassment when discussing menstruation, abortion, and miscarriage. The stigma also created an added dimension of discomfort. These cultural attitudes continue to play a critical role in regulating accessibility to mopane worms. For example, livestock owners do not freely grant access to harvesters on their properties because 'unclean' harvesters would affect their livestock. Moreover, the illegality of abortion continues to reproduce the stigma. Presently abortion remains outlawed in Botswana except only under certain strict conditions.[44]

7.4.2.3 'Leaving the seed'

According to Setswana custom, it is forbidden to unearth mopane worms or pupae that have burrowed underground. The harvesters shared that harvesting intensity should be reduced towards the end of the harvest season when the caterpillars are in the 5th instar phase. During this phase, caterpillars cease foraging on leaves, move down the tree trunks and crawl on the ground. According to the harvesters, this marks the end of the harvest season as the caterpillars prepare for pupation. Traditional taboos prohibit harvesting mopane worms at this and the pupation stages. According to local beliefs, continued harvesting of burrowing caterpillars and

[44] According to the *Penal Code Amendment Act 1991*, doctors may be permitted to perform abortion when the pregnancy was a result of rape, defilement, or incest; puts the life of a mother at risk or may cause harm to her physical or mental health; or the foetus would suffer or later develop physical or mental abnormality.

unearthing pupae would induce mopane worms to migrate from that area. This belief was also shared by traders who, although they do not harvest, were aware that digging pupae would chase away mopane worms. A recurrent theme in the interviews was a sense amongst harvesters in Mogapi, Mogapinyana, Tsetsebjwe and Sefophe that it was essential to avoid harvesting mopane worms as they prepare to pupate. This was known by the harvesters as the seed for regeneration in the subsequent seasons that must be left for the sake of mopane worm population. Although the enforcement of the rules prohibiting unearthing burrowing caterpillars was not applied consistently across various villages, some harvesters pointed out that the kgosi in Lesolathebe was strict on preventing such unsustainable practices. When asked about the prohibition, one harvester commented that:

> '*Mopane worms that are burrowing should not be harvested because that will become a seed for the next year's generation. In other villages of Bokalaka, you are not allowed to harvest burrowing or recently burrowed mopane worms. This also includes the caterpillars that moving down the tree stem towards the ground. It is a serious offence if one gets caught doing any of these things. They have set that rule on mopane worms in Lesolathebe*' (Interview, Mogapinyana, Lorraine, 03/02/2019).

Customary practices provided an important form of governance that the actors acknowledged. Although traditional authorities' influence on resource governance appears to be waning, these institutions were nonetheless perceived to be instrumental in providing control, especially when the DFRR was incapable. Drawing from the governance debates outlined in chapter two, this observation concurs with the idea that effective governance entails the participation of a wider range of actors beyond the hegemonic power of the state.

7.5 Formal Regulation of Mopane Worm Marketing in South Africa

This section turns focus on the regulation of mopane worm marketing across markets in South Africa. The roles of the local municipalities in Thohoyandou, Makhado, Malamulele and Giyani were to issue hawker permits and enforce compliance thereof. However, inconsistencies in executing these roles by the municipalities were a source of discontentment among the actors in the areas. These issues are discussed below.

7.5.1 Hawker regulation

Hawker regulation was undertaken primarily through issuing permits and enforcement to ensure compliance. This approach was applied inconsistently and haphazardly. The hawkers believed that the inability or lack of will to enforce compliance meant that more people got away with trading without permits. For those who had been complying, this disincentivised the need to obtain permits. Nonetheless, respondents were unequivocal that the process of obtaining permits was burdensome, and they would prefer a regime in which permits did not require payments. From the perspective of Collins Chabane municipality, the purpose of the permit regime is to enable a record-keeping capability, ensure allocation of stalls, avoid conflict among traders for stalls, and for hawkers to occupy only designated locations (Marcia, Municipality Officer, *pers. comm.*, 4/04/2018). Although this was the stance of the municipalities, permits have also been used as a tool to enforce authority over the hawkers. Traders spoke about incidents of routine policing and inspection raids by the municipality's law enforcement to ascertain the eligibility of the traders. The processes of issuing permits appeared to be implemented by the municipalities with little or no input by the traders and hawkers on the modalities of the system. Josephine, a local small quantity trader in Giyani, commented on the process of obtaining a permit and said that:

> '*The first thing is that they need to see and confirm the location of my stall; they then allocate a number for me. They would then take a copy of my identity document to obtain the details and take a photo to make the card at the municipal offices. It is like the new ID card in look because it has my names, ID number, table number*' (Interview, Giyani, Josephine, 02/04/2018).

The permit allocates each trader a stall in each yearly cycle and can only be allocated to somebody else should the original owner relinquish it. The permit, and thus the designated stall, was one of the most coveted resources for the traders. For one, it allowed the traders to earn an income, to be able to support their households, and it also gave them a right to claim ownership of a facility to which they have exclusive right to trade. Without the income earned from trading, some of the hawkers would need to find alternative income sources. This could prove to be a challenge given the lack of employment opportunities in the towns and low skills levels of most of the traders. In expressing the sense of security for the stall, Julia shared the following:

> '*The municipality regulates it through the permits. Someone cannot just come and seat wherever, they*

must get a permit that will show the location of their stall. So, the permit determines where you can stay and sell' (Interview, Thohoyandou, Julia, 26/03/2018).

The formal regulation of traders, dealers and vendors in South Africa is not only limited to the municipal by-laws. The Thulamela and Greater Giyani municipalities encourage traders to self-organise and form Hawkers associations, and it was through these organisations that municipalities engaged collectively with the traders. These associations also served a gatekeeping role of ensuring that only local citizens obtain the trading permits. This was done by restricting membership of the associations to only local people. Since the municipalities refuse to issue or renew street trading permits to hawkers who do not have a valid membership to the associations, only local people can obtain trading permits. Although such requirement is neither a municipal policy nor required in the by-laws, Thulamela and Greater Giyani municipalities have been requiring permit applicants to join hawker associations. This pre-condition requirement resulted in traders deciding to not bother with obtaining the permits. Some traders in Thohoyandou labelled the association leadership as corrupt and not concerned about foreigners trading in the market despite agreed rules that prevented such activities. One trader explained the essential function of the association as follows:

'*However, this arrangement is neither useful nor effective sometimes. For example, the hawkers' association is aware of the issue of the foreigners trading here without the necessary permission. However, the municipality is not aware, and this means that their communication with the municipality is not particularly good*' (Interview, Thohoyandou, Tshilidzi, 29/08/2019).

The presence of foreign traders on several streets around Thohoyandou was notable. However, the administrative requirements of obtaining the permits, such as a South African identification document and proof of local residence such as a letter from the kgosi or municipal utility bill, are other hurdles that foreign nationals would have to navigate. It is plausible that they would be some trading without permits as the by-laws make no provision of issuing street trading permits to foreign nationals. As a result, the concerns of the local hawkers may not be farfetched. For example, several cross-border traders from Botswana and Zimbabwe were found across several markets.

Overall, the regulations in South Africa paid no particular attention to mopane worms. Instead,

the trade was regulated as part of informal trading through street hawking bylaws. The approach offered minimal support in regulating any practices. This left mopane worm trade vulnerable to capture by powerful actors. Issues of marginalisation of actors also emerge when powerful actors can influence the daily practices with no checks and balances to limit the concentration of power in the hands of few individuals.

7.6 Conclusion

This chapter presented and discussed the patterns and forms of governance of mopane worms in Central District, Botswana, and Limpopo Province, South Africa. Analysing the dynamic plural governance regimes in mopane worm livelihoods is crucial to understanding the drivers of the existing access and harvesting patterns. The chapter also discussed the legal framework for formal regulation of mopane worms in Botswana and South Africa. This highlighted the different approaches adopted by the two countries to promote resource access and sustainable use. Botswana has developed regulations that deal with mopane worms, while South Africa lacks this focus. The chapter further highlighted that statutory regulation and state actors continue to play a significant role in regulating access and harvesting of mopane worms, especially in rural areas. This, however, has led to the overlapping of roles with the traditional leaders, who are in terms of customary law responsible for regulating resource access and use. The overlaps introduced constraints in the trade, especially for resource harvesters and traders. The burden to simultaneously comply with statutory and customary governance systems has a deterrent effect on mopane worm users. These give rise to the notions of legal pluralism and forum shopping as resource users are forced to creatively find alternative ways for resource access and to realise their livelihood goals. These notions and their implications across the crossborder trade are discussed in chapter 9. The chapter also showed that harvesters and traders are not passive actors in the trade chain; instead, they control essential aspects such as trading prices and organise the relationships between cross-border traders and vendors in the urban markets. Such controls are prevalent in informal markets where statutory and customary governance systems are either absent or unenforced. In taking up some of the regulatory roles, traders may deliberately create trading conditions that suit their best interests. For example, the exclusion of foreign traders at markets in Thohoyandou served to limit competition from Batswana.

In Botswana, harvesters and local dealers continue to trade on their own terms and often in defiance of traditional leaders' commands to centralise the trade of mopane worms at the Kgotlas. Finally, the chapter has shown the overlaps, conflicts and inconsistencies that result from the plurality of governance regimes across the mopane worm trade chain. Notably, on the one hand, this plurality seems to be eroding the effectiveness of specific regulatory tools while, on the other hand, leading to discontent. The ineffectiveness of these overlapping systems has pushed the harvesters to the margins of compliance. In these margins, the ability to make a living from harvesting and trading mopane worms gets constrained. The next chapter develops a typology on interactions and outcomes among categories of actors.

CHAPTER 8: TYPOLOGIES OF ACTORS AND POWER DYNAMICS

8.1 Introduction

The previous chapter discussed customary and statutory governance mechanisms and their outcomes on access and use of mopane worms. This chapter examines the typologies of actor relations and the implications for power, access, and marginalisation across the trade. The chapter excludes the regulatory actors and focuses solely on harvesters, dealers, cross-border traders and vendors. The cross-border trade of mopane resembles a landscape comprising different actors in various contexts, each consumed in the ambitious pursuit of their livelihood. The business landscape consists of various actors and nationalities, extending from mopane woodlands in Botswana to South Africa's small rural towns and large cities. The key actors in the mopane worm trade can be grouped into three broad categories. Although the respective roles of actors, the locations at which they trade, and the permit requirements they comply with may overlap, the distinctive characteristics are discernible. Using the actors' characteristics and perceptions, this chapter develops a typology of the actor influences and power dynamics in the trade. The typology seeks to elucidate the underlying clandestine and explicit influences that shape the trade's overall flow of benefits and nature. Notably, the narratives and typology make sense of the actors' daily lives in mopane worm trade. The first part of the chapter presents the typologies, comprising discussion of the categories and unique characteristics. The second part uses the typology to discuss how the actor relations and participation in the trade are impacted. The conclusion draws attention to the relational dynamics and their manifestation in configuring access to resources and markets

8.2 Typology of Actor Narratives on Power in Mopane Worm Cross-Border Trade

The typology presented herein was developed based on the participants' perceptions and narratives regarding their roles, influences, and interactions with other actors in the cross-border trade. The narratives and perceptions were coded and sorted into categories that ranged from *satisfaction* to *dissatisfaction* in the trading and governance arrangements. Two broad themes in which actors described their capability to determine their dealing in mopane worms were described as *powerful and influential* vs *powerless and lacking the influence*. The 'dissatisfactory'

narratives included unfair treatment by the authorities, exploitation by clients or suppliers and inability to compete with fellow competitors. The 'satisfactory' narratives expressed relative stability and income security, greater control over their businesses, influencing their peers, and general acceptance of formal and informal regulation. Overall, the harvesters were the least satisfied of all actor categories.

Actors also described themselves in two ways, those who hold themselves as having the influence and power to determine their trading terms, including prices, quantities and whether to engage in dealing, which may bring less-than-desired income. Some described themselves as having little influence to determine the trade terms of the transactions they engage in. In this theme, the actors expressed their lack of desire to negotiate for favourable conditions when interacting with clientele and suppliers. The narratives and perceptions of the actors are reflected in three broad categories along a continuum comprising: the dominant traders, the hopeful actors, and the marginalised harvesters. The categories are not impermeable silos of classification; on the contrary, they are the subjective narratives and expressions of the actors in respect of the cross-border trade. The typology presented in this chapter excluded regulatory actors. The analyses were limited to harvesters and traders as the actors whose livelihoods and daily practices were impacted by their interactions and regulatory arrangements.

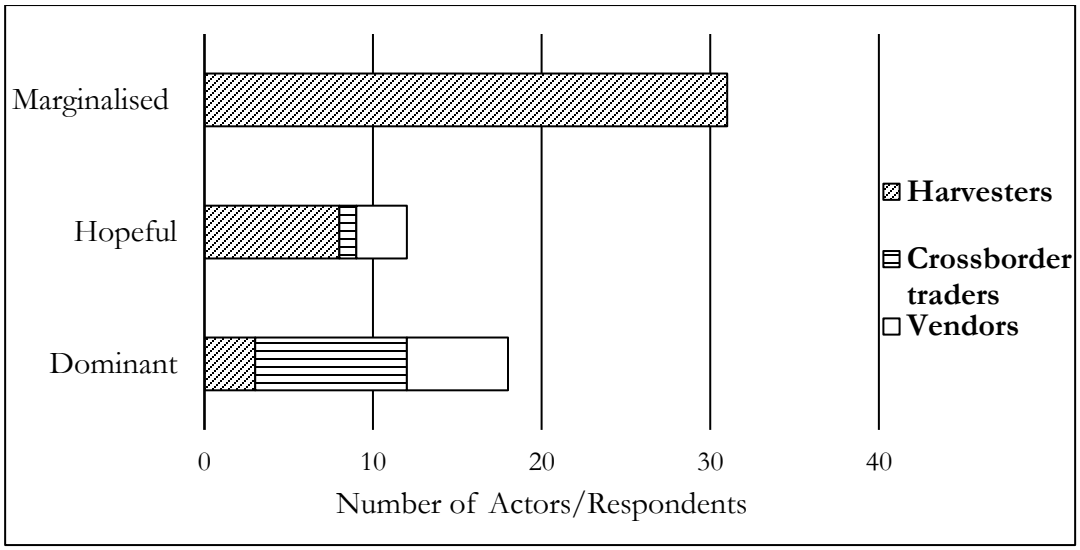


Figure 8.1 A breakdown of actor narratives according to categories of actors

Table 8.1 Typology of power dynamics in the mopane worm cross-border trade

Common narratives	**Dominant actors**	**Description**
Dominant traders	Cross-border traders and Vendors	Actively influence clients and customers to realise satisfactory trade terms
		Primarily import mopane worm into South Africa
		Built network of influence including multiple suppliers and clients
Hopeful actors	Harvesters and Vendors	Deem the transactions to be satisfactory
		Perceive themselves to lack power and means to determine and influence the trade terms
		Hopeful for an improvement in the interactions on trading negotiations
		Require increased access of mopane worms
Marginalised harvesters	Harvesters	Perceived themselves to lack power and means to determine the trade terms
		Dissatisfied with the trade terms in which they engage
		Reluctance to use their powers and numerical advantage to resist the coercive dominant traders
		Expressed sense of loss and despair in extracting any value in mopane worm trade
		Excluded from governance decision-making
		Favour devolution of power to traditional leaders and prominence for customary regulation

Source: Interview Data

8.2.1 Dominant Cross-Border Traders

This category comprises cross-border traders (9), vendors (6) and harvesters (3). These actors shared narratives of dominance in their roles (see Figure 8.1; Table 8.1 above). These describe how the actors continue to engage in mopane worm trade and negotiate transactions to their desired outcome. The actors were satisfied with the nature of the cross-border trade and the current formal regulation. This was partly because traders could comply with some of the regulations, which restricted entry for some potential competitors. Nonetheless, there persists some displeasure with certain aspects of the regulatory regime and its inconsistent application by the authorities. Some of the cross-border traders in this category have been trading mopane worms consistently for many years. They have built a network of suppliers and clients which contributes to the stability and profitability of their microbusiness. These cross-border traders, dealers and vendors can mobilise their networks and influence secure trade deals quickly for a higher turnover rate. These extensive networks with suppliers and clients often spread across several towns and provinces. South African and Batswana cross-border traders dominate this category. Some of the dominant actors' narratives included a greater sense of autonomy, which resulted from their capability to engage in their trade activities on their terms and achieve their targets.

8.2.1.1 Wider networks and influence

Most of the dominant actors expressed and demonstrated a higher integration in the trade chain. These individuals were based at South African markets, from where they had expanded their networks to facilitate the importation and further distribution across Limpopo province. The network within which the traders were embedded enabled individuals to source from diverse suppliers in Botswana and build resilience to market shocks of price fluctuation and stock shortages. Moreover, the traders' vulnerability to price manipulation by suppliers is diminished as they can choose a preferred supplier and not be locked into dealings with a single supplier. The bulk and cross-border traders who expressed this view had to source their supply from Botswana. This strategy reduced the reliance on any intermediaries. By sourcing the supply directly from the harvesters, they were more at liberty to determine their trade prices and determine the quantities with which to trade with the vendors and bulk traders. For some traders, client networks extended to larger cities such as Johannesburg and Pretoria in Gauteng Province. The traders supplied mopane worms to clients in bulk quantities, of 50kg and 80 kg maize meal bags. Some of

the local clients preferred 5kg and 9kg buckets. This combination of trading quantities was intended to maximise profitability by meeting the needs of different types of customers. Since profitability depends significantly on the volumes traded, it was imperative to increase the amounts. This also increased their reliance on suppliers and helped maintain their reputation among their clients. One dominant trader expressed their linkages with clients as follows:

> '*I have customers from Johannesburg who phone me and tell me how many bags they want, and I send them with the taxi drivers at the taxi rank to Johannesburg to deliver there. The customer would then send me the money through Shoprite. Even Pietersburg and Louis Trichardt customers put the money at Shoprite, and then I send the stuff at the taxi rank*' (Interview, Sibasa, Moses, 28/03/2018).

8.2.1.2 Autonomy and independence

The higher degree of autonomy allowed the cross-border traders and vendors to negotiate with and influence other actors to trade on favourable terms. In certain instances, some traders had a manipulative attitude, especially when dealing with harvesters. The actors in this category enjoyed a privileged position on the trade chain, which offered two essential benefits. Firstly, the traders could transact with harvesters who must accept low prices through persistent negotiation and persuasion. This was a crucial part of harvester-trader interactions. The second benefit of directly purchasing from the harvesters was that it allowed the traders to evaluate the quality of the stock and thus the price offered. Although quality evaluation is subjective, certain specific steps are common in assessing mopane worms. For example, the traders inspect the dried caterpillar size's gut contents and inquire about the cooking and preservation methods. The tell-tale signs of poorly processed mopane worms include leaf matter in the guts of the caterpillars and the direct roasting of the caterpillars on fire coals. As a result, poorly processed caterpillars are avoided as much as possible by the traders and consumers alike. The size is thought to be indicative of the instar stage at which the caterpillars were harvested. It is after consideration of the quality of the caterpillars that prices are negotiated. This applies when negotiations are between the harvester and cross-border traders and between the cross-border traders and the vendors. For example, a cross-border trader would consider the processing, preservation, and size of the caterpillars before purchasing from a harvester. Later, when the same cross-border trader sells to bulk traders or vendors, they cite similar factors to justify the prices.

The results suggest that cross-border traders hold more sway in such negotiations. Discussing the influence on the prices in the trade, one of the traders shared the following:

> '*The owner of the product is the one who decides the price. The quality of the worms usually influences this. I sell a 20-litre bucket for R600. However, other people sell it for R550 or R500. Nevertheless, the actual price is R600*' (Interview, Sibasa, Moses, 28/03/2018).

In this narrative, a common sentiment was that traders felt at liberty to negotiate with any client if the customer needed a discount. Similarly, reducing the prices when a customer wished to buy a larger quantity was common. Nonetheless, the power to adjust bulk prices was an individual decision. The trader had to consider attracting and retaining customers to broaden their client base by offering competitive prices. This is a deviation from an established practice in which traders in each market, sometimes across various towns, may agree on a price for a specific quantity, for example, a 50kg maize meal bag. Lillian, a trader from Zimbabwe, explained this inevitable conflict as a problem which traders must contend with daily. Lilian explained that her clients often sought to negotiate discounts, but she always maintained her stance to ensure profitability as follows:

> '[They try] *to a large extent, but most of the time, people do not know how much these* [mopane worms] *cost in other countries and across the border from our suppliers. So whatever price you want to charge is up to you. So, if someone wants to buy in bulk, 10kg, you charge them whatever price you see fit. So long as it is not too expensive. It should not be too much; it should be reasonable. Although most people do not know what we pay across the border, you should not get caught with an exorbitant price. You do not want people to have to pay more than they are willing to pay for mopane*' (Interview, Makhado, Lillian, 03/04/2018).

Other traders warned that they were still conscious of the shared values that traders had to abide by, especially in the market setting where the setting of prices was on a consensus basis. From time to time, traders across markets negotiate and agree on the prevailing prices at which mopane worms are traded. These are subject to the availability of mopane worms due to seasonality. Some emphasised the importance of maintaining agreed prices among the traders in the markets to maintain stability, order, and mutual respect. Traders explained that since they were self-regulated, every trader in that area had to respect rules set by the collective in a location.

8.2.1.3 Consolidation and alliances

In this category, traders appeared to favour acts best described as consolidation and building partnerships, namely resource pooling, information sharing, and bargaining power. Resource pooling and information sharing were the most critical sources of social capital for traders. However, some cross-border traders and vendors indicated that they prefer working independently and without interference from fellow traders. On the contrary, many noted resource pooling and information sharing were the key factors that gave traders a competitive edge and influence over other actors such as bulk traders and vendors. This effect was translated by some actors into bargaining power, especially against harvesters and bulk traders. Resource pooling aids in reducing logistical costs and eases the logistical hurdles, which otherwise, each cross-border trader would have to negotiate alone. This cost-cutting measure was also beneficial in Botswana. Only one or two foreign traders would purchase the requisite dealers permit and buy the bulk supply on behalf of the group.

Most of the 'dominant' actors were cross-border traders, and they engaged in trips to Botswana for purchasing mopane worms. A portion of this group also distributed in several towns in Limpopo Province in South Africa. Some cross-border traders tapped into their networks and social capital for assistance to participate in these logistically daunting activities. Some traders formed groups to work collectively through sharing information. For example, a trader may share their knowledge of an outbreak with trusted fellow traders in the market and subsequently begin trip preparation. Traders explained that they may send one or two individuals to Botswana in advance to obtain reliable and trustworthy information on the outbreak. There were cases in which traders would travel to Botswana only to discover upon arrival that the outbreak was not good enough, and they struggled to fill their quotas. This would inadvertently compel the traders to stay in Botswana for longer than they had anticipated and planned. Thus, the pair sent to Botswana would relay the information back to the rest of the traders, who would then follow. This elaborate information sharing and verification process is not without drawbacks. The costs of sending the initial person(s) to verify the outbreak had to be shared evenly among the group. Most importantly, the verified information was not to be shared with any other traders who were not part of the group. Such information leakage would undermine the group's competitive edge. Although traders in Thohoyandou were part of such a scheme, this degree of cooperation was not widespread.

8.2.1.4 Compliance with the regulatory regimes

The general sentiment regarding regulation among all actors was negative. Widespread opposition to trade control, particularly formal regulations, permeated every stage of the trade, from harvesting, border, and markets. All traders were unhappy with the inconsistent application of the rules and the apparent lack of enforcement will. As a result, formal regulation was perceived to be an impediment more than a necessity. However, some cross-border traders were more welcoming of the regulatory effort, albeit expressing reservations about the failure of the laws to fulfil their mandate. To understand this perception, one must consider that most dominant actors were privileged with extensive contacts of clients and suppliers and that cross-border traders were well-resourced. They could absorb some of the costs related to obtaining permits. Such privilege has inadvertently ensured that cross-border traders can outcompete bulk traders who are then limited in their aspirations to expand in the trade.

Most importantly, this leverage means that any strict enforcement of the regulatory regime may have a smothering effect, especially on traders. They would then be dependent on cross-border traders as suppliers. Some vendors welcomed the regulation because it was perceived to bring certainty to stall ownership and tenure of profitable locations in various markets. As discussed by Anna in Elim, the security of tenure offered certainty and security.

> '*Yes, as a trader, I am not allowed to leave my allocated stall and go to sell somewhere else in the town where I was not authorised to occupy. It is important to have an allocated stall for trading because now I can invest my energy and resources knowing that I am doing something that is earning me an income and I can buy food when I need to, and I can provide for my children*' (Interview, Elim, Anna, 03/04/2018).

A key characteristic of the dominance and influence of the traders across the cross-border traders was the important role of connecting harvesters in Botswana to markets in South Africa. This unique role of cross-border traders allowed individuals to wield influential power since harvesters were dependant on cross-border traders to buy their harvest while vendors and bulk traders were dependants on their supply. Some of the practices of dominant traders were exploitative towards the harvesters, particularly when negotiating prices.

8.2.2 Marginalised Harvesters

This category comprised views shared by the harvesters (31) who were based in Botswana. The common feature was that of marginalisation by cross-border traders and unfavourable regulatory arrangements. The majority of the harvesters felt that they were pushed to the periphery and played a minimal role in influencing the nature of mopane worm trade. The perceived lack of power and means to determine the trade terms was centred around the fact that dealers and cross-border traders set the terms on which harvesters sell mopane worms. For example, in negotiations, dealers and cross-border traders decide the prices and how to fill a bucket of mopane worms. These result in harvesters having to sell at a lower price than they hoped. The prevailing sense of loss of income and disparity among the harvesters was underscored by dealers and cross-border traders' reluctance to offer fair prices for mopane worms. Overall, the limited ability of harvesters to access permits and markets created conditions that dealers and cross-border traders exploited and manipulated.

This category consisted only of harvesters (see Figure 8.1; Table 8.1 above). The narratives of the harvesters also included those who believed they had the power and influence to determine the terms of trade but continue to engage in dissatisfactory transactions due to limited options to trade. The harvesters in this category expressed that they were willing to initiate dealing negotiations and bargain for preferable prices. However, they still accepted unfavourable offers from cross-border traders. For example, some harvesters shared that they were willing to accept prices that were 50% below their preferred price. Although the harvesters were conscious of their agency, some were reluctant to use their knowledge of the trade, their numerical strength, and other advantages to resist cross-border traders' coercive tactics. The implications of these factors are discussed below.

8.2.2.1 Access regulation and exploitation

The main concerns shared by marginalised harvesters included exclusion, marginalisation, rejection, and exploitation. This is a striking difference from the stories shared by the dominant actors. The actors in this category were exclusively harvesters (see Figure 8.1; Table 8.1 above), and the sources of their unhappiness included the manipulative cross-border traders, conservation officials, and the apparent lack of desire by the state to effectively devolve natural resource regulatory powers to local institutions such as the traditional authorities. Mopane worm trade was the sole source of income for most

marginalised actors; thus, exploitation at the hands of the cross-border traders directly negatively impacted household income. Similarly, the lack of access or inability to harvest in some seasons led to the loss of potential income and an important protein source. Most of the harvesters were unemployed and depended on mopane worm trading for income. For such people, reforming the trade held promise for better returns. Edna, a mopane worm harvester, explains this situation below.

Edna is a 59-year-old mopane worm harvester from Tsetsebjwe in Botswana. She has been involved in mopane worm harvesting since childhood and harvests every season at the forest adjacent to her village. The forest and the environs are used for livestock grazing, and some portions of it are cultivated.

Accessibility

Edna has had difficulties reconciling herself to the introduction of permits, especially as she has been harvesting the resources without the need for a permit since childhood. She also refused to obtain the license. As a result, Edna was on one occasion caught harvesting by the enforcement officials without possession of a valid permit. Her harvest was confiscated and destroyed by the conservation officials and police officers. Edna and some of the fellow harvesters have realised the enormity of the conflict with the government. She conceded that they would be buying the permits in future because they can no longer defy the government. The harvesters have also given up on the demands that permit-issuing powers should be devolved to the traditional authorities. However, they believe that such devolution would result in speedy and more responsive regulation. Edna explained that 'we are not unable to buy the permits, we can buy them, but the problem is that they issue the permits too late. We can never defy what the government say. Our dikgosi are trying to convince the authorities to issue permits in time, but that is not happening'. Therefore, there is nothing that the villagers can do if the authorities are not willing to consider their requests. Edna summarised this narrative as follows 'the government is fighting with us over permits. In contrast, the forestry department does not issue permits in time'. According to Edna, the indiscriminate raids by the officials had a severe impact on poor harvesters who depend on mopane worm income. Also, the marginalisation would further condemn them to abject poverty and suffering due to a lack of employment opportunities in their area.

Exploitation

Edna had also fallen victim to some of the exploitative tricks used by cross-border traders, notably the South African traders. As she does every season, Edna had sold her harvest to South African traders without suspecting anything untoward. Unbeknown to Edna, she had unwittingly accepted fake Pula[45] notes from one of the traders. She was only informed of her unfortunate encounter with the dodgy traders when a local shop refused the notes. Edna explained her conundrum as follows, 'as an illiterate person when I saw the money with the face of Ian,[46] I thought it was genuine money. When I later went to a shop to buy maize meal, I was informed that the money was fake. I was left wondering about what to do next because those people have taken my mopane worms'.

According to Edna, the traders were exploiting the harvesters relentlessly. Despite the fake notes, they demanded that harvesters reduce the asking prices to P250 for a bucket of mopane worms. The harvesters accepted their offers as a last resort to earn income. Alternatively, some traders offered aluminum potjie pots, plastic drums, used blankets and clothes for bartering. Edna expressed that 'we trade to them at that price because we are hungry. They overfill the buckets and pick anything that falls on the ground, all that for P250'. This expression of sadness was compounded by the fact that the prices of mopane worms doubled in South Africa, thus earning traders higher profits than what Edna and fellow harvesters earn. Edna believed that this positioned the harvesters as the ultimate losers in the trade chain due to the coercion which locked them into exploitative transactions. She further added that 'we are poor, and we have nothing else to survive on. Our children have been sent home from schools because of the Transvaalers[47]'. Nonetheless, Edna hopes that the government would someday introduce a law that mandates all mopane worm trading to occur at the village kgotla at a sanctioned price because 'harvesting mopane worms is tough'. Finally, Edna felt that the government had to guarantee unhindered access to mopane worms for the harvesters due to their importance to rural livelihoods.

[45] Pula is a currency of the Republic of Botswana.

[46] Rtd. Lieutenant general Ian Seretse Khama is the former president of the Republic of Botswana.

[47] "Transvaalers" is a term used colloquially by locals in Botswana in refence to people from the former Transvaal province, presently Limpopo province, in South Africa.

The expressions of losing potential profits and income, powerlessness, and stigmatisation were common among marginalised harvesters' narratives. The narratives bordered on the expressed lack of power to influence overall terms of trade, lack of desire to counter the stigmatisation from fellow actors, and the competition among traders. These prevented the harvesters from interacting with their clients and suppliers on an equal footing as trading partners. Instead, more bargaining power was shifted to the cross-border and bulk traders. As a result, most harvesters were grateful to have traded their harvest so long as they would earn some income. All harvesters in this category echoed this sense of loss and hopelessness when engaging South African traders. Several described their South African peers as ruthless 'exploiters'. Harry described the exploitative nature of the traders as follows:

> '*They do that (manipulation) for their benefit. They are operating their businesses unethically because they exploit us, the harvesters, by offering low prices when they buy*' (Interview, Mogapinyana, Harry, 02/02/2019).

This sense of loss for the marginalised actors, who are exclusively harvesters, points to the unbalanced power dynamic between the harvesters and their clientele. Effectively, the traders can procure mopane worms at a 'discount', which may translate to higher profits, mainly when exporting to South African markets. This is achieved by wielding overt superior financial power over the harvesters. Secondly, harvesters find themselves at the mercy of the traders and thus unwilling to bargain harder to avoid upsetting the clients. The intra-harvester competition for quick trade may inadvertently be giving more bargaining power to the traders. This phenomenon was explained by Mogau, a harvester from Mogapinyana, as follows:

> '*The problem is that harvesters want to sell their harvest at all cost. If a trader comes here looking for mopane worms at P300 and refuses to sell to that person, others will accept that person's offer and sell to them. In the process, they would even tell me that I am not a smart person because I would have rejected the money. Sometimes they would even ridicule me and say that I have not suffered enough yet*' (Interview, Mogapinyana, Mogau, 06/02/2019).

This stigmatisation was a critical factor through which harvesters internalised a sense of powerlessness and inequality. Their peers influenced actors to alter their worldviews, beliefs, and their sense of worth. The interplay of influence, competition and stigmatisation

emboldened the hegemonic power of the cross-border traders. Harvesters have accepted that without submission to the trader's demands, they would not trade mopane worms. This could be seen through narratives on prices which were the domain of the traders. Some harvesters felt that determining the prices and the respective quantities with which mopane worms were sold should be left to cross-border traders. Others felt that when a trader seeks to purchase mopane worms, they should dictate the pricing. Although harvesters may have had an idea of how much they should get for a 15-litre bucket, some felt that due to the high number of fellow harvesters in their villages, it would be best to allow the traders to determine the prices. The harvesters thought that this would give them a better chance to conclude a trade. Discussing this issue, one harvester shared how they were inadvertently forced to accept inferior trade terms against their will:

> '*These are set by the people how come here to buy. Although I may have my prices at which I would like to trade, due to the high number of harvesters, I am then forced to sell at what the traders set because if I do not, then someone else will accept their offer, and I would have missed out*' (Interview, Mogapinyana, Mavis, 03/02/2019).

The influential power of the traders over harvesters perpetuated the social exclusion of harvesters in the trade. Effectively, harvesters were relegated to mere spectators. Their restricted role was to 'harvest and let the cross-border trader takeover'. When discussing this issue, Mavis added that the profits were limited to the traders due to their effective control and stranglehold on the trade:

> '*It* [mopane worm trading] *does have benefits; however, such returns are realised only by the cross-border traders. We are still coerced into selling at low prices while inflating their prices when they arrive in South Africa. The only benefit that I can attest to is that we can get money, but that money is truly little. The people who export mopane, including the foreigners, know the true value of mopane trade. The little that we harvesters get cannot be regarded as real returns compared to what is earned by these people*' (Interview, Mogapinyana, Mavis, 03/02/2019).

This sense of exclusion and relegation was shared by fellow harvesters when discussing their limited powers and meaningful participation as equals in the trade. However, the compensation obtained through trading the harvest was deemed far less than ideal. Some of the harvesters shared their painful narratives as follows:

'*We do not get any good returns. Our only returns are the injuries that we sustain when harvesting. Mopane worms can cause you an injury that can lead to an amputation of a finger. All that for a mere P300?*' (Interview, Mogapinyana, Triphina, 03/02/2019).

These despondent narratives demonstrate the power imbalance in cross-border trade. Stigmatisation reinforces the dominating power of the traders, which flows from the limited opportunities and avenues available to harvesters. This lack of alternatives locks harvesters into exploitative dealings with traders. The traders have condemned harvesters to the fringes of mopane worm livelihoods and continue to erode their ability to earn a living. Although most harvesters expressed that mopane worm income is the sole source of household income, the income was too low to be utilised for any other purpose besides purchasing food and supplies such as school uniforms and stationery. The significance of the traders' stranglehold on the trade has forced some harvesters to contemplate exiting the trade altogether. This contemplation was a last resort for some harvesters, given the lack of improvement in the prices and bullying tactics of the traders. One harvester commented:

'*We are forced to sell mopane worms after harvesting so that we can recoup that money* [spend on transportation and supplies]*; however, the trading price is so low. Eventually, we are better off staying at home and not harvesting because we are not making any money*' (Interview, Sefophe, Brenda, 08/02/2019).

8.2.2.2 Dejection and coercion

Harvesters spoke of engaging in dissatisfactory dealings due to the coercive practice of cross-border traders. Although the narratives include dejection and lack of desire to challenge the status quo, some harvesters expressed the power and ability to pursue their targeted goals. Nonetheless, such powers appeared not to be mobilised. Some of the harvesters refrained from bargaining with clients to avoid upsetting and pushing them away. This is despite the dissatisfaction as expressed below:

'*I think the price is too low. It does not match the trouble that we get through to harvest mopane worms. Harvesting is difficult and painful. You also need to buy salt, cook, and preserve the worms; then, selling at a low price feels like we are just throwing away the worms. I use the income from selling mopane worms to purchase food, electricity and any other thing I may need*' (Interview, Tsetsebjwe, Agnes, 11/02/2019).

The harvesters were 'easy targets', often coerced into exploitative dealings. For some time, the traders have managed to keep the 15-litre bucket price between P250 and P300. They achieved this by taking advantage of the fragmented open trading, which begins promptly after the harvest season. Two conditions have enabled the unabated coercion, especially over harvesters. First, there are more harvesters (supply) than traders (demand) competing to trade and some are thus willing to accept lower prices. Harvesters know that should they not shift from their asking price, somebody elsewhere will be ready to negotiate with the traders. The competition inadvertently sparks a price war between the harvesters and enables traders to buy from the cheaper trader. Secondly, the harvesters' desperation for income played into the hands of the traders. For many, the lack of employment meant that any opportunity to earn some money would be grabbed regardless of the price. This further invigorated the bargaining power of the traders and entrenched their coercive attitude in the dealings. With no self-organisation, the individual harvesters found themselves at the mercy of the traders in their dealings.

8.2.2.3 Exclusion and gatekeeping

Some harvesters believed they were systematically excluded and impacted by gatekeeping, which is rife in the trade. According to the harvesters, cross-border traders excluded any other groups of people from entering the cross-border trade by withholding information, which could benefit the aspiring trader. For ordinary rural dwellers, lack of access to such crucial information presented an insurmountable barrier to the trade. Information critical for foreign travel, for example, included information on foreign currency exchanges, visas, customs declaration, and market locations in the foreign country. The vignette below presents views on gatekeeping and exclusion tactics used to marginalise harvesters in cross-border trade.

Noriah is a female mopane worm harvester from Mogapi in Botswana. Since her childhood, she has been involved in mopane worm harvesting and has been trading her harvest for over 13 years.

Noriah has a long history of trading with cross-border traders from South Africa. However, the relations and rapport have since suffered and deteriorated because the traders withhold information about the trade in South Africa. According to Noriah, the cross-border traders systematically excluded anyone, especially harvesters, who might have the ambition to become cross-border traders by withholding any information

related to the trade in South Africa. Noriah believed that the traders were withholding the information because mopane worms fetch higher prices at the markets in South Africa than they do in Botswana. Furthermore, any new entrants are feared as they would increase the number of traders and erode the profits per capita. She explained that 'they know that if we are aware and certain that they are making a significant profit in South Africa, we would then refuse to trade to them and instead we will export on our own to South Africa because of the profits'.

Noriah believed that the established traders' strategy was to continue to exclude aspirant traders such as harvesters while continuing to purchase from them at meagre prices. This gatekeeping was not only limited to South African traders, but Batswana traders also prevented new entrants through lack of information sharing and maintaining secrecy about the cross-border trade. An essential aspect of maintaining the stranglehold on the cross-border trade is primarily due to the increase in the value of mopane worms when exported into South Africa.

8.2.2.4 Reluctance and uncertainty

Although the harvesters in this category expressed having power and influence to pursue their goals, they were reluctant to use their powers, numerical strength, and other advantages to resist coercive dealings, especially from dominant actors. In some instances, the actors were coerced into dissatisfactory transactions. The coercion involved subtle and covert persuasion techniques. Some traders attempted to convince the harvesters that their persistence on specific prices would only result in a loss of potential sales and thus income. The harvesters preferred an approach that guaranteed access to locals while giving traditional leaders authority and powers to exclude nonlocal harvesters in their villages in Botswana. This was thought to be necessary for the livelihoods of the harvesters. However, harvesters were reluctant to boycott the purchasing of permits. While harvesters had displeasure with the permits, they purchased a permit in each season without fail. Without a permit, harvesters risked facing the wrath of the law. As a result, they had no other option but to comply with the regulations. While the permits were undesirable, harvesters understood that permits were among enablers for earning income through the harvest and sale of mopane worms. However, such compliance was not always guaranteed. Some harvesters explained that permits were only necessary when they harvested in easily

accessible areas. As a result, there was an increasing trend of harvesting in areas that the DFRR officials do not frequent to circumvent the permit regulations.

8.2.3 Hopeful Actors

This category includes narratives shared by harvesters (8), vendors (3) and a cross-border trader (1). This category comprises narratives and perceptions that are neither of dominance nor marginalisation in the continuum described above. Actors in this category included those that deemed the transactions satisfactory; however, they were hoping for interventions that would improve their ability to negotiate better terms. They also perceived themselves to be lacking powers and means to influence any change of the trade. For traders, this included organising harvesters across villages to harness the collective effort to control dealers and cross-border traders. Some harvesters were included in this category in Botswana and some vendors across Thohoyandou, Giyani and Malamulele (see Figure 8.1; Table 8.1 above). These individuals had been harvesting and trading for several years and, as a result, had developed a degree of dependency on mopane worm livelihoods. Their roles in the trade chain as harvesters and vendors depended on dealers and cross-border traders in two ways. First, the harvesters needed dealers and cross-border traders to trade off their stock to earn income from the harvesting effort. Secondly, the vendors also depended on the dealers and cross-border traders who export mopane worms from Botswana to supply markets in Limpopo province, South Africa. This dependency inadvertently created a relationship in which dealers and cross-border traders dictated how trade transactions were based when sourcing from harvesters in Botswana and supplying vendors in South Africa. For vendors in Thohoyandou, this included issues around cross-border traders and bulk traders' unilateral decision to prevent Batswana from trading in the markets. In this category, the harvesters and vendors were hopeful that the nature of mopane worm trade could be changed to ensure that all role players derived maximum benefits.

8.2.3.1 Transaction negotiations

Due to the informality of the trade, prices are often not universally negotiated or applied. As a result, harvesters and traders often engage in negotiations each time a sale must be completed. The willingness of imports from Botswana to negotiate prices with vendors, as opposed to their South African counterparts, meant that local market vendors were more inclined to purchase from Batswana. The South African cross-border traders were known

to inflate prices to take advantage of vendors dependent on cross-border traders for supply. However, the diversity of suppliers due to the increased presence of Batswana and their willingness to negotiate prices improved the flexibility and options for vendors. This perception was shared by vendors who preferred to trade with Batswana cross-border traders over local South African cross-border traders. The preference for Batswana traders was motivated by the willingness of Batswana to offer mopane worms on credit to local vendors in Thohoyandou. One hopeful vendor explained as follows:

> '*The prices for each of the quantities are decided by them on their own such as a bucket at R300. We are forced to buy according to those prices as agreed upon, but the Botswana traders please us because they do allow to give us mopane on credit if we do not have enough money to buy when they get here. Hence, I say that we feel that Botswana traders must be traded here because they help support our livelihoods with the credit*' (Interview, Thohoyandou, Lufuno, 26/03/2018).

The harvesters in this category expressed some degree of satisfaction, especially regarding the slightly increased prices that the cross-border traders paid in the harvester villages in Botswana. While the prices had not reached a preferred level of P500, some individuals were satisfied with the prevailing price of P300 for a bucket of mopane worms. The income from mopane worms was valuable, and for some, it was welcomed, although hope for increases in the next few seasons was expressed. One harvester shared their views as follows:

> '*Comparing the prevailing prices with the old prices, I would say that things have indeed changed for the best. We are now trading at P300, which was the price for the previous seasons. I would be happy if the price were P400 to P500 for a bucket because harvesting is painful and tiresome*' (Interview, Mogapi, Katlego, 06/02/2019).

While the harvesters were satisfied with prices and cordial relationships with cross-border traders, some still harboured feelings of a general lack of power to influence the terms of trade. The real power, which guarantees higher than average profits for the traders and the harvesters, was the power to bargain and walked away from a transaction if deemed unfair. In the current trading patterns, the dealers and cross-border traders were at liberty to set trade terms and, in fact, stop negotiating if a harvester insisted on a price range for their stock. The cross-border trade used similar tactics towards vendors. On some occasions, the cross-border traders had increased the bulk prices of mopane worms without forewarning the vendors. These sudden changes had a knock-on effect on the vendors who

were unable to stock worms to their desired volumes and sometimes were forced to increase prices often shunned by consumers.

8.2.3.2 Cooperation

The need for cooperation was cited as a potential approach to levelling the playing field in the trade, especially among the vendors and the cross-border traders. Under the current arrangement, bulk traders determined the prices that vendors could use. The lack of any regulation meant that vendors were not shielded from any price fluctuations, impacting their pricing and profitability. The random price changes affected not only vendors but also fellow cross-border traders. For example, when a competitor adjusted prices, they stood a chance of stealing customers from other traders who may be trading at higher prices. Therefore, a trader could use the price difference to lure the customer to the disadvantage of fellow traders. This phenomenon was more prevalent in Thohoyandou due to the higher concentration of traders and competition for customers. The effects were felt in other towns as more traders adopted this approach of luring clients by offering prices slightly lower than those of competitors. For the traders, this was demonstrative of the unfair practices and poor cooperation among the traders, as explained by one trader in Malamulele in this way:

> '*We have to agree on the prices so that we sell at the same price and there is no competition. All the traders from here* (*Malamulele*) *to Thohoyandou must use the same prices so that every one of us has a fair chance to sell their stock without price differences*' (Interview, Malamulele, Joe, 02/04/2018).

8.2.3.3 Access to mopane worms

The ability to access mopane worms, either through permits, customary rights, or any other means, allows harvesters to earn an income through trading. Harvesters in this category expressed the desire to harvest mopane worms without negotiating the current regulatory framework. According to the harvesters, the regulations in Botswana did not prioritise local harvesters, who had a legitimate claim through customary rights to access and harvest mopane worms. The harvesters questioned the current regulatory system, which offers no preference to local villagers in outbreak areas. For example, harvesters in Tsetsebjwe wanted the local kgosi and DFRR to issue permits to locals first and grant access to any other outsiders when all local prospective harvesters are issued with permits. Another point of contention was the permit system itself, as the harvesters questioned the relevance of

the permits, given that the villagers were barely making ends meet. According to them, targeting traders and exporters with the permits would make more sense and improve access to mopane worms for the impoverished harvesters.

Overall, actors in this category shared perceptions that mopane worm trade required structural changes to ensure fair distribution of benefits among harvesters, dealers, cross-border traders and vendors commensurate to their roles. At markets in South Africa, vendors felt that greater participation of Batswana cross-border traders was beneficial as they traded mopane worms at reasonable prices, unlike their South African counterparts, who are known to inflate prices. However, such participation was resisted by local cross-border traders at markets who required that Batswana should only be limited to supplying bulk traders and not vendors to open the trade for locals. Intervention by local municipalities was considered be necessary, especially in Thohoyandou, where informal traders association and individual traders are at odds over informal control of the markets. Similarly, in Botswana, harvesters required that greater regulation by the traditional local authorities be pursued to ensure that trade is beneficial to the harvesters. Accordingly, it was felt that this should not be left to the individual harvesters' agency to confront the constraints. However, the expressions of satisfaction with some elements of the cross-border trade in this category were indicative that actors were able to develop ways to engage favourably with dealers and cross-border traders.

8.2.4 Dominance and Power

The dominance of the cross-border traders depended on the characteristics of the individuals. A key part of dominance was the ability and relative autonomy to operate with reduced restrictions and constraints. Except for statutory regulations, there were few restrictions on cross-border traders. Overall, cross-border traders had higher ownership of critical resources, enabling cross-border movement, purchasing bulk supplies, and enabling wider geographical reach. These characteristics emboldened the influence and power of cross-border traders across markets. Such influence and power were key as resources to facilitate control in markets and interactions with harvesters. This is analogous to the access control and maintenance articulated by Ribot and Peluso (2003). In the articulation of access, Ribot and Peluso (2003) argued that to maintain access, subordinate and marginalised actors may be compelled to expend resources to the influential and dominant actors to derive benefits from resources. In Botswana, such influence and power were used

as a means to marginalise harvesters. For example, cross-border traders provided a means for harvests to trade their harvest; thus, harvesters were often left at the mercy of these traders. This dynamic in the relationship and interactions empowered the cross-border traders to impose unfair terms. Such exercise of power undermined the ability of harvesters to negotiate preferential trade terms. Inadvertently, harvesters forfeited potentially high profits by settling for low prices offered by cross-border traders. In this way, harvesters expended resources to maintain the existing arrangements (Ribot & Peluso, 2003). In some instances, the cross-border traders offered harvester used goods and clothes in exchange for mopane worms instead of cash. Overall, the broader political-economic factors underscored this unequal situation. For example, the dominant cross-border traders' better access to technology, capital, markets, and information entrenched the dominance and power over harvesters.

Cross-border trading is a resource-intensive endeavour that required access to information, capital, and financial resources. These enabled cross-border traders to be better positioned to navigate the regulatory, informality and trade constraints, which were restrictive for others. Ribot and Peluso (2003) outlined that access concerns the ability to derive benefits from resources. In this category, ease of access to resources, markets, supplies and networks increased the power and ability of cross-border traders to dominate other actors while deriving benefits from mopane worm cross-border trade.

8.2.5 Engaging the System

Although harvesters decried the unfair practices of the cross-border traders and, to a lesser extent, dealers and regulatory constraints, they crafted ways of impact of such practices. A closer analysis of the harvesters practices and ways of accessing mopane worms demonstrated that they adopted strategies to minimise the impact of exploitative cross-border traders and regulatory arrangements on their livelihoods. To minimise the costs associated with accessing mopane worms, some harvesters avoided obtaining permits and harvested in areas that are seldom visited by DFRR raids. Such exercise of agency enabled harvesters to eliminate costs associated with obtaining permits, including harvest permit application fee, transportation costs to the nearest regional offices of DFRR. Other creative ways to minimise income losses and risks of being caught harvesting illegally involved harvesters obtaining just one permit for use by the whole household.

In some cases, such permits were shared among larger groups to facilitate stock transportation from harvest areas to the harvesters' homes. This strategy was necessary to minimise the risk of arrests at roadblocks. Despite the efforts to minimise the impact of the bullying cross-border traders and regulatory constraints, some of the harvesters were not satisfied with the nature of mopane worm trade. To ensure a just cross-border trade, some harvesters shared that greater devolution of regulatory roles to local customary institutions would eliminate some of the constraints associated with compliance and regulatory voids. The void was argued to result from traditional authorities' lack of enforceable powers over cross-border traders and dealers.

8.3 Conclusion

The precarious nature of the mopane worm trade means that the flow of benefits is not uniform across the trade chain. Instead, certain actors can derive maximum returns while some are worse-off. This is indicative of the pervasive role of power and influence as leading factors that affect the interactions and trade between various actors. While the regulatory arrangements and actors' relations have imposed constraints, especially on harvesters, increasingly, agency has offered the needed impetus for harvesters to engage with those constraints to develop ways of facilitating access to resources. Jentoft & Bavinck (2014) allude to the power asymmetries where incompatibilities in governing approaches over resource influences the extent to which actors may adhere to rules and norms. Using these factors, the chapter developed a typology of the actor narratives and power dynamics based on the perceptions of the mopane worm harvesters, dealers, cross-border traders, and vendors to evaluate how benefit flows are shaped. The typology reveals the underlying clandestine and explicit influences that shape the trade's overall flow of benefits and nature. Notably, the narratives demonstrate that cross-border traders are central to the trade and influential in determining the trading patterns and setting prices in Botswana and South Africa. Overall, harvesters are marginalised in the trade. Complaints of exploitation, manipulation and poor regulation indicate the extent to which harvesters are confronted by exploitative dealers and a poorly administered regulatory regime that undermines livelihoods. This chapter underscores that constraints in mopane worm trade are created by the regulatory arrangements and emerge from the interactions among the actors. Significantly, such constraints form the basis for gatekeeping and create barriers to discourage new entrants, especially in the markets. The implications of these constraints and the clandestine acts of overcoming them are elaborated within the broader resource

governance scholarship in chapter 9. The next chapter presents the discussion and synthesis of the key findings within the frameworks introduced in chapter two.

CHAPTER 9: DISCUSSION

9.1 Introduction

This chapter discusses the key findings of this study in the context of the literature and theoretical framework presented in chapter 2. The discussion focuses on the governance arrangements and the informalisation dynamics that influence access and use patterns across the mopane worm trade. It also highlights the conflicts and asymmetries at the interface between different governing systems and how they influence resource users' adoption of adaptive strategies in mopane worm commercialisation. The interactive governance framework, integrated with scholarship on informality and political ecology perspectives, guides the discussion.

Following the empirical findings presented in chapters 6, 7 and 8, two broad themes emerged. The first is that mopane worm governance is presently centralised in a hierarchical mode. Despite being centred in statutory regulations and policies, this approach cannot effectively govern wild products such as mopane worms and also marginalises customary forms of governance. This has led to fragmented arrangements that introduce constraints that impact the ability of local actors to benefit from resource commercialisation. A second theme that emerged focuses on the interface between governance and informality. Owing to the constraints resulting from the fragmented and overlaid governance arrangements, mopane resource users have been forced to adopt more informal and precarious practices to navigate different governance systems that have arisen across the trade chain. This dynamic relationship and interaction create complexities for the daily practices of actors and governing institutions, resulting in the emergence of new arrangements to facilitate access across the trade chain.

This chapter returns to the conceptual framework presented in chapter 2 to guide the discussion of key findings. Drawing from the interactive governance framework, three governance orders are relevant, namely the meta, second and first order. These orders comprise the 'problem-solving and opportunity creation; design, care and maintenance of governance institutions; and the formulation and application of norms and principles' for natural governance (Kooiman & Jentoft 2009, p. 820). The meta order comprises values, images, and principles that provide the necessary foundation for governance. Among

others, these values and principles guide economic development and social justice objectives. The second-order includes the rules and organisations or authorities. The first order entails the actions and governing tools of the day-to-day actions taken to regulate the access and use of resources (Jentoft & Bavinck, 2014). As discussed in chapter 2, symmetry is integral to understanding the nature of interactions between different governance systems and actors. According to Jentoft and Bavinck (2014), symmetry refers to the coherence between governance systems and their power differences, and asymmetry refers to the opposite. The extent of symmetry and asymmetry influences the nature of the interactions and relationships between governing systems. Therefore, governance systems are expected to contain more symmetric relations when there is greater compatibility between norms, values, and principles among the governance systems and when the respective institutions are isomorphic (Jentoft & Bavinck, 2014).

As discussed in chapter 2, a lack of access to resources and markets has significant implications for individuals and households (Ellis & Allison, 2004; Shackleton et al., 2011; Robinson, 2016). This, in turn, brings attention to the ways and strategies that resource users may develop in response to asymmetries, which may influence the interactions with governing institutions. These interactions are analysed to understand the dynamism at the interface between governing institutions and the informality of wild product commercialisation. The chapter is organised around the following four themes: 1) governance arrangements across the mopane worm trade; 2) how actors navigate governance arrangements in cross-border commercialisation; 3) agency as a mechanism of access; and 4) the interface of governance and informality and its conceptualisation.

9.2 Governance Arrangements Across the Mopane Worm Trade

9.2.1 Centralised state-led regulation

The regulation of access to and use of mopane worms is presently done through statutory approaches. These approaches comprise centralised, top-down frameworks that largely exclude non-state actors in the decision-making processes. For example, in Botswana, decision making on mopane worm access, harvest and trade is centralised in statutory institutions with minimal input from resource users and traditional authorities. By allocating decision-making powers in the forestry department through the Veld Products Regulations (S.I. 89, 2006), authorities have effectively crafted a centralised, hierarchical governance model for mopane worms and other wild products in which non-state actors

are excluded from decision making. The exclusion of non-state actors in the regulation has significant implications, particularly as statutory institutions are required to undertake all regulatory functions across the trade chain.

This hierarchical approach strains statutory institutions while leaving minimal opportunities for the involvement of customary forms of governance. A hierarchical mode of governance functions on the exercise of orders and rules based on the states' and governments' exercise of authority. This arrangement is known to result in conflict between the government and resource users because of the marginalising effects of the unilateral exercise of state power (Acheson, 2006; Kronsell & Bäckstrand, 2010). In both Botswana and South Africa, this has led to problems, including the inadequate provision of regulatory services, poor enforcement of regulations, and the near-collapse of regulation in seasons of peak activity. In practice, ineffective enforcement has meant that strict compliance with the regulations cannot be guaranteed while sustainable harvesting and use practices are seldom encouraged. These breakdowns are indicative of the inadequacies and strained nature of statutory institutions.

The findings on cumbersome rules and strained institutions in hierarchical modes of governance are not unique to the mopane worm cross-border trade. Kooiman (2008) pointed out that a key hindrance to hierarchical governance is that it has more rules and regulations, becoming more ineffective. In other countries, ineffective enforcement resulting from poorly designed institutions has undermined adherence to sustainable harvesting norms and use practices. For example, in Cameroon, Ndoye and Awono (2010) observed that a cumbersome system of centralised governance for the harvest and trade of *Gnetum africanum* and *G. buchholzianum* through arbitrary quotas was instrumental in discouraging compliance and instead led to an increase in corrupt practices. According to Ndoye and Awono (2010), the quota system excluded harvesters and traders from rural communities and favoured a few individuals with political power. Additionally, checkpoints used as enforcement strategies introduced 'informal taxes' through briberies, despite traders and transporters having complied with the required access and harvesting regulations and processes.

Similar findings emerged in a study of mopane worm harvesting practices in Botswana, where Lucas (2010) concluded that the punitive and policing nature of centralised state

regulations discouraged sustainable harvesting practices instead of actively engaging with rural communities in a participatory fashion. Although Lucas (2010) examined sustainable harvesting practices, the study also found that undermining the role and powers of traditional leaders weakened customary institutions and practices, thus leaving statutory institutions as a dominant form of governance. For example, traditional leaders historically had the power to place an embargo on harvesting to restrict overharvesting, allowing for close monitoring of the growth of the caterpillars to determine the appropriate harvesting period. This role is currently exclusively the forestry department's through powers vested by the Veld Products Regulation (S.I. 89, 2006). In effect, traditional leaders and customary institutions were pushed to the peripheries of regulations and their participation in decision making limited to granting consent for prospective harvesters.

Several commentaries suggest that the outcomes of excessive centralised regulation of wild products may lack the requisite agility and flexibility necessary to adapt to the local economic, socio-political, and ecological contexts (Granich et al., 2010; Wynberg et al., 2015; Kozanayi, 2018). Notably, the tendency to prefer overregulation through rigid and poorly formulated laws to govern resources may undermine the efforts for sustainable resource use. A regulatory system that neglects local realities will likely fail to meet local needs, and therefore, be rejected by local resource users. In Namibia, Lavelle (2019) observed that devil's claw (*Harpagophytum procumbens* and *H. zeyheri*) governance was largely hybridised through the presence of a variety of institutions that weakened the role of the state at the local level. Such an emergence of new and hybrid forms of governance was more pronounced in contexts where resource users were able to regulate resource through co-management arrangements. This was a notable departure from centralised notions of governance, agitated amongst other factors by discontentment with broader political-economic conditions which have led to economic instability (Lavelle, 2019).

The findings of this study suggest that existing centralised frameworks are ill-suited to the informality and geographies of the mopane worm trade. For example, the concentration of regulatory powers in the DFRR in Botswana restricted the participation of non-state actors while straining the DFRR because of a sudden increase in demand for its services during harvesting seasons. On several occasions, the DFRR struggled to meet the surge in demand for permits, leading to delays in declaring the commencement of the harvesting, thus signalling a lack of capacity. The effects of these constraints on the harvesters and

traders were further worsened by the additional costs that impede access to resources. Given that no single state or non-state entity has the problem-solving capacity necessary for the effective regulation of natural resources, it is inevitable that the centralised hierarchical approach would be inadequate for mopane worms regulation.

The centralised regulation of mopane worms is also at odds with the shift advocated by scholars for evolving governance from hierarchical state-centric modes to polycentric approaches, which empower the meaningful participation of non-state actors (Kooiman et al., 2008; Newig & Fritsch, 2009; Aligica & Tarko, 2011; Pahl-Wostl & Knieper, 2014; Weston & Goga, 2016). As necessitated by the increasing complexity and dynamism of socio-ecological systems, the need to transition from government to governance has been recognised (Kooiman, 2000; Armitage et al., 2009; Lockwood et al., 2010). Such a transition refers to the shift in public decision-making and resource governance processes from the hierarchical regime espoused by the state to multi-layered points inclusive of public and private actors (Lo, 2018). The recognised ability of polycentric systems to adapt to contexts and changes offers advantages for natural resource governance. Among these, Carlisle and Gruby (2019) highlight the enhanced capacity to adapt to actual or anticipated change and the ability to provide a good institutional fit across contexts and to mitigate risk emanating from obsolete governance actors and institutions through redundancy.

The transition towards polycentric modes of governance calls for alternative and innovative ways to deal with 'wicked problems' (Rittel & Webber, 1973; Armitage, 2008; Armitage et al., 2009) and shifts in power from the state to subnational scales (Pierre, 2000; Ribot, 2003; Hansen et al., 2014). Mopane worm users and traditional leaders consistently emphasised the need for regulatory powers to be devolved to village-level traditional authorities to enable more responsive regulation that fits the local context. While traditional leaders have historically managed access to and use of natural resources, the present framework has taken away this power and role, effectively disempowering the traditional authorities. In Zimbabwe, Zinhiva & Chitakira (2017) observed that the disempowerment of traditional authorities through centralised resource management approaches had been a precursor to the degradation of natural resources. The local authorities lacked the ability to enforce compliance with rules and norms owing to the incapacity of the state actors, and the subversion of traditional authorities created regulatory voids. Such trends also suggest

the limited utility of centralised approaches to cope with uncertainty and complex socio-ecological systems (Armitage et al., 2009).

The significance of local customary institutions and knowledge in natural resource governance is documented in the literature (see Mowo et al., 2013; Sithole, 2016; Kozanayi, 2018). Describing the interface between statutory and customary rules and regulations in marula (*Sclerocarya birrea* subsp. *caffra*) conservation and use in southern Africa, Wynberg and Laird (2007) argued that the presence of a robust customary governance system should effectively guide the need for and extent of introducing new statutory rules. This view underscores the importance of effective and appropriate regulation. The present study has demonstrated that cumbersome regulations and compliance processes reduced the accessibility of permits, and by extension, access to mopane worms and participation in the trade. This impact on access to resources and markets demonstrates a critical disconnect between regulatory instruments and the aspirations and lived experiences of users. In an analysis of the formalisation efforts to achieve sustainability and equity goals in NTFP trade, Wynberg et al. (2015) observed overregulation and poorly formulated laws persistently undermined local knowledge and needs. Similar results of a disconnect between regulation and local realities were demonstrated in South Africa by Makhado et al. (2012), who emphasised the importance of sensitivity to local contexts and found that NTFP users were unlikely to comply with permit regulations that are unaffordable and inaccessible.

Interactive governance theory recognises the co-existence of multiple governance systems from meta order to first order in the governance of natural resources. As postulated by Jentoft and Bavinck (2014), this co-existence of multiple forms of governance is expected given the diversity of interests and roles over natural resource governance, especially by customary and statutory actors. However, the undue allocation of excessive power to statutory actors undermines the co-existence of the three systems, which results in asymmetries. An important outcome is a contrast between the legislated process and the reality across the trade. For example, the imposition of statutory rules on existing customary and informal systems has resulted in conflicts and asymmetries that impact the governability of natural resources. In their analysis of marula governance in southern Africa, Wynberg and Laird (2007) concluded that government intervention in NTFP governance should be sensitive to the existence and role of customary governance. Concurring, Sowman and Wynberg (2014a) contend that effective governance approaches

maintain the prominence of local actors through a favourable regulatory regime. The case of mopane worm commercialisation demonstrates that the haphazard introduction of new rules and systems overlaid on existing customary and informal norms has undermined established practices. In turn, the new rules, which centralise governance powers in state actors, remain contentious as actors continue to access resources and markets in ways that circumvent the rules. Although it may be more convenient to adopt state-centric and hierarchical approaches for natural resource governance, careful consideration of the local context and customary governance dynamics is imperative. Where local customary institutions are sufficiently strong to regulate resource use, such an important role should be aligned with the statutory system to carve a governance framework that has relevance and broad appeal to resource users.

This study argues that the centralised approach is ill-suited to handle the growing cross-border commercialisation of mopane worms. The misconception that the regulation and governance of natural resources can be centralised and vested in one institutional body for uniform control of access, harvesting and trade is problematic, particularly as it attempts to take a narrow simplistic view of an otherwise complex system. The growing cross-border commercialisation further underscores the diversity and complexity of practices, actions, and actors in the trade. This also amplifies inequities resulting from power, knowledge, and culture (Armitage, 2008). Bodin and Crona (2009) noted that the involvement and contribution of multiscalar actors are crucial for the effective management of any natural resource. Although statutory interventions may be necessary to foster sustainable natural resource utilisation values, especially at a meta order, such interventions should be sensitive to diverse local customary and informal institutions in the second-order and the daily practices of resource access and use. In contrast, the present governance approaches across the mopane worm trade fail to adequately consider local customary governance institutions as appropriate governance partners to the state.

9.2.2 Marginalisation and asymmetries at the second and first orders

Although statutory institutions and actors dominate the governance of mopane worms across the meta, second and first orders of governance, findings suggest a high degree of fragmentation and asymmetry, which emerge partly due to conflicts between various forms of governance. Other reasons for this fragmentation and asymmetry include power inequalities, overlapping institutional mandates and roles, poor recognition of non-state

actors, erosion of customary norms and practices, ambiguities in rules, and the co-option of customary systems for political expediency by state actors. Jentoft and Bavinck (2014) referred to the inequities and incompatibilities as asymmetries that often flow from and are backed by state power. These inequities and incompatibilities between governing systems are significant in the context of wild product commercialisation as they manifest in ways that impact the governability and access to resources and markets. Similarly, they influence how resources are used. Wiersum et al. (2014) confirmed that the nature of the interplay between access rights as shaped by governance regimes inevitably plays an influential role in determining emergent institutional arrangements. Thus, the uncertainty resulting from regulatory conflicts further alienates resource users and amplifies the structural and relational drivers of marginalisation. Therefore, despite the dominance of statutory governance, asymmetries become more entrenched across the trade.

The subversion of customary forms of governance and the inadequacies of statutory regulation has created an 'on the ground' regulatory void. Dikgosi are inherently the eyes and ears on the ground who uphold customary rules, sanction punishment to transgressors and, where necessary, invite the intervention of law enforcement agencies (Hope, 2000). However, in the context of natural resources, this critical role continues to be eroded in Botswana and elsewhere (Dipholo et al., 2014; Mogende & Kolawole, 2016). Presently, dikgosi feel unempowered to intervene when conflicts arise between cross-border traders and harvesters. Similarly, local harvesters refuse to abide by any instructions from dikgosi because of their perceived lack of authoritative power to regulate the trade. While it is acknowledged that natural resource governance institutions evolve, adapt, and adjust to contemporary drivers of change (Kepe & Scoones, 1999; Ostrom et al., 1999; Potts et al., 2016), the legislated reconfiguration of the institution of traditional leadership has subverted the customary system. Brown and Lassoie (2010b) reached similar conclusions in Cameroon, where they observed that the crafting of local, modern regulatory institutions resulted in the erosion of the legitimacy and authority of traditional leaders. The diminished adherence to cultural beliefs by younger generations has also led to the dismantling of traditional norms and rituals, which had previously served as the basis of sustainable resource use and conservation (Brown & Lassoie, 2010b). In the *Tilapiine cichlid* fisheries of Lake Liambezi, Tweddle et al. (2015) observed similar trends where crossborder trade chains extending into DRC via Zambia attracted the participation of wealthy actors which led to the widespread ignorance of local norms. The erosion of customary regulations

coupled with the incapacity of state actors undermines regulatory efforts as the erosion create institutional voids. As evident across the mopane worm trade, such institutional voids have played a central role in undermining effective governance.

9.3 Navigating Governance Arrangements in Cross-Border Commercialisation

The preceding discussion described the main mode of resource governance across the mopane worm trade chain. The discussion also revealed the constraints and asymmetries that have implications for interactions between governing systems in the second-order, and the accessibility of resources and markets in the first order. However, in much of the NTFP literature, there is a gap in understanding how informality constrains or enables actors differently while responding to the governance challenges. This section draws from the interactive governance framework (Jentoft & Bavinck, 2014) to discuss the interplay between informality, governance asymmetries and implications for wild product commercialisation at institutional and first orders. Put differently, this section expounds on how resource users adapt to the effects and manifestations of gatekeeping, elite capture, and marginalisation, all of which emerge as outcomes of centralised state control over wild product access and use.

As alluded to by Jentoft and Bavinck (2014), the interactive governance framework pays particular attention to the governability of natural resources with recognition of the limits on how governable the socio-ecological systems are. As demonstrated by the empirical findings presented in this study, harvesters, users, and traders must navigate a complex and asymmetric interface between formal, customary, and informal institutions to carve out alternative ways of accessing and trading mopane worms. These alternative strategies, often at odds with expected norms and practices, expose the limitations and shortcomings of state-centric hierarchical regulatory frameworks. They fail to account for the diversity, complexity, dynamics, and scale that characterise mopane worm commercialisation. Interactive governance theory offers analytical tools and concepts to explore these limits, asymmetries and how they can be overcome at the institutional level.

The contestations and asymmetries among actors and the diversity of institutions that dominate the second-order put resource users in a predicament between statutory, informal, and customary forms of governance. This occurs when people break one or a set of rules while complying with another (Jentoft & Bavinck, 2014, p. 74). Continuing from

this predicament, the discussion in this section expands on how actors navigate institutions and the everyday challenges resulting from gatekeeping, elite capture, and marginalisation. The discussion focuses on informalisation, forum shopping, and adopting precarious practices as adaptive strategies across the mopane worm trade chain.

9.3.1 Informalisation as a strategy

The increasing commercialisation of natural resources makes it imperative to understand the role and influence of governance regimes concerning access to resources and markets (Wiersum et al., 2014). Irrefutably, one of the fundamental objectives of natural resource governance is to ensure that users benefit from natural resources (Sowman & Wynberg, 2014a). This is essential, especially in the global South where access to resources is crucial to household livelihoods and well-being (Ahenkan & Boon, 2011; Shackleton & Pullanikkatil, 2019). The importance is further underscored by the fact that access is often determined by class, power, and gender (Sithole, 2016). In their seminal theory of access, Ribot and Peluso (2003) demonstrated that a set of social relations are necessary as a precursor for resource users to benefit from resources. Evidence from this study supports these observations. For example, harvesters were restricted in participating meaningfully across the trade due to limited access to resources, markets, labour, and technology. For cross-border traders and dealers, improved access to markets, information, capital, technology, and labour significantly increased their ability to derive benefits from access to resources and trading markets. Although access and ownership of resources are influential (Ribot & Peluso, 2003), asymmetries in governance influenced how resource users participated in the trade. The emergence of haphazard, informal rules in the Thohoyandou market and other markets, for example, restricted Batswana cross-border traders despite their access to and ownership of resources that enabled cross-border trading.

Empirical insights of this study demonstrate that actors with broader networks, alliances with a greater degree of independence and an ability to absorb compliance pressures were more likely to maximise the benefits of commercialisation and access (see chapter 8). Typically, these people have developed extensive social capital to mobilise when necessary to gain access to resources or to simplify navigating challenges such as cross-border movement and permit compliance. Developing social capital for this benefit requires an effort that is often cultivated over extensive periods. Gaining access to resources and maintaining dominance in this manner is consistent with the suggestions of Ribot and

Peluso (2003) that capital and social identity play a crucial role in determining resource access, such that those with access to several resources are at an advantage.

Given the prevalence of informality in the mopane worm trade, access to resources is secured through relational mechanisms, including power, control, influence, and gatekeeping. This power is a manifestation of the extent to which elites capture the benefits in the trade chain. Literature has shown that the phenomenon of elite capture is prevalent in the formalisation, governance, and commercialisation of natural resource livelihoods (Ribot, 2003; Larson & Soto, 2008; Mbaiwa, 2008; van Niekerk & Wynberg, 2012; Ingram, 2014; Wynberg et al., 2015). This thesis reveals that informality has been a go-to strategy for actors who cannot successfully navigate the compliance costs present in the trade. By choosing to comply with regulations necessary for each context (Guha-Khasnobis et al., 2006; Kanbur, 2009; Williams et al., 2016), actors circumvent obsolete constraints to ensure access to resources and trade. Informality offers the adaptive capacity for resource users to pursue livelihood goals with the most negligible costs and minimal constraints.

While informality as a strategy offers benefits, the prominence of relational mechanisms based on norms and arbitrary rules places a premium on power and its exercise. For example, harvesters in Botswana were subjected to manipulative acts of exclusion, and limited access to information and coercion to prevent their participation in activities further up the value chain. Similarly, across markets in South Africa, acts of intimidation and exclusion were used to limit access to markets. Fragmented governance approaches created conditions that were exploited by well-positioned cross-border dealers to manipulate poorer harvesters to access stock at low prices, which in turn boosted cross-border profitability at markets in South Africa. Informality as an adaptive strategy thus has the empowering effect of enabling resource users to navigate fragmented regulatory frameworks to gain access to resources and markets. However, informality can also create opportunities for exploitation of marginal actors particularly harvesters, with limited options for recourse.

9.3.2 Forum shopping and legal pluralism

Despite the centralised hierarchies in mopane worm governance, the persistence of customary norms and informal rules means that resource users must negotiate plural legal systems to access resources at any given time. This gives rise to confusion as resource users

grapple with navigating from one legal system to another through forum shopping (Meinzen-Dick & Pradhan, 2002; Merlet, 2019). Forum shopping is defined as the ability to select the arena of law, custom, or convention that will favour an actor's objectives (Ribot & Peluso, 2003). The overlaps in rules, institutional mandates and roles make it inevitable that rules will be broken, which occurs when people try to comply with another set of rules. Given the asymmetries and complexities in the fragmented governance of mopane worms, resource users use forum shopping creatively and out of the need to realise their livelihood goals. For example, harvesters indicated that they obtained permits only when there was a risk of encountering a police roadblock. In a review of forest governance regimes in developing countries, Larson and Soto (2008) observed that when faced with uncertainty and confusion about institutional mandates, resource users were likely to ignore rules and navigate between governance systems, depending on the nature of the issue at hand. Such a phenomenon is known to entrench forum shopping among resource users and to lead to an open-access regime in extreme cases (Fitzpatrick, 2006). In Botswana and South Africa, actors are confronted by multiple institutions, frameworks, and conditions with which they must comply and navigate. Customary norms and rules, statutory regulations and informal market rules create a complex and cross-scale dynamic context that typically characterises the NTFP sector (Wiersum et al., 2014). For resource users and traders to whom access is a matter of life and poverty, resorting to forum shopping as a coping mechanism is the most logical alternative. Commonly, as witnessed in fieldwork in Botswana, local communities invoke historical claims to rights ownership when 'outsiders' access resources in their area. Indeed, the use of customary rights and customary law as a framework to claim rights to resources is increasingly emerging as statutory frameworks constrain historical rights, resulting in social impacts on rural livelihoods (Sowman & Sunde, 2018).

Informal norms and practices straddle the interface between statutory and customary governance. Of significance is the demonstration that mopane worm commercialisation is characterised by the presence of various forms of formal, customary, and informal rules to which compliance may be necessary for any given context. As argued in chapter 2 and demonstrated by empirical evidence presented in this study, mopane worm cross-border trade does not fit a neat categorisation as either a formal or informal sector. On a day-to-day basis, actors are forced to delve into the formal, customary, and informal realms to ply their trade, leading to a compliance dilemma. Owing to this conundrum, it is evident that

the three realms are not separate but dynamic (Guha-Khasnobis et al., 2006; Koçer, 2016). The nature of mopane worm commercialisation demonstrates that the emerging relationships between actors and institutions permeate the different governance systems with varying levels of informality. As demonstrated, the combined effect of forum shopping and informalisation in the mopane worm trade empowers resource users to navigate constraints and asymmetries and thus secure livelihoods.

9.3.3 Precarious practices

The hierarchies and asymmetries that characterise interactions among actors and governance systems force some actors to adopt desperate strategies to facilitate access to resources and markets. In addition to informality and forum shopping, some actors may be forced to resort to precarious practices. The sustainable use of resources and contribution of NTFPs to livelihoods depend on the governance modes adopted or preferred by powerful institutional and individual actors. At any given point, multiple institutions are required to simultaneously regulate and support NTFP trade chains (Ros-Tonen & Kusters, 2011), and this creates challenges for the day-to-day practices of actors. For actors in the mopane worm trade, navigating the asymmetries and precarious nature of commercialisation has required a higher level of adaptability and innovative crafting of access and trade strategies through the process of bricolage (Cleaver, 2002). Adopting precarious practices offers a strategy that provides temporary relief from the constraints and asymmetries for those with limited capacity. The concept of bricolage entails adopting a combination of strategies to diversify livelihood activities to navigate shocks and constraints. The precarious nature of mopane worm harvesting and trading forces actors to make do with any enablers at their disposal to navigate the governance constraints through bricolage.

As demonstrated, structural and relational access mechanisms, such as power, influence, authority and knowledge, may equip different actors to navigate the regulatory regime through compliance or by circumventing the regulatory institutions. However, the inequities in access to these mechanisms imply that not all actors are successful in navigating the regulatory constraints and asymmetries. Laird et al. (2011) articulate that inconsistencies and arbitrary rule-setting perpetuate inequities that force actors to devise ways to circumvent complex governance systems. The findings in this thesis support the observation by Ingram et al., (2015) that people use bricolage as an adaptation strategy in

response to fragmented governance arrangements. Understanding the impact of multiple governance arrangements on access and marketing opens an avenue to conceptualise the implications of interactive governance for the livelihoods of traders and the sustainable use of resources.

Varying levels of formality and informality are adopted in response to the constraints which affect users differently across the interface of the governance systems. As a result, actors may opt to be more formal or more informal, depending on the specific individual contexts and constraints they confront. Koçer (2016) noted that the choice between 'pure' formality and 'pure' informality is a rational one based on externalising or minimising the costs while maximising benefits. This represents the crafting and recrafting of access arrangements, which, given the constraints, may be necessary to secure crucial access to resources and benefits for impoverished households. The findings of this study demonstrate that it is imperative to pay attention to the local practices and institutions that influence the livelihood strategies of resource users. This is relevant because ineffective governance approaches may increase the vulnerability of resources users and force the adoption of precarious and informal practices to access resources.

9.4 Agency as a Mechanism of Access

9.4.1 Navigating fragmented governance arrangements through agency

Drawing from the notions of embedded social action (Giddens, 1984), this study argues that actors use their agency to engage and influence the social structures within which they are embedded. The effect of governing systems on resource users is not unidirectional (Jentoft, 2007); instead, resource users use their agency to creatively find ways to navigate and influence the interface between statutory and customary governance systems. In using their agency, resource users and governing actors engage in an iterative process that shapes the nature of resource use. According to Jentoft (2007), this interactive process seeks to navigate the complex and vulnerable characteristics of both the governing structures and social actors. A key vulnerability of the present hierarchical mode of governance is that rules and institutions are becoming increasingly less effective due to a disconnect with local resource use practices.

Nonetheless, the nature and multiplicity of institutions in the mopane worm trade force people to create new ways of accessing resources and markets when confronted with

barriers and constraints. For example, the introduction of the Veld Product Regulations (S.I. 89, 2006) in Botswana gave impetus to resource users' adaptive ways of accessing mopane worms. Drawing from the informality continuum (Koçer, 2016), it is argued that the constraining effect of fragmented governance systems prompted actors to adopt more informal practices to avoid complex formalised processes. A similar phenomenon emerged in Thohoyandou markets when the perceived lack of satisfactory regulation across markets was a cue for traders to create informal rules by establishing a traders' association to restrict foreign traders. Although the exclusionary processes observed in Botswana and Thohoyandou are different, they demonstrate the different dimensions of the drivers and varying levels of informality. The lateral shifts from formal to informal depend on how actors navigate constraints and barriers. This aligns with the rational decision-making hypothesis advanced by Maloney (2004) and is supported by the fact that actors' decisions about informality are taken purposefully and are aided by their agency to navigate between enabling and constraining factors at the interface between different regulatory environments.

Giddens (1984) argued that the effect of structure on social actions and social actions on structure demonstrate the relationship that actors have developed to create a tolerable co-existence with otherwise hostile structures. In the mopane worm trade case, fragmented governance systems and socio-political dynamics affect actors unevenly and thus create unique challenges. Navigating this landscape presents challenges for actors. This, in turn, depends on their proximity to the structural and relational mechanisms of access (Ribot & Peluso, 2003). For established actors, such as enterprising cross-border traders, the ability to navigate governance institutions was improved by characteristics that others lacked (see chapter 8). However, not all actors were part of extensive networks or owned the resources necessary to facilitate access to mopane worms. For example, dealers and cross-border traders often manipulated and exploited harvesters with limited ability to access permits and markets. This inability highlights the importance of access mechanisms that enable users to benefit from resources. Ribot and Peluso (2003) characterised the ability to benefit from resources as the range of powers comprising mechanisms and processes that vary and are impacted by political-economic factors. Therefore, access to benefits from resources would be undermined when the means to facilitate such access are inaccessible. To navigate this predicament, actors used various strategies, including forum shopping, collective action, and social networks. The resourcefulness and adaptive strategies adopted

by users demonstrate the creative livelihood-making process, akin to the concept of bricolage (Cleaver & de Koning, 2015). This signifies the adaptive capacity of actors to reorganise livelihoods and strategies to deal with fragmented and dynamic governance arrangements (Ingram et al., 2015).

9.4.2 Circumventing institutions

The combined effect of centralised hierarchical regulation, gatekeeping practices, and cumbersome compliance processes has motivated resource users to circumvent regulatory institutions to access resources. When regulatory institutions are designed so that compliance is insurmountable, people use their creativity to develop alternative ways to circumvent the rules and regulations. Pacheco et al. (2008, p. 7) referred to such ways as 'rules of the game' that guide actors' daily lives and their interactions outside the purview of the state institutions. The results of this study demonstrate that actors are not passive agents at the mercy of institutional bureaucrats. Across the trade, actors proactively navigated the frameworks and rules to engage in livelihood strategies that offered high returns at minimal costs. Such strategies included circumventing cumbersome regulatory frameworks and taking advantage of the limitations of rule enforcement for full or partial non-compliance. For example, harvesters without permits set up camps in forests where the officials would not easily find them. Similarly, cross-border traders across the Central District worked with harvesters to purchase and bulk up stock without the dealer permits, which were only purchased on the last day before departing Botswana for South Africa. Cross-border traders also worked together to export mopane worm consignments using only one permit on behalf of the group. In some cases, these strategies were the last resort for frustrated harvesters and traders who found state bureaucracy inaccessible and costly.

The practices to circumvent regulatory constraints conform with the notion advanced by Cleaver and de Koning (2015), which sees actor agency as a means through which people respond to their social context and power dynamics through 'everyday' practices. In this case, the iterative interaction between resource users and regulators effectively led to a reconfiguration of governance arrangements beyond the realm of statutory institutions.

In a study on mopane worm harvesting practices in Botswana, Lucas (2010) attributed the prevalence of circumventing institutions and illegal harvesting to policy uncertainty created by the government. For example, mopane worm harvesting was formally restricted in 2004

and later revised through the Veld Products Regulation (S.I. 89, 2006), which required prospective harvesters and traders to obtain permits before commencing with their trade. However, in 2008 the government of Botswana temporarily waived the permit requirements[48] for harvesting (Lucas, 2010), thus allowing unhindered access to mopane worms. As a result, the reintroduction of mopane worm harvesting restrictions was met with resistance from harvesters. Throughout the study area, harvesters were of the firm view that restricting harvesters to comply with permit regulations was futile and unnecessarily exclusionary. The rejection of the statutory permit system and common concerns around the ineffectiveness of the authorities were some of the driving factors for mopane worm users to circumvent the state bureaucracy. Such policy changes also created information asymmetries among actors, increasing the susceptibility of impoverished actors to exploitation. In India and Nepal, Choudhary et al. (2014) reported that a lack of knowledge about market dynamics, access, trading prices and weak linkages with other producers was critical in the NTFP sector. Similarly, in Zimbabwe, Kozanayi (2018) observed that when state regulation is deemed excessive, resource users were prepared to adopt clandestine access methods to violate the regulations to sustain their established livelihood practices. Clearly, agency is useful in empowering actors when policy uncertainty, confusion and a lack of information undermine established norms and practices. In this context, circumventing institutions to secure access to resources and markets was a necessity for actors.

9.4.3 Control and gatekeeping

In response to the cumbersome regulatory framework and perceived regulatory void, local traders developed their own informal rules to fill voids that occurred because of the inadequacies of the statutory regulation. However, these informal arrangements also led to additional entry barriers, especially for foreign traders. Local South African traders in Thohoyandou, for example, introduced rules in the markets which require any Batswana traders to supply stock to local bulk traders only, instead of selling directly to vendors and consumers. This informal rule arose because of the traders' perceived lack of regulation of any kind by the Thulamela Municipality. For example, the municipality issued street trading permits for local traders, but no mechanisms existed to issue similar permits to foreign traders. As a result, foreign traders plied their trade without needing to obtain street

[48] The regulations were nonetheless not repealed, therefore remained in force.

vending permits, in contrast to their local peers. Although excessive regulation is well recognised as a problem in wild products management (Wynberg & Laird, 2007; Ndoye & Awono, 2010; Wynberg et al., 2015), a lack of or inadequate regulation is equally seen as a precursor to opening the trade for exploitation by enterprising non-local actors. However, the creation of informal rules to exclude Batswana was also deemed necessary in retaliation against the regulatory regime in Botswana, which requires South Africans to comply with numerous costly permit regulations. Studies on mopane worm livelihoods in communal areas in Botswana, South Africa and Zimbabwe have found that locals often cited poor adherence to local customary norms as the basis for their discontentment with commercially driven 'outsider' actors (Lucas, 2010; Makhado et al., 2012; Sithole, 2016; Sekonya et al., 2020). These conclusions are consistent with the findings of Twine et al. (2003), who demonstrated a strong linkage between resource commercialisation, poor regulation by local actors and increased participation by outsiders.

The Veld Products Regulations in Botswana, which regulated foreign cross-border traders through hefty permit fees and other restrictions, has a direct bearing on the impasse in Thohoyandou. By frustrating the ease of movement and access of mopane worms from Botswana into South Africa, the inhibitory requirements created significant bottlenecks for South Africans going to Botswana. Mopane worm trade is truly regional, with the full potential value realised when dealers cross the international borders. Laird et al. (2010) caution against the tendency of governments to gravitate towards overwhelming bureaucracy and elaborate regulations, especially as the evidence demonstrates that cumbersome regulation may do more harm than good (Wynberg & Laird, 2007). While influential South African cross-border traders asserted control by opposing Batswana foreigners at some markets, the local vendors and Batswana used their agency to devise ways to circumvent the restrictive informal arrangements.

The ongoing competition for control and influence by cross-border traders indicates entrenched inequities and local power dynamics, which are further underscored by the growing disparities between actors across the trade. For example, the power imbalance evident in the trade manifests in the way in which entrepreneurial cross-border traders are capturing the trade chain. It has been argued that elite capture may be an unintended consequence of formalising commercialisation of natural resources (Mbaiwa, 2008; van Niekerk & Wynberg, 2012; Wynberg et al., 2015). This study showed that mopane worm

commercialisation is susceptible to elite capture and gatekeeping as reinforced by the power inequities across the trade chain.

Across harvester communities, cross-border traders exploited harvesters by maintaining a stranglehold on the trade chain, preventing harvesters from 'stepping up' in the trade. This was achieved by purposefully withholding information on permit acquisition, trade markets in South Africa, and customs requirements. Combined with the lack of a pro-poor and participatory focus in the regulatory framework, it was inevitable that this would lead to a state where harvesters were restricted to being merely labourers with little added value derived from their effort. Similar exclusionary practices have been reported in Nepal and India's Indian Bay leaf value chain by Choudhary et al. (2014). In this case, it was observed that locals were less likely to obtain trading permits because of a lack of awareness and capacity and the risks in transportation and marketing. As a result, traders captured the value, and locals participated in the trade merely as collectors. Choudhary et al. (2014) concluded that the restrictive process and procedures pushed local actors to remain unregistered and often vulnerable to exploitation. The dominant traders further deepened the gatekeeping and exclusion of new entrants by forming alliances and clashing with others. Traders in South Africa formed Hawkers Associations, whose membership was only open to locals. Membership of these alliances was essential for accessing street trading permits, becoming part of networks and trading in key markets, such as the Thohoyandou open market. The elite capture of benefits in NTFP systems has been well documented, with rural harvesters and collectors left without an equitable share of the benefits (Ribot, 2003; Child, 2009; Wynberg et al., 2009; Mbatha, 2011; van Niekerk & Wynberg, 2012). While entrepreneurial cross-border traders were able to use their power and influence to restrict the harvesters from stepping up the trade, it is also evident that the restrictive nature of the regulations contributed to elite capture by limiting the ability of impoverished harvesters to participate beyond harvesting.

9.4.4 Contribution of social networks

The supporting role of social networks is valuable as it enables resource users to navigate the constraints resulting from gatekeeping, marginalisation, and centralised control across the trade. A central finding of this study is that actors in the cross-border trade depend on input and support from their families, friends, and kin to access harvesting areas; obtain harvest permits and information on permit-issuing dates; and arrange cross-border trips.

Actors also leverage social capital for additional labour to increase harvesting capacity, improve profitability by operating in multiple trading locations, and recruit clients. This observation is consistent with the notion that social networks are a resource from which actors draw capital to pursue their interests (Baker, 1990). The exchange of information, commodities and resources on a voluntary and reciprocal basis are the hallmarks of social capital, enabling accessibility in informal trading contexts. Mutopo (2010), in a study of Zimbabwean cross-border traders, observed that friendships and family relationships were key factors that influenced the take up of trading by Zimbabwean women in South Africa. These groups continued to build networks through continual interaction on cross-border journeys and thus developed trust through friendships, cordiality, and personal recommendations (Mutopo, 2010).

Security and personal safety are important considerations for cross-border traders when travelling with large consignments of mopane worms and sometimes large sums of money in a foreign country. As a result, most traders preferred to travel together in convoys for the duration of the trips. This sense of belonging and being in the company of fellow compatriots is necessary given the risks faced by traders. Mutopo (2010) similarly found that the xenophobic abuse and attacks were all part of the risks that faced Zimbabwean cross-border traders in South Africa. An important strategy to mitigate the risks was to travel in groups. It is common for cross-border traders to use their networks to blend in among local people to avoid attacks (Mutopo, 2010). Similarly, Garatidye (2014) reported that women cross-border traders were widely targeted by robbers for their goods and cash at trading points and taxi ranks in Musina and Johannesburg. Garatidye (2014) concluded that although Zimbabwean women cross-border traders lived in fear while in South Africa, some continued to ply their trade fully aware of the risks. The lack of choice and limitations are often a result of the broader political economy factors, which lead to context-specific uneven distribution of costs and benefits related to natural resources among the actors (Bryant & Bailey, 1997).

Social networks and human agency are sources of power for the powerless, and such powers manifest in social relationships (Foucault, 1980; Hocker & Wilmot, 2014). While it is a truism from a sociological perspective that humans interact (Turner, 1988), the findings of this study demonstrate that such interactions and social networks serve as an empowering strategy for the powerless actors. Building alliances with like-minded people

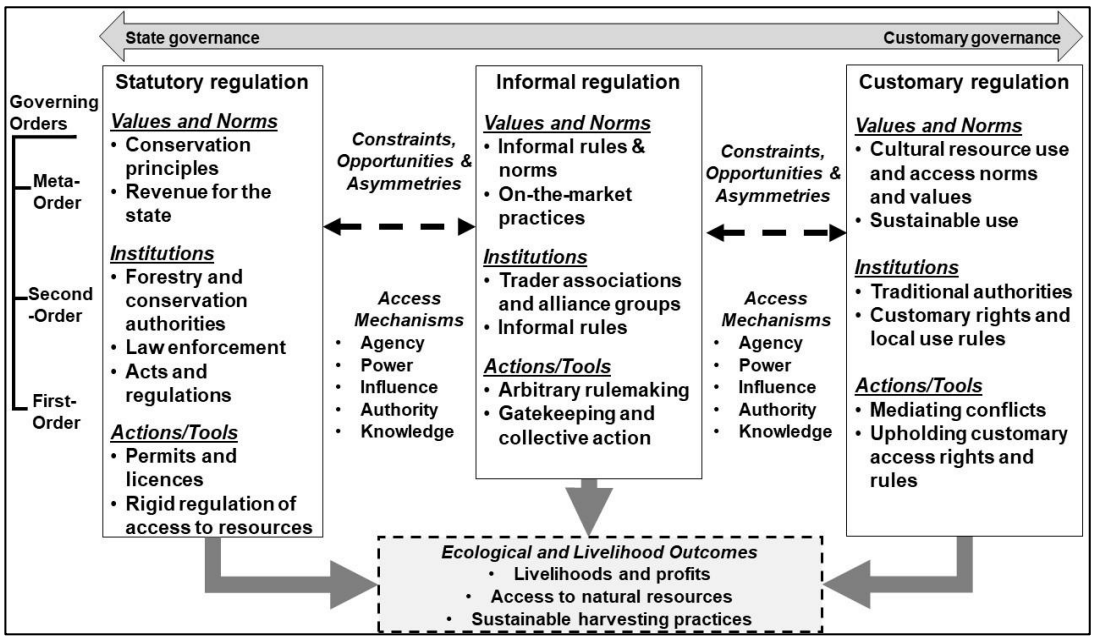
to circumvent the inequities created by bottlenecks and gatekeeping creates a tolerable environment in which actors access and trade resources. While navigating this inequality by tapping into social capital requires creativity (Cleaver, 2002; De Koning, 2011; Ingram et al., 2015), it also demonstrates the dynamism with which actors influence structures (Giddens, 1984; Kooiman & Bavinck, 2005).

Social ties and kinship are important in such alliances as they extend from existing family relations and kinships. According to Ingram et al. (2015), actors must make the best of any configuration of capitals at their disposal to construct, mould and refine their livelihood activities and navigate limitations imposed by the fragmented governance arrangements. The empowering effect of social networks is known to compensate for weaknesses, thus improving the ability to derive benefits from natural resource access and use (Coleman, 1988; Barnes-Mauthe et al., 2015). Mopane worm users and institutions are socially embedded. The embeddedness is intricately linked to the social networks for resource users, which aid their daily practices (see chapter 6). Additionally, the embeddedness of the mopane worm trade has improved the capacity of actors to navigate governance institutions to access resources, reduce transaction costs, and promote information transfer and cooperative problem-solving.

9.5 Governance and Informality: A Conceptual Framework for Analysing the Governance Interface

Drawing from this discussion, a framework for analysing the interface between governance and informality in wild product commercialisation is presented in Figure 9.1. The framework comprises three interacting forms of governance: statutory, informal, and customary governance, along a formality-informality continuum. The governance approaches influence how resources may be accessed and used, which in turn lead to different ecological sustainability and resource utilisation outcomes. The framework also incorporates mechanisms of access as well as the constraints and opportunities that influence relationships between resource users and different forms of governance. The mechanisms enable resource users to navigate the interface between different forms of governance. As presented in the framework, the mechanisms include, but are not limited to, power, influence, authority, and knowledge. These, in turn, influence the extent to which actors can engage different institutions and regulatory actions in pursuit of commercialisation goals. Ribot and Peluso (2003) articulated that bundles of power and

mechanisms of access are central to the engagement as they influence how resources and benefits are accessed. While the influence of these mechanisms is significant on resource access arrangements, resource users also proactively use their agency to circumvent emerging constraints and take advantage of opportunities to realise different goals. This enables resource users to move along an informality continuum and access resources by combining formal, informal, and customary means.



Source: George Sekonya

Figure 9.1 Conceptual framework describing the governance and informalisation of mopane worm cross-border commercialisation

The framework in Figure 9.1 contributes to interactive governance scholarship by conceptualising the regulation of natural resources through a combination of statutory, informal, and customary forms of governance. For formal trade, statutory governance provides mechanisms through which traders and dealers are regulated. Regulating commercial trade through statutory mechanisms allows for greater state control. However, the state seldom has complete control over access and use of natural resources, which are intertwined with local livelihoods and cultures. The use of mopane worms for informal trade and household subsistence typically involves customary and informal institutions as relevant forms of governance. The three forms of governance interact across three orders. Such interactions make it inevitable that resource users will adopt varying combinations of compliance with statutory rules, informal practices, and customary norms. This interaction,

depicted by dynamic feedback loops, demonstrates pathways for resources users to combine different forms of trade and use. Using their agency, local harvesters, dealers, cross-border traders, and vendors craft arrangements to access resources and markets.

These results shed light on how integrating multiple forms of governance, informality, and subsequent interactions influence the commercialisation of natural resources and are significant in two respects. First, natural resource governance is centralised in state institutions through hierarchical approaches. The centralisation of governance emerges at a meta order and persists despite the presence of customary and informal forms of governance. The intersection of interests over natural resources by the state, traditional authorities and local resource users means that natural resource governance is seldom politically neutral. The fact that state actors are backed by state power across the meta, second and first orders makes it inevitable that the state may undermine other interests in resource management. Nonetheless, despite the positioning of statutory institutions, other forms of governance remain influential in the day-to-day interactions among resource users and thus lead to the emergence of legal pluralism.

The second is that informality and agency provide important mechanisms for resource users to either negotiate the constraints or exploit opportunities that emerge from governance inconsistencies, asymmetries, and legal pluralism. In any setting, inequities in power, wealth and social class are prominent in shaping the diverse and complex forms of social relations and access, leading to the marginalisation of destitute actors. This thesis argues that individuals use their agency to devise strategies to access resources through informal ways that circumvent some of the governance and relational constraints. In mopane worm cross-border commercialisation, the interactions between statutory and customary governance systems have led to greater adoption of informal practices across the trade.

9.6 Conclusion

This chapter discussed the main findings of the study in the context of the theories and frameworks introduced in chapter 2. The discussion culminated in a conceptual framework (Figure 9.1), demonstrating that governance of wild products incorporates multiple forms of governance underpinned by diverse regulatory institutions and frameworks. Owing to the fragmented nature of governance, this diversity has introduced constraints for the

access and marketing of wild products. Across harvester communities and markets, these constraints were navigated through various strategies, including informalisation, in a demonstration of the liberating and empowering effect of agency. Therefore, it is evident that hierarchical modes of governance, the growing marginalisation of destitute actors, and the proliferation of extra-legal ways of access that are dominant across wild product trade are an outcome of ineffective governance, a breakdown in decision-making, and inconsistent regulatory processes.

These governance problems underscore the extent to which policy frameworks misconceptualise wild product livelihoods and thus result in a mismatch between interventions and the realities of resource users. As demonstrated in this study, fragmented governance arrangements benefit actors with privileged access to market information, knowledge, capital, and resources to navigate the constraints and incompatibilities that characterise informal cross-border trade. Therefore, it is imperative to align statutory, customary, and informal regulatory mechanisms for effective governance in wild product trade chains, coupled with a focus on sustainable use of resources and safeguarding informal, resource-based livelihoods.

The next chapter concludes the thesis with a summary of key lessons, contributions and the main recommendations of the study.

CHAPTER 10: CONCLUSION

This chapter presents the key lessons, main contributions and recommendations of this thesis. This study set out to enhance understanding of the interface between governance and informality in wild product commercialisation. This was done to expand the conceptual understanding of the outcomes of interactive governance approaches and informality on wild product commercialisation, sustainable use resources and rural livelihoods. Using the lens of mopane worms, the cross-border commercialisation between Botswana and South Africa was investigated through a case study approach to a) identify key actors across the mopane worm trade chain; b) analyse the governance arrangements that configure the harvesting, dealing and cross-border trade of mopane worms; c) investigate the role of social relations among resource users in navigating different governance systems; d) examine power dynamics in relation to actor interactions; and e) propose a conceptual framework to understand the livelihood implications of the interplay between different governance arrangements and informal trade.

Qualitative methods comprising case study and multi-sited ethnography were adopted for data gathering to gain a nuanced and multifaceted understanding of the governance arrangements, informalisation and commercialisation of mopane worms. The approach was necessitated by the cross-border characteristic of the trade and the need to incorporate the multiple contexts and trajectories of the trade. The study sites chosen were in Botswana and South Africa and comprised cross-border trade of mopane worms through harvesting in the Central District of Botswana and bulk exportation, marketing and trading in the Limpopo province of South Africa. In Botswana, the study sites were in the Central District, while the South African study sites included urban markets across Vhembe and Mopani Districts in Limpopo Province. A total of 70 interviews were conducted with harvesters, intermediaries, cross-border traders, forestry department officials and traditional leaders. To provide rigour to the results through triangulation, additional data were gathered through participant and non-participant observations, market surveys and document analysis. Thematic and iterative analysis followed data gathering.

10.1 The Identification of Key Actors Across the Mopane Worm Trade Chain

Mopane worm commercialisation has grown from an obscure, subsistence-based livelihood activity into a lucrative regional trade chain, followed by unprecedented growth, which has attracted the interest and participation of institutional and individual actors. The institutional actors that are key to mopane worm commercialisation and its regulation include conservation and forestry departments, customary authorities, immigration, and law enforcement agencies in both Botswana and South Africa. These actors collectively comprise the governance institutions across the trade that regulate how harvesters, dealers, and cross-border traders access resources and markets. The study found significant overlaps in roles and institutional mandates across statutory and customary institutions with implications for the effective governance of wild product commercialisation. Specifically, the duplication of roles and asymmetric interactions among institutional actors undermined the extent to which customary institutional actors contributed towards the effective governance of natural resources.

Mopane worm commercialisation comprises individual actors, including harvesters, dealers, cross-border traders and vendors from diverse socio-economic backgrounds across Botswana and South Africa. This study showed that disparities in wealth, resource access capability and power inequities influenced the nature of relationships that exist among these actors. A key outcome of these relationships was a differentiation in which impoverished and marginalised actors were restricted from 'stepping up' the trade chain, and thus, remained harvesters and processors. On the other hand, wealthier entrepreneurial actors dominated the cross-border trade and thus derived significant benefits. The study demonstrated that a capture of the trade and its benefits was facilitated through exclusionary clandestine and overt acts. In some instances, this capture manifested opportunistically through organised informal institutions and norms that flourished in the contexts of regulatory voids and fragmented governance arrangements. Despite the constraints, including entry barriers, marginalisation and exploitation, mopane worm commercialisation provided invaluable seasonal and year-round income-earning opportunities for harvesters and traders, respectively. Consistent with the known household contribution of NTFPs articulated in the literature, the income creates a crucial cushion against poverty and unemployment.

Although commercialisation attracts prospective actors for economic reasons, mopane worms remain an inherent part of local diets, cultural identity, customary practices, and livelihoods in harvester communities. The broader implications are that these values need to be considered when policy frameworks aimed at promoting resource commercialisation are designed and implemented across the trade chain.

10.2 The Role of Social Relations Among Resource Users in Navigating Different Governance Systems

Due to the social embeddedness of the mopane worm trade, social relationships and networks are critical resources for actors to navigate the constraints and bottlenecks in regulations. The findings from this study demonstrated that relationships and interactions between the actors and governance frameworks are not unidirectional. Instead, they are characterised by dynamism and interactive feedbacks, enabling actors to create tenable conditions to circumvent restrictive governance institutions through agency, social identities, and networks, thus facilitating access to resources and markets. Although regulations have been developed to regulate and facilitate access to resources, their lack of local contextualisation and inconsistent enforcement impact their effectiveness. This is aggravated by local socio-political dynamics, which empower the influential actors with privileged access to enabling mechanisms of access. The study demonstrated that actors experience governance outcomes inconsistently; some are marginalised, while the rules advantage others. However, the research showed that the social embeddedness of the mopane worm trade enabled actors to draw on their social networks and agency to navigate and influence governance inconsistencies and constraints across the trade chain. Taken together, these findings suggest that social networks and relations are an integral mechanism through which access and commercialisation of mopane worms are facilitated, especially in rural contexts.

The study demonstrated the significance of social networks and relations for facilitating access to information, resources, and markets for cross-border marketing, especially for novice cross-border traders embarking on maiden cross-border trips to either Botswana or South Africa. Across harvesting communities, social relations help facilitate access to information, resources, and markets. In South African markets, networks of kinships and family ties have led to the emergence of hawkers associations among locals, contributing to improved accessibility of these markets for foreign traders. These institutions serve the

deliberate role of consolidating bargaining power and improving the ability to navigate statutory frameworks. In addition, informal institutions are integral in regulating the everyday marketing of mopane worms across markets through informal rules. Significantly, the covert 'rules of the game' shared through social relations form part of the practices, including smuggling and the under-declaration of consignments at border posts. While little is known about the true extent of these clandestine cross-border activities, the bribery of officials is a common way of ensuring that low customs duty was payable by cross-border traders.

This study raises important questions about the role of agency and collective action in empowering impoverished natural resource users. Resorting to alternative ways of access to circumvent the constraining effect of regulations is common among traders and indicates the empowering effect of agency and collective action. By way of example, the prevalence of clandestine ways of access and marketing demonstrates the need to reform existing governance frameworks to be locally relevant to the needs and aspirations of local resource users and traders. The emerging regional commercialisation of mopane worms provides invaluable income that enables diversification and investment in assets such as farming inputs, livestock, household-based microbusinesses, and funding education in rural areas with little economic activity. The implication is that the transformative impact of wild product commercialisation must be considered when formulating governance frameworks that enable rather than constrain participation, access, and commercialisation. This consideration could be instrumental in minimising the reliance on social networks to facilitate access and unlock the potential of social networks to bolster social cohesion across the trade and among the actors.

10.3 Governance Arrangements that Affect the Harvesting, Dealing and Cross-Border Trade of Mopane Worms

This study strengthens the idea that effective governance is crucial to supporting resource-based livelihoods. To this end, the findings demonstrated that fragmented governance arrangements and frameworks have four critical outcomes for how users access and use resources. First, multiple overlapping institutions place actors in a predicament as they may break one set of rules while complying with another. As demonstrated in this study, actors use their agency to devise alternative ways to access resources and markets. In this pursuit, forum shopping has emerged as a strategy, with actors compelled to choose between

customary and statutory rules to access natural resources. In addition to the rules conundrum, limited interactions between statutory and customary governance actors create a regulatory void, especially in areas with a limited reach of state regulation. At the same time, traditional authorities are inadequately resourced to enforce rules.

A second outcome of the fragmented governance arrangements and frameworks is that impoverished actors who have limited capacity to navigate regulatory frameworks often find themselves at the mercy of cross-border traders and unable to benefit from resource commercialisation. While the regulations prescribe procedures to access resources, limitations amplified by inequalities among actors mean that access to the benefits remains elusive for many actors, especially harvesters.

A third outcome of the fragmented governance arrangements and frameworks is that actors who struggle to navigate these regulatory frameworks are discouraged and demoralised from pursuing legally sanctioned access mechanisms. For example, harvesters in Botswana lost hope of complying with the rules as compliance costs comprise a large proportion of their incomes.

Finally, while the existing framework is purported to be informed by resource sustainability objectives, this study argues that the reality, particularly in harvester communities, proves otherwise. The access mechanisms proposed through the permit system neither enhanced local participation in decision-making nor promoted sustainable harvesting practices. The existing hierarchical model of governance has effectively kept the central government as a critical powerholder. This lack of a sustainability focus and poor devolution of powers demonstrate the lack of consideration for local livelihoods and socio-economic contexts in the design of the regulatory frameworks. Given the significance of NTFPs to livelihoods in rural communities, it is apparent that the lack of local contextualisation constrains livelihoods and limits access to benefits.

While constraints emanating from governance inefficiencies have a significant limiting effect on actors across the trade, the emergence and adoption of informal rules, norms and institutions demonstrate the inherent resourcefulness and agency of actors to navigate such constraints. The study demonstrated that informalisation across the mopane worm trade occurs primarily in response to the constraints of overlaps and inadequate regulation where

regulatory voids are significant. The rise in informality has improved the ability of harvesters to pursue livelihood goals while minimising costs and circumventing constraints. Where actors perceive regulation as non-existent or lacking, informal institutions have provided the necessary rules to regulate actor interactions and markets. A key conclusion is that despite the poor recognition of statutory institutions, informal arrangements can stimulate coherence in practices, especially in contexts where statutory and customary forms of governance fall short.

The broader implication of these findings is that resource managers need to develop policies that align the roles and mandates of statutory and customary institutions to minimise asymmetries and improve compatibility to facilitate resource access and sustainable management outcomes, with a pro-poor focus to support harvester communities. Resource managers must acknowledge that governance affects resource use and commercialisation outcomes. Therefore, a holistic understanding of the trade and livelihoods of the actors should be key for informing policy interventions in wild product commercialisation.

10.4 Power Dynamics in Relation to Actor Interactions

The pervasive effect of the exercise of power and its inequities have shaped the interactions among harvesters, dealers, vendors and governing actors. The study contributed to our understanding of the role of power in influencing actor interactions and as an access mechanism in two ways. First, the prominence of hierarchical statutory governance over other forms of governance has a debilitating effect on multi-stakeholder engagements for regulating resources. This dominance, especially at a meta-order, is a direct result of state power over other role players in resource governance. As demonstrated in the interactive governance framework (Jentoft & Bavinck, 2014) (see Figure 2.1 in chapter 2), a greater degree of coherence and compatibility between governing systems is necessary to foster effective modes of governance through symmetric interactions that minimise costs and constraints. Despite being key powerholders, statutory institutions lack proactive interventions to promote access and sustainable resource use. Similarly, their dominance continues to frustrate resource users and other stakeholders such as traditional authorities. Such factors point to the lack of multi-stakeholder engagement in decision-making. This study suggests that the positioning of state actors as sole powerholders has introduced bottlenecks and constraints that have encouraged the adoption of informal practices,

especially among harvesters, dealers, and traders. Such strategies have become necessary since interactions are undermined and, in some instances, restricted by the state bureaucracy.

Second, power has emerged as an access mechanism, with its inequities and dynamics affecting interactions among harvesters, dealers, traders, and vendors at the individual level in everyday marketing and trade. Inherently, the role of power favours the powerful and powerholders. In this context, the ability to comply with permit regulations has empowered actors who are compliant while leaving non-compliant actors at a disadvantage. This imbalance has manifested when compliant actors can manipulate non-compliant actors with the knowledge that non-compliant actors would have limited recourse in a case of dispute, thus creating dependency relationships. The dependency that results from this dynamic often condemns non-compliant actors to trade at the mercy of powerful and often wealthier actors. This study showed that the inability to comply with permit regulations could undermine impoverished individuals for whom compliance is costly and unattainable. This finding emphasises the need to design inclusive regulations and governance frameworks that empower impoverished resource users while promoting sustainable resource use practices among actors.

The wider implications are that the existing models of centralised decision-making limit a holistic understanding of natural resource governance and commercialisation from a broader range of stakeholders at the institutional level. Instead, resource governance is understood from protectionist ideals, which perceive resource use as an antithesis to sustainability. These ideals permeate the everyday actions of first-order governing wherein holding a permit is deemed equivalent to sustainable resource use and is thus preferred by regulators. As a result, powerless and un-permitted resource users withstand the worst of resource managers, despite usually adopting ecologically sound harvesting and resource use practices in communal areas.

10.5 Towards a Conceptual Framework to Understand the Livelihood Implications of the Interplay Between Different Governance Arrangements and Informal Trade

This thesis provided insights into understanding the governance of natural resource commercialisation by expanding the role of informalisation and its location at the interface

between statutory and customary forms of governance. An interactive governance perspective was adopted to understand the outcomes of various interactions at different orders of governance and predicaments faced by actors grappling daily to access and trade natural resources. A key finding is that the state-centred approach is consistent with resource management notions championed through fortress conservation approaches, which suggests that resource sustainability requires protecting natural resources from humans. This romanticism of nature ignores the important role of natural resources in cultural identity, livelihoods, and wellbeing in impoverished households (Brockington, 2002; Brockington & Igoe, 2006). The idea that getting institutions right is a panacea for effective governance as advocated in the effort to develop principles for good governance similarly falls short of appreciating the local contexts and socio-political dynamics that influence patterns of resource use. The universality of such principles and state-centric institutions has been criticised in the African context, given the persistent existence of customary forms of governance and unique local dynamics, which remain marginalised in mainstream resource management discourses despite being influential.

This thesis contributed to expanding the understanding of the interactive relationship between the governance of wild product commercialisation and the role of informality as a mechanism for facilitating access to resources and markets. Through the conceptual framework presented in Figure 9.1, this study demonstrated that traditional authorities and informal institutions contribute significantly to regulating resources in contexts where state reach is limited. Furthermore, the intimate relationship between traditional authorities and local communities has positioned these institutions as the face of governance to fill the void created by limited state capacity and reach. Similarly, informal institutions such as trader associations have been repositioned to regulate markets because of the inadequacies of statutory institutions.

This thesis drew from the interactive governance framework (Jentoft & Bavinck, 2014) to provide an overarching framework incorporating customary and informal institutional insights into legally plural approaches for governing wild product commercialisation and natural resource use in general. The historically entrenched customary institutions and their intertwined relationship with local practices and livelihoods provide a basis for criticism of the exclusionary nature of contemporary conservation approaches, which locate state power as the requisite factor for effective governance of natural resources and livelihoods.

The framework proposed in this thesis (see Figure 9.1 in chapter 9) helps to explain the relationships between various forms of governance at practical day-to-day, institutional and policy levels to minimise the asymmetries and maximise synergies in resource governance initiatives.

Unique local contexts and dynamics are imperative in shaping resource access and use patterns in the context of natural resource commercialisation. For resource users, navigating the interface between statutory, customary, and informal forms of governance and gaining access to resources and thus benefits requires a combination of multiple, context-specific arrangements and mechanisms, which existing NTFP governance models do not address. To augment resource governance, it is pertinent to consider concepts that encapsulate notions of marginality, access, power, forum shopping and collective action to account for the pragmatism with which local actors pursue livelihoods and resource commercialisation. This represents a shift from an oversimplified view of the relationships between natural resources and users that conceals the nuances in resource patterns. As demonstrated in this study, wild product commercialisation requires pragmatism, agency, and resourcefulness to navigate the constraints imposed by institutional frameworks and local socio-political dynamics, which often are entrenched in societies. These may include deeply held customary norms, practices and contemporary practices that are not readily embraced in policy frameworks. Customary beliefs and norms on harvesting, such as the timing of harvest and harvesting late instar worms, provide ecologically sound regulation to harvesting and need to be accommodated in regulatory norms.

Nonetheless, the erosion of customary norms continues in practice. Significantly, the relationship between local communities and natural resources has been simplified and used to justify specific resource management strategies. However, when looked at in its entirety, people's relationship with nature is an integral part of cultural identity. Practices that are unique to a culture embody the essence of who people are. Thus governance frameworks need to consider the complex relationships between resources and local communities so that context-specific informal and customary practices and values are accounted for in statutory frameworks.

10.6 Main Contributions of the Study

10.6.1 Contribution to scholarship around governance of wild product commercialisation

This study contributes to the literature on the governance of wild product commercialisation by addressing the theoretical gap on how the co-existence of multiple governance systems impacts access to resources, markets and livelihood crafting, particularly in cross-border contexts. By examining the interactive nature of resource governance, the study contributes to this literature in three ways. First, understanding the influence of governance arrangements and their forms across the entire trade chain is essential as it allows one to study and contextualise the constraints and enabling factors without assuming that resource governance is the sole competence of statutory actors. The interactive governance theory is a valuable starting point in this exercise. However, its neglect of the role of informality is a theoretical blind spot to which this study contributes.

Second, the study contributes theoretically and empirically to the literature on the utility of informality as a concept to understand the relationships between regulatory frameworks and resource users. From a governance perspective, the study showed that informality comprises a governance system that provides tools to regulate the behaviours of actors in contexts where state reach is minimal or non-existent. These insights locate informal forms of governance as one of the systems that comprise the plural legal systems that govern resource use. This notion extends existing ideas of how informal activities are regulated and suggests that informality is not synonymous with unregulated, illegal and chaotic activities. Furthermore, the findings in this study demonstrate that informality also serves as an adaptive strategy that offers resource users the means to self-govern while either circumventing statutory bureaucracy or remaining outside its reach. Therefore, self-governance through informality should not be equated to illegality. Instead, insights in this study support a continuum conceptualisation in which the extent of state reach best describes the informality and not arbitrary dualisms between formal and informal.

Third, the study contributes to the literature on the governance of wild product commercialisation by incorporating actor agency to explain the crafting strategies to navigate governance frameworks. Building on the relational mechanisms of access as outlined by Ribot and Peluso (2003), a central finding to emerge from this study is that agency empowers those limited by a lack of ownership or access to mechanisms such as

power, authority, knowledge and influence. Put differently, the study showed that agency allows constrained actors to craft alternative pathways to access resources under different governance arrangements. This understanding in the context of governing cross-border commercialisation should help to improve predictions of the impact of governance frameworks on impoverished actors for whom access to natural resources, such as mopane worms, may comprise a last resort to buffer against poverty and unemployment.

10.6.2 Contribution to the literature on the cross-border commercialisation of wild products

This study also contributes to the literature on the cross-border commercialisation of mopane worms in southern Africa. This it does in three ways. First, it extends the empirical work of Kozanayi and Frost (2002), which alluded to the growing cross-border commercialisation in southern Zimbabwe without explicitly exploring the phenomenon. By analysing the cross-border commercialisation holistically and in its entirety, this study is the first of its kind to study mopane worm cross-border commercialisation and examine the linkages between harvesting areas and markets across international borders between two countries in southern Africa. This study lays the groundwork for future empirical research to investigate and quantify the value addition and value chain governance and determine a quantitative framework for measuring the contribution of mopane worm cross-border commercialisation to gross domestic product (GDP) in the countries encompassing the trade.

Second, this study demonstrates that mopane worm cross-border commercialisation is growing in popularity and attracting a wide range of actors. As a result, important questions arise on the sustainability of wild-harvested populations to support the growing cross-border trade. A natural progression of this work is to explore alternative ways of mopane worm farming to supplement wild-harvested stocks to ensure sustainable use of resources and alleviate the pressures on wild populations.

Third, by critically interrogating the constraints and opportunities that configure access arrangements to resources and markets in cross-border commercialisation, the study offers alternative ways of understanding the drivers of access relevant to broader natural resource-based livelihoods. The insights from the study reinforce the notion that when access to a resource is a matter of life and death, people are bound to develop ways to facilitate their

ability to access resources. This study proposed a conceptual framework that explains the influence of governance frameworks on actions and ways that actors adopt and realise livelihood outcomes.

10.6.3 Contribution to the scholarship on the informal economy

This study makes significant contributions to the informality literature in two ways. First, the study confirms the notion that informality is more than just evading compliance and a purported category of illegal practices. Instead, informality entails complex combinations of practices that conform to statutory, customary, and informal or tacit rules, where applicable. When analysed through the lens of interactive governance theory, informality expands to encompass adaptability to constraints through the creative crafting of access pathways and mechanisms. This notion of informality reinforces the continuum conceptualisation advanced by informality scholars (see Chen, 2006; Guha-Khasnobis et al., 2006; Koçer, 2016). In the context of wild product commercialisation, this conceptualisation offers an analytical tool to understand the nuances of resource access and use that are otherwise concealed in formal-informal dualism thinking.

Second, by complementing the continuum conceptualisation with political-economic concepts of access and marginality, this study contributes to under-researched themes in informal natural resource commercialisation. Specifically, the study's use of agency explains the interactions that occur at the interface with governance frameworks. The emergence of hybrid governance arrangements broadens the utility of informality scholarship and its applicability in natural resource commercialisation and governance scholarship.

10.6.4 Contribution to the scholarship on interactive governance

The study contributes to the interactive governance literature by confirming and extending Jentoft and Bavinck's (2014) framework of analysing legal pluralism. Specifically, this study integrated informality in the framework to demonstrate that informal governance comprises a complex mix of rules, norms and actions that complement statutory and customary forms of governance in plural legal systems to regulate natural resources. The findings suggested that while statutory governance dominates the policy-setting context of regulation, the context is different at institutional and everyday interactions where dynamism and hybridity are prominent, resulting from actors' proactive actions of engaging with the system. Insights further demonstrated that asymmetries between statutory and

customary institutions create bottlenecks that prompt actors to increasingly embrace informal forms of governance, thus leading to hybrid governance arrangements. This work contributes to the existing knowledge of interactive governance by expanding the notion of informality and its ability to craft norms that better fit unique local contexts than rigid statutory frameworks. Finally, the role of informality as engaged in this thesis suggests a natural resource governance order whereby informal systems of governance provide the means for access, as do statutory frameworks in a pluralistic legal context. This would entail that statutory authority, customary rights and informal norms be co-constituted as counterparts in a governance framework that is responsive, relevant, and fit for local socioecological contexts.

10.6.5 Methodological contribution

This study makes a methodological contribution on how to approach research that encompasses two countries simultaneously. Previous studies on mopane worm trade were limited to looking inwards within each country, then where applicable, only alluding to the existence of cross-border trade. This approach of investigating mopane worm commercialisation from the perspective of one country has dominated mopane worm literature. Findings on mopane worm access, use and regulations in Zimbabwe as reported, among others, by Kozanayi and Frost (2002), Stack et al. (2003) and Gondo et al. (2010) took such as single state focus. Similarly, Lucas (2010) and Moruakgomo (1996) investigated the access, harvesting, and trade of mopane worms in Botswana, mentioning that the South African markets attract some of the harvests. This approach continued in Namibia with Thomas (2013) and in South Africa with Makhado et al. (2012) and Wolbers (2018). Although these scholars studied mopane worm regulation, access, use and commercialisation, the focus on the cross-border aspect is non-existent in some and extremely limited in others. Noteworthy, Illgner and Nel (2000) slightly departed from this trend to offer a systematic review of mopane worm geography at the regional scale; however, their review gives little attention to the governance and commercialisation of these resources. The departure from this tradition in this thesis was based on the argument that an exclusive focus on one country limits understanding about the true nature and extent of mopane worm cross-border commercialisation. Conceptually, commercialisation is regional, transcending the international borders of two or more countries. Therefore, studying the regional trade chain using multi-sited ethnography offered an opportunity to

gather nuanced insights into the diverse challenges, strategies, and arrangements relevant to cross-border trade.

The multi-sited ethnography, comprising iterative data collection and analysis, allowed for theory to emerge from the empirical research while mapping the diverse constellations of governance systems, actors, institutions, and practices spread across two countries. Finally, this methodological approach allowed this study to provide empirical support to address the limitations of the studies that had neglected the assessment of the entire mopane worm cross-border trade chain.

10.7 Recommendations

The findings of this study have several important implications for the future practice and policy of governing mopane worm cross-border commercialisation, from which three key recommendations are made. The first recommendation is that the cross-border trade makes it imperative for both Botswana and South Africa to collaborate on developing a regulatory framework that promotes seamless cross-border movement across the trade while ensuring a greater pro-poor focus. This envisaged collaboration could help to empower impoverished harvesters and traders to maximise benefit flows and promote sustainable harvesting practices between the two countries. In addition, the two countries could usefully explore policies that promote equity in access to resources, benefits, and power sharing in the cross-border trade between South Africa and Botswana. The focus on promoting sustainable practices across borders is pertinent because of the dependence on natural resources across rural communities in both countries, supporting a growing and socio-economically significant trade that creates jobs for rural and urban actors.

A second recommendation is for conservation departments to ensure that governance roles across statutory and customary institutions are aligned to minimise duplications that are costly and constrain participation in the mopane worm trade. The regulation of wild products typically focuses on protecting the resource through permits without promoting sustainable use (Shackleton, 2009). In aligning the institutional roles of governance actors, roles must be geared towards promoting sustainable practices instead of hindering resource access and extraction of benefits. Adopting co-governing modes that permit communities to exercise rights over wild products will strengthen the bargaining power of harvester

communities. The failure to resolve these issues has implications for the governability of wild products, the participation of communities in commercialisation, and the extent to which impoverished actors can extract meaningful benefits from wild product commercialisation. Governance frameworks must incorporate non-state and informal forms of governance to be relevant and responsive to the needs of resource users. Such harmonisation will ensure that powerless, impoverished actors can access resources and derive benefits in ways that promote sustainable governance outcomes.

A third recommendation is that informality must be seen and understood as an adaptive coping mechanism due to the constraints of cross-border trade. A key lesson is that the constraining effect of local political dynamics and statutory institutions significantly impacts impoverished households and actors. In practice, the outcomes of this impact mean that access to benefits remains elusive for most people. At the same time, elites derive maximum benefit from cross-border trade because of their ability to comply with restrictive permit regulations. The rising adoption of informal practices is indicative of the need for reforms in the NTFP regulatory framework to ensure complementarity between governance regimes while facilitating the flow of benefits. Broadly, this calls for countries to reconceptualise their approaches towards the commercialisation of non-timber forest products with due care to local dynamics and contexts.

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APPENDICES

Appendix 1 UCT Faculty of Science Research Ethics Clearance

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

Faculty of Science
University of Cape Town
Rondebosch
South Africa 7701

E-mail: shari.daya@uct.ac.za

9 March 2018

Mr George Sekonya
Department of Statistical Sciences

RE: A political ecology of informal NTFP value chains: politics, power and connections in mopane worm trade

Dear Mr Sekonya

I am pleased to inform you that the Faculty of Science Research Ethics Committee has approved the above-named application for research ethics clearance, subject to the conditions listed below.

- Implement the measures described in your application to ensure that the process of your research is ethically sound; and
- Uphold ethical principles throughout all stages of the research, responding appropriately to unanticipated issues: please contact me if you need advice on ethical issues that arise.

Your approval code is: **FSREC 15 - 2018**

I wish you success in your research.

Yours sincerely

Dr Shari Daya
Acting Chair: Faculty of Science Research Ethics Committee

Cc: Associate Professor Rachel Wynberg (Supervisor)

Appendix 2 Botswana Research Permit

TELEPHONE: 3914955
TELEGRAMS: MENT
TELEX:
TELEFAX: 3951092
REF: ENT 8/36/4 XLV (2)

REPUBLIC OF BOTSWANA

MINISTRY OF ENVIRONMENT, NATURAL RESOURCES CONSERVATION & TOURISM
PRIVATE BAG BO 199
GABORONE
BOTSWANA

ALL CORRESPONDENCE MUST BE ADDRESSED TO
THE PERMANENT SECRETARY

Dr Lapologang Magole
University of Botswana
Private Bag 0061
Gaborone
Botswana.

15th January 2019

email:- lapologang.magole@mopipi.ub.bw

Dear Sir/ Madam,

RESEARCH PERMIT: Dr LAPOLOGANG MAGOLE

We are pleased to inform that you are granted permission to conduct research, for a study entitled (**"a political ecology of informal NTFP value chains: politics, power and connections in Mopane worm trade."**)

The research will be conducted in these areas – **Central District – Lerala, Palapye, Mmadinare, Selebi-Phikwe and Bobonong areas.**

This permit is valid from the **01st January 2019 to 31 December 2019**

This permit is granted subject to the following **conditions:**

1. The permit does not give authority to enter premises, private establishments or protected areas. Permission for such entry should be negotiated with those concerned.
2. You conduct the study according to particulars furnished in the approved application and / or proposal taking into account the above conditions.
3. Government of Botswana shall be duly acknowledged in all research outputs.
4. Copies research outputs from the study shall be deposited directly with Department of Wildlife and National Parks and Ministry of Environment, Natural Resources Conservation & Tourism HQ.

5. Failure to comply with any of the above conditions may result in the immediate cancellation of this permit.

6. This permit covers the following individuals:

   Prof. Rachel Wynberg
   Prof. Frank Matose
   Dr Lapologang Magole
   James George Sekonya

7. This permit is **not transferable**.

Yours Faithfully

MINISTRY OF ENVIRONMENT, NATURAL RESOURCES CONSERVATION & TOURISM
RESEARCH & DEVELOPMENT UNIT
15 JAN 2019
TEL: +267 3914955
P/BAG BO 199, GABORONE

Ditiro K. Modibedi
FOR / PERMANENT SECRETARY

cc. Regional Wildlife Officer – Central
Director, Department Of Wildlife National Parks
Assistant Director Research Ethics Office of Research & Development

Our Mission: *To protect the environment; Conserve the country's renewable and natural resources; Derive value out of environment for the benefit of Botswana*

BOTSWANA

Appendix 3 DFRR Permission to Conduct Research Study

OLD LOBATSE ROAD
LOAPI HOUSE, 1ST FLOOR
TEL: 3954050
FAX: 3954051
TELEGRAMS: MEWT
REFERENCE: DFRR 6/2/2 II (28)

REPUBLIC OF BOTSWANA

MINISTRY OF ENVIRONMEMENT,
NATURAL RESOURSES
CONSERVATION AND TOURISM
DEPARTMENT OF FORESTRY
& RANGE RESOURCES
PRIVATE BAG 00424
GABORONE
BOTSWANA

ALL CORRESPONDENCE MUST BE ADDRESSED TO THE DIRECTOR

14 February 2019

Mr. James George Sekonya
University of Cape Town
P/Bag X3
Rondebosch
Cape Town 7700

Dear Sir

RE: PERMISSION TO CONDUCT RESEARCH STUDY

Reference is made to your initial letter referenced above, together with the one dated 12 February 2019.

Permission is hereby granted to interview the Department of Forestry and Range Resources officials on issues related to the issuing of harvesting, dealership (commercial) and export permits of mopane worms in the Central District. We wish you a pleasant working relationship with our personnel for the fruitful results of your study as it will be equally very important to our department.

Thank you.

Yours Faithfully

G. Phunyuka
For/Director

Our Vision: *To protect the environment; Conserve the country's renewable and natural resources; Derive value out of environment for the benefit of Botswana*

BOTSWANA
Our pride, your destination

Appendix 4 Researcher Introduction Letter

Department of Environmental & Geographical Science
University of Cape Town - Private Bag X3 - Rondebosch 7701
Tel: 021-6502866 Fax: 021-6503791

21 August 2018

To whom it may concern

This letter serves to confirm that Mr James George Sekonya is a registered PhD student in the Department of Environmental and Geographical Sciences at the University of Cape Town. I am the supervisor of the research towards his PhD, on the crossborder trade of mopane worms between Botswana, Zimbabwe and South Africa. The research seeks to examine the informality, regulatory framework, power dynamics, politics and social networks embedded within the informal crossborder trade of mopane worms. His methods rely heavily on interviewing respondents (officials) with in-depth knowledge of the regulation of crossborder movement (Customs, Immigration and Declaration) and traders of mopane worms.

George Sekonya has duly submitted his proposal to the Science Faculty and has been granted approval by the Science Faculty Research Ethics Committee. His research methods have been reviewed and confirmed to meet the university's requirements for research involving human subjects, including confidentiality, freedom to withdraw from the research and anonymity.

I hope that permission will be granted to George to undertake this project. Any assistance rendered to this research study will be greatly appreciated. Should you need further clarifications, I may be contacted at the address provided.

Yours sincerely

Rachel Wynberg

A/Prof Rachel Wynberg
Bioeconomy Research Chair
University of Cape Town

Appendix 5 Harvester Interview Schedule

Date of interview:……
Interview number:……
Location:……..
GPS Coordinates:…….

A. Background information

Sex of the respondent:……...
Respondent's nationality: ……..
Age of the Respondent: ……
Leve of education: ……
Marital status: ……
Household size: …….

B. Key actors in the mopane worm trade and characterise their roles in the value chain.

1. What is the most appropriate land tenure type in the area from which you harvest?
2. How long have you been involved in mopane worm harvesting?
3. Besides harvesting what are your other roles in the mopane worm informal trade. Please explain why and how you took up the role(s) mentioned above?
4. Do you supply MW to the same individual client, or you use multiple clients? (Probe for explanation)
5. What are the quantity prices of mopane worms per bucket, maize meal bag etc.? (Probe on how the prices are determined and any price negotiation)
6. How do you interact with cross-border traders?
7. What is your perception of the cross-border trade in mopane worms?
8. Have you ever been involved in selling mopane worms to cross-border traders? (Probe on the frequency of visits to RSA; pricing and benefits of cross-border trading)

C. To investigate the forms and exercise of power by institutional and individual actors for access and use of mopane worm resources

9. Are you required to obtain a permit for harvesting MW? (Probe on the process of obtaining such permit and other types of permits)
10. Do the traditional leaders have any role in regulating access to mopane worms?
11. Besides granting harvesting permits, what are the other roles of the DFRR in trading and export of mopane worms?
12. Are there any conditions set for harvesters on quantity, mopane worm size, the timing of harvest etc?
13. Can you explain the nature of influence that harvesters have regarding securing access to mopane worms? Please explain with examples
14. To the best of your knowledge, who has the most influence in the mopane worm informal trade? (i.e., Harvesters, DFRR or Dikgosi)

D. To investigate the nature and role of social relationships and networks in the informal mopane worm value chain.

15. How were you introduced to mopane worm harvesting? (If introduced by somebody else, probe on the nature of their relationship and role played by the family in MW harvesting)
16. Can you explain the importance of social relationships and networks for harvesters in terms of the following:
    i. Capital
    ii. Information sharing
    iii. Advice
    iv. Trust
17. How do you cooperate with other harvesters to share information on the following:
    i. Mopane worm outbreaks; Sharing transportation costs.
18. Do you require credit or financial and material support to facilitate access, harvesting and trade? (Probe on how such assistance is obtained)

E. To analyse and describe the benefits and value distribution among the informal traders

19. Is mopane worm harvesting your sole source of income? How much are you able to earn in a season?
    a. If no, what other activities do you undertake to supplement your income?
20. Are there any material benefits attributable to your involvement in mopane worm harvesting and trading?
21. Can you please explain how mopane worm harvesting and trading has been of help to you and your household?
22. Are there any important values that you associate with practices such as mopane worm harvesting? If yes, probe on those values in detail)

F. The institutional and regulatory framework

23. Is there any form of regulation on how, when and who can harvest mopane worms?
24. Can you explain in detail how mopane worm harvesting is regulated or controlled and by the following?
    i. Traditional authority/Kgosi
    ii. Local government/Council
    iii. Central Government/DFRR
25. Which regulatory policies, law or customary practices are these regulatory efforts based on? Name such policies or resource management laws.
26. Do you think these regulatory actors are fair to the harvesters when executing their roles? Please explain.
27. According to your understanding, has the government done anything to promote and assist mopane worm microenterprises and trading? (If yes, can you name and explain such interventions.)

28. Which institutions are responsible for promoting mopane worm microenterprises and assisting traders?

Appendix 6 Key Informant Interview Schedule – Forestry

Date of interview:……...
Interview number:……..
Location:……
GPS Coordinates:……

A. Role in the mopane worm economy

1. What role do you play in the regulation of veld products (including mopane worm) harvesting and conservation?
    a. (Explore relationships that exist with other departments/parastatals/traditional authorities/Dikgosi)
    b. Powers to grant and deny access rights/permits.
    c. Conflicts related to access to resources and how they are resolved?
2. How is access to mopane worm resources regulated? Who determines the access criteria and on what conditions may other users be excluded?
3. What role do you play in regulating the trade of mopane worms, either locally or for export purposes?
4. Which other institutions are responsible for regulation and conservation of veldt resources, including mopane worms? What is their relationship with your institution, and how do you cooperate in issues related to the mopane worm economy?
5. To what extent do the harvesters and traders participate in decisions related to the regulation of conservation, harvesting and trade?
6. What is your understanding of the challenges and issues that are faced by the cross-border traders who ply their trade in South Africa?
    a. Probe on the customs processes at borders, immigration, customs clearance etc.

B. Benefits and value of mopane worm harvesting

7. What is the importance of mopane worm economy for rural and urban people's livelihoods in the harvest area?
8. What are the benefits of mopane worm economy and its export for the country and the people? (Probe on informal work, self-employment, alleviate the pressures on state social spending and people earning incomes, etc.)
9. How does mopane worm trade help stimulate informal economic activities? (Probe on reinvestment of profits in other tradeable goods in the informal trade)
10. What other factors encourage Batswana traders to export mopane worms to South Africa?

C. The institutional and regulatory framework within which informal mopane worm harvesters and traders operate

11. Which institutions of government and traditional leadership are responsible for regulating the harvesting and trade of mopane worms?
12. Which policies, bylaws or legal frameworks empowers your institution to play the role that it does regarding the conservation/harvesting/trade of mopane worms?
    a. Which other institutions/entities are key in assisting yours in this role? (At District, Ward and Village level).

13. Are you aware of the traditional norms and customs which are relevant and applied in the conserving and regulating the harvesting of mopane worms?
14. How is access to mopane worms regulated in this area?
    a. If via rights, who determines the access rights of the people?
    b. If via permits, who administers the permitting process and how are the permits given to the people?
15. Do women and men have similar rights to access mopane worms for harvesting? Explain.
16. To what extent are the customary ownership/rights considered when determining access to mopane worm resources? What role is played by the traditional authority?
17. Are there any obligations that are placed on the harvesters as conditions for access to mopane worms?
18. Have there been any conflicts on access to mopane worms between harvesters and regulators? How were these conflicts resolved?
19. Are you satisfied with how mopane worm resources are regulated/managed in the Central District area? If not, what do you think must be changed?
20. Do you think the regulation of mopane worms places an unfair burden on the harvesters and traders or it helps to promote the trade? Why?
21. Have you had experiences in the past of South Africans coming to Botswana to harvest or buy mopane worms in bulk for trade? How do you regulate such individuals in comparison to the Botswana counterparts?
22. How is mopane worm export-controlled at the border by BURS? What are the legal requirements of the customs?

Appendix 7 Key Informant Interview Schedule – Traditional Leaders

1. Can you please explain the nature of ownership of mopane worms in this community? And how?
2. What role is played by the traditional leadership in the management and regulation of harvesting? Do you make decisions on mopane worms ownership, use, access (*e.g., harvesting period*)? Do you have powers to punish the harvesters who do not comply with the rules? (Probe on declaring of harvesting period and quantities, foreigners or people from other districts or provinces)
3. Are there any rules governing the access of mopane worm resources? (Probe further on the nature of rules. Are these rules fair to anyone in the community? Who is more likely to benefit from these rules?)
4. How is the access to mopane worms regulated? Through permits or rights?
    a. If via rights, who determines the access rights of the people? How?
    b. If via permits, who administers the permitting process and how are the permits given to the people? How?
5. Are there any traditional norms and customs which are relevant to and applied in conserving mopane worms and regulating the harvesting?
6. Do women and men have similar rights to access mopane worms for harvesting? Explain.
7. Do you think the regulation of mopane worms places an unfair burden on the harvesters and traders or it helps to promote the trade? Why?
8. What role is played by government institutions in the management and regulation of mopane worms in this area? How?
9. What is the perception of the harvesters towards the regulatory efforts of the traditional leaders and that of the government institutions?
10. Have there been any conflicts on access to mopane worms? If so, which mechanisms exist for resolving such conflicts?
11. What do you think is the importance of mopane worms for people's livelihoods?

Appendix 8 List of informants and their institutional affiliation in Botswana, South Africa

NO	ALIAS	LOCATION OF INTERVIEW	NATIONALITY	ROLE
1	KGOSI OF LERALA	LERALA	MOTSWANA	Kgosi
2	Kgosi Phoo Phoo Mapena	Maunatlala	Motswana	Kgosi
3	Kgosi of Tsetsebjwe	Tsetsebjwe	Motswana	Kgosi
4	Kgosi of Sefhophe	Sefhophe	Motswana	Kgosi
5	Kgosi Mhaladi Oteng Mhaladi	Seolwane	Motswana	Kgosi
6	Jane	Moakatumo	Motswana	Harvester
7	Marry	Moakatumo	Motswana	Harvester
8	Tumi	Moakatumo	Motswana	Harvester
9	Mogau	Moakatumo	Motswana	Harvester
10	VN550145	Mogapi	Motswana	Cross-border trader
11	VN550113	Mogapi	Motswana	Harvester
12	Keneilwe	Mogapi	Motswana	Harvester
13	Katlego	Mogapi	Motswana	Harvester
14	Abuti	Mogapi	Motswana	Harvester
15	Tau	Mogapi	Motswana	Harvester
16	Millicent	Mogapi	Motswana	Harvester
17	Nelly	Mogapi	Motswana	Harvester
18	Nomsa	Mogapi	Motswana	Harvester
19	Tebogo	Mogapi	Motswana	Harvester
20	Mogau	Mogapi	Motswana	Harvester
21	VN550094	Mogapinyana	Motswana	Harvester
22	Rose	Mogapinyana	Motswana	Harvester
23	Lethabo	Mogapinyana	Motswana	Harvester
24	Mavis	Mogapinyana	Motswana	Harvester
25	Lorraine	Mogapinyana	Motswana	Harvester
26	Edith	Mogapinyana	Motswana	Harvester
27	VN550104	Mogapinyana	Motswana	Harvester
28	Itumeleng	Mogapinyana	Motswana	Harvester
29	VN550107	Mogapinyana	Motswana	Harvester
30	Florence	Mogapinyana	Motswana	Harvester
31	VN550111	Mogapinyana	Motswana	Harvester
32	VN550128	Sefhophe	Motswana	Harvester

33	Lerato	Sefhophe	Motswana	Harvester
34	Lesedi	Sefhophe	Motswana	Harvester
35	Tshenolo	Sefhophe	Motswana	Harvester
36	Maggie	Sefhophe	Motswana	Harvester
37	VN550133	Sefhophe	Motswana	Harvester
38	VN550134	Sefhophe	Motswana	Harvester
39	VN550135	Sefhophe	Motswana	Harvester
40	VN550136	Sefhophe	Motswana	Harvester
41	VN550145	Tsetsebjwe	Motswana	Cross-border trader
42	Agnes	Tsetsebjwe	Motswana	Harvester
43	Dineo	Tsetsebjwe	Motswana	Harvester
44	Mpho	Tsetsebjwe	Motswana	Harvester
45	Leticia	Tsetsebjwe	Motswana	Harvester
46	Lemogang	Tsetsebjwe	Motswana	Harvester
47	Thabo	Tsetsebjwe	Motswana	Harvester
48	Lebogang	Tsetsebjwe	Motswana	Harvester
49	Edna	Tsetsebjwe	Motswana	Harvester
50	P Kgomo	Serowe	Motswana	Key informant
51	Olga	Serowe	Motswana	Key Informant
52	Obakeng	Serowe	Motswana	Key Informant
53	Julia	Thohoyandou	South African	Cross-border trader
54	Tshilidzi	Thohoyandou	South African	Cross-border trader
55	Azwindini	Thohoyandou	South African	Cross-border trader
56	Sefako	Thohoyandou	South African	Cross-border trader
57	Grace	Thohoyandou	South African	Vendor
58	Linda	Thohoyandou	South African	Vendor
59	Lufuno	Thohoyandou	South African	Vendor
60	Maria	Thohoyandou	South African	Vendor
61	Moses	Sibasa	Zimbabwean	Cross-border trader
62	Amai	Makhado	Zimbabwean	Cross-border trader
63	Lillian	Makhado	Zimbabwean	Vendor
64	Joe	Malamulele	Zimbabwean	Vendor

65	Marcia	Malamulele	South African	Key Informant
66	Anna	Elim Town	South African	Vendor
67	Josephine	Giyani	South African	Cross-border trader
68	Nyiko	Giyani	South African	Cross-border trader
69	Tirhani	Giyani	South African	Vendor
70	Sarah	Giyani	South African	Vendor