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Dissertation

TOPIC: INVESTIGATING THE APPLICABILITY OF NEXUS THINKING TO PRIVATE PROTECTED AREAS; THE CASE OF MOKOLODI NATURE RESERVE, SOUTHEAST BOTSWANA.

Submitted in Partial Fulfillment of the award of the Degree of Master of Science in Environmental Science of the University of Botswana

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Declaration

I hereby declare that this research dissertation is my own work. It is submitted for the fulfillment of the Masters of Science in Environmental Science at the University of Botswana, Gaborone. It contains no material previously published or submitted before for any other degree or examination in any other university, except where due acknowledgement has been made in the context.

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List of Abbreviations/ Acronyms

MNR	–	<i>Mokolodi Nature Reserve</i>
IUCN	-	<i>The International Union for the Conservation of Nature</i>
SADC	-	<i>Southern African Development Community</i>
CBD	-	<i>Convention on Biological Diversity</i>
CBNRM	-	<i>Community Based Natural Resources Management</i>
CBO	-	<i>Community Based Organizations</i>
NT	-	<i>Nexus Thinking</i>
WEF	-	<i>Water-Energy-Food</i>
SDGs	-	<i>Sustainable Development Goals</i>
CSR	-	<i>Community Social Responsibility</i>
GDP	-	<i>Gross Domestic Product</i>
WTO	-	<i>World Trade Organization</i>
UNCED	-	<i>The United Nations Conference on Environment and Development</i>
CAMPFIRE	–	<i>Communal Areas Management Programme for Indigenous Resources</i>
ADMADE	-	<i>Administrative Design for game Management Areas</i>
LIFE	-	<i>Living in a Finite Environment</i>
COBRA	-	<i>Conservation of Biodiversity Resource Areas Programme</i>
WCED	-	<i>World Commission on Environment and Development</i>
USAID	-	<i>United States Agency for International Development</i>
NRMP	-	<i>Natural Resource Management Project</i>
DWNP	-	<i>Department of Wildlife and National Parks</i>
PPA	-	<i>Private Protected Area</i>
MWF	-	<i>Mokolodi Wildlife Foundation</i>
UNWTO	-	<i>United Nations World tourism Organisation</i>

NRMP	-	<i>Natural Resources Management Plan</i>
WTTC	-	<i>World Travel & Tourism Council</i>
ANU	-	<i>Australian National University</i>
ENSO	-	<i>El Niño-Southern Oscillation</i>
VDC	-	<i>Village Development Committee</i>
CSO	-	<i>Central Statistics Office</i>
DEA	-	<i>Department of Environmental Affairs</i>
WB	-	<i>World Bank</i>
IMF	-	<i>International Monetary Fund</i>
ESAP	-	<i>Economic Structural Adjustment Programme</i>
NDP	-	<i>National Development Plan</i>
CBT	-	<i>Community Based Tourism</i>
UNEP	-	<i>United Nations Environment Programme</i>
ICDP	-	<i>Integrated Conservation and Development Project</i>
SEDC	-	<i>South East District Council</i>
SME	-	<i>Small to Medium Enterprises</i>
UNDP	-	<i>United Nations Development Programme</i>
KRST	-	<i>Khama Rhino Sanctuary Trust</i>
TGLP	-	<i>Tribal Grazing Land Policy</i>
GPS	-	<i>Global Positioning System</i>
UTM	-	<i>Universal Transverse Mercator</i>
TVA	-	<i>Tennessee Valley Authority</i>

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Philippians 4vs13 'I can do everything through Him who gives me strength'.

Abstract

World-wide, Community Based Natural Resources Management (CBNRM) has gained international attention for reconciling common pool resource management with needs and aspirations of the local people. Regionally, Zimbabwe's CBNRM strategy was first introduced in the early 1980s under Communal Areas Management Programme for Indigenous Resources (CAMPFIRE), arguably representing the earliest such strategy in the SADC region. In Botswana, CBNRM was introduced in the late 1980s through the support of USAID. This marked a paradigm shift towards the management and utilization of common shared resources as well as conservation of biological diversity. The strategy generated socio-economic and ecological benefits to once marginalized communities, improving livelihoods and biodiversity conservation. Despite CBNRM achievements, its applicability is limited to common pool resources. That is the strategy of CBNRM does not apply to privately owned resources. It therefore becomes necessary to search for models that recognized and forged mutually beneficial linkages for the sustainable co-existence of the two property regimes, i.e. common property and private property resource management regimes. This is particularly important considering that the successful future prospects of protected conservation area ecotourism, whether in private or public/communal areas, revolve around building mutually shared beneficial linkages. This prompted this study, to unravel such linkages and establish the extent of beneficial matrix between the two property regimes - the private and the communal. This study explored the applicability of the nexus thinking (NT) framework in understanding and forging the linkages among conservation, ecotourism development and the livelihoods of local communities around a privately owned Mokolodi Nature Reserve on the outskirts of the City of Gaborone in the Southeast of Botswana. It is thus conceptualized that conservation, livelihoods and ecotourism form a complex system linked by multiple interacting components.

Data was collected from the community closest to MNR and MNR's management. Questionnaires and key informant interviews were used as primary sources of data. Likewise, secondary data from appropriate sources was solicited. The triangulation methodology was adopted as the research framework for generating and analyzing data so that there was cross-validation of evidence from both qualitative and quantitative data sources. The study has found out that mutually beneficial linkages existed between MNR and the local community. Interaction and coordination constitute the NT model. Therefore, the NT model as an interactive and innovative framework can deliberately or by design be used or promoted in the management of privately protected resources for sustainable socio-economic and ecological benefits. Both the private and the public sector have the obligation to engage with each other through partnership agreements, sharing ideas, so as to enhance resource security and empower the local communities. The NT framework is therefore recommended for privately owned conservancies like MNR surrounded by the commons and commoners as a counterpart to the CBNRM framework for Government controlled conservancies.

Key Words: *Conservation, Ecotourism, Livelihoods, Nexus, benefit sharing*

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CHAPTER 1: INTRODUCTION

1.0 INTRODUCTION

This chapter set the scene upon which this research study was centered. The background presents an overview of the study, followed by the statement of the research problem under consideration. The overarching aim of the study is outlined as well as objectives and research questions which the study endeavored to answer. The remaining sections which form part of this chapter include the scope of the study and choice of the study area and, finally, significance or importance of the study.

1.1 BACKGROUND TO THE RESEARCH PROBLEM

For thousands of years, humans lived in peace and harmony with nature, settling near rich spectacular flora and fauna ranging from plants, insects, birds, mammals, fish, reptiles and invertebrates. The natural environment was in abundance of habitats of terrestrial freshwater and marine ecosystems of pristine beauty and diversity. Over the years, growing knowledge about the environment and the importance of nature for pleasure attracted tourists from far and wide to enjoy the scenic beauty of nature. Tourism is not only a prime asset for foreign currency to countries' economies but also key components for human and environmental welfare. According to Jiang, Declacy, Mkiramweni, & Harrison (2011) 46 out of the 50 least developed countries in the world generate foreign exchange revenue from tourism. In Botswana tourism is the second largest national income earner, after diamonds, contributing 5% of the country's Gross Domestic Product (Mbaiwa, 2011; WTTC & Council, 2009). However, in the last century, with industrialization, demographic growth and climate change, people's needs and use of natural resources outstripped the ability of nature to replenish. The rate at which biodiversity is lost worldwide is worrisome and the world is in the midst of a biodiversity crisis. According to Ceballos, Ehrlichb & Dirzo (2017), worldwide, up to 690 species are lost to extinctions per week. For instance, in the Living Planet Report of 2018, the global populations of fish, birds, mammals, amphibians and reptiles have declined by an average of 60 percent between 1970 and 2014 and the number is projected to rise to 66 percent by 2020 (Monastersky, 2014).

Botswana's abundant natural resource base is declining rapidly due to anthropogenic activities (Golding, 2002; IUCN, 1999; Steiner, & Rihoy, 1995). Key species such as rhinos and elephants are at the center of international outcry as poaching for their valuable horns and ivory is pushing the creatures into the verge of extinction (Schlossberg, Chase, & Sutcliffe, 2019). Research indicates that overexploitation of biodiversity has adverse implications for sustainable

ecosystems and human livelihoods (Turner et al., 2003). This became a global concern in this 21st century as reflected in the Earth Charter for Nature in 1992 (Mafuta, Munjoma, & Mubako, 2008), World Summit on Sustainable Development in 2002 (Mafuta et al., 2008) and recently in the United Nations Climate Change Conference held in 2015 in Parris, France. It is in these environmental summits that multi-lateral environmental protection instruments such as the Convention on Biological Diversity (CBD), World Commission on Environment and Development (WECD) and Agenda 2030 for Sustainable Development Goals (SDGs) were developed. The primary goal of these meetings and instruments is to reinvigorate global commitment towards poverty eradication, conservation of biodiversity, sustainable use of the components of biodiversity and equitable distribution of benefits from utilization of natural resources (Steiner, & Rihoy, 1995). It is within the premises of this goal that priority be given to development models that promote conservation of natural resources. Understanding the framework behind these goals is necessary to develop strategies that help to unlock and tap conservation, ecotourism and livelihood benefits from protected areas (PAs). However, the shared benefits should be within and guided by the fundamental goals of protected areas and conservation area ecotourism (Karki, 2013). Benefits sharing ameliorate anticipated setbacks both to wilderness and wildlife especially in Protected Areas proximate to rural communities (Karki, 2013; Sebele, 2010).

Over the past three decades, collective resource management theory and rural development helped to address poverty, inequality and environmental degradation (Suich, Howe, & Mace, 2015). According to Fabricius, & Collins (2007), Community Based Natural Resource Management (CBNRM) was hailed for the success of collective management theory as it devolved authority for ecosystem management to the local communities. The strategy helped to curb loss of biodiversity and it also gave hope for sustainable livelihoods and rural development (Mbaiwa, & Darkoh, 2009; Nyaupane, & Poudel, 2011). National governments supported by major environmental organizations such as the International Union for the Conservation of Nature (IUCN), World Wildlife Fund (WWF), United Nations Environment Program (UNEP) as well as powerful environmental lobbyists such as Green Peace, Earth First and other Non-Governmental Organizations (NGOs) gave support to compensatory and incentive based environmental conservation projects (West, Igoe, & Brockington, 2006). These organizations acknowledged CBNRM's initiatives as relevant to the needs of both the local community and

the natural environment. The success of CBNRM was not without the support and implementation of programs and institutions such as Community Based Conservation (CBC), Community Based Organizations (CBOs) and Integrated Conservation and Development Projects (ICDPs) (Dahal, Nepal, & Schuett, 2014; West et al., 2006).

Considering that environmental degradation and poverty co-exist; the goal was to pursue a development strategy that reconciles ecological needs of the environment with the socio-economic needs of the local community (West et al., 2006). The strategy of CBNRM encourages local people to value wilderness and wildlife as their sources of wealth to transform livelihoods. The tangible benefits from revenue generated from ecotourism, motivate them to align their behavior towards active participation in the conservation of common pool resources (Kolawole & Mbaiwa, 2013). These sentiments were also echoed by Nyaupane, & Poudel (2011); Stronza, & Pegas, (2008) who reiterate that when people derive direct incentives from the protected areas, they in turn develop positive attitudes towards the natural environment and conservation for continued socio-economic and ecological benefits. In support, Blaikie (2006) concurs that through CBOs communities manage and utilize their resources sustainably. Established human institutions– dikgosi, local authorities, land boards and community Trusts (CBOs)– provide traditional management expertise that inhibits overuse and mismanagement of common pool resources, evading issues associated with the tragedy of the commons circumstances identified in Hardin's (1968) seminal publication. Rihoy (1995) supported by Mbaiwa (2004), upholds that CBNRM is a reform of the conventional protectionist conservation philosophy, based on the premises of common property resource management theory discouraging open access resource management. These common property resources are accessible to the community and no individual person has exclusive property rights to such resources (Jodha, 1986), but their use is regulated through community rules and institutions. The economic incentives attained from conservation ecotourism activities include employment, marketing and selling of traditional and cultural goods and services (Campbell, Kartawijaya, Yulianto, Prasetya, & Clifton, 2013; Novelli, & Scarth, 2007).

Despite CBNRM's achievements, however, its applicability is limited to common pool resources (Mbaiwa, 2011; Rihoy, 1995; Taylor, 2001). This alludes to the fact that the model

was not designed to apply to resources owned and managed privately in areas proximate to or surrounded by local villages. The dictates of proximity, ecology (ecosystem linkages) and economy (livelihood linkages) suggest that these two sets of resources (communally and privately owned) have inescapable linkages. It therefore becomes necessary to search for models that recognized and forged mutually beneficial linkages for the sustainable co-existence of the two property regimes, i.e. common property and private property resource management regimes. It was the premise of the study that Nexus Thinking (NT) offers an alternative to the CBNRM model for the promotion of such linkages compatible with situations such as that of the Mokolodi Nature Reserve on the outskirts of Gaborone, Botswana. In the context of the study, nexus thinking provides an interactive, connection and linkage perspective or approach that characterizes cooperation, coordination, coherence, and interdependency for development. It usher in a practical platform for interactive strategies that portray cross-sectorial, multi-scale interdependencies that reduce mismatches in decision making, planning and management thereby increasing synergies and promoting resource security (Bizikova, Roy, Swanson, Venema, & McCandless, 2013; WEF, 2012). The linkages helped to build mutual relationships that provided consensus in terms of decision making, resource utilization and conservation activities. The approach was used to examine variable interactions with conservation or development applications. For example, the water-energy-food (WEF) nexus (Bazilian et al., 2011; Hoff, 2011); the trade-migration-development nexus (Hussey, & Pittock, 2012), and the climate change and rural development nexus (Hussey, & Pittock, 2012).

Therefore the research explored and analyzed the applicability of the NT to understand the relationship among conservation, ecotourism and rural livelihoods using the case of Mokolodi Nature Reserve (MNR), a non-profit privately owned area and Mokolodi Community which shares the common boundary on the northeastern section of the reserve. The study examined specific relationships, such as: livelihoods and conservation (Adams et al., 2004; Salafsky & Wollenberg, 2000) tourism and livelihood improvement (Ashley, 2005; Croes & Vanegas, 2008; Harrison, 2008; Ollenburg, & Buckley, 2007); and conservation and tourism/development (Brown, 2002; Nyaupane, & Thapa, 2004; Salafsky, & Wollenberg, 2000). The concept of NT could therefore be used to link biodiversity conservation with rural livelihoods improvement and ecotourism development, serving as a socio-economic and ecological development strategy for policy makers. It has the potential to promote private-public stakeholder collaboration, capacity

building, economic rational decision making and securitization of resources (Mitchell, & Ashley, 2010). The anticipation was to understand the nature and characteristics of the linkages, determine the extent of the interdependency as well as to establish stakeholder perspectives on the opportunities and challenges of applying the nexus thinking to the Mokolodi Nature Reserve. It is the premise of the study that sustainable solutions to complex environmental challenges lies in the greater understanding and consideration of linkages and interdependencies among different sectors that interface in the socio-economic and ecological system.

1.2 STATEMENT OF THE RESEARCH PROBLEM

Many environmentalists and conservationists believe that the future prospects of protected areas are limited without the involvement and support of the local communities (Beresford, & Phillips, 2000; McShane, & Wells, 2004). Poverty as a main societal challenge can be a cause and consequence of environmental degradation. Although poverty and environmental degradation appear to be two distinct issues, a strong relationship exists between them. The challenges of biodiversity conservation are usually associated with household income (Castellani, & Sala, 2010). According to Sebele (2010) and Snyman (2013) people with higher assets and high income are likely to participate in a biodiversity conservation initiative. The realization of the connection between biodiversity and income implies that the priority of conservation initiatives should be to reduce poverty and improve local livelihoods. It is the positive attitude towards environmental conservation that upholds the goals of environmental sustainability (Adams et al., 2004). This can be manifested by the appreciation of nature portrayed by local communities. Keeping in perspective inter-linkages existing between protected areas and the local people and in view of the importance of the linkages to livelihoods, ecotourism and conservation, as demonstrated in the literature highlighted in the background section; the question was how benefits can be channeled to the local communities in a privately owned protected ecotourism conservation area. The study explored the applicability of nexus thinking (NT) within this context. The NT model offered equitable benefits of conservation from the support and involvement of the local communities, without upsetting the functioning of privately owned and managed resources. The model also promote corporate social responsibility for Mokolodi Nature Reserve towards the local community, thereby increasing synergies and promoting resource security (Bizikova et al., 2013; WEF, 2012). It is nature that attracts ecotourists and conservation of nature is indispensable to the sustainability of ecotourism and local

livelihoods. When mutually beneficial linkages of private protected areas and local livelihoods are clearly elaborated and appreciated, protection of the natural environment and its biodiversity is assured. The literature survey revealed that no previous study locally or internationally has attempted to apply the NT approach to unravel the linkages between privately managed protected areas, ecotourism and the livelihoods of communities in communally managed areas surrounding them. Hence the study.

1.3 AIM OF THE STUDY

To explore the applicability of nexus thinking (NT) among conservation, local livelihoods and ecotourism development using the Mokolodi Nature Reserve in Botswana as a case study.

1.4 OBJECTIVES OF THE STUDY

1.4.1 To establish the characteristics of conservation, ecotourism and local livelihoods in and around the Mokolodi Nature Reserve (MNR).

1.4.2 To determine the extent of interdependency among conservation, ecotourism and local livelihoods using nexus thinking for the MNR.

1.4.3 To establish stakeholder perspectives on the opportunities and challenges of applying nexus thinking to the relationship among conservation, ecotourism and local livelihoods for the MNR.

1.5 RESEARCH QUESTIONS

a) **Research questions for Objective 1: Component characteristics**

(Semi-structured questionnaire was used to ascertain what characterizes these three components)

1. What characterizes conservation at MNR?

For example: biodiversity protection activities; vegetation monitoring; water-point distribution; rhino population and movement monitoring; anti-poaching activities, environmental education, maintaining carrying capacity, monitoring erosion and bush encroachment, maintenance of fire breaks etc.

2. What characterizes ecotourism in Mokolodi?

For instance: number of tourists per unit time; tourist guiding; tourist activities; tourist income p.a.; tourist types (e.g. local, international, educational); rhino tracking; provision of accommodation, low impact visitor behavior, educational awareness to visitors and local communities etc.

3. What characterizes livelihoods of communities around MNR?

For example: formal employment (type, source, etc); informal employment; agropastoralism, livestock rearing, market gardening.

b) Research question for Objective 2: Component interdependencies through their characteristics (e.g. Tables 1.1 to 1.3)

4. To what extent are the characteristics of conservation, ecotourism and local livelihoods interdependent?

Tables 1.1 to 1.3: indicate, respectively, some of the characteristics of the three components and possible interdependencies.

(Semi-structured questionnaire and Key Informant Interview guide was used to assess the extent of interdependence among the three components)

Table 1.1 Components Interdependence: Conservation

COMPONENT	CHARACTERISTICS	INTERDEPENDENT CHARACTRISTICS	
		Ecotourism	Local livelihoods
Conservation	Anti-poaching, fencing, debushing	Tourist income	formal employment
	Monitoring erosion and bush encroachment, fire management	Tourist activities eg bush braai, tracking of wildlife	Job creation and Formal employment
	Game capturing and off take	Tourist facilities	Informal employment/ cultural activities
	Rhino population and movement monitoring	Tourist guiding	formal employment
	Water point distribution, water holes provision for wild animals	Wildlife viewing	Agropastrolism and farming/ livestock

(Source: Author's construction)

Table 1.2 Components Interdependence: Ecotourism

COMPONENT	CHARACTERISTICS	INTERDEPENDENT CHARACTRISTICS	
		Conservation	Local livelihoods
Ecotourism	Tourist activities eg bush braai	Vegetation monitoring	formal employment
	Tourist types eg (local, international, educational)	Biodiversity protection activities	Informal employment eg curios and or/ farm produce
	Tour guiding	Environmental education	Provision of services eg natural herbs
	Tour facilities	Capacity building	Agropastrolasim farming
	Tour income	Anti-poaching	formal employment

(Source: Author's construction)

Table 1.3 Components Interdependence: Livelihoods

COMPONENT	CHARACTERISTICS	INTERDEPENDENT CHARACTERISTICS	
		Conservation	Ecotourism
Local Livelihoods	Informal employment	Rhino population and movement monitoring	Rhino tracking
	Formal employment	Erosion and bush encroachment, debushing for fire management and creation of access treks and trails especially in wet season	Tour income
	Agropastoralism farming	Water point distribution, game restocking	Tourist activities
	Provision of services eg natural herbs	Vegetation monitoring	Number of tourist per unit time

(Source: Author's construction)

c) Research questions for Objective 3: Stakeholder perspectives on Nexus Thinking framework's applicability

(A Key Informant Interviews was used to assess Stakeholder's perspectives on the applicability of Nexus Thinking.

5. How do stakeholders perceive NT assumed interdependencies and why?

(Stakeholders):

- MNR management/Board (Secretary to the Board and two board members)
- Local communities eg (Chiefs, ward chiefs, chancellors, Farmers association representatives, VDC (Village Development Community Representatives)
- MNR workers (Managers of each department eg anti-poaching, Environmental Education, administration, marketing, and operations)
- Local District Land Board (South East District Council: The Secretary of the Land Board and the Chairman of the Land Board)
- Relevant Government Department: (Department of Wildlife and Natural Parks eg Environmental officers or Director or Permanent Secretary), Parks Unit/Division at DWNP manager, or coordinator, Ecotourism Division Manager at Botswana Tourism Organisation.

1.6 VARIABLES OF ANALYSIS

Table 1.4 identifies the variables and corresponding proxies or indicators for each research objective and associated questions, as well as their appropriate measurement scales.

Table 1.4 Variables of Analysis: Operationalization

OBJECTIVE	RESEARCH QUESTION	VARIABLE	VARIABLE INDICATOR/PROXY	MEASUREMENT SCALE
1. To establish the characteristics of conservation, ecotourism and local livelihoods in and around the Mokolodi Nature Reserve (MNR).	1.1.What characterizes conservation at MNR?	1.1.1 Conservation activity	<ul style="list-style-type: none"> • Animal patrols per day • Animal census frequency • Vegetation inventory frequency • Etc 	Nominal/interval/Ordinal
	1.2.What characterizes eco-tourism in Mokolodi?	1.2.1 Ecotourism related activity	<ul style="list-style-type: none"> • Tour guiding • Visitor behavior control/monitoring • Visitor numbers per day/week • Etc 	Nominal/interval
	1.3.What characterizes livelihoods of communities around MNR?	1.3.1 Livelihoods related activity	<ul style="list-style-type: none"> • Engaging in arable farming • Livestock rearing (cattle, goats, sheep and poultry) • Formal employment • Informal employment • etc 	Nominal
2. To determine the extent of interdependency among conservation, ecotourism and local livelihoods using nexus thinking for the MNR.	2.1.To what extent are the characteristics of conservation, ecotourism and local livelihoods interdependent?	2.1.1 linkages	<ul style="list-style-type: none"> • Tour guiding vs local employment vs conservation • Tourist behavior monitoring vs local employment vs conservation • Vegetation monitoring vs local employment vs ecotourism • Animal tracking vs local employment vs conservation • Etc 	Nominal/ordinal/interval

<p>3. To establish stakeholder perspectives on the opportunities and challenges of applying nexus thinking to the relationship among conservation, ecotourism and local livelihoods for the MNR.</p>	<p>3.1. How do stakeholders perceive assumed interdependencies and why?</p>	<p>3.1 stakeholders perspective/opinion</p>	<ul style="list-style-type: none"> • Opinion/Likert scale values on assumed interdependencies • Illustrative verbatim opinions • etc 	<p>Nominal /ordinal/interval</p> <p>Qualitative descriptions/illustrations of presence/absence of linkages</p>
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(Source: Author's construction)

1.6.1 Elaboration on Table 1.4: variable of analysis/operationalization

The survey instrument was established based on review of present literature. The research was developed from the linkages among conservation, ecotourism and local livelihoods in and around the MNR. In order to establish the characteristics of conservation, ecotourism and local livelihoods, three variables were identified and measured for analysis. These variables were conservation activity, ecotourism related activity and livelihoods related activity. The variable indicator or proxy in respect of conservation variable activities are: animal patrols per day, animal census frequency and vegetation inventory frequency. The characteristics of conservation were measured by both nominal and ordinal scale. Part A provided general information and consisted of scale/nominal and ordinal measurement questions. The data sought dealt with gender, age, educational status and employment status. Part B was operationalized by 6 items consisting of a five – point likert- type scale from 1 to 5 where 1 = is strongly disagree; 2 = Disagree; 3 = neutral; 4= agree and 5 = strongly agree. A nominal scale; where a yes or no answer, was used as well as open ended questions where respondents provided their reasoning to substantiate their answers.

The proxy for ecotourism related activities are tour guiding, visitor behavior control/monitoring and visitor numbers per day/week. In this particular area, the level of concern was to adhere to the principles of ecotourism namely: monitoring visitor behavior, maintaining visitor numbers and providing tour guiding. A five–point likert-type scale was used to measure the variables activity from 1 to 5 where 1 = is strongly disagree 3 = neutral 5 = strongly agree. The nominal scale of measurement was used where a yes or no answer was given as well as open ended questions where respondents provided their reasoning to substantiate their answers.

With regard to livelihoods related activity, the proxy included: engaging in arable farming, livestock rearing (cattle, goats, sheep and poultry), formal employment, and Informal employment. The measurement scale was nominal/ interval. Part one of the constructs provided general information and consisted of scale/nominal and ordinal measurement questions. The data sought covered gender, age, educational status and employment status. This section consisted of both open-ended and closed questions designed to provide information about local people's means of livelihoods.

To determine the extent of the interdependency, the constructs of nominal, ordinal and interval scale of measurement was applied to ascertain the linkages. The linkages helped to analyse the corresponding relationship (interdependence) among conservation, ecotourism and livelihoods. The variable indicators or proxy were : tour guiding vs local employment vs conservation; tourist behavior monitoring vs local employment vs conservation; vegetation monitoring vs local employment vs ecotourism and animal tracking vs local employment vs conservation. These activities uncovered linkages that helped to achieve sustainable socio-economic and ecological development. The linkages were measured by a five–point likert-type scale 1 to 5 where 1 = is strongly disagree 3 = neutral 5 = strongly agree. The nominal scale of measurement was also used where a yes or no answer was given as well as open ended questions where respondents provided their reasoning to substantiate their opinions or views. The information obtained provides research evidence based understating of the nature and level of the connection or linkage of the three components.

Obviously, sustenance of the NT framework required support, cooperation and involvement of the relevant stakeholders within such a system (Moswete, 2009) and in this instance stakeholders associated with MNR. In order to find out the perspectives of different stakeholders about NT, the study established the stakeholders' perspectives or/ opinions (variable) on the opportunities and challenges of applying the nexus thinking to the relationship among conservation, ecotourism and local livelihoods for the MNR. The variable indicators or proxy were opinion. The measurement scale was nominal/ordinal and interval as well as qualitative descriptions, illustrations of presence and or/ absence of linkages. However, this was merely a guiding framework; further responses were noted in the research field and analyzed accordingly.

1.7 SIGNIFICANCE/IMPORTANCE OF THE STUDY

The need for solutions to global environmental challenges continues to be the priority of research across the globe. However, the academy has provided insufficient information in areas such as climate change, loss of biodiversity, environmental degradation and poverty, and this compromised the ability to develop solutions to such challenges (Mbaiwa, 2015). The advent of Community Based Natural Resource Management (CBNRM) has been welcomed as an innovative way of addressing socio-economic and ecological challenges (Mbaiwa, 2011). Although the strategy made remarkable achievements, its applicability is limited to the

management and utilization of common pool resources (Blaikie, 2006; Honey, 2008; Phuthego, 2008; Swatuk, 2005). The study addressed this gap. The support and involvement of the local communities in ecotourism and conservation initiatives helped to address environmental challenges such as poaching, environmental degradation and human resource use conflicts, detrimental to the thriving of biodiversity. However, the complexity and interrelatedness of appropriating benefit to local communities from privately owned natural resources demand a holistic, interconnected and multifaceted approach (Allouche, Middleton, & Gyawali, 2014). This was provided in the study through the use of Nexus Thinking (NT). The NT approach has much to contribute in understanding the linkages among biodiversity conservation, ecotourism and livelihoods.

The knowledge and understanding shared in the study help management, government and rural communities, corporate bodies and individuals to understand, appreciate and uphold the socio-economic and ecological benefits derived from NT. It further increase awareness of the importance of ecosystems and habitat preservation. According to Christian, Fernandez-Stark, Ahmed, & Gereffi (2011) the absence of inter-linkages across socio-ecological systems, renders a tourism destination to befits ‘a place’ in the global tourism value chain with zero returns from its natural resources. Therefore, recognizing the importance of linkages was necessary for sustainable development. More so, the concept was also reflected in the Convention on Biological Diversity of 2010, Agenda 2030 for Sustainable Development Goals (SDGs) as well as Botswana’s Vision 2036 all of which emphasize the need for holistic approaches when tackling environmental challenges (Holden, Linnerud, & Banister, 2017). The challenges facing ecotourism, conservation and livelihoods required sustainable development strategies based on three moral imperatives: satisfying human needs, ensuring social equity, and respecting environmental limits (Holden et al., 2017) and hence the use of Nexus Thinking (NT). The use of nexus thinking fostered dialogue on broad development issues of planning, empowerment, partnership, decision making and governance, promoting interactions and integration of sectors and activities. The study further determines the extent of interdependency among conservation, ecotourism and local livelihoods. This was assessed in terms of stakeholder collaboration. The knowledge and understanding that sustainable utilization of resources provides tangible benefits and incentives not only to individuals but also to the entire community was important in this study. The study reflected on the role of MNR in developing human and social capital, through Corporate Social Responsibilities

(CSR). This included financial assistance towards the development of schools, health facilities and road network to transform livelihoods of the local people. The study provided knowledge base benefiting both current and future researchers, Small to Medium Enterprises (SMEs), communities, policy makers and tourism development planners.

1.8 SCOPE

The proposed study first reflected on the achievements of CBNRM approach towards the management and utilization of natural resources. The history and development of the CBNRM was explored including the acknowledged limitation of the approach towards the management and utilization of common pool resources (Blaikie, 2006; Phuthego, & Chanda, 2004; Taylor, 2001). The perceived limitation of CBNRM created a knowledge gap, in particular, that it does not devolve benefits for resources privately owned and managed under protected areas conservation ecotourism. Therefore, this gap made it necessary to search for models that recognizes and forges mutually beneficial linkages for the sustainable co-existence of common property and private property resource management regimes. Thereafter, the study explored on the core concept of Nexus Thinking: its applicability on resources privately owned and managed. Various linkages were explored to understand the connections among conservation, ecotourism and rural livelihoods. Reference was made to such sectors which have already documented Nexus thinking. Conservation-ecotourism-rural livelihoods nexus, NT established the characteristics of conservation, ecotourism and livelihoods. Through these characteristics, the study determined the extent of the interdependency among conservation, ecotourism and local livelihoods at MNR. The goal was to identify opportunities that promote ecotourism development, conservation and livelihoods improvement and minimize conflicts, loss of biodiversity and degradation of the natural environment. The study further explored the implementation of Community Social Responsibilities initiatives. A reflection was made on the significance of such incentives on biodiversity conservation, livelihoods, poverty eradication and sustainable development. The study further established the stakeholder's perspectives on the challenges and opportunities of the applicability of the nexus thinking. Different key stakeholders were identified and engaged to solicit their perceptions on the application of nexus thinking on a private owned entity. For logistical reasons, the study was limited to the MNR and proximate Mokolodi Community.

1.8.1 Choice of Study Area

The choice of Mokolodi Nature Reserve, MNR as a study area, (Figure 1.1) was considered based on the fact that MNR is a privately owned nature reserve, surrounded by rural local communities, who cannot derive benefits from MNR through CBNRM. Amongst all the neighbours, Mokolodi community has more direct and occasional interaction with MNR. Hence the choice of the Mokolodi Village. The study area was applicable for carrying out the research to assess the applicability of Nexus Thinking model in conservation ecotourism local livelihoods nexus. More so, the nature reserve is popular with tourists who come to Gaborone whose main aim is to pursue non-consumptive activities such as game drives, bush braais, rhino tracking, and accommodation. All these ecotourism activities finance environmental education for school children of Botswana and conservation activities in the reserve. Therefore, broad ideology of sustainability encompass the interdependency of ecological, economic and socio-cultural parameters (Tao, & Wall, 2009). Furthermore, research in MNR was often overlooked due to its location and size, as more emphasis was placed or tends to be directed on popular and huge wildlife tourist attracting destinations. The most common research areas are in the Northern parts of the country mainly the Chobe National Park and the Okavango Delta by virtue of being the world's largest inland Delta (Arntzen et al., 2003). Livestock rearing was the source of economic livelihood for most of the local people surrounding MNR, making it an ideal area to study conservation ecotourism livelihood nexus. The linkages helped to diversify their sources of livelihoods to include income generating projects such as poultry, livestock rearing and bee keeping. Although there is some literature on MNR, however it was very scanty and very limited to biodiversity conservation. The choice of MNR has largely been influenced by its progress and achievements. Despite economic hardships it has made achievements in terms of wildlife conservation and environmental education to the surrounding community and the nation at large (MWF, 2011). In view of the fact that the researcher was in full time employment, MNR and Mokolodi community was accessible to the researcher.

1.9 MAP OF STUDY AREA

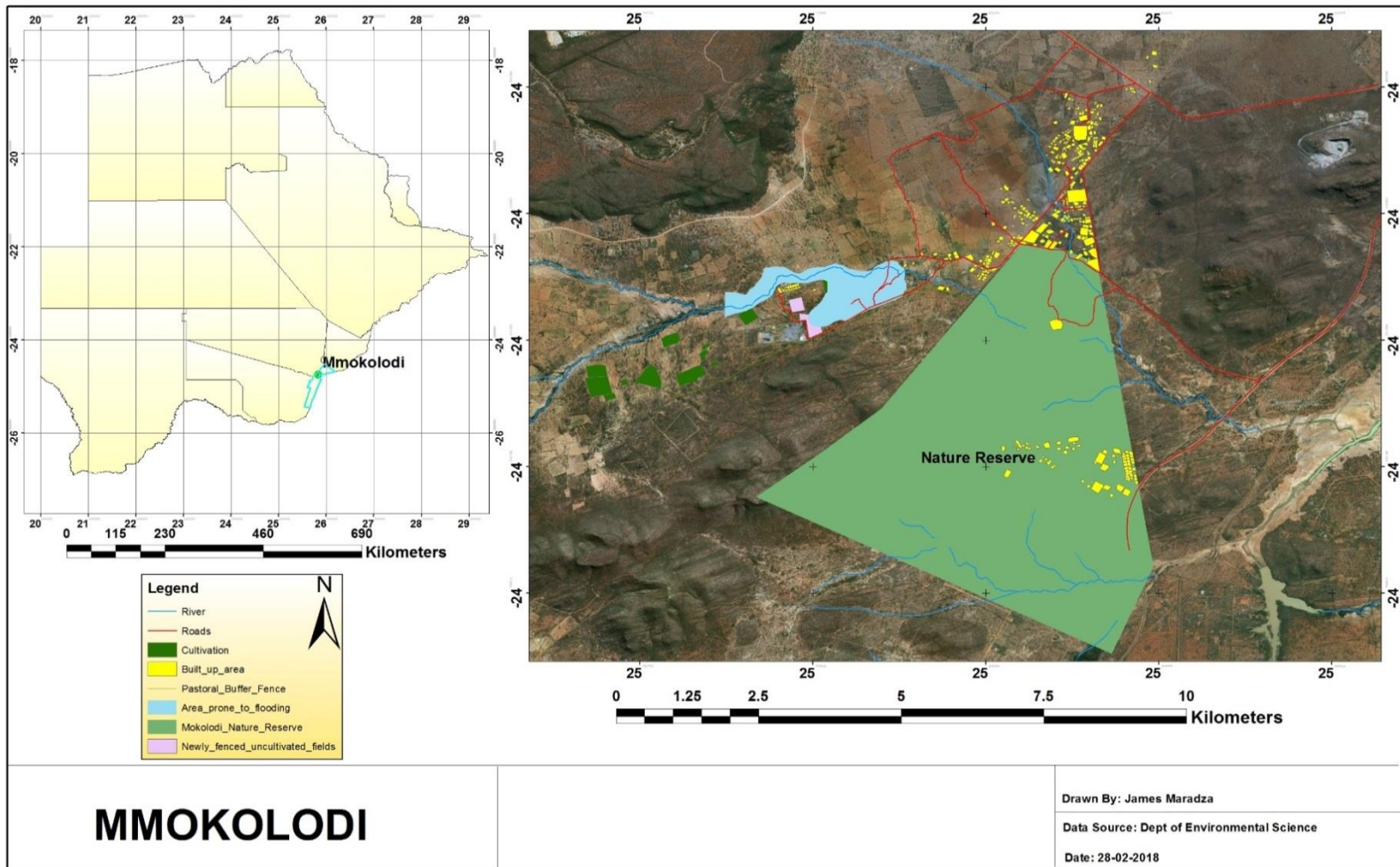


Figure 1.1 Study area map (2017).

CHAPTER 2: LITREATURE REVIEW

2.0 INTRODUCTION

This chapter presents a general review of the literature relevant to issues discussed in this study; from various authorities and scholars relating to tourism in general, narrowed down in particular to ecotourism, conservation and local livelihoods of both common property and private property resources management regimes. The discussion from various researchers was aimed at understanding different strategies used; contextualize the derived knowledge from the reviewed literature and identify perceived gaps from the current literature in the context of Botswana's ecotourism, conservation and local livelihoods. The gaps necessitated the search for innovative ideas and inventive models that recognized and provided mutually beneficial linkages for the sustainable co-existence of common property and private property resource management regimes. The aim was to explore the applicability of nexus thinking as a strategy of improving ecotourism in the context of conservation and household income through benefit sharing, in particular, by fostering linkages between privately managed protected areas and proximate commons communities. In its widest sense ecotourism refers to travel for pleasure or business. Generally, ecotourism can be international or domestic. Although ecotourism is perceived as nature based, questions were raised as to whether ecotourism is sustainable (Weaver, 2005). As a result different forms of ecotourism such as nature based, adventure based, culture based and sustainable tourism were on the spotlight and are more often used interchangeably. For instance (Weaver, 2005) differentiates ecotourism into two separate analogies: hard type ecotourism (comprehensive, small scale and deeply ecological) and soft type ecotourism (large scale, profit oriented ecotourism). The aforesaid versions of ecotourism reflected the level of sustainability attached to such an ecotourism adventure. However, both types have been embraced in a single ecotourism spectrum.

Tourism became one of the world's fastest growing economic industries in the world and the third largest industry after chemicals and fuels (Christian, et al., 2011). Globally, tourism generates 11% of Global Gross Domestic Product (GDP) (Crotti, & Misrahi, 2017) and employs over 200 million people, accounting for 1 in every 10 jobs (Crotti, & Misrahi, 2017). Internationally, arrival of tourist increased from 2.5 million in 1950 to 1.186 billion in 2015 with an average record of over 800 million international travelers every year (Crotti, &

Misrahi, 2017). This growth is expected to surpass 1.8 billion by 2030 (Crotti, & Misrahi, 2017). The growth of tourism is increasingly relevant to international processes, notably the RIO + 20 (The United Nations Conference on Environment and Development) held in Rio de Janeiro, Brazil 2012 (Christian, et al., 2011), with the goal of merging socio-economic and environmental goals of the global community. The assumption was that if tourism was to be properly managed, it had the potential to fulfill the three dimensions of sustainable development namely: social, economic and environmental. In addition to the RIO + 20, the Sendai Framework for Disaster Risk Reduction 2015-2030, ratified in 2015, also strengthened approaches that connects the tourism sector with environmental disaster management (Christian, et al., 2011) for the purpose of achieving sustainable tourism development. More so, the aspirational Global Goals of the 2030 Agenda for Sustainable development (SDGs) - notably Goals number 8, 12 and 14 - appreciate the role of tourism in fostering economic growth, job creation, promoting local culture and sustainable consumption and production patterns (United Nation General Assembly (Crotti, & Misrahi, 2017). These international frameworks strive for integration and development, focusing on priorities, policies and strategies that help to achieve long-term goals of sustainable development.

Nature based tourism, in the form of ecotourism, is the second largest economic sector in Botswana, after diamonds mining and processing (Mbaiwa, 2004; Mopelwa, & Blignaut, 2014), and it contributes 9.7% towards the Southern African country's Gross Domestic Product (WTTC & Council, 2009) creating employment to approximately 13,000 people in the country (Rabaloi, 2006). Statistics from Community Based Natural Resource Management (CBNRM) survey reports indicated that between 1997 and 2015, revenue collected from CBNRM through CBOs or Trusts exceeded P300 million (Crotti, & Misrahi, 2017). The unique natural resources (e.g. the "Big Five" wildlife species) and cultural heritage sites of iconic features, such as the renowned World Heritage Sites like the Okavango Delta protected under the Ramsar Convention – are viewed as having a catalytic influence for economic and social growth of ecotourism in Botswana (Mbaiwa, 2004). The wealth injected in this business creates employment opportunities for local people; improve rural infrastructure, service delivery and social amenities as well as providing market for agropastoralism products. This improves the livelihoods of the local people. In view of these positive attributes of ecotourism, it is imperative to continue soliciting sustainable innovative ideas and initiatives that boost socio-economic and ecological development of the country, as

envisaged in the country's National Development Plan (NDP 11) contributing to the attainment of Botswana's Vision 2036 and Sustainable Development Goals of 2030 (SDGs).

The rest of this chapter is organized as follows: Section 2.1 reviews the background information about CBNRM and livelihoods, with particular focus on poverty and environmental degradation. Thereafter, section 2.2 dug into the origins and overview of CBNRM in Botswana. Section 2.3, presents the concept of privately owned natural resources and the Mokolodi Nature Reserve. This is followed by a detailed review of Nexus Thinking in Section 2.4. This section reviewed literature on the meaning, origins and application of Nexus Thinking. The succeeding section, 2.5, discuss the conceptual linkages (nexus) among livelihoods, conservation, ecotourism and protected areas. This section is followed by a discussion of the Community Social Responsibility (CSR) coined in this study as Private Protected Area Social Responsibility (PPASR). Private nature reserves have been engaging in a wide range of corporate social responsibility activities. They have been sponsoring social activities such as village soccer teams and netball teams. CSR is a voluntary initiative and, in most cases, it has been regarded as a gesture of good hand by private nature reserves to poor local communities. However, in this instance CSR is important because it considers the socio-economic and ecological interests of the society. This took the discussion to section 2.6, the conceptual framework, premised on the linkages between PPAs and Local Community. Various connections were explored. That is intra-linkages – ecotourism, biodiversity conservation and PPASR as entities within the PPAs and inter-linkages between PPAs and local communities, livelihoods and communal area environment. The benefits of these connections were further elaborated towards the end of this section. The chapter concludes by summing up the fundamental benefits of CBNRM to common property resources and the inapplicability of CBNRM to PPAs and Government Protected Areas (GPAs). The Nexus Thinking was presented as an alternative model to manage resources owned and managed as PPAs and GPAs.

2.1 CBNRM AND LIVELIHOODS

2.1.1 Poverty vs Environmental Degradation

Although Botswana is a medium income country, poverty levels among rural communities are high with the national average poverty rate standing at 16.3% in 2015 (Statistics Botswana,

2018). Unfortunately, poverty is directly linked to environmental degradation in a vicious circle. The absence of alternative means of household income, especially in marginalized sections of the society; leave the poor people with no option except to plunder natural resources for survival. Therefore poverty hinders rural growth and limits conservation success. Unless and until poverty alleviation strategies provide social and economic benefits to the local people, poverty and environmental degradation remains a challenge especially in developing countries. According to Robertson (1989), human poverty is the inability of the people to afford average standards of living: access to food, clean water, shelter, healthcare and clothing. Poverty can also be defined either in absolute or relative terms: from a narrow or broad perspective (Robertson, 1989). In relative terms, Laderchi, Saith, & Stewart, (2003) describes poverty as a modern Eurocentric construct which clustered countries together as poor on the basis that their overall income is insignificant as compared to those countries dominating the world's economy. On the other side, the World Bank defines poverty in absolute terms focusing on individual income or consumption level which is \$1.25 per day (Laderchi et al., 2003). Although the concept of poverty alleviation dates as far back as the 1970s, poverty became a major theme in international development in the 90s after the World Bank's World Development Report of 1990 on Economic Structural Adjustment Programme (ESAP) (Culpeper, 2005). ESAP was a Poverty Reduction Strategy (PRS) instituted by both the World Bank and International Monetary Fund for developing countries to ease their debts and secure international funding (Gould, 2005). However, to date poverty reduction still remains a yet to be achieved sustainable development goal.

Lately, tourism was in the international spotlight as a possible alternative to poverty alleviation. A number of developing countries received large voluntary transfer of wealth, three times more than any development assistance, from developed countries in the form of tourist expenditure (Ashley, & Mitchell, 2009). There is no doubt that, ecotourism can be an alternative means of livelihoods not only to alleviate poverty but also a means to curb environmental degradation. For instance, the poverty reduction initiative: Sustainable Tourism – Elimination of Poverty (ST-EP) launched by The World Tourism Organization in Johannesburg in 2002 focused on driving benefits to the local community. The idea was to channel sustained resources and small to medium tourism projects to marginalized rural communities (Adams, et al., 2004; Suich, et al., 2015). Therefore, involving Botswana in

tourism development initiatives, conservation and sustainable resource utilization is essential to connect conservation with livelihoods, as a means to poverty alleviation and depletion of biodiversity. However, this is only applicable if and when benefits from exploitation of resources, direction of investments and orientation of technological development are made constant with present needs of the local people today and in future. Research shows that 28% of Botswana's population is involved in Community Based Organizations (CBOs) (also called Trusts in Botswana) and around 61% of the same population is confined to the rural areas (Sebele, 2010). This shows that the bulk of the population is found in rural areas and with meaningful participation of local communities in conservation through CBNRM (Swatuk, 2005); significant benefits can be attained and the livelihoods of the people can be transformed. The same sentiments were also expressed in the Khama Rhino Sanctuary Trust (KRST) management plan, which reiterates that community participation increases local benefits and stimulates communities' interest in resource conservation (Sebele, 2010).

The concept of CBNRM was not only credited for its commitment to ensure that local people are involved in the management and conservation of natural resources (Mbaiwa, 2011) but it prided itself as a crucial livelihoods benefactor and driver in rural development (Sebele, 2010), by strengthening rural economies and empowering local communities to manage their natural resources. However, noble as it is, studies widely acknowledged that CBNRM was limited to the governance of common pool resources (Blaikie, 2006; Fabricius, & Collins, 2007; Phuthogo, & Chanda, 2004; Taylor, 2001). This current discourse treats CBNRM as a less robust institutional arrangement that at best can only buffer protection of common property resources (Hoole, 2008). This shortcoming of CBNRM's inapplicability to PPAs and Government Protected Areas (GPAs) requires further research to solicit more viable and sustainable approaches: Approaches that are best applicable to PPAs and GPAs. When more attention is given to the socio-economic and ecological linkages inherent in landscapes shared by PPAs and communities; conservation and benefits sharing can be promoted and attained (Stone, 2013). The basic premise of the benefits sharing approach asserts that as local people enjoy tangible benefits accrued from ecotourism and conservation, it motivates their behavior to conform to the values, ethics and norms of conservation (Ollenburg, & Buckley, 2007; Phuthogo, 2008; Spenceley, 2012). At the same time the benefits accrued to the local community can outweigh the costs and damages faced by the same communities in

conserving biodiversity. As a result people appreciate the value of nature and incorporate nature into their worldviews as a way of regulating the use and management of natural resources – responsible tourism (Fabricius, & Collins, 2007).

2.2 CBNRM: OVERVIEW OF ITS ORIGINS AND THE BOTSWANA CONTEXT

2.2.1 Overview

The strategy of integrating human resource into natural resource conservation is not new in Africa. A recount of the colonial history records revealed that legendary communities such as those of the Maasai -Mara, the Ngorongoro and the Amboseli areas in East Africa practiced sustainable utilization of natural resources (Murphree, 1998). Similarly in pre-colonial Botswana, communities satisfactorily managed their own resources according to their traditional *dikgosi* customs, knowledge and technologies (Arntzen, Buzwani, Setlhogile, Kgathi, & Motsolapheko, 2007; Arntzen et al., 2003; Phuthego, & Chanda, 2004). It is unfortunate that today, critical observation and literature reveals that most of the sub-Saharan African communities are battling with loss of biodiversity and environmental degradation, impacting more on the well-being of the poor, especially those whose livelihoods depended on natural resources (Schlossberg, et al., 2019; Stone, 2013). Anthropogenic factors and processes such as urbanization, technology, agriculture, industrialization, fuel wood extraction in marginalized rural communities have been most influential drivers of loss of biodiversity and environmental degradation. As a result, natural resources are dwindling both in absolute numbers and diversity. Estimates from a global assessment conducted in 2014 shows that from the 71576 terrestrial and freshwater species assessed: 860 were extinct; 21 286 were threatened and 4286 were critically endangered (Pimm et al., 2014). This is worrisome and there is urgent need for redress measures to this global challenge sooner rather than later, lest the world suffers catastrophic biodiversity extermination.

Early efforts to address these challenges, led national governments in partnership with international organizations such as the USA Agency for International Development (USAID) and the World Bank, to prioritize local communities' participation in rural development projects and biodiversity conservation (Suich et al., 2015). This marked the beginning of CBNRM as a new paradigm of resource utilization and conservation philosophy (Child, 2004; Jones, 2006; Swatuk, 2005). Although research indicates that there is no single definition of CBNRM, most researchers however do agree that CBNRM is a strategy for better resource

management through wider participation of the local communities in decision making, planning and management (Armitage, 2005; Mbaiwa, 2004). CBNRM refers to a development strategy whose core function is to support natural resource conservation and improve the livelihoods of the marginalized local people (Moswete, 2009; Dahal, et al., 2014). CBNRM can be equated to a people centered participatory resource management strategy with the prime focus of achieving sustainable and equitable use of local natural resources; driven by the prime objective of meeting the socio-economic and ecological needs of the society and the environment now and in future (Turner, et al., 2003; Arntzen et al., 2007). Participation by the local residents in ecotourism and conservation creates benefits for local communities – e.g. skills development, income, and social and economic infrastructure. It also empowers communities by encouraging them to participate in the management of their immediate natural resources for long term economic, social and environmental gains and balancing exploitation of natural resources with the conservation of valued ecosystem components. Sustainability is about growth and progress: preserving wildlife in order to serve the people, to meet their basic human needs now and in the future through ecotourism development. The approach received conceptual support from the World Commission on Environment and gained remarkable supremacy after the publication of the World Commission on Environment and Development's (Brundtland) Report in 1987– sustainability and sustainable development for our common future (Holden, et al., 2017). A number of developing countries, Botswana included, found the tenets of this approach attractive and rallied behind it.

Inspired by the recommendations of the Brundtland Report just alluded to, the UN convened a Global Earth Summit in 1992 in Rio De Janeiro and a blue print Agenda 21 was produced and adopted by member states. Among the tenets of Agenda 21 is the need for countries to promote more sustainable tourism with local community engagement to address the spiraling poverty and environmental degradation (Jodha, 1986; Holden, et al., 2017). Both Agenda 21 and the Convention on Biological Diversity (CBD) reinvigorated global commitment towards poverty reduction, conservation of biodiversity, sustainable utilization of natural resources, fair and equitable distribution of benefits arising from genetic resources (Mafuta et al., 2008). Regionally, CBNRM was first established in Zimbabwe through the Communal Area Management Program for Indigenous Resources (CAMPFIRE) in the 1980s. The then focus

of the program was to provide incentives to the local people for conserving natural resources within their surroundings. By late 1980, the approach had spread across the whole of Southern Africa (Child, 2004; Mbaiwa, 2011; Nyaupane, & Poudel, 2011; Swatuk, 2005). The CBNRM strategy enhanced community participation in natural resource use and conservation, with its main focus centered on rural economic development and the sustainable management of common property resources (Mbaiwa, 2015; McShane, & Wells, 2004). According to Suich et al. (2015), the concept of CBNRM is anchored on the three sustainability aspects: social equity, economic efficiency and ecological sustainability. Social equity advocates for equal and fair access to natural resources utilization. It strives to ensure equitable distribution of costs, benefits, decision making and management of natural resources with the purpose of alleviating poverty (Spector, Sjöstedt, & Zartman, 1994) and curbing depletion of natural resources and degradation of the natural environment. Community participation enables the people to execute their stewardship obligation to manage natural resources for the benefit of the current generation and many more generations to come. On the other side, the economic efficiency aspect deals with optimal use of the natural resources. The maximum output attained from these natural resources offers economic benefits which improve the standards of living of CBNRM communities (Markandya, 1992; Paehlke, 1999). However, such economic benefits should not only benefit the people and the tourism industry but also the natural environment. The ecological sustainability component reiterates that the rate of renewability of the natural environment and its resources should not be exceeded by the rate at which the resources are being extracted from the natural environment (Serageldin, 1993; IUCN, 1999). Therefore, overuse and unsustainable utilization of natural resources through unsanctified human actions such as poaching, poisoning wildlife and indiscriminate cutting down of vegetation, have the detrimental effect of depleting or undermining the natural resources base. For instance, the current rate of rhino and elephant poaching, especially in Southern Africa, has ecological ramifications for sustainable ecosystems (Karki, 2013).

Botswana hailed CBNRM as a panacea to biodiversity depletion after suffering, for so many decades, from massive declines in biodiversity (Murphree, 2009; Scheyvens, 2007; Sebele, 2010). It also promised to effectively address the challenges of poverty and rural development (Phuthogo, & Chanda, 2004). This view is also echoed by Hall, (2007) who affirms that the community approach to tourism is a bottom up approach which highlights development *in* the

community as opposed to development *of* the community. The process of redistribution of power and transfer of responsibilities from central government to the local people shape the community's environmental future. According to Jiang et al., (2011) the strategy is premised on the notion of conservation with the people for the betterment of their livelihoods and natural resources. Furthermore, the author referred to this as incentive compatibility, and described it as the establishment of economic interest in the long-run for the viability of ecosystems. The ecosystems represent benefit streams for both parties - those who seek to preserve biodiversity and those who must make a living from this genetic resource (Jiang et al., (2011). According to Steiner, & Rihoy (1995), the CBNRM approach was meant to counteract factors such as the threat of species extinction due to population growth, overuse of resources, habitat fragmentation and human wildlife conflict (Rihoy, 1995). The successful implementation of CBNRM led to some recovery of biodiversity in some areas. For instance, in Zimbabwe the Communal Area Management Program for Indigenous Resources (CAMPFIRE) reportedly played an important role in conserving biodiversity and improving livelihoods of the local communities (Mafuta et al., 2008). In their remarks Mutandwa, & Gadzirayi (2007) concluded that in Zimbabwe, CAMPFIRE empowered rural communities with the "rights to manage", "rights to benefit" and "rights of disposal of natural resource utilization".

In Africa, CBNRM is dominant in East and Southern Africa. As just noted above, in Zimbabwe it is popularly known as (CAMPFIRE). In Zambia it is known as Administrative Design for game Management Areas (ADMAGE). In Namibia, it has been implemented through the Living in a Finite Environment (LIFE) programme (Ashley, 2005), whilst in Mozambique, it has been advanced successfully through Tchuma Tchato which means "Our Wealth" (Cruz, 1995). In Kenya it has been successfully pursued through Conservation of Biodiversity Resource Areas Programme (COBRA) (Masika, 1995), and in Tanzania it is Ujirani Mwana, referring to Good neighborliness.

Indeed CBNRM's identity is rooted in wildlife management and nature conservation to increase, promote and improve livelihoods or rural communities (Stone, & Stone, 2010). Despite CBNRM's prominence, however the model was marred with challenges and constraints in recent years. Research indicates that CBNRM is no longer the vogue that it was two decades ago (Stone, & Stone, 2010; Lenao, 2013). The challenges as summarised by

Stone, & Stone (2010) includes: loss of grazing land for livestock by local communities, lack of communication with the local community, lack of benefits and adequate employment of local people within the local communities. In addition Lenao, (2013), cites the challenges of CBRNM as: heavy dependence on external donor funding, inadequate marketing, lack of capacity and low economic impact among the communities. In Zimbabwe for instance, the challenges faced by CAMPFIRE are attributed to the failure by local communities to manage local projects in their communities. For instance the Mahenye CAMPFIRE project deteriorated due to lack of leadership together with withdrawal of foreign investments which were providing the necessary financial aid (Balint & Mashinya, 2006). Be that as it may, overall, CBNRM pursues the notion of rural governance and livelihoods of local communities. However, it is apparent that the success of rural development and resource conservation (CBNRM) requires viable local participatory decision making institutions that enforce sustainable ways of governing natural resources. At the moment these institutions are fragile and are still in need of continual external support in terms of financial assistance and technical expertise on the governance of natural resources (Balint & Mashinya, 2006).

2.2.2 CBNRM in Botswana Context

In Botswana CBNRM could be likened to the San/Basarwa people who introduced the conservation of land and animals in their traditional gatherings or meetings popularly known as the *kgotlas* (Fabricius, Koch, Turner, & Magome, 2013). A *kgotla* (*meeting place*) is a traditional gathering or assembly place where societal and environmental issues are conveyed, discussed, shared and resolved by community leaders known as chiefs (*dikgosi*). The python and lion species, for example, were believed to be the custodians of important landscapes. Boundaries were demarcated by communities to protect certain land through community leadership (Stone, 2013). These practices marked the early forms of nature conservation. In the modern Botswana, the Tribal Grazing Land Policy (TGLP) of 1975 which zoned land use was enacted with aim of curbing overgrazing and degradation of the range and promoting greater equality of incomes in rural Botswana (Stone, 2013). Modern CBNRM practice was first launched in Botswana in 1990 in conjunction with Botswana Government and the United States Agency for International Development (USAID), through a joint Natural Resource Management Project (NRMP) hosted by the Department of Wildlife and National Parks (DWNP) (Gujadhur, 2001; McCormick, & Honadle, 1999). The approach aimed to motivate communities to actively participate in the management and utilization of natural resources

through Community Based Organisations (CBOs) known as Trusts and by then was confined to wildlife (Fabricius et al., 2013) and (CBT) commonly used for Community Based Tourism. However CBNRM has since been extended to cover other areas such as veld products, historical sites, places of scenic beauty and other renowned natural wonders (Arntzen et al., 2007; Nyaupane & Poudel, 2011). The adoption of the CBNRM approach was driven by the realization that alienation of poor local communities - wallowing in poverty in their remote areas - would not only further deepen their economic hardships, but also push them further to plunder natural resources. Averting such disastrous consequences would only be possible through direct involvement of the local community living around protected areas through Community Based Organisations via CBNRM called Trusts in Botswana (Arntzen et al., 2007). A Trust can be made of one or more villages depending on geographical location and availability of land with wildlife (Arntzen et al., 2007). The adoption of the CBNRM approach was also inspired by the realization that the local populations have greater interest in conserving natural resources within their localities on the basis that natural resources have an intrinsic value essential for the sustainability of the society.

Botswana CBNRM policy of 2007 makes it mandatory for all citizens to conserve their natural resources, develop and promote conservation strategies that are ecosystem friendly, promote opportunities for local participation, capacity for natural resource management and enhance social and economic development in rural areas (Government of Botswana, GoB, 2007; Phuthego, & Chanda, 2004; Sebele, 2010). In 2007, the CBNRM policy formalized the operations of existing CBOs and made it easy to open new CBOs (Stone, 2013). In 2001 there were 25 CBNRM organizations formed as Trusts and of these, 12 were in the Okavango Delta (Cassidy, 1999). Notable examples of these Trusts are the Khama Rhino Sanctuary Trust (KRST), the Okavango Community Trust (OCT) and the Khwai Development Trust (KDT) (Stone, 2013). These trusts were meant to increase the local involvement and participation to empower the local people through natural resources governance and utilization.

A survey carried out in 2016 revealed that the number of CBOs in Botswana had risen to 146, with 94 of them registered with the Botswana Community Based Organizations Network (BOCOBONET), their affiliate body; 16 not registered and the registration of the remaining 37 not known (Dikobe, 2012). The CBNRM policy, in its endeavor to redistribute benefits

equitably, made provisions for a fund that would mobilize 65% of royalties and land rentals (GoB, 2007; Lee & Du Preez, 2016). The funds would benefit CBOs, the old, the orphanage and pay educational fees for disadvantaged children (Dikobe, 2012). The whole strategy acknowledged that the concern for biodiversity in broad terms not only underpinned threatened flora and fauna but also human communities' ability to survive and improve their livelihoods (Armitage, 2005). The ultimate goal is to improve the livelihoods of the people through sustainable resource management, to a point that they derive meaningful value and benefits from conserving their environment (Armitage, 2005). The fascinating question is whether CBNRM achieved this goal or not? More importantly, did the local people maximize their benefits from natural resources as a result of CBNRM? Whether or not the local people achieved or maximized benefits from the approach may require further research, but the present study focuses on one of the widely acknowledged limitations of the approach: that the approach does not apply to resources managed in privately owned protected areas. As noted in Chapter 1, the study provides insight and knowledge in regard to an alternative approach to CBNRM that could apply to such resources.

2.2.3 CBNRM vs Privately owned natural resources

Of course CBNRM is grounded on the premises of sustainable development and widely acknowledged for improving conservation of natural resources and improving livelihoods of the local people (Mbaiwa, 2011; Murphy, 1985), but its application is limited to common pool resources and not to privately owned natural resources (Arntzen et al., 2007; Blaikie, 2006; Mbaiwa, & Darkoh, 2009). This view is also echoed by Mosimane & Silva (2015), who concur that natural resources associated with CBNRM are usually in respect of common pool resources. This view is further expounded upon by Mbaiwa, (2010) who affirms that the paradigm of CBNRM was built upon common property theory, which states that common pool resources can be sustainably utilized when community autonomy as an institution is recognized. In that respect, CBNRM is not applicable to both PPAs and GPAs such as national parks (Armitage, 2005) except in buffer zones known as Wildlife Management Areas (WMAs) in Botswana. In support Jones (2005) affirms that CBNRM focuses on addressing issues over access and control of common pool resources by local people. Evidence from research on community based resource management revealed that Southern African countries such as Botswana, Malawi, Zambia, Mozambique and Zimbabwe generate financial benefits

from wildlife tourism (Armitage, 2005). Through CBNRM, local resource users have the capability of regulating access to key common pool resources such as forests, dams, grazing land and wildlife; displaying rightful circumstances and administering such regulations through a wide range of community institutions such as Community Trusts, *dikgosi* (chiefs), and local authorities (Jones, 1999; Pomeroy, 1995; Steiner & Rihoy, 1995). The reasoning behind CBNRM is based on the strategic simplification that common pool resources institutions possess local property rights that do not recognize personal ownership of such resources but that idealized traditional resource use system is highly valued for its sustainability as it evades issues associated with the tragedy of the commons circumstances identified in Hardin's 1968 seminal publication (Hardin, 1968). In her remarks, (Scheyvens, 1999) concludes that if CBNRM is to be used, it should be reserved only for ventures with high degree of community control and where the communities command a large proportion of the benefits, rather than benefits wholly owned and controlled by private owners.

In light of the limitations posed by CBNRM as a model for common property resource governance, it is apparent that there is need for further research on models that guarantee meaningful benefits to areas or communities surrounding or proximate to privately owned and managed natural resources. The dictates of proximity, ecology (ecosystem linkages) and economy (livelihood linkages) suggest that these two sets of resources (communally and privately owned) have inescapable linkages. It therefore becomes necessary to search for models that would recognize and forge mutually beneficial linkages for the sustainable co-existence of the two regimes. As discussed under sections 2.4 and 2.5 below, there is hope that the nexus thinking (NT) approach add insight and knowledge in promoting community support for conservation and sustainable utilization of natural resources in privately owned nature reserves or government protected areas (GPAs). This is the much anticipated scientific research framework capable of addressing the contemporary limitation of CBNRM with respect to such resources. However, the focus in this particular instance is on conservation, ecotourism and rural livelihoods in the Mokolodi Nature Reserve (MNR), a privately owned reserve close to Gaborone, Botswana.

2.3 THE CONCEPT OF PRIVATELY OWNED NATURAL RESOURCES AND THE MOKOLODI NATURE RESERVE

2.3.1 Private Ownership of natural resources

Land laws in Botswana have gone through many modifications since independence in 1966 (Adams, 2000). The first changes were instituted through The State Land Act of 1966 and The Tribal Land Act of 1968 (GRB, 1992). These statutes led to the establishment of three categories of land tenure in Botswana namely: tribal land, state land and freehold land (Adams, 2000). Between 1966 and 1972 over 15 000 square kilometers of state land were alienated and sold as freehold land both to Europeans and Batswana (White, 1999). It was then that MNR was sold as freehold land. Later on in 1994, the land was donated to Mokolodi Wildlife Foundation (MWF) to promote ecotourism and conservation of biodiversity (MWF, 2011). This was in response to the global plea to increase protected areas, so as to conserve natural resources, preserve cultural heritage, and maximize economic benefits from resource utilization (Novelli, & Scarth, 2007; Child, 2004). According to the UN List of Protected Areas, the number increased from 10 000 in 1962 to over 100 000 by 2003 covering about 18.8 million square kilometers (Child, 2004). In Botswana some of these protected areas (conservancies) are owned by private organizations also known as Trusts. This may be referred to as private ownership of the natural resources for the conservation and protection of the wilderness, flora and fauna.

The CBNRM approach, discussed suggests that there is an inherent separation between common pool resources and private owned natural resources (Mbaiwa, 2011). As local people attempt to share the benefits from resources managed under PA conservation ecotourism; at times restraints, moratoriums, or control measures of natural resource use are enforced by the private owners as a way of curbing loss of biodiversity (Novelli & Scarth, 2007). Generally, any trespass on set boundaries or demarcations of these private nature reserves can result in either persecution or prosecution. However, the end result may be a frosty relationship between the private owner and the community or communities nearby. Such frosty relationships are common between communities and government controlled PAs. For instance, the recently controversial Botswana Government Policy of “shoot to kill” of suspected or actual poachers (Mogomotsi & Madigele, 2017), has created tension between the communities and the government. According to Mogomotsi & Madigele (2017), green militarization to enforce the shoot to kill policy has created tensions in Northern Botswana, where communities have been subjected to indiscriminate raids by the Botswana Defense Force (BDF). Undoubtedly, this has rather reinforced the community’s belief or perception

that government prioritizes biodiversity conservation over human welfare (Mogomotsi & Madigele, 2017). Opponents argue that the policy has the potential of endangering the lives of local people and tourists, not connected in any way to poaching activities. Scenarios of that nature may force communities to develop negative perceptions towards conservation, biodiversity and ecotourism. This situation is unfortunate, considering that studies have shown that future prospects of protected areas are dim without the involvement and support of the local communities (McShane & Wells, 2004), irrespective of the property regime. The concept of sustainability as prescribed under Sustainable Development Goals to 2030 (SDGs), Convention of Biodiversity (CBD), Agenda 21, Brundtland Commission Report of 1987 (Brundtland, 1987), Botswana National Development Plan 11 (NDP 11) and Vision 2036 is central to growth, progress and development towards alleviating poverty. It is premised on livelihoods-harnessing benefits accruing from conservation initiatives to drive the socio-economic and ecological prosperity of the local people and environments now and in the future.

Livelihoods consideration is central to any development strategy either through employment, education, or corporate social responsibility. Without the community in mind, there is no tourism and no conservation (Karki, 2013). However, community benefit sharing is not about plundering natural resources but creating socio-economic and ecological footprints and opportunities from ecotourism and conservation that help to improve their livelihoods. A suitable approach is necessary to ensure that the local community derives such benefits from these natural resources (whether government or privately owned) in a win-win situation (Karki, 2013). It is the premise of the study to try and address the gap created by the absence of an approach akin to CBNRM that could be used to diffuse or preempt the actual or potential conflicts or antagonisms between local communities and nearby privately or government managed natural resources. The envisaged approach promote positive, win-win interaction and interconnection between local communities (and their livelihoods) and the privately owned nature reserve (and its biodiversity and the ecotourism based on this biodiversity). As the interaction and connection kicks in, valuable insights and ideas are shared and implemented, addressing poverty, loss of biodiversity and environmental degradation (Bazilian et al., 2011; Nyaupane & Poudel, 2011). The approach can be developed, nurtured and assessed to ascertain and determine the extent of the benefits

accrued. Benefits include both household and community benefits. Household benefits could include employment in the reserve and ecotourism activities or facilities or supply of goods and services to the reserve or tourists. Community benefits could include transport network, amenities and support for village projects and activities (Karki, 2013). In complement, the community collaborates to stamp out human wildlife conflicts, poaching, protect and monitor biodiversity and vegetation cover so as to improve activities that boost ecotourism activities and income. This increases socio-economic benefits through ecotourism related employment and other income generating relationships with the private PA, thereby improving the overall livelihoods of households (Stone, 2006). In support Sebele, (2010), notes that it is a win-win situation, referring to the benefits derived by the local people from the natural environment and the tourism area. By exploring the applicability of nexus thinking, this can open up to strategies that address the challenges of environmental degradation, poverty and loss of biodiversity. Generally, the main purpose is to improve natural resource conservation and rural livelihoods so as to alleviate poverty. As discussed in sections 2.4 and 2.5 below, NT holds the promise as a guiding framework towards achieving sustainable conservation, ecotourism and livelihoods for privately owned PAs and proximate communities, respectively.

2.3.2 Mokolodi Nature Reserve

The nature reserve is a privately owned entity established in 1994 by Mokolodi Wildlife Foundation (MWF) to serve a dual purpose of promoting environmental education and environmental conservation in modern day Botswana (MWF, 2011). MNR is registered as a charitable trust under the Botswana Societies Act of 1972 (MWF Booklet, 2014-15). A voluntary Board of Trustees meets on a quarterly basis to oversee the running of various projects in the park. The foundation oversees the management and functioning of MNR in general and in particular the Education Centre (MWF Booklet, 2014/15). The reserve covers approximately 4500 hectares of acacia bushveld valley (MWF, 2010). The area allocated for the reserve today was once a cattle farm with high cattle density until 1986 (Bråten, 1997). The history of cattle grazing perhaps had an impact on the vegetation (Bråten, 1997), which has now been reduced to a mere mixed shrub and tree savannah land (Bekker & De Wit, 1991). The main activities important for livelihoods options include formal and informal

employment, agropastoralism, making the study site an ideal place to research on conservation ecotourism local livelihood nexus.

The reserve continues to serve as a vital education resource center both to the young and the old. The educational activities offered at the park include aquatic ecosystem studies, water conservation, nature walks, guided game drives and tours of the animal sanctuary. The nature reserve provides a wide range of tourism related products and services for its self- sustenance. However, the reserve also depends on public donations for capital assets and operational shortfalls. One of the achievements at MNR is the rhino breeding program which is contributing immensely to restocking of biodiversity and rebuilding of the nation's rhino population, after the species was almost pushed to the verge of extinction (Tallis et al., 2008). The reserve's efforts were realized in 2011, when a total of nine rhinos were moved to various locations around the country for restocking purposes (MWF, 2010). Thanks to the Rhino Conservation Team, in collaboration with the Botswana Defense Force, for their endless monitoring activities; engaging in anti-poaching, providing supplement feeds as well as keeping watch on the carrying capacity. The supplementary feeds helped to take off the pressure from the surrounding grassland and to maintain the required nutrient level of the animals. Likewise, carrying capacity maintains the population so as to limit cases of interspecific and intraspecific competition between wildlife populations. According to MWF Booklet (2016-17), a road strip count conducted in 2016 estimated that the reserve has a thriving diverse wildlife population hovering around 1450. The nature reserve often downsizes its wildlife population through game capture where old and undesired animals are captured and killed. The meat is used to feed other animals such as hyena or sold to local butcheries or used in the restaurant to feed tourists. The nature reserve also uses the approach of offtake to maintain the carrying capacity. This is when management hunting is permitted to control wildlife population. Management hunting was executed in 2014 and a total of 5 kudu, 11 warthog and 40 impala were culled from the reserve through management hunting (MWF Booklet, 2016-17).

The conservation efforts of the reserve have been without the grant support from United Nations Development Programme (UNDP) / Global Environmental Facility Small Grant Programme. (MWF Booklet, 2014/15). The funds have been instrumental in rehabilitating the

reserve's veldt condition, stabilizing and reducing erosion, creating not only a healthier ecosystem but also increasing the average area for carrying capacity. According to MWF Booklet (2014/15), the conservation team successfully employed erosion control techniques such as gabion baskets (cf. Figure 2.1), Reno –mattresses, geotextile silt traps, rock blankets and potholes to contain velocity of the flowing water (MWF Booklet, 2014/15). This created additional employment to the local community, absorbed in the working task force.



Figure 2.1: Gabions for soil erosion control at MNR: Source (MWF Booklet, 2014/15)

Furthermore, the Conservation Team has been battling with bush encroachment. MNR carries out selective cutting down of woody trees especially invasive species such as *Dichrostachys cinerea* and *Acacia mellifera*, opening up space for the growth of grass to feed grazing wildlife (MWF Booklet, 2014/15). Burning of the grass is also part of the conservation efforts that ensures that a healthy savannah ecosystem is maintained. Usually between September and October, small scale controlled veld burns are administered to promote germination of dormant seedlings, reduce parasite loads and combat moribund plant material (MWF Booklet, 2014/15). MNR boast of a thriving animal sanctuary/ reptile park which gives care to injured animals. The sanctuary forms an integral part of the MNR environmental education program. The reserve provides a safe living environment to injured animals and it is upon recovery that the animals are released back into the wild.

As in most tourist destinations, the MNR is surrounded by local communities (cf. Figure 1.1). Although the reserve is a private non-profit wilderness (MWF, 2011); community engagement has been widely extended to the local community through formal employment and informal employment. According to Dewah (2015) MNR employs over seventy employees with almost ninety five percent of these employees directly coming from the surrounding Mokolodi Community. The people are employed as tourist guides, drivers, construction workers, chefs in restaurant, conservation security personnel, and community provides accommodation to some (Dewah, 2015). Employment of the local people reduces the rate of unemployment in the local community, contributing to the curbing of social ills such as drug abuse, prostitution, and robbery. According to MWF (2011), the local community strongly appreciated the benefits to the extent that community members are now involved in various educational environmental awareness outreach activities on conservation and tourism.

MNR thrives on ensuring the safety of their clientele and improved guest experience throughout the stay, from arriving, transportation, accommodation, game drives to all related activities. One of its attraction areas, the World View Center, has received a new facelift (field visit) making the place the best place to be to enjoy the scenic beauty of MNR escarpments. Game drives are provided in a state of the art 25-Seater safari vehicle, with friendly tour guides. MNR provides a wide range of successful and enjoyable events to its tourists which are ecofriendly.

2.4 NEXUS THINKING: MEANING AND APPLICATION

2.4.1 Defining Nexus

The term nexus refers to a bond, link or tie connecting members of group or series (Groenfeldt, 2010). This view is also echoed by Leck, Conway, Bradshaw, & Rees (2015) who defined nexus as one or more connections linking two or more things. Both definitions capture the interactive, connection and linkage notion effect that characterizes cooperation, coordination, coherence, interdependence for long term development. It provides a practical platform for novel, interactive strategies that portray cross-sectorial, multi-scale interdependencies that reduce mismatches in decision making, planning and management, thereby increasing synergies and promoting resource security (Bizikova et al., 2013; WEF, 2012). Nexus highlights relationships and interdependencies between different components

and the need for integrated management across sectors (Bazilian et al., 2011). Nexus thinking, therefore, can be defined as the way of looking at a bigger picture rather than one thing in isolation. This is more aptly explained with reference to water, and how utilities and water managers balance the increasing interrelated pressure on water, energy and food (Bazilian et al., 2011). It is therefore a strategic and holistic style of thinking that considers long-term implications across interlinked areas, weighing up and balancing social, economic and environmental goals.

2.4.2 The Origins and Application of Nexus Thinking

Although the concept of nexus thinking (NT) appeared to be primitive, there is substantial ancient historical evidence of the model. For instance, the integration of water resource management basin, which dates as far back as many decades ago (Molle, 2009). The Tennessee Valley Authority (TVA) founded in 1933 was a direct attribute of NT (Andrews, 2006). The TVA holistically managed water resources whilst generating energy for enhancing agriculture production and promoting wider social economic development (Benson, Gain, & Rouillard, 2015). In assessing the TVA project, Benson et al., (2015) concluded that integrating water management for extensive social development objectives indeed became the blueprint for the country's development. Considering that the global population hurtles towards 8 billion (Miller, & Spoolman, 2012), a more conscious stewardship approach is necessary to sustainably manage natural resources to avoid, at all costs, circumstances leading to issues of scarcity and shortages as envisaged by the tragedy of the commons. Presenting the perfect storm, Beddington, (2009), made it abundantly clear that global population increase and resource demand are threatening resource availability. Only novel ways of thinking and flexible interactive forms of governance, NT in particular, offer the necessary aptitude required to safeguard all forms of life from global tragedies such as poverty, resource depletion and environmental degradation (Allouche et al., 2014).

Further research revealed that the NT approach can also be applied to the Water –Energy – Food (WEF) relationship (Bazilian et al., 2011; Hoff, 2011). In essence this is about buttressing existing linkages between water, energy and food resources, when incorporated in the management and planning of related activities. By considering the linkages, the main purpose is to avert possibilities of instability or crisis arising mainly as a result of

mismanagement, over exploitation or unsustainable utilization of natural resources. The realization that natural resources are finite foster innovation and inventions of new ideas, concepts or models that help to manage and conserve natural resources, among other things. It was only in 2008, during the World Economic Forum (WEF) that the concept of Nexus Thinking was revealed, as a response to the call for action on water resource management (WEF, 2012). The reason for incorporating NT was to simultaneously achieve water security, economic growth and development. Thereafter several conferences followed, all of them focusing on NT. First was the Bonni 2011 nexus conference for policy coherence, spearheading among other things, greater cooperation between actors and citizens through public-private partnerships (Babbie, 2007). The second to follow was the Mekong2Rio Conference on water- energy- food (WEF) in a trans-boundary context (Bach et al., 2012). During the crafting of SDGs by the United Nations, it is worth noting that the NT concept was their point of reference (Hussey & Pittock, 2012). There is therefore no doubt that the incorporation of the NT idea in global strategic working plans, such as framing of SDGs, validates the relevance and necessity of utilizing the concept of Nexus Thinking in any development strategy.

The analysis of the WEF nexus concept suggests that the relationship between the three components in space and time help to address any negative, social, economic and environmental threats or crisis. In addition, the same WEF nexus concept enhances resource use efficiency and sustainability. The interdependence of components cannot be ignored. For example, water is required to generate hydroelectric energy, which in turn is required to pump water for irrigation. Any interruption or changes to one of these components can have disastrous effects across a wide range of scale to the other components. Stability on all sectors that depend on water and food would have to be compromised. In that respect knowledge and understanding of the linkages, place more focus on the stability and accessibility of resources so as to attain desirable outcomes. The greatest novelty of nexus concept is reflected in the ability to connect social and economic development aspects with natural ecosystems protection (Benson et al., 2015). Interaction between different stakeholders within different sectors promotes unity of purpose, innovation, equitable distribution of ideas and resources benefiting all – a win-win solution. The nexus concept allows equal treatment of different individual sectors - water, energy, food- (multi-centric) (Benson et al., 2015). This shows that

all the sectors are equally important and contribute to the good of each sector as well as the complete whole benefiting the social, economic and environmental systems. Furthermore, the approach paves way for public-private stakeholder coalition for innovation and transformation – opening up a public-private stakeholder platform that enhances partnership, collaboration, capacity building and sharing of ideas (WEF, 2012). Private-public cooperation necessitates integration essential to addressing challenges and crisis that affect either the general public or the private sector. The challenges include poverty, poaching, environmental degradation or human wildlife conflict.

2.4.2.1 Applying Nexus Thinking to Mokolodi Nature Reserve

The conservation-ecotourism-rural livelihoods nexus reflects three important components tied together by socio-economic and ecological activities to address the challenges of poverty, environmental degradation and depletion of natural resources. These social-economic and ecological activities include employment, environmental education and conservation and these initiatives promote interaction, collaboration and coordination between the local village and MNR. Sustainability and stability of these components (conservation-ecotourism-rural livelihoods) is assured at best by treating these components equally. Stable quantities of biodiversity proportional to and within the carrying capacity of the park protect the environment from degradation. In the same vein, by ensuring accessibility of biodiversity to ecotourists, it strengthened ecotourism development and boosts local employment opportunities guarantying improvement of livelihoods. Generally, a sustainable and strengthened ecotourism venture guaranteed stable revenue from tourists, the revenue which is ploughed back into the nature reserve as wages for employees, as funding for monitoring and anti-poaching activities as well as other projects on the reserve that may enhance employment opportunities and transform the livelihoods of the local people (Bach et al., 2012). As people realized that their sources of livelihoods are directly linked to biodiversity, they positively respond to any conservation initiatives. Tourism activities such as animal tracking, game viewing, bush braai, should be fully developed and maintained so as to attract tourists and boost revenue inflow at MNR (MWF, 2011). However, any disruption to any of the components or sectors has negative effect on one or all the components. For instance any reduction in numbers and types of tourists visiting the place limits job opportunities and result in loss of ecotourism income. Poor income entailed that the funding for anti-poaching and

monitoring activities are reduced and ultimately the community lose income through reduced or lost employment, subjecting the people to poverty (Croes, & Vanegas, 2008). The NT model appreciates the value of interactions, interconnectedness and interdependence between human and biological components of social ecological systems (Carlsson, & Berkes, 2003). The approach focuses on enhancing productivity and efficiency of the utilization of resources to avoid scarcity and depletion of natural resources (Hoff, 2011).

However, nexus thinking has also tradeoffs. For instance, the approach fails to deal with shifts in relation to the state of global markets and policies, such as recession; fails to account for long term large scale environmental change - such as climate change and variability, desertification and drought - and it fails to adequately relate agrarian changes with long term changes in rural economies (Scoones, 2009). Furthermore the proposed stakeholder dialogue fails to engage the poorest and the most vulnerable members of the society whose livelihoods are key to the sustainability of the natural environment. Therefore, it was the argument of the study that these tradeoffs, are sufficiently addressed by nexus thinking framework as a conceptual tool and a more holistic model for achieving sustainable development.

2.5 CONCEPTUAL LINKAGES (Nexus) AMONG LIVELIHOODS, CONSERVATION, ECOTOURSIM AND PPAs

2.5.1 The Nature and Concept of Livelihood-Conservation Linkage

It is a common phenomenon that local people in any particular rural society or community rely on products and services from their immediate natural environment to meet their basic survival needs. According Ringler, Bhaduri, & Lawford (2013) the linkages considered the welfare of human beings and environmental outcomes. That is central to the linkage aspect, lies the well- being of the local people whose livelihoods are tightly interrelated to the natural environment although, often times, in conflict with maintaining environmental integrity. In most instances the resources use outweighs the replenishing rate of the resources and the resultant scenarios are deterioration, depletion and degradation of the natural resources. Therefore the focal point are safeguarding biodiversity through conservation, as well as providing economic benefits to the local community to improve their livelihoods. That is the approach was premised on livelihoods intervention (Salafsky & Wollenberg, 2000). The driving force behind the sequence of different activities is the bond or link that connects the respective components. According to Salafsky, & Wollenberg (2000) it is the link that closes

the loop making the system self-perpetuating. The linked activities managed any perceived threats by providing more attractive livelihoods options thereby inhibiting local communities from carrying out damaging livelihood activities. When the value of biodiversity to the local community is enhanced, the local people are forced to maintain or enhance the benefit by taking necessary measures or actions that mitigate both internal and external threats to loss of biological diversity (Madzwamuse & Fabricius, 2004). It is the incentives beneficial to the stakeholders that boost mitigation measures against any perceived threats.

The livelihood conservation linkage was considered as a subset of the overall conservation-ecotourism- livelihoods nexus. The key function behind the linked approach was development of dependent relationships between biodiversity conservation and the local community surrounding private protected areas. The conservation aspect is regarded as one or more social, economic or environmental interventions designed to mitigate any threats to biodiversity in a given area or location (Salafsky et al., 2001). The inherent notion is that the local stakeholders living around the nature reserve, with no control of biodiversity, are given opportunities to benefit directly from the biodiversity conservation. Such opportunities foster development and provide benefits for the local community as well as the natural environment. These opportunities includes jobs, business and additional income, marketing agro-pastoralism, improved infrastructure, community services and facilities, new skills and technologies improved environmental awareness and improved land use patterns. Key species in the nature reserve such as rhinoceros play a crucial role of attracting tourists, guaranteeing flow of revenue which are then transferred to conservation or development projects. The available opportunities or benefits act as incentives for livelihoods improvement deterring any possible damage to the natural environment or to biodiversity (Salafsky et al., 2001). The same view was echoed by Spenceley, (2012) who concurred that there is an explicit correlation between enhanced livelihoods benefits and increased appreciation of biodiversity. As shown in section 2.3 above, the current opportunities at Mokolodi accord the local communities income realized from wage employment, agro-pastoralism, informal trading, environmental education and skills development and cultural activities (MNR booklet, 2011). In that respect livelihoods drive conservation rather than simply being compatible with it (Tao & Wall, 2011). The approach not only ensured that the local community appreciates the significance of biodiversity but also has the prerogative duty of maintaining and promoting

stable ecosystems. Therefore, the concept of conservation is considered successful because the local communities are able to appreciate, share and enjoy the economic, social and environmental benefits attached and derived from it (Wells & McShane, 2004; Worboys, Lockwood, Kothari, Feary, & Pulsford, 2015).

2.5.2 The Nature and Concept of Ecotourism

Over the last decade, ecotourism made remarkable progress. Various initiatives were introduced and these included sustainable development, innovative Eco lodges, community involvement and education. The main goal behind these initiatives are to secure conservation of nature and the natural environment, livelihoods improvement of the local community and sustainable development. Stronza, & Pegas, (2008) Defined ecotourism as a form of nature based tourism contributing towards both socio-economic and environmental benefits. Despite other various definitions, the widely accepted definition of ecotourism is credited to Hector Ceballos Lascurain, who coined the term 'ecotourism' in 1983, and defined it as environmentally responsible, enlightening travel and visitation to undisturbed natural areas with the goal of enjoying and appreciating nature as well as any other accompanying cultural features both past and present that enhances conservation, low visitor impact and provides for beneficially active socio-economic involvement of local people (Ceballos-Lascurain, 1996). According to this definition, the context of ecotourism are placed into four principles of responsible tourism (Harrison, 2008) namely: minimizing environmental impacts, respecting host cultures, maximizing benefits to local communities and enhancing tourists' satisfaction. The greatest impact of ecotourism is directed towards poverty reduction, employment creation and economic growth.

Furthermore, ancient development of ecotourism was also attributed to Miller's extensive work on national park planning for eco-development (Miller, 1978). Ever since the 2002 World Summit in Johannesburg (Rabaloi, 2006), ecotourism continued to be hailed as a panacea not only for promoting local community development and protecting fragile and pristine ecosystems but also for instilling environmental awareness in the travel industry (Holden, 2007; Honey, 2008; Spenceley, 2012). The growth of ecotourism emerged in the late 1970s and early 1980s, much to the effort of powerful environmental movements and lobbyists such as IUCN, Green peace, World Wildlife Foundation and Earth First (Honey, 2008).

The narratives of ecotourism above present ecotourism as an ecologically sustainable tourism venture focused primarily on experiencing natural areas, understanding and appreciating cultural and environmental conservation. This can simply be phrased with three “Es”: exciting, educative and ethical (West, et al., 2007). Therefore, ecotourism is opposed to mass tourism and prides itself as a form of alternative tourism to mass tourism. This view is further elaborated by Page & Dowling, (2002), who affirm that ecotourism is a niche form of tourism, nature based, ecologically sustainable, environmentally educative and locally beneficial. The education component is very important because it separates ecotourism from all other forms of nature based tourism (Page, & Dowling, 2002). Undoubtedly, these are powerful tools or indicators that link ecotourism, livelihoods and biodiversity conservation to sustainability. Ecotourism reflected constant monitoring of impacts, and introducing the necessary preventive and corrective measures in order to maintain a high level of tourist satisfaction and ensure a meaningful experience to tourists (United Nation World Tourism Organization (UNWTO), 2016) without causing any damage to the natural environment. Ecotourism was further recognized after the publication of the Brundtland Commission Report in 1987, *Our Common Future* for sustainable development (Brundtland, 1987). In the report sustainable development was defined as a development designed to meet the needs of the current generation without compromising the ability of the future generation to meet their own needs (Brundtland, 1987). In that respect, the fundamental principles of sustainability are anchored on striking a balance between socio-economic benefits and conservation of the natural resources so that future generations are not deprived of the same luxury the current generation is enjoying. Therefore, the strength of ecotourism was premised on minimal negative impacts, education, conservation and local community engagement or participation (Carter, Garrod, & Low, 2015; Page & Dowling, 2002; Scheyvens, 1999). This entails that ecotourism was a nature based environmental initiative whose focus was on conserving abiotic environment – landscapes; biotic environment – plants and animals – and cultural environment which dealt with human features. Ecotourism considers the local community as an integral part of the system. Some of the benefits the Local Community enjoys from ecotourism includes: the provision of knowledge, services, facilities and marketing of local products and services. However, such benefits should not offset the cost of ecotourism to the host community and the natural environment (Page & Dowling, 2002).

2.5.2.1 Community Based Ecotourism

In community-based ecotourism, the community may choose to partner with a private partner to provide capital, clients, or other tourist expertise or resources. This tourism enables the tourist to discover the traditional cultures and rituals of the local inhabitants and wildlife. In turn the community realizes the commercial and social value placed on their natural and cultural heritage and this fosters community based conservation of the natural resources and improve the community livelihoods at large (Mbaiwa & Stronza, 2010). When a country pursue the norms, values and ethics of ecotourism, the country earn a brand as a 'green' destination ratifying the country as an authentic destinations offering tourists value for their money. It is therefore the responsibility of the communities to conserve the natural resources not only to ensure continuance of proceeds but also to satisfy tourist needs and wants. Indeed' community based ecotourism anchored on wildlife attractions are the basis of many CBNRM projects in the Southern African region (Arntzen et al., 2003).

2.5.2.2 Ecotourism in the context of Botswana

In Botswana, rural communities are largely characterized by high levels of unemployment and poverty and they rely heavily on natural resources. The same sentiments was expressed by Castellani, & Sala (2010) who concurred that in ecotourism locations, there is often a traditional dependency on natural resources by local communities. In that respect, ecotourism assists these rural communities by meeting their socio-economic and environmental needs from biodiversity conservation initiatives (Campbell, et al., 2013). In certain instances, these communities derive their benefits from ecotourism via Wildlife Management Areas (WMAs). Consequently, these indigenous communities facilitate issues concerned with planning sites for ecotourism enterprises, defining obligations and expectations of the operators (Weaver, 2005). The link between the ecotourism and the local community as shown in one of the definitions of ecotourism: it attaches ecotourism to the responsible travel to natural areas for the purpose of conserving the natural environment and improving the welfare of the local people (Honey, 2008).

2.5.3 The Nature and Concept of Conversation –Ecotourism Linkage.

Botswana has a wide range of wild animals of different species (Botswana National Atlas, 2001). Some of these are both the black (*Diceros Bicornis*) and white (*Ceratotherium simum*)

rhinoceros which are key species in a number of Protected Area conservation ecotourism, such as the Mokolodi area. Due to constant threat from poaching, these wild animals have become the flagship species for international conservation (Golding, 2002). The wild animals are a huge resource, generating revenue beneficial both to the local and regional communities through their attraction of tourists (Kolawane, & Mbaiwa, 2013).

However, different countries have witnessed a wide range of animal species being driven to the verge of extinction. In South Africa, for instance, in the case of rhinos, more than 1000 rhinos have been poached in 2007 alone (Lindsey, Roulet, & Romanach, 2007). The increase in the carnage of rhinos and elephants and indeed other wild animals is a cause for concern for biodiversity conservation (Mbaiwa, 2004). Recent statistical data on wildlife poaching in South Africa suggest that poaching of wildlife on private and public owned parks is on the rise. This surge in wild animals poaching points to the urgent need for more holistic conservation approaches (Lee & Du Preez, 2016) – an all-inclusive, complementary and interactive strategy – lest the different animal species become exterminated. The study advocated for a nexus thinking approach imbedded in the conservation–ecotourism linkage subset. The poaching trend in common pool resources is too high; hence the approach is earmarked for privately owned nature reserves where the bulk of the species found refuge. The linkages between conservation and ecotourism gave way to more effective law enforcement measures which ensured that perpetrators of these heinous poaching crimes are given hefty sentences. Considering the incentives from conserving biodiversity; it triggered the volition by the local communities to conserve the natural resources and rightly shun any wildlife goods and services sourced illegally from the nature reserve. This assertion is also enshrined in Article 1 of the Convention on Biological Diversity (CBD). CBD encourages sustainable utilization of resources by availing the necessary incentives to the local people. This form of reward compliment the community's efforts in conserving biodiversity (Campbell, et al., 2013). However, the strategy can only be considered successful, if and when the benefits transform the lives of the local people (Karki, 2013).

The nexus thinking approach amicably address challenges associated with park–people relationships and human –wildlife conflict. Wild animals are closely monitored such that they do not cause any damage to the crops and livestock of the local communities. Similarly, local communities living on the periphery of the nature reserves sustainably harvest and use some

of the natural resources in the park there by improving conservation of biodiversity and their livelihoods. This may include grazing land for their livestock, accessing water from the water points and traditional herbs and harvesting pan (*amasonja*). These conservation contingent measures motivate the local communities to embark on conservation initiatives that inhibit human-wildlife conflict (Novelli, & Scarth, 2007). Rather it perpetuates conservation, development and improvement of livelihoods.

2.5.4 The Concept of Corporate Social Responsibility (CSR)

Corporate Social Responsibility (CSR) can be traced to as far back as 1953 from the writings of Bowen on Social Responsibilities of the Business Man (Bowen, 1953). Ever since then, CSR was an area of great academic debate, commentary, theory building and research (Babbie, 2007). However, its prominence was not without controversy and contestation to the extent that even now there is no strong consensus on the definition of CSR (McWilliams, Siegel, & Wright, 2006). Nevertheless, the prime focus of CSR ever since then was and remained central to the manager acting as a public trustee, balancing competing claims to corporate resources and lastly corporate philanthropy – business support of good causes (Babbie, 2007). The understanding from the aforesaid ideas portrays a belief that although business and society are two distinct entities, they are interwoven and interdependent with each other. This affirms that the society has certain expectations for appropriate business behavior and outcome (McWilliams, et al., 2006). However, people like Theodore Levitt (1958) as cited by (Carroll & Buchholtz, 2012) have not agreed with CSR idea. He argued that the social concerns and general welfare were not to be a burden to the business, but government, as this distracted the profit motive central to the success of the business (Carroll & Buchholtz, 2012). Nevertheless proponents of CSR such as Fredrick and McGuire have insisted that it is in the business's long-term self-interest – enlightened self-interest – to be socially responsible (McWilliams et al., 2006). This assertion was central to the fact that the future sustainability of the business is in ploughing back to the community, pro-acting is better than reacting. In support, Carroll & Buchholtz (2012), uphold that anticipating, planning and initiating is more practical and less costly than simply reacting to social-economic and ecological problems such as poverty, resource extinction, climate change and environmental degradation once they have surfaced. Therefore, the essence of CSR demands doing well beyond community expectations taking social and economic benefits to the community for the good of the community and the business. A strategy of moving away from

mitigating harm to soliciting strategical corporate reinforcement measures viable and sustainable to the well-being of the local people and development of the business entity (Babbie, 2007).

Khoury, Rostami, & Turnbull (1999) view CSR as the overall relationship of the corporation with all its social stakeholders – customers, environmental employees, communities, owners or investors, government, suppliers and competitors. CSR generally is considered as actions that enhance social good of the surrounding community or society beyond the interest of the local company and that which is required by the law (McWilliams et al., 2006). The elements of social responsibility, among other things, include investing in the community, sound relations with employees, creating and maintaining employment, environmental stewardship and financial performance. Once the business community engages in these activities, it not only guarantee its business output financially and economically, but it also promotes sustainable resource utilization and livelihoods of the local community. This means that CSR drive business' social obligations and its goodly impact should be reckoned by the society. In that respect CSR is viewed as an architect of minimizing harm, promoting good causes and helping to deal with unresolved social and environmental problems, whilst still allowing companies to engage in their daily activities effectively and efficiently as commercial enterprises (Khoury et al., 1999).

2.5.4.1 Corporate Social Responsibility, Protected Areas and Ecotourism

The concept of CSR is strongly tied to the issue of sustainable development as propounded by the Global Compact, where responsible corporate citizens combine with other bodies to pursue the vision of a more sustainable and inclusive economy (Babbie, 2007). Private nature reserves are involved in a wide range of CSR activities such as working in partnership with local villages and providing funding for village projects such as poultry and farming. They also engage in socially sensitive investment such as funding for HIV and AIDS counseling services, social development activities such as road construction, donation of books for schools and paying school fees for the needy and involving in activities for environmental conservation and sustainability, such as planting trees, sinking boreholes and providing medicinal requirements to local clinics.

The rationale behind CSR in ecotourism entails that the business venture's responsibilities not only extends above and beyond the commercial aspect to the well-being of the society but also goes even further to the concerns of a healthy physical environment (Ringler et al., 2013). Similarly the concept of NT is driven by the increasing scarcity of natural resources and advocate for a proactive engagement ideology to holistically assess and promote investment options that co-balance benefits across different sectors (Ringler et al., 2013). The two concepts, therefore, contemplate that the society and the business enterprise are two inseparable entities that has to integrate with each other for the common good of their survival and stability. Both narratives of CSR and NT above, point to the issues of resource scarcity, biodiversity, population, ecological limits for the ultimate preservation of social order in the society and nature in the natural environment. The two, CSR and NT, are premised on the notion of being proactive to anticipated socio-economic and environmental burdens, risking livelihoods and impeding economic development leading to socio-geopolitical tensions which can cause irreparable damage to the natural environment (Ringler et al., 2013). However, this is only through integrated connections that enhance efficiency and sustenance of resource use. The main function of both models, CSR and NT, are to reconcile economic growth with socio-economic and environmental maintenance – social justice and human development within the framework of social equity, integration and equitable distribution and utilization of resources in line with the sustainable development agenda as propounded by the Brundtland Commission (Brundtland, 1987). Jointly, CSR and NT models are considered as harmonious win-win strategical frameworks for human well-being and environmental sustainability.

The two approaches, CSR and NT, present a kind gesture to the society, provide solutions to hard core societal challenges such as poverty, lack of employment, poor infrastructure development and environmental degradation. In the process, strong ties and relationships are developed between the business corporation or Private Protected Areas or Government Protected Areas and local community organizations or groupings such as Community Trusts. The interactions between the entities provide long lasting social and business networks benefiting both the work place and the society in a way that goes above and beyond the legal limit. In support, McWilliams et al., (2006) concurs that private firms are much more than just profit dominated economic actors in the society but their networking and interaction promote diversity and dynamics in handling both socio-economic and environmental issues. Furthermore, the approach of CSR and NT are closely linked to voluntary stakeholder

participation. This is the avenue that helps to explore the relationship between business enterprises and the society and in so doing, improves our knowledge and understanding of the impact of both CSR and NT within the wider framework of common property resource governance and private owned resource governance (McWilliams et al., 2006). Participation also fosters mutual trust and respect between the PPAs and the local community. Hence the quest for integration. To distinguish it from the typical corporate social responsibility, the analog win-win relation between a PPA and the local community was hereby coined the private protected area social responsibility or PPASR.

2.5 CONCEPTUAL FRAMEWORK.

Schools of thought or models are points of reference used by people to organize their reasoning and observations (Babbie, 2007). The nexus thinking conceptual framework of the study, shown in Figure 2.2 below, is formulated from literature reviewed of previous studies based on the interactions between Private Protected Area (PPA) and local communities and how such interactions shape sustainable livelihoods, ecotourism, conservation outcomes and neighborliness. The conceptual framework consists of four main components namely: Communal Area Communities, Ecotourism, Conservation and Livelihoods. The framework ushers in new ways of understanding both socio-economic and environmental dimensions of achieving sustainable development. It is a reflection of the significance of establishing networks, interactions and linkages within PPAs and among PPAs, Communal Area Communities, Livelihoods and Communal Area Environments. The interactions promote coordination and cooperation instrumental to decision making and collaboration of ideas for the socio-economic well-being of the local community and the natural environment (Milne & Ateljevic, 2010).

The Private Protected Area (PPA) is considered as a transaction enterprise driven by ecotourism, biodiversity conservation and Private Protected Area Social Responsibility (PPASR) initiatives. These three inner components act as cogs of the wheel, interlinked to each other for the internal stability and sustainability of the PPA. Further apart, the PPA's stability and sustainability is also buttressed by interactions and linkages from communal area communities, livelihoods and communal area environment. Communal Area Communities refers to population, households, labour, cultural assets and institutions such as schools, health

care facilities, water points etc. The interaction between the communal area and the PPA provides socio-economic services such as labour, community infrastructure, and social economic amenities. The workers, visitors, residents, government and stakeholders as they embark in constant interaction, they shape development goals for PPAs, individuals, households, communities and the entire region (Milne & Ateljeic, 2010). Goods and services from agropastoralism, cultural attractions, informal trading and labour can be channeled to the PPA and in so doing improve the livelihoods of the local people and in turn improve communal area communities and communal area environment. Better household income means less pressure on the natural environment and act as an alternative means of income by the local community, thereby averting depletion of communal area community's resources and degradation of communal area environment. According to Milne & Ateljeic (2010), the local community acts as an intermediate level of social life between the personal (family and individual) and impersonal (the global and institutional or organizations). Community based Organization initiatives enhance localized cooperation and networking and in so doing improve livelihoods, conservation and ecotourism development. Local community involvement creates connections in areas of planning and management for communal area environments for sustainability and livelihoods transformation. The interaction between local community and the PPAs promote accountability and responsibility between the concerned parties. Therefore, the nexus thinking model is about promoting co-existence, tangible benefits sharing, a win-win situation and mutual relationship between the PPA and the local community.

Although MNR is a not for profit making organization, it deliberately extends its kind gesture to the local communities through PPASR initiatives. The benefits may not be tangible compared to that in the NT approach. This is a way of strengthening neighborliness and to improve social relations. The PPASR initiative entails all charitable activities extended by MNR to the surrounding communities to improve communal area communities and the communal area environment. The activities related to Communal Area Communities include: funding small income generating projects (poultry, bee keeping, fishing etc), sponsoring social activities (social soccer, netball or cultural dancing) and donating food and or clothing to the vulnerable and poor members of the community. In regard to Communal Area Environment, activities can focus on maintaining environmental integrity of the commons,

providing assistance to combat soil erosion, stream bank cultivation, and siltation. Through MNR's initiatives, the communities through *kgotla* forums, can inject vital knowledge and insights essential to keep their commons sustainable. For instance members encourage each other to plant trees and grass to mitigate wind and water erosion and also to beautify their commons. The idea is to keep both the local communities and the natural ecosystem self-sustainable, efficient and self-sufficient to curb unnecessary burden to Private Protected Area resources. However, participation by the local community is considered as expensive and conflicts can easily arise especially from rival ethnic groups who may become more articulate about resource utilization. Furthermore, the local elites can take advantage of their social status and networking within the community and influence decision making especially on benefit sharing. Nevertheless, the alliance between the PPAs and Local community has the potential to achieve sustainable management of PPAs and local community areas. However, sustainability is successfully achieved only if and when the local communities derive economic benefits from biodiversity conservation. Such benefits should neither be at the expense of the natural environment and biodiversity nor the ecotourism venture MNR. Therefore, tourism development and the local community should consider the vulnerability and tolerance limits of natural environment and biodiversity so as to guarantee the well-being of both current and future generations.

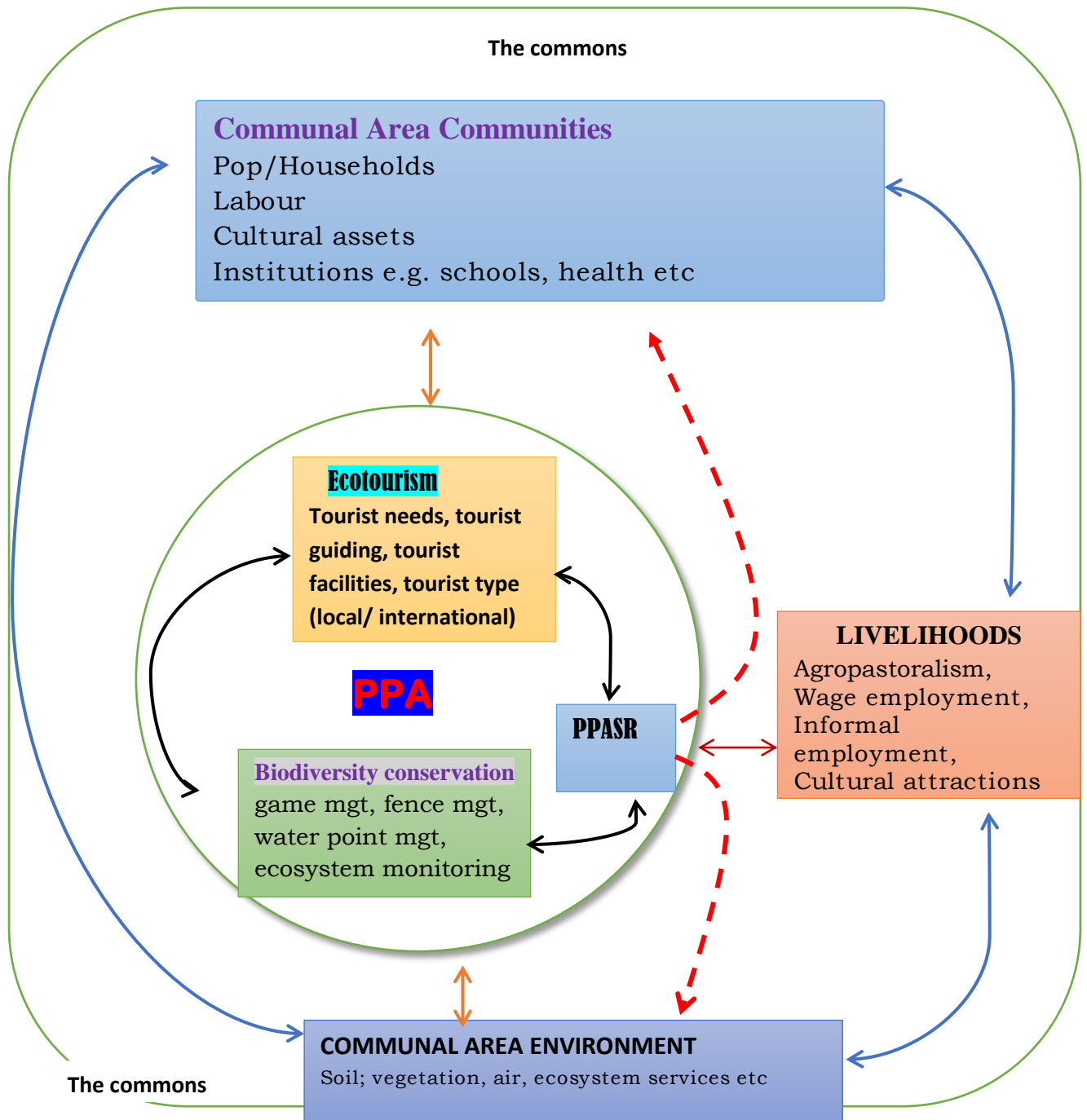


Figure 2.2 Conceptual framework. Source: Adapted from Hoff, 2011; Bizikova, et al., (2013)

KEY

- PPASR: Private Protected Area Social Responsibility
- PPA: Private Protected Area
- ↔ Interdependent linkage
- Outward service

2.6 CONCLUSION

The adoption of CBNRM was premised on strengthening rural communities and alleviating poverty by empowering local communities to manage their resources for long term socio-economic and environmental benefits through CBOs or Trusts. Indeed, CBNRM has had positive contributions to biodiversity conservation, ecotourism and local livelihoods (Mbaiwa, 2011; Moswete, & Thapa, 2106; Snyman, 2013). The established CBOs and tourism related enterprises improved rural communities' infrastructure and social services. However, the CBNRM approach was not applicable to Private Protected Areas (PPAs). Hence the option for an alternative model: Nexus Thinking. The Conservation–ecotourism- rural livelihoods nexus model provides a fundamental connection that shapes the presence and strength of vital activities that benefits biodiversity and promotes socio-economic well-being of local communities and their related community area environments. Although local communities always suffer condemnation from ecologists and conservationists over the way they attain livelihoods - destructive and illegal - the NT approach, however, pacified this perceived destructive and illegal myth. That is the use of the nexus thinking approach creates mutual interaction within and between entities and this pave way for insights that encourage better resources management outcomes. Much credit of NT is the ability to stimulate interdependencies and connections that guarantee sustainable social, economic and environmental outcomes beneficial to biodiversity, local livelihoods and ecotourism. In support Spenceley, (2012) upholds that there is an explicit correlation between enhanced livelihoods benefits and increased appreciation of biodiversity conservation. Meaningful benefits attained by the local community guarantees sustainable survival of biodiversity. Furthermore, the NT approach opens up to the kind gesture often characterized by the corporate social responsibility phenomenon. Forged partnerships between ecotourism entities and the local communities on issues of poaching, education, training and conservation is a win-win strategy beneficial not only to the PPAs and GPAs, but also to the local community.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 INTRODUCTION

This chapter describes the methodology used in this study in terms of the research design and the approaches to collection, processing, analysis and presentation of data. The purpose was to facilitate the achievement of set objectives through methods that would enable generation of data necessary to answer the research questions linked to the objectives. Specifically, the chapter presents, respectively, the key aspects of the study, the target population, research design, data collection techniques and associated sampling procedures, data processing approaches and methods of analysis. Also covered in the chapter are issues of data reliability, validity and research ethics. As indicated previously (cf. Chapters 1 and 2), the study explored the linkages among conservation, ecotourism and local livelihoods through the nexus thinking (NT) model.

3.1 STUDY SITE

3.1.1 The geography of Mokolodi Nature Reserve

The study was carried out in Mokolodi Nature Reserve coordinates (24°45'S, 25°55'E) and the neighbouring Mokolodi village, located in the South East District of the country (Figure 1.1). The selection of the Protected Area (PT) and Mokolodi Village enabled the researcher to explore the linkages among conservation, ecotourism and rural livelihoods. The Nature Reserve is fenced and covers approximately 4500 hectares. The nature reserve's altitude varies between 1000-1300 m above mean sea level, with the lowland located in the middle and south of the border line of the reserve (Bekker & De Wit, 1991). The nature reserve maintains and protects genetically diverse animal population through its Sanctuary and Rehabilitation Center (MWF, 2011). The carrying capacity of MNR ranges from 3.14 Ha/LSU to 3.86 Ha/LSU (Livestock Unit) (MWF, 2011). According to the wildlife population count in 2009 (done once every ten years), the nature reserve has approximately 152 greater kudus, along with 16 other species of browsers and grazers that included but not limited to giraffe, wildebeest, impala (MWF, 2016-17). The present day Mokolodi Nature Reserve was once a bushveld utilised for cattle ranching, donated by the South East district council into a Trust for the children of Botswana to enjoy and learn about nature conservation and environmental protection (MWF, 2011). The revenue accrued from the nature reserve is

utilised to advance the core mandate of education and conservation of biodiversity. The reserve enjoys strong community involvement and interaction with MNR (MWF, 2016-17). More information about the history of MNR has been elaborated in sub-section 2.3.2 above.

3.1.2 Mokolodi Nature Reserve (MNR)

a) existing habitats

The reserve consists of three main habitat types: the *Spirostachys* habitat in lowlands and along riverbeds, the *Acacia* habitat on gentle slopes and *Combretum* habitat along the hill slopes and tops. The habitat types are dominated by the species *Spirostachys africana*, *Acacia tortilis* and *Combretum apiculatum*, respectively. The *Spirostachys* habitat is composed of large trees and bare ground with fine textured soil. The *Acacia* and *Combretum* habitats consist of large numbers of trees and overall, most of them being smaller than trees in the *Spirostachys* habitat (Bråten, 1997). The more rocky ground in *Acacia* and *Combretum* habitats is covered with grass, especially in the *Combretum* habitat. The soil type is characterized by very shallow to moderately deep, varying from rocky slopes to sandy clay loams. The colour of the soil ranges from greyish brown to dark red (Bekker & De Wit, 1991; MWF, 2016-17).

b) Climate

The Nature reserve is located in the southern African plateau and as such its climatic condition is characterized by a wide range of seasonal temperatures. The average maximum daily temperature range between 22°C in July and 37°C in January (Bråten, 1997). The coldest month is July with the lowest average temperature of around 3.9°C. The duration of bright sunshine varies between 8 and 10 hours on a daily basis with clear skies and low relative humidity during the winter. Rainfall is seasonal with the bulk of the rains occurring in the summer period between October and April with variations in each and every year. The nature reserve is close to the subtropical high pressure zone of the southern hemisphere and this is responsible for its arid and semi-arid conditions. The rainfall is typical of semi-arid to arid areas characterized by low and erratic rainfall and high temperatures. MNR has a mean annual rainfall of 538 mm and in most cases a small number of heavy storms contributes to the bulk of the precipitation (Bråten, 1997). Over the past four decades, the country, generally, has been experiencing frequent droughts as a result of global changing weather patterns (climate change and variability), in particular, from the El Niño-Southern Oscillation

(ENSO). This has negatively affected agriculture production and biodiversity conservation. However, a sizeable number of tropical cyclones have improved the availability of water for both the flora and fauna. To ensure availability of water to wildlife during the dry seasons and droughts, MNR built water points, the most significant of which is Mokolodi Dam.

3.1.3 Mokolodi Community

Mokolodi Community borders the reserve on the northeastern side and compared with other communities in the district, the community has a ver small population. Amongst all the neighbouring communities, Mokolodi community appears to command direct and occasional interactions with the reserve, and this can be attributed to the fact that a significant percentage of employees in the reserve come from Mokolodi community (MWF, 2016-17. Hence the focus of the study on the community, alongside the MNR.

a) History and demographic characteristics

Although Mokolodi community is regarded as new by Botswana standards, as the community was formally recognized in 2006, the community existed long before the establishment of MNR (MWF, 2011). Available records indicate that as early as 1933 a few people were already inhabitants in the area (Mokolodi Nature Reserve, 2003). Today, some of the residents of this community are second and third generation of original inhabitants from the neighbouring communities such Gabane, Manyana and Mmankgodi. The community has a population of 652 (CSO, 2011). On average, a number of houses are not connected to the country's electricity grid. In respect of health infrastructure, the community has a medical clinic that provides health services to the local community. More so the community has a primary school and an assembling or meeting place, Kgotla, where socio-economic and political issues are deliberated. The overall administration of the community is under the local chief, Nkosi Boitshoko Rasethogwane and the village Development Committee (VDC).

b) Environmental setting

Mokolodi community is an immediate neighbour to the reserve on the northeastern end, so the physical environmental characteristics are similar to those described for the MNR. The community is informally divided into five wards namely Tiping, Lesetlhana, Diekeng, Motshwereng and Lehurutshe (CSO, 2011). Households in the community are widely

dispersed especially in Tiping and Lehurutshe wards, with ploughing fields between them. The bulk of the houses in the community are made from mud and bricks while roofing is either thatching grass or iron sheets.

c) Livelihoods

The term livelihoods refer to the way of life and work which helps people or communities to meet their needs for survival (Creswell & Clark 2007). The livelihoods of the majority of the people in this community are into subsistence farming, with most of the households having at least one or more types of livestock. A good number of the people are involved in livestock rearing: goats, sheep and cattle. In terms of employment, MNR is the largest employer of the people in the village and this has improved the standard of living of the people.

3.2 TARGET POPULATION

The study's target population consisted of the staff of Mokolodi Nature Reserve, the neighbouring local community (Mokolodi Community) and MNR's stakeholders which comprised of South East District Council, relevant Civil Society Organizations such as Kalahari Conservation Society and Birdlife Botswana, the Chief/ Kgosi, Village Development Committee (VDC) Chair, Mokolodi Nature Reserve, and the relevant government departments: Department Wildlife and National Parks, Department of Environmental Affairs as well as the Department of Tourism. The population of the surrounding community is approximately 624 people (CSO, 2011). In order to manage area navigation and safety, the researcher and his two research assistants were accompanied by MNR tour guides. Global Positioning System, i.e., GPS map, Garmin: GPS®76CSx, (Creswell & Clark 2007) were used to determine the UTM coordinates of MNR and the surrounding communities. In the processes of selecting respondents, the research team approached the chief of the community for permission and guidance on the residence of community members.

3.3 RESEARCH DESIGN

In this study, the triangulation methodology was adopted as the research framework for generating and analyzing data and this was centered on the views of (Creswell & Clark, 2007; Patton, 2002). The approach of methodological triangulation refers to the combination of several methods in the study of the same phenomenon (Greene, Caracelli, & Graham, 1989) so that the final data draws inferences from both qualitative and quantitative information.

Qualitative research allows the researcher to identify a research issue from the perspectives of study participants, and comprehend the meanings they give to objects, behavior or events (Glatthorn & Joyner, 2005). The approach helped the researcher to gain insights into a particular phenomenon and the sought stakeholder perspectives addressed the issue of benefits sharing and challenges of applying the nexus thinking on PPAs. The data were analyzed through the process of “open coding” and verbal synthesis – an inductive process (Creswell & Clark, 2007). Open coding refers to coding anything that might be relevant from as many different perspectives given as possible. The use of open coding helped to classify all the collected data and data was compared systematically with other parts of the data set.

On the other hand, quantitative research refers to the collection of numerical representation and manipulation of responses and observations, for the purpose of describing and explaining the phenomena of interest reflected by those observations – a deductive process (Morgan, 1998). The basis of the quantitative approach is that attainment of research objectives is best expressed through numeric values (Glatthorn & Joyner, 2005) such as descriptive and inferential statistics. The use of various methods helped to account for biases and limitations associated with the use of one single method of data collection in this study (Mertens, 2004). Data triangulation also provided confirmation of research findings, more comprehensive data and understanding of the phenomena under study. Therefore the approach served as a verification process to increase validity, credibility and reliability of study results. The methodological triangulation approach was first used to study validity of psychological traits by Campbell and Fiske in 1959 (Creswell & Clark, 2007). However, due to the limitations and biases inherent in using qualitative and quantitative approaches separately in a study, the mixed methods approach was opted to neutralize such biases thereby increasing reliability and credibility of the data collected in the study. Therefore, the use of two or more methods enabled the researcher to have a comprehensive understanding of issues under investigation. However, the use of data triangulation methodology was time consuming and very expensive especially since this was a single study (Creswell & Clark, 2007). However, the researcher developed research questions that were focused, concise and relevant to the study and this technique helped to save time and the expenses.

3.4 DATA COLLECTION METHODS

The study used both primary and secondary data collection methods. Primary data refers to data that is collected directly from the field of study to address a research problem, using the appropriate measures to solve the problem (Davies, Foxall, & Pallister, 2002). A survey research and key informant interviews were used to collect the primary data. The data collection instruments were the questionnaire and key informant interview guide. Secondary data (past and present literature) refers to documented information used in the research study as point of reference or for analysis. This was relevant information in documents sourced directly from institutions (MNR, Non-Governmental Organizations and business establishments which were part of the study) during field work which was not accessible to the researcher at the time of the literature review for the study. These documents were unpublished.

3.4.1 Survey Research and Key Informant Interviews

Survey research and key informant interviews was used to generate data to address the three objectives of the study, namely:

1. To establish the characteristics of conservation, ecotourism and local livelihoods in and around the Mokolodi Nature Reserve (MNR).
2. To determine the extent of interdependency among conservation, ecotourism and local livelihoods using nexus thinking for the MNR.
3. To establish stakeholder perspectives on the opportunities and challenges of applying nexus thinking to the relationship among conservation, ecotourism and local livelihoods for the MNR.

3.4.1.1 Survey Research

A survey research was used to measure independent and dependent variables and test their relationships using statistical tools where applicable. The Questionnaire was used to capture background characteristics, knowledge and practices from a sample of respondents (Moswete, 2009). The survey approach helped to provide answers to questions on characteristics of conservation, ecotourism and livelihoods and to explore the extent of the linkages from identified variables: conservation related activity, ecotourism related activity, and livelihoods related activity. The aim of this study was to establish characteristics of conservation, ecotourism and local livelihoods and then determine the extent of interdependency among

these. The survey approach was appropriate as it enabled the researcher to effectively measure the characteristics of identified variables and determine the extent of interdependency between such identified variables. This method was used to answer the following research questions: a) What characterises conservation at MNR?; b) What characterises eco-tourism in Mokolodi?; c) What characterises livelihoods of communities around MNR?; d) To what extent are the characteristics of conservation, ecotourism and local livelihoods interdependent?

3.4.1.1 Strengths and Weaknesses of research survey

A semi-structured questionnaire was viewed as the most suitable data collection instrument for this research as it ensured a high degree of standardization of responses and it addressed the complexity of concepts measured (Davies, et al., 2002). Furthermore, the face to face administration of the questionnaire allowed the researcher to clarify questions, use visual aids, observe surroundings and use non-verbal communication in order to gather as much relevant information as possible (Moswete, 2009).

However, since semi-structured questionnaire were administered face to face; there was a likelihood for interviewer bias. However, interviewer bias was addressed by training interviewers to develop good rapport with respondents, avoided leading questions and remained neutral and objective during the research activities. Sometimes, the appearance of the interviewer distracts the respondent and this affect the quantity and quality of the responses provided by the respondents (Davies et al., 2002). However, in order to deal with such a challenge, the researcher made pilot test in one of the local community, the questionnaire with a small set of respondents similar to those in the final survey. This provided the researcher with a reasonable assessment as to whether the research questions were clear or not and it also helped the researcher to ascertain the respondents' interpretations of the questions (Neuman, 2007). The researcher himself administered the questionnaires.

3.4.1.2 Data collection instrument

The data was collected through the use of semi-structured questionnaire consisting of a mixture of open and closed ended questions so as to obtain both the quantitative and qualitative responses. This instrument enabled the researcher to get unpredicted but relevant

answers in face to face interviews. Furthermore, a questionnaire instrument is not time consuming. The questionnaire used in this study was designed based on the literature reviewed and the socio-economic and ecological conceptual framework (cf. Figure 2.2, Chapter 2).

3.4.1.3 Sample size and sampling procedure

According to Wilson (1992) a sample is a small part of anything, chosen with the intention to stand for or to represent the whole. The procedure of sampling the population is necessary to overcome financial challenges as well as dynamics within the population (Neuman, 2007). More so an adequate sample size is necessary so that conclusions reached after data analysis are generalized to the whole population under the study. This again was important in that the study helped to achieve homogeneity and improved accuracy, reliability and quality of data collected. The sample size was very important in this research based on primary data, especially when responses were from the use of a semi-structured questionnaire. The Researcher familiarized himself with the population before he administered the semi-structured questionnaires. According to Neuman (2007), the primary goal of sampling is to get a small representative collection of units from a large population. This enabled the researcher to produce precise generalizations about the larger group through studying the smaller group. In this study, the sampled size (n) was determined using the Yamane (1967) cited in Neuman (2007) formula with a 90% confidence level and a margin of error of 10%. Where n is the sample size, N is the population size, and e is the margin of error.

$$n = \frac{N}{1 + N(e)^2}$$

According to CSO (2011) Mokolodi Community has a population of 624 people and the average household size per household is 3.76. Therefore, the researcher first divided the population in the selected study area or site by 3.76 to determine the number of household units. The number of household units for Mokolodi community is = 624/3.76= 165.96. Then the Taro Yamane formula was used to calculate the sample size from the total number of households shown above. The calculation of the sample size using the Yamane formula provided the equation below.

$$n = \frac{N}{1+N(e)^2} = n = \frac{165.96}{1+165.96 (0.1)^2} = 62.4 \text{ Households}$$

Due to logistical and financial challenges, as the research was self funded, a sample size of 62 households was targeted for the research survey and this represented about 37% of the total number of households in the community chosen for the study. When selecting the respondents, the researcher used a systematic random sampling. This sampling procedure helped the researcher to systematically choose the number of respondents that statistically represent each population frame (after a random start) and this ensured that the data gathered represents the true population.

The use of systematic sampling allowed the researcher to calculate a sampling interval used to select elements from the sample (Neuman, 2007) and this was done by overlooking certain elements at an interval in the frame before selecting one for the sample. The calculation of the sampling interval is as follows: $165.96/62$ which gives a sampling interval of $2.7 = 3$. As such the sampling interval for Mokolodi Village is 3. In order to select the sample systematically the researcher first allocated each household a number on a base map then picked a random number closest to the sampling frame from those numbers. Then the researcher started with the selected random number counting using the sampling interval to pick the first household and mark it. Then the researcher counted the sampling interval for the next household and repeat the same steps until the 62 households were identified.

The researcher's targeted respondent for questionnaire administration was the head of the household. However, in the absence of the head of the household, the spouse was interviewed. In case both the head of the household and the spouse were not available, any family member aged 18 or above was selected as the respondent. In instances, where a residential compound comprises of different household units, for instance in a situation of a main house and the cottage within the same plot, the main house was chosen for questionnaire administration. In the event that there is no one present at the household, the next house was chosen for the study and the sampling interval was used again to come up with the next household.

3.5 SURVEY AT MOKOLODI NATURE RESERVE

3.5.1 Key Informant Interviews

An Interview guide (Appendix 3) is a string of written down questions that serve as a check list to guide the interview. According to Babbie (2007) a key informant interview guide

provides a valuable tool for cross checking the questionnaire survey material. Key Informant Interviews were used to generate qualitative data for the third objective of this study namely: *“To establish stakeholder perspectives on the opportunities and challenges of applying nexus thinking to the relationship among conservation, ecotourism and local livelihoods for the MNR”*. Key Informant interviews refer to in-depth face-to-face interviews with people who, based on their positions, personal skills, knowledge and understanding, have sufficient insights into the problem being investigated and these may include community elders and leaders, professionals or retired experts (Patton, 2002). Key Informants applied their knowledge in relation to their opinion and or perspectives on the opportunities and challenges of applying the nexus approach on privately owned and managed resources vis-à-vis communal area livelihoods. Their perspectives and opinions were used to address the following research question: How do stakeholders perceive assumed interdependencies and why?

3.5.1.1 Strengths and Weaknesses of Key Informant Interviews

The use of in-depth face-to-face interviews ensured that quality data was obtained in a short period of time as opposed to interviewing all other members of the community which may be expensive and time consuming (Kumar et al, 1993). Interviewees often provide a free exchange of ideas which are used to validate research statements. Key informants interview do not influence the answers from the informants, rather, the interviewer pose the topic for probing and thereafter give room for the informants to raise issues and perspectives meaningful and relevant to the research (Kumar et al, 1993).

However, a prospective weakness of this method is that sometimes key informants are unlikely to represent the views of the majority in the community. Key Informant interviews could be time consuming (Tongco, 2007) and expensive since there may be need for a second round of interviews. When the interviewee and interviewer are of different nationality, language or culture, it easily affects the interaction and answers given (Patton, 2002) and this may affect the flow of the interview conversation. Furthermore, where translation is done by the manager or a person of higher authority, usually his or her presence has implications on the responses given by the informants.

However in order to ensure that informants were comfortable, the interviewer conducted the interviews in offices and or appropriate areas, mutually agreed secluded places to avoid outside influence or interruptions that would affect responses given by informants. The interviewer developed good rapport with the informants and this ensured a sense of trust making the targeted informants comfortable to reveal the needed information.

3.5.1.2 Data collection instrument

An interview guide (Appendix 3) was used and this outlined the questions, topics and issues for discussion during the interview. Depending on the responses given by the informants, the interviewer probed to elicit more information and to seek more clarity from informants so as to give detailed information on the basis of their conclusions, opinions, view-points and recommendations. The memoing for note taking constituted instruments used in the study. The researcher made the interview atmosphere informal so as to create a sense of freedom to informants and this allowed informants to give out relevant and valid information without fear, favor or bias and of course recording was only allowed subsequent to prior permission from informants – that is, they had to consent first to the recording of their conversation. Further, the discussion was recorded with a voice recorder so as to capture information that would otherwise be missed during the discussion. Data captured through the tape or sound recorder was in English and was typed. In case of any refusal by informants for voice recording, the interviewer considered information gathered verbally and if certain relevant items were not covered, missing or not clear, a further enquiry by the interviewer was done to substantiate his data. The interview session, on average, took approximately 20 minutes.

3.5.1.3 Sampling procedure for MNR stakeholders

Purposive sampling and snow ball techniques were used for selecting key informants. These methods are normally used in instances whereby a researcher wants to study a certain cultural domain to solicit and elicit knowledge from experts (Patton, 2002). This is a non-random sampling technique whereby the researcher interviews people who are willing to give information by virtue of their knowledge or experience in their field of study, for the convenience of the researcher who applies his own judgment to select the informants (Moswete, 2009). The same sentiments were also echoed by Patton, (2002) who concurs that the method is commonly applied to key informant interviews to solicit and elicit knowledge and insights on the subject matter under investigation. Usually, the researcher applies his

mind on selecting the study site or participants that can best avail to him/her the required information.

The sampling procedure of key informants was based on an assumption that they are knowledgeable and can provide insight to the issues being researched and are willing to provide such information (Kumar et al., 1993). There is no sample design as to the number of informants to be selected (Creswell & Clark, 2007) but representatives were purposively selected from stakeholders: South East District Council (Land Board), Kalahari Conservation Society, Department of Wildlife and National Parks, Department of Tourism, Mokolodi Nature Reserve, Kgosi, VDC Chair, Farmers Association, Birds life Botswana, Department of environmental affairs (DEA) to elicit and solicit more insight data on the opportunities and challenges of applying the nexus approach. The sample included men and women above the age of 18. However, this is a highly biased method (Tongco, 2007) and the researcher ensured that reliability was guaranteed during data collection. An interview protocol was developed with set instructions to be followed so as to maintain consistency between interviews (Patton, 2002). The interview session on average took 20 minutes per each informant.

3.5.1.4 Sampling procedure MNR management staff

Purposive sampling was used for selecting respondents for the questionnaire administration of MNR management staff. The method is normally used in instances whereby a researcher wants to study a certain cultural domain to solicit and elicit knowledge from experts (Patton, 2002). This is a non-random sampling technique whereby the researcher solicits information through a research questionnaire from people who are willing to give information by virtue of their knowledge or experience in their field of study, for the convenience of the researcher who applies his own judgment to select the informants (Moswete, 2009). The same sentiments were also echoed by Patton, (2002) who concurs that the method is commonly applied to respondents to solicit and elicit knowledge and insights on the subject matter under investigation. Usually, the researcher applies his mind on selecting the study site or participants that can best avail to him/her the required information. At the time of the research, the management staff at MNR were 10. By virtue of their experience, a research questionnaire was administered to all the 10 management staff to solicit and elicit knowledge and insights on conservation and ecotourism.

3.5.1.5 The composition of the sources of the study's primary data is summarized in Table 3.1.

Table 3.1 Composition of sample

Respondents/Informants	Population before sampling	Sample after the use of Yamane Formula
Mokolodi Village	624(166 Households)	37 % of total household population of 166 = 62 households
MNR Senior and Management Staff	10	100% sample; i.e. there were only 10 senior and mgt staff at MNR at time of survey.
Stakeholder representatives	10	80% of the total sample, that is only 8 informants responded to the interview request (purposive sampling was used to select the informants)
Total	642(183 individuals)	80

Source: Researcher Conceptualization

3.5.2 Secondary Data

3.5.2.1 Secondary Data or Documentary Data

This data comprised of published and unpublished grey data or information that has already been gathered by other researchers or institutions and made available for analysis during the research. The data may have been in existence for other purposes but may be relevant in answering or meeting the research questions and objectives. Secondary data complemented and helped with the necessary checks on primary data gathered through questionnaires and interviews (Creswell, & Clark, 2007). Usually secondary data is cheap and can be easily and quickly accessed as compared to primary data. The data is economically viable in terms of efforts to secure it. However, time series may have an impact on the reliability of the data as current information may easily outdate old information (Creswell, & Clark, 2007).

3.6 DATA PROCESSING AND ANALYSIS

Data processes refers to a series of cycle like steps whose first step is acquiring data from first hand sources, entered, validated, processed and then stored for public consumption in the form of journals, reports, books and symposium presentations. When the social survey, the key informant interviews and secondary data analysis was done; the data collected both

manually and electronically was checked for accuracy, and consistency to minimize errors and then grouped into quantitative and qualitative data. In order for the data to be meaningful it had to be authentic, reliable and applicable (Creswell, & Clark, 2007). Therefore all the data collected was processed and all the responses were accurately categorized and analyzed.

3.6.1 Processing/analysis of quantitative data

When analyzing quantitative data, the researcher was expected to convert raw data into meaningful data through the application of rational and critical thinking. The data was arranged and analyzed numerically about the characteristics of conservation, ecotourism and rural livelihoods. The variables that was analyzed include: conservation related activities, ecotourism related activities, livelihoods related activities as well as the linkages. That is collected data was sorted and categorized as nominal, ordinal and scale. Cross tabulation was used to create indices through the use of a 5 point likert scale with responses ranging from strongly agree to strongly disagree. Editing was implemented to facilitate detection of errors and omissions so as to achieve accurate, consistent and uniform data. Likewise coding puts data into manageable categories consistent with the research problem. To establish the characteristics of conservation, ecotourism and local livelihoods, the Statistical Package for Social Sciences (SPSS) Software Version 22 was used to make the necessary classifications. Classification of the collected data ensured that responses were arranged according to class or common characteristics and tabulation helped with the arrangement and displaying of summary data into logical format. To determine the extent of interdependency among conservation, ecotourism and local livelihoods using nexus thinking for the MNR, a mean score analysis was used to determine the extent of the connections. The test examined the linkages among income -link, relationship and linkage variables. The whole process involved compiling data in excel and SPSS. Having the data in this format provided concise descriptions, explanations on means score analysis and correlations linkage analysis of the research findings building an analytical framework of the research problem. The gathered data were summarized into descriptive statistics like frequency distribution tables, bar charts, means and correlation linkages which was used to present the socio-economic and ecological characteristics of conservation, ecotourism and rural livelihoods nexus.

3.6.2 Processing and Analysis of qualitative data

Qualitative data refers to rich textual data generated in a research. This involves structured texts (articles, books, stories copies of documents), unstructured texts (transcripts of individual interviews, field notes) and audio recordings from observation of certain activities. The data was aligned to concepts, opinions, values, perceptions and behaviors of people within a social context. The qualitative data was obtained from open-ended questions where respondents gave their views, opinions and reasons for their perspectives. It is worthy to note that qualitative data cannot be easily reduced to numerical figures. Thereafter, the data was analyzed and this involved a number of processes and procedures to transform qualitative data obtained into explanation. This involved examining, categorizing, recombining, indexing, organizing and interpreting information, so as to understand and discover social phenomena in natural rather than experimental settings, giving due emphasis to the meaning, experiences and views of participants (Pope, Ziebland & Mays, 2000).

3.6.3 The methodological framework is summarized in Table 3.2.

Table 3.2 Logical framework for data collection and analysis

Objectives	Research questions	Variables	Data collection tools	Data analysis tools	Expected outcomes
<u>Objective 1</u> To establish the characteristics of conservation, ecotourism and local livelihoods in and around the Mokolodi Nature Reserve (MNR).	1.What characterizes conservation at MNR?	Conservation activity	MNR Research survey	Descriptive statistics	I expected to find different types of conservation related activities at MNR.
	2.What characterizes ecotourism in Mokolodi?	Ecotourism related activity	MNR Research survey	Descriptive statistics	I expected to establish forms of ecotourism related activities at MNR.
	3.What characterizes livelihoods of communities around MNR?	Livelihoods related activity	Household survey	Descriptive statistics	I expected to find different means of livelihoods among the local communities.
<u>Objective 2</u> To determine the extent of interdependency among conservation, ecotourism and local livelihoods using nexus thinking for the MNR.	4.To what extent are the characteristics of conservation, ecotourism and local livelihoods interdependent?	Linkages	Household survey MNR research survey Key informants interviews	Mean score analysis Correlation analysis	I expected to find that at least one activity component strongly linked to conservation, ecotourism and livelihoods.
<u>Objective 3</u> To establish stakeholder perspectives on the opportunities and challenges of applying nexus thinking to the relationship among conservation, ecotourism and local livelihoods for the MNR.	5.How do stakeholders perceive assumed interdependencies and why?	Stakeholders perspective/opinion	Key informants interviews	Thematic analysis or content analysis	I expected to find that those who supported NT were able to identify the opportunities of applying the model. Furthermore, I expected to find out opinions that pointed to the challenges of applying the NT model to conservation, ecotourism and livelihoods.

Source: Author's construction

3.7 ETHICAL CONSIDERATION

The success of any research is not without the application of humane and sensitive treatment of the research participants. Inasmuch as the research may wish to gather as much truth and knowledge as possible, the researcher considered the need to respect the rights of the participants (Van Damme, Casteleyn, & Manno, 2004). Ethical considerations provided a free and comfortable working relationship between the researcher and the respondents. Therefore, ethical issues were central in the research. Due care and attention was desirous, as much as possible, to minimize any physical, social or psychological harm both to the participants and natural wildlife. In order to manage anonymity, names of the respondents were not recorded but simply coded. The data collected was stored in a safe environment and was only accessed by the researcher for the purpose of the research only. Participation in this study was by no means coerced, forced, or threatened by any person or persons. Each and every participant, after fully applied his or her mind or conscience, was at liberty to choose not to participate or to participate. Participation in this study was voluntary and participants were requested to append their signature on the consent form (Appendix 3) which clearly explains their rights and privileges. The research team comprised of the researcher and two research assistants. The research team at all times introduced themselves with due respect and humility and informed the participants of the principle purpose of the study.

3.7.1 Acquisition of the Research permit

In this study, the researcher applied for a research permit from the University of Botswana Office of Research and Development and to the Ministry of Environment, Wildlife and Tourism. This permit was taken with the researcher at every data collection point and was presented to the respondents to assure them of the validity and reliability of the research.

3.8 CONCLUSION

The conservation ecotourism and local livelihoods nexus is an essential strategy that helps to conserve biodiversity as well as sustaining the livelihoods of the local community. Key mega fauna species such as rhinos and elephants are popular sight for tourist attraction and generate substantial amount of revenue. The revenue generated plays a pivotal role in furthering conservation initiatives and anti-poaching activities. The study considered the use of ecotourism as an insightful tool that helped to have an in-depth analysis of biodiversity conservation benefits, challenges, perceptions and livelihoods enhancement. It brings in a sustainable relationship among conservation, ecotourism and livelihoods. The

information gathered played a significant role in understanding the value of biodiversity not only in beautifying the environment but also providing the necessary income to transform rural livelihoods. Therefore, the findings from this study revealed existing linkages as well as the extent of these linkages. This added insight and knowledge on the value of nexus thinking in the field of conservation, tourism and local livelihoods. Furthermore, data analysis in the next chapter opened up analytical comparison from different areas on the applicability of the approach to different localities. The research have the opportunity to assist tourism entrepreneurs, community trusts, managers and individuals with specific knowledge by which to use, value, and protect natural resources.

3.9 LIMITATIONS

Although the study has provided valuable insights in the notion of nexus thinking framework with regard to conservation, ecotourism and livelihoods; nonetheless limitations were encountered. The study only sampled one community, Mokolodi Community, located on the western side of the park. This was mainly due to time and resources constraints as the researcher was in full time employment and was also personally funding the study. Furthermore, even though there are many and varied stakeholders connected to the study area–MNR-, due to time and funding constraints, the researcher was limited only to ten (10) stakeholders although only eight (8) stakeholders were available and these were involved in the study.

Furthermore, the challenge of unemployment in the society made some of the respondents to view the study as a forum to express their dissatisfaction with the level of poverty and unemployment in the community. Similarly, other respondents, instead of focusing on the matter which was under discussion, took the moment as an opportunity to discuss how MNR should address their socio-economic challenges such as poverty, HIV and AIDS and unemployment. Although it was a challenge for the interviewer to navigate through these diversions and redirect conversations to the core issues of the study, the interviewer was able to solicit as much relevant information as possible from the respondents. Be that as it may, at the end it was a success and a very interesting experience as a researcher.

CHAPTER 4: DATA ANALYSIS AND PRESENTATION

4.0 INTRODUCTION

This chapter analyses and presents the findings of the study. It contains household and Mokolodi Nature Reserve (MNR) staff survey as well as key informant interview results on characteristics of conservation, ecotourism and local livelihoods as well as the extent of their interdependence or linkage. The local community is directly involved with Mokolodi Nature Reserve, hence the need to explore, identify and nurture the linkages for the betterment of the natural environment and local community as interdependent systems. The chapter also contains findings from stakeholders' perspectives and/or opinions on the opportunities and challenges of applying Nexus Thinking (NT) to the relationship among conservation, ecotourism (in Mokolodi Nature Reserve) and the livelihoods of the surrounding community (Mokolodi Village). The purpose is to present a detailed analysis of Nexus Thinking with a view to draw key messages and conclusions about its applicability. The chapter is organized as follows. Following this introduction is a presentation of the demographic characteristics of the household, MNR questionnaire survey respondents and stakeholder key informants. Except for the section on demographic characteristics, the chapter's structure is informed by, or aligned to, the study's research objectives and questions. Thus, sections 4.2, 4.3 and 4.4 present findings for the first, second and third objectives, respectively. For the reader's ease of reference, the study's objectives and research questions have been reproduced in Boxes 1, 2 and 3. The discussion of the results of this study is in the final chapter.

4.1 DEMOGRAPHIC CHARACTERISTICS OF HOUSEHOLD, MNR SURVEY RESPONDENTS AND STAKEHOLDER KEY INFORMANTS.

The study captured key demographic characteristics of both household and MNR questionnaire respondents and key informants so as to give the reader an appreciation of the characteristics of the people that provided the data reported in this chapter. The characteristics recorded were gender, education and employment status as presented below.

4.1.1 Gender and Education

4.1.1.1 Mokolodi Village Household Respondents

The sample size for the household survey was 62 which was the planned number (cf chapter 3). Of this, 45% of the respondents were male and 55% female (Table 4.1). Although in the same order of magnitude, this gender contrast deviates substantially from the sex composition of about 49% male and 51% female reported for the Southeast District in the 2011 census (CSO, 2012). The difference is attributed to greater outmigration by males from the village to urban areas to look for better and alternative means of livelihoods (CSO, 2012). It is also probable that some men were out to cattle posts and farms whilst females stayed at home to attend to household chores. The study also indicates that the majority of the sampled population (32%) were aged above 48 years, while about 29% were aged between 38 and 47 years. Those between the ages of 28 and 37 were 24% and lastly 15% were between the ages of 18 and 27 years. Of all the household respondents interviewed in this study, 27% indicated that they had non-formal education, whilst 73% had attained formal education (Table 4.2). This suggests very high levels of literacy, although the questionnaire did not capture the actual levels of educational attainment among village respondents. This was important for the study because the respondents were able to provide the information sought by the researcher.

Table 4.1: Mokolodi Village Selected Households Demographic Characteristics (2018).

Education Status			Age group				Total
			18-27	28-37	38-47	48 ++	
Formal Education	Sex	Male	4	6	8	2	20
		Female	5	9	8	3	25
	Total	9	15	16	5	45	
Non-Formal Education	Sex	Male	-	-	1	7	8
		Female	-	-	1	8	9
	Total	-	-	2	15	17	
Total	Sex	Male	4	6	9	9	28
		Female	5	9	9	11	34
	Total	9	15	18	20	62	

4.1.1.2 Mokolodi Nature Reserve Management Staff Respondents

The sample size for the survey in Mokolodi Nature Reserve was 10 as planned. This was considered 100% sample for MNR senior technocrats (cf. Chapter 3, Table 3.1). The sample consisted of senior management personnel. Of the 10 technocrats or officers

interviewed from MNR, 6 came from Mokolodi Village and they hold managerial /supervisory positions at MNR (MNR- Respondent 1). Therefore, MNR employs both skilled and unskilled labour from the local village although unskilled labour constitutes the bulk of the local people. The sample was administered evenly between males and females as per Table 4.2. This suggests gender equity in the administration of senior management positions at MNR. The study indicates that only one person is between the ages of 18 and 27, seven people are in the age group 28 and 37 and only one person fell between the ages of 38 and 47. Of the ten respondents, four people indicated that they had attained a diploma and six people had attained a degree. The results further show that MNR has a youthful leadership that has the potential to generate desired results in respect of conservation and ecotourism.

Table 4.2: Mokolodi Nature Reserve Management Staff Selected Demographic Profile (2018).

Education Status			Age			Total
			18-27	28-37	38-47	
Diploma	Sex	Male	-	1	1	2
		Female	-	2	0	2
	Total		-	3	1	4
Degree	Sex	Male	0	2	1	3
		Female	1	2	0	3
	Total		1	4	1	6
Total	Sex	Male	0	3	2	5
		Female	1	4	0	5
	Total		1	7	2	10

4.1.1.3 Key Informant Stakeholders

A total of 8 out of 10 key informants were selected through purposive and snow ball sampling technique (cf. Chapter 3) and interviewed for the study. This consisted of the Chief of Mokolodi Village, technocrats from two environmental NGOs and the remainder from relevant local and central government institutions, as shown in Table 4.3. Of the 8 key informants interviewed, only one was female. This gender discrepancy can be attributed to the non-random sampling technique used by the researcher, because only people who were willing to give information by virtue of their knowledge or experience in their field of study or those identified through snow-balling, were interviewed. In this case more males were willing or identified than females, hence the difference. The study also indicates that 63% of the interviewees were above 50 years of age. Further, 75% of the

key informants had attained a postgraduate qualification at the level of first degree or master's degree in their professional field, and an even higher proportion (88%) had at least 10 years of experience in their field of expertise. Information obtained in this study, from the local chief (Kgosi), shows that as early as 1933, people had already settled in the present day Mokolodi Village. In summary, the key stakeholders interviewed had knowledge and the capability of responding to interview questions asked and understood exactly what the researcher wanted to achieve in this study.

Table 4.3: Key Informant Stakeholders' Demographic-Profiles (2018).

	Informant Institution	Professional Title	Age	Sex	Educational Qualifications	Years of Experience
1	Tribal Administration	Mokolodi Village Chief	76	M	Standard 7	27
2	Kalahari Conservation Society	Chief Executive Officer	60	M	Bachelor degree	1
3	Birds Life Botswana	Program Officer	38	F	Bachelor degree	12
4	Local Government	Community Dev Officer (SEDC/VDC)	55	M	Form 2	10
5	Local Government	Principal Planning Manager (SEDC)	37	M	Bachelor degree	13
6	Central Government	Chief Natural Resources Officer (DEA)	54	M	Master degree	10
7	Central Government	Chief Tourism Officer (DoT)	45	M	Master degree	20
8	Central Government	Chief Wildlife Officer (DWNP)	55	M	Master degree	38

4.1.2 Employment

4.1.2.1 Mokolodi Village

The research shows that the majority of the respondents were in full-time employment (cf. Table 4.4). The local community's means of livelihood, other than full time employment, consist of part time employment, informal trading and livestock rearing. These are the main means of survival in the local community. However, unemployment is a challenge in the local community. According to the research, unemployment in the community was

around 15%, slightly lower than the national average estimated to be 16.3% in 2015 (Botswana Statistics, 2018).

Table 4.4: Employment Status of the Survey (Household) Mokolodi Village (2018).

	Employment Status	Percentage (%)
1	Full time	44
2	Part time	8
3	Informal trading	16
4	Livestock rearing	17
5	Unemployed	15
	Total percentage (%)	100%

4.1.2.2 Mokolodi Nature Reserve Management Staff

Most of the respondents who were interviewed confirmed that they are employed at MNR on a fulltime basis (cf. Table 4.5 below). The study also shows that 6 out of the 10 technocrats interviewed come from the local village. The respondents' work positions or titles are captured in Table 4.3. Most of the respondents have been working for MNR for periods ranging from 5 to 16 years. The diverse data from the sampled officers working in different departments was essential to make informed conclusions and opinions in as far as conservation, ecotourism and environmental education at MNR is concerned. Therefore the opinions expressed by the sampled officers working at MNR reflected practices at MNR. Of course MNR staff opinions were sought, especially in respect of questions 20 and 21 of the research questionnaire (cf. Appendix 3), but the opinions were exclusively of their perception of MNR's conservation, ecotourism and environmental education initiatives.

4.2 CHARACTERISTICS OF CONSERVATION, ECOTOURISM AND LOCAL IN AND AROUND MOKOLODI NATURE RESERVE

This section analyses and presents the findings related to the first objective of the study and its research questions.

4.2.1 Conservation

Based on questionnaires issued to all ten respondents as planned in this study, conservation related activities at MNR are characterized by animal patrols, animal censuses and vegetation monitoring. The questionnaire used (Appendix 3) gathered information about animal patrols, animal census and vegetation monitoring activities at

MNR with questions such as: how often they carried out patrols, censuses and vegetation monitoring and the reasons why they carried out such activities. The majority of the respondents (90%) confirmed that all these three common conservation activities at MNR have significantly improved biodiversity conservation (cf. Figure 4.2). The animal census and vegetation monitoring data is important in that it helps management with planning and implementation of sustainable ecological strategies in the form of follow up action to avert any ecological damage or disaster in the park. For instance such data is used to determine whether culling, or supplementary feeding or re-vegetation of degraded areas are undertaken so as to sustain biodiversity and ecological integrity.

Only 10%, that is only 1 (one) out of 10, of the respondents was not sure.

4.2.1.1 Animal Patrols

Animal patrols were unanimously mentioned by MNR respondents as an important conservation activity in the reserve. These were reportedly carried out daily to monitor any wildlife poaching activities in the park and also to constantly observe the thriving of wildlife. The Respondents confirmed that animal patrols were carried out daily by the game rangers “*to protect biodiversity from poachers and to monitor the movement of wildlife*”. For instance injured, orphaned, displaced or confiscated fauna could be identified and quickly brought to live in the park’s animal sanctuary for rehabilitation (cf. Figure 4.2). After care and attention, recovered animals are released back to the natural habitat. Therefore MNR’s animal sanctuary is the haven for wildlife before they are released to the natural habitat in the park. Likewise animal enclosure such as MNR crocodile enclosure, rescue and support conservation of biodiversity (cf. Figures 4.1 and 4.2). Although these enclosures may not reflect their natural survival settings but it helps to increase their behavioural diversity.



Figure 4.1 MNR Animal Reptile Park: Crocodile Enclosure (2018). Photo: J. Maradza.



Figure 4.2 Mokolodi Nature Reserve wildlife Sanctuary/Animal Clinic (2018). Photo: J. Maradza.

4.2.1.2 Animal Census

Animal censuses were also unanimously mentioned by MNR respondents (100%) as an important conservation activity in the reserve. The questionnaire was used to obtain information about animal census activities at MNR. All the respondents (100%) confirmed that animal census is carried out once every ten years to monitor biodiversity and ensure that wildlife was within the carrying capacity of MNR's natural environment. MNR's animal census was last carried in 2009 (MWF, 2011).

4.2.1.3 Vegetation Monitoring

A research questionnaire was used to gather information about vegetation monitoring activities at MNR. The respondents were asked to give their opinion on the importance of vegetation inventory at MNR. As indicated in Figure 4.1, 70 % of the respondents indicated that they strongly agreed that monitoring was important, 20% agreed, whilst one respondent indicated that he/she was not sure. One of the respondents commented that vegetation inventory is *“a very important and essential aspect of environmental conservation considering that bush encroachment is the greatest challenge of environmental conservation”*. In support, a number of respondents concurred that *“vegetation inventory is necessary and has to be maintained at all costs to safeguard biodiversity.”* In that respect vegetation monitoring is an essential aspect of conservation as it helps to monitor and deal away with bush encroachment in the reserve.

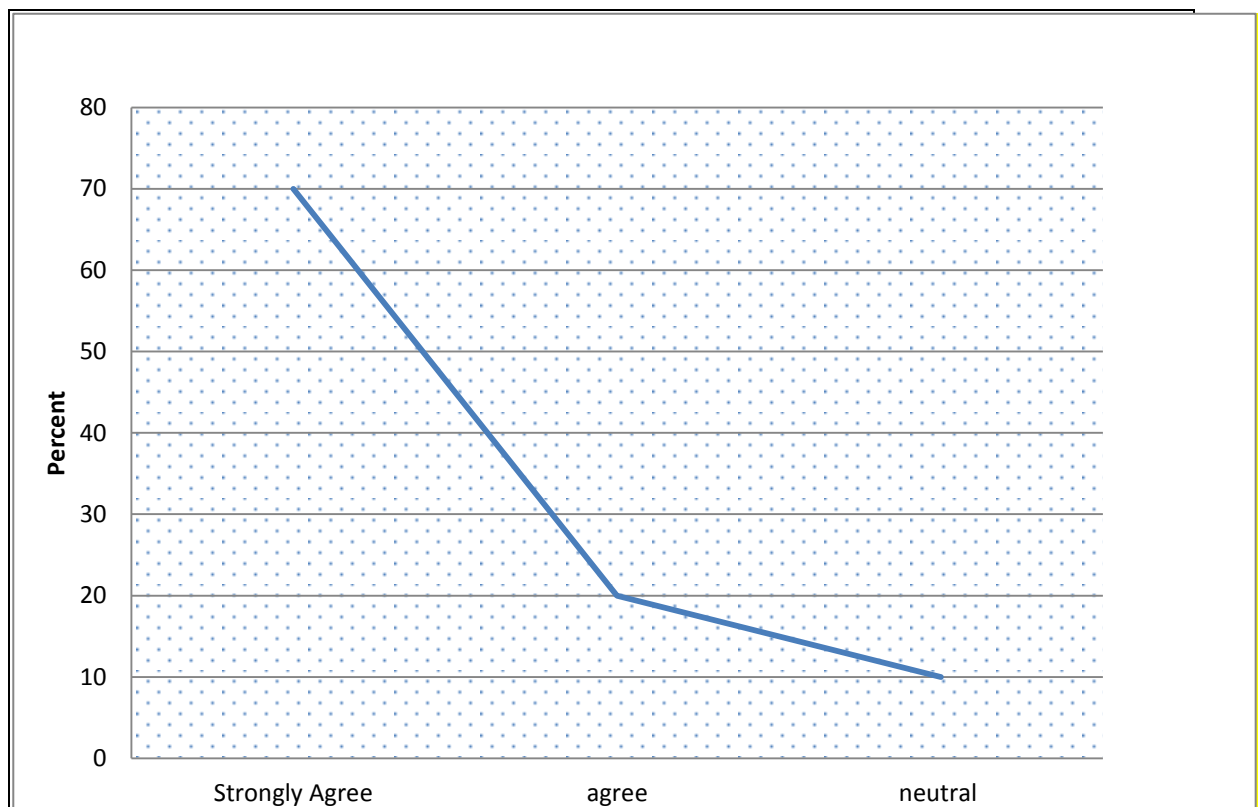


Figure 4.3: MNR management staff's perception of the importance of vegetation monitoring (2018).

4.2.1.4 Biodiversity Conservation Activities

When respondents were asked whether they perceive conservation activities essential for improving biodiversity protection, 90% confirmed that it significantly improved conservation (cf. Figures 4.1, 4.2 and 4.4). Only 10% confirmed that it moderately improve conservation (cf. Figure 4.4). To further substantiate their responses, the same respondents whose perception were significant (90%) believed that effective biodiversity

protection involved “*maintaining the carrying capacity of the environment, stopping bush encroachment and managing fire outbreaks*”.

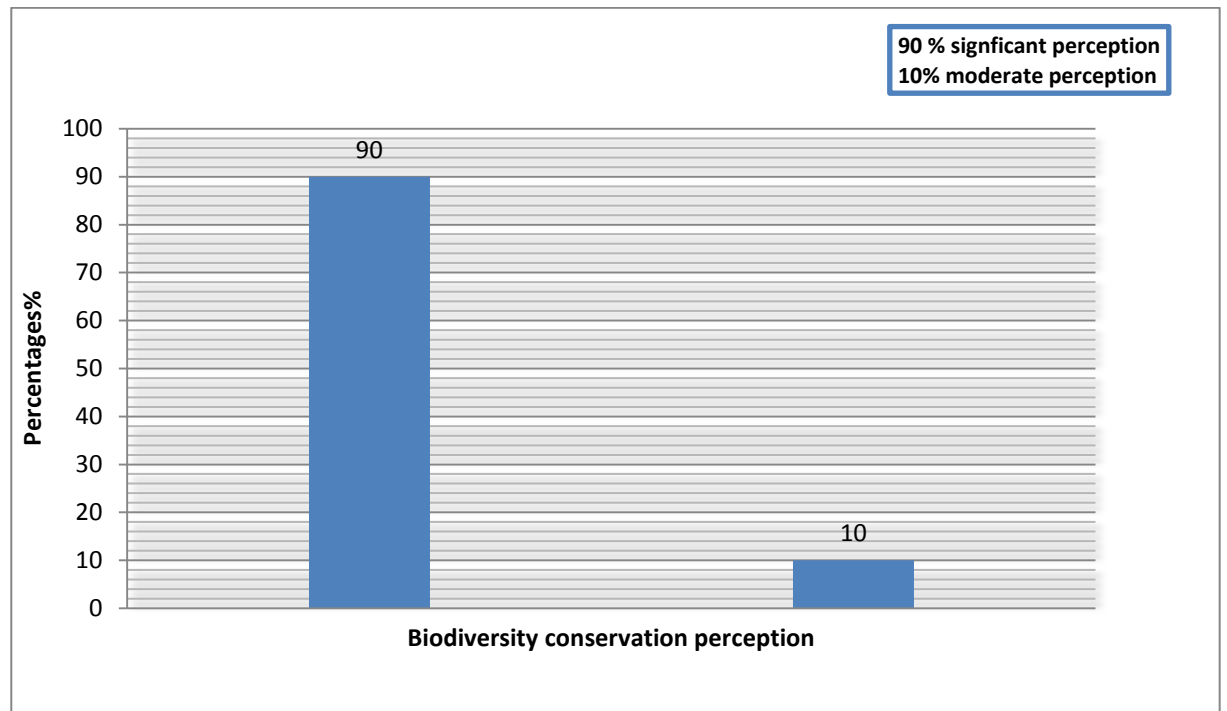


Figure 4.4 Mokolodi Community’s Perception of Biodiversity Conservation at MNR (2018).

4.2.2 Ecotourism

Based on questionnaires issued to all ten respondents as planned in this study, ecotourism related activities at MNR are characterized by tour guiding, monitoring behavior of tourists, tourist activities and cultural activities.

4.2.2.1 Tour guiding

All the 10 respondents confirmed that MNR provides tour guiding services (cf. Figure 4.12). The respondents were requested to explain why tour guiding is undertaken at MNR. Some of the respondents were of the view that “*it promotes ecotourism and also it helps to entertain tourists*” (MNR-Respondent 3) as they are taken to well-known scenic sites or areas of the reserve. Others were of the view that “*it promotes environmental education and conservation of biodiversity*” (MNR-Respondent 6) as carefully selected routes are used.

4.2.2.2 Monitoring behaviour of tourists

As observed by Page & Dowling (2002) ecotourism is a niche form of tourism which is nature based, ecologically sustainable, environmentally educative and locally beneficial.

Therefore, monitoring the behaviour of the tourists is an integral aspect of ecotourism that is necessary to safeguard the natural environment from degradation. Ecotourism should always remain an alternative form of tourism to mass tourism. The respondents were asked if monitoring the behaviour of the tourists is a requirement at MNR. All the respondents asserted that MNR monitors the behaviour of tourists. The respondents were further requested to give reasons for monitoring the behaviour of tourists. The majority of the respondents were of the view that monitoring the behaviour of tourists “*is mainly to educate tourists on the importance of conserving and keeping the natural environment safe, clean and healthy*” (as summed up MNR-Respondent 3). This shows that the reserve is striving to preserve both flora and fauna by ensuring that tourists enjoy the natural beauty of MNR in peace and harmony with nature. Furthermore, the respondents also confirmed that MNR restricts the number of visitors in the reserve to a maximum of 125 tourists for the 2 hour tour guiding period in the park at any one time. That is MNR permits all its five vehicles into the park at every tour guiding period which lasts for 2 hours. Each vehicle has a carrying capacity of 25 tourists. The restriction ensures that there is less noise in the park and to a large extent promotes sustainable tourism.

4.2.2.3 Ecotourist Activities

In order to ascertain if ecotourism activities at MNR has improved conservation of biodiversity, respondents were requested to give their opinion on this assertion. The majority of the respondents, (70%) (cf. Figure 4.5), confirmed that they strongly agreed with the assumption and only a few were not sure. The affirmative response by the respondents, that ecotourism activities at MNR improved biodiversity conservation, shows that ecotourism and conservation at MNR are in a mutually reinforcing relationship. The study further sought to validate the given responses and the respondents were asked to elaborate or give reasons for their responses. Below are some of the remarks expressed by the respondents, “*because the reserve is now home to a rich biodiversity mainly as a result of ecotourism activities that have improved conservation of biodiversity*”. This is attributed to tourism activities – tour guiding, bush braai, cultural activities - that have improved financial income at MNR. According to MNR, the financial income has been utilised to fund better and sustainable conservation activities such as animal census, vegetation monitoring, anti-poaching activities (MNR-Respondent 8). These activities have improved conservation of biodiversity. Other respondents corroborated this by saying “*because the activities are sustainable and give preference to the care of the natural environment*” (MNR-Respondent 7). The comments show that MNR is providing

sustainable tourism and conservation activities that help not only to promote biodiversity and ecotourism but also employment of people from the local community as indicated under sub-section 4.2.3 below.

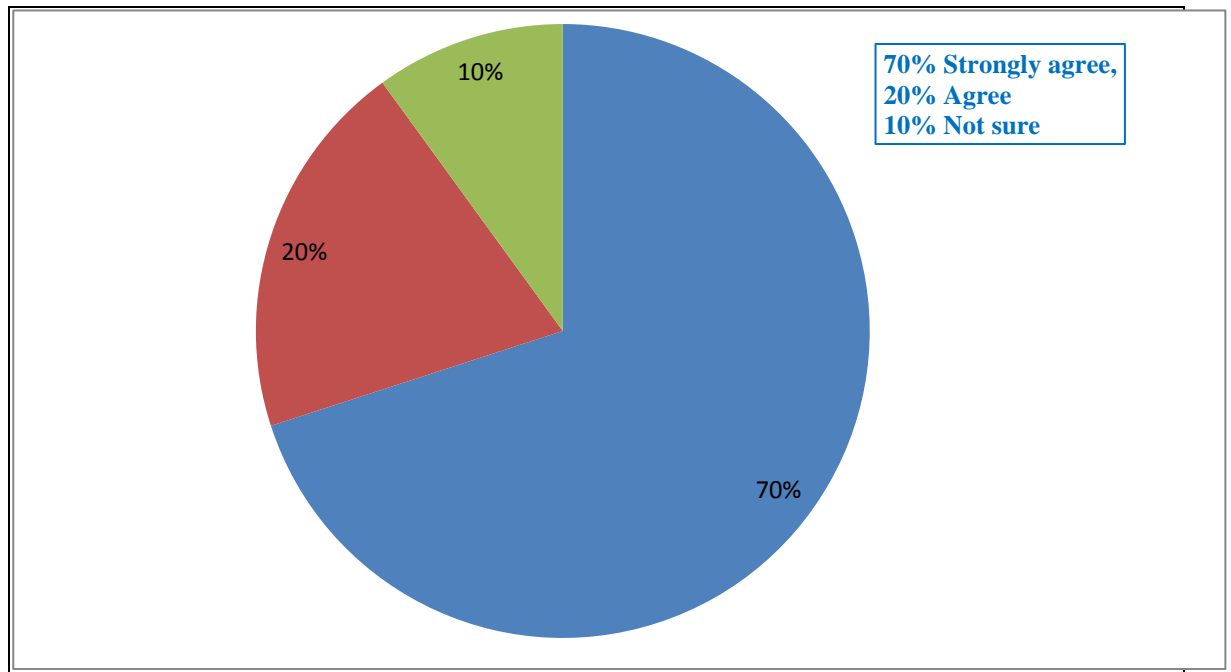


Figure 4.5: MNR perceptions on whether ecotourism activities have improved biodiversity conservation (2018).

4.2.2.4 Trends in number of tourists at Mokolodi Nature Reserve, 2008 – December 2017

Through the research questionnaire, the respondents were asked if MNR activities have improved the flow of tourists at the reserve. Statistical information on the flow of tourists into MNR for a period of ten years, from 2008 to 2017, was requested and this information was availed to the researcher (cf. Figure 4.6). The figures were obtained from the MNR data base – not available at the proposal development stage otherwise it could have been part of the literature review. The data shows that within the observed period of 2008 to 2017; 2008-2009 recorded the highest number of tourists who visited MNR. A sharp decline of tourists visiting MNR was recorded between 2009 and 2013 (cf. Figure 4.6). There was a downward trend of tourist arrivals at MNR from 2008-9 towards 2012-2013. This was the period when the world was experiencing a global recession and this explains the reduction of the tourists visiting Botswana (MNR – Respondent 1). The second peak of tourists was recorded for 2014-2015, probably signaling the easing of the recession.

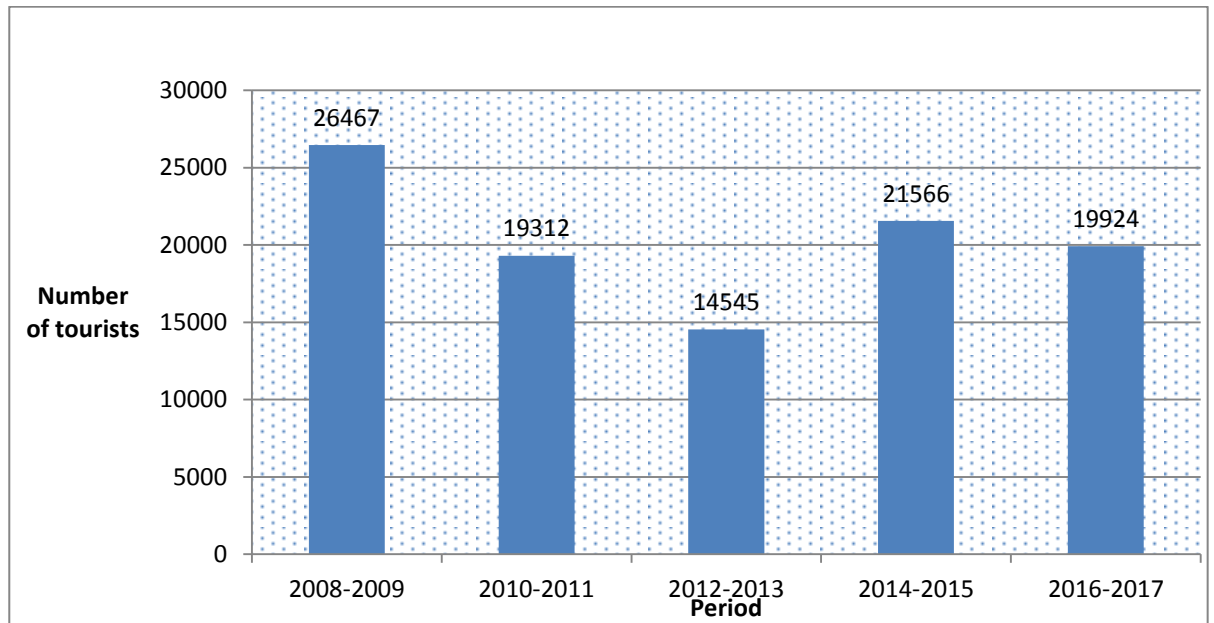


Figure 4.6: Mokolodi Nature Reserve, 2008 -2017 Tourists Statistics (Mokolodi Nature Reserve Computer data (2018)).

4.2.3 Characteristics of livelihoods in Mokolodi Community and community benefits from MNR

4.2.3.1 Livelihoods

As reported in Table 4.4, livelihoods activities in Mokolodi village are characterized by formal employment, informal employment, part time employment and livestock rearing. The information was obtained from the household survey. The majority of the people whose livelihoods are derived from formal employment are employed at MNR either as full time or part time employees. This is because MNR is the most viable nearby livelihood entity and priority is always given to the members of the local village for any employment opportunity arising from MNR. The local people whose livelihoods depend on rearing of livestock are either involved into goats, poultry and or sheep rearing; goats and poultry being the most dominant livestock reared (cf. Table 4.5). Considering the dry climatic condition of Mokolodi Village, these are the available and viable livelihoods activities that bring tangible benefits to the local village.

Like any other local community in Botswana, unemployment is a challenge in Mokolodi Village. As noted earlier, the rate of unemployment in the village at the time of the study (2018) was 15% percent, slightly lower than the national unemployment rate of 16.3%

percent in 2015 (Statistics Botswana, 2018). The relatively lower employment rate in the community is good and is attributed in part to the proximity of the community to MNR which is the only viable nearby business entity.

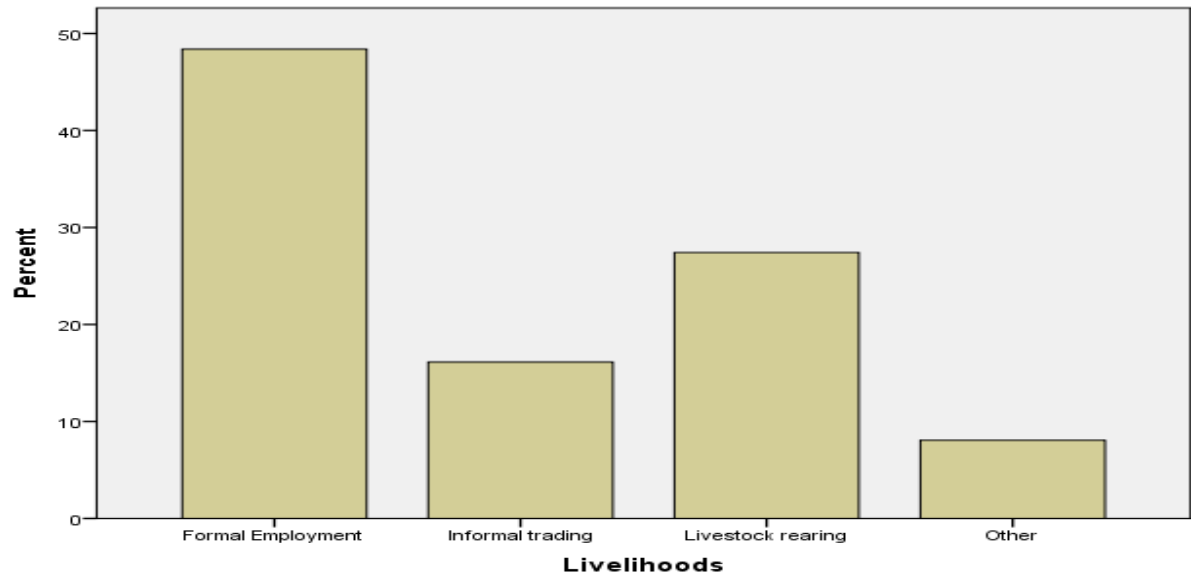


Figure 4.7: Mokolodi Community's Sources of Livelihoods (2018).

Table 4.5: Mokolodi Community Profile of Livestock Rearing Activities (2018).

	Frequency	Percent	Cumulative Percent
Cattle rearing	1	1.6	1.6
Poultry	20	32.3	33.9
Sheep rearing	3	4.8	38.7
Goats rearing	25	40.3	79.0
Other	9	14.5	93.5
None/not applicable	4	6.5	100.0
Total	62	100	

4.2.3.2 Community Benefits from MNR

In order to ascertain the benefits of MNR to the local community and if these benefits are improving the livelihoods of the local community, the MNR respondents were requested to identify the benefits and confirm if these benefits are helpful to the community. The respondents had to indicate various benefits attained from MNR and thereafter affirm if

they applied to the community. The majority of the respondents admitted that employment opportunities at Mokolodi Nature Reserve is a major benefit to the community as it is one of the main sources of livelihoods (cf. Figure 4.8). Other respondents also agreed that MNR's environmental education benefits the local community because it is education from MNR's education centre that has enlightened the community on the value of conserving the natural environment and safeguarding biodiversity.

Number of Responses	1	2	3	4	5	6	7	8	9	10
Employment										
Cultural services										
Education services										

Figure 4.8: The Benefits of Mokolodi Nature Reserve to the Local Community (2018).

Surprisingly, only one respondent views cultural activities as of great benefit to the local community. Although members of the local community are remunerated for showcasing their cultural and traditional activities at MNR (cf. Figure 4.9) the respondents were not convinced that the incentives bring socio-economic benefits to the local community. Hence, the selection by a single person. However, the cultural activities included traditional Tswana dancing and choral singing (cf. Figure 4.9) and a community guest house offering traditional food and accommodation (cf. Figures 4.8 and 4.9) for local and international ecotourists visiting MNR.



Figure 4.9: Community troupe (dancers) entertaining tourists (2018). Photo: J. Maradza

The village guest house receives the majority of its visitors from MNR ecotourists who enjoyed Botswana traditional cuisine. This makes the guest house a source of employment to the local community and the business has the potential to employ more local people in future as more guest houses are under construction (cf. Figure 4.10).



Figure 4.10 Mokolodi Village Guest House under construction (2018). Photo: J. Maradza

4.3 INTERDEPENDENCY AMONG CONSERVATION, ECOTOURISM AND LOCAL LIVELIHOODS USING NEXUS THINKING FOR THE MNR

The extent of the nexus among the three components characterized in the preceding section is explored here to address Objective 2 of the study (cf. table 1.4). The research questionnaire instrument was used to gather data in order to determine the extent of the interdependency among conservation, ecotourism and local livelihoods. Both quantitative and qualitative data from open ended and close ended questions were used to gauge the extent of the interdependency.

4.3.1 Conservation, ecotourism and livelihood linkages

To determine if the holistic and interdependence approach has desired impact in addressing the challenges of conservation, ecotourism and livelihoods, using a five point likert scale, with 1 = strongly disagree, 2= disagree, 3 = neutral, 4 = agree and 5 = strongly agree (Appendix 3); the MNR respondents were asked if they agreed with such an approach. All the ten respondents indicated that they strongly agreed that the approach had desirable effect on the challenges of conservation, ecotourism and livelihoods, namely: loss of biodiversity, environmental degradation and poverty. With the use of open-ended question, the respondents were further asked to give their opinion on how the holistic and interdependence approach could be enhanced. A wide range of opinions were given: some suggested that MNR should *“Always involve the local village so that wherever necessary the community should help MNR with information for the benefit of the environment and biodiversity”*, and also that *“enhancing private protected area social responsibility helps the community not only to see value in conservation and ecotourism but also in improving their livelihoods”*. That is through community social responsibility, socio-economic and ecological activities are availed to the community. The activities cited included developing community infrastructure such as schools, roads and water networks, providing water and pasture to livestock and providing technical expertise to the community on conservation of natural resources in community commons or rangelands. Others also felt that *“environmental education should be enhanced so as to educate the community on the value of conserving nature, boosting collaboration and involvement by taking care of nature”*. Some felt that income-generating projects such as poultry, livestock rearing, traditional dance (cf. Figure 4.9) and community guest house accommodation (cf. Figure 4.10), in the community tied with MNR in terms of market bring economic benefits that improve the livelihoods of the community and simultaneously benefiting MNR to enhance conservation and ecotourism.

Based on these responses, it is clear that an interconnected or holistic approach is perceived as a major step towards conserving biodiversity, promoting ecotourism and improving the livelihoods of the local community. Collaboration, incorporation, engagement, education, income generating projects and community social responsibility initiatives were perceived to be necessary and essential for enhancing the interconnectedness (nexus) approach.

In order to assess the existence of mutual relationship between the community, natural environment and ecotourism, the household respondents were asked whether they agreed that the various activities carried out by the community and MNR created a mutual relationship. Figure 4.11, reflects the views of community respondents on this relationship. The overwhelming majority (90.3%) (consisting of those who agreed and strongly agreed), affirmed the mutual relationship. This near unanimous viewpoint affirmed that mutually beneficial linkages existed between MNR's conservation and ecotourism and the local community's livelihood activities. The respondents who positively confirmed that the linkage framework promotes sustainable conservation and livelihoods improvement were further requested to substantiate their claim and all of them cited socio-economic and ecological benefits. On the contrary, those who answered in the negative argued that they did not see any benefits from such linkages. However, considering that the majority of the respondents perceived the existence of the linkage framework, there is a possibility of tangible benefits not only to MNR but also to the local community with the potential for employment of the local people at the community guest house (cf. Figure 4.10) once it is fully operational. For instance, the Kgosi reiterated that the linkage framework “... *benefits us all and this will create better employment opportunities among the youth who are roaming in the community with nothing to do*”.

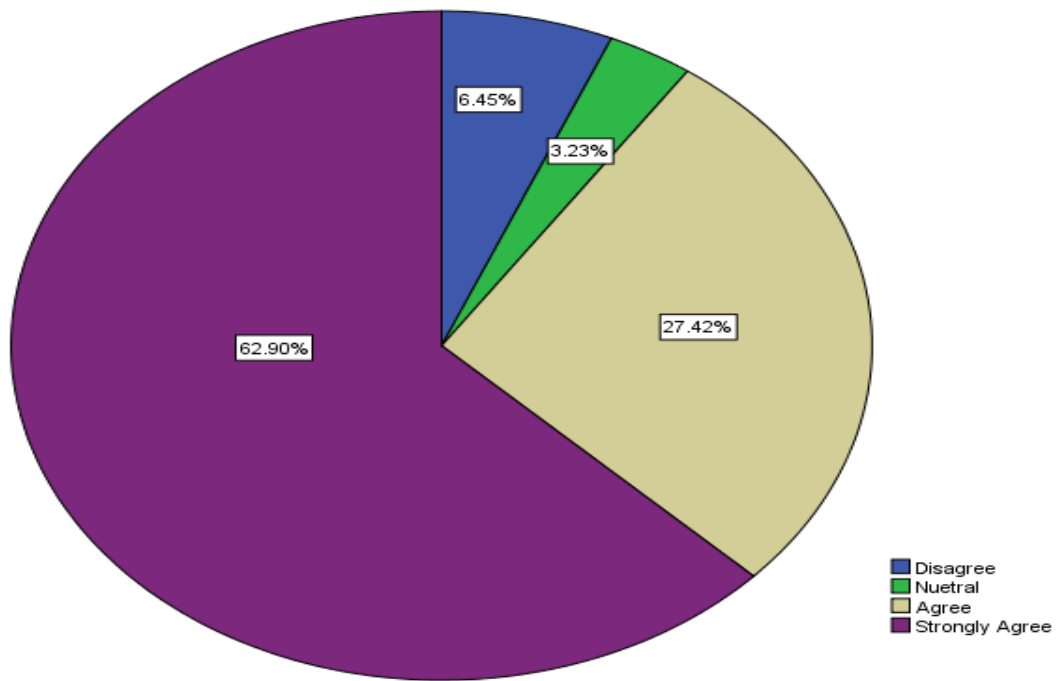


Figure: 4.11: Mutual Linkages Opinions among Conservation, Ecotourism and Livelihoods (2018).

4.3.2 Livelihoods-ecotourism linkages between the Mokolodi Village and MNR.

The study established that the activities carried out by the community benefit MNR. A linkage exists between these livelihood activities and ecotourism at MNR (cf. Figure 4.12).

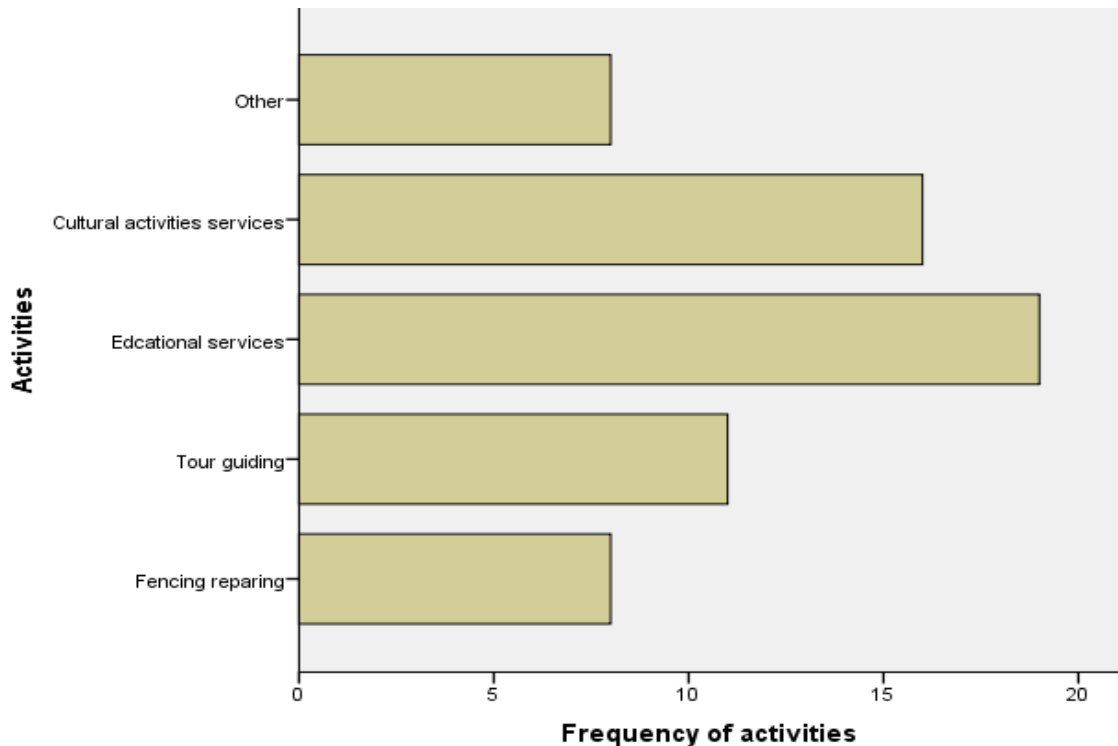


Figure 4.12: Community involvement on various activities done at MNR (2018).

The interconnectedness of events and activities improves community and Private Protected Area working relations. The involvement by the local community in ecotourism related activities, such as environmental education, tour guiding and cultural activities (community troupe –dancers and community guest house accommodation (cf. Figures 4.9 and 4.10), has generated income for the local community and has improved the livelihoods of some households. The Education Centre (cf. Figure 4.13) for instance has been the resource centre for the local community in terms of skills development, and knowledge empowerment. Such knowledge base has not only been instrumental in conserving biodiversity but also essential for the development of ecotourism as a sustainable livelihoods initiative through associated employment opportunities for village members.



Figure 4.13: Mokolodi Nature Reserve Education Centre (2018). Photo: J. Maradza

MNR activities that were mentioned under “Other activities” included bush braai, rhino tracking and provision of accommodation. Likewise, the local community has reportedly been involved in these activities for financial gain and has improved the livelihoods of the local village and the promotion and sustainability of ecotourism as well as conservation at MNR.

4.3.3 The analysis of the extent of the interdependency among conservation, ecotourism and livelihoods

The research used both the mean score analysis and the correlation matrix to further determine the extent of the relationship between the variables of conservation, ecotourism and livelihoods. Quantitative data was derived from the research questionnaire on the variables income-link, relationship and linkage measured using ordinal scales (cf. Chapter 3 and Appendix 2: Qs 9-12). The results of the descriptive and correlation analysis are presented in Tables 4.6 and 4.7 and interpreted in the subsections that follow.

Table 4.6 Mean Scores of Linkage Variables (2018).

Variable*	Mean	n	Common view
Incomelink (income linkage to MNR)	2.31	62	Slight link
Relationship (among community, MNR environment and ecotourism)	4.4677	62	Strongly agree
Linkage (between MNR and Mokoldi villagers)	2.145	62	Agree

*Scales: **Incomelink:** 1(not at all) 2 (slightly) 3 (moderately) 4 (strongly); **Relationship:** 1(strongly disagree) 2 (disagree) 3 (neutral) 4 (agree) 5(strongly agree); **Linkage:** 1 (strong agree) 2 (agree) 3 (neutral) 4 (disagree) 5(strongly disagree).

Table 4.7 Correlation coefficient (r) matrix revealing nexus patterns (2018) (n=62).

VARIABLES	VARIABLE CORRELATIONS (r) AND p			
	Income-link	p	Relationship	p
Income-link	1			
Relationship	.542	0.000*	1	
Linkage	0.131	0.002*	0.107	0.01**

* p <0.01; ** p <0.05

4.3.3.1 The relationship between income and linkage

The income variable refers to the financial gain attained by the local community from their day to day livelihood activities connected to MNR (cf. Figure 4.12 above). The linkage variable refers to perceived connection or interconnectedness between MNR and Mokoldi village, such linkages are esteemed to improve livelihoods of the community and MNR's conservation of biodiversity and ecotourism. A total of 62 respondents were requested to indicate the extent to which their incomes were linked to the MNR (see key under Table 4.6). The response to this research survey question was measured through a four-point likert scale, namely: *not at all*, *slightly*, *moderately* and *strongly*. The mean score analysis outcome as reflected in Table 4.6 was 2.3, representing "slightly" on the likert scale. Similarly, the linkage variable was measured through a 5-point likert scale namely: *strongly agree*, *agree*, *neutral*, *disagree*, *strongly disagree*. The 62 respondents

were requested to confirm if a linkage framework approach (connection between the local community and MNR) is necessary for the sustainable conservation of biodiversity and improvement of their livelihoods beyond those reflected in Table 4.5. The average score outcome of the linkage notion was 2.1 (cf. Table 4.6) which shows that the local community agreed that the linkage framework would improve their livelihoods and MNR's conservation of biodiversity, albeit only slightly.

A further analysis of the correlation between perceived income and the linkage variables using the correlation analysis, (cf. Table 4.7) above, shows that there is a positive correlation. The correlation coefficient (r) of 0.131 ($p = 0.002$) suggests that there is a statistically significant relationship between the variables of income and linkage between MNR and local community. This would suggest that though the linkage between Mokolodi community's income and MNR was considered slight, it was nevertheless perceived to be beneficial both to the local community and MNR's conservation and ecotourism activities.

4.3.3.2 The linkage between income and relationship

There is a positive correlation between perceived income and relationship variables as shown in Table 4.7. The p-value of 0.00 on the correlation matrix shows that there is a statistically significant relationship of $r = 0.542$. This suggests that there could be a self-reinforcing association between MNR's financial benefits to the community (though currently perceived as slight), (cf. Table 4.6) and MNR's primary activities of environmental conservation and ecotourism. The linkage connections are further buttressed by the views of surveyed Mokolodi Community households (cf. Figure 4.11) who concurred that mutually beneficial linkages existed between MNR's conservation and ecotourism and the local community's livelihood activities.

4.3.3.3 The relationship between linkage and relationship

The collected data for the linkage variable was measured through a five point likert scale. The respondents indicated that they agreed that the linkage framework between MNR and the local community (cf. Figure 4.11) would promote sustainable conservation of biodiversity and also improve the livelihoods of the local people. As suggested by the mean score analysis results (cf. Table 4.6), agree was positioned as the mean on the likert scale. The relationship variable was designed to indicate perceived degree of relation between the local community (Mokolodi Community), the MNR natural environment and ecotourism. The relationship variable was measured through a five-point Likert scale (see

key below Table 4.6). The respondents were requested to indicate their level of agreement on the relationship existing among the community, natural environment and ecotourism. Based on data gathered and presented in Table 4.6 the mean score is approximately 4.5, representing “strongly agree” when rounded upward on the likert scale.

In order to assess the linkage between the two variables, a correlation analysis was done. The correlation matrix (cf. Table 4.7) shows that there is a positive correlation between these variables ($r = 0.107$; $p = 0.01$). The p-value on the correlation matrix shows that there is a statistically significant relationship between these variables, suggesting that the linkages among MNR, the local community, MNR’s natural environment, Mokolodi Village cultural activities and environmental conservation and eco-tourism at MNR were self-reinforcing.

4.4 STAKEHOLDER PERSPECTIVES ON THE OPPORTUNITIES AND CHALLENGES OF APPLYING NEXUS THINKING TO THE RELATIONSHIP AMONG CONSERVATION, ECOTOURISM AND LOCAL LIVELIHOODS FOR THE MNR

Mokolodi Nature Reserve (MNR) has a diversity of stakeholders. These include relevant government departments and ministries, Mokolodi residents, Mokolodi community chief (Kgosi), Village Development Committee, the Rural (Southeast) District Council, Government Departments and Non-Governmental Organizations (NGOs) (cf. Table 4.3). The stakeholders are keen not only to see MNR succeeding but also to promote a mutually beneficial relationship between the Reserve and the local community. This section of the study therefore gauged the views of stakeholders on the usefulness of the nexus thinking approach to promoting a win-win relationship between MNR and the local economy and environment (Objective 3, table 1.4). An Interview guide (Appendix 3), was used to generate qualitative data for the third objective of this research study namely: To establish stakeholder perspectives on the opportunities and challenges of applying nexus thinking to the relationship among conservation, ecotourism and local livelihoods for the MNR. The researcher carried out in-depth face-to-face interviews with selected informants from different stakeholder groups, whose positions, personal skills, knowledge and understanding, put them in good stead to have sufficient insights on the information sought. All the key informants interviewed rallied behind the approach and their perspectives are reported below.

4.4.1 Poverty challenges for Sustainable Development Goal (SDG) Number 1.

An Interview guide (Appendix 3) consisting of a string of written down questions served as a check list to guide the interview. The researcher engaged in-depth face-to-face interviews with key informants to solicit sufficient insights into the problem being investigated. The informants were composed of environmental officers from both private and government institutions, elders and leaders of the Mokolodi Community. The Key Informants applied their knowledge on the opinion and or perspectives on opportunities and challenges of applying the nexus approach on privately owned and managed resources vis-à-vis communal area livelihoods. The informants provided valuable opinions and perspectives that helped to address the research question: How do stakeholders perceive assumed interdependencies and why?

A major concern of the Government of Botswana and the United Nations' Sustainable Development Goal (SDG) 1 is to reduce poverty. Thus, any relationship or strategy or approach that contributes to poverty reduction or alleviation would be most welcome. In order to gauge their perception of poverty among members of Mokolodi Community, stakeholders were asked if poverty is a challenge in most local communities in the country. All the respondents indicated that they agreed that poverty is a menace in Mokolodi and most of the local people in Botswana. One of the respondents even cited *"lack of sustainable livelihood incomes as a major factor contributing to poverty in most of these rural communities"* (Stakeholder 1). When asked how poverty can be addressed in local communities like Mokolodi Community that are close to privately owned, non-profit making protected areas like MNR, the majority of the respondents indicated that small scale income generating projects should be developed within these communities. One of the respondents interviewed suggested that there is need to *"initiate small income generating projects such as poultry, basketry, artifacts and or bee keeping"* (Stakeholder 2). Further comments from the stakeholders were that government should craft strategies and policies that support community involvement in Private Protected Areas (PPAs) so as to improve the livelihoods of the local people. This view was shared by one of the respondents whose opinion was that, *"there should be policies that avail the local communities appropriate programs for long term economic benefit"* (Stakeholders 5). Such policies should empower the local people to partake in ecotourism activities, showcasing their cultural activities and artistic work. The research study also shows that only two respondents were of the view that PPAs should provide employment to the local community. This is probably because, whilst it is important for PPAs such as MNR to

create employment, they cannot realistically be expected to absorb all the people from the local community. Therefore entrepreneurship through small to medium income generating projects related to the PPA (e.g. ecotourism, fence maintenance, and fire-break maintenance) would have wider local socio-economic benefits and complement the limited direct job opportunities.

4.4.2 Stakeholder perceptions of Nexus Thinking (NT) as a holistic approach and opportunities associated with it.

To establish whether the eight stakeholders agreed with the NT approach (as theoretically presented to them by the researcher), an interview guide question helped to solicit the stakeholder's perception. The research instrument elicited for their perspective on whether the approach had desirable impact on conservation, ecotourism and livelihoods. All the key informants concurred that the linkage or interconnectedness approach would be instrumental in conserving nature and had the potential of improving livelihoods. The informants were further requested to give reasons for their perspectives. The majority of the informants indicated that the approach promoted interaction, working together, sharing of ideas, collective thinking, engagement, unity and it empowered the local community. One officer from the NGO sector pointed out that the approach

“would be effective, because the local community would feel that they are directly involved and custodians of the natural resources even though the wildlife is privately owned. The approach would also promote partnerships between MNR and the local community which could enhance cooperation and good relationship. This would help the nature reserve to minimize costs in terms of management as the support from the community would help to reduce spending on curbing poaching, maintaining fencing and dealing with wildfires and other natural disasters” (Stakeholder 7).

Two informants indicated that the NT approach would bring value that would drive the local community to conserve nature for their livelihood benefit and as such it would be a win-win solution to the challenges of poverty, loss of biodiversity and environmental degradation. One officer from the government related sector concluded that NT:

“was about interdependence of activities. That is, for there to be ecotourism you need conservation to thrive and ecotourism will create income, employment and improvement of skills. The adjacent community will see value and the need to conserve because when

people derive any livelihood benefits, they are bound to conserve natural resources and ultimately there is going to be sustainability. The issue here is value which the people have to see out of conservation for conservation to thrive and say that we are willing to support the ecotourism concept” (Stakeholder 3).

To further assess the concept of Nexus Thinking, respondents were asked if they perceived the approach as a sustainable framework when used in the context of privately owned areas like Mokolodi Nature Reserve. A total of 7 informants agreed that NT had the potential of being a sustainable and effective framework. Although the informants gave varied points in support of their opinions, most of them indicated that it is a win-win solution to the global and local challenges of poverty, loss of biodiversity and environmental degradation. As presented by one of the officers based in the NGO sector, *“...NT is a sustainable framework because it enables interaction and working together and is a win-win solution to socio-economic and ecological challenges” (Stakeholder 7).* However, one respondent based in the government sector was pessimistic about the approach. He argued that the NT approach requires further assessment, arguing that NT:

“...is something that can be looked into, a framework that can be studied and analyzed further to pick the actual benefits out of the system. If done sustainably by community within the area they control and adjacent to Private Protected Areas or where they attain royalties, this would be a much more beneficial concept” (Stakeholder 3).

Thus, to this stakeholder, the NT approach was rather abstract and untested in relation to PPAs and their relationships with proximate communities. This pessimism was probably shared by the other stakeholders, as is reflected by their perceptions of NT adoption/implementation challenges presented in the next (sub-section 4.4.3).

4.4.3 Challenges in adopting the Nexus Thinking

The study found out that there are challenges in adopting the Nexus Thinking approach. All the respondents were of the view that the concept is challenging and difficult to be understood by rural people. The majority of the stakeholders cited possible lack of tangible benefits to the local community as the main challenge. That is, the respondents were of the view that *“if benefits from the concept are not tangible, members of the community may not embrace the initiative”*. Some of the respondents were of the view that the owners of the PPAs were after profit and would not be willing to engage the local

community as this could divert their profit making ideology to social responsibility which they felt was the sole responsibility of government.

4.4.4 Foreseeable risks to NT adoption

To establish if stakeholders perceive any foreseeable challenges to the framework, the stakeholders were asked to air out their views. All the respondents concurred that there were slight foreseeable challenges or risks in adopting this framework. The cited challenges were: change of administration; increase in population; natural disasters such as climate change, droughts and flooding. These challenges result in disruptions in ecosystems which could lead to loss of biodiversity and ultimately affect ecotourism. An upset to one component automatically affects the others since the components were interlinked. Furthermore, the owners of PPAs could choose not to collaborate with the local community as collaborating alters their business motive of making profits. Lack of collaboration would upset the whole framework and this would have ramifications from community reaction which may be catastrophic in respect of biodiversity conservation. For instance poaching can cause loss of biodiversity. The study also found out that mismanagement in a system whose components depend on one another may result in a total collapse of, and chaos in, such a system. As indicated by one of the respondents,

“Mismanagement is the greatest enemy when it comes to a system that is interlinked and involving sensitive environmental components: to say a loss or complication in one component will see everything collapsing...” (Stakeholder 4).

Therefore proper management of the whole system has to be the main objective of all concerned parties so as to realize sustainable tangible benefits. The study also notes that change of ownership of the PPAs may be a strong foreseeable challenge when it comes to a system that relies on interconnectedness. One of the respondents from the government sector was of the view that after the owner of a PPA has made enough profits *“he or she may decide to quit the business and sell the business at any given time without consulting anybody, leaving the whole community relying on that venture in limbo”* (Stakeholder 8). The person who buys the venture brings in his own management style which may have little or no interest in the needs of the local community.

4.4.5 Stakeholder Recommendations for adopting Nexus Thinking

In conclusion, the respondents were asked if they would recommend adoption of the NT framework. All the respondents indicated that they would strongly recommend adoption of the framework. The recommendation was made after the respondents had shown

understanding of the framework. The majority of the respondents indicated that the approach is interactive, involving, empowering, improves conservation, ecotourism and livelihoods of the local community. As summed up by one of the respondents who vouched for the approach from the government sector, *“Yes I recommend the adoption of the concept because it is a holistic approach which is good because it is a win-win solution to the socio-economic and ecological challenges”* (Stakeholders 3). It has long term benefits that help to improve conservation, ecotourism and livelihoods of the local people. Furthermore another respondent from the private sector, also weighed in saying,

“I strongly recommend the approach because you need support from your surrounding community if you are to be successful in conservation initiatives and the support is only guaranteed if and when the local community realizes benefits” (Stakeholder 1).

The Nexus Thinking (NT) approach, therefore, offers the opportunity for the local community to engage in community development projects that promote conservation and ecotourism which in turn enhanced their livelihoods. There is a strong aspect of cementing private protected area social responsibility which strengthens interaction and cooperation between the local community and the nature reserve. Likewise for ecotourism and conservation to develop at MNR, another stakeholder observed, *“there is need to work hand in hand with their local community”* (Stakeholder 2). Therefore the respondents felt that the approach is potentially sustainable and has prospects of being successful, provided possible challenges are anticipated and strategically mitigated.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.0 INTRODUCTION

This chapter discusses the results just presented and concludes the study. It also offers recommendations for policy and future research. As a recap, the aim of the study was to explore the applicability of nexus thinking (NT) among conservation, local livelihoods and ecotourism development using MNR in Botswana as a case study using a mixed methods research design. The chapter is therefore arranged into four sections namely: section 5.1, overall discussion of the results of the research study, starting with a sub-section on demographics; section 5.2, conclusions of the study and, lastly, section 5.3, recommendations for policy and further research.

5.1 DISCUSSION

5.1.1 Demographics

Based on sample data, Mokolodi local community still has a large population of elderly people. This could be viewed as a knowledge bank of rich traditional knowledge that can be tapped and utilized for various purposes. For instance, traditional and cultural dance groups guided by the elderly could be established which could showcase the community's activities at MNR for remuneration. This would not only promote ecotourism but also improve local livelihoods. This is indeed already the case. Furthermore, the observed age difference or gap could be due to economic reasons since young people might have out-migrated to urban areas in search of better employment opportunities and modern lifestyles. The MNR sample, on the other hand, shows that the organization has a youthful leadership that has the potential to generate desired results in respect of conservation and ecotourism. The study findings also show that the majority of the stakeholders interviewed were above 50 years, with a first degree and or a master's qualification. This could show that the gathered data was sought from an enlightened set of key stakeholders with arguably relevant and reliable information for the study because of their relevant education and/or experience. Although the chief and the village development committee (VDC) officer possessed minimal formal education they, however, jointly presented reliable and relevant information about conservation, ecotourism and even the genealogy of their people and traditional lineage. The findings from the study noted a gender bias or disparity in managerial positions both in private and government institutions. This can be due to inadequate women empowerment.

5.1.2 Characteristics of Conservation, Ecotourism and local Livelihoods in and around Mokolodi Nature Reserve

The research explored the applicability of Nexus Thinking to private protected areas surrounded by a local community. MNR was the private protected area and Mokolodi community was the surrounding local community (cf. Figure 1.1). The linkage analysis involved conservation, ecotourism and livelihoods. The nexus conceptual framework model was used as a guide (cf. Figure. 2.2). The first part of the study established the different characteristics of conservation, ecotourism and local livelihoods in and around MNR. The results of the research survey from both MNR and the local community reveal that within the Private Protected Area, there is a wide range of conservation related activities. These activities were animal patrols, vegetation inventory, animal census (cf. section 4.2). Animal patrols in particular ensured that injured animals are rescued in time and are brought to live in the animal sanctuary whilst they are recovering (cf. Figures 4.1. and 4.2). The animal sanctuary provides the necessary support and protection to the animals. The findings show that these activities provide employment opportunities to the local community and MNR prioritizes the local residents of Mokolodi Community for these jobs. This finding is logical considering that employment has a potential role to create a strong relationship between the parties, and in turn promote positive local attitudes towards conservation and ecotourism in, MNR. The positive relationship between MNR and the local community is sensible because substantial employment opportunities for the local people would mean that residents would be more supportive of anti-poaching measures, environmental awareness campaigns and other supportive ecotourism initiatives at MNR. At the moment, 80% of the workforce at MNR came from the local community (MNR, 2016-17).

The study further explored key activities of ecotourism at MNR. The established activities were tour guiding services, monitoring of the behavior of tourists and maintaining an acceptable number of tourists in the park per day (cf. paragraph 4.2.2). These activities promote conservation of biodiversity and improve ecotourism development as tourists favor visiting areas thriving in biodiversity. This finding would make sense considering that monitoring tourists' behavior and maintaining an appropriate number of tourists in the park not only minimize the impact of people on the natural environment but would also be a measure to secure conservation of the natural environment (Stronza & Pegas, 2008). Similarly, various studies (Page & Dowling, 2002; Scheyvens, 1999) have shown that the

strength of ecotourism is premised on its minimal negative impacts on the environment. Consequently, the ultimate goal is to develop mutual linkages among the local communities, MNR and the natural ecosystem that are self-sustainable, efficient and self-sufficient to curb poverty and degradation of natural resources.

The study also explored livelihood activities of the local community proximate to MNR. The established livelihood activities included cattle rearing, poultry, sheep rearing and goats rearing (cf. Table 4.5). These activities are traditional and an alternative source of income for the local community, complementing modern livelihood sources (cf. Figure 4.7). Furthermore goods and services from local livelihood activities increase interaction, mutual relationship and co-existence between the local community and MNR. Equally so, residents' support for MNR increases with economic benefits. This positive relationship analogy is sensible as the increase in benefits accrued to the residents, enhances commitment by the local people to conservation and ecotourism development initiatives at MNR. Indeed, as noted under subsection 2.3.2 in Chapter 2, environmental (biodiversity) conservation is at the core of MNR's existence and accrued economic benefits for the local community, from cultural activities such as traditional dance (cf. Figure 4.9) and traditional cuisine from the local community guest house (cf. Figure 4.10), encourage residents to rally behind any conservation initiative at MNR. The net result would be thriving biodiversity at MNR which would in turn attract eco-tourists to the park (cf. Figure 4.6). The eco-tourists would then be a source of sustainable income essential to fund conservation and ecotourism activities. Basically, thriving conservation and booming ecotourism at MNR would open up, to the local residents, a wide range of employment opportunities, such as local community traditional dance groups (cf. Figure 4.9), and ultimately improve their livelihoods. Therefore it is important for MNR to engage the local community in conservation and ecotourism activities, and likewise the local community should view MNR positively and work together in a mutual relationship for long term environmental and socio-economic benefits.

5.1.3 The extent of the interdependency among conservation, ecotourism and local livelihoods

The study further sought to determine the extent of the interdependency among conservation, ecotourism and local livelihoods. The variables (income-link, relationship and linkage) statistically established significant positive correlations in this study (cf. Table 4.7). There was a strong positive interdependency between perceived income-link

and linkages (cf. Table 4.7). This finding is logical in view of the fact that the more the employment opportunities available at MNR, the better and more available the jobs for the local residents. This would benefit the local residents economically. In that respect, when residents accrue economic benefits from conservation and ecotourism, they would perceive ecotourism in particular and MNR in general as their source of sustainable livelihood. In this study, about 80% of the workforce at MNR is from the local community (MWF, 2016-17). Employment is viewed as the most tangible and direct benefit the local community has had from MNR and hence the income gained has played an important role in supporting the livelihoods of the local people. Of course more benefits would be realized by people directly attached to MNR; nonetheless, income earned by people working at MNR is spent within the community, indirectly benefiting the whole community. Besides, the incomes of MNR employees benefit both their nuclear and extended families.

There was a strong and statistically significant correlation between perceived income-link and relationship. As the local residents benefit from MNR by showcasing their cultural activities (cf. Figures 4.9 and 4.10), positive mutual relationship between the community and MNR would be developed. This is beside the direct employment opportunities just alluded to. This finding makes sense in that the more and improved the mutual relationship among conservation, ecotourism and livelihoods, the more the benefits accrued to both MNR and local residents. Ultimately, the benefit of the linkage notion would drive the local residents to value conservation of flora and fauna for their economic benefit. Similarly, studies have shown that when local residents benefit from ecotourism in their area, they would naturally develop positive attitudes towards the care of nature and natural environments (Moswete et al., 2012; Snyman, 2013).

5.1.4 Stakeholder perspectives on opportunities and challenges of applying NT

The final research question of the study sought to establish the stakeholder perspectives and opinions on Nexus Thinking – applicability as well as opportunities and challenges of the framework. Generally, the stakeholders portrayed a positive perception of NT and its applicability to Private Protected Areas (PPAs) and Government protected areas (cf. subsection 4.4.2). This finding is logical, considering that the NT model is built upon interaction, involving, engaging, collaboration, entrepreneurship (Bazilian et al., 2011; Hoff, 2011). Furthermore, as presented by the informants, the NT approach is a win-win

solution to socio-economic and ecological challenges (cf. paragraph 4.4.5) – poverty, loss of biodiversity, depletion/degradation of natural resources. This shows that the approach can be utilized for the sustainability of both nature and humans. Generally, the majority of the informants were of the view that the NT approach would be of great benefit not only to PPAs' flora and fauna but also to the adjacent local communities (cf. sub-section 4.4.2). The benefits cited by the informants include employment creation, education enhancement, better rangeland management, conservation of biodiversity, sustainable utilization of natural resources and improvement of social amenities (cf. sub-section 4.4.2). However, some of the stakeholders were pessimistic about the NT framework, as they felt that it was rather abstract and that there was need for time to further refine the concept (cf. sub-section 4.4.3). Nonetheless, the majority of informants was optimistic, positive and considered the framework as noble, practical and interactive.

However, few informants expressed concerns on the potential challenges of adopting the NT framework (these are change of administration, unwillingness by the new owners of the Private Protected Area to adopt the framework, the impact of climate change and related natural disasters such as cyclones, heat waves and earthquakes) (cf. sub-section 4.4.4). Be that as it may, past studies have shown that even if local residents are fretful of tourism related challenges in their communities, they still maintain strong support for beneficial park-based tourism development (Dwyer et al., 2007; Moswete, & Thapa, 2015).

Generally, the results of this study portray Nexus Thinking as applicable to conservation, ecotourism and local livelihoods in Private Protected Areas surrounded by communal land use and settlements. The literature review conclusively reveals that the NT approach is a sustainable framework, built upon interaction and allows co-existence of different components (Bazilian et al., 2011; Hoff, 2011). Similarly the respondents noted that the approach is viable, practical and affords the people an opportunity to engage in entrepreneurship activities (cf. Figures 4.9 and 4.10) that help to improve livelihoods as well as conserve flora and fauna. This finding is sensible since the model provides a fundamental connection that shapes the presence and strength of vital activities that benefit biodiversity and promote the socio-economic well-being of local communities and community area environments. The informants, likewise, viewed the approach as innovative, holistic, inclusive and collaborative. This shows that the framework has the potential to transform the livelihoods of the local community, improve conservation and

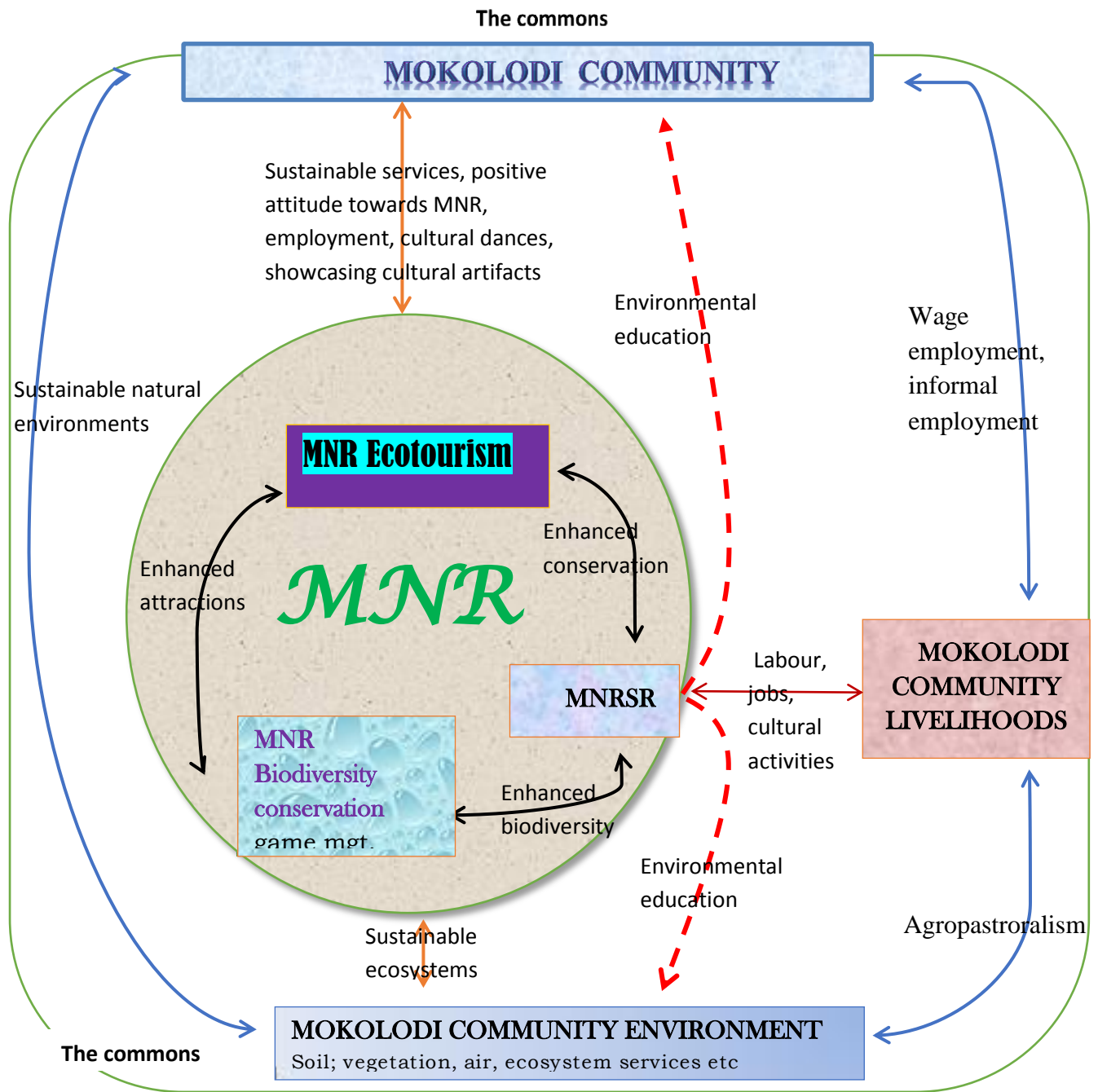
enhance ecotourism. This indicates that the study acknowledges the strength of the NT framework not only in dealing with the socio-economic and ecological challenges (e.g. poverty, loss of biodiversity and environmental degradation) but also in guaranteeing socio-economic and ecological opportunities (e.g. employment, entrepreneurship, social amenities) benefiting both PPAs and proximate communities.

5.2 CONCLUSION

The study used a mixed methods approach involving both males and females of different age groups and different educational background as survey respondents and key informants. The study sample represented a diverse socio-economic and cultural population as well as technocrats from MNR and MNR's stakeholder institutions. Figure 5.1 is a reproduction of Figure 2.2 but this time reflecting the findings of the study. It reflects a transactional enterprise internally driven by biodiversity conservation, ecotourism and MNR social responsibility as a subset within a bigger set (Mokolodi Community's commons). This framework enhances our understanding of the concept of nexus thinking (NT) and applicability to the case study, where different components interdepend with each other as shown by double headed arrows. Environmental education, an outward service, shown by one sided broken arrows, promotes good relations and neighborliness between MNR and the local community. Notably, it is this integration (linkage) that keeps the components thriving. Some of the benefits realized from the linkages are enhanced eco-tourist attraction areas, enhanced ecotourism activities and biodiversity conservation. However, the success of ecotourism and conservation at MNR would not have been possible without the effort and support of Mokolodi Community. In support, similar remarks have also been echoed by Lai, & Nepal (2006) who affirm that ecotourism development and success rely heavily on the support and willingness, by local communities, to participate in park related activities. As reflected in (cf. Figure 5.1) below, MNR provides jobs to the local community and in return local communities provide labour force for ecotourism and conservation related activities. MNR also avails platforms where the local community would showcase their cultural activities such as choral music, traditional dance and artifacts. These activities have become an important livelihood option for Mokolodi community. Reciprocally, the local community has rallied behind conservation and ecotourism activities at MNR. This shows that tourism benefits accrued by the local community motivated the local community to develop positive vision over MNR and the net result: unwavering support by the local community towards MNR's conservation and ecotourism initiatives. It is with no doubt that linkages such as these

have the potential to unlock conservation, ecotourism and livelihoods enterprises or businesses (cf. Figures 4.9 and 4.10) and transform Botswana's livelihoods.

The study adds literature on NT and its application to PPAs and GPAs which is currently very limited. The study afforded environmental planners, government, stakeholders and entrepreneurs insight into the potential of nexus thinking in addressing loss of biodiversity, poverty and environmental degradation. The results of the study further opened up our understanding of the linkage notion and how these connections could be developed to promote sustainable interconnected human-wildlife societies and ecosystems. Generally, based on the study findings, the NT model reflected an innovative way of addressing both human and environmental challenges.



Source: Adapted from Hoff, 2011; Bizikova, et al., (2013)

KEY: MNRSR: Mokolodi Nature Reserve Social Responsibility.

↔ Interdependent linkage - - - - - Outward service

Figure 5.1 Data-informed conceptual framework

5.3 RECOMMENDATIONS

Based on the study's findings, the following recommendations for policy/management action and further research are offered:

5.3.1 Recommendations for policy/management action

- The study selected Mokolodi Village for the social survey. The Village is the only settlement closest to and neighbouring Mokolodi Nature Reserve, making the village a potential business hub tapping from MNR's ecotourism and biodiversity resources. Thus it is recommended that the village should maximize the benefits of their proximity to MNR by engaging with different stakeholders and MNR to solicit for any relevant financial and educational support necessary to start community development projects that help to improve their livelihoods. If this opportunity is realized and utilized, through various forms of engagement, the village will be able develop small scale income generating projects thereby addressing the challenges of unemployment and poverty. Their participation in conservation and ecotourism activities in and out of the park is a milestone toward poverty reduction. Mainstreaming biodiversity conservation in their commons helps to improve the value of such natural resources for the benefit of the natural environment and the local community.
- The second recommendation is based on the finding that corporate social responsibility, coined in this study as private protected area social responsibility, promotes interaction and good relationships between the local village and MNR. That is, MNR may have to develop a local village empowerment program particularly targeting the less privileged - the youth and the women- and equip them with entrepreneurial skills to create small income generating projects at local or village level. The benefits will act as a deterrent against poaching by the local villagers, thereby promoting sustainable biodiversity conservation.
- The study findings show that nexus thinking is an interactive framework that promotes linkages of different components (cf. section 5.1.4). Therefore, since engagement is key in the nexus approach, the study recommends that the Local village and MNR engage in interactive partnership agreements that enhance local village investment, market for local goods and entrepreneurship. The benefits may

include cooperation and collaboration with the local village in addressing any socio-ecological challenge between the local village and MNR.

- The study shows that some PPAs may not be willing to engage local villagers and believe that it is the duty of the local government to address the social challenges of its people as opposed to Private Protected Areas. In that regard, it is recommended that a strategic government policy framework be in place so that there is continuity of development projects and collaboration that enhance togetherness between PPAs and local villages.

5.3.2 Recommendations for future research

- I. The study has found out that poverty is a challenge in the local community. Thus it is recommended that a study be carried out to establish the contribution of private protected areas in Botswana to ending poverty in all its forms in surrounding local villages.
- II. The study was only limited to one private protected area and the adjacent local village. Thus it is recommended that a further research be conducted to make a comparative analysis of the real-time applicability of Nexus Thinking on Private Protected Areas on conservation ecotourism and local livelihoods in two different areas in Botswana.

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APPENDIX 1: INFORMED CONSENT FORM AND WORK PLAN

PROJECT TITLE: **Investigating the applicability of Nexus Thinking to Private Protected Areas (privately owned) ; the case of Mokolodi Nature Reserve, Southeast Botswana.**

Principal Investigator; JAMES MARADZA

Phone number(s): 71224451

Research assistant 1: Kedibone Kido Chaboneka

Research assistant 2: Maduo Disele

What you should know about this research study:

- We give you this informed consent document so that you may read about the purpose, risks, and benefits of this research study.
- You have the right to refuse to take part, or agree to take part now and change your mind later.
- Please review this consent form carefully. Ask any questions before you make a decision.

Your participation is voluntary.

PURPOSE You are being asked to participate in a research study of *my research: Investigating the applicability of interlinkages or interconnectedness (Nexus Thinking) to Private Protected Areas (privately owned); the case of Mokolodi Nature Reserve, Southeast Botswana.* The purpose of the study is to **explore, describe and explain the applicability of interconnected activities (Nexus Thinking) to Private Protected Areas (privately owned); the case of Mokolodi Nature Reserve, Southeast Botswana as a way of improving biodiversity (variety of plant and animal life) conservation as well as the livelihoods of the local people.** You were selected as a possible participant in this study because *we feel that your awareness and experience towards conservation, ecotourism and livelihoods can contribute much to our understanding and knowledge of how conservation, ecotourism and local communities' livelihoods can be improved.* Before you sign this form, please ask any questions on any aspect of this study that is unclear to you. You may take as much time as necessary to think it over.

PROCEDURES AND DURATION If you decide to participate, you will be invited to *participate through an interview or questionnaire for 15-20 minutes and help me to learn more about ecotourism, conservation and livelihoods so as to improve our community and nation at large. You may answer the questionnaire yourself, or it can be read to you and you can say out loud the answer you want me to write down. If you do not wish to answer any of the questions included in the survey, you may skip them and move on to the next question This interview will be guided by myself.*

RISKS AND DISCOMFORTS *There is a risk that you may share some personal or confidential information by chance, or that you may feel uncomfortable talking about some of the topics for example your opinion on sensitive issues such as government policies, community beliefs and norms and legislation towards ecotourism. However, I do not wish for this to happen. You do not have to answer any question or take part in the interview/survey if you feel the question(s) are too personal or if talking about them makes you uncomfortable.)*

BENEFITS AND/OR COMPENSATION *There will be no direct benefit to you per say, but your participation is highly valued as it will help us to find out more information about the the interdependence among conservation, ecotourism and local livelihoods. I am confident that the information will play an important role in decision making, management and monitoring of biodiversity as well as improving the livelihoods of the local people.*

CONFIDENTIALITY The data from this investigation will be private and confidential. *The research being done in the community may draw attention and if you participate you may be asked questions by other people in the community. I will not be sharing information about you to anyone outside of the research team. The information that we collect from this research project will be kept private. Any information about you will not reflect your name whatsoever, but rather we will code it with a number. Only the researchers will know what your number is and we will lock that information up with a lock and key. It will not be shared with or given to anyone except the person who will have access to the information, such as research sponsors if any.* None of these will be used for commercial use.

VOLUNTARY PARTICIPATION: Participation in this study is voluntary. If you decide not to participate in this study, your decision will not affect your future relations with the University of Botswana, its personnel, and associated institutions. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without penalty. Any refusal to observe and meet appointments agreed upon with the central investigator will be considered as implicit withdrawal and therefore will terminate the subject's participation in the investigation without his/her prior request. In the event of incapacity to fulfill the duties agreed upon the subject's participation to this investigation will be terminate without his/her consent.

AUTHORIZATION: You are making a decision whether or not to participate in this study. Your signature indicates that you have read and understood the information provided above, have had all your questions answered, and have decided to participate.

-----	-----
Name of Research Participant (please print)	Date
_____	_____
Signature of Staff Obtaining Consent (Optional)	Date

YOU WILL BE GIVEN A COPY OF THIS CONSENT FORM TO KEEP.

If you have any questions concerning this study or consent form beyond those answered by the investigator, including questions about the research, your rights as a research participant; or if you feel that you have been treated unfairly and would like to talk to someone other than a member of the research team, please feel free to contact the Office of Research and Development, University of Botswana, Phone: Ms Dimpho Njadingwe on 355-2900, E-mail: research@mopipi.ub.bw, Telefax:[0267]395-75.

Table 7: Research Timeline

	Aug 2017		Sep 201 7	Oct 201 7	Nov 2017				Dec 2017			
	1 st wk	4 th wk	1- 4 th wk	4th Wk	1st Wk	2n d W k	3rd Wk	4th Wk	1st Wk	2nd Wk	3rd Wk	4th Wk
Writing proposal												
	Mar ch20 18	Ap ril 201 8		Ma y 201 8	June 2018				July 2018			
					1st Wk	2n d W k	3rd Wk	4th Wk	1st Wk	2nd Wk	3rd Wk	4th Wk
Presentat ion												
Data collectio n												
Data coding and analysis												
1 st thesis draft												
Submission												
Addressing comment												
2 nd thesis draft submission												
Final Submission												

(author's construction)

ACTIVITY (MOJOR COMPONENTS)	DETAILED DESCRIPTION OF ACTIVITY BREAKDOWN	Cost (BWP)
Conduct field work household questionnaire survey on the selected community around the study site – Mokolodi Nature Reserve – Mokolodi Village to establish characteristics of local livelihoods and the related linkages among conservation and ecotourism.	Design a data collection instrument for recording data. Equip research assistants with the appropriate information for the activity Reward research assistants allowance during fieldwork survey Transport and other travel expenses Telecommunication expenses Printing and photocopying expenses Computer data entry procedure Analysis of collected data and run of raw output to check consistency, Report preparation	P 200.00 P 150.00 P2 000.00 P1 600.00 P 100.00 P 400.00 P 500.00 P 500.00 P5 450.00
Undertaking social survey using Mokolodi Nature Reserve questionnaire survey on employees of the MNR to establish characteristics of ecotourism and the related linkages among conservation and livelihoods.	Design and test data collection instrument for the questionnaire Design, prepare and administer questionnaires of employees from MNR Transport and other travel expenses Telecommunication expenses Printing and photocopying expenses Entering data into the computer Data analysis and validation , Report preparation	P1000.00 P 650.00 P 500.00 P 600.00 P 500.00 P 500.00 P1500.00 P5 250.00
Collect data through Key Informants Interviews from Key Informants to establish the stakeholder’s perspectives on the benefits and challenges of applying nexus thinking to the relationship among conservation, ecotourism and livelihoods	Design, prepare and administer data collection from sampled informants Compilation of data collected through Key informant guide for key informants Reviewing and analyzing data collected, producing tables, graphs, pie charts and maps, Printing and photocopying expenses, Report preparation	P1 000.00 P 500.00 P 250.00 P 300.00 P 450.00 P2 500.00
	TOTAL	P13 200.00

Source: Author’s construction

Arable Farming

Traditional herbs

Livestock rearing

Other (specify)

7 Has Mokolodi Nature Reserve been beneficial to you? YES/NO: -----

If yes, in what way to:

You or household.....

.....

The community.....

.....

If no why not.....

8. Which livestock activity best describes your means of livelihoods?

Cattle rearing

Poultry

Sheep rearing

Goats rearing

other

None/ not applicable

9. Is your means of income in any way connected or linked to Mokolodi Nature Reserve?

Not all slightly moderately strongly

Please explain your answer.....

.....

10. Who else is benefiting from your activity mentioned in (Point 8)?

None MNR The government Batswana All

Please explain your answer

11. Which activities have you been involved in at Mokolodi Nature Reserve?

Fencing repairing

Tour guiding

Educational services

Cultural activities services

Other specify

Research questions about Linkages between the PPA and the Local Community

12. Do you agree that these activities create a mutual relationship between the community, natural environment and ecotourism?

Strongly Disagree Disagree Neutral Agree Strongly Agree

Please explain your answer:

13. Do you agree that working in a linkage or connected framework between the community and MNR is necessary for sustainable conservation of biodiversity and improvement of your livelihoods?

Strongly Agree Agree Neutral Disagree Strongly Disagree

Please explain your answer

14. What are the challenges you are facing towards improving conservation and livelihoods and ecotourism in your community?

15. How best can we support MNR as a protected area?

APPENDIX 3: QUESTIONNAIRE FOR (MNR SENIOR /MANAGEMENT) STAFF
To the Respondent,

I am a graduate student from University of Botswana (UB) undertaking Masters of Science in Environmental Science; in this regard I am kindly requesting you to participate in this research by taking part in this key informant interview. The sole purpose of this document is to help in collecting information for the study problem titled “The Conservation-ecotourism-livelihoods nexus (interconnectedness or interlinkages): the case of Mokolodi Nature Reserve” This instrument’s aim is none other than to facilitate a research project and this is purely an academic exercise to improve and enhance our understanding of the environment; the source of our livelihoods. The information obtained from informants or from observation will be strictly confidential.

PART ONE: GENERAL INFORMATION

Please put an (X) indicate your choice of answer

1. Sex MALE
- FEMALE
- 2 Age
- 18 - 27 28- 37 38 – 47 48 and above
- 3 Educational status
- Primary Secondary Certificate Diploma Degree Masters PhD
-
- 4 Employment
- Full time Part time
-
5. If employed indicate your work and rank/position/title
-

Research questions about Conservation related activities at MNR

6. How long have you served MNR in your capacity?

-
7. Do you carry animal patrols? YES / NO
8. If yes to Question 7, why?
9. If no to Question 7, why not?.....
10. How often do you carry out animal patrols?
 Daily Weekly Fortnightly Monthly Yearly
 Other (specify).....
11. How often do you carry out animal census?
 Not at all yearly every 2 years every 3 years every 4 years
 Other (specify).....
12. Vegetation inventory frequency is important to monitor the vegetation of the environment?
 Strongly Disagree Disagree Neutral Agree Strongly Agree
 Please explain your answer.....
13. Have these conservation activities improved biodiversity Conservation at MNR?
 Not at all Slightly Moderate Above average Significantly
 Please explain your answer.....

Research questions about Tourism related activities at MNR

14. Do you provide tour guiding services at MNR? YES / NO
 If yes to Question 14, why?
 And If no to Question 14, why not?.....
15. Do you monitor the behavior of tourists at MNR? YES / NO
 If yes to Question 15, why?
 And If no to Question 14, why not?.....
16. How many visitors do you allow entry to the reserve per day
 0-10 11-30 31-50 51- 80 81- 100 above
 100

17. MNR ecotourism activities have improved the conservation and management of resources

Strongly Disagree	disagree	Not Sure	Agree	Strongly agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please explain your answer.....

18. Have MNR activities improved the flow of tourists to MNR (Statistics of tourists over the past ten years)

19. How are the local communities around MNR benefiting from ecotourism and conservation?

20. Do you think MNR has improved the socio-economic situation in the surrounding local communities? If yes, in which ways? If no, what are the challenges?

Research questions about the Linkages related activities at MNR

21. Do you agree that a holistic and interdependence approach can have desirable effect in dealing with the challenges of conservation, ecotourism and livelihoods?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22. How best can you enhance such a holistic and interdependence approach?

APPENDIX 4: INTERVIEW GUIDE FOR KEY INFORMANT INTERVIEWS (STAKEHOLDERS)

To the Respondent,

I am a graduate student from University of Botswana (UB) undertaking Masters of Science in Environmental Science; in this regard I am kindly requesting you to participate in this research by taking part in this key informant interview. The sole purpose of this document is to help in collecting information for the study problem titled “The Conservation-ecotourism-livelihoods nexus (interconnectedness or interlinkages): the case of Mokolodi Nature Reserve” This instrument’s aim is none other than to facilitate a research project and this is purely an academic exercise to improve and enhance our understanding of the environment; the source of our livelihoods. The information obtained from informants or from observation will be strictly confidential.

Key Informant guide questions on Stakeholder perspectives on the opportunities and challenges of applying NT

1. Sex
2. How old are you?
3. what is the level of your education?
4. Are you employed permanently or part time?
5. What is your rank/work/position/title at your work place?
6. How long have you been in employment?
7. Do you agree that poverty is a challenge in most rural communities in the country?
8. How best do you think poverty can be addressed in local communities surrounding privately owned, non-profit making protected areas?
9. Do you agree that a holistic or interconnected approach would help to improve conservation of the natural environment as well as improve local livelihoods? Why do you agree?
10. Nexus thinking (interconnectedness or interlinkages) is one way that captures the interactive, connection and linkage notion effect that characterizes cooperation, coordination, coherence, interdependence by increasing synergies and promoting resource security for sustainable development. In your own perspective do you perceive Nexus thinking (interconnectedness or interlinkages) as a sustainable framework especially involving privately owned areas like MNR?
11. Do you agree that there are opportunities in using the interconnectedness or interlinkages (nexus thinking) approach? Why do you think so?

12. In your opinion do you feel that there are challenges in adopting and applying the interconnectedness or interlinkages (nexus thinking) approach?
13. What are the foreseeable challenges of the approach?
14. Do you recommend adoption of this interconnectedness or interlinkages framework? Please elaborate on your answer.