

UNIVERSITY OF GHANA

DEPARTMENT OF GEOGRAPHY AND RESOURCE DEVELOPMENT

**PERCEIVED RISKS AND MANAGEMENT STRATEGIES IN PROTECTED
AREAS- THE CASE OF KYABOBO NATIONAL PARK IN THE NKWANTA
SOUTH DISTRICT, GHANA**



BY

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DECLARATION

I, Christian Emmanuel Bruku, declare that this research and its entire contents represent my own work. I remain answerable to every question pertaining to this work and acknowledged all secondary sources in the list of references. No part whatsoever has been presented to any other Institution for the award of degree.

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DEDICATION

I dedicate this thesis to the glory of God for his grace and mercies that guided me through this journey. To my lovely mother Miss. Mercy Anyomi for her support in diverse ways to make this MPhil studies a success.



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LIST OF ACRONYMS AND ABBREVIATIONS

CRMCs	Community Resource Management Committees
GIS	Geographic Information Systems
GPS	Geographic Positioning System
IUCN	International Union for the Conservation of Nature
KNP	Kyabobo National Park
KNPDP	Kyabobo National Park Development Project
KYAMAB	Kyabobo Management Advisory Board
NADMO	National Disaster Management Organization
NGO(s)	Non-Governmental Organization(s)
NHIS	National Health Insurance Scheme
NTFP(s)	Non Timber Forest Product(s)
PA(s)	Protected Area(s)
PAM	Protected Area Management
PMT	Protection Motivation Theory
RS	Remote Sensing
SPSS	Statistical Package for Social Science
USGS	United States Geological Survey
WPAs	Wildlife Protected Areas
WCPA	World Commission on Protected Areas

ABSTRACT

The goal of preserving biodiversity for the benefit of present society and posterity have driven the creation of Protected Areas (PA) across the world. Yet, satiating conservation and protecting livelihoods of local people have been a challenge to protected area management. The incentive to protect livelihoods and avoid alienation from PAs have led to local people's indulgence in illegal activities. This pose risks to the very survival of PAs. Like other parts of the world, PAs in Ghana have been plagued with illegal activities that threaten their existence. The objective of the study was to examine the perceived risks and management strategies in PAs with Kyabobo National Park (KNP) as a case study.

The study used a mixed method strategy to gather quantitative and qualitative data. The multistage sampling procedure was used to solicit the views of 200 households using a questionnaire. Also, interviews with 9 stakeholders provided crucial qualitative data. In addition to basic statistical tools, Remote Sensing (RS) and Geographic Information Systems (GIS) software was used to carefully analyse livelihood and ecological risk in the study area.

Major findings of the study reveal that the creation of the KNP has caused livelihood discomforts through loss of farmlands, denied access to forest resources, and destruction of crops by wild animals. In addition, the failure of establishing alternative livelihood opportunities has aggravated the severity of the risks on livelihoods of local people. Thus local people have resorted to re-invasion of the PA as a coping strategy through illegal logging, poaching, and the collection of other Non-Timber Forest Products like honey.

Even though the management of the KNP had adopted some protectionist strategies like restricted access to park resources, it is observed that the prevalence of underlying

factors like limited livelihood options made the enforcement of such management strategies difficult. The study therefore recommends an inclusive management approach involving both local people and institutions to the protection of the KNP to abate accumulating risks. In addition, promoting Public-Private Partnership (PPP) policy is likely to help abate the numerous vulnerabilities, provide alternative livelihoods, and consequently mitigate risk-generating activities.



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CHAPTER ONE

GENERAL INTRODUCTION

1.0 Introduction

Tourist destinations throughout the world continue to be transformed by investments in tourism. According to the United Nations World Tourism Organization (UNWTO) (2014), the tourism industry is a major contributor to development through revenue generation, job creation and infrastructural development. Despite occasional shocks associated with the industry, global international tourist arrivals continue to increase from 25 million in 1950, 278 million in 1980, 528 million in 1995, and 1087 million in 2013 (UNWTO, 2014). Several authors (Pantelescu, 2012; Minciu, 2004; Holloway, 2002; Middleton and Clark, 2001; Vellas and Becherel, 1999) have identified tourism as a panacea for social and economic development globally. Richardson (2010) acknowledged that tourism is the utmost source of external income for developing countries after petroleum. According to Ashley et al, (2007), developing countries have thus accepted tourism as a remedy towards poverty reduction.

The nexus between tourism and Protected Areas (PAs) over the years has increased due to an overall expansion of the scope of tourism, coupled with the growing interest among tourists to discern more about the unadulterated and traditional legacy of the destinations they visit (Sluis et al., 2007). Nonetheless, touristic activities that depend on the natural milieu most often than not exerts stresses on the very resources on which they rely (Akyeampong and Asiedu, 2008). This induce risks in the protected areas and the services they offer. Thus, in as much as there is a global concern about the nexus between tourism and protected areas, there is an equal attention being drawn to issues of ecological and livelihood risks that are increasingly becoming popular in such

conserved areas. McFarlane and Witson (2008) defined ecological risks as threats to the health and productivity of species and ecosystems. These are largely anthropogenic activities such as pollution, poaching and illegal logging. Livelihood risks according to Clements et al., (2014) are the costs that protected areas bring to the livelihoods of people in fringe communities. Wittimyer et al., (2008) identified loss of rights, exclusion from natural resources, and displacement from traditional lands as typical examples of livelihood risks faced by residents within these protected areas.

From a global perspective, it is identified that despite the implementation of several conservation approaches, the Global Outlook (GO) shows that biodiversity loss from protected areas has persisted (Muhumuza & Balkwill, 2013). Many PAs are experiencing degradation of suitable habitats and increased forest loss due to anthropogenic activities, including conflict-related resettlement schemes (Nampindo, 2014). The International Union for the Conservation of Nature (IUCN) and World Commission on Protected Areas (WCPA), revealed that wildlife and the poaching of timber is getting more organized, universal and ruthless (IUCN & WCPA, 2013). Furthermore, PA staffs and their families are often intimidated, sometimes harassed and killed (Sam, 2010). Consequently, fringe communities suffer pressures, disturbances and loss of natural assets from community reserves (Murthi & Buyck, 2014). It is reckoned that PAs are additionally exposed by fragile jurisdictional procedures that fail to indict those caught in illegal wildlife trade even when they are apprehended (Mohammed, 2014).

The issue of ecological and livelihood risks in protected areas of the developing world and Africa specifically do not vary much from global contexts. Wapalila (2008) in a study of Mikumi National Park in Tanzania found that human-wildlife conflict in and around PAs in developing countries have increased and led to adverse impacts on

peoples` livelihoods. Nana and Tchamadeu (2014) in a related study on Mount Cameroon National Park found that poaching of the park animals continue to increase despite steps by authorities to stop such activities. Related studies on protected areas in Ghana has been conducted. Ayivor (2007) examined policy implementation in protected watershed areas in Digya National Park and found that there is increasing conflict between the local people and the park managers over access to resources of the park. Opong (2007) also examined wildlife conservation and livelihood options in Kakum National Park and established that poaching is a major factor accounting for the reduction in the faunal composition of the park.

This study sought to add to these earlier studies on PAs by examining from an inverse-directional perspective risks posed to the ecosystem on one hand, and risks posed to the livelihoods of people in fringe communities on the other hand. It is expected that through this study a broader illumination of ecological and livelihood risks in protected areas will be explored so as to inform current and future management interventions on PAs.

1.1 Problem Statement

The potentials of protected areas (PAs) to tourism growth, and development of destination areas have become progressively significant in recent years (Akyeampong and Asiedu, 2008; Ceballos-Lascurain, 1996). Chevalier and Milburn (2015) noted that if managed effectively, PAs are able to function as profitable establishments, providing monetarist and non-monetarist benefits to augment development. Notwithstanding the benefits that Protected Areas (PAs) offer, the activities undertaken in these conserved areas often lead to the depletion of the biological resources. These activities pose risks which are either direct or indirect to the protected area.

Wachinger & Renn (2010) define risk as the likelihood of an adverse effect resulting from an event or an activity. Studies on risks in protected areas involve an inverse-directional approach involving an analysis of ecological and livelihood risks. McFarlane & Witson (2008) define ecological risks as threats to the health and productivity of species and ecosystems. They argue that ecological risks are caused by human activities. Some of these ecological risks include: poaching, bushfires, illegal logging, pollution of habitat with solid and liquid waste, settlement expansion, and sometimes activities of tourists like continuous trampling on young plants and dumping of plastic, cans and other wastes.

It is also noteworthy that studies on risks in protected areas do not only focus on the activities that endanger the ecosystem but also, pressures that the establishment of the ecosystem places on the livelihoods of people in fringe communities of these conserved areas. Some of these risks that the established protected areas pose to livelihoods include: loss of rights and exclusion from natural resources (Wittemyer et al., 2008); displacement of local people (Jiren et al., 2012); and crop raiding by herbivores (Gillingham & Lee, 2003, as cited in Vedeld et al., 2012).

In Ghana, some studies on risks in protected areas have been done. A study by Ayivor (2007) on policy implementation in protected watershed areas in Digya National Park revealed a conflict between local people and park managers in accessing resources of the park. Oppong (2007) also examined wildlife conservation and livelihood options in the Kakum National Park and established poaching as a factor accounting for the reduction in the faunal composition in protected areas. Ankomah (2012) further examined and found out that illegal logging accounted for the depletion of forests in the Bobri and Oboyow forest reserves in Ghana.

The Kyabobo National Park (KNP) is the newest protected area in Ghana (Sluis et al., 2007). It is significant for biological preservation and nature-based tourism, based on regional and national contexts. Like other protected areas, the Kyabobo National Park in Ghana faces similar challenges of ecological and livelihood risks. Notwithstanding this, most of the studies on KNP have rather paid attention to other issues. Sluis et al., (2007) and Bouma (2007) for example explored the potential of tourism in KNP and found that the park offers a high prospect for tourism development. Larsen (2006a) also examined the butterfly composition of the KNP and found that it contains almost 80% of the entire butterfly population in the Volta Region of Ghana. Leache (2005) further conducted a herpetological survey of the KNP and found a high amphibian population around the Shiare area of the park.

With the above established background, it is clear that much of the studies on risks in protected areas in Ghana (Ayivor, 2007; Opong, 2007; Ankomah, 2012) and the KNP (Sluis et al., 2007; Bouma, 2007; Larsen, 2006; Leache, 2005) is unidirectional. That is, the focus of most of these studies has been on the morphology or an aspect of risks, either poaching, logging, or livelihoods threats on surrounding residents. The KNP on the other hand faces a multiplicity of risks that need a more comprehensive attention. This study therefore sought to understand the ecological and livelihood risks in this protected area using an inverse-directional approach, which is risks posed by the surrounding communities on the protected area, and the livelihood threats posed to residents in the fringe communities. This inverse directional analysis of risks in protected areas has received little academic attention, and this study sought to address this problem. In addition, this study sought to examine the factors accounting for the persistence of these livelihood and ecological risks associated with protected areas.

1.2 Research Questions

- i. In what ways have the establishment of the KNP affected the livelihood activities of people residing in the fringe communities of the park?
- ii. What is the range of activities that are undertaken inside and outside the protected area that pose risks/threats to the integrity of the protected area?
- iii. What is the level of effectiveness of the management interventions that have been introduced to address issues of livelihoods and ecological risks in the KNP area?

1.3 Objectives

The broad objective of this research is to investigate the perceived risks to the Kyabobo National Park and Host Communities. The specific objectives include:

1. To examine the socio-economic effects of the Kyabobo National Park on fringe communities
2. To analyse the spatial variations in risks perceived in the study area and the underlying risk factors
3. To assess the effectiveness of the key interventions made towards the management of livelihood and ecological risks in the KNP area

1.4 Hypotheses

In accordance with literature review and aims of this study, the following hypotheses are to be tested:

1. Ho: There is no significant spatial variation in perceived livelihood risks between communities fringing the park

Ha: There is a significant spatial variation in perceived livelihood risks between communities fringing the park

2. Ho: Restricted access is the best ecological risk management strategy in the Kyabobo National Park

Ha: Restricted access is not the best ecological risk management strategy in the Kyabobo National Park.

1.5 Significance of the Study

There have been studies on protected areas in Ghana. However, many of these studies focused on the morphology, tourism potentials, or an aspect of risk, either poaching, logging, or livelihood threats. In particular, very little is known in the study area concerning this important subject matter of ecological and livelihood risks.

Therefore, this study attempts to fill this gap in knowledge by providing insights on the issue of livelihood and ecological risks in protected areas and their fringe communities and the underlying factors that drive the occurrence of these risks. Furthermore, the study provides useful directions for policy makers at local and national level in addressing issues of risks and promoting effective management of protected areas.

1.6 Organization of the Thesis

This study is structured into six chapters. The first chapter provided a general introduction to the study, the problem statement, research questions, objectives and the hypotheses of the study. The chapter concluded with the significance of the study.

The second chapter reviewed related literature on specific themes including the concept of PAs, the nexus between PAs and tourism, national parks as PAs, perceived risks and the management strategies in national park areas. The chapter concluded with a review of the conceptual and theoretical framework guiding the study.

Further, the third chapter examined the Study Area and Methodological issues guiding the study. Specifically, the chapter dwelt on the data collection methods, sampling techniques, sampling size, data sources, and the study area.

The fourth, and fifth chapters essentially delved into the analysis and discussions of data on each objective. Chapter four examined the background characteristics of the respondents and the socioeconomic effects of the KNP on the livelihoods of people in fringe communities. Chapter five was analysed and discussed in two main sections. The first part investigated the perceived risks in the area and the underlying causes of these risks. The second part discussed the risk management strategies in the area. The final chapter presented the summary of the key findings, conclusion and recommendations.

1.7 Chapter Summary

This chapter provided a background of protected areas and the issues surrounding protected area management. The gaps in knowledge which includes the use of inverse directional analysis of risks in protected areas, and the underlying causes of persisting risks in protected areas was identified in the problem statement. The chapter further highlighted the objectives of the study which aimed at exploring the perceived risks in the Kyabobo National Park and its fringe communities. Finally, the hypotheses driving the study was stated.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter provides an overview of existing literature on key concepts and themes underlying the study. The first part was on a brief overview of Protected Areas (PAs). Therefore the chapter explored the concept of risk perception and risk management and linkages as they relate to protected areas. Finally, the Protection Motivation Theory was discussed and the chapter concluded with the formulation of the conceptual framework that guided the conduct of this study.

2.1 General Overview of the Concept of Protected Areas

A protected area is an evidently demarcated geographic space, accepted, dedicated and managed, via legal or other active means, to attain the long term preservation of nature with accompanying bionetwork services and cultural ideals (IUCN, 2014). There are different ways in which protected areas manifest in form including national parks, community conservation areas, wilderness areas, nature reserves, and privately owned reserves (IUCN, 2014). According to IUCN (2014), protected areas have become important components of biodiversity protection, with nearly a total of 200,000 PAs across the world representing 14.6% of the world's terrestrial area and 2.8% of the oceans.

Watson et al., (2014) opine that the growing understanding of the significance of PAs have induced a corresponding proliferation of PAs globally. The collaborative resolutions of governments, donors, and host communities have produced the speedy development of PAs worldwide. In the same light, the expectations placed on PAs to

avert ecosystem fragmentation has increased dramatically according to Watson et al., (2014).

The focus of PAs have broadened over the past decades. According to Watson et al., (2014), PAs are not created only to preserve iconic landscapes and seascapes and to offer habitation for threatened wildlife. They also contribute to the livelihoods of people in host communities, boost the economy of nations, restock fisheries and play a significant stake in the mitigation of, and adaption to, climate change.

According to IUCN (2014), PAs offer drinking water to one in three of the world's 100 largest cities; store equivalent volume of carbon as the tropical rainforests; keep people in good physical shape through the supply of unpolluted water and air, as well as new medications. PAs also provide additional roles of helping to moderate risks of extreme phenomena including floods, storm-surges, drought and rise in sea-level; increase food security by enhancing fisheries and conserving wild crops; and providing homes, employments and means of support to millions of people around the world (Stolton et al., 2008). According to the Secretariat of the Convention on Biological Diversity (CDB) (2008), PAs also convey remarkable environmental, divine, cultural and scientific gains to society.

In certain developing countries, the proceeds connected with PAs is of national worth. In Rwanda for instance, Watson et al., (2014) noted that tourism-induced revenue from visits to mountain gorillas inside Volcanoes National Park constitute the nation's major source of foreign exchange, generating US\$ 200 million yearly.

2.2 Governance of Protected Areas (PAs)

Several PAs currently have management systems that involve native communities and wilfully seek out to balance conservation with livelihoods (Watson et al, 2014). Despite the advancements made in PAM, Newmark (2008) opined that conservation areas in Africa are getting isolated due to habitat depletion, fences and road, as well as poaching and diseases. These developments have sparked concerns on PA governance. Graham et al., (2003) noted that PA governance encompasses the structure, processes and the traditions that define the way power and responsibilities are executed, as well as how stakeholders are involved in decision making with regards to specific PAs.

Lockwood (2010) reckons that the previously dominant top-down model of state-ownership has been augmented by collaborative management, the involvement of host communities, as well as partnership arrangements. Controls and duties related to PAs even though still vested in governments and their agencies, have seen NGOs, and local people working hand in hand through effective partnerships (Lockwood, 2010). Instituting and upholding good governance across the varied management types is thus important for the advancement of PAs. Good governance is a necessary condition for operational administration. This is critical towards obtaining communal and political support vital to the development, and more importantly, the survival of the world's PA system (Lockwood, 2010).

CBD (2008) opine that as the population of the world increases, and there is corresponding increase in the demand for natural resources, PAs will be more threatened. More so, whether or not these areas enjoy protection or not, they will progressively be bedevilled with more external threats that are tough to control. These include climate change, growth beyond confines, challenges with water and pollution, invasive species and episodic wildlife migration (CBD, 2008).

2.3 Exploring the Nexus Between Protected Areas and Tourism

The use of parks as PAs is an important societal activity in countries such as Canada and USA (Eagles et al., 2000). Partnership between the tourism industry and PA agencies are increasingly regarded as being a way of inspiring more participation by the private sector as well as the local communities in PAs, improving tourism opportunities and garnering much needed resources for PAM (Moore et al., 2009).

Moore et al., (2009) opine that the fusion of tourism-based activities with natural resource management induces manifold benefits. Xu et al., (2009) alludes to the opinion above by Moore et al., (2009) stating that ecotourism plays an imperative part in establishing advantageous connections between local people, and PAs. Boo (1990) cited in Xu et al., (2009) reckons that PAs are often being considered as important tourist destinations due to its naturalness and its hub of resources that are of good touristic value.

Xu et al., (2009) further opine that the allure of tourism in the light of conservation and development in PAs is that, in theory, it can deliver local economic gains and also sustain conservation systems through less-destructive and non-consumptive usage of resources. Thus, the link between people, parks, and tourism has received momentous consideration in modern times, chiefly in developing countries where connections have been drawn with sustainable growth initiatives, PA preservation, and growth schemes of local communities (Ceballos-Lascurain, 1993; Nenon and Durst, 1993).

The incongruity concerning concept and practice of tourism in PAs however affirms the intricacy in its management and therefore requires evaluation of ecotourism in PAs to detect the factors hampering the achievement of its goals (Xu et al., 2009). Due to exceptional natural resources in PAs, tourism revenue is the main source of funds for

PAM and improving local people`s economic status (Xu et al., 2009). Unlike other industries and human activities, tourism in PAs has unique characteristics that make it a potential positive force (Leung et al., 2015). Tourism operations, and to a lesser extent, recreational visitation, involves multiple sectors and can generate revenues in support of local and regional, and sometimes national economy. As such, tourism industry influences politics and public policies about the future of PAs (Leung et al., 2015). The importance of tourism in PA conservation has been recognized in the past few world parks congresses and world conservation congresses (Leung et al., 2015).

Notwithstanding its conservational significance, tourism in PAs however does not always provide such ideal relationships when threatened by destructive, natural, and socio-economic circumstances. Notwithstanding the prominence of tourism to the natural environment, coastal and marine tourism areas for instance are susceptible to rapid and unplanned development. Mismanaged tourist activities can result in site dilapidation and a consequent waning in visitor numbers (Commonwealth of Australia, 2003). The continuation of enquiry into the economic worth of parks, according to CRC (2008), is critical to unearthing its value to the tourism industry and underlines its significance to the wider economy of communities and nations.

2.4 Overview of Protected Areas in Ghana

UICN/PACO (2010) notes that Ghana is very rich with diverse ecosystems and this has resulted in a high level of diversity of flora and fauna species in the country. The demarcation of forest areas for protection has a long history in Ghana. Traditional councils in historical times do set aside forests as sacred grooves which are protected by strict traditional customs. Teye (2013) notes that colonial and post independent successive governments have embraced the need to protect the forest areas of Ghana, and have thus put in place important legislations and policies to achieve this feat.

Ayivor (2007) noted that Ghana's policy formulations and implementation of policies on environment gained state attention after the 1992 summit in Rio. The regulations on PAs in the country was subsequently reinforced and supporting institutions and agencies were subsequently established. One of such agencies which is a key stakeholder is the Wildlife Division. Jachmann (2008) opined that Wildlife Officers including a senior officer, a protection officer in charge of law enforcement, and wildlife rangers making a hierarchical team are the major actors in the management of such PAs.

UICN/PACO (2010) identified twenty one (21) Wildlife Protected Areas (WPAs) in Ghana which amounted to a total of 1,347,600ha of the country's land. These PA network includes 7 National Parks, 6 Resource Reserves, 2 Wildlife Sanctuaries, 1 Strict Nature Reserve and 5 Coastal Wetlands. UICN/PACO (2010) further noted that some of the PAs in Ghana serve as cultural and spiritual entities with sanctuaries and sacred grooves. Some also contain aesthetic attractions with notable examples being the Bamboo Cathedral and Rapids in Ankasa; Waterfalls and Caves in Bomfobiri.

Teye (2013) noted that Ghana's forests are however subject to a lot of activities which pose risks to their sustenance and vitality. UICN/PACO (2010) explains that WPAs in Ghana are subject to threats such as poaching, bushfires and land conversion caused by agricultural activities within and around PA boundaries.

2.5 Overview of Forest and Wildlife Policies in Ghana

The history of forest policies and resources management in Ghana dates back to 1906 (Boon et al, 2009). Ghana Forestry Commission (1994) notes that forest resource policies have provided for the creation of forest estates as well as promoting public education and research on forests. Among the numerous forest and resources policies

include: Forest Commission Act of 1960; forest improvement fund Act of 1960; Concessions Act of 1962; Forest ordinance for the protection of forests including reserves of 1972; Trees and timber (chain saw operation) regulation of 1983; Administration of land (amendment) degree of 1984; Forest products inspection Bureau Law of 1985; Forest protection (amendment) Law of 1986; Control and prevention of bushfires Law of 1990 and Trees and timber (chain saw operation) regulation of 1991 as guides for forests resources management in the country Forest (Ghana Forestry Commission 1994).

Ankomah (2012) expounded that the main policy thrusts of the 1994 policy were environmental protection, sustainable production and use of forest and wildlife resources, involvement of local people in management and benefit sharing, institutional restructuring and promotion of research and human resource development. In spite of this, Boon et al (2009) opine that the destruction of the natural forests continues at an alarming rate of 2% per annum.

Recently, Ghana`s Forest and Wildlife Policy was revised in 2011 and approved in 2012 with the aim of conserving and sustainably developing the forest and wildlife resources of the country and maintaining environmental stability (The REDD Desk, 2017). The revised policy according to the Ministry of Lands and Natural Resources (2012) is also to ensure continuous flow of optimum benefits and welfare from the forest sector to the livelihoods of all Ghanaians. The stated objectives of the policy are to manage and enhance the ecological integrity of Ghana`s forest, savannah, wetlands and other ecosystems; to promote the rehabilitation and restoration of degraded landscapes through plantations development and community forestry; to promote the development of viable forest and wildlife based industries and livelihoods; and to promote training,

research and technology development that supports sustainable forest management (The REDD Desk, 2017).

a careful review of the current policy shows that it provides room for effectiveness and efficiency in the sense that, it engaged multi-sectoral approaches to planning and management of forest and wildlife resources and gives credence to multi-stakeholder interests in forest and wildlife management, thus providing a common motive to protect, manage and resources for the common good of all Ghanaians. Despite its strengths, the current policy can be critiqued on the basis that it did not take into consideration the provision of “better” economic alternatives for communities that depend on the forest to enhance their livelihoods. Furthermore, it places much emphasis on timber production to the neglect of Non-Timber Forest Products (NTFPs) which are a major component of the forest and on which many fringe communities depend. with the existence of this and other gaps in the policy, forest depletion is continue to be a serious problem as communities fight to earn a living from the forest and wildlife reserves in and around them.

2.6 National Parks as Important Protected Areas

National parks are the most extensive type of PAs globally and in Africa with a percentage value of 23% of the total area covered by PAs worldwide (Muhumuza & Balkwill, 2013). National parks fall within category II of the IUCN categories of PAs. The motive for the establishment of National parks according to Muhumuza & Balkwill (2013) are to: safeguard the biological integrity of bionetworks for present and posterity; eliminate misuse that is damaging to the purposes of demarcation of the area; and offer a base for spiritual, scientific, educational, recreational, and tourist prospects, all of which must be ecologically and culturally friendly.

The value of parks spans the arenas of environment, community, health and economic benefits (Parks Forum, 2008). Conservation in National parks is done through two main approaches including the protection approach, which targets exclusion of activities from National parks except for tourism, and the community-based conservation approach which was proposed to address the challenges associated with eliminating human activities from the frontiers of parks (Muhumuza & Balkwill, 2013).

Several national parks contain private land and non-park economic tasks that can interfere with management purposes. The amount and multiplicity of risks hinge on the degree to which the boundary of a newly established park enfolds hitherto settled lands and economic development (Dilsaver & Wyckoff, 2005). Such demarcation issues continue to hinder National park management in recent times.

2.7 Historical Background of the Kyabobo National Park (KNP)

The Kyabobo National Park is one of the newest additions to the Protected Areas of Ghana. Even though there has been some studies on the park, very little information has been provided in the literature regarding the historical background of the park. Notwithstanding this limitation, this aspect of the review relied on the few existing literature in providing a discussion on the historical background of the Kyabobo National Park.

The establishment of national parks and conservation in general in Ghana has a long history. However, efforts towards biological conservation received a massive boost in March, 1988 when the government at the time spearheaded the crusade to conserve biodiversity. Ghana became a signatory to the Convention on Biological Diversity (CBD) in 1992. Based on that, there has been the use of both in-situ (sacred-groves and

protected areas) and ex-situ (gene banks, zoological and botanical gardens) methodologies in promoting conservation across the country.

On the establishment of the Kyabobo National Park, Sluis et al., (2007), noted that preliminary survey was conducted in the area by N. Ankudey for the Wildlife Division (WD) in 1989. This preliminary survey formed part of a ten-year gestation to define the suitability of the area for demarcation as a national park (Larsen, 2006a). In 1993, an executive instrument (E.I. 20 of 16/09/1993) was passed and this legalized the area as a national park (Sluis et al, 2007). The boundary of the Kyabobo National Park have witnessed two re-demarcation exercises in 1995 and 1999. This came about due to increasing agitation from local people concerning the loss of farmlands. However, since the last re-demarcation exercise in 1999, there hasn't been any further boundary alterations. Notwithstanding this, there is still dissenting views especially from the Shiare community concerning the boundary of the park which they argue is disadvantageous to them.

Larsen (2006a) noted that the Kyabobo National Park adjoins the Fazao-Malkafassa National Park in Togo, and is close to the German colonial station of Bismarckburg. Linkages with German researches in Bismarckburg have given the Kyabobo National Park a strong historical link which had driven visitation to the park by many German tourists in the past. In one of the early studies on the park by Bowes-Lyon (1998), it is found that there is a strong spiritual attachment to the Kyabobo National Park through the Shiare village. Bowes-Lyon (1998) noted that Shiare which is one the fringe communities continues to be controlled by a powerful and influential cult, with pilgrims from across West Africa coming to consult "Brukung", the traditional god. Bowes-Lyon (1998) further noted that the Kyabobo National Park until recently boasts about trading truckloads of bush meat such as bushbuck, duiker and bush pig. Thus, current

issues of poaching can be traced to this historical background of prominent trading in bush meat in the area.

The Kyabobo National Park area has been marked by frustrations and tensions between government and local people (Bowes-Lyon, 1998). Ayivor et al., (2013) noted that two park guards of the Kyabobo National Park were killed by assailants over a boundary dispute in 2006. Though the issue of tensions may have reduced, such assassinations and agitations shows that issues concerning the management of the park is far from a consensus. Nonetheless, the Wildlife Division (WD) works informally with surrounding villages with the Senior Wildlife Officer in charge of maintaining effective communication between local participants and park management.

In all issues regarding park management, Boyes-Lyon (1998) noted that decision making concerning the Kyabobo National Park is quite complicated with many different people trying to influence outcomes. As a result of potential government control of local natural resources (Land and Wildlife), the communities viewed the park as a threat to both their culture and future income-generating possibilities.

2.8 Exploring the Concept of Risk Perception

Eiser et al., (2012) notes that the conception of risk is a principal concern for policy in areas including environment, technology, health, finance and security. Risk as a concept has been defined differently by different scholars. According to Renn (2008), the lexicon risk is aptly expounded as the probable spreading of adverse effects, nevertheless the daily use of risk has diverse connotations. Wachinger & Renn (2010) opine that in social contexts, risk refers to the possibility of an adversative effect ensuing from an event or an activity, rather than an opportunity for desired consequences. Slovic &

Weber (2002) noted that, in the domain of social science analysis however, the notion of objective characterization of risk is rejected.

According to (Renn, 2008, cited in Wachinger and Renn, 2010), there are two approaches to the study of risk perception including the realist approach and the constructivist approach. Realist according to Rosa (2008) argue that there is the existence of an outside objective world with risks that one can identify and acknowledge. Wachinger & Renn (2010) noted that the solutions of complications of discernment of risks are simply ones of availability of information and a greater understanding of the risk.

Jasanoff (1998) however noted that Constructivists refer to risk as not objective but rather subjective and socially constructed. Researchers from both epistemological viewpoints however, come to an agreement on the fact that people`s risk assessments are unsurprisingly independent, depending on a range of socio-demographic and personal factors such as gender, education, knowledge, experience, culture, values, social norms, attitudes and beliefs (Shakya, 2011).

A significant facet of risk is its accumulative nature when exposure to a threat transpires recurrently over time. In their article ‘rating the risks’, Slovic et al (1982) stated that people respond differently to the hazards they perceive. This underscores the importance of risk perception in effective risk management strategies. Espiner (2001) agrees with the significance of risk perception as a panacea to governing the behaviour of individuals. This view is further agreed upon by the National Safety Council (2014) that understanding risk and how different people perceive it is an important step towards the creation of awareness and risk mitigation programs.

Paolini et al., (2012) identified two broad classes of perceived risks namely natural and man-made risks. In as much as these natural and anthropogenic risks exist, understanding the linkages between such risks and its perception in PAs and in fringe communities of PAs is a rudimentary step to fulfilling risk mitigation strategies and enhancing sustainability of PAs across the world.

2.9 Linkages Between National Parks, Fringe Communities, and Perceived Risks

Membership of community, beliefs and value systems, as well as the experiences of people all shape the understanding of risks and epitomizes normative sentiments of how the social order should operate (Rickard, 2014). The operation of societies around national parks has greater implications for their perception of risks from park and their activities that poses risks to parks. Masuda & Garvin (2006), argued that perceived risks manifested as threats to the ways of life of people including their sense of belonging and well-being. Baxter (2009), further noted that the risk perceptions springing from a shared sense of place may isolate insiders from outsiders, thereby contributing to certain attitudes, behaviours, and cultural characteristics of those who share similar experiences of residing in a particular place from those who do not.

Elucidating on the issues of perceived risks around National Parks, (Harterter & Goldman, 2011, as cited in Feretti, 2013) noted that households surrounding national parks especially those nearest to park boundaries, often bear the greatest cost of conservation and are more likely to be disproportionately burdened by park-associated losses. Naughton-Treves et al., (as cited in Feretti, 2013) noted that households nearest park boundaries, are often financially unable to move away, lack access to social services like healthcare and are less likely to feel benefitted by the park than those that

live farther away. Broadly, the risks posed to National parks and their surrounding communities can be categorized into ecological risks and livelihood risks.

2.9.1 Ecological Risks

McFarlane & Witson (2008) define ecological risks as threats to the well-being and efficiency of species and biomes. Exploring ecological risks in Canada`s National parks, McFarlane & Witson (2008) explained that conventionally, ecological risk in Canada`s national parks was linked to human activities including developmental and industrial pressures. McFarlane & Witson (2008) noted however that, substantial efforts dedicated to comprehending ecosystem risk has concentrated on the natural sciences with less focus accorded to understanding the human facets of risk management.

In addition to this, risks to environmental systems have been fixated on anthropogenic sources encompassing issues of air pollution, toxic waste, and population growth. Notwithstanding this, there are natural sources of hazards to ecological systems such as floods, droughts and earthquakes. Furthermore, natural events tend to receive lesser general risk ratings compared to man-made hazards. Also, it is perceived that natural phenomena have less effects on ecological systems, species as well as humans. Notwithstanding this, McFarlane & Witson (2008) elucidates that assessments of perceived ecological risks have encompassed scopes related to impacts, both on the ecosystem and on humans. Thus, understanding the effects of ecosystem conservation on human livelihoods is an equally significant aspect of PA literature.

2.9.2 Livelihood Risks

The proliferation of National parks and other forms of PAs around the world has prompted extensive investigation into the fates of the livelihoods of people around such PAs. Baird & Leslie (2013) explained that national parks have disrupted established

relationships between fringe communities and PA resources. This has led to the introduction of new constraints in most cases, but also opportunities to local people in fringe areas of such PAs in other cases.

Clements et al., (2014) however noted that although the gains from biodiversity and ecosystems are well documented globally, the costs to PAs may be inexplicably borne by local people. Wittimyer et al., (2008) opined that the explosion of land protection has adversely impacted the livelihoods of fringe communities through loss of rights, marginalisation from natural resources, as well as displacement from traditional lands. Ghimire (1994) and Suwanmanee (2009) lay further credence to the above negative effect of PAs on livelihoods noting that there is enough evidence to the viewpoint that the establishment of PAs in numerous instances led to displacement of local people and disrupted their livelihoods when access to vital resources were denied.

In a study on Sri Phangnga National Park, Jiren et al., (2012) found that the negative impact of the national park on the livelihood of both insiders and outsiders outweighs the positive impacts. Wapalila (2008) in a related study in Mikumi National Park of Tanzania outlined that the small contribution of national parks and other Wildlife Protected Areas (WPAs) in sustaining local livelihoods compared to other land use practices is a big challenge. As a result, local people recognise wildlife conservation as a legal responsibility, and not a socio-economic benefit and prospect (Shemwetta & Kideghesho, 2000, as cited in Wapalila, 2008). Wapalila (2008) further explained that management strategies most often than not trigger local livelihoods to conflict with conservation because people are obliged to totally depend on the areas outside parks.

According to Wapalila (2008), there are several instances of human-wildlife conflicts in and around PAs in developing countries and this has caused adverse impact on

peoples livelihoods. Brockington & Igoe (2006) explicates that local communities typically gets little compensations but considerable costs related to ejection and marginalization, damages to crops and livestock, and a general deprivation of resource access due to conservation activities.

Gillingham & Lee (as cited in Vedeld et al., 2012), further clarify that apart from threats to resources, various risks emanate from animals in national parks, through herbivores that graze and raid crops, and carnivores that prey on livestock outside park boundaries, often resulting in loss of lives and livelihood of local people. Baird & Leslie (2013) explained that land-use restraints can lead to reductions in the expected returns from agricultural-based livelihood activities, while national park expansion and further marginalization from access to forage and water could ruthlessly undermine pastoralist activities by taking resources out of production. According to Coad et al., (2008), the net livelihood effects of PAs are quite difficult to discern, due to the lack of standardized evaluation strategies. Nonetheless, substantial costs can be borne by communities if effective management, formal capabilities, and concerns of governance and tenure are left unresolved (Coad et al., 2008).

Cernea (1997), identified eight main risks to displaced people, many of which are also relevant to communities living around PAs. These include: loss of lands for farming and settlement building; loss of jobs even in instances where resettlement schemes provide some level of temporal jobs; homelessness through the loss of family homes, physical houses and cultural spaces; marginalization; food insecurity due to decline in food production; intensified morbidity and mortality; loss of access to communal resources such as forests, water, waste lands and cultural sites; and social disarticulation including disruption to social institutions and disempowerment.

Redford & Fearn (2007) therefore agree that in some cases, PAs have been responsible for shrinking the livelihood prospects of people living in and near such conservations. Bunting et al., (2013) opine that, in terms of risk perception, people in similar environmental settings could perceive livelihood risks differently due to the fact that one`s livelihood may not be built on a single variable. Thus, the risk management strategies taken by an individual may differ from that of another person based on the different risks they individually perceive from PAs.

2.10 Approaches to Risk Management in PAs and Fringe Communities

Given the apparent prevalence of risk in societies, it is inexorable that some substantial effort should go into scheming or limiting exposure to it. Risk management is applied to a plethora of situations in which undesired or unexpected outcomes could be significant. According to Waller (1994), risk management approach for preservation issues typically comprises four simple steps including: detecting the risks; evaluating the enormity of the risk; finding probable risk minimization strategies; and appraising the costs and benefits allied with each strategy. According to Paolini et al., (2012), if causalities of risks are unearthed, their potential effects measured, and responses are planned to curtail their impact, risks can be reduced- if not completely removed.

Hardaker et al., (2004) identified key livelihood risk management strategies adopted by farmers as avoidance of financial problems, obtaining off-farm income, and the diversification of production. OECD (2009) as cited in Wauters et al., (2014), also noted that risk management typically involve risk reduction, risk mitigation and risk coping. Broadly, risk management in PAs involves all or part of the following elements: risk identification, risk monitoring, risk communication, risk evaluation, risk impact assessment, and risk mitigation.

2.10.1 Risk Identification

Carey et al., (2005) opines that the detection and prioritizing of natural values and the probable risks to them is a crucial part of the managing of parks and reserves. Game et al., (2013) concurred to this viewpoint noting that without risk identification, rigorous risk assessment exercises is of limited value. Carey et al., (2005) further explained that the inability to detect specific hazards would inadvertently result in their omission from additional reflection. This may demean risk management efforts. Hence it is critical that all possible causes of threats be identified, even if only to be subsequently labelled as of low risk (SA/SNZ, 1999). Carey et al., (2005) further clarify that the typical techniques used in identifying risks or hazards include the use of checklists as well as unstructured brainstorming.

2.10.2 Risk Monitoring

Soderlind (2007) define risk monitoring as the tracking of known risks, checking residual risks, detecting new risks, carrying out risk response strategies, and appraising their efficacy during the course of a project life cycle. Specifically, risk monitoring enhances the means of getting the correct information, and timely, to the precise people, such that those people can make the most informed judgments possible. Ranong & Phuenngam (2009) elaborated on the significance of risk monitoring stating that risks need to be examined to guarantee the altering of environment does not vary risk priorities and to ensure that risk management strategies are both efficient in theory and in practice.

Explaining the significance of monitoring in climate change mitigation, FAO (2012) opine that monitoring aids to distinguish changes and assess predispositions in climate related phenomena. Monitoring, however, does not necessarily provide reasons for changes and observed tendencies in phenomena unless previous researches have

established some causal links. Thus, according to FAO (2012), further analysis to establish whether observed tendencies correspond to changes helps to mitigate negative outcomes. In the area of risk management, monitoring have been identified to help promote the ecological integrity of national parks. In its 2011 updated guidelines for ecological integrity, Parks Canada identified monitoring activities as essential for the maintenance or restoration of ecological integrity of national parks (AOG, 2013). The guidelines noted that managers of national park require reliable information in order to comprehend and communicate the form of park environments and evaluate their progress in fulfilling set targets, underscoring the need for effective monitoring in park management (AOG, 2013). With an effective monitoring system, the burgeoning role of risk communication in risk management literature cannot be overlooked.

2.10.3 Risk Communication

Communication does not only involve signal transfer but also the construction of sense. Alyushina & Kucheruk (2010) noted that risk communication is the transferal of information that deals with the presence, the character and form, likelihood, gravity, tolerability, as well as the modalities of neutralization of risk. Alyushina & Kucheruk (2010) again noted that the risk communication process often adopts the usage of multiple messages that expounds on the nature of risk; prompt concern, or reactions to predictable measures regarding the management of this risk.

OECD (2002) as cited in Hampel (2006) distinguished four critical functions of risk communication including: education and enlightenment; risk training and inducement of behavioural changes; confidence in institutions of risk assessment and risk management; and involvement in risk—elated decisions and conflict resolution. According to Hampel (2006), communication relies on common indicators and the comprehension of the key terminologies by the public. Hampel (2006) again clarifies

that risk communication is further in the offing to achieve its targets when the basis is not on the scientific conception of risk in the information domain of communication, but rather when it denotes the public's comprehension of risk.

From a risk management perspective, such communication primarily occurs in the prevention/preparation and the cautionary level of the hazard cycle (Hoppner et al., 2010). In the field of natural hazards, social scientists uphold the view that communication is vital prior to, during and after the occurrence of a hazard (Lindell & Perry, 2004). Terpstra et al., (2009), expounds that national and community level communication strategies do not necessarily serve all the purposes and functions of awareness creation and the taking of interventions to the same extent. There might be a bias towards for example communication to assure safety rather than communication to raise awareness or to assess and evaluate risk situations (Terpstra et al., 2009).

2.10.4 Risk Evaluation

Risk evaluation explains what the projected threat really meant to individuals affected with it. Risk evaluation also mean the unearthing of risk mitigation strategies through establishing of qualitative and/or quantitative relations between benefits and associated risks. According to Burthold (2007), risk evaluation is engrossed with assessing the likelihood and the potential impact risks, taking into account any interdependencies or other factors outside the immediate scope under investigation.

Burthold (2007) explains further that probability is the likelihood of an outcome actually happening, and impact is the evaluated result of that particular consequence essentially coming to actuality. After the potential risks have been identified, evaluating the risk for probability of occurrence and the potential losses it may induce is the succeeding phase in the risk management process. Berg (2010) opine that risk

evaluation is important in that, it provides the opportunity to identify which risks need tolerance, and which ones needed additional control measures to enhance the effectiveness of intervening strategies.

2.10.5 Risk Impact Assessment

According to (Taylor, 2005, as cited in Paolini et al., 2012), risk assessment conjectures imminent threats from probable agents. Risk impact assessment connects with risk evaluation in the risk management system. Furthermore, once risks and their underlying factors are known, the risk impact can be measured based on the chance of the known risk occurring and the sternness of its effect. In addition, Paolini et al., (2012) noted that risk impact assessment is done both on qualitative and quantitative approaches where the qualitative methodology adopts words to describe the enormousness of severity and probability of destruction and the quantitative approach uses numerical values based on scoring system.

Curtis and Carey (2012) indicate that impact assessment also comprise financial, reputational, regulatory, health, safety, security, environmental, employee, customer, and operational impacts. UNDP (2010), noted that assessing risk is critical to decision and policy processes and entails alliance between various parts of society. UNDP (2010) further opine that above and beyond the approximation of losses and impact, risk assessment permits the determination of the tolerable level of risk, defined as the level of losses that is tolerable devoid of destroying lives, personal and national assets.

Placed in the context of national parks, risk impact assessment involves the estimation of possible losses of unprotected populace, assets, services, livelihoods and environment. In this context of perceived risks in National parks areas, risk impact assessment, can therefore be explained as the process of identifying the consequence of

a risk. It is identifying possible constructive or destructive, direct or indirect, short-term or long-term consequences of various threats within the national park enclave to the ecological system (national park) and livelihoods of surrounding communities.

2.10.6 Risk Mitigation

“We must above all, shift from a culture of reaction to a culture of prevention. The humanitarian community does a remarkable job in responding to disaster. But the most important task in the medium, and long-term is to strengthen and broaden programs which reduce the number and cost of disasters in the first place. Prevention is not only more humane than cure, it is also much cheaper” (Kofi Annan in UNEP, 2002, as cited in Stolton et al., 2008).

According to Stolton et al., (2008), mitigation can be defined to mean the actions that offset the effects of risks/threats. Stolton et al., (2008) further expounds that mitigation involves structural and non-structural steps that are taken in time to avert the adverse effects of nature-induced, technological hazards, and environmental degradation. Martin et al., (2009) noted that community involvement is a critical element in risk mitigation. Slovic (1987), and (Mileti & Sorenson, 1987, as cited in Martin et al., 2009) identified four steps in the risk mitigation process including the assessment of risk probabilities; review of risk mitigation behaviours; evaluation of the expected impacts of these behaviours; and deciding on the behaviour to adopt.

Weinstein (as cited in Martin et al., 2009) demonstrates that the consequences of experience with a danger on protective behaviour steered people to see the particular risk as more recurrent and to see themselves as potential future victims, thus increasing their motivation to engage in risk reduction behaviours. Wauters et al., (2014) further

elucidated on risk mitigation noting that it involves strategies that allow the risk to happen, but reduce its impact.

Paolini et al., (2012) identified two broad categories of risk mitigation strategies including preventive (avoid, block, detect) and active (respond, recover) strategies. Paolini et al., (2012) further clarify that the avoidance or elimination strategy involves evading sources and attractants of the agent of deterioration. It is noteworthy that in most instances, blocking the threat is the preferred method of risk mitigation in a national park since avoiding the occurrence does not entirely prevent it. In case of detection, the aim is to perceive the threats prior to it turning into a real event, so that immediate protective actions can be taken. In the case of national parks, an example of a detection process is the installation of monitoring and early warning systems for fire and poaching risks.

According to Paolini et al., (2012), the method of responding involve reacting to the agent of deterioration after presuming its presence. This approach is usually adopted when other methods of control have failed to moderate the risk sufficiently. Recovery as a method of risk mitigation, Paolini et al., (2012) noted, is to convalesce from the agent`s consequence on park or park element by doing actual conservation work on the park. Notwithstanding this, it is however reckoned that for effective control of perceived risks, there is need for the combination of different mitigation strategies. It is also important to consider sustainability and long-term consequence of the choice of method of mitigation strategy in national park management

2.11 Overview of the Protection Motivation Theory (PMT)

In understanding complex issues of risk, Grothmann & Reusswig (2006) opined that the Protection Motivation Theory (PMT) is part of four chief theories adopted in

psychological investigation on health actions. McGuire (1985) notes that in comparison to earlier studies in the field of Geography, the PMT offers an intricate structure for comprehending social behaviour. According to the PMT, peoples` motivation to safeguard themselves from destruction is boosted by four vital perceptions including severity of the risks, the personal susceptibility to the threat, self-efficacy at carrying out the risk-reducing actions, and the response efficacy of the risk-mitigation behaviour (Rogers, 1983).

According to Floyd et al., (2000), the PMT is prearranged along two broad perceptive intermediating processes. These include risk-appraisal process and the coping-appraisal process. The risk-appraisal, Floyd et al., (2000) noted, is an evaluation of one`s capability to handle and fend the danger. Furthermore, coping-appraisal process include efficacy variables and response costs. Response efficacy according to Floyd et al., (2000) is the certainty that the adaptive response will be effective. Furthermore, self-efficacy is the presumed capability of an individual to actually execute the adaptive response. Floyd et al., (2000) again expounded that there are response costs accompanying the taking of adaptive coping responses. Boer and Seydel (1996) noted that protection motivation is an intermediating factor with the function of arousing, sustaining and directing protective actions.

There has been several behavioural studies notably in the West where the PMT has been broadly used as a framework to investigate health-related behaviours (Floyd et al., 2000; Milne, 2000). The theory was used in etiological researches to explore risks and protective behaviours including the use of tobacco (Pechmann et al., 2003; Maddux & Rogers (1983), environmental hazard reduction (Vaughan, 1993), physical activity (Plotnikoff et al., 2010) and cigarette smoking behaviour amongst juveniles in China (MacDonell et al., (2013). Martin et al., (2007) noted that the decision of people to

engage in fire reduction behaviours is amplified by the belief in ones susceptibility to the risk, the acceptance of the severity of the risk, the conviction that one can efficaciously evade the risk, and the conviction that the risk-reduction behaviours are operative means to mitigate the risk of wildfire.

The PMT despite its far-reaching application has some limitations. Key among the criticisms against the PMT is the view that each of the evaluation procedures can be prejudiced by a heuristic judgment. Notwithstanding this, the relevance of the theory is a testimony to its wide inter-disciplinary application.

Bockarjova and Steg (2014) noted that PMT offers a useful framework to expound pro-environmental decisions by using a wide-ranging set of predictors, including the costs and benefits of current (maladaptive) behaviour as well as potential adaptive behaviour. Further, Floyd et al., (2000) explains that the PMT offers an empathetic viewpoint on why behaviour can change when people are confronted with risks. More specifically, the PMT provides a basis for understanding how people appraise or perceive risks and the strategies they adopt to protect themselves against these risks.

2.12 Exploring Perceived Risks and Management Strategies in Kyabobo National Park Through the Protection Motivation Theory

The KNP is one of the PAs in the country. Its establishment has however brought to the fore issues of threats or risks to the livelihoods of the local people on one hand, and the national park on the other hand.

Firstly, appraisal of threats or risks to the livelihoods of the residents reveal that there is denied access to important resources on which the people depend for their livelihoods. There are marked issues of denied access to resources of the park, loss of land and farms, crop damage by wildlife, among others. The vulnerability context of

the situation is emphasized by the high level of poverty, inadequate social and physical infrastructure, and the failure or unsuccessful stories of alternative livelihoods projects. The appraisal of these risks in relation to vulnerabilities of the people obliges the taking of protection motivation measures to secure livelihoods. This explains many maladaptive activities which local people engage in like poaching, illegal entry and harvesting of NTFPs, illegal logging and bushfires.

Secondly, appraisal of threats to the KNP reveals several ecological problems such as poaching, illegal logging and bushfires which pose risks to the sustainability of flora and fauna of the park. There is no fencing of the park and the limited number of park guards patrolling the park leaves the park at the mercies of these illegal activities. Weighing the costs and benefits of protection, the management of the park are confronted with the protection motivation of restricting access to the park or regulating the activities in and around the park.

From both appraised livelihood and ecological risks perspective, there is a motivation to protect a particular interest and the decision thereof meant that trade-offs be made either on the livelihood side or on the conservation side. An integrative approach that provides a protection for both livelihoods and park provides an amicable solution to this appraised risks and offers a positive adaptive behaviour on the part of all stakeholders of the KNP including the local people. An understanding of the key concepts of risks and risk management provides an enhanced clarity of what people perceive as risk and the strategies adopted as protection motivations in the context of protected areas.

2.13 The Risk Management Framework

This study adapted the risk management framework from Paolini et al., (2012) to examine the management of risks to the Kyabobo National Park. The risk management framework consists of two key elements. These include risk identification, and risk mitigation strategies. The proceeding explanations on these two key elements is based on the explanations opined by Paolini et al., (2012).

Firstly, risk identification involves the finding of two key elements namely: what might happen in terms of potential damages (the risk/threat), and the probable cause (agents of deterioration). Paolini et al., (2012) noted that once a threat, as a consequence of an agent, is identified, then finding a mitigation or treatment becomes easier. Therefore, the first step to risk management is the identification of risks and their cause factors.

The second major element in this framework focused on the risk mitigation strategies adopted in managing the identified risks and its cause factors. According to Paolini et al., (2012), risk mitigation strategies are remedial actions taken by managers to control risks that are identified. These mitigation strategies are either preventive, such as avoiding the source of risk, or blocking the risk. The strategy can also be active, such as putting in strategies to recover from the effects of the identified risks. The framework as briefly discussed above has been adapted to suit this study due to variations in risks and management strategies within the framework.

As applied to this study, risk identification examined risks or threats to the Kyabobo National Park and their underlying cause factors. Examples of these risks include: poaching, bushfire, logging, pollution, farming activities, settlement expansion among others. These risks are linked to underlying cause factors such as limited alternative livelihoods for people in fringe communities of the park, population growth, poverty, weak law enforcements on conservation, lack of awareness and tourist activities that

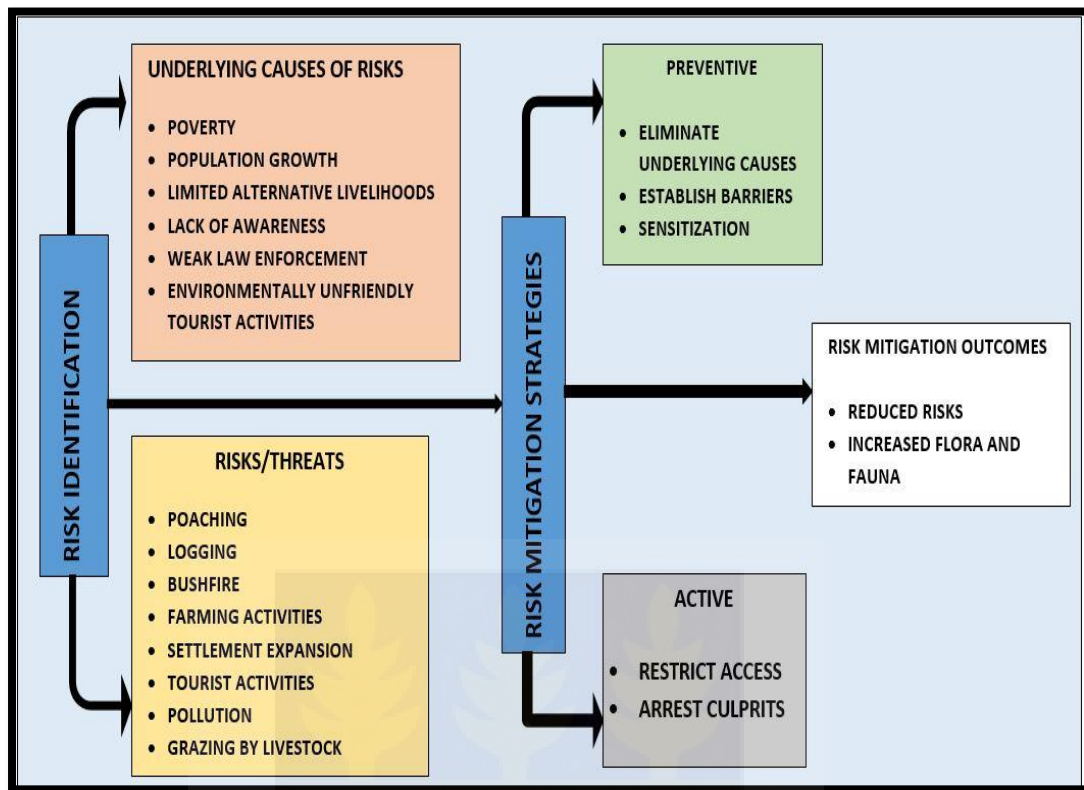
are environmentally unhealthy such as dumping of solid wastes (e.g. plastics, drinking cans).

The risk identification process links to the mitigation strategies adopted to address these risks. The framework thus examined preventive strategies such as engaging in sensitization programmes within the fringe communities, and reducing underlying factors such as the provision of alternative livelihood schemes, and regulation of tourist activities. Secondly, the framework also examined active mitigation strategies such as restricting local people's access to the park, or arresting people who engage in activities that pose threats to the survival of the park. The adoption of these mitigation strategies within the risk management framework will lead to risk mitigation outcomes such as reduced risks, and increased flora and fauna population of the park.

In conclusion, the framework on risk management in the KNP offers a conceptualization of intervening strategies adopted by management to address risks to the park, through the identification of risks and their causes, and the application of mitigation strategies. Figure 2.1 is a diagrammatic representation of the risk management framework.



Figure 2.1: Conceptual Framework on Risk Management in the KNP



Source: Adapted from Paolini et al., (2012)

2.14 The Livelihoods Framework

This study adapted the livelihoods framework from Ellis (2000) to assess livelihood conditions of residents and risks posed to these livelihoods. This livelihoods framework examines the complexity of people's livelihoods and also sought to understand the various dimensions of a person's livelihood, strategies and associated opportunities and constraints. The proceeding definitions on the elements were based on those provided by Ellis (2000).

The Ellis (2000) livelihoods framework consists of three (3) main elements. These include livelihood assets, livelihood strategies/activities and livelihood outcomes. Livelihood assets according to Ellis (2000) refer to the things from which people derive a flow of income or consumption. It also represents things that people invest in so as to increase future flows of income/consumption. On the whole, the more assets someone

has the less vulnerable they are to various risks or shocks. The livelihood assets are conventionally divided into: natural capital, physical capital, human capital, financial capital, and social capital.

Natural capital according to Ellis (2000), comprises of the land, water, and biological resources that are utilized by people to generate means of survival. Natural capital is not static but rather enhanced when brought under human control. A major distinction within natural capital can be made between renewable and non-renewable resources. Renewable resources replenish themselves over time, such as fishery stocks or trees used for firewood. Non-renewable natural capital on the other hand includes resources pertinent to rural livelihoods that can be permanently depleted based on a certain rate of human extraction.

Physical capital according to Ellis (2000), comprises capitals that are created by economic production processes. Buildings, irrigation canals, roads, tools, and machines are some examples of physical capitals/assets. Physical capital in economic terms is defined as a producer good as contrasted to a consumer good. An important class of physical assets that facilitate livelihood diversification are infrastructural assets such as roads, power lines, and water supplies.

Human capital is often regarded as the chief asset possessed by the poor. It refers to the labour available to households: its education, skills, and health. Ellis (2000) noted that, human capital increases by investment in, and training, as well as by the skills acquired through pursuing one or more occupations. The human capital composition of a household changes due to internal demographic factors (births, deaths, marriage, migration) and to deliberate restructuring to meet unexpected events (divorce).

Financial capital according to Ellis (2000), refers to the stocks of money to which households have access. This is chiefly likened to savings, and access to credits in the form of loans. In many societies, the absence of financial markets or distrust of such financial institutions, results in savings being held in other forms. In rural sub-Saharan Africa, the keeping of livestock often plays a critical role as a store of wealth and as a buffer against bad times. While cattle and goats are considerably less liquid as a form of savings than a cash deposit in a rural financial institution, they possess the same attribute when sold.

Social capital relates to the formal and informal social resources that people draw upon in pursuit of their livelihoods. People develop social capital by investing time, effort and other resources in: membership of formal groups or organizations, informal social interactions in and outside the workplace, and relationships of reciprocity including gift exchange and mutual assistance. Social capital allows people to make claims of support and can help in the development of informal safety nets amongst the poor.

The second major element of the framework focused on the livelihood strategies of individuals and societies. The livelihood strategies in this framework refer to activities that focus on increasing the range of assets to which a person or household have access, or increasing access to particular types of capital. For rural people, agriculture and other natural-resource-based activities may play an important role, but households also diversify into other activities which may be linked to agriculture and natural resources.

Finally, livelihood outcomes refers to the negative or positive effects that livelihood strategies can have on livelihood assets. The livelihood outcomes are influenced by risks/shocks that affect livelihood strategies or livelihood assets. The framework as

briefly discussed above has been adapted to suit this study due to variations in the factors that influence the individual elements within the framework.

As applied in this study, natural capital is examined taking into consideration the land resources that the local people have access to. Financial capital looked at the liquid cash or livestock, employments, and access to markets. The social capital is examined taking into account the social cohesion that existed among fringe communities of the park, their cultural connections, and membership of local associations. The human capital looked at the strength and health of local people to engage in livelihood activities, the physical capital explored in this study is the water and housing resources of fringing communities.

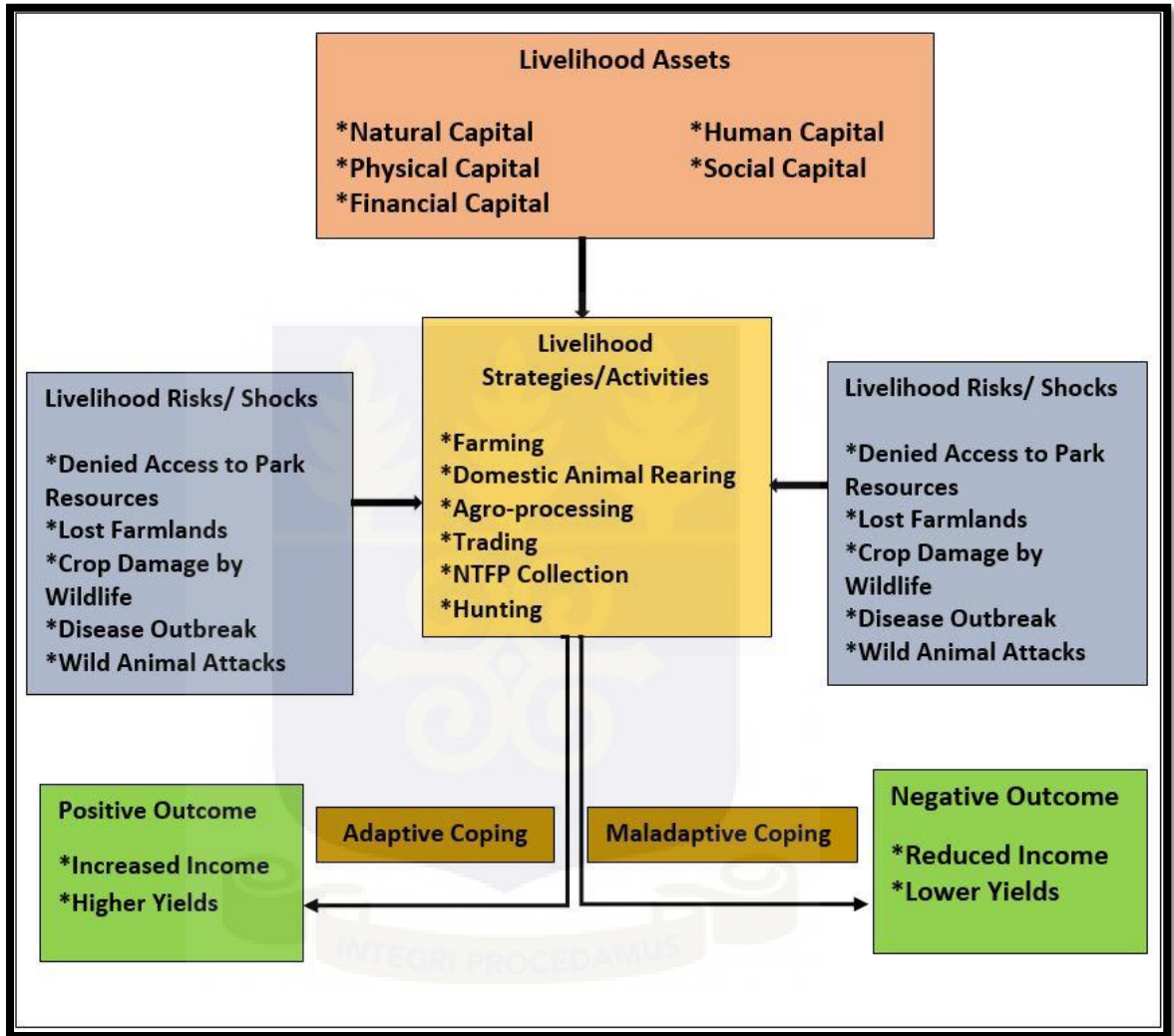
The above mentioned capital links to the livelihood strategies that the people engage in. Some of these livelihood strategies that the local people in the KNP engage in include farming, domestic animal rearing, agro-processing, trading, hunting and Non-Timber Forest Product (NTFP) collection.

The indulgence of local people in these livelihood activities results in livelihood outcomes. However, the nature of the livelihood outcome is not predetermined, but influenced by certain risks or shocks such as denied access to lands, disease outbreaks, crop damages by wildlife among others which affect these livelihood strategies. Therefore the livelihood outcome of an individual or household hinges on the interventions or coping strategies adopted. Adaptive coping results in positive outcomes such as increased income and higher yields whiles maladaptive coping on the other hand results in negative outcomes such as reduced income and lower yields.

In conclusion, the livelihoods framework offers a conceptualization of rural livelihoods and the different variables that shape activities, objectives, and outcomes. As applied

in this study, the livelihoods framework served as a guide to exploring risks to livelihoods of local people. Figure 2.2 is a diagrammatic representation of the livelihoods framework.

Figure 2.2: Conceptual Framework on Livelihoods in the KNP



Source: Adapted from Ellis (2000)

2.15 Chapter Summary

This chapter was devoted to the review of related literature and the theoretical and conceptual frameworks for the study. Specifically, the first part focused on exploring the concept of protected areas and the nexus between protected areas and tourism. Further, the chapter provided an overview of protected areas in Ghana, and discussed

the historical background of the Kyabobo National Park. In addition, the next section of the literature review provided a discussion on the concept of risk perception and tried to relate risk perception in national parks and fringe communities of parks. Furthermore, the issue of risk management in protected areas with a focus on national park was reviewed. The chapter concluded with a discussion of the Protection Motivation Theory (PMT), the linkages between the theory and the issue of risks in the Kyabobo National Park, and the conceptual frameworks for the study.



CHAPTER THREE

STUDY AREA AND METHODOLOGY

3.0 Introduction

This chapter is dedicated to the presentation of background on the geography of the study area and the methodology guiding the study. The chapter is organised into two sections: “A” and “B”. The location and physical characteristics of the study area, the relief and drainage, vegetation and climate, the study population, socio-economic and demographic characteristics were provided in the first section (i.e. A). The second section (i.e. B) of this chapter is on the methodology of the study. Specifically, the methodology delved into the research design, research strategy, data sources, data collection methods, sampling techniques, sample size and data analysis. Also, the chapter provided a methodology on how risk maps and the land cover map were generated using Microsoft Excel, Remote Sensing and Geographic Information Systems tools.

A) THE STUDY AREA

3.1 The Study Location and Physical Characteristics

KNP is the most recent addition to Ghana`s PA system, following a ten year conception period (Larsen, 2006a). It is located in the Nkwanta South District of the Volta Region and lie between the coordinates 8°17' and 8°31'N, and 0°31' and 0°44'E, on the Eastern International Border with the Republic of Togo (Sluis et al, 2007). The Nkwanta South District Assembly (2013) estimates that, the park is the second highest range in the country and covers an area of 340 sq. km. The KNP also shares international border with the much larger Fazao-Malfacassa National Park of Togo covering 1,920 km² (Sluis et al, 2007).

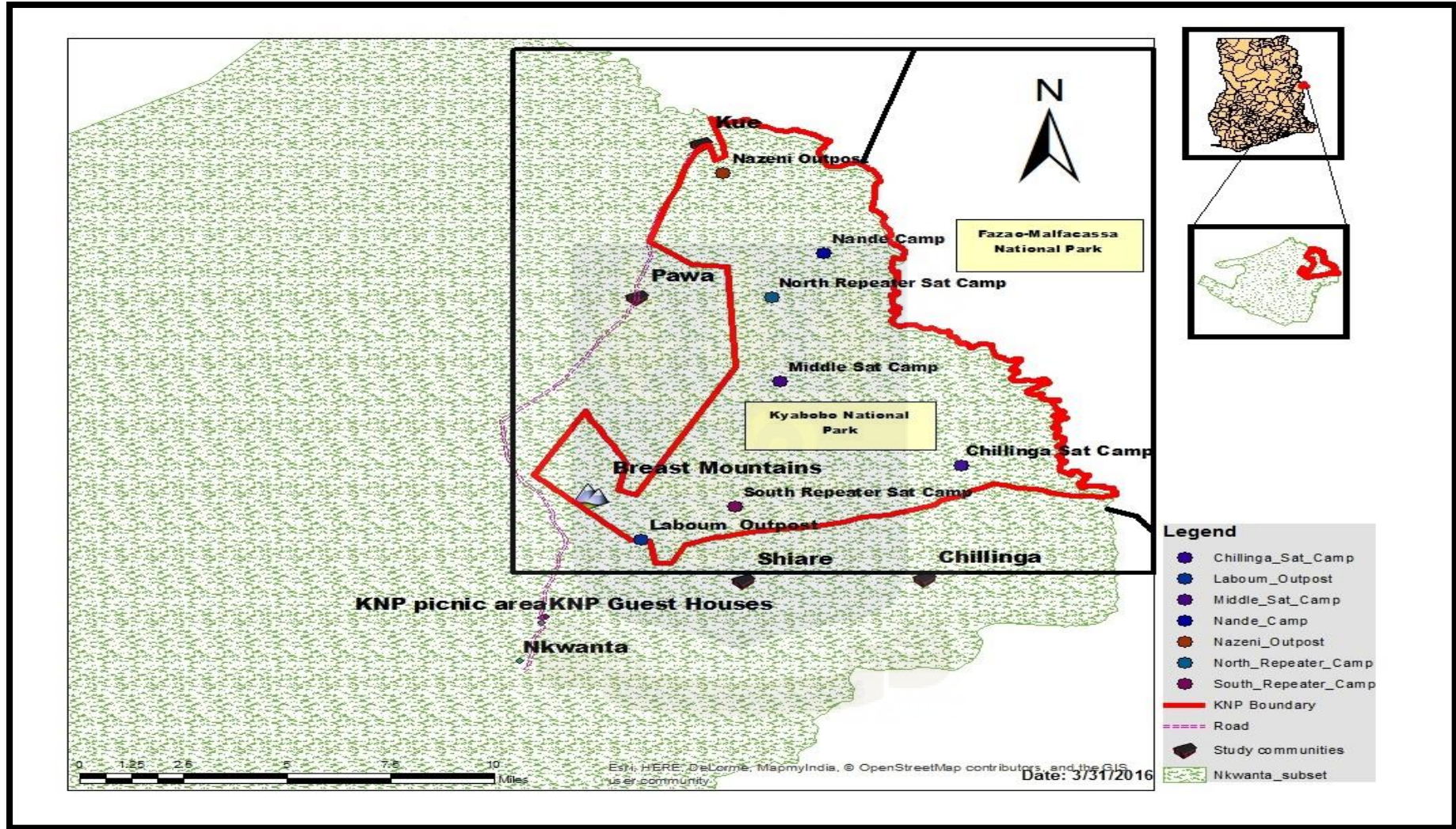


Figure 3.1 Map of Study Area

Author`s Own Construct, 2016.

3.1.1 Relief and Drainage

The topography of the Kyabobo National Park is undulating, with a succession of steep hills running north-south throughout the park (Sluis et al, 2007). Most of the hills are over 800 meters high. The park with the forest reserves are significant catchment areas for Lake Volta, via the Kpassa, Bonakye and Chai rivers (Sluis et al, 2007). The geology of the area is composed of quartzite, sandstone, shale, phyllite, schist and silicified limestone (Sluis et al., 2007).

KNP has a great drainage, with a lot of rivers and streams (Graphic Showbiz, 2007). The Nkwanta South District is drained by some rivers and streams such as Bonakye, Sabon, Kabiti, Kue, and Chai (MOFA, 2015). Some of these rivers, notably, the Kue and Bonakye flows through the park. These rivers according to MOFA (2015) largely take their sources from Buem-Togo ranges on the eastern boarder of the district and flows south-westerly direction into the Oti river which covers about 1% of the surface of the district. The several tributaries of the rivers in the Nkwanta South District act as the main source of drinking and non-drinking water (GSS, 2014). However, most of these streams often dry up during the long dry season which occurs from December to March (GSS, 2014). Furthermore, many smaller streams which provide sources of water to fringe communities flow through the KNP and served as a means by which the local people interacted with the reserve prior to its protection. However, with restricted access to the park, there is no such interaction with the park now. Notwithstanding this, the relief and drainage characteristic of the park provides evidence of the potentials of the area for touristic activities like hiking and swimming.

3.1.2 Vegetation and Climate

A significant attraction that the area offers to naturalists and scientists is that the KNP is located just on the borderline linking the savannah belt and forest zones in Ghana, and where a montage of woodland and forest types amalgamate extensively, at the western edge of the Dahomey Gap (Sluis et al., 2007). Apart from a few ridge tops which are almost bare of trees, the park is generally densely wooded (Leache, 2005). There is also tall evergreen rain forest and semi-evergreen rainforest, as well as dry anogeissus forest and riparian forest (Leache, 2005). Larsen (2006a) notes that the park encompasses typical guinea savannah at the foot of the main ridge of mountains, succeeded by dense guinea savannah woodland, characterized by a tree cover of 40-60%. The abundance of savannah vegetation and grass provides an enabling environment for wildlife to thrive well in the area.

The mean annual rainfall in Nkwanta is 1226 mm (over the last 6 years) most of which falls in June to September. The dry season from October to May is characterized by the hot dry dusty harmattan winds from the Sahara (Sluis et al., 2007). Larsen (2006a) noted that the mountains in and around the park, have to some extent created their own local climatic conditions, which have increased rainfall and provided the basis for forests, even during long spells of very dry conditions during the late Miocene till the late Pleistocene.

A significant conclusion drawn from the vegetation and climatic characteristic of the study area is that the guinea savannah vegetation allows the thriving of livestock through easily access to forage. The climatic conditions are conducive for agriculture. Thus local people engage in farming and livestock rearing as an important aspect of their livelihoods.

3.1.3 The Study Population

Most of the land in the park belongs to the indigenous Akyode people by customary rights. The Akyode towns are Shiare, Chillinga, Kromase, Nyanbong, Gekorong, Abrewanko, Keri and Pawa. Other tribes include the Konkomba, Adele, Ewe, and Kotokoli (Sluis et al., 2007). The population of the District was 117,878 in the year 2010, out of which 58,482 representing 49.6 percent are males while females constitute 50.4 percent (GSS, 2014). In terms of density, with a land surface area of 2,733 square kilometres, the population density of the District was 43.13 persons per square kilometre in the year 2010 (GSS, 2014).

3.1.4 Socio-economic and Demographic Characteristics

There are 18,114 total stocks of houses in the Nkwanta South District, constituting 4.5 percent of the total houses in the Volta Region and 0.5 percent of the national housing stock (GSS, 2014). Mud brick/earth is the main construction material used for the outer walls in the District. The main roofing material is metal sheets. However, thatch/palm leaf or raffia also represent a significant percentage of materials used for roofing in the District (GSS, 2014). The main source of lighting in the district are electricity (37.3%), kerosene lamp (7.5%), and flashlight/torch (25.1%) (GSS, 2014). Fuel wood is the main source of fuel for cooking.

In terms of social infrastructure, there are 69 pre-schools, 87 primary schools, 37 Junior High Schools, and 2 Second Cycle Institutions (GSS, 2014). There are 16 health facilities in the District. Apart from Nkwanta township roads, there are no bitumen surface roads resulting in difficulties in vehicular mobility especially in the rainy season and dusty in the long dry season (GSS, 2014).

Agriculture and forestry are the main economic activities in the Nkwanta South District with minimal activities of manufacturing and service (GSS, 2014). The major economic activities include agriculture and related activities. Most of the economically active population are engaged in farming activities due to the high returns derived from yam production in particular. The Nkwanta South District is one of the leading producers of yam in Ghana (GSS, 2014). Other crops produced in the district include cassava, maize, groundnut, cowpea, rice and sorghum. There is a high concentration of yam buying middlemen in the Nkwanta South District, and their activities offer employment to a sizeable number of people.

In terms of manufacturing, agro-processing is largely limited to gari preparation (GSS, 2014). Most households rear livestock for domestic and commercial purposes. Communities along rivers in the district also engage in some fishing activities to complement their farming activities.

B) THE STUDY METHODOLOGY

3.2 Philosophical Underpinning of the Study

Philosophical worldviews hold an important place in research. Funk (2001) noted that worldviews provide explanations to how people perceive, think, and know aspects of reality. Thus perceptions about the world provide a baseline that guides enquiries into any problem identified by a researcher. Cresswell (2009) identified four broad philosophical worldviews underpinning research. These includes the postpositive, social construction, participatory, and pragmatic worldviews. This study however, adopted the pragmatic worldview to investigate perceived risks and management strategies in the Kyabobo National Park.

According to Suter & Cormier (2012), pragmatism was developed in the late 19th and early 20th century and Kalolo (2015) has noted that the etymological meaning of pragmatism identified it as a practical (action-oriented) approach to finding solutions for existing problems. Cresswell (2009) opine that pragmatism as a worldview arises out of actions, situations, and consequences rather than antecedent conditions. Thus, for the mixed method researcher, pragmatism opens the door to multiple research methods, different worldviews, different assumptions, as well as different forms of data collection and analysis (Cresswell, 2009).

Pragmatic researchers recognize the fact that every method has its limitations and that the different approaches can be complementary. With the freedom to choose the methods, techniques, and procedures that fulfill the exploration of particular problems, Suter & Cormier (2012) noted that the pragmatic philosophy provides a justifiable ground for investigating the complex problems of the environment. The preoccupation of the pragmatic philosophy with a holistic investigation of broad spectrum of social, cultural, natural and historical problems justifies its backing of mixed methods of enquiry.

This study sought to explore perceived risks and management strategies in protected areas. The study adopted the protection motivation theory to provide a guide to investigating perception of ecological and livelihood risks in the KNP. Approaching the study from one approach, either qualitative or quantitative methodology will limit in-depth investigation of the problem. Alternatively, the motivation to protect livelihoods on one hand, and the motivation to preserve the conserved area on the other hand, represent two complex and somewhat contrasting interest. Thus the use of mixed methods underpinned by pragmatic philosophy provided the opportunity to approach

the study from a holistic point of view that offer detailed explanations to the issues of risk in the KNP.

The importance of pragmatism for this study is that as a line of enquiry that helps in exploring ecological and livelihood risks in the KNP, it does not limit the study to a fixed and rigid standpoint, but rather, allows for the gathering of various viewpoints through the use of various methods. Therefore, the researcher was able to investigate perceived risks, and obtain explanation on the underlying causes of such risks from several perspectives.

3.3 Research Design

The research adopted a case study design. Despite the availability of other designs, including the cross-sectional design, the case study design was considered the most appropriate. According to Labaree (2013), the case study design is useful when little is known about an issue or phenomenon. Taking the place specific nature of risks, the case study design provides an appropriate design to explore the issue of perceived risks and management strategies in the KNP. This design helped to explore descriptive issues (what risks?) and explanatory issues (why the risks?) in the study area.

3.4 Research Strategy

The study adopted a mixed method strategy. Cresswell (2009) noted that mixed method research is an approach to inquiry that combines both qualitative and quantitative methodologies within the same research. Cresswell (2009) further opined that the triangulation of these methods ensure that data gathered is complementary and represents reality. According to Driscoll et al., (2007), the mixed method is useful for understanding survey responses, and statistical assessment of patterns of responses.

This study adopted the sequential mixed method strategy (Cresswell, 2009) where issues surrounding risk and risk management emerging from the quantitative survey were integrated into the qualitative investigation for further clarity. Even though Teye (2012) identified the challenge of time and resource constraints as major challenges of the mixed method approach due to the wider scope of issues it covers, the complexity of the phenomena under study makes the mixed method the most appropriate strategy to use.

3.5 Data Sources

The data for the study was basically acquired from both primary and secondary sources. The primary data was obtained through field work in KNP and fringe communities through the administration of questionnaires, in-depth-interviews, participant observation and focus group discussions. Photographs of visible ecological risks such as bushfires, logged trees, and evidence of poaching activities, and the geographic coordinates of these identified risks were also taken to augment the primary data. The questionnaire and interviews basically probed into livelihood activities of local people, activities that threaten the survival of the KNP, livelihood risks that local people perceive from the creation of the KNP and the management interventions that have been instituted so far.

The main source of secondary data for the study was obtained from the head office of the KNP. From this office, patrol data on illegal activities in the park, and information on alternative livelihood activities introduced by the park management in fringe communities of the park was gathered. In addition to this, secondary data was also obtained from literatures within the domain of protected areas and risk studies by way of websites, reports, books, journals and articles, newspapers, brochures, magazines and case studies. The specific secondary data gathered focused on global statistics on

protected areas, emerging ecological challenges in protected areas, and the national policies of Ghana on forest and wildlife. The Statistical division of the Nkwanta South District Assembly also provided data on the population size of the study communities.

3.6 Data Collection Methods

3.6.1 Quantitative Data

The quantitative data for the study was solicited using structured questionnaires. Both close-ended and open-ended questions were included. The questionnaire was organized into three main themes according to the objectives guiding the study. The first theme essentially delved into the background of the respondents and the socio-economic effects of the KNP on their livelihoods. The second part focused on the perception of various risks in the KNP and the fringe communities. The final section delved into the risk management strategies embraced in the study area.

3.6.2 Qualitative Data

The qualitative data for this study was obtained using semi-structured interview guide to conduct in-depth interviews and focus group discussions. The respondents selected for in-depth interview were varied to reflect opinions from both the KNP management perspective, and the perspectives of the local people. Issues discussed focused on the livelihood activities of the people in fringe communities prior to the establishment and protection of the park, and after the establishment and protection of the park, livelihood and ecological risks prevailing in the study area and its associated underlying causes, and the management strategies instituted by major stakeholders to remedy the risks.

3.7 Sampling Technique

The study adopted a four-level multistage sampling technique. The first stage involved the stratification of the study area into two broad strata based on distance from the KNP boundary. The strata comprised of fringe communities that are close to the park and fringe communities that are far from the park. The strata of communities that are close to the KNP were within 0 to 10km from the park boundary and communities beyond 10km from the park boundary fall within the second strata. The reason for the stratification on distance was to investigate spatial variations in the risks perceived in the area. Table 3.1 provides information on the outcome of the stratification of the communities.

Table 3.1: Fringe Communities and Their Distance from the KNP boundary

Community	Distance from Park Boundary
Kue	3km
Odomi	3.7km
Pawa	6.5km
Gekorong	8km
Shiare	15km
Keri	16km
Chillinga	17.8km

Source: Field Survey, 2016

As a result of many communities falling under each of these strata, the second stage adopted a purposive sampling technique to select two communities under each stratum. The communities were selected taking into account their geographical location around the park, the population size, infrastructural development and ethnic mix. The result of the selection is presented in the Table 3.2.

Table 3.2: Selected Study Communities and their Distance from KNP Boundary

Communities within 10km of park boundary		Communities beyond 10km of park boundary	
Kue	3km	SHIARE	15km
Pawa	6.5km	CHILLINGA	17.8km

Source: Field Survey, 2016

Due to the pattern of the settlements which at some places were nucleated, and others scattered, the next stage adopted cluster sampling in order to put each community into defined blocks using the major road dividing the community as the major boundary. Thus each community had two clusters, eastern cluster and western cluster. Within each cluster, systematic sampling was used to select the houses for the questionnaire administration. Every third house after the first was selected until the quota for that cluster was met. In the instance where there was no one in the selected house at the time of entry, the next house is selected.

At the final stage, household heads were selected as respondents to the questionnaire. In a situation where there was more than one household in a house, balloting was done to choose one to represent all the households in the structure. In cases where the household heads were absent at the time of the study, any available household member above 18 years who had stayed in the community for at least 10 years was considered. The justification for this consideration is that the 10-year duration is adequate for the respondent to have gained knowledge on the area and thus be able to respond to issues on livelihoods and risks in and around the KNP area.

3.8 Sample Sizes

3.8.1 Sample Size for Quantitative Data

A total of 200 questionnaires were administered in the four (4) fringe communities of the KNP. The study obtained the 2015 projected population of these communities from the District Planning Coordinating Unit (DPCU). Using the projected population of these communities, proportional allocation of sample sizes to each community was undertaken. The Yamane (1967:886) formula for sample size calculation, $n = \frac{N}{1 + Ne^2}$, where n = sample size, N = the population size, and e = level of precision, was used to determine the sample size for the study. Using proportional allocation, the sample size for the study for each community was determined using the formula, $S = \frac{CP}{TP} * n$, where S = sample size, CP = Population of community, TP = Total population and n = sample size. From the computation, the final sample sizes for the communities is presented in table 3.3 below:

Table 3.3: Summary of Sample Size for Study Communities

Community	Population	Sample Size
Kue	2,125	53
Pawa	775	19
Shiare	2,803	70
Chillinga	2,304	58
Total	8,007	200

Source: Field Survey, 2016

3.8.2 Sample Size for Qualitative Data

A total of nine (9) stakeholders were selected and interviewed during the field work. The stakeholders included Kyabobo National Park Manager, the Law Enforcement Officer of KNP, the Administrator of KNP, Park Guard of KNP, member of Nkwanta South District sub-committee on tourism, District Director of Forest Services Commission, and the Assembly members for Shiare-Kromase, North Keri, and Chillinga electoral area. According to Teye (2012), interviews does not necessarily

require a large sample size, rather, emphasis is placed on the process and meaning, and in-depth knowledge on the topic.

3.9 Participant Observation

It is very difficult for a researcher to isolate him or herself completely from a field work. Indeed, (Strong 1974, as cited in Odikro, 2014) noted that it is unrealistic for a researcher not to exert any influence in the field during data gathering. Thus, almost all researchers will to some extent include personal observation to their data collection activities in order to cross check key issues that unfold in literature and during survey. In this regard, the researcher engaged in a non-participatory field observation especially on the aspect of socio-economic characteristics of respondents, the tourism attractions, and the activities that induce risks to the KNP. Relevant observations made during ground-trotting of the park area helped in the researcher's appraisal of perceived risks posed to the conservation area in particular.

3.10 Data Analysis

Different tools were used to analyse the data. Data from the household survey was entered into the Statistical Package for Social Sciences (SPSS) software version 16.0. Statistical analyses such as measures of dispersion (mean, mode) were done for variable such as ecological and livelihood risks, and underlying cause factors of perceived risks. Further, the hypotheses of the study which includes investigating the relationship between variables such as distance and sex on risk perception, were tested using chi square test. Results from cross tabulations between socio-demographic factors and perceived risks, as well as frequencies generated in the SPSS was imported into the Microsoft Excel application to produce pie charts, bar graphs and tables which enhanced the visual presentation of the results. Furthermore, interviews and focus group

discussions were transcribed and data matrix was used to categorize the responses under thematic areas of the study such as socio-demographic and economic background of respondents, perceived livelihood and ecological risks, and risk management strategies in the KNP. Finally, Remote Sensing (RS) and Geographic Information Systems (GIS) data collected were analysed using ArcGIS 10.2 and Envi 4.0 software to produce an ecological risk map and land cover map for the KNP.

3.11 Methodology for Remote Sensing and Geographic Information Systems

The study used the techniques of Remote Sensing (RS) and Geographic Information Systems (GIS) to produce the risk and land cover maps of the KNP. The RS technique involved the acquisition, processing and interpretation of Landsat imageries. The GIS technique involved the collection of point data on risks to the KNP using the Global Positioning System (GPS) which provided the geographic coordinates of identified risks. The procedures led to the production of risk and land cover maps of the KNP.

3.11.1 Livelihood Risk Mapping

Risk mapping requires data on the type and relative importance of threats perceived by individuals in villages around the KNP. Through preliminary survey of the fringe communities, threats to livelihoods were identified and developed into the structured questionnaire during the household survey. Respondents were asked to identify risks to their livelihoods. These livelihood risks included for example denied access to park resources, crop damage by wildlife, and lost farmlands. Furthermore, the respondents were asked to rank the risks in terms of severity using a five-point Likert-scale and these are very high, high, neutral, low, and very low.

In this study, the perceived livelihood risks mapping was approached with the Smith et al, (2000) framework serving as a guide. Perceived sources of livelihood risks for

villagers residing in arid and semi-arid lands of southern Ethiopia and northern Kenya were classified and ordered in Smith et al, (2000). For this study, the Incidence index (I), Severity index (S), and Risk index (R) were calculated for each livelihood risk identified. According to Bunting et al, (2013), the Incidence index gives a measure of the proportion of respondents identifying a particular risk. This was calculated as a proportion of respondents that identify the same risk divided by that population. The Severity index measures the severity of each risk measured from 1 (least severe) to 5 (most severe). The Severity index for the risks to KNP was calculated using the formula:

$$S = [r-1/n-1]*(-1) + 1, \quad (r \text{ is the rank of each response}).$$

Even though the survey did not explicitly ask the respondents to rank the risks in a numbered listing, like the Smith et al, (2000) study, the wording of the question allows one to infer the rank.

Finally, the Risk index (R) was computed using the formula:

$$R = I / (2-S).$$

The higher the R-index, the larger the perceived risk problem. The S-score for each risk was graphed in relation to the I-scores using the Microsoft Excel quick analysis.

3.11.2 Ecological Risk Mapping

This risk mapping involved mapping of threats/risks to the protected elements of the park including various plants and animals. Geographic coordinates of illegal activities identified from the patrol data and through field survey including poaching, bushfires, logging, Gin traps, poaching camps among others were obtained with GPS devices by the park guards through daily patrols of the park. The patrol data for the period 2010-

2015 was entered into Microsoft Excel datasheet. This Excel data was imported and Georeferenced to the Geographic coordinate system of WGS 1984 Meter Grid system using ArcGIS software. The layer was exported and saved as a shapefile which was displayed under the layer panel of the map making interface. The Ghana District shapefile was also added to the table of content of the map interface. The Nkwanta South District was selected out of the other districts by opening the attribute table of the Ghana Districts shapefile and selecting “Nkwanta south”. A new layer was created for it by exporting it into shapefile format.

Furthermore, the shapefile of mapped risks for the year 2010 to 2015 was overlaid on the Nkwanta South District layer. The next process involved using control points to digitize the boundary of the KNP from Google Earth and saving it in KML format. The digitized KML file of the KNP boundary was imported into the Arc Map by using the conversion tool “KML to Layer” under the Arc toolbox. The KML file was Georeferenced and exported as KNP boundary shapefile. Finally, the boundary shapefile was “called into” the Arc Map and superimposed on the district boundary and yearly risks layers. Using the layout view, geographic features were added to the map. These include map title, legend, north arrow, scale, date, time and Author. The map was saved in Jpeg format.

3.11.3 Land Cover Map

To develop the land cover map, Landsat Images were downloaded from USGS website for path/row 193/54 at a 30m spatial resolution. Three scenes were acquired comprising the 2000 Landsat ETM⁺, the 2010 Landsat ETM⁺ and 2015 Landsat ETM⁺. The year 2000 was selected as the starting point because the most recent boundary demarcation of the KNP was configured in 1999, hence, the year-on, 2000 provides a relevant starting point for the land cover assessment. The 2010 image was used because a ten

year interval was sufficient to provide a meaningful significant change analysis. However, the 2015 image was added in order to present the current land cover characteristics of the KNP and provide a useful discussion that epitomizes prevailing land cover characteristics of the reserve. The motive for selecting Landsat images for the study was due to their widespread usage in forest area mappings and more prominently because of their temporal and multispectral characteristics (Chand & Acharya, 2010, as cited in Odikro, 2014).

The images were then stacked using the band combination 5, 4, 3 to produce a composite image. Quinn (2001) notes that the band combination 5, 4, 3 provides the user with a great amount of information and colour contrast. The combination is convenient for vegetation studies and thus appropriate for studying the land cover change of the KNP. The already rectified multi-temporal images were atmospherically corrected to reflectance values and clipped to the extent of the study area. The multi-spectral images were independently classified using an unsupervised classification technique based on ISODATA algorithm. In all, three land cover classes were identified; tree canopy, grassland/shrubs, and cleared/bare land. Area statistics for each land use land cover class was generated and post-classification change determined on a pixel by pixel comparison.

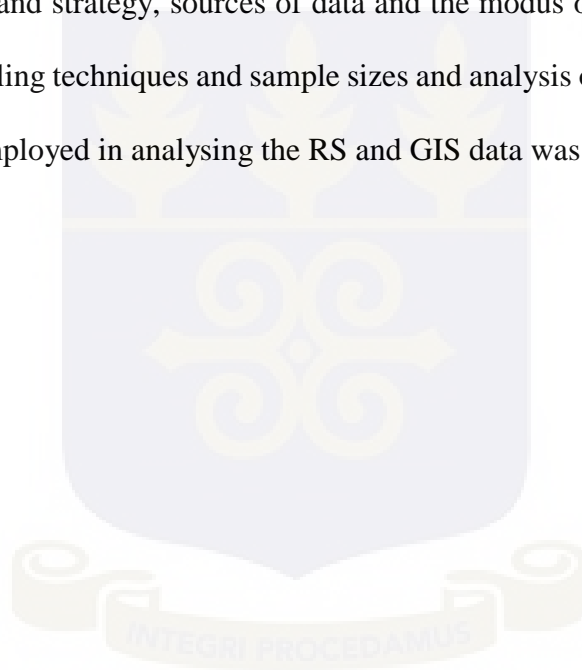
3.12 Limitations of the Study

The limitations of the study includes the constraints of time, material and finance which did not allow the researcher to cover more fringe communities of the KNP. These constraints also militated against the researcher taking extensive patrols with the park guards through the park to be able to better understand the rate of illegal activities within or outside the reserve from an outsider's perspective. However, patrol data on the Kyabobo National Park obtained from the Park administration provided alternative

source for the obtaining of information on illegal activities within and outside the KNP boundary.

3.13 Chapter Summary

This chapter dwelt on the study area and the methodology for the study. The discussion on the study area was on the location, physical and socio-economic characteristics of the fringe communities of the KNP. The methodological issues of the study were discussed in the second section of the chapter. Key areas discussed included the research design and strategy, sources of data and the modus operandi adopted in data collection, sampling techniques and sample sizes and analysis of the data gathered. The methodology employed in analysing the RS and GIS data was also discussed.



CHAPTER FOUR

ANALYSIS AND DISCUSSION OF RESULTS

BACKGROUND CHARACTERISTICS OF RESPONDENTS AND SOCIO-ECONOMIC EFFECTS OF KNP ON FRINGE COMMUNITIES

4.0 Introduction

This chapter presents the results and discussion on the background characteristics of respondents, and the socio-economic effects of the KNP on fringe communities of the park. The presentation of the results are followed by a discussion of the findings. The chapter also provided explanations on the socio-economic effects of the KNP on communities located around the park, taking into account the livelihood activities within these communities prior to the official demarcation of the area as a national park, and after the demarcation exercise.

4.1 Socio-Demographic Characteristics of Respondents

The socio-demographic characteristics of the respondents were examined under various themes. The key ones include the age of respondent, sex, economic activity status, main occupation, and the level of education.

The age structure of fringe communities of the KNP is structured into four (4) classes as shown in Table 4.1. It is observed that the age group 30-39 alone represented half of the entire sample (50%), and closely followed by the age group 40-49 with 25.5%. The age distribution shows that the population of the communities is very youthful. This is confirmed by the Nkwanta South District population distribution which shows that over 71.7% of the labour force is below forty years (GSS, 2014). The implication of the youthful nature of the population is that, more people are likely to be engaged in

economic activities. These activities could be dependent on the park or outside the park. In any case, the success or failure of the park can have effects on the livelihoods of this youthful population.

Table 4.1 Background Characteristics of Respondents

Age (In Years)	Frequency	Percentage
20-29	18	9
30-39	100	50
40-49	51	25.5
50 and above	31	15.5
Sex		
Male	144	72
Female	56	28
Economic Activity Status		
Employed	194	97
Unemployed	6	3
Main Occupation (Sectorwise)		
Agriculture	160	82.5
Forestry	1	0.5
Trade/Commerce	20	10.3
Civil Service	7	3.6
Other occupations	6	3.1

Field Survey, 2016

The results in Table 4.1 indicate that there were more male respondents than females. The male population represented 72.0% of the total respondents and the females accounted for 28.0 percent. Even though a balanced representation for both male and female would have presented a more balanced perspective, the sex distribution has to a large extent, fairly represented the population. The study targeted household heads for the questionnaire survey. Thus, the high representation of male as against females provides evidence of male dominated households which is a common feature of households within the Nkwanta South District. Furthermore, the Table 4.1 shows that 97% of the respondents are employed while 3% are unemployed. The implication of this employment characteristic on the economy of the KNP is that, majority of the

residents are able to earn from their economic activities and therefore dependency of the unemployed on the employed is likely to be low. If the employed population are engaged in activities that depend on the KNP, then, the protection of the park could lead to some of the local people losing their jobs/occupations.

Table 4.2: Major Occupation of Respondents by Sex

Sex	MAJOR OCCUPATIONS					Total
	Agriculture	Forestry	Trade/Commerce	Civil Service	Other Occupations	
Male	61.4	0.5	3.6	3.6	2.1	71.2
Female	21.1	0	6.7	0	1.0	28.8
Total	82.5	0.5	10.3	3.6	3.1	100.0

Source: Field survey, 2016

Respondent`s major occupation were also investigated further. As indicated in Table 4.2, agriculture is the major occupation of respondents and this accounted for 82.5%. Trade/Commerce is the second major occupation representing 10.3%. Respondents` engaged in the civil service accounted for 3.6% while those engaged in other activities like artisanal work, and transport represented 3.1% of the major occupation of respondents. The percentage of respondent`s engaged in forestry as a major occupation is 0.5%.

Furthermore, the representation of males and females in the major occupations show from Table 4.2 that more males (61.4%) than females (21.1%) are engaged in agriculture. On the other hand, more females (6.7%) than males (3.6%) are engaged in trade/commerce. The results in Table 4.2 fairly represents the Nkwanta South District occupation profile especially on agriculture, with GSS (2014) noting that the district is largely agrarian.

With most people engaged in agriculture, forestry and fishery work, a key implication of the establishment of the KNP is that, land in outlying areas of the park boundary is either under pressure, or has reduced in productivity due to overexploitation. The reduced land available for these communities have the tendency to result in farming within the park, poaching, logging, and bushfires which could threaten the survival of the park.

Table 4.3 Average Monthly Income Distribution of Respondents

Community	Average Monthly Income (In Ghana Cedis)				Total
	Below 51.00	51.00- 100.00	101.00- 500.00	Above 500.00	
Kue	2.5	12.0	12.0	0	26.5
Pawa	0	5.0	4.5	0	9.5
Shiare	1.5	16.5	17.0	0	35.0
Chillinga	5.0	12.5	10.5	1.0	29.0
Total	9.0	46.0	44.0	1.0	100.0

Source: Field Survey, 2016

This study also investigated the average monthly income distribution of respondents. The results presented in Table 4.3 shows that most of the respondents representing 46.0% have their average monthly income within the range of 51.00 to 100.00 Ghana Cedis. Also, 44% of the respondents indicate that their average monthly income is within the range 101.00 to 500.00 Ghana Cedis. It is noteworthy that the income distribution among respondents is fairly similar across the study communities. Chillinga is the only community with respondents' average monthly income above 500.00 Ghana Cedis. Whilst it is difficult to adduce reasons for the high average monthly income in Chillinga, it is likely that the large expanse of land available to Chillinga outside the park boundary, relative to the other studied communities may help explain this income differences. Thus, residents in Chillinga could engage in activities

like large scale farming which earn them more income than the other communities studied.

Linkages can be drawn between the income distribution in the study area and risk perception among residents. With low level of income, local people will likely be unable to secure basic needs like medicines, food, and building materials. Thus, there is the probability that local people will engage in activities like collection of food, herbs, and building materials from the KNP to meet their needs. These activities if not regulated, will likely pose threats to the survival of the park.

Oduro-Ofori et al., (2015) in a study in the Kogyae Strict Nature Reserve in the Ashanti region, found that people enter this reserve illegally to acquire medicinal plants because their income is too low to save money for health expenses. It is important to note however that, low level of income alone does not provide enough explanation to risk perception in the KNP even though some linkages can be drawn.

Table 4.4: Level of Education of Respondents in Fringe Communities of KNP

Community	Level of Education						Total
	Primary	JHS/Middle School	SHS/SSS	Post-Sec/Voc/Tech	Tertiary	No Education	
Kue	11.5	4.5	3.0	0	1.0	6.5	26.5
Pawa	2.5	0.5	0	0	0	6.5	9.5
Shiare	10.5	5.5	2.5	1.0	0.5	15.0	35.0
Chillinga	14.5	6.0	1.0	0	0.5	7.5	29.0
Total	38.5	16.5	6.5	1.0	2.0	35.5	100.0

Source: Field Survey, 2016

This study also investigated the level of education of respondents. In order to assess the level of education of the respondents, the educational levels were categorized based on guidance from the Ghana Statistical Service format for educational level assessment into: primary; JHS/Middle school, Post Sec/Voc/Tech; Tertiary; and No education.

Table 4.4 shows that those who had primary and Junior High School (JHS) education represented 38.5% and 16.5% respectively. This is followed by those who have had secondary, tertiary, and vocational education accounting for 6.5%, 2%, and 1% respectively. Significant also were 35.5% of respondents with no education.

A cross tabulation was conducted with respondent`s level of education and their community of residence. It was found that Kue had the highest number of respondents with secondary and tertiary education amongst the communities accounting for 6.0% and 1.0% respectively. Chillinga which is linked to the nearest urban centre Nkwanta, only by foot, have the highest number of respondents with primary education accounting for 14.5% and the second highest with no education accounting for 7.5% representation. One significant observation made from the results is that all the study communities have basic schools, and this partly explains the high percentage of respondents who have had basic education.

4.2 Socio-Economic Effects of KNP on Fringe Communities

National parks are important resources to the communities in which they are located. Most often than not, they are meant to serve not only conservatory purposes but also to act as growth poles affecting the social and economic life of the communities that surround it. In order to assess the socio-economic bearings of the KNP on its fringe communities, the following thematic areas were investigated: the livelihood activities of the local people in these communities during the period before the creation of the park and the period after the creation of the park; and the alternative livelihoods activities induced as part of the Kyabobo National Park Development Project (KNPDP).

4.2.1 Major Livelihood Activities of Local People Before and After Protection of the KNP

Figure 4.1 represents the livelihood activities of local people prior to the protection of the KNP and after the protection of the park. It is important to appraise the livelihoods of the people as it has direct relation to understanding activities that pose risks to the park. It is also important to review the livelihoods of the people in order to ascertain the effects of the park on the living conditions of local people.

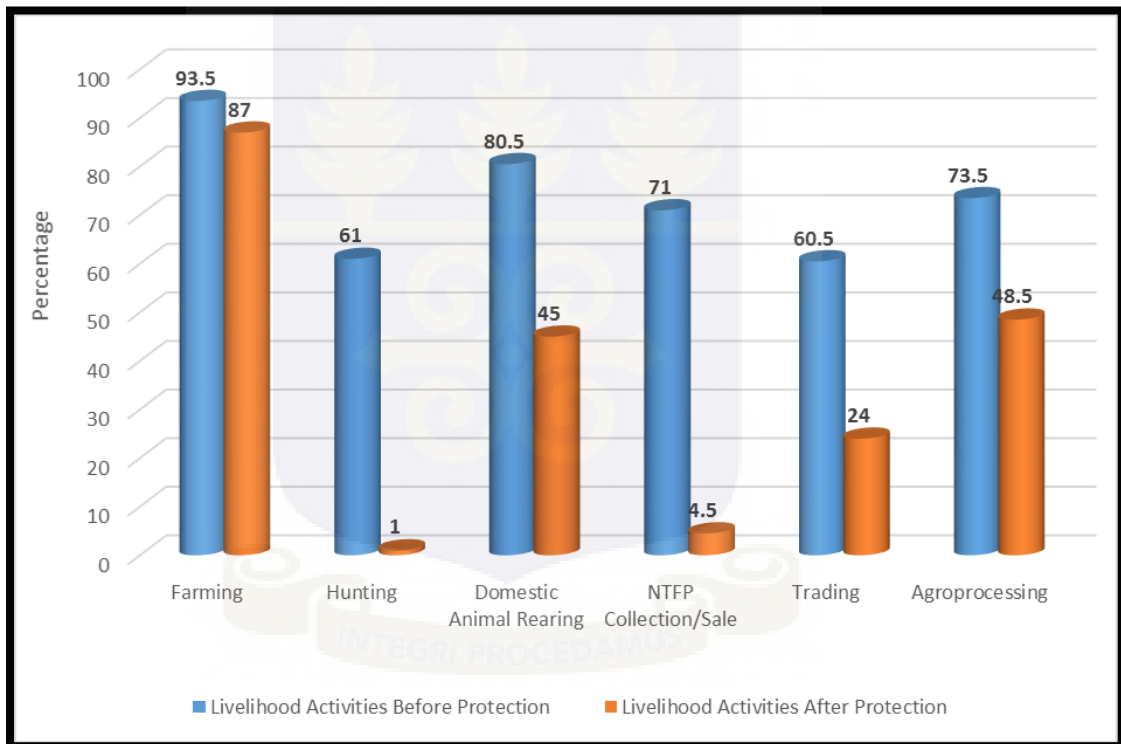


Figure 4.1 Major Livelihood Activities of Local People in Fringe Communities of KNP

Field Work, 2016

Figure 4.1 shows that 93.5% of total respondents indicated that they engaged in farming as their livelihood activity prior to the creation of the park. After the creation of the park however, the percentage of respondents engaged in farming had decreased to 87%. This result shows that after the creation of the park, the number of respondents engaged in farming as their major livelihood activity had decreased by 6.5%.

Furthermore, the percentage of respondents engaged in trading- the second major occupation of respondents as shown in the background characteristics in Table 4.1- has reduced from 60.5% in the period before the creation of the park, to 24.0% after the creation of the park. The number of respondents engaged in other major livelihood activities such as hunting, domestic animal rearing, agro-processing and NTFP collection prior to the creation of the park has also reduced after the creation of the park. Notably, the percentage of respondents engaged in hunting has reduced from 61.0% to 1.0%, domestic animal rearing reduced to 45.0% from 80.5%, and Non-Timber Forest Product (NTFP) collection decreased from 71.0% to 4.5%.

The reduction in the pursuance of major livelihood activities after the creation of the park may represent a livelihood challenge. However, inferences can be made that it represented a shift towards new and alternative livelihoods. Dejene et al., (2012) in a study on Awash National Park in Ethiopia, noted that the creation of national parks in rural areas often lead to diversification of rural livelihoods.

Elaborating on how the creation of the KNP had placed constraints on the pursuance of major livelihood activities by local people in the studied communities, a participant noted in a Focus Group Discussion (FGD) at Chillinga that:

“We are not able to do many things that we used to do to get money. We cannot hunt, we cannot harvest honey from the park, and our women cannot go for firewood and other things to sell. The major livelihood activity we engage in now is just farming and trading. Even with the farming, because the land available is small compared to our population, we are not able to farm large areas of land nor engage in land fallowing” (FGD Participant- Chillinga, 31st January, 2016).

The main issue identified from this investigation on livelihood activities is that, there is a reduction in the acreage of farmlands available to local people. And as indicated in the elaboration on the livelihoods framework used in this study, land is a very important natural capital utilized by local people to generate means of survival. Therefore, with the reduction in available lands for farming, it is possible that livelihood activities of local people will be at risk, more especially where alternative livelihood options are not available. Local people will therefore engage in various strategies to cope with this challenge of reduced farmlands. As noted in the livelihoods framework, Figure 2.2, these coping strategies could be adaptive or maladaptive, where maladaptive behaviours could affect the livelihoods of local people negatively. Oduro-Ofori et al., (2015) aptly noted that, local people often fall back on reserves for their daily sustenance when there is inadequate funds to engage in alternative livelihoods.

Table 4.5: Spatial Distribution of Major Livelihood Activities Before and After the Creation of KNP

Communities		Kue	Pawa	Shiare	Chillinga	Total
Major Livelihoods Before Park Creation	Farming	25.5	9.5	33.0	25.5	93.5
	Hunting	19.5	3.0	21.5	17.0	61.0
	Domestic Animal Rearing	23.5	9.0	25.0	23.0	80.5
	NTFP Collection	24.0	6.0	22.5	18.5	71.0
	Trading	19.0	4.0	18.5	19.0	60.5
	Agro-Processing	19.0	4.5	25.0	24.0	73.5
	Major Livelihoods After Park Creation	Farming	23.5	8.0	30.0	25.5
Hunting		0	0	1.0	0	1.0
Domestic Animal Rearing		14.5	3.5	18.0	9.0	45.0
NTFP Collection		1.5	0	3.0	0	4.5
Trading		9.5	2.5	7.0	5.0	24.0
Agro-Processing		12.0	3.0	18.5	15.0	48.5

Source: Field Survey, 2016

The spatial distribution of the major livelihood activities before and after the creation of the park was also investigated in this study. Thus, a cross tabulation was done between the livelihood activities and respondent`s community of residence. The result in Table 4.5 shows that, in exception of Chillinga, the number of respondents engaged in farming in the study communities decreased after the creation of the park. The exception of Chillinga to the reduction in farming can be explained to some extent by the fact that, it is quite far from the KNP boundary, and has more available land for farming than the other communities.

In addition, Shiare is the only community where respondents still engage in some level of hunting after the creation of the park. Notwithstanding this, the percentage of respondents engaged in hunting have decreased from 21.5% to 1.0%. The percentage of respondents engaged in trading in Shiare and Chillinga decreased significantly after the creation of the park from 18.5% and 19.0% to 7.0% and 5.0% respectively.

A second dimension to this discussion on livelihood activities of local people in the studied communities over the two periods (i.e. before the protection of the park, and after the protection of the park) is that of the differences in livelihood activities that depended directly on the park, and those activities that do not depend directly on the park.

For example, the result in Table 4.5 shows that, NTFP collection which depended much on the park, decreased by 66.5% from 71.0% in the period before the protection of the park to 4.5% in the period after the protection of the park. Contrariwise, Agro-processing which depended less on the park, decreased by 25.0% from 73.5% in the period before the protection of the park to 48.5% in the period after the protection of the park.

In addition, hunting, which depended much on the park, decreased by 60.0% from 61.0% in the period before the protection of the park to 1.0% in the period after the protection of the park. Conversely, the percentage reduction in domestic animal rearing over the two periods was 35.5%. It can therefore be deduced that livelihood activities that depended so much on the KNP reduced significantly compared to livelihood activities that were less dependent on the park.



Plate 4.1 Residents Engaged in Gari Processing at Pawa
Source: Field Survey, 2016

4.2.2 Alternative Livelihoods Created for Local People as Part of KNP

Development Project

Alternative livelihood are often essential components of the development of conservation areas. Roe et al., (2015) noted that alternative livelihoods are alternative strategies to achieving biodiversity conservation by substituting a livelihood strategy that is causing harm to a biodiversity target, for one that has a lesser impact on the same target. In some cases, it meant providing an alternative resource to the one that is being

exploited. Roe et al., (2015) cited beekeeping, tourism, handicraft production, livestock rearing and horticulture as examples of alternative livelihoods in protected areas. Sluis et al., (2007) noted that one of the targets for the establishment of the KNP is to create alternative livelihoods for the residents in communities of the park.

Using a two-level response (i.e. agree, disagree), this study investigated alternative livelihood strategies that were introduced to the fringe communities of the KNP as part of the park development project.

Table 4.6: Local People’s Perception of Alternative Livelihoods Introduced as Part of KNP Project

Alternative Livelihoods	Community					Total 100%
		Kue	Pawa	Shiare	Chillinga	
Mushroom Production	Agree	1.5	0	0	0	1.5
	Disagree	25.0	9.5	35.0	29.0	98.5
Honey Production	Agree	14.5	2.5	17.5	16.5	51.0
	Disagree	12.0	7.0	17.5	12.5	49.0
Grass Cutter Production	Agree	0	2.0	7.0	8.0	17.0
	Disagree	26.5	7.5	28.0	21.0	83.0
Woodlots Establishment	Agree	2.0	2.0	0.5	4.0	8.5
	Disagree	24.5	7.5	34.5	25.0	91.5
Community –Based Ecotourism Projects	Agree	4.5	0	0	0	4.5
	Disagree	22.0	9.5	35.0	29.0	95.5

Source: Field Data, 2016

The Table 4.6 shows that 98.5% of respondents across the study communities indicated that mushroom production has not been introduced by park management as an alternative livelihood activity in their communities. Furthermore, the only studied community in which respondents indicated that community-based ecotourism projects was introduced is Kue with 4.5% of respondents accounting for this perception. The Table 4.6 also shows that 7.0% and 8.0% of respondents in Shiare and Chillinga respectively indicated that grass cutter production was introduced as an alternative

livelihood project. From the observed results in Table 4.6, honey production is the only alternative livelihood activity that majority of the respondents (51.0%) concurred to as being undertaken in their communities.

The relevance of this results in examining risk perception in the KNP is that, suppositions can be drawn to the fact that, these alternative livelihoods projects have not achieved much success in the fringe communities of the park. As indicated in the risk management framework adapted in this study, this unsuccessful introduction of alternative livelihood projects could serve as link cause of risks posed to the KNP. In an interview on alternative livelihoods undertaken in the fringe communities, the park manager noted that:

“We are unable to carry out the alternative livelihood activities because of financial constraints. We have started with bee-keeping for instance, but we are not able to reach out to many people. But it is part of our plan to provide alternative livelihoods for the people” (Manager, KNP-Nkwanta, 4th February, 2016)

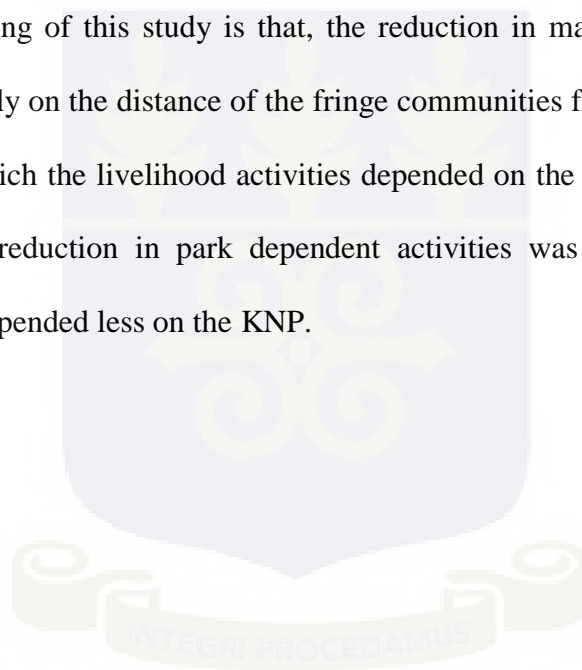
Several reasons have been adduced to the ineffectiveness of the alternative livelihood activities in the fringe communities of the KNP. Significant among these militating factors is financial constraints on the part of park management making it difficult to carry out planned projects or to sustain existing ones.

That said, the relative success of the honey production as an alternative livelihood option is attributed to the distribution of honey hives to people in these communities which also fitted into an existing economic culture of honey harvesting from trees in the KNP. The provision of honey hives to the local people by the KNP management made it very easy for them to continue in honey production extensively.

4.3 Chapter Summary

This chapter discussed the background characteristics of the respondents, and the socio-economic effects of the KNP on fringe communities of the park. The chapter found that major livelihood activities of local people in fringing communities have reduced after the protection of the park. This finding corroborates existing studies on PAs in Ghana which indicated similar finding that the protection of PAs often led to reduction in major livelihood activities of people in fringe communities. Research by Binlinla et al., (2014), and Oppong (2007) on the Kakum National Park are examples of such studies.

One major finding of this study is that, the reduction in major livelihood activities hinged not mainly on the distance of the fringe communities from the park, but rather, the extent to which the livelihood activities depended on the park. It is observed that the percentage reduction in park dependent activities was higher than livelihood activities that depended less on the KNP.



CHAPTER FIVE

SPATIAL VARIATIONS IN PERCEIVED RISKS IN THE KNP

5.0 Introduction

This chapter discussed the spatial variations in risks perceived in the KNP. In view of this, the chapter discussions are organized along four key thematic areas. The first aspect examined livelihood risks in the studied communities. The second aspect examined risks to the park (i.e. the conserved area). The third aspect of the chapter examined the underlying factors linked to the generation of risks to the KNP. The final aspect of the chapter is on the management strategies adopted to manage livelihood and ecological risks in the park.

5.1 Risks Posed by KNP to the Livelihoods of People in Fringe Communities

Livelihood assets are divided into five (5) capitals as shown in the livelihood framework in Figure 2.2. These livelihood assets/capital include: financial capital, social capital, physical capital, natural capital, and human capital. Risks posed to these livelihood elements in the studied communities are discussed below.

5.1.1 Perceived Risks to Financial Capital of People in the Fringe Communities

The background profile and livelihood activities of people in fringe communities of the KNP indicated that financial capital is mainly acquired through occupation/employment, keeping of livestock, and market activities like trading. As noted by Wapalila (2008), rural areas have limited financial resources, thus, most people tend to hold financial capital in forms such as the keeping of livestock and buying of assets. This study investigated ways in which the creation of the KNP induced risks to the financial capital of residents.

Table 5.1: Risks to Financial Capital

Community	Inability to find Jobs/ cut-off from Occupation	Inability to Maintain Livestock	Inaccessible Markets
Kue	21.5	1.7	0
Pawa	7.6	3.5	0
Shiare	32	1.2	2.3
Chillinga	23.2	0	7
Total	84.3	6.4	9.3

Source: Field Survey, 2016

The balance of income sources according to local people in fringe communities have changed after the creation of the park with higher dependence on relatively insecure sources of financial capital like wage labour, as compared to traditional sources like agriculture and sale of NTFP. From the results presented in Table 5.1, local people perceive being cut-off from their traditional occupations like farming, or inability to find new jobs, as the main risk/shocks to their financial capital. Over 84% (84.3%) of the respondents made this attribution. At the community level, this risk accounted for 32.0% of responses in Shiare, followed by Chillinga with 23.2%. Kue and Pawa also accounted for 21.5% and 7.6% of the responses respectively. In an interview with the KNP manager, He noted that:

“We are not able to employ many people to work in the park either as park guards or in other capacities. This is because we don’t have the financial strength to pay wages. We are short of staff right now, but the embargo laid on employment by the government meant that we cannot even employ people from the community even if we see the need to. We don’t receive enough funding to adequately execute alternative livelihood projects meant to create employment

and income for the local people” (Manager-KNP- Nkwanta, 4th February, 2016).

In addition to this, the results indicate that 9.3% of respondents perceived limited/inaccessible markets as risks to their financial capital. Markets offer local people the chance to trade their farm produce and get income to acquire other needs. A review of the framework on livelihoods in Figure 2.2 elaborated that, people hold financial capital in the form of non-liquid capital such as livestock, which they later trade to acquire liquid capital or cash. Thus, the unavailability or limited access to markets make it difficult for local people to easily engage in trade that will enable them convert their non-liquid capitals like livestock to liquid cash. Also, limited access to markets have affected the trade in farm produce. In an FGD at Chillinga, a participant noted that:

“We don’t have any market in this community. In the past, we farm in the park. When we harvest our crops, we just move to Keri market to sell there. Sometimes the market women from the nearby towns like Kue and Pawa even come to the farms to buy the yam from the yam barns. But now, we don’t have farms in the park and we cannot move through the park to the nearby towns to sell our produce. Our women have to carry heavy goods to Nkwanta market, and because there is no road connecting us to Nkwanta, they trek with the heavy load. Because of this difficulty in accessing market, we go to Togo to sell our harvest. The price they pay for our produce is lesser in Togo and this weakens our finances. But we don’t have a choice because there is a road from here to Togo which makes it easier to move there” (Participant-FGD, Chillinga, 31st January, 2016).

Furthermore, local people indicated the difficulty in maintaining their livestock due to the restrictions on accessing fodder from the park for their livestock. This has therefore created major risk to their livelihoods. In this regard, 6.4% of respondents' perceived this to be a risk to their financial capital and this is shown in Table 5.1. A respondent in Pawa commented on this as follows:

“In this traditional area, keeping livestock is regarded as a source of finance because when you are able to sell just one, you make a lot of money. So the people here used to keep large flocks of cattle, goats and sheep. But now that the Wildlife people have taken over the place, most people just keep a few goats and fowls at home. We cannot rear more goats or cattle because we have cleared and burnt all the grass on the available land to engage in farming. We cannot feed the flocks with the farm produce. So we just reduce the quantity of flocks we rear and this affects the levels of our financial risks” (Respondent at Pawa, 6th February, 2016).

5.1.2 Perceived Risks to Social Capital of People in the Fringe Communities

Social capital is associated with human networks established in the pursuit of livelihood needs. These consists of variables such as support, relief, protection and social connections. Coad et al., (2008) noted that social relationships and cultural/ spiritual connections are key aspects of social capital. This study investigated how the establishment of the KNP posed risk to the social capital of the people in fringe communities of the park.

Residents noted that there is a direct link between the establishment of the park and changes in the cultural and traditional relationships amongst fringe communities.

Elucidating on this perception, a respondent at Shiare noted that:

“The relationship between the residents in my community and people in other communities is not as it used to be. It is now marked with distrust. It seemed that the other communities are receiving support from the Park officers so they just seem to accept everything the park officers say. There are no benefits coming to us here and thus we are not happy about the park establishment. So right now, everybody is seeing we the residents of Shiare as enemies. The people in the communities around the park used to be so united but that unity is somehow broken now because of the different interests pursued by the various communities” (A Respondent at Shiare, 30th January, 2016).

Furthermore, the villagers noted that the cultural cohesion that existed between the fringe communities have weakened. Elaborating on this dimension of risk to the social relationship of the people in the studied communities, the Assembly Member for Keri-North noted in an interview that:

“In the past, the people in the fringe communities are so connected culturally because they speak same language, celebrate same festival, and the leaders of the communities used to meet in sacred places in the park to perform some customs. The people from the fringe communities often went to Shiare to consult the traditional god- “Brukung”. But now, this cultural interactions have weakened. Some of these spiritual places where people used to meet in the park are now ‘no-go-areas’. It is now an issue of “everybody for himself” (A Respondent at Shiare, 30th January, 2016).

Furthermore, changes in livelihood strategies resulting from displacement from park lands have influenced households and introduced new inequalities within the communities. In an interview, the chief of Chillinga noted that:

“Our main work was farming and honey-poaching. This has reduced since access to the reserve is restricted. Our youths are now migrating to Nkwanta, Tamale and Hohoe, leaving us the older people here. This has weakened household supports. We are no longer able to fall on our social relations for livelihood support. In the past when your crop failed, you could go to the next household or another family member to get some bowl of maize or tubers of yam without any difficulty. Right now that we are all struggling to produce little on our lands for our families, familial ties and supports have weakened “(Chief of Chillinga- 31st January, 2016).

It is noteworthy that, although local people in fringe communities indicated that the establishment of the KNP indirectly posed risks to their social capital in terms of weakening interactions, distrust, and weakening of household support systems, there is nonetheless the potential to improve social connectivity amongst the communities as a result of the creation of the park. This possibility of enhancing social capital from the creation of the KNP is clarified in an interview with the chairman of the District Sub-committee on Tourism who noted that:

“We are forming ecotourism groups among the communities. This will help to strengthen the socio-cultural connection between the communities and promote ecotourism in the area” (Chairman of District Sub-committee on Tourism-Nkwanta, 4th February, 2016).

The formation of ecotourism groups among the fringing communities is an example of adaptive coping strategies noted in the framework on livelihoods (see Fig. 2.2) which has the possibility of generating outcomes such as job creation and income generation which eventually would lead to reduced risks and enhanced livelihoods.

5.1.3 Perceived Risks to the Physical Capital of People in the Fringe

Communities

Physical capital mainly refers to infrastructural assets that enhances livelihood diversification. Typical examples of physical capitals include: road and water infrastructure, schools, hospitals, housing and electricity. According to the residents in the studied communities, the establishment of the KNP has not affected assets such as roads, schools, and hospitals as these assets are largely non-existent in their communities. However, respondents noted that the establishment of the park has in a way affected their access to important resources such as water and homebuilding/construction materials. The result and discussion on ways in which the establishment of the park has posed risks to residents in relation to the use of their physical capital is presented below.

Table 5.2 Perceived Risks to Physical Capital

Community	Cut-off from water resources	Lack of homebuilding materials
Kue	6.7	20.8
Pawa	0	10.7
Shiare	7.3	30.3
Chillinga	0	24.2
Total	14.0	86.0

Source: Field Survey, 2016

The result in Table 5.2 shows that the main risk that local people perceived to their physical capital is the lack of homebuilding materials. This accounted for 86.0% of

responses. At the community level, this accounted for 30.3 % of respondents in Shiare, 24.2% in Chillinga, 20.8% in Kue, and 10.7% in Pawa. Logs and thatch are the common materials used for building and roofing of their mud houses. Residents noted that they obtained logs and thatch for the construction of their houses from the park prior to its establishment. A respondent at Pawa noted that:

“When you look around, you will see a lot of mud houses with thatch roofs. The logs and thatch came from the park. Right now, we are no longer allowed to access these things from the park. If you don’t have money to buy building materials like iron rods, wood and aluminum roofing sheets, then you just continue to live in your old family house which are increasingly getting congested due to increases in family sizes. It is difficult for us to build now because we don’t have money to buy these things, and we can’t go to the park to get the wood and thatch that is needed to build our houses” (A Respondent at Pawa-29th January, 2016).

Furthermore, respondents noted that the creation of the Park has limited their access to water resources in the park due to restricted entry. The Kue River for instance served as the main source for water and river fish for the people of Kue prior to the establishment of the park. However, access to this river is restricted as the KNP management have made it a protected resource of the park. In an FGD at Kue, a participant noted the following:

“Last time, somebody from this community (Kue) was arrested by the Park Guards for going to catch fish in the river. They said the river is now protected and that nobody is allowed to go there. Even if you go to fetch water, they think you are going to poach animals that come to drink from the river, or catch fish.

We don't want trouble so we all queue and fetch water from the borehole. There are only two boreholes serving this community whiles the river is there and we cannot fetch water from it" (Participant- FGD, Kue, 28th January, 2016).

5.1.4 Perceived Risks to the Human Capital of People in the Fringe

Communities

Whilst recognizing that the scope of human capital is very broad, in this study, the focus was on exploring how the creation of the KNP has affected education, health, and food capacities of the local people.

Local people in fringe communities of the park indicated that the establishment of the park has somewhat made it difficult for them to access medicinal plants which they hitherto obtained from the area occupied by the park. In an FGD at Chillinga, a participant noted as follows:

"We don't have hospitals in our community here at Chillinga. There is no hospital at Shiare too. What our forefathers taught us is herbal medicine. So our hospital is the forest. But now that the Wildlife people have taken over the Park, we are not allowed to enter to obtain herbs, backs of trees, and roots which we used to prepare herbal medicine. This is a serious source of worry to our health needs. This is because, before we able to move a sick person to the Nkwanta hospital, we are not able to offer any kind of first aid to the person, and the person can die before arrival at the hospital" (Participant- FGD, Chillinga, 31st January, 2016).

Furthermore, local people indicated that, indirectly, the establishment of the KNP affects income generating activities like farming which provides income to help them to finance the education of their children. In addition to this, the restricted access and

displacement from the KNP pose challenges to their access to farmland to farm to produce food. The assembly member for Keri-North noted in an interview that:

“Previously, we got our food needs from the park. We farm there, get bush-meat, mushroom, fruits, honey and other things. Now that the park is protected, we don’t have access to these things. We are all competing for the little land available outside the park to farm. Because the land available outside the reserve is small, the area cultivated by each household or individual is very small. The problem might not be seen right now, but in the future, this may lead to hunger when the people are not able to produce enough food to feed their increasing household sizes” (Assembly Member, Keri-North, 4th February, 2016).

Similar views on risks to human capital is held by individuals in all the studied communities. Thus, distance of fringe communities from the park boundaries does not necessarily determine perception of risks to human capital. The study recognized that the risk to human capital is highly context-dependent and may vary over the lifetime of the PA. For instance, while the initial establishment of the park may limit access to health resources which may affect the human capital capacity, there is nonetheless the potential of future infrastructural development such as hospitals to remedy the earlier costs to the human capital.

5.1.5 Perceived Risks to the Natural Capital of People in the Fringe

Communities

Ellis (2000) noted that natural capital is not static and its utilization for survival is not confined to gathering activities such as collecting wild vegetables or hunting wild animals, but also augmenting resources by bringing them under human control. The

main natural capital of the people in fringe communities of the KNP includes land, water, and livestock.

The study found that the major risk to the natural capital as a result of the establishment of the park is the loss of land. This perception is held across all the study communities.

A participant in an FGD at Chillinga noted that:

“We have lost all our farmlands that were in the place now occupied by the Kyabobo National Park. When they came, they said the government will compensate us but there was no compensation for the lands. They just gave some small money to a few people in the communities and told us that it is compensation for our farms that is taken over by the government for the establishment of the Park. Even the compensation was not properly done because most people didn't receive anything” (Participant – FGD-Chillinga, 31st January, 2016).

Similar opinion is held by another participant in an FGD at Kue who noted that:

“They have taken over our farmlands. Last time someone was putting up a building at place in this Kue community close to the main road that leads to the community, I heard the park officials warning him to stop because that place was considered part of the Park. We don't even know where exactly the park boundary is because we have lost all our lands, especially the farmlands” (Participant-FGD-Kue, 28th January, 2016).

The implications of these perceived livelihood risks, first on the local people, and secondly on the Park is that, where there are not enough coping mechanisms to deal with these risks, the vulnerability of the people is deepened and the propensity to re-engage in restricted activities within the park like farming and hunting is high.

5.1.6 Testing of Hypothesis One (1)

According to Peacock et al., (2005), there has been little empirical studies on the factors that shape individual`s risk perception. However, geographical proximity to the source of risks have been identified in existing literature as a key determining factor of risk perception. In a study on perceived characteristics of environmental hazards, Lindell (1994) found that there is a positive association between proximity to hazard and risk perception.

Peacock et al., (2005) also noted in a related study that perceptions of hurricane risks is positively related to the location of people. Furthermore, Hartter & Goldman (2011) in a study on local responses to a forest park in Western Uganda noted that, distance from park boundary is a key determinant of risk perception, as people located nearest to PA boundaries often bear a greater cost of conservation activities and more likely to be disproportionately burdened by park related losses. Feretti (2013) however noted in a study on the perception of disease risks and vulnerability in East Africa National Parks that distance from PA boundaries does not necessarily influence local perception of risks.

This study thus tested the significance of an individual`s location on livelihood risk perception in the KNP. The relevance of this hypothesis testing is to corroborate existing studies on factors that affect risk perception, and also to find out if the location of people in fringe communities of the KNP affected their livelihood risk perception.

Table 5.3 Distance *Perception of Livelihood Risks Cross-tabulation

Distance of community from park boundary	There is no significant spatial variation in perceived livelihood risks between communities near and those far from the KNP boundary		Total
	Agree	Disagree	
(Kue & Pawa) 0-10km	67	5	72
(Shiare & Chillinga) Above 10km	112	16	128
Total	179	21	200

Source: Field Survey, 2016

Table 5.4: Chi-square Test for Hypothesis 1

	Value	Df	P-value
Pearson Chi-Square	1.513	1	.219
Continuity Correction	.980	1	.322
Likelihood Ratio	1.603	1	.205
N of Valid Cases	200		

Source: Field Survey, 2016 (at 5% level of significance)

From the Chi-square test, it is observed that the P-value is 0.219, is greater than 0.05. This means that the columns and rows in the contingency table are not independent. Thus, the null hypothesis is accepted that there is no significant spatial variation in perceived livelihood risks between communities fringing the KNP. In practice, this result shows that distance of fringe communities from the KNP does not affect their level of risk perception.

5.1.7 Livelihood Risk Map of Fringe Communities of the KNP

The livelihood risk map (Figure 5.1) provided a figurative presentation of the major livelihood risks identified in the studied communities. These include: denied access to forest resources (DA), disease outbreaks (DO), crop damage by wild animals (CD), inequality in infrastructure allocation (II), weakening of forest-based industries (FP), wildlife attacks on human and livestock (WA), and loss of farmlands (LF). The risk

map was constructed with guidance from the Smith et al., (2000) framework on risk mapping.

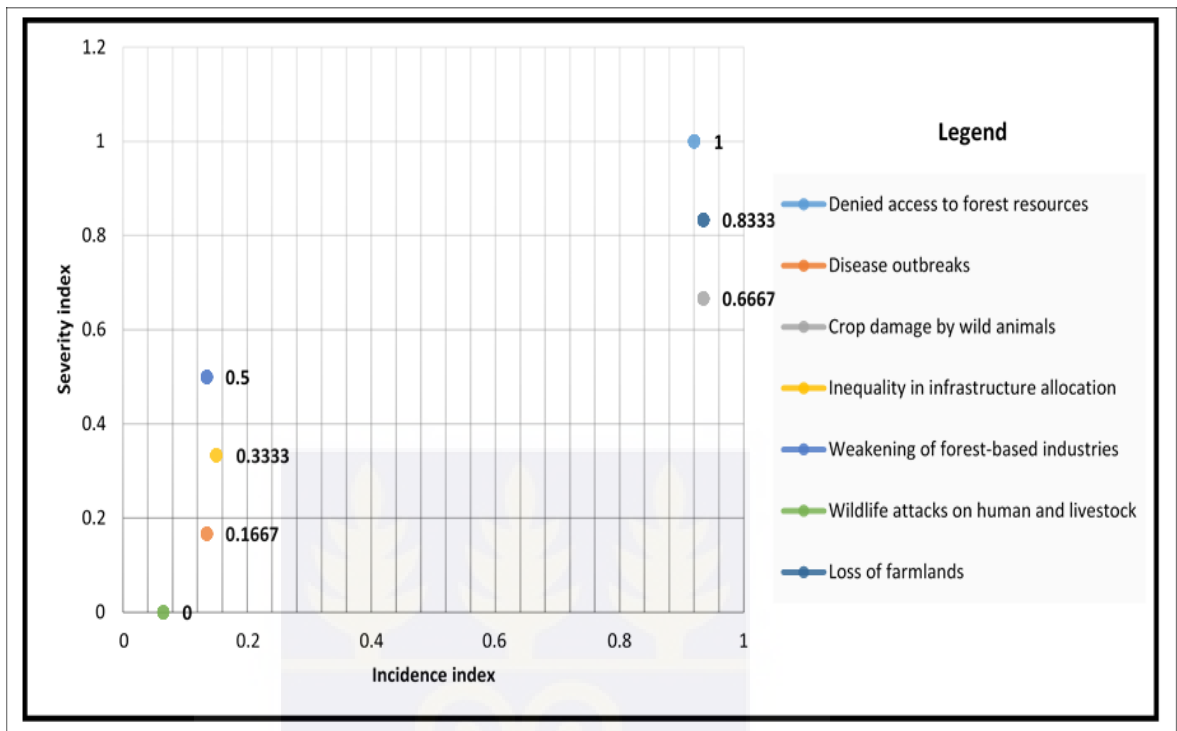


Figure 5.1: Livelihood Risk Map of Fringe Communities of the KNP

Source: Field Survey, 2016

The lower left portion of the livelihood risk map in Figure 5.1 show risks with the lowest incidence and lowest severity. Given the variety of responses obtained from the survey, many of the categories lie in the region of low incidence and low severity. The case of wildlife attacks on human and livestock (WA) had the lowest incidence and severity in the studied communities. Risks related to loss of farmlands (LF), damage to food crops by wildlife (CD) and denied access to forest resources (DA) represented the highest incidence and as well the most severe form of risks to communities around the KNP. These risks with high incidence and severity indices further provide direct linkages with livelihood risks assessed with the Capital/Asset framework by Ellis (2000) in the early part of the discussion on perceived livelihood risks. It shows that

human capital, physical capital and social capitals are the livelihood elements that are at risk in most of the study communities.

5.2 Risks Posed to the Kyabobo National Park

Risks posed to the KNP are broadly categorized in this study as ecological risks (i.e. risks posed to the conserved area of the park). Ecological risks as noted earlier in the review of literature, are activities that lead to destruction of the flora and fauna that protected areas seek to preserve. With respect to the investigation of risks posed to the KNP, the perception of local people and stakeholders on the specific activities that threaten the park was assessed. The outcome of this assessment is presented in Figure 5.2 below. Detailed explanations from interviews with stakeholders are added to enhance the explanation of these perceived risks.

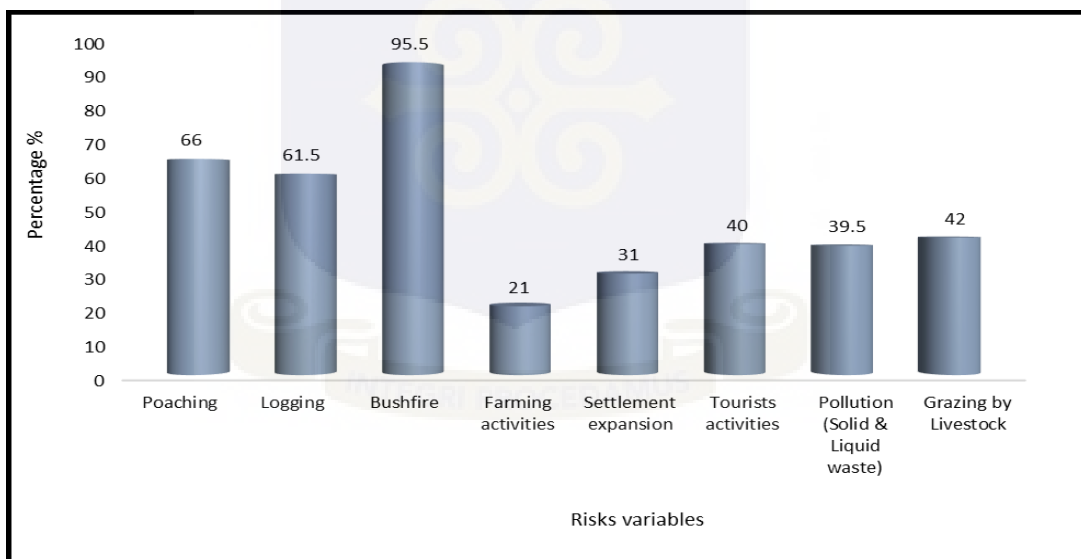


Figure 5.2: Percentage of people perceiving risk variables in the KNP

Source: Field Survey, 2016

The results presented in Figure 5.2 indicated that bushfire is the major ecological risk to the park representing 95.5% of the total responses. Elaborating on the issue of bushfires in the KNP, a respondent noted in Pawa that:

“As for the bushfire issue, it is an every year affair. Sometimes even if we see that there is a fire in the park or spreading to the park, there is nothing we can do about it because if the Wildlife people see you there, they think you are the one who set the fire and they will arrest you. The Wildlife people came out with the idea that they are forming committee to control such activities like bushfires, but they didn’t provide us with any fire-fighting materials. To them, the local people only knows how to set the fire, but they don’t know how to control it”
(Respondent- Pawa, 29th January, 2016).

Furthermore, a Park Guard noted in an interview that, they (Park Guards) also engage in burning within the park. This is called the “controlled early burning”. The purpose of this early burning He noted that it is to enable the grass to grow early for the animals in the Park to get food. He noted however that, the controlled burning is done at certain portions of the park and under strict supervision by the Park Guards. The study found also that, having knowledge of this early burning, hunters have used the technique to rather hunt for games in the park. They often set fire to the bush at areas close to the park so that the grass can grow back early and attract the animals to those areas for them to hunt. Most of the time, these hunters do not control this burning and it spreads to the rest of the park.

Furthermore, 66% of respondents identified poaching as the second major ecological risk to the KNP. The study identified that the frequently poached animals of the park include: bushbucks, red river hog, Maxwell duiker, red flanked duiker, grey duiker, yellow backed duiker, grey monkey, and wild dog, waterbuck, and Mona monkey.

Figure 5.2 shows that illegal logging is the third major risk to the park. The study identified that apart from people who directly go to the park to do logging, other individuals end up cutting down trees in the bid to poach honey from them. The law

enforcement officer of the KNP in an interview on the issue of illegal logging noted this:

“You will realize that rosewood is something that has become a hotcake now. It is a tree species that is very widely exploited now. In the past it was mainly for firewood and other related uses. But now, in China and other places, they have realized the importance of it. So it is causing a lot of people to focus on it. They were cutting the trees initially but now it is more. It has gotten to the point that they have almost exhausted those in the off-reserve areas and the next place they can think of is the Park. This is a significant threat to the existence of the park” (Law Enforcement Officer-KNP, Nkwanta, 5th February, 2016).

Further on the issue of logging, the District Manager of Forest Services Commission (FSC) noted that:

“When it comes to the issue of cutting trees, Kue, Pawa, and Keri communities are the guiltiest culprits. Our field inspectors record a lot of logging around these communities. The problem I often have with the people in these communities is that, they engage chainsaw operators to come and cut the trees without seeking permit from the forestry department. When we arrest them, sometimes their chiefs or assembly men come to beg for their release. This makes it difficult for us to strictly enforce some of the rules on forest management around the Park” (District Manager-FSC, Nkwanta, 3rd February, 2016).

It is noted that most of the illegal activities that goes on in the area occur within the buffer zone of the KNP. The study found that residents engage the services of contractors to fell trees on their farms that are sometimes located in the buffer or off-

reserve areas of the park. The threat is that once these available timber is fully extracted, these contractors turn their attention to the park itself. Other perceived risks to the KNP include farming in park boundaries, settlement expansion, tourist activities such as dumping of plastics and drink cans, pollution, and grazing by livestock. Plate 5.1 below provide evidence of poaching activities in the park as some hunters were arrested by the park guards.



Plate 5.1 Poachers Arrested by Wildlife Officials at Kyabobo National Park

Source: Ayivor et al., 2013

The KNP is exposed to numerous risks as elaborated in Figure 5.2. Notwithstanding this, the effects of these risks vary in terms of severity. Whiles some of these risks are more pronounced, others are less pronounced in the park. In order to assess the level of severity of the risks to the KNP, a Likert scale ranked from, very severe (5) to least severe (1), was used to measure the level of severity of identified risks in the KNP. The

aggregated ranks of each risk was computed and the result is presented in Figure 5.3 below.

The result in Figure 5.3 and shows that bushfire was the most severe risk to the KNP with a weighted frequency of 853. Poaching was the second most severe risk to the KNP with a frequency of 686. Logging recorded the third most a frequency of 649. The data shows that the most severe risks to KNP are directly linked to the exploitation of flora and fauna in and around the park.

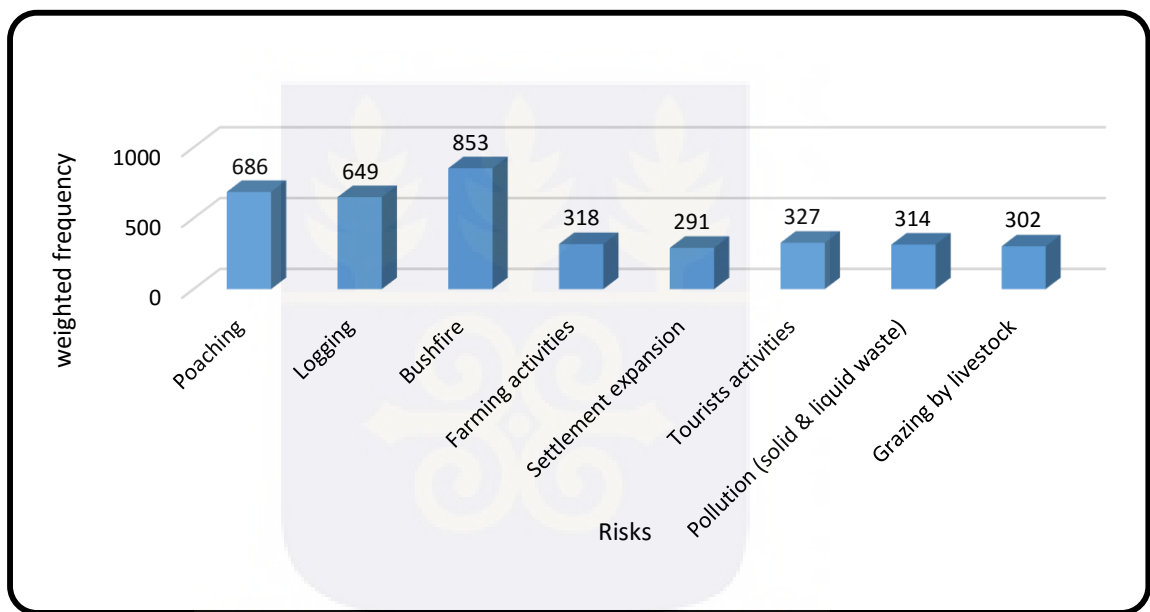


Figure. 5.3: Severity of Risks to Kyabobo National Park
Field Survey, 2016

Table 5.5 below provide a summary of illegal activities recorded in the KNP between 2010 and 2015. The table show that illegal activities have declined in the park.

Table 5.5 Summary of Illegal Activities Recorded in KNP Between 2010-to-2015

Year	Illegal Activities/Risks/Threats	Frequency	Grand Total
2010	Gin trap found	1	49
	Illegal logging	1	
	Poaching	47	

Year	Illegal Activities/Risks/Threats	Frequency	Grand Total
2011	Honey poaching	2	32
	Illegal logging	3	
	Poaching	27	

Year	Illegal Activities/Risks/Threats	Frequency	Grand Total
2012	Gin trap found	1	2
	Poacher arrested	1	

Year	Illegal Activities/Risks/Threats	Frequency	Grand Total
2013	Gin trap	1	4
	Poaching camp found	1	
	Illegal entry	1	
	Poacher arrested	1	

Year	Illegal Activities/Risks/Threats	Frequency	Grand Total
2014	Empty cartridges	3	37
	Fish poaching	1	
	Bushfires	1	
	Gin trap found	2	
	Gunshot heard	2	
	Honey poaching	8	
	Illegal logging	3	
	Poacher arrested	1	
	Poacher footprints spotted	4	
	Poacher spoor	1	
	Poaching camp	9	
	Wire snares	2	

Year	Illegal Activities/Risks/Threats	Frequency	Grand Total
2015	Gin trap	1	13
	Honey poaching	3	
	Illegal poaching	1	
	Poacher spotted	3	
	Poaching	1	
	Poaching camp	3	
	Weapon seized	1	

Source: Kyabobo National Park Patrol Records, 2016

5.3 Factors Underlying the Generation of Risks to the KNP

The underlying causes of risks to protected areas are many and varied. Although the Secretariat of the Convention on Biological Diversity (2010) and Muhumuza & Balkwill (2013) identified underlying causes of risk to biodiversity as demographic change, economic activity, levels of international trade, cultural and religious factors, and scientific and technological change, these factors were not discussed in specific detail in this study. However, aspects of these factors applicable to providing adequate explanations on the generation of risks to the KNP was explored in this study. Examples of these factors include: poverty, population growth, limited alternative livelihoods, weak law enforcement, illiteracy and low level of awareness.

To identify the major factor underlying the generation of risks to the KNP, a five-level Likert-scale measurement was used to measure the significance of these factors in the studied communities. For each factor, respondents indicated whether they strongly agree (5), agree (4), neutral (3), disagree (2), or strongly disagree (1) that that factor is the major cause of risk to the Park. The aggregated score of each underlying factor was computed and percentages calculated so as to identify the major factor that underlie the posing of risks to the KNP.

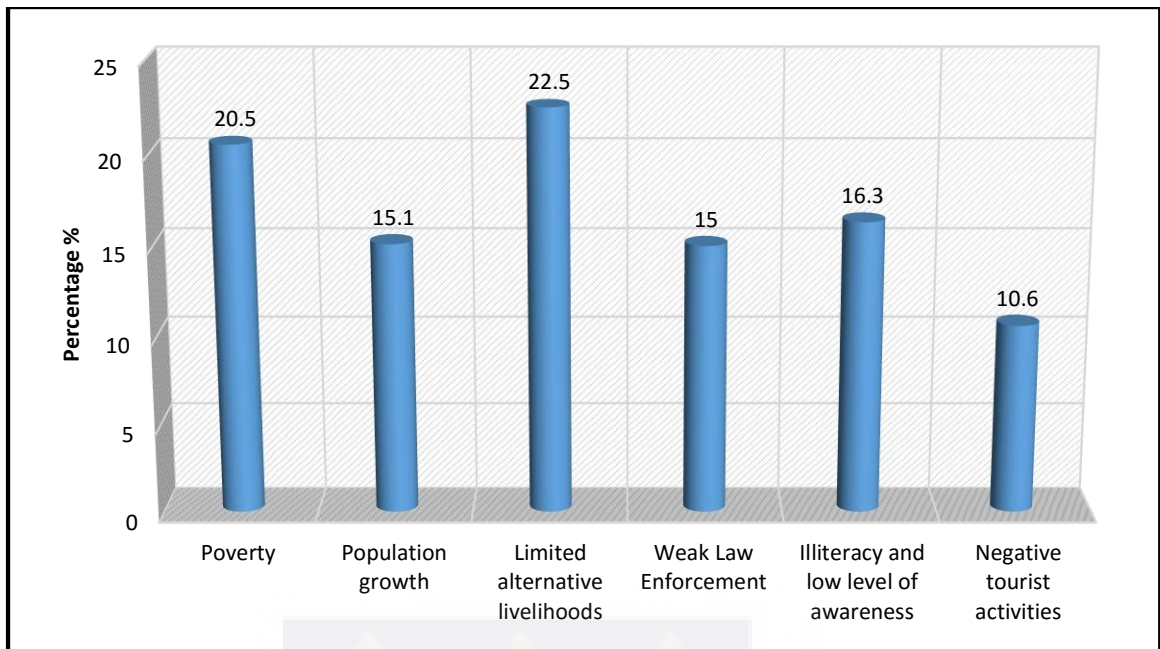


Figure 5.4: Underlying Causes of Risks to the Kyabobo National Park
Field Survey, 2016

From the results presented in Figure 5.4, it is observed that the major underlying risk factor is the limited availability of alternative livelihoods for local people. This represented 22.5% of the underlying cause factors. The inability of park management to provide alternative livelihood options or sustain the ones that have been enrolled have made it virtually difficult to keep local people away from engaging in activities that pose risks to the park.

The results in the Figure 5.4 again show that poverty was the second major underlying cause of risks to the KNP. This represented 20.5% of responses. Another major underlying cause of risks to KNP is illiteracy and low level of awareness. This accounted for 16.3% of the responses. There has been very few risk awareness creation exercises in the area to enhance local people's knowledge of conservation. Other underlying cause factors of risks to KNP include weak law enforcements, population growth, and negative activities of tourist such as indiscriminate dumping of plastic bags and drink cans.

It is important to note that these underlying factors do not operate in isolation but are inextricably intertwined and a neglect of one could have ripple effects on the others and thereby leading to risk generating activities. Similarly, an intervention on any one of these factors has the potential to eliminate or mitigate the others. It is important to reach out to the populace at large so as to guarantee that these underlying risks are remedied. This undoubtedly is a mammoth and challenging task, nonetheless, one that opens up some optimism for posterity.

5.4 Risk Management in Kyabobo National Park

As explained in the conceptual framework in Figure 2.1, risk management involves the application of risk mitigation strategies after risks are identified. These mitigation strategies are either preventive or active, and their successful application generates outcomes that reduces risks.

The proceeding discussions presents management strategies that have been engaged by stakeholders in addressing livelihood and ecological risks perceived in the KNP and its fringing communities.

5.4.1 Awareness of Risk Management Programs in Fringe Communities

The study investigated the awareness of local people on risk management programs in the area. These risk management programs involve the use of open forums, informal education through schools and religious bodies, and media platforms to sensitize local people on proactively engaging in activities that reduce or mitigate risks they perceive from the park and also risks they pose to the park. In this regard, respondents were to indicate whether they are aware or have benefited from any of such risk management programs.

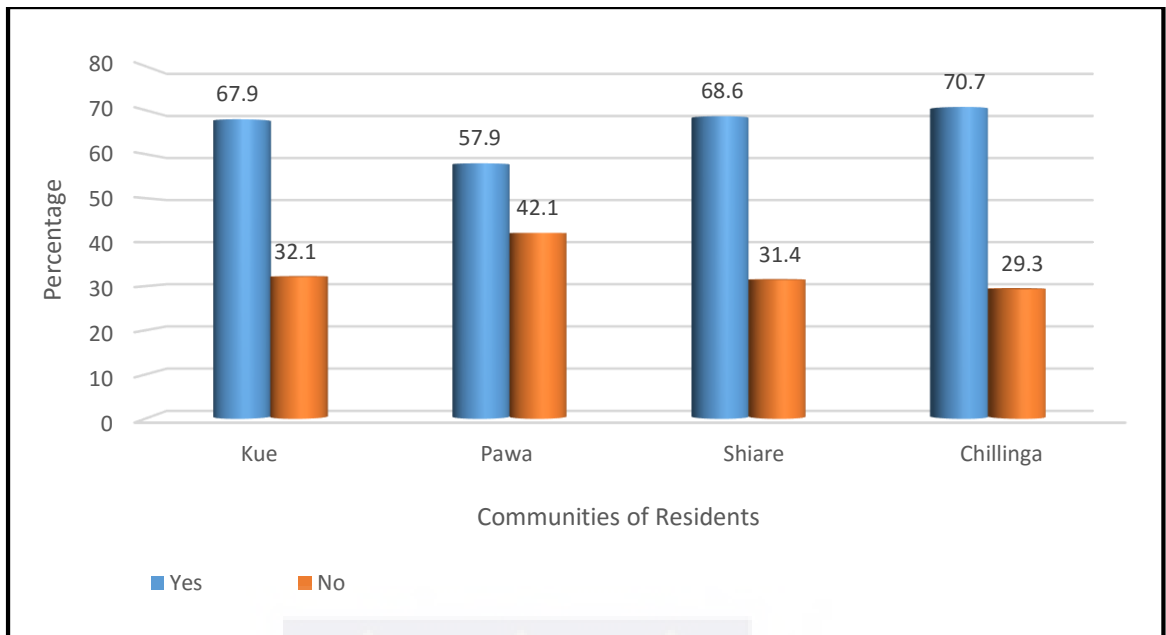


Figure 5.5: Awareness of Risk Management Programs in Fringe Communities of KNP

Source: Field Survey, 2016

The result in Figure.5.5 indicate that the awareness of risk management initiatives is high among local people in fringe communities. From the observation, 70.7% of respondents in Chillinga are aware of risk management initiatives while 29.3% have not. Also, 68.6% of respondents in Shiare expressed awareness of risk management programs while 31.4% expressed no knowledge of such activities. Similarly, a majority of the population in Pawa and Kue communities express awareness of risk management programs. Speaking on risk awareness creation in communities, the Law Enforcement Officer of the KNP noted:

“We try to jaw-jaw with them so that their awareness of risks to the park will be enhanced as a way of fostering a healthy and effective national park. To some extent, I think more and more people are beginning to understand why the need for the park. The park manager has focused so much on community work to enhance awareness and create good working relations with the local people.”

The instances of risks to the park where the staff are attacked has reduced”

(Law Enforcement Officer-KNP, Nkwanta, 5th February, 2016).

5.4.2 Stakeholder Institutions Involved in Risk Management Programs in Fringe Communities of the Kyabobo National Park

The study investigated the institutions that are involved in the creation of risk awareness in the study communities. The results are presented in Figure 5.6 below.

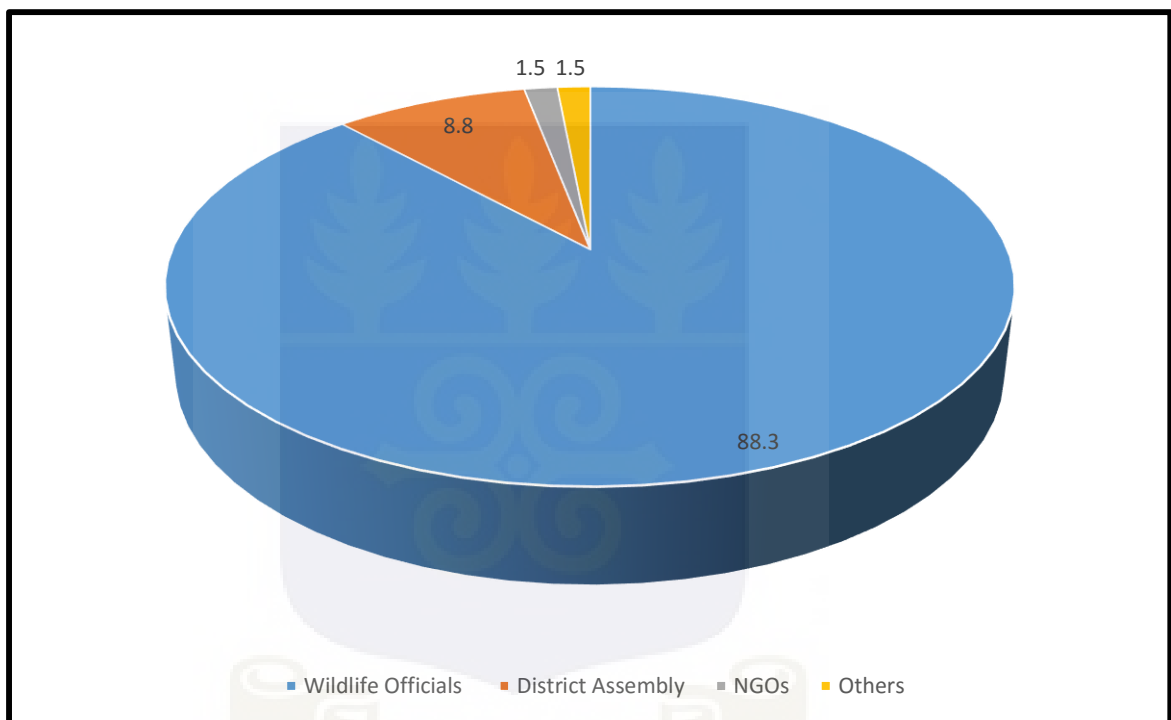


Figure 5.6: Stakeholder Institutions involved in awareness creation in fringe communities of KNP

Field Survey, 2016

The results from Figure 5.6 revealed that 88.3% of awareness creation in fringe communities of the KNP is done by the Wildlife officials of the KNP. The Park Manager and the Law enforcement Officer are the trailblazers of this activities. The Nkwanta South District Assembly accounts for 8.8% of awareness creation exercises. NGOs and other key stakeholders account for a 1.5% each of risk awareness creation exercises in the KNP area. The Law Enforcement Officer of the KNP in an interview on awareness exercises undertaken noted:

“Recently, my colleague Josiah led a team from Nkwanta to Mole national park. The purpose is this, every year, we engage JSS 2 students within this area. What we do is to teach them on conservations and organize excursions into the reserve for them. When we come back, we set exam for them. Students that perform very well, we pick 2 people from each school and take them to Mole national park so that they can appreciate what a national park that has been able to stand on its feet looks like. So after years of doing this, we got to a point that, one of the teachers last year acknowledged that he benefited from this when he was in JSS. You can imagine how long it has been in place. So if this continues, at a certain point, a certain generation will be available that is conscious about conservation. So this is some of the things that we do. Aside that we have community film shows” (Law Enforcement Officer-KNP, Nkwanta, 5th February, 2016).

A careful observation of the statistics in Figure 5.6 shows that nearly all awareness creation exercises is left in the hands of the Wildlife Officials of the Park. This is particularly not positive for an area where risks to the protected area is pronounced. The Wildlife Officials are already burdened with the duties of overseeing the daily administration of the park. Unfortunately, they are constrained by a multiplicity of challenges such as limited staff, limited logistics and finance. Thus, the effectiveness with which awareness creation exercises will be carried out by the Wildlife division is challenged.

5.4.3 Strategies Adopted to Manage Livelihood Risks

The study sought out to find out the strategies that local people adopt in order to sustain their livelihoods in the face of risks posed by the KNP to their livelihoods. Irrespective of the prospects that conservation brings, local people in forest resource areas often

prioritize the sustenance of their immediate livelihoods needs against posterity. This is often the case of rural settings where there is limited alternative livelihoods, and high levels of poverty.

With guidance from literature, respondents were asked to indicate which of the following activities they engage in to manage the livelihood risks they perceive from the KNP. The options include: engaging in multiple economic activities; avoid getting close to park boundaries; and setting traps for wild animals.

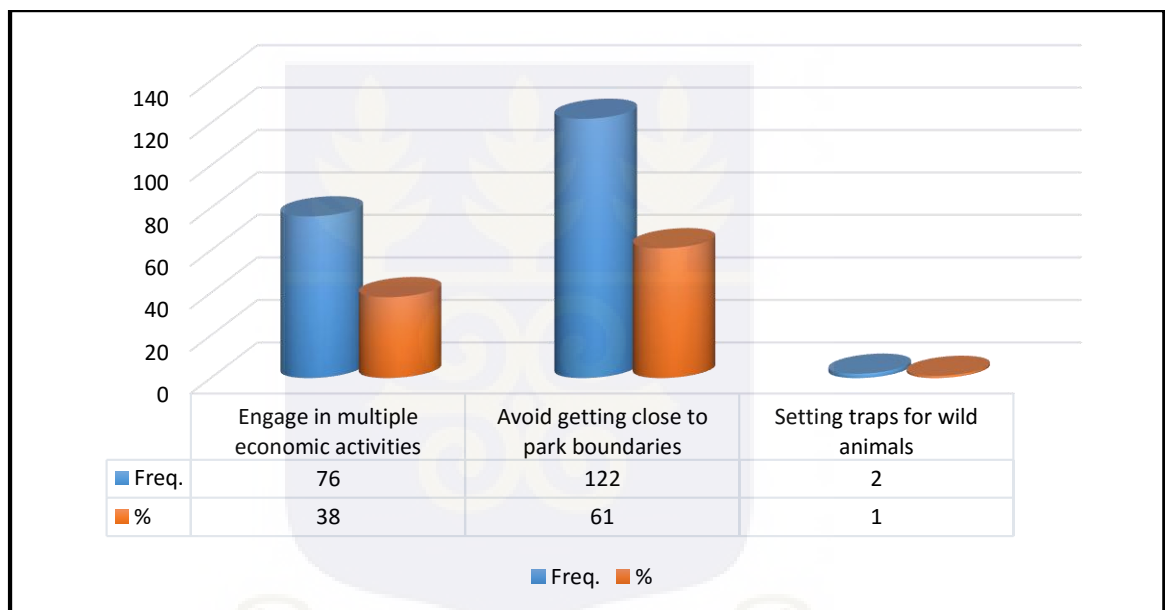


Figure 5.7: Strategies Adopted by Local People to Manage Risks Posed by KNP to Their Livelihoods
Field Survey, 2016

The investigation from the field survey revealed in Figure 5.7 that the major livelihood risks management strategy adopted by local people is avoiding getting close to the park boundaries. Indeed 61% of respondents associated with this option. Avoiding getting close to the park boundaries include finding alternatives to activities they used to do in the park like NTFP collection. It also include avoiding farming close to the park where bushbucks, duikers and hogs destroy the food crops. Furthermore, 38% of the respondents indicate that they engage in multiple economic activities to manage

livelihood risks. Some of the untraditional activities engaged in include honey production, gari processing, petty trading, and carpentry. Though somewhat insignificant, 1% of the respondents also indicate setting traps for wild animals as a risk management strategy. This is normally in extreme cases where individuals are not prepared to move away completely from the park areas and thus resort to protecting their farms by setting traps for animals. It is not only a means of securing the farms, but also to obtain bush meat for consumption or sale. Diversification of livelihoods is a major step to livelihood risks mitigation in protected areas.

5.4.4 Strategies Adopted by Park Management to Address Ecological Risks

Several risk management strategies are adopted for the management of various ecological risks in protected areas. These strategies range from strict restrictions on activities that pose risk to PAs, to liberal and integrative strategies where some level of activity is allowed in such PAs with the observance of management principles as guiding baselines. With poaching, illegal logging, bushfires among others being major risks to the KNP, the study investigated the strategies that have been engaged by management in dealing with these risks. The park manager noted that the main strategy adopted to address risks to KNP is the use of regulatory approaches. The manager further elaborated on the management approach adopted in the park noting that:

“In Africa, conservation is like a tag of war. Nonetheless, the fact that natural resources are being conserved does not mean people should go hungry and die. In some areas, we have what we call NTFPs, Non-Timber Forest Products, which in some circumstances we allow people to access. So it is not for us to say that because government had acquired the place, they should never enter. No it is not that way. The people can go in there without disturbing the place. So we regulate the activities that the people engage in and around the park.

What we are against is extractive use that affects the park negatively”
(Manager-KNP, Nkwanta, 4th February, 2016).

The law enforcement officer of the park also noted that, the management of the park engage in community risk awareness and sensitization programs. In an interview, he explained that:

“We don’t use just one strategy to manage the poaching, bushfires and other things. We engage the community in dialogue very often to sensitize them on the need to support the management in protecting the park. We also go to the schools and radio stations to create awareness” (Law Enforcement Officer-KNP, Nkwanta, 5th February, 2016).

5.4.5 Testing of Hypothesis Two (2)

Different types of strategies have been adopted by conservationists in the management of risks in PAs across the world. Muhumuza & Balkwill (2013) noted that there are two broad approaches to managing PAs. This include the protectionism approach which restricts access to Parks except for tourism activities, and the community-based conservation approach that allows local people to access Park resources.

Whiles each of these approaches have its own strength and weaknesses, little mention is made of the best approach towards the mitigation of risks in PAs. This study hypothesized that restricted access is the best ecological risk management strategy in the KNP. The perception of local people on this management strategy is measured on a two-level response (Agree, Disagree) and the cross-tabulated variables and results of the test of hypothesis is presented in below.

Table 5.6: Community* Restricted access cross-tabulation

Name of Community * Restricted access is the best ecological risk management strategy in the KNP			
Community of Respondents	Restricted access is the best ecological risk management strategy in the KNP		Total
	Agree	Disagree	
Kue	14	39	53
Pawa	5	14	19
Shiare	5	65	70
Chillinga	8	50	58
Total	32	168	200

Source: Field Survey, 2016

Table 5.7: Chi- Square Test of Hypothesis 2

	Value	df	P-Value
Pearson Chi-Square	10.078	3	.018
Likelihood Ratio	10.205	3	.017
Linear-by-Linear Association	5.664	1	.017
N of Valid Cases	200		

Source: Field Survey, 2016

(at 5% level of significance)

From the Chi-square output in Table 5.7, it is observed that the P-Value 0.018 is less than 0.05. Thus the null hypothesis is rejected. In other words, the hypothesis that restricted access is the best ecological risk management strategy in KNP is rejected in favour of other risk management strategies such as regulatory access. This result corroborates existing viewpoint on risk management approaches opined by Wapalila (2008), that community involvement in management which allows people some level of access to resources in parks provides a better way to solving conservation problems.

5.4.6 Perceived Measures to Make Management of KNP More Effective

The study was interested in finding out what people perceive as measures to augment the efficacy of administration of the PA, and to a large extent the mitigation of risks to the livelihoods of the people and to the conserved area.

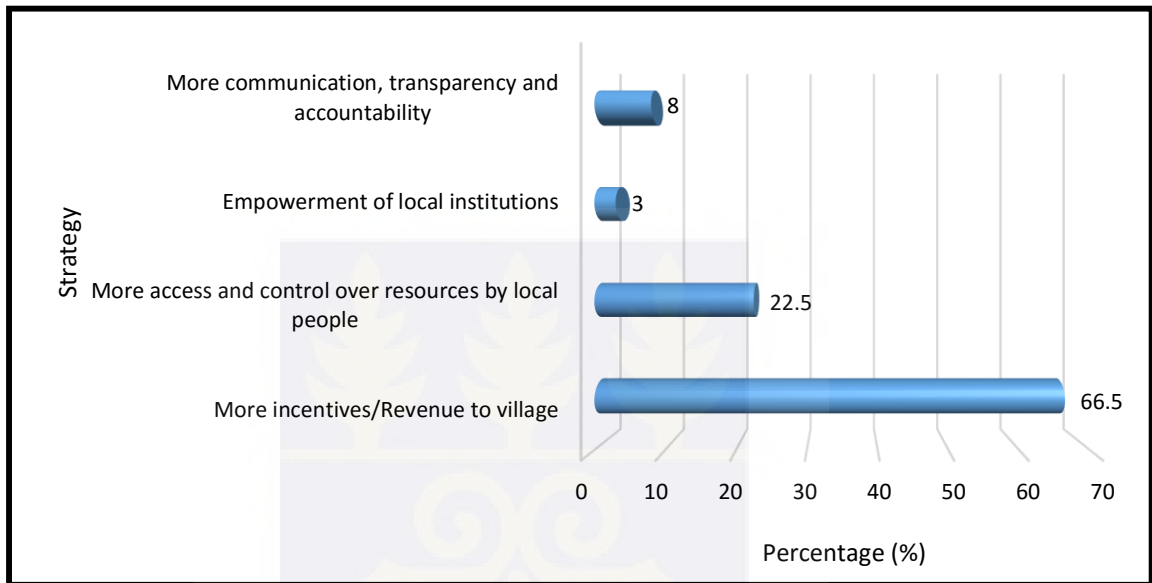


Figure 5.8: Measures to Enhance the Management Effectiveness of the KNP

Source: Field Survey, 2016

In the review of household heads and representatives' opinions, and deliberations with park management, it is uncovered that the level of local involvement in planning or management of the park is very low. The impression gathered from focus group discussions in the communities was that residents felt mistreated by the wildlife officials. Opinions from focus group discussions also point to the fact that there is deficiency of infrastructural development, employment opportunities and livelihoods enhancement options for residents. Thus, residents to a large extent do not value the existence of the park as a useful resource to them.

Nevertheless, the survey clarified that residents in fringe communities of the park are prepared to collaborate with wildlife officials when given the right recognition and their

livelihood concerns are being taken into account. In view of this, the investigation noted that 66.5% of respondents indicate that provision of more incentives and revenue to the villages will enhance the management effectiveness of the KNP. Also, 22.5% of the respondents indicate that more access and control of resources by local people will support the effectiveness of management of the park.

Indeed it is noteworthy that the traditional ways of strict protectionism adopted in early protected area management is fading out (Chhetri et al., 2003). There is a growing advocacy for a regulatory approach which allows local people some level of control albeit regulated access over park resources. Furthermore, 8% of the respondents call for communication, transparency and accountability to the people who were original custodians of the area. Also, 3% of the respondents called for the empowerment of local institutions. An example of such an institution is the Community Resource Management Committees (CRMCs) which has been set up in each of the nine (9) fringe communities of the park.

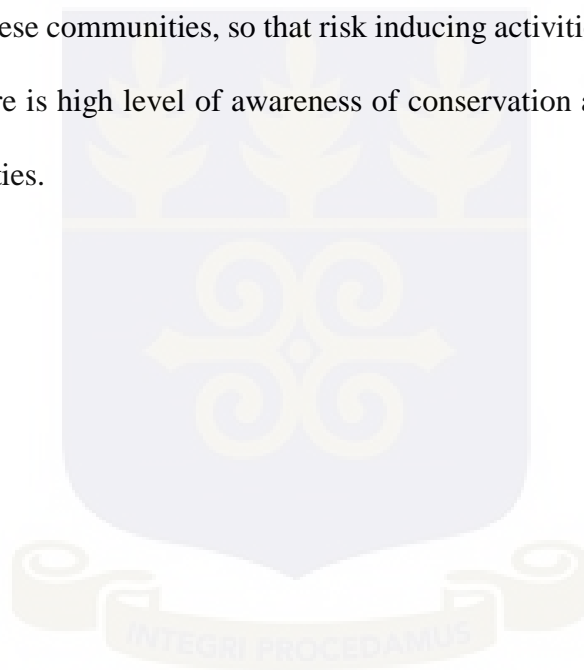
5.5 Chapter Summary

This chapter was dedicated to examining the spatial variations of risks perceived in the KNP, the underlying cause factors of these risks and the risk management strategies that have been put in place to address these risks. It is found from the study that local people perceived various risks or shocks to their livelihood assets. These risks or livelihood constraints have been identified as the effects that displacement from the KNP have had on people in fringing communities.

Furthermore, the study found that there is no significant spatial variation in perceived livelihood risks between fringing communities of the KNP. Thus, local people across the studied communities perceived similar risks irrespective of their location. In

addition, it was established in this chapter that the most severe and common major risk to the livelihood of local people is denied access to resources of the park. Also, the most ubiquitous and severe ecological risk is bushfire. Furthermore, limited alternative livelihoods is identified as the major factor that underlie risks to the KNP.

On risk management in KNP, one key finding from this study is that, the park management organized frequent excursions for pupils in fringing communities to other parks like Mole National Park, which is relatively well developed than the KNP. The motive according to management was to whip up interest in conservation among the young ones in these communities, so that risk inducing activities will be reduced in the future when there is high level of awareness of conservation among these children in fringe communities.



CHAPTER SIX

SUMMARY OF KEY FINDINGS, CONCLUSION, RECOMMENDATIONS

6.0 Introduction

The study examined the perceived risks and management strategies in the KNP of the Nkwanta South District. Specifically, issues surrounding the risks that people in fringe communities perceive to their livelihoods and the risks that are posed to the KNP were examined. Also, the risks management strategies adopted were assessed. Important linkages were examined between risk perception and socio-economic conditions of local people. This chapter presents a summary of the major findings of the investigations conducted in the study and appropriate recommendations are presented.

6.1 Summary of Major Findings of the Study

6.1.1 Socio-Economic Effects of KNP on Livelihoods of Local People

It is found that local people in communities around the KNP have lost major livelihoods assets and livelihood strategies as a result of being completely displaced from activities that they used to engage in in the KNP after the protection of the park. Albeit, the major livelihood activities affected most are those that are very dependent on the park. Farming and Agro-processing are the only major livelihood strategies/activities that local people depend on currently for their survival. Furthermore, aside honey-production, it is found that all other alternative livelihood activities like mushroom production, grass cutter rearing, and woodlots establishment which was initiated by the park management have not chalked much successes in fringing communities of the park.

6.1.2 Perceived risks and underlying causes of risks to KNP

The investigations revealed that the most pronounced and severe risks to the livelihoods of local people are denied access to forest resources, loss of farmlands, and increase in crop damage by wildlife. These have made it quite difficult for local people to engage in livelihood strategies that will yield positive livelihood outcomes like increased income and higher yields. Furthermore, it is established that there is no significant variation in perceived risks among the fringing communities.

The major ecological risks perceived to the KNP are bushfires, poaching, and illegal logging. It is established from the ecological risk maps that most of the risks within the KNP or nearer to the park boundaries, were identified closer to Pawa and Kue communities, as well as the Togo side of the KNP boundary. Nonetheless, most of the illegal activities occurred within the buffer and off-reserve areas of the KNP. The major underlying cause of risks perceived in the KNP area is limited alternative livelihood strategies which local people could engage in to meet their household needs.

6.1.3 Risk Management in the KNP Area

There is a high awareness of risk management programs in the fringing communities with the Wildlife officials the facilitators of the risk awareness programs. Application of local knowledge featured prominently as a risk management strategy among local people. To this effect, local people highlighted that they principally avoid getting close to the park boundary (i.e. farming close, moving into the park without park guides) while a significant number also indicate that they engaged in multiple economic activities as a strategy to manage risks to their livelihoods. Regulation of activities, rather than outright restriction on access to park is perceived as the best approach to manage ecological risks to KNP. One key finding here is that, though the KNP is a trans-boundary national park, there is no formal management collaboration with

officials of the Fazao National Park of Togo. According to the KNP management, this has made it quite difficult to manage activities of Togo Nationals that pose risks to the KNP.

6.2 Conclusion

This study draws on the concepts of perceived risks and risk management in PAs. The Protection Motivation Theory (PMT), and conceptual frameworks on risk management and livelihoods served as a guide to examine perception of livelihood and ecological risks in the study area and the coping/management strategies adopted. The analysis revealed that the KNP is exposed to numerous risks that threaten its vitality. Anthropogenic undertakings in and around the PA has resulted in the depletion of the floral and faunal resources through bushfires, poaching and illegal logging.

On the flipside however, local livelihoods are negatively affected because of displacement from the park. With marginalization of local people, limited alternative livelihoods, and the lack of appropriate compensations, local people continue to engage in activities like poaching and logging which are deemed unhealthy to the survival of the park.

Although some level of awareness has been raised as a management strategy, the lack of funds and strong resistance from some local people have made it very difficult to eliminate the underlying risk factors. The lack of collaboration with officials of the Fazao National Park in Togo have partly contributed to this existing risk management difficulties.

Despite the numerous challenges that the park has been exposed to, it is worth noting that it has so far induced some positive outcomes in the fringing communities through

the diversification of livelihoods. Honey production is one of these livelihood diversification activity that has been successful so far in the fringing communities.

6.3 Recommendations

In addition to the goal of conservation, the KNP was established with the added objective of promoting tourism development in the Nkwanta District. Therefore the following recommendations are made to the government of Ghana, Stakeholders, traditional and political authorities of Kue, Pawa, Shiare, and Chillinga communities to help achieve the above stated goals.

The management of the KNP needs to offer supplementary benefits to local people and to treat them in a way that promotes long term partnerships. It is evident that majority of the local people are not opposed to the park`s establishment. Thus a strong collaboration that makes park officials popular among local people is recommended. Also, an individual compensation mechanism should be facilitated, as the local people bear so much costs from the conservation activity in its current state. The government in partnership with KYAMAB should pilot compensation schemes to properly compensate people for crop losses and other damages by marauding animals. It is further recommended that government and donors should provide funding to facilitate the consolidation of alternative livelihood projects in these communities.

The feeder roads department and the District Assembly should come to the aid of the communities by building roads and rehabilitating existing ones especially from the district capital Nkwanta to the rural areas around the park. The only means of accessing Chillinga for instance from Nkwanta is by footpath. The building of roads to connect these villages will not only open up the communities and make marketing of their produce quite easier, but also, serve as physical capital that could enhance the

realization of other livelihood capitals. In addition there should be an increase in publicity on the tourism resources of the KNP. Efforts should also be made to enhance the scenic view of the natural attractions. Community tourism development groups should be formed to harness the unique cultures of the local people which could be developed into cultural tourism to augment the nature-based tourism in the area. The beautiful landscapes and cultures will provide variety for different types of tourists.

Community risk management watchdogs should be formed, trained and provided with the needed logistics to first of all provide undercover information on illegal logging and poaching to the law enforcement officials of the park, as well as to control activities such as bushfires. It is also worthy to increase patrol teams and enhance them with communication devices including radio calls (walk talkies) for the reason that poachers may adapt to the existing patrol routine and change their hunting habit. Furthermore, the management of the KNP should collaborate with the officials of the Fazao National Park to forge a working system that induces benefits to both management. This will help in tracking down on illegal activities around the borders of both parks. Collaboration between management of both parks will also enhance the tapping of managerial ideas which will go a long way to enhance effective risk management in the KNP.

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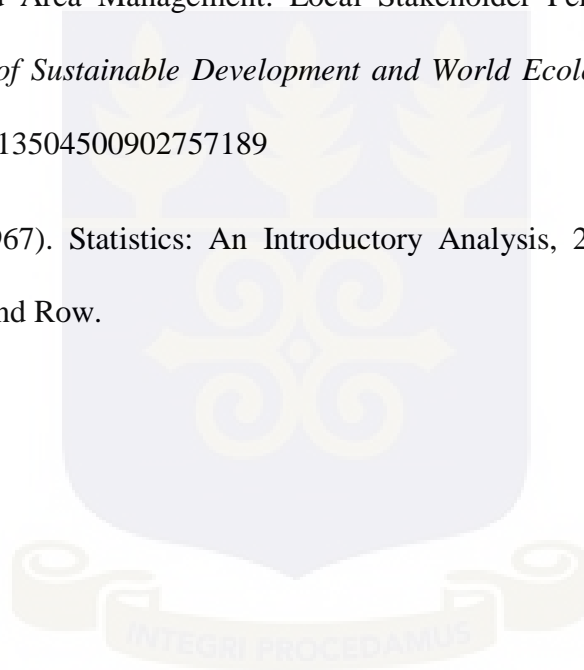
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APPENDICES

DEPARTMENT OF GEOGRAPHY AND RESOURCE DEVELOPMENT

UNIVERSITY OF GHANA

LEGON

APPENDIX A

STRUCTURED QUESTIONNAIRE

QUESTIONNAIRE FOR HOUSEHOLDS

Dear Respondent

I am an MPhil student of the University of Ghana undertaking a research under the theme: Perceived Risks and Management Strategies in Protected areas. A case study of Kyabobo National Park in the Nkwanta South District of Ghana. This questionnaire aims to collect information on the perception on risks and risk management in the study area.

Participation in this research is voluntary. Your identity would be kept secret and the confidentiality of your responses is guaranteed.

GPS POINT [X] [Y]

f. Agro-processing (e.g. Honey, Alcohol, Gari, palm oil) [] []

7. What alternative livelihood opportunities and asset security measures have been created to benefit local people as a result of the creation of the park?

i. Mushroom Production Agree [] Disagree []

ii. Honey Production Agree [] Disagree []

iii. Grasscutter /Snail rearing Agree [] Disagree []

iv. Woodlots establishments Agree [] Disagree []

v. Community-based ecotourism projects Agree [] Disagree []

8. Is this park important for your livelihood support?

Yes [] No []

9. Elaborate on your response in question 10

.....

.....

.....

10. Do you agree with the statement that the creation of the park has led to physical displacement of local people (loss of residential and farming lands)?

Yes [] No []

11. Have the creation of the park caused any conflicts in your community?

Yes [] No []

12. If yes, explain

- | | | | |
|-------|--|--------------------------|--------------------------|
| i. | Park Tour Guides | <input type="checkbox"/> | <input type="checkbox"/> |
| ii. | Community Tour Guides | <input type="checkbox"/> | <input type="checkbox"/> |
| iii. | Restaurant/ Chop bar services | <input type="checkbox"/> | <input type="checkbox"/> |
| iv. | Farming | <input type="checkbox"/> | <input type="checkbox"/> |
| v. | Accommodation services | <input type="checkbox"/> | <input type="checkbox"/> |
| vi. | Transportation/Drivers | <input type="checkbox"/> | <input type="checkbox"/> |
| vii. | Security | <input type="checkbox"/> | <input type="checkbox"/> |
| viii. | Messengers | <input type="checkbox"/> | <input type="checkbox"/> |
| ix. | Cultural groups | <input type="checkbox"/> | <input type="checkbox"/> |
| x. | Artworks/woodcarvings | <input type="checkbox"/> | <input type="checkbox"/> |
| xi. | NTFP collection/sale (mushroom, honey, snails) | <input type="checkbox"/> | <input type="checkbox"/> |

18. Has tourism sustained this employment activity (ies) for local people?

Yes

No

19. What is/are the perceived socio-cultural benefits derived from tourism in Kyabobo National Park?

- | Benefits | yes | no |
|--|--------------------------|--------------------------|
| i. Increased Host-Guest Interaction | <input type="checkbox"/> | <input type="checkbox"/> |
| ii. Appreciation of Culture by Guest | <input type="checkbox"/> | <input type="checkbox"/> |
| iii. Friendly social cohesion | <input type="checkbox"/> | <input type="checkbox"/> |
| iv. Tourism has made community popular | <input type="checkbox"/> | <input type="checkbox"/> |

20. What is/are the perceived negative socio-cultural effects of tourism in Kyabobo National Park?

Threat/Risk/Cost	yes	no
i. Incidence of stealing from Guest	<input type="checkbox"/>	<input type="checkbox"/>
ii. Instances of begging by locales	<input type="checkbox"/>	<input type="checkbox"/>
iii. Incidence of smoking/Alcoholism	<input type="checkbox"/>	<input type="checkbox"/>
iv. Change in dressing mode	<input type="checkbox"/>	<input type="checkbox"/>
v. Incidence of prostitution in community	<input type="checkbox"/>	<input type="checkbox"/>

21. Do you feel that local people take full advantage of the area`s economic potential related to tourism?

- a. No, definitely not
- b. No, not really
- c. Yes, to some extent
- d. Yes, definitely

22. What major social benefits has the creation of the park induced in your community?

- a. Provision/Rehabilitation of infrastructure
- b. Improvement in social networking
- c. Increased Government support
- d. Improved security (from wild animal attacks and thieves)

23. In what major way has the Kyabobo national park affected you economically?

- a. Revenue for local development
- b. Employment opportunities for local people
- c. Tourism as a growth pole for development
- d. Increased access to credit (banks/microfinance/cooperatives)

PERCEIVED RISKS IN STUDY AREA AND UNDERLYING CAUSES OF RISKS

24. How is the Kyabobo National Park posing Risks/Threats to your livelihoods?

(1= strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree)

Risks/Threat	Response				
i. Denied local people access to Forest Resource	[1]	[2]	[3]	[4]	[5]
ii. Disease outbreaks	[1]	[2]	[3]	[4]	[5]
iii. Increase crop damage by wildlife	[1]	[2]	[3]	[4]	[5]
iv. Inequity in allocation of infrastructure dev't	[1]	[2]	[3]	[4]	[5]
v. Weakening of Forest Product based industries	[1]	[2]	[3]	[4]	[5]
vi. Wildlife attacking people	[1]	[2]	[3]	[4]	[5]
vii. Loss of farmlands	[1]	[2]	[3]	[4]	[5]

25. Have you lost any livelihood resource due to the creation of the park?

- a. Yes []
- b. No []

26. Do you agree with the statement that people located closer to the park are exposed to more livelihood risks/threats than those who live far away?

- a. Yes, I Agree [] b. No, I Disagree []

27. Which of the following activity (ies) do you perceive as Risks/Threats to Kyabobo National Park?

Risks/Threats	yes	no
i. Poaching	[]	[]
ii. Logging	[]	[]
iii. Bushfire	[]	[]
iv. Predatory Animals	[]	[]
v. Farming	[]	[]
vi. Settlement Expansion	[]	[]
vii. Tourist Activities (e.g. Trampling)	[]	[]
viii. Pollution (Solid & Liquid waste)	[]	[]
ix. Grazing of Park by livestock	[]	[]

28. Using a scale of very high to very low, indicate the level of severity of risks posed to the Kyabobo National Park. (NB# very high=5, high=4, Neutral=3, Low=2, very low=1)

Risk	Level of Severity				
i. Poaching	[5]	[4]	[3]	[2]	[1]
ii. Logging	[5]	[4]	[3]	[2]	[1]

iii.	Fire	[5]	[4]	[3]	[2]	[1]
iv.	Predatory Animals	[5]	[4]	[3]	[2]	[1]
v.	Farming	[5]	[4]	[3]	[2]	[1]
vi.	Settlement Expansion	[5]	[4]	[3]	[2]	[1]
vii.	Tourist Activities	[5]	[4]	[3]	[2]	[1]
viii.	Pollution (solid & liquid waste)	[5]	[4]	[3]	[2]	[1]
ix.	Grazing of park by livestock	[5]	[4]	[3]	[2]	[1]

29. What do you think is/are the major underlying causes of risks to the Kyabobo National Park? (NB# Strongly agree=5, Agree=4, Neutral=3, Disagree=2, Strongly Disagree=1)

Underlying causes of risk		Response				
i.	Poverty	[5]	[4]	[3]	[2]	[1]
ii.	Population growth and Migration	[5]	[4]	[3]	[2]	[1]
iii.	Limited alternative livelihoods	[5]	[4]	[3]	[2]	[1]
iv.	Weak law enforcement	[5]	[4]	[3]	[2]	[1]
v.	Illiteracy and low level of awareness	[5]	[4]	[3]	[2]	[1]
vi.	Tourist activities	[5]	[4]	[3]	[2]	[1]

30. What barriers do you experience with using the park?

.....

.....

.....

31. Which of these natural conditions poses the most risk to the kyabobo national park?

- a. Drought
- b. Wild fires
- c. Floods
- d. Invasive/ wild animals

32. Which of these human activities poses the most risk to the park?

- a. Poaching
- b. Pollution (solid and liquid waste)
- c. Bush fires
- d. Harvesting of NTFPs
- e. Farming

33. Between natural and human factors, what is the main source of risk to the Kyabobo national park?

- a. Natural [] Human []

34. Do you think the faunal/animal composition of the park has declined?

- Yes [] No []

35. How has the creation of the park posed risk/threat to your financial capital

- i. Inability to find a job/unemployment
- ii. Lack of basic credit facilities

iii. Inability to maintain livestock

iv. Lack of market/inaccessibility

36. How has the creation of the park posed risk/threat to your social capital?

i. Less meat in the house due to ban on poaching

ii. Lack of government support

iii. Access to education has become difficult (high fees & Distance to school)

iv. Poor access to health (no entry to get herbs/ limited access to clinic)

v. Wild animals attack livestock

37. How has the creation of the park threatened your physical capital?

i. Damage to roads/ cut off road networks

ii. Cut off from water source

iii. Lack of housing resources

38. How has the park posed risk to your human capital?

i. Death of family networks

ii. Deterioration of health

iii. Hunger

iv. Malnutrition

39. How has the park posed risk to your natural capital?

i. Loss of land

- ii. Increase in pests in the area
- iii. Decrease in natural produce making people reliant on purchased goods
- iv. Livestock diseases or loss

40. Which activities led to the degradation?

- i. Frequently occurred bushfires from various courses
- ii. Over harvesting and grazing
- iii. Encroachment for shifting cultivation and settlement
- iv. Intensive and unregulated firewood and charcoal production
- v. All the above were common

**RISK MANAMENT STRATEGIES AND MANAGEMENT EFFECTIVENESS
IN STUDY AREA**

41. What strategies do you or your household adopt to manage risks/threats posed to your livelihood?

- i. Engage in multiple economic activities
- ii. Avoid getting close to park boundaries
- iii. Setting traps for wildlife

42. Have you benefited from any risk awareness program in your community?

Yes [] No []

43. Which institution (or persons) carried out this risk awareness exercise?

- a. Wildlife society
- b. GTA
- c. District Assembly
- d. NGO
- e. Others..... (Specify)

44. Is there any community-based park management association in your community?

Yes [] No []

45. Is there any anti-poaching brigade in your community?

Yes [] No []

46. Has there been any fire management skills training in your community as part of the Kyabobo national park development project?

Yes [] No []

47. What do you think should be done to people who are caught engaging in activities that poses risks to the Kyabobo national park?

- a. They should be fined
- b. They should be jailed
- c. They should be allowed to go free

48. Which of these management actions have been effective so far with regards to risk management in the Kyabobo national park?

- a. Law enforcement

b. Education and awareness creation

49. Can you say the management strategies adopted have reduced risks to the park?

Yes [] No []

50. If yes, what are the indicators of this risk management effectiveness?

a. The vegetation species density has increased and regenerate vigorously

b. Illegal activities are controlled

c. Both A and B

d. Others..... (specify)

51. What do you need to be improved or changed in the management of the park to make risk management more effective?

i. More incentives/ revenue to village

ii. More access and control over resources by locals

iii. Local institutions empowerment

iv. More communication, transparency and accountability

52. Are you satisfied with how the park is managed?

Yes [] No []

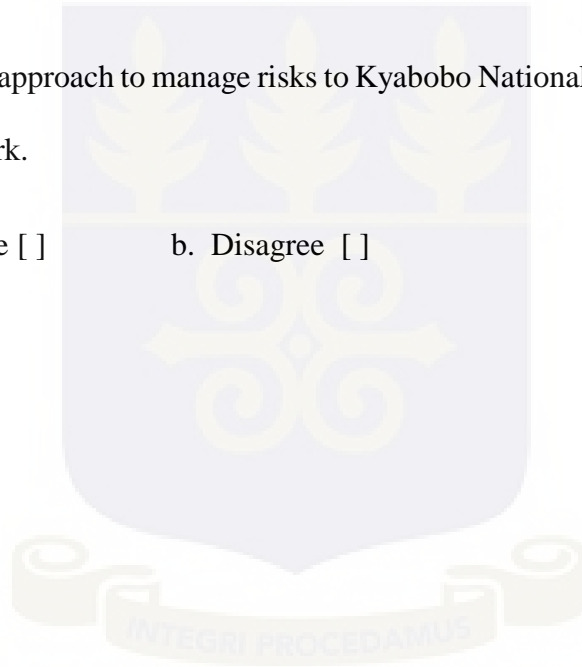
53. What is the best strategy to manage the risks/threats posed to the Kyabobo National Park?

Risks/threat	strategies
a. Poaching	[] Educate [] Regulate [] Restrict Access

- b. Logging Educate Regulate Restrict Access
- c. Fire Educate Regulate Restrict Access
- d. Farming in park areas Educate Regulate Restrict Access
- e. Settlement expansion Educate Regulate Restrict Access
- f. Tourist activities Educate Regulate Restrict Access
- g. Pollution (Solid/liquid) Educate Regulate Restrict Access
- h. Grazing by livestock Educate Regulate Restrict Access

54. The best approach to manage risks to Kyabobo National Park is to restrict access to the park.

- a. Agree
- b. Disagree



APPENDIX B

INTERVIEW GUIDE FOR STAKEHOLDERS OF KYABOBO NATIONAL PARK

B1: INTERVIEW GUIDE FOR ASSEMBLY MEMBER

1. What are the livelihood activities of inhabitants of this community before the creation of the Kyabobo National Park?
2. What are the livelihood activities of inhabitants of this community after the creation of the Kyabobo National Park?
3. In what ways do you think the Kyabobo National Park has benefited the people?
4. What risks or threats do you think the creation of the park is posing to the people of this community (livelihood risks etc)
5. What is the major risk that they face as a result of the creation of the park?
6. What strategies have the people adopted to manage these risks that they are exposed to?
7. How effective have these strategies been?
8. Are local people involved in the management of the Kyabobo National Park?
9. Would you say the creation of the Kyabobo National Park is a step in the right direction? Why?
10. What do you think can be done to mitigate the negative effects and threats that the Kyabobo National Park poses to people of this community?

B2: INTERVIEW GUIDE FOR FOREST SERVICES COMMISSION

1. What is the economic base of the communities surrounding the park
2. What forest resource (s) is at risk/ threatened most
 - a. Timber. (List the particular types at risk)

- b. Animals (list)
 - c. Birds (List)
 - d. Insects (List)
3. Why are these park resources under threat?
 4. Which communities poses these risks to the park?
 5. Which category of people (hunters, tourists, chainsaw operators etc) poses the most risk to the park
 6. What steps have your institution taken to manage these risks
 7. How will you describe the interactions and relationships between community members and the management, officers, forest and tour guides in the park area?
 8. Do communities take part in
 - a. Management meetings
 - b. Decision making
 - c. Communal labour
 - d. Extraction or sharing forest resources
 - e. Information sharing
 9. How do community members conform to the environmental management goals?
 10. Are there community forest management committees that ensures good forest management practices?
 11. Are there any signs of conflicts that are related to forest conservation of the Kyabobo National Park?
 12. What is the attitude of the people towards the conservation project?
 13. What specific roles does your organization play in the protection of the Kyabobo national park?

14. What other agencies are involved in the management of the park?
15. Is there any collaboration among these bodies? Who does what?
16. What are your organization`s most serious problems with regard to implementation of risk management strategies in the Kyabobo national park
17. What are the possible solutions

B3: INTERVIEW GUIDE FOR KYABOBO NATIONAL PARK MANAGER

1. What is the main reason (s) for the establishment of the Kyabobo National Park?
2. Have the Kyabobo National Park achieved its purpose?
3. How effective has tourism been in Kyabobo national park?
4. What opportunities have tourism and Kyabobo national park created for the local people?
5. Have challenges have you identified that is limiting the realization of the full potential of tourism in Kyabobo National Park?
6. What do you think need to be done to address these challenges
7. What risks is the Kyabobo National Park exposed to?
8. What is the major risk to the park that management are faced with?
9. What different risk (s) do the following communities pose to the park:
 - i. Chillinga
 - ii. Pawa
 - iii. Keri
 - iv. Shiare
10. What is the main causes of this risks that the park is threatened with?
11. What strategies have you adopted to manage these risks that the Kyabobo national park is exposed to?
12. Which bodies or individuals are involved in the management of these risks
13. How effective have your strategies been in addressing these risks/threats

14. What are the challenges you face in the management of the risks that the park is threatened with/ or why do these risks persist despite key interventions
15. Going forward, what do you think needs to be done to secure the Kyabobo national park from the various risks/threats identified?

B4: INTERVIEW GUIDE FOR NKWANTA SOUTH DISTRICT SUB COMMITTEE ON TOURISM

1. How were you involved in the implementation of tourism in the Kyabobo National Park Area
2. What are your expectations of the tourism initiative in Kyabobo
3. what are the most visited tourism sites within the park
4. Would you say that tourism has contributed to infrastructure development in fringe communities
5. In what ways have tourism and Kyabobo affected the local people
 - i. Economically
 - ii. Culturally
 - iii. Environmentally
 - iv. socially
6. in what ways does tourism and activities of tourist pose risks/threats to
 - i. the Kyabobo national park
 - ii. the surrounding communities
7. what strategies have you adopted to address these risks/threats
8. how effective have your strategies been
9. what measures do you think are needed to effectively manage these risks
10. what challenges have hindered the effective development of tourism in Kyabobo
11. what interventions have you taken to overcome these challenges

B5: INTERVIEW GUIDE FOR TOUR GUIDE

1. How often have you encountered the under listed threats in the KNP

Activity

- i. Snares found
 - ii. Poachers camp found
 - iii. Spent cartridges found
 - iv. Animals found killed
 - v. Firearms confiscated
 - vi. Poachers arrested
 - vii. Snares confiscated
 - viii. Gunshots heard
 - ix. Poachers observed
 - x. Carbide/old batteries found
 - xi. Skins confiscated
 - xii. Trees/logs felled
 - xiii. Bush fire incidents
2. What is the major risk that the Kyabobo National Park is threatened with?
 3. What do you think are the underlying cause factors for these risks?
 4. How have these risks affected the park?
 5. How many incidents of wild animals' attacks have you recorded?
 6. What steps do you take to protect the local people/tourist on one hand, and the animals on the other hand?

B6: INTERVIEW GUIDE FOR PERSONELOF WILDLIFE DIVISION-

NKWANTA

1. How important was the forest to the communities and inhabitants
2. Do you think it is necessary to strictly protect the forest and wildlife in Kyabobo
3. Are the community leaders and members involved in decisions concerning the park management
4. Do you think there is adequate conservation education and awareness creation in the community
5. How does local knowledge feature in conservation education and management of the park
6. How has the needs of local people been incorporated in the management of Kyabobo
7. Do you think the population of flora and fauna has increased in Kyabobo national park compared to the last 10-20 years
8. What will you make of the crop damage incidences
 - i. Would you say it has decreased or increased?
 - ii. What would you recommend to reduce the frequency of incidence if not eliminated?

APPENDIX C

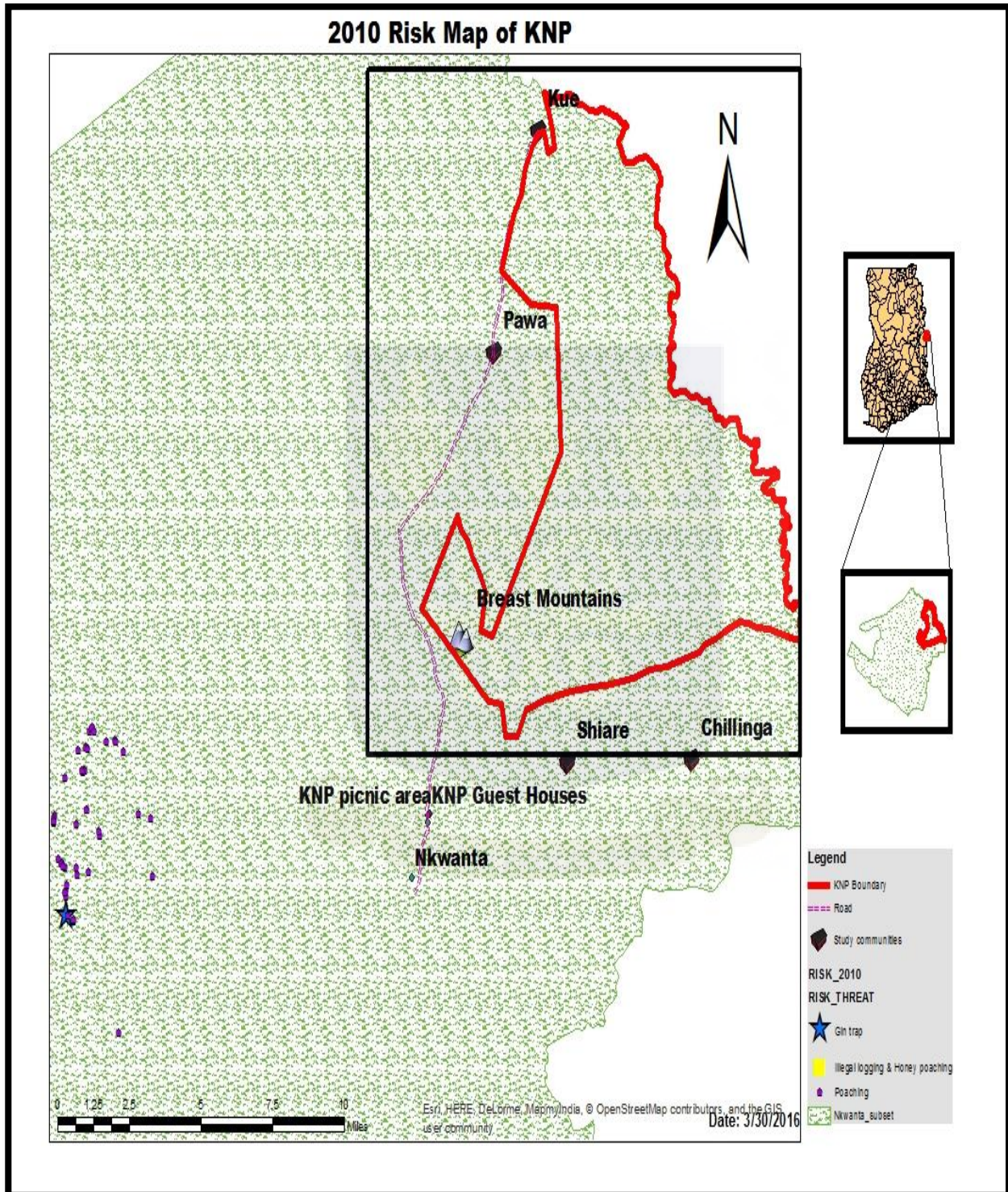
GENERAL SEMI-STRUCTURED GUIDE FOR FOCUS GROUP

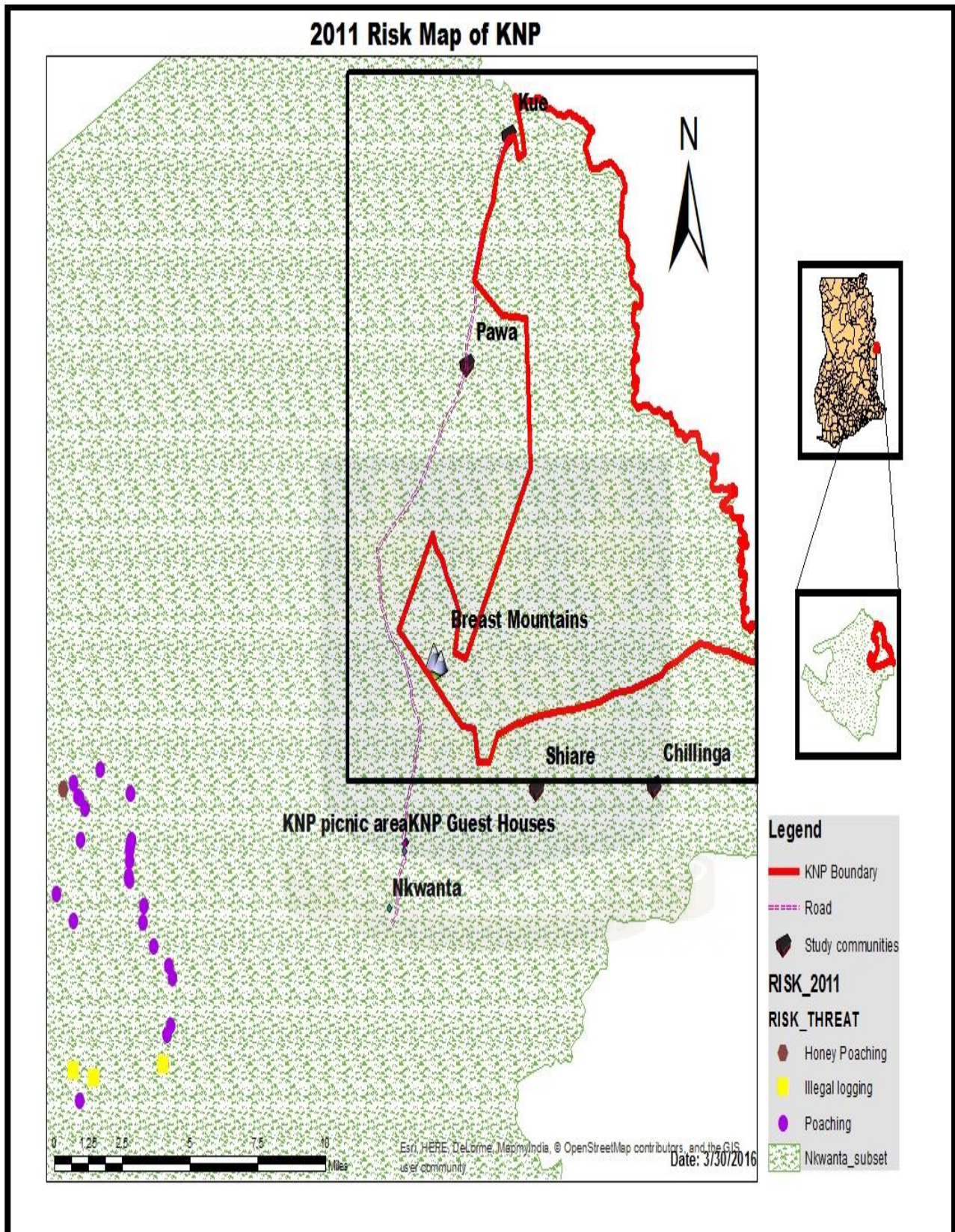
DISCUSSION

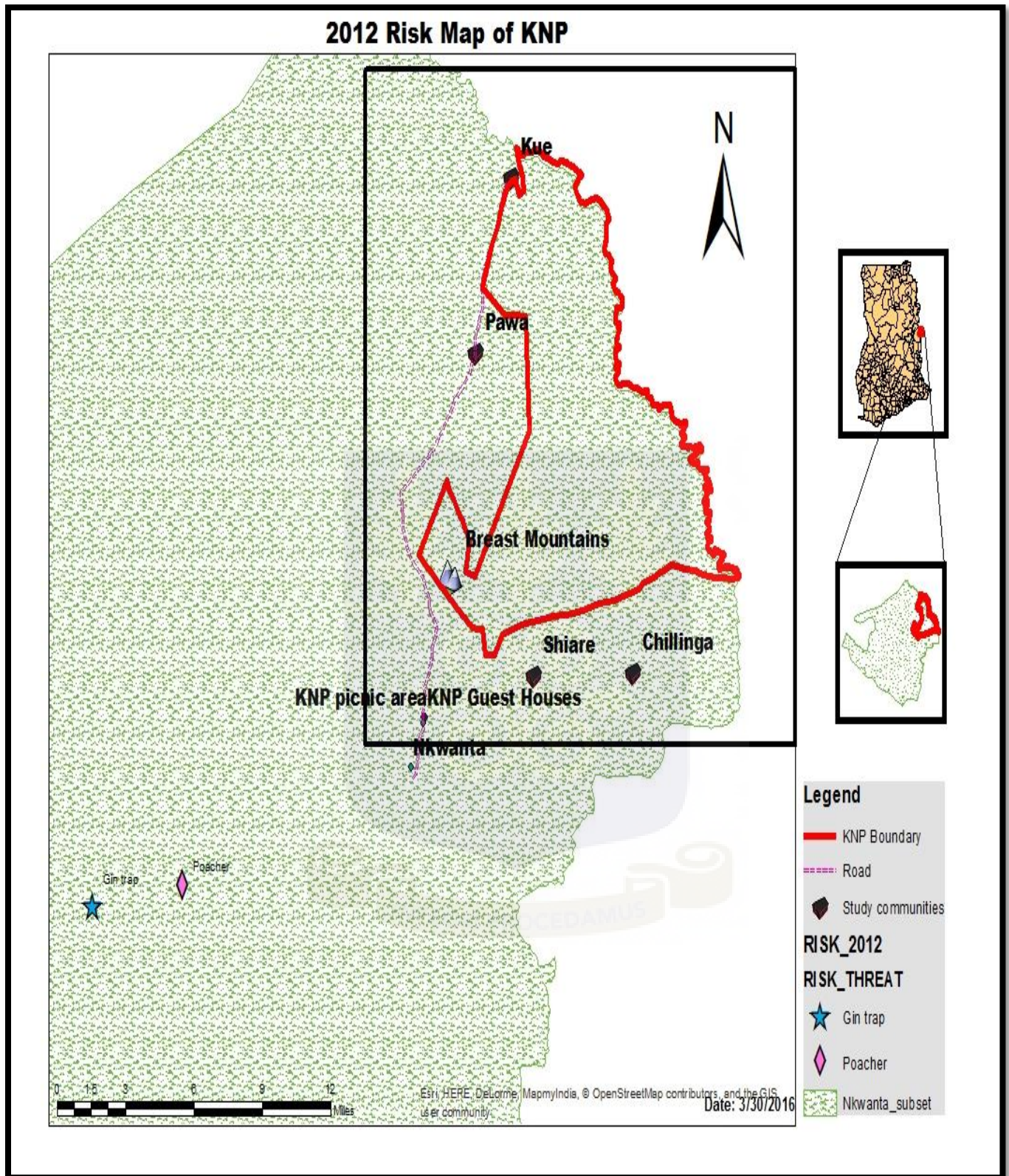
1. What are the livelihood activities of inhabitants of this community before the creation of the park?
2. What are the livelihood activities of inhabitants of this community after the creation of the park
3. What risks is the park posing to your livelihoods
4. Which of these risks is most severe
5. What management strategies have been taken to address these risks that you are threatened with
6. Have these strategies been effective in addressing the threats
7. Apart from the steps you are taking now to secure your livelihoods from the risks the park poses to you, what other things do you feel needs to be done to address these challenges
8. Have you had any collaborations with the park authorities over the management of the forest
9. What strategies have you taken at the community level to protect the forest resource
10. Apart from the communities around the park, does activities of people from other places far from the park pose any threats to the park?

APPENDIX D

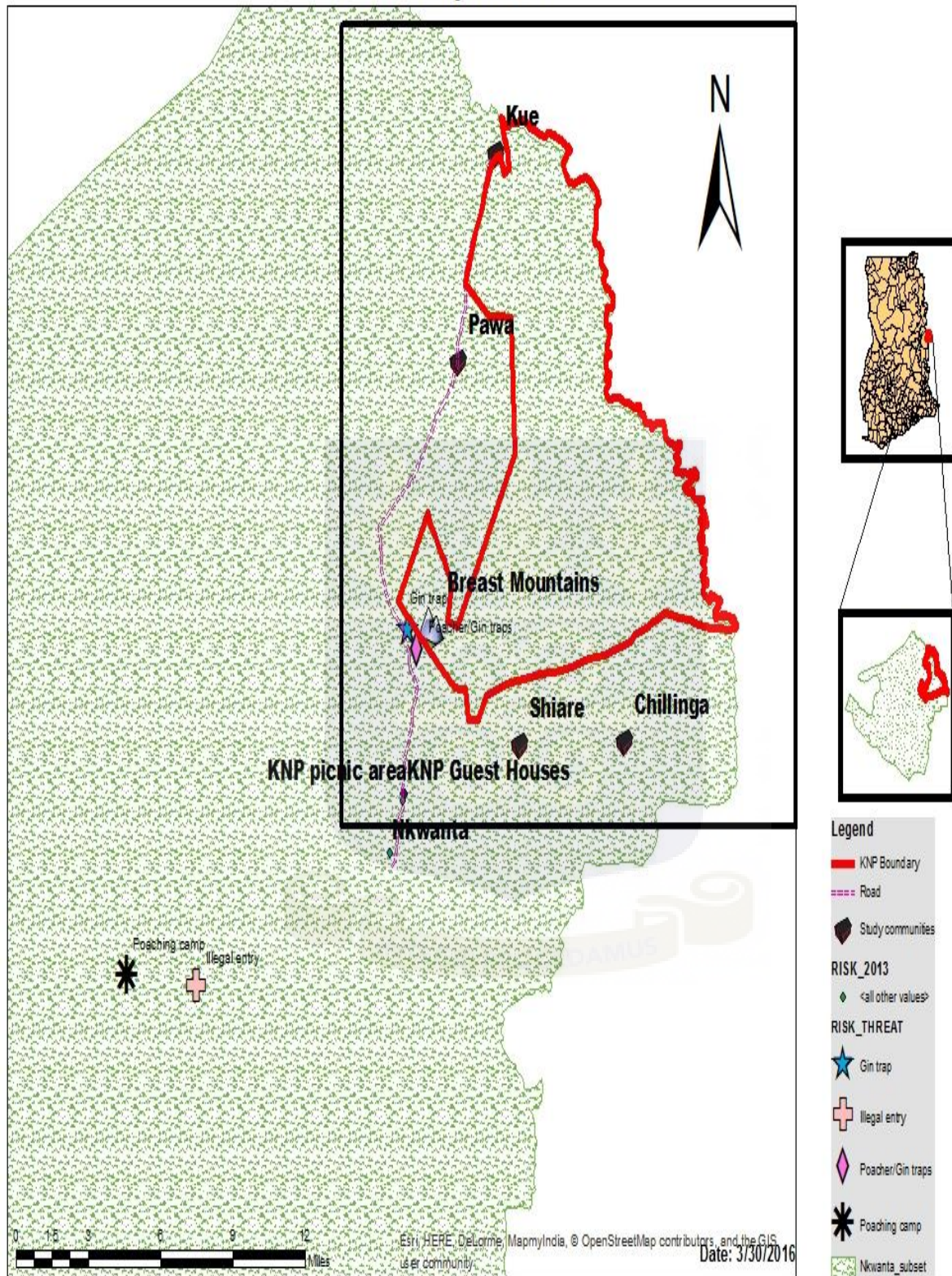
RISK MAPS

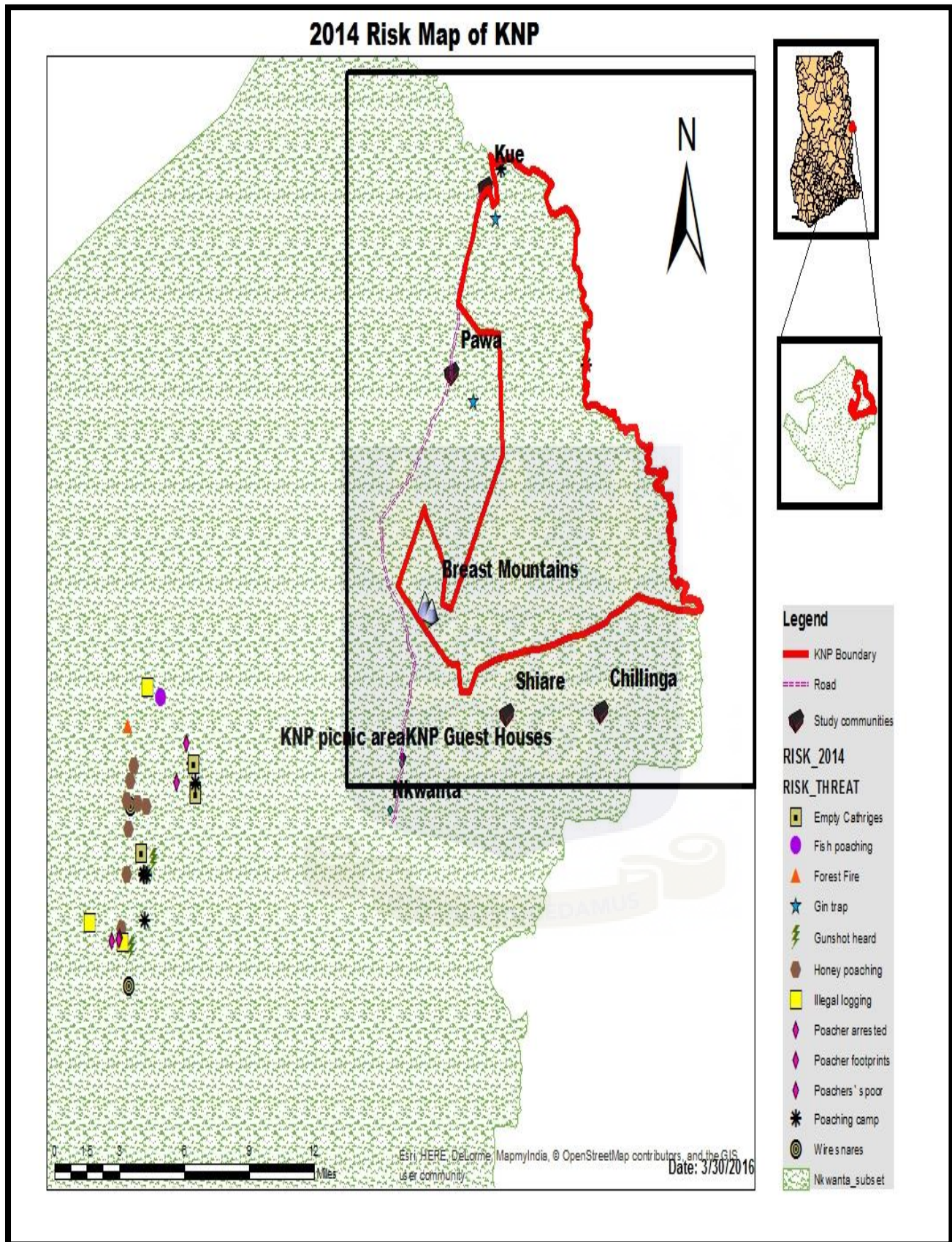


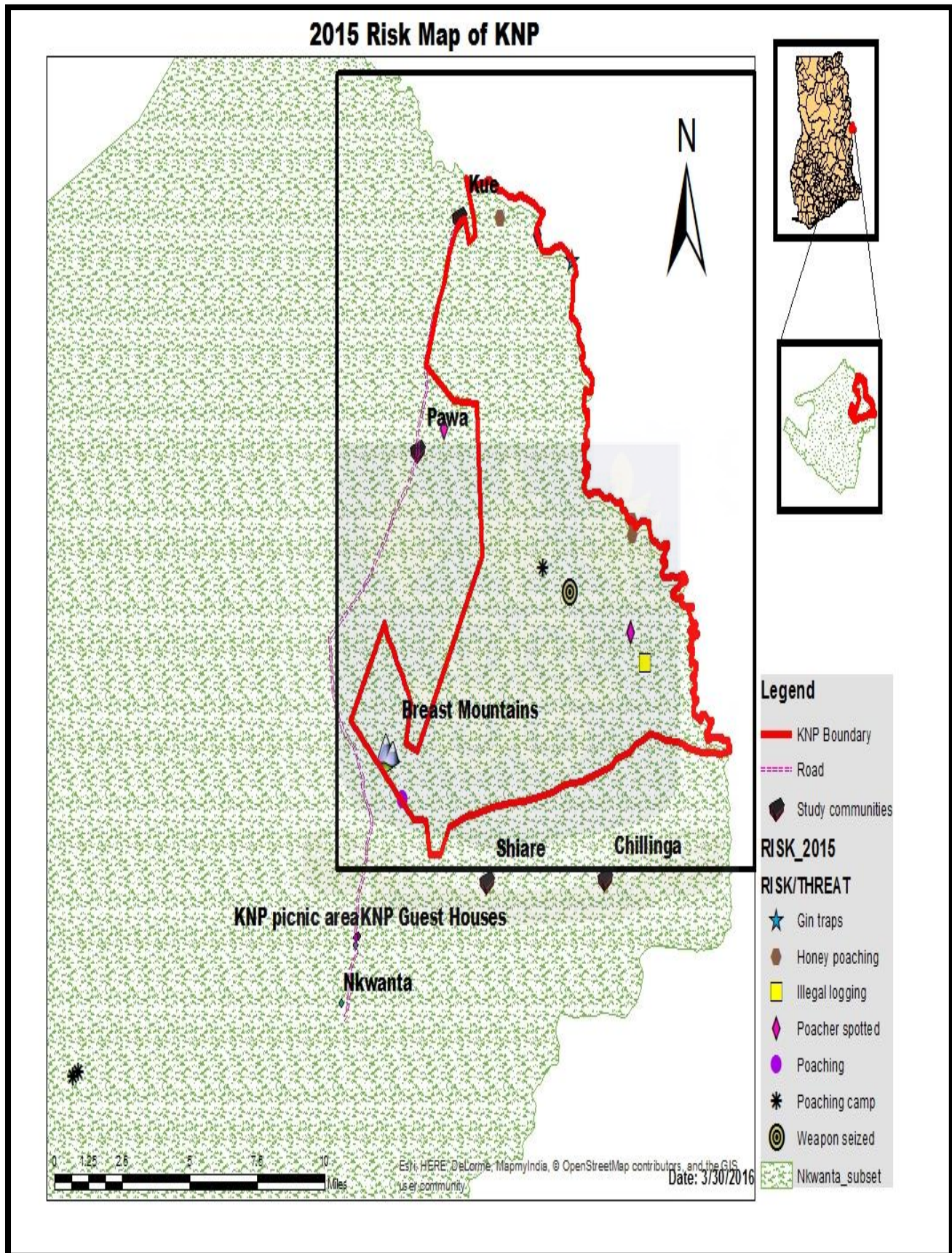




2013 Risk Map of KNP

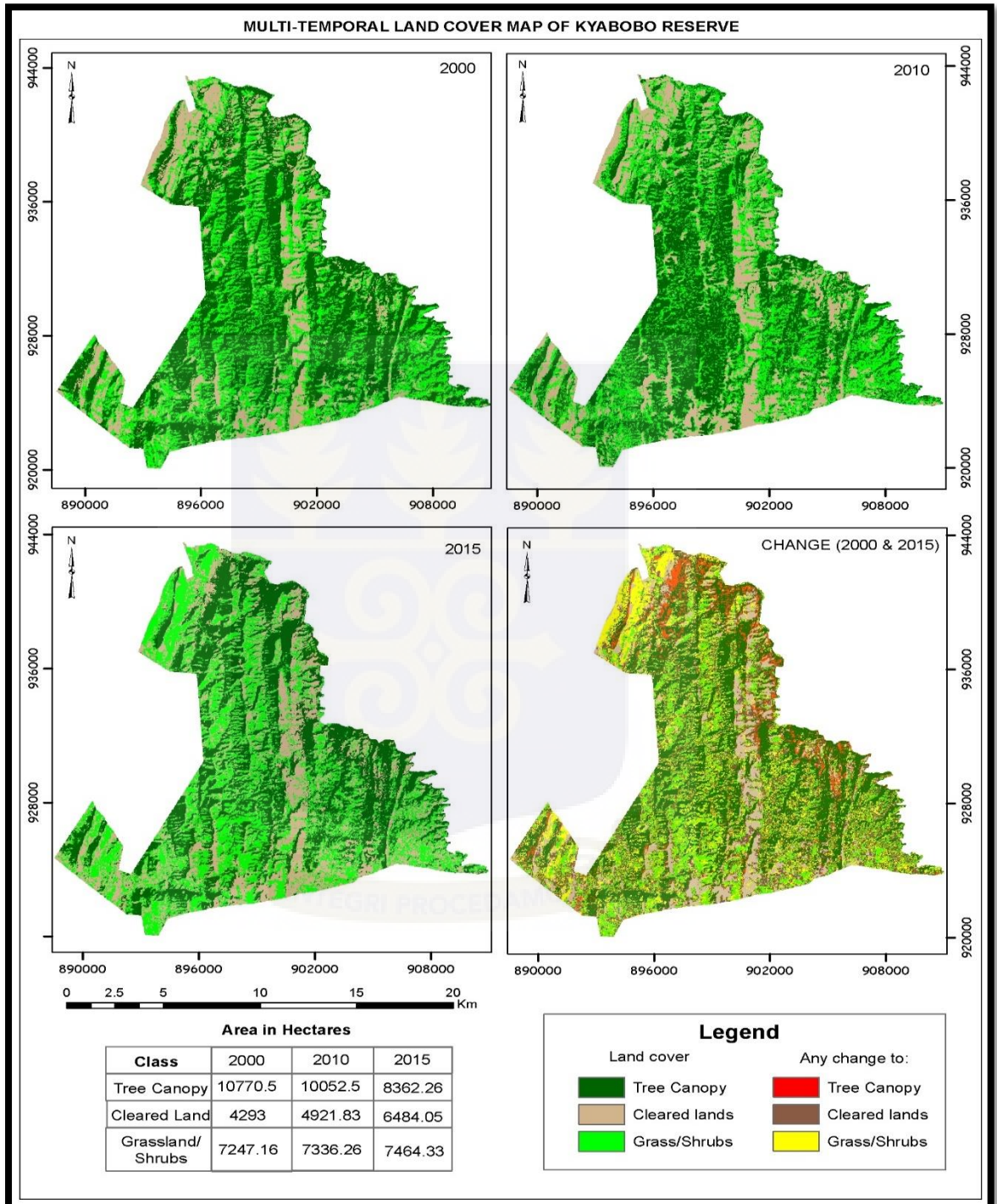






APPENDIX E

MULTI-TEMPORAL LAND COVER MAP OF KYBOBO NATIONAL PARK



Source: Authors` own construct, 2016

APPENDIX E1: Land Cover Change Statistics of the KNP

Land Cover Change Statistics			
Land cover	2000	2010	Percentage change (Incr. /Decr.)
Tree canopy	10770.5	10052.5	-6.7
Cleared land	4293	4921.83	14.6
Grassland/shrubs	7247	7336.26	1.2
	2010	2015	
Tree canopy	10052.5	8362.26	-16.8
Cleared land	4921.83	6484.05	31.7
Grassland/shrubs	7336.26	7464.33	1.7
	2000	2015	
Tree canopy	10770.5	8362.26	-22.4
Cleared land	4293	6484.05	51
Grassland/shrubs	7247.16	7464.33	3

Field survey, 2016

APPENDIX E2: Land Cover Conversion Statistics for KNP from 2000 to 2015

From 2000	To 2015	Area (in hectares)
Tree canopy	Tree canopy	7127.1
Tree canopy	Cleared land	1102.23
Tree canopy	Grassland/shrubs	2541.15
Cleared land	Tree canopy	552.69
Cleared land	Cleared land	2528.64
Cleared land	Grassland/shrubs	1211.67
Grassland/shrubs	Tree canopy	682.47
Grassland/shrubs	Cleared land	2853.18
Grassland/shrubs	Grassland/shrubs	3711.51

Field Survey, 2016