An Evaluation of the Effectiveness of a Protected Area Management Model in Bhutan: A case study of Phrumsengla National Park, Central Bhutan.

Thinley Choden BSc. Forestry

This Thesis is submitted for the partial fulfilment of the requirements for the degree of Research Masters with Training in Environmental Science in the School of Veterinary and Life Sciences, Murdoch University, Western Australia.

June 2016

Declaration

I declare that this thesis is my own account of my research and contains as it main content work, which has not been submitted for a degree at any tertiary education institution.

Thinley Choden

Abstract

Phrumsengla National Park (PNP), located in central Bhutan, is an important protected area due to its biodiversity and as a source of natural resources for local communities. The focus of this research was to study the effectiveness of PNP management under the International Union for the Conservation of Nature and Natural Resources - World Commission on Protected Areas' framework.

Document analysis and semi-structured interviews provided the data. The interviews were conducted with staff from different levels of government, and community members. An in-depth interview was conducted with officials from Wildlife Conservation Division, Policy and Planning Division and park officials. A total of twelve community respondents representing all four districts and seven *geogs* (block of communities) living inside and in buffer areas were interviewed.

It was found that the management of the PNP was geared to achieve its mandates of biodiversity conservation, and also to benefit the rural population dependent on PNP's natural resources. Park officials count the recent tiger survey and physical boundary demarcation as recent achievement. The communities saw the management of the PNP as protecting trees for their sustainable utilisation, and for most of them, PNP's Integrated Conservation and Development Program was identified as benefiting rural communities.

On the other hand, the management plan (2008-2013) was not fully implemented due to lack of resources and technical skills. Multiple challenges and issues were identified that affected overall management effectiveness: the national highway, construction of new roads, poaching, illegal timber harvesting, human-wildlife conflict and conflict of interests between the PNP management and local communities. It was also found that the failure of management plan implementation was due to absence of support and monitoring from central agencies.

The research findings led to recommendations being made to address the issues identified.

Table of Contents

Content	Page
Declaration	ii
Abstract	iii
Table of contents	iv
List of Boxes	vi
List of Figures	vii
List of Tables	viii
List of Appendices	ix
Acknowledgement	Х

CHAPTER ONE: INTRODUCTION

1.1 Background on Protected Areas	1
1.2 Importance of Protected Area Management Effectiveness	1
1.3 Past Protected Area Evaluation in Bhutan	2
1.4 Relevance of this Research to Phrumsengla National Park	7
1.5 Scope of Research	7
1.6 Limitation of Research	8

CHAPTER TWO: LITERATURE REVIEW

2.1 Overview	9	
2.2 Protected Areas and their Significance		
2.2.1 Importance of Protected Areas	12	
2.3 Definition, Nomenclature and Categories of Protected Areas	15	
2.3.1 International Union for Conservation of Nature and Natural		
Resources' Categories for Protected Areas	16	
2.4 Governance Types of Protected Areas	17	
2.4.1 Governance in Management of Protected Areas	18	
2.5 Protected Area Coverage and Global Target	19	
2.6 History, Importance, and Objectives of Protected Area		
Management Effectiveness Evaluation	21	
2.7 Method used in Evaluation of Protected Area Management		
Effectiveness	24	
2.7.1 International Union for Conservation of Nature and Natural		
Resources' Protected Area Management Effectiveness		
Framework	27	
2.8 Protected Area Management Effectiveness Evaluation Globally	30	
2.9 Background of Protected Areas in Bhutan	32	
2.10 Governance Structure of Bhutan's Protected Areas	36	
2.11 Past Protected Area Evaluation in Bhutan		
CHAPTER THREE: RESEARCH METHODOLOGY		
3.1 Research Method	39	
3.2 Interviews and Sampling	42	
3.3 Data Transcription and Analysis	46	
CHAPTER FOUR: RESULTS AND DISCUSSION	48	
4.1 Governance and Management of Protected Areas	49	
4.2 Context: Understanding the Current Situation		
4.2.1 Conflicts Between Phrumsengla National Park and		

Communities	
4.2.2 Distrust Towards Park Officials	5
4.2.3 Relationship between Phrumsengla National Park and	
Stakeholders	5
4.2.4 Threats and Challenges of Phrumsengla National Park and	
Communities	5
4.3 Planning: Management Plan and Planning Process	6
4.3.1 Communities' Understanding on Management Planning	6
4.3.2 Protected Area Legislation and Policies	6
4.3.3 Design of Phrumsengla National Park	6
4.4 Inputs: Resource Investment in Phrumsengla National Park	6
4.4.1 Inputs for Human Resources	7
4.4.2 Inputs for Infrastructure	7
4.4.3 Inputs for Communities	7
4.4.4 Resources for Sustainable Financing of Protected Areas of	
Bhutan	7
4.5 Process: Current Management System	7
4.5.1 Distribution of Resources	7
4.6 Outputs: Achievements of Phrumsengla National Park	8
CHADTED EIVE, CONCLUSION	c
5.1 To Study the Pole of Governance in the Effective Management	С
of Drumsangla National Park	ç
5.2 To Evaluate the Effectiveness of the Dhrumsengla National	C
Park Management Model	c
5.3 To Identify the Eactors Influencing the Management	
Effectiveness of the Phrumsengla National Park	c
5.4 To Study the Role of Important Stakeholders in Strengthening	
the Management of the Phrumsengla National Park	С
5.5 To Identify Measures to Strengthen the Effective Management	
of Phrumsengla National Park	ç
5.5.1 Develop Protected Area Management Planning Guideline	q
5.5.2 Enhance Canacity Building	ć
5.5.3 Strengthen Stakeholder Relationshin	c
5.5.4 Develop Sustainable Financing Mechanism	1
5.6 Review of 2002 Evaluation Recommendations	1
5.6 Keview of 2002 Evaluation Recommendations	1
5.7 Understanding the Outcome of Phrumsengle National Park	1
5.7 Understanding the Outcome of Phrumsengla National Park	1
5.7 Understanding the Outcome of Phrumsengla National Park5.8 ConclusionReferences]] 1

List of Boxes

Box 2.1: Definition of Management Plan from Various Sources	14

Page

List of Figures

_		Page
Figure 2.1:	Planning hierarchy in protected area management planning	14
Figure 2.2:	Framework for governance effectiveness (including elements of the	
	Hockings et al. (2006) and management effectiveness framework)	19
Figure 2.3:	The International Union for Conservation of Nature and Natural	
	Resources' Framework for Assessing Management Effectiveness	
	of Protected Areas	28
Figure 2.4:	Protected area system of Bhutan	33
Figure 2.5:	Provisional zonation map of Phrumsengla National Park	34
Figure 2.6:	Organogram of Ministry of Agriculture and Forests, Bhutan	37
Figure 3.1:	Geogs falling inside PNP boundary with the number of households	45
Figure 3.2:	Park office and infrastructure location	46
Figure 4.1:	Location of Labour camps along the highway within the	
C	Phrumsengla National Park's jurisdiction	60
Figure 4.2:	Organogram of Phrumsengla National Park	69

List of Tables

	Page
Table 1.1: Results of Rapid Assessment and Prioritization of Protected Area	U
Management conducted in Phrumsengla National Park (PNP) in	
2003	4
Table 1.2: Pressures and Threats Identified during 2002 Evaluation of	
Phrumsengla National Park with Recommendations	6
Table 2.1: Approaches to Evaluating the Effectiveness of Protected Areas	26
Table 2.2: International Union for Conservation of Nature and Natural	
Resources' Framework for Assessing Management Effectiveness of	
Protected Areas and Protected Areas Systems	29
Table 3.1: Interview Schedule	42
Table 3.2: Category and Number of Respondents.	43
Table 4.1: Relationship Between the Research Questions and the International	
Union for Conservation of Nature and Natural Resources' Protected	
Area Management Evaluation Framework	48
Table 4.2: Difference Between Management and Governance	49
Table 4.3: Quantity of Timber and Fuel Wood Supplied From Phrumsengla	
National Park	54
Table 4.4: Number of Livestock Kills by Wild Predators	58
Table 4.5: Types of Offences Recorded in Phrumsengla National Park	62
Table 4.6: Staff Strength of Phrumsengla National Park	64
Table 4.7: Forecast of Budget for the Management Plan (2008-2013)	68
Table 4.8: Approved Annual Budget for the Management Plan Period During	
the Last Five Years	69
Table 4.9: Research Related Activities Carried out till Date in Phrumsengla	
National Park	82
Table 5.1: Review of Recommendation of 2002 Evaluation	87
Table 5.2. Relationship Between Research Question and Elements of IUCN	
PAME Framework	89
Table 5.3. Relationship Between Research Question and Elements of IUCN	
PAME Framework	91
Table 5.4. Relationship Between Research Question and Elements of IUCN	
PAME Framework	93
Table 5.5. Relationship Between Research Question and Elements of IUCN	-
PAME Framework	96
Table 5.6. Relationship Between Research Ouestion and Elements of IUCN	
PAME Framework	97
··· ··································	

List of Appendices

	Page
Appendix A- NVivo export of node 'achievement'	115
Appendix B- NVivo export of node 'support by government'	122

Acknowledgement

Firstly I would like to thank my Supervisors; Assoc. Prof. John Bailey (Principal) and Dr. Noraisha Oyama (Assistant) for accepting me as their student. John shaped my research into a desirable outcome and Nora for investing selfless time into details of my work to getting on words. Their sense of humour was a positive strength that allowed me to laugh out loudly and refreshed me with an extra energy during our meetings and discussions.

This study would not have been possible without the Australia Awards Scholarship, and I express my sincere gratitude for the Government of Australia for this support. John's discretionary fund partly supported my fieldwork, and I am grateful for this support.

I am thankful to Dr. Kate Rodger and Dr. Catherine Baudains for helping me to define my research and research methods. I would like to thank the Student Contact Officer, Mr. Jason Rickersey for the multiple supports and few of them are; to settle in the new environment, reunion with my family and my Research fieldwork in Bhutan. Dr. Julia Hobson of Centre for University Teaching and Learning introduced me into academic writing. I appreciate the services of Graduate Research Office and Ms. Jacqualine Dyer of School of Veterinary and Life Sciences during my study period.

In Bhutan, I would like to thank the Department of Forests and Park Services and Renewable Natural Resources Research and Development Centre for approving me to pursue this degree. The management of PNP and park officials helped me during the fieldwork and in providing the data and information required. I would like to specifically thank Ugyen Namgyel, Pema Tshering and Tshewang Phuntsho for continuously sharing me with the information. My colleagues and friends of Department of Forests and Park Services also provided me with relevant data and information. I am grateful to all respondents of my research who shared their thoughts and experiences with me. Thanks to my cousin Thukten and his wife; Sangay for taking care of my daughter during the busy schedule of my husband and me. To my mother, thank you for not worrying about me away from home and my brothers for taking care of her. Finally to my husband Chimi, for his unfailing support and love during this journey and my daughter Ngawang for sacrificing her most loved activity; bedtime stories.

CHAPTER ONE: INTRODUCTION

1.1 Background on Protected Areas

The earth is endowed with rich biodiversity. Biodiversity is the global resource on which humankind depends for their wellbeing by using environmental services (Millennium Ecosystem Assessment, 2005). Environmental services are categorized as provisioning services, regulating services, habitat or supporting services and cultural services (Millennium Ecosystem Assessment, 2005). Today biodiversity and its services are exploited by increasing human population and threatened by emerging issues like climate change (Millennium Ecosystem Assessment, 2005). The value of the ecosystem and ecosystem services is the basis of understanding the value of biodiversity as mentioned by Barbier et al. (2009). In recognition, nations agreed to cooperate at the Earth Summit in 1992 in Rio de Janeiro, Brazil (United Nations General Assembly, 1992). Today the European Union and 195 countries have ratified the Convention on Biological Diversity (CBD) (CBD, 2016), which was another significant step towards biodiversity conservation. The CBD further instituted the Program of Work on Protected Areas (PoWPA) in 2004 because protected areas (PAs) are recognized as the most promising action to protect biodiversity (CBD, 2004).

A protected area "is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (Dudley, 2008, p.8). PAs are recognized as the principal mechanism for biodiversity conservation and conservation of other natural and cultural values from extinction (Rodrigues et al., 2004; Saout et al., 2013; Watson et al., 2014; Worboys, 2015). The fundamental principle behind the PAs is that they should be protected to provide the values and services they are designated for (Hockings et al., 2002). Currently, terrestrial PAs cover 15.4 %, and the CBD is seeking to increase this coverage to 17% by 2020 (Juffe-Bignoli et al., 2014).

1.2 Importance of Protected Area Management Effectiveness

The effectiveness of PAs is a shared concern by the parties of the CBD. Hockings et al. (2006) convey that it is important to know the effectiveness of PAs in fulfilling

the objectives assigned because there are so many pressures that degrade the values even with the management strategies in place. This concern of the CBD parties was further endorsed at CoP10 in Nagoya, Japan in the form of revised and updated Strategic Plan for Biodiversity including the Aichi Biodiversity Targets for 2011-2020. The global target 11 of National Biodiversity Strategic Action and Planning (NBSAP) states "... areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed..." (CBD, 2010).

PAs face significant threats both from the actions of the immediate vicinity and from pressures originating further away (Hockings et al., 2006). These demands require that the threats need to be attended urgently to maintain the values of PAs, but this is often a challenge (Hockings et al., 2006). At the international front, the parties to the CBD report on the progress of the PAs and at a state level, they are faced with the practical challenges to manage vast and diverse areas, and this has increasingly led to "a rapid increase in interest in monitoring and assessment" (Hockings et al., 2006, p.2). PAs need to be evaluated to know the extent to which they are protecting their associated values and delivering benefits to the community (Ervin, 2003a; Hockings et al., 2006; Leverington et al., 2010).

1.3 Past Protected Area Evaluation in Bhutan

In Bhutan 51.44% of the country is declared as PAs (DoFPS, 2011). The World Wide Fund for Nature (WWF) program in Bhutan conducted an assessment of four PAs (Bumdeling Wildlife Sanctuary, Jigme Dorji National Park, Jigme Singye Wangchuck National Park and Phrumsengla National Park) (Tshering, 2003). Table 1.1 summarises the findings of this study and Table 1.2 shows the recommendation of the study. Tshering (2003) presents the detailed report of the evaluation in Bhutan, while Ervin (2003b) compiled this report with the case studies of four countries (Bhutan, China, Russia and South Africa). These parks were assessed against different themes appropriate to the issues and challenges found in these countries. Ervin (2003b) reports that fours parks in Bhutan were assessed in greater detail compared to the three other countries.

The assessment was conducted utilizing a method devised by the WWF, known as, the Rapid Assessment and Prioritization of Protected Area Management (RAPPAM) (Ervin, 2003a). This approach assessed the strengths and weaknesses of the first

decade of PA management in Bhutan. According to Ervin (2003b), this study established the baseline for future assessments in the four PAs. The RAPPAM method compares one park with another and does not report full findings for an individual park (Ervin, 2003a; Ervin, 2003b; Leverington et al., 2010).

Table 1.1: Results of Rapid Assessment and Prioritization of Protected Area Management Conducted in Phrumsengla National Park (erstwhile called Thrumshingla National Park in 2002 (Source Tshering, 2003)

IUCN PAME framework elements and	Results	Score ^b 0 (low) – 5 (high)
components ^a		
Context	Presented in the Table 1.2	
Planning		
Objectives	 Clear objectives for conservation but vague statements for specific species 	3.8
	 Policies and plans consistent with plan objectives 	
	 Park officials understand the PA objectives 	
	- Communities lack understanding on role of park and have high and unrealistic expectations	
	– Environmental education programs are changing the attitudes of people	
Legal status and security	 Legally binding for long term protection 	2.8
	 Boundary demarcation for zones incomplete and guidelines unclear 	
	 Minor tenure issues will be clarified with zonation 	
	 Inadequate number of field staff for law enforcement 	
	 No community conflicts but HWC seen as potential cause 	
Site Design and planning	 Park layout is optimum for conservation 	3.4
	 Represents broad range of forest ecosystem 	
	- Paper zoning and on-ground zoning may cause conflicts over tenure rights on grazing land	
	 Absence of legal status of biological corridors and their management plans 	
Input		
Staff	 60-80% shortage and affecting performance 	3.8
	 Few technical graduates available and high dependence on foreign consultants 	
	- Lack of skills in plant and animal identification, GIS, and inventory conflict resolution	
	 Organised management and known their responsibilities 	
	 Ad hoc trainings doesn't assure provision of required skills 	
	– Good working environment	
Communication and information	- Inadequate communication with WCD and lack of periodic communication within the staff	1.2
	 Inadequate communication facilities for field staff 	
	 Lack of detailed data on population and habitat of threatened species 	
	– Existing data focused on mega-fauna such as tiger, red panda etc.	
	 ICDP plan preparation involved communities 	
Transport and facilities	 Adequate vehicles and rugged terrain requires walking 	3.4
	 Range offices do not have adequate GPS and GIS equipment 	
	 Staff infrastructure facilities inadequate 	
	- Good maintenance budget allocated	
	- Visitor facilities sufficient for current level of visitors but require more in future	

IUCN PAME framework elements and	Results	Score ^b 0 (low) – 5 (high)
components ^a		
Process		
Management planning	 New comprehensive management plan, but less attention to the biodiversity resources within park Weak information on the species, species list generated for presence and absence. 	3.4
	- ICDP plan is essential component of park management	
	 No systematic analysis of threats 	
	 Work plans developed monthly but range offices do not have work plans 	
Management decision making	 Strong team work, but room for improvement 	4.6
	 Decision making transparent and meets in advance 	
	- Coordination with WCD, District Officer and other PA management needs improvement	
	 Collaboration within park staff and communities exist 	
	 Some decision on HWC made by WCD 	
	 ICDP planning involved communities 	
	 PNP is new park and management planning has been adaptive to new learning 	
Financial management	 Inadequate funds for infrastructure and equipment 	1.8
	 Funds centralised and delayed release affects expenditure 	
	 Donor priorities influence financial and management priorities 	
	 Unrealistic expectations from multiple stakeholders 	
	 Short term funds are met from donors 	
	 Bhutan Trust Fund for Environmental Conservation identified as source for sustainable financing 	
Research Monitoring and evaluation	– Impacts of PA not studied due to lack of skills	1.2
	– No systematic research program or protocol and research needs not identified	
	- Review of staff performance inadequate and WCD to provide approach to monitor staff	
	- Attempt to incorporate research results into planning but there is lack of data on	
	biodiversity issues	
Output		
Short term achievement	 Field staff achievements difficult to assess due to lack of their own work plans 	1.8
	- Field staff to prepare their work plan based on the park's work plan soon	
	 Park recently established and partially implemented management activities 	
	 ICDP plans are developed and strong component in management plan 	
	 Advocacy programs and environmental education reflected in park annual plans. 	
	 PNP has the reputation of implementation of plan 	
Outcome	– Not evaluated	

Note. Adapted from the report of the evaluation of PNP done in 2002 and results published in 2003.

^aThe components of the IUCN PAME framework's elements were identified during 2002 evaluation. Outcome was not evaluated as PNP was a new park then. ^bThe score is the average of scores given for different components (at least five relevant components were identified) within the element of IUCN PAME framework. The score was given on the scale 0-5 (5 is the highest) by the evaluators (Tshering, 2003).

Table 1.2: Pressures and Threats Identified during 2002 Evaluation of Phrumsengla National Park With Recommendations (Source Tshering, 2003)

Pressures and threats	Level of pressure/threat	Recommendation
Poaching and killing	Major ^a	 Develop anti-poaching strategy
		 Institute trans-boundary cooperation
		 Address HWC with compensation schemes
		 Develop ecotourism guideline for individual park
		 Develop and implement ICDP plans
Grazing	Major	 Develop grazing mitigation program and monitor the impacts of grazing
Fishing	Minor	 Study the aquatic diversity and population
Timber felling	Minor	 Strengthen law enforcement
Road construction	Major	 Limit new road construction and use the best road construction practices
Fire	Minor	 Study impact of fire on the ecosystem
Non-timber products	Minor	 Develop sustainable management guidelines
Slash and burn cultivation	Mild	 No specific recommendation
Fire wood collection	Mild	 No specific recommendation
Financial resources	Major	 Develop and implement human resource plan
		 Decentralise financial management practices to PA
		 Provide additional equipment and facilities
		 Conduct PA assessment every two-three years
Enhance research program	Major	 Zonation to be completed
		 Bio-prospecting potential
		 Collaborate with research institutes

Note. This table has been summarised from report of Tshering (2003).

^aThe three categories identified in the evaluation are major, minor and mild: Major has the highest threat while mild as the minimal threat.

1.4 Relevance of this Research to Phrumsengla National Park

A decade after this assessment of Phrumsengla National Park (PNP), it is necessary and relevant to reassess it as per the policy document written by the Ministry of Agriculture and Forests (MoAF, 2013). Ervin (2003a, p.840) reported that the PAs of Bhutan are "vulnerable to an array of threats and management weakness, many of them severe and debilitating." This study will focus on whether these findings have changed or remained the same since the first assessment. Also, it will evaluate the efficiency of the recommendations adopted (if they have been adopted) from the initial study. The findings generated can be used by the PNP management to report its achievements to stakeholders; government agencies, donors, and local communities because they seek to know the progress made. PNP managers can use the research findings to improve their performance, prioritize resource allocation, promote accountability and transparency and strengthen working relationships with stakeholders.

1.5 Scope of Research

This research is designed to fulfil the following objectives;

- 1. To study the role of governance in the effective management of PNP.
- 2. To evaluate the effectiveness of the PNP management model.
- 3. To identify the factors influencing the management effectiveness of the PNP.
- 4. To study the role of important stakeholders (park officials, local communities and relevant forestry and planning officers) in strengthening the management of PNP.
- 5. To identify measures to strengthen the effective management of PNP.
- 6. To review the recommendations of 2002 Evaluation.

The above objectives were fulfilled by an in-depth interview and analysis with the respondents selected from different levels of policymakers, park management, and local community members. These findings are presented in this thesis in the following chapters.

Chapter two is a literature review on the PAs and importance of studying its management effectiveness at the global scenario. Chapter three describes the research methodology used to generate the data from the different groups of respondents and its analysis. Results and discussions generated from the data are presented in Chapter four, while the last, Chapter five, presents the recommendations and conclusions for future works and research to be continued as per the research findings.

1.6 Limitations of Research

The major limitation of this study was interviewing the respondents with research questions in different local dialects. Three dialects (*Dzongkha, Sharchopkha*, and *Kurtoepkha*) were used excluding English, which was sometimes used comfortably with the park officials and the officials at Wildlife Conservation Division (WCD-erstwhile known as Nature Conservation Division) and Policy and Planning Division (PPD). Highest efforts were devoted to interpreting the interview questions in the context and meaning of the research questions, but there could have been times where it would not have been understood in context by respondents as desired by the researcher.

CHAPTER TWO: LITERATURE REVIEW

2.1 Overview

The International Union for Conservation of Nature and Natural Resources (IUCN) defines PA management effectiveness evaluation as "the assessment of how well the protected area is being managed" (Hockings et al., 2006, p.1). The importance to conduct PAs evaluation was first discussed at the third decadal World Park Congresses (Hockings et al., 2004a) at Bali in 1982. The Non-governmental organisations (NGO) and donors expressed that the PAs established were not functioning efficiently to protect the values associated with them during the park congresses. The Bali Action Plan led to the development of tools and guidelines to assess the management effectiveness of PAs, but it had picked little progress. In 1992 at the fourth park congress in Caracas, it was recommended that IUCN develop a system to monitor the effectiveness of PA management.

The outcome was the International Union for Conservation of Nature and Natural Resources - World Commission on Protected Areas' (IUCN WCPA) framework; Evaluating effectiveness: A framework for assessing the management of protected areas, 2000 (Hockings et al., 2000). It was later revised in 2006 (this will henceforth be referred as IUCN PAME framework) (Hockings et al., 2006). This framework received wide international recognition according to Ervin (2003a). There was the development of specific methodologies to aid in assessing an individual PA or assessing the larger systems (Hockings et al., 2004a). Management effectiveness of PAs was one of the priority topics discussed at the fifth Durban congress in 2003 according to Hockings et al. (2004a). The CBD developed the PoWPA in 2004 with the objective to promote the development and adoption of protected area management effectiveness (PAME) systems (CBD, 2004). PA management effectiveness is now adopted as an important element to assess the progress of the CBD's strategic plan and its constituent Aichi Targets; Target 11 (CBD, 2010).

There are four complimentary evaluation approaches in evaluating the PAs and PA system management effectiveness (Leverington et al., 2010). The first approach evaluates the extent of the PA and location. Hockings et al. (2015) mention that the

data shows rising numbers and global extent of PAs are aspects of this approach. Important Bird Areas and Alliance for Zero Extinction are identified by this approach (Butchart et al., 2012). The second approach assesses the extent to which PAs can reduce adverse impacts of forest clearing or habitat degradation or correlate the location of PAs to lowering these impacts (Hockings et al., 2015). The results from these studies are mixed, that PAs are effective in reducing the rates of habitat change. The third approach is evaluation of the overall PAME. PAME evaluation approach has been implemented for individual PAs, groups of sites or the whole PA system (Leverington et al., 2010). The fourth approach evaluates the outcomes of the management based on the detailed monitoring and reporting of the condition and biodiversity values inside PA.

IUCN PAME framework is third kind of approach to evaluating PAME (Hockings et al., 2015). This framework is based on six elements – Context, Planning, Inputs, Process, Output, and Outcome (Hockings et al., 2006). According to Hockings et al., (2006, p. xiii), "it is not a methodology in itself, but it is a guide to developing a comprehensive assessment system." These elements relate to the steps in a strategic planning and management cycle. This approach has been followed in this study and examples of evaluation that have used this approach are referred to and cited in this study.

Understanding the Context of the PA includes knowing its values, threats facing the PA, opportunities available, stakeholders and both management and political environments. Planning element focuses on assessing the PA legislation and policies, PA design, PA system design and management planning. Assessment of resources required in the PA management is the focus of the Input element. The Process element evaluates the way in which the management is conducted. It assesses whether the management processes have been carried out in the established or accepted processes. The Output element assesses the implementation of management programs and actions to see if the products and services have been delivered. Assessment of Outcome evaluates the extent to which the objectives of the PA.

PAME has been conducted by PA agencies and conservation NGOs since the 1990s (Hockings, 2003). The purposes of conducting this study are; "to lead to better management in a changing environment; assist in effective resource allocation; promote accountability and transparency; to help involve the community, build the constituency and promote protected area values" (Leverington and Hockings, 2004, p.173). Leverington et al. (2010) report that efforts have been made by many countries to apply the PAME methodologies to assess the effectiveness of their PAs and PA systems. Funding agencies including Global Environment Fund (GEF), World Bank and WWF require such evaluations to the projects funded in PAs (Leverington et al., 2010).

2.2 Protected Areas and their Significance

The international history of PAs, importance and beginning of its categorisation has been presented by Dudley and Stolton (2008, p.12) in the following quote.

"Protected areas are cultural artifacts and their story is entwined with that of human civilization. Over 2000 years ago, royal decrees in India protected certain areas. In Europe, rich and powerful people protected hunting grounds for a thousand years. Moreover, the idea of protection of special places is universal: for example, it occurs among the communities in the Pacific ("tapu" areas) and in parts of Africa (sacred groves). However, the modern protected areas movement had nineteenth-century origins in North America, Australia, New Zealand and South Africa. Other countries were quick to follow suit. While the idea of protected areas spread around the world in the twentieth century, the driving force was different in different regions. Thus, in North America, protected areas were about safeguarding dramatic and sublime scenery; in Africa, the concern was with game parks; in Europe, landscape protection was more common."

The concept of modern conservation and PAs developed in the late 19th century in response to changes to the lands of the former European colonies and increasing loss of wilderness areas. The PA concept was also intended to stop species loss and to maintain natural landscapes and exceptional natural phenomena and scenery (Worboys, 2015). The responsibility to conserve biodiversity was formally agreed to when 150 governments signed the CBD at Rio Conference in 1992 (Coad et al., 2013). According to Dudley (2008), PAs need special protection to maintain the

functionality of ecological processes that cannot be maintained in the intensively managed areas of urban and agricultural areas.

2.2.1 Importance of Protected Areas

PAs are the principal mechanism for conservation of biodiversity and other natural and cultural heritage areas. They are recognized as an effective tool for biodiversity conservation and specifically to prevent endangered species from extinction. The sixth great extinction event on earth will be caused by human activities according to the United Nations Environment Program in the Global Environmental Outlook Geo-5 (Worboys, 2015). PAs are a refuge for the protection of biodiversity (Rodrigues et al., 2004; Saout et al., 2013). PAs help to protect nature at genetic, species and ecosystems levels, geodiversity including geoheritage, landforms and scenery, soils and water (Worboys, 2015).

Conservation societies have emerged to promote the idea of nature protection, when there was destructive exploitation of wildlife, like the bison in North America, elephants in Africa and feathers of egrets and gulls used in the fashion industry (Worboys, 2015). This was an innovation in the field of conservation with support from different levels of partners for the conservation, protection, and management of PAs. Such innovations were recognized as critical at this period, where there are multiple human threats to the biodiversity such as habitat destruction, poaching, pollution, forest fires, introduced species and climate change.

Investments in improving PA management are continuing because there is strong evidence that suggests that PAs maintain population levels of species better than any other management approach (Watson et al., 2014). The PAs were initially designated to protect wildlife and their habitat, but they are now also recognized to fulfil social, economic and environmental benefits (Hockings, 2003; Leverington et al., 2010; Watson et al., 2014). They are a source of rural livelihood, generate revenue through tourism in the PAs and also play a key role in mitigation and adaptation to climate change (Watson et al., 2014). PAs are places of biodiversity conservation, while also contributing to the people's livelihood at the local level. Conservation in PAs is for the conservation of nature and the services it provides mankind; food, clean water supply, medicines and protection against the impacts of natural disasters.

The PA management is guided by the management plan. A management plan is an important document for a park to assess the delivery of the PA objectives as described by Hockings et al. (2004b) (Refer to Box 2.1). This is the product of management planning which requires investment of resources, skills and support from organizational systems for its success. Management planning is a process and not an event. According to Thomas and Middleton (2003), it does not end with the production of management plan but it should go through implementation and beyond.

The management plan provides guidance to the managers for day-to-day operations and provides continuity to management within the agreed management plan. It also helps to define how effective the plan was to achieve the objectives identified in the plan for the PA. The PA management plan provides avenues for improved use of financial and human resources, improved accountability and improved communication to the stakeholders and wider public (Thomas and Middleton, 2003). It is also a requirement of some funding agencies (especially multilateral and bilateral donors) that support the PA projects to have management plans produced as part of the funding agreement to ensure the wise use of funds (Thomas and Middleton, 2003). Figure 2.1 shows the influence of the legislation in preparation of management plans and the management plans are legally binding supported by the conservation legislations.

The participatory planning of management plan is encouraged. This involves the all the park officials, local communities and other relevant stakeholders who interact with the park. This develops ownership and motivation to implement the plan. The park staffs should be empowered to make important contributions to the plan rather than simply presenting the plan to them (Thomas and Middleton, 2003). For the continuity of the management, the new staffs should be informed of the direction and momentum, and the management plan can be a used as a briefing document (Thomas and Middleton, 2003).

Box 2.1: Definition of Management Plan From Various Sources (Source Thomas and

Middleton, 2003, p. 7)

A Management Plan has been variously defined as:

- "a written and circulated approved document which describes the site or area and the problems and opportunity for management of its nature conservation, land form or landscape features enabling objectives based on this information to be met through relevant works over a stated period of time" (Eurosite 1999).
- 2. "the guided by which Parks in Canada manages the resources and use of a national park. It contains the management objectives and the management strategies for achieving them. The plan is not an end in itself; rather it constitutes a framework within which a subsequent management, implementation and planning will take place." (Parks Canada 1978).
- 3. "a document that guides and controls the management of a protected area. It details the resources, uses, facilities, and personal needed to manage the area in the future. It is a working document that presents a program for the coming 5-10 years" (Ndosi 1992).
- 4. "a document that guides and controls the management of protected area resources, the use of the area and the development of facilities needed to support that management and use. Thus Management Plan is a working document to guide and facilitate all development activities and all management activities to be implemented in a area" (Thorsell 1995).
- 5. "a document that sets forth the basic and development philosophy of the park and provides strategies for solving problems and achieving identified management objectives over a ten-year period. Based on these strategies, programs, actions and support facilities necessary for efficient park operations, visitor use and human benefit are identified. Throughout the planning effort. The park is considered in a regional context that influences and is influenced by it" (Young and Young 1993).



Figure 2.1: Planning hierarchy in protected area management planning (Source Thomas and Middleton, 2003)

2.3 Definition, Nomenclature and Categories of Protected Areas

When PAs were being developed, there was no global standard or common terminology (Dudley, 2008). PA designations were guided by the notion to protect scenic views, wildlife and landscape, and as common goods (Dudley and Stolton, 2008) and to avoid the Tragedy of Commons (Hardin, 1968). Countries around the world are actively declaring their own PAs and have also developed legislation for these PAs. Efforts are made by the public, voluntary and private organizations and communities to designate areas of conservation significance as PAs (Worboys, 2015). IUCN defined PAs in 2008 based on the roles associated with them as follows;

"A protected area is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (Dudley, 2008, p.8).

There are also networks of global PAs under the international conventions (e.g., World Heritage and Ramsar Convention) and regional agreements (e.g., Natura 2000 sites in Europe). The different international conventions, regional agreements and respective national legislation of individual nations gave rise to the use of different names for PAs. Also the reason for declaring these areas as PAs has led to the categorization of PAs driven by different interests and different organizations. The World Heritage Conventions declared Cultural and Natural heritage sites with Outstanding Universal Value, the Ramsar Convention established Ramsar Wetlands and the United Nations Educational, Scientific and Cultural Organisation's Biosphere Reserve and UNESCO Geoparks are examples of different categories of PAs by various organizations (Dudley, 2008; Worboys, 2015).

The IUCN recognizes that many approaches in establishing and managing PAs will contribute substantively to positive conservation strategies. Some parks will require more stringent protection to contribute to the effective functioning of PAs (Dudley, 2008). PAs are known by different terms such as national park, nature reserve, wilderness area, wildlife management area and landscape PA and can also include approaches such as community-conserved areas. These terms importantly convey the different management approaches, from highly protected sites, where few or any

people are restricted to enter like in a strict nature reserve. While in the national parks, visitors are allowed to enjoy the values of endemic and endangered wildlife species and scenic grandeur apart from conservation. Some parks support the traditional human lifestyle and allow sustainable utilization of natural resources for their livelihood such as in Managed Resource Protected Area (Dudley, 2008). This variety reflects that conservation success does not come with a single approach in different locations, and a successful method in one location can be counter-productive or politically impossible in another location (Dudley, 2008).

2.3.1 International Union for Conservation of Nature and Natural Resources' Categories for Protected Areas

The IUCN categorizes PAs to describe the different management approaches and management objectives (Dudley, 2008). A specific IUCN category is assigned to a PA consistent with its principal management objective. This framework is a common language for distinguishing, describing and working with broad PA management types (Worboys, 2015). "This category is critical given that the nations have assigned wide range of descriptive terms that represent PAs as 'conservation park', 'conservation reserve', 'feature protection area', 'flora reserve', 'forest reserve', 'indigenous protection area', 'karst conservation reserve', 'national park', 'nature reserve', 'reference area', 'scientific area', and many others'' (Worboys, 2015, p.16). In order to avoid confusion and ambiguity with different names for the PAs in different countries and PAs created under global conventions (eg. World Heritage sites), this effort was necessary (Dudley, 2008). Following are the IUCN categories of PAs.

- Category Ia: Strict nature reserve/wilderness: protection area managed mainly for science or wilderness protection.
- Category Ib: Wilderness area: protected area managed mainly for wilderness protection.
- Category II: National Park: protected area managed mainly for ecosystem protection and recreation.
- Category III: Natural Monument: protected area managed mainly for conservation of specific natural features.

- Category IV: Habitat/Species Management Area: protected area managed mainly for conservation through management intervention.
- Category V: Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation or recreation.
- Category VI: Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural resources (Dudley, 2008).

2.4 Governance Types of Protected Areas

Governance of PAs refers to the "principles, policies, and rules regarding the decision-making" for the PA (Borrini-Feyerabend et al., 2013, p.11). It is about how, when and who holds the power, authority, and responsibility to make a decision. The IUCN distinguishes the governance of PAs based on the "key actors holding authority and responsibility for the main decision affecting it" (Borrini-Feyerabend and Hill, 2015, p. 180). The categories and management types of PAs as defined by IUCN do not have any influence on the governance types according to Dudley (2008). This has led to four governance types of PAs that are globally recognized (Dudley, 2008).

- Governance by government (at various levels)
- Governance by various right-holders and stakeholders together (shared governance)
- Governance by private individuals and organizations
- Governance by indigenous peoples and/or local communities

Conventional PAs are commonly understood as areas established and managed by national governments to fulfil the commitment of these governments to the CBD and for the implementation of the CBD's strategic plan 2011-2020 (Worboys, 2015). In order to protect biodiversity and its values, the governments designated and governed these PAs. The second form of PA governance is the shared governance or collaboratively managed PAs, managed by two or more non-government and government agencies. Shared governance or collaborative governance shares the responsibility to manage a PA. In this type of governance, the decision-making authority rests with a national governmental agency and stakeholders are informed and consulted on the management decisions. These stakeholders are part of the

governing body. Such governance is especially suitable for trans-boundary conservation (Borrini-Feyerabend and Hill, 2015; Dudley, 2008).

The 21st century also saw the roles taken by the traditional, indigenous people, local communities and individuals, civil society organizations, and private sectors in the conservation including governance and management of PAs (Worboys, 2015). Pumalin Park of Chile has as area of 3250 km² and it was declared as a private park by the United States environmental foundation; The Conservation Land Trust in 2005 (Worboys, 2015). This park offers wilderness experiences to the visitors and protects endemic flora and fauna of Valdivian temperate rainforest. This private park serves as role model for other private conservation efforts, on all scales throughout the world (Pumalin Park, 2013).

"Indigenous Peoples' and Community Conserved Territories (ICCAs)" and "Private Protected Areas (PPAs)" are an accepted form of non-government PAs according to IUCN and governments (Worboys, 2015, p.24). Australian Indigenous Protected Areas (IPAs) is a successful example of conservation of biodiversity and cultural resources by Indigenous Australians (Worboys, 2015). There were 60 IPAs across Australia by 2013, and this formed more than one-third of the National Reserve System (Government of Australia, 2013a; Worboys, 2015). For example, the Birriliburu IPA in Western Australia (WA) has an area of 6.6 million hectares and is the largest amongst nine IPAs in WA (Government of Australia, 2013b).

2.4.1 Governance in Management of Protected Areas

Initially, PA governance became the focus internationally at the fifth IUCN Parks Congress of 2003 in Durban, South Africa and consequently gained importance during the IUCN World Conservation Congress in Bangkok in 2004 (Borrini-Feyeraband et al., 2013; Lockwood, 2010). In 2004, CBD's PoWPA adopted at the 7th Conference of Parties (CoP) in Kuala Lumpur; governance, participation, equity, and benefit sharing as one of its four themes (CBD, 2004; Lockwood, 2010). Good governance appropriate to the context of PA is crucial to ensure effective and equitable conservation (Borrini-Feyeraband et al., 2013). The IUCN has recognized five main good-governance principles for the PAs namely; vision, performance, and

accountability to achieve effectiveness and fairness and respect for procedural and substantial rights to address the equity (Borrini-Feyeraband and Hill, 2015).

The IUCN PAME framework for PA management effectiveness does not mention governance in the framework, but governance relates to all the six elements of the IUCN framework as depicted in Figure 2.2 (Lockwood, 2010, p.756). According to Borrini-Feyerabend et al. (2013) the PA governance study is not a substitute for the gap analysis and management effectiveness studies but rather builds upon and compliments them. Hockings et al. (2006, p. 23-24) observe that assessment of management effectiveness and governance is "likely to become more closely linked in future, and assessment of process should generally include some measure of the effectiveness of governance systems", and "appropriateness of the particular governance model being used might usefully be included as one factor being assessed" under assessing the management processes.



Figure 2.2: Framework for governance effectiveness (including elements of the Hockings et al. (2006) and management effectiveness framework (Lockwood, 2010, p.756)

2.5 Protected Area Coverage and Global Target

The world database on PAs reports that the coverage has increased significantly over the last 52 years. In 1962, at the first World Conference on National Parks in Seattle, Washington, there were 9214 PAs identified for the world, today there are approximately 209,000 PAs (Worboys, 2015). This makes up 15.4% of terrestrial and inland water areas, and 3.4% of the oceans (Juffe-Bignoli et al., 2014). Approximately 8.4% of all the marine areas within the national jurisdiction (0-200 nautical miles) are PAs, while only 0.25% of marine areas beyond national jurisdiction are protected. The global network occupies more than 32 million km² across 193 countries and distributed within 11 regions: Africa, Asia, Caribbean, Central America, Europe, Middle East, North America, Oceania, South America and Southern Oceans and areas beyond national jurisdiction (Deguignet et al., 2014).

The CBD's 10th CoP or CoP 10 in Aichi, Nagoya Japan in 2010 prepared the Strategic Plan for Biodiversity 2011-2020 and adopted the Aichi Biodiversity Targets (CBD, 2010). These global targets provide guidelines to the preparation of NBSAPs, which are the principal instruments for the implementation of the convention at the national level. The parties to CBD are mandated to mainstream this strategy into the planning and activities of the sectors that impact biodiversity both positively and negatively (CBD, 2011).

The time-bound Aichi biodiversity targets, are measurable and guide the parties to prepare and implement their respective NBSAPs. Of the 20 Aichi targets, the objective of target 11 is to achieve 17% terrestrial land and 10% marine and coastal areas listed as PAs by 2020 (CBD, 2013; Juffe-Bignoli et al., 2014). Target 11 also aims to attain equitable and effective management of the existing conservation areas through a well represented and connected network of PAs and other area-based conservation measures (CBD, 2013).

To fulfil this 10% marine PAs, a further 2.2 million km^2 of marine areas will need to be designated as marine PAs and in addition, 21.5 million km^2 in areas beyond national jurisdiction will need to be protected. In order to meet the 17% coverage for the terrestrial and inland waters, an additional 2.2 million km^2 PAs will be required (Juffe-Bignoli et al., 2014).

2.6 History, Importance, and Objectives of Protected Area Management Effectiveness Evaluation

Evaluation plans and programs in the environmental sector have become important and relevant lately (Birnbaum and Mickwitz, 2009) due to the complexity of the environmental problems, leading to the greater difficulty associated with the evaluation. It is challenging to conduct an evaluation of the effectiveness of PA management because it needs to be supported by different stakeholders. There should also be a reliable process to conduct and generate information from the evaluation (Growcock et al., 2009). The evaluation results need to be disseminated in a format that can meaningfully translate into the planning and implementation decisions. It is also challenging to link the research findings into the practical on-ground management requirements for decision-making (Growcock et al., 2009).

In the environmental sector, donors, governments, and other related bodies seek evidence mostly on the transparency of donors' fund expenditure (Jacobson et al., 2008; Hockings et al., 2015), for this effective management studies are important. The results from such studies are used to highlight problems and set the priority by the funders, policy makers and conservation lobbyists (Hockings et al., 2000). This process of "management effectiveness evaluation is becoming institutionalized in the within management system" and "becoming part of the contemporary approach to best-practice management" (Hockings et al., 2015, p. 922).

Since the establishment of PAs, managers and others involved in conservation have wanted to achieve effective management (Hockings et al., 2004a; Hockings et al., 2015). Management effectiveness studies first emerged at the decadal World Parks Congress (Seattle 1962) and the need for monitoring and evaluation of PAs was discussed initially at the Third World Congress on National Parks (Bali Congress 1982) (Hockings et al., 2004a; Hockings et al., 2015). It then became an important program of deliberation at the Commissions on National Parks and Protected Areas and was identified as one of the major PA issues at the Fourth Congress (Caracas 1992) (Hockings et al., 2004a; Hockings et al., 2015).

The fourth congress IUCN highlighted the need for a standard methodology to measure the effectiveness and to be widely applied globally (Hockings et al., 2004a).

The IUCN framework (Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas, 2000) for assessing the management effectiveness was the primary framework and adapted by countries and organisations for management evaluations (Hockings et al., 2000; Hockings et al., 2015). This was later revised in 2006 (Evaluating effectiveness: A framework for assessing management of protected areas (2nd edition) (Hockings et al., 2006; Hockings et al., 2015). The fifth Congress in Durban (2003) identified management effectiveness of PAs as the priority topic (Hockings et al., 2015). PA management effectiveness involves biophysical, cultural and socioeconomic and managerial factors as well as numerous stakeholders, so monitoring and evaluation must draw in tools from a wide range of disciplines. Participatory rural appraisal and project cycle management have offered many useful ideas in this field (Hockings et al., 2015).

PAME evaluation is becoming common; there is a general rise in evaluation and performance assessments within governments and other public bodies across the world (Hockings et al., 2015; Jacobson et al., 2008). PA management evaluation assesses how well PAs are being managed; primarily the extent to which the management strategies are protecting values and achieving goals and objectives (Hockings, 1998; Hockings et al., 2002; Hockings, 2003; Hockings et al., 2015).

Understanding the management effectiveness of PAs has become important for the managers to improve their management strategies and as a response for the need to report the progress of PA management at the national and international levels (Hockings et al., 2000; Hockings, 2003; Hockings et al., 2015). Evaluation of PAs facilitates adaptive management to help improve planning processes and provide management directions to managers in deciding the priorities through a continuous learning process (Growcock et al., 2009). It has become increasingly important to understand the impacts posed by natural threats like climate change, inadequate resources for management and lack of capacity with respect to human resources for effective governance, and effective policy mechanisms to ensure effective PA management (Hockings, 2003).

The CBD adopted the PoWPA and there was a requirement (Goal 4.2) for the signatory states to develop and implement systems for assessing management

effectiveness (CBD, 2004; Jacobson et al., 2008). PAME is now a key element in a broader examination of the progress towards the CBD strategic plan (Hockings et al., 2015) and its constituent Aichi Targets (CBD, 2010).

The PA management evaluation, on the whole, will help to improve conservation and management effectiveness of PAs - both for the individual sites and PA systems (Hockings et al., 2015). The findings of the evaluation can be used to help managers improve on-going management of PA through adaptive management and to influence policy to improve PA systems and management arrangements. The following are the objectives of PA evaluation in detail;

- To "enable and support an adaptive approach to management by providing essential information to the managers at all levels on the extent to management interventions are being implemented and are being successful"
- To "assist in effective resource allocation by indicating gaps and areas of highest need and likelihood of success in some cases, facilitating 'triage' where resources are scarce"
- To "promote accountability and transparency through providing senior management, funding bodies, stakeholder groups and the public with information about how resources are being used and decisions made"
- To "involve the community, build a constituency to support protected areas and promote protected area values at a particular site or more generally across a system of protected areas" (Hockings et al., 2006; Hockings et al., 2015, p. 894).

Besides achieving the objectives of the PA evaluation, the process of assessment itself is beneficial and there is improved communication between the PA officials and other stakeholders. Hockings et al. (2006) state that the assessment process gives an opportunity for the managers to reflect on the challenges they face in managing the sites and systems from different perspectives apart from their daily schedule.

2.7 Methods used in Evaluation of Protected Area Management Effectiveness

There are four PAME approaches taken to evaluate PAs and PA systems (Hockings et al., 2015; Leverington et. al., 2010). The detailed differences between these approaches are described in the Table 2.1. The approaches are;

- 1. Protected area extent and location: This assesses the extent and location of PAs inclusive of their biological and landscape diversity (Hockings et al., 2015; Leverington et al., 2010). In order to designate an area as a PA, it is important to consider the coverage of the habitat of important species such as endemic or endangered species in the habitat. The key biodiversity areas are designated, for example, Important Bird Areas and they use this as a guide to establish the PA (Hockings et al., 2015). Another scientific framework used by the Australian National Reserve system to designate PAs is called Comprehensive, Adequate and Representative. This criterion includes areas in regional-scale ecosystems in each bioregion with areas to support a viable population of species and to encompass variability.
- 2. Evaluation of large-scale impact of PAs: This approach studies the influence of PAs in reducing the scale of habitat degradation and deforestation in the location of the PA (Hockings et al., 2015; Leverington et al., 2010). Such studies have been conducted in the tropical forests, and most of the results have demonstrated the effectiveness of PAs in reducing rates of habitat change (Geldmann et al., 2013; Hockings et al., 2015).
- 3. Overall PAME: This approach is used to evaluate a single PA, a group of sites and systems of PAs (Hockings et al., 2015; Leverington et al., 2010). This approach assesses the overall effectiveness of the PA by looking at the components of the design, resources input to PA management, and process of management. It also assesses how it achieves the objectives while conserving their values (Hockings et al., 2015; Leverington et al., 2010).
- Protected area outcomes: This approach examines the outcomes of PA management based on detailed monitoring and reporting on the condition and the trend of PA values, especially biodiversity values (Geldmann et al., 2013;

Hockings et al., 2015). This approach undertakes detailed studies in a systematic way to develop adaptive management, and this was adopted by The Nature Conservancy and Park Management in South Africa, Australia and Canada (Growcock et al., 2009). Hockings et al. (2015) indicate that there is, however, limited detailed monitoring of species population in the PAs.
Approach	Key questions that underpin the approach
Assessment of extent and location of PAs, including their coverage of biological and landscape diversity	 How many PAs are there in a country or region, and what is their total area? How effectively do the PAs cover eco-regions or habitats? How effectively do the PAs represent other features such as landscape elements, wetlands types and species?
Assessment of the effectiveness of PAs as a conservation mechanism at larger scales, and the impact of PAs on people.	 Have PAs reduced deforestation and other habitat loss? How have PAs affected local communities- have they increased or alleviated poverty?
Assessment of overall PA management effectiveness (PAME)	 How well designed is the PA and the PA system? Are adequate and appropriate planning, resources and processes in place to enable management? Are PAs achieving their objectives and conserving their values?
Outcomes of PAs in conserving their biodiversity values (a subset of approach 3 but focused just on the outcomes)	 Are PAs protecting species and habitats? Are values such as endangered species being conserved or restored? What is the impact of PAs on communities?

Table 2.1: Approaches to Evaluating the Effectiveness of Protected Areas (Source Hockings et al., 2015, p. 892)

2.7.1 International Union for Conservation of Nature and Natural Resources Protected Area Management Effectiveness Framework

An example of an approach to PAME applied to an individual PA has been developed under the auspices of WCPA and referred to as IUCN PAME framework here (Hockings et al., 2006). This is the third approach discussed above and this approach was followed in this study. This IUCN PAME framework considers six elements in the PA management cycle which are important for measuring management effectiveness (Hockings et al., 2006) namely Context, Planning, Inputs, Process, Outputs and Outcomes (Figure 2.3). They reflect the three large themes of management: design (Context and Planning), appropriateness/adequacy (Inputs and Process) and delivery (Outputs and Outcomes) (Hockings et al., 2006). In order to understand the effectiveness of PA management, these six elements should be assessed (Hockings et al., 2006) (Table 2.2).

Evaluating the Context helps in understanding the values of the PA, its threats, and opportunities facing it including its management and political environment. The Planning element assesses the establishment of a PA with its objectives, while Inputs considers the resources such as financial and human resources invested in fulfilling the objective of a PA. Process identifies how the management actions are implemented as per the accepted procedures. The Outputs measures achievement of activities' target (e.g. a number of patrol runs, paths built), while Outcome reflects the achievement of the long-term objectives (e.g. stable plant and animal population, functioning ecosystem) of the PAs (Hockings et al., 2006).



Figure 2.3: The International Union for Conservation of Nature and Natural Resources' framework for assessing management effectiveness of protected areas (source Hockings et al., 2006)

Table 2.2: International Union for Conservation of Nature and Natural Resources' Framework for Assessing Management Effectivenessof Protected Areas and Protected Areas Systems (Source Hockings et al., 2006)

	Design		Appropriater	ness/Adequacy	Delivery	
Elements of Management Cycle	Context	Planning	Inputs	Process	Outputs	Outcomes
Focus of Evaluation	Assessment of importance, threat and policy environment	Assessment of protected area design and planning	Assessment of resources needed to carry out management	Assessment of the way in which management is conducted	Assessment of the implementation of management programmes and actions; delivery of products and services	Assessment of the outcome and extent to which they achieved objectives
Criteria that are assessed	Significance/Values Threats Vulnerability Stakeholders National Context	Protected area legislation and policy Protected area system design Protected area design management planning	Resource available to the agency Resource available to the protected areas	Sustainability of management process and extent to which established or accepted process are being implemented	Results of management actions Services and products	Impact: Effects of management in relation to objectives

2.8 Protected Area Management Effectiveness Evaluation Globally

PAME has become an integral part of the global and national conservation agenda after its introduction in the 1990s for good PA management (Hockings et al., 2015). The GEF has adopted a standard requirement to use the Management Effectiveness Tracking Tool (METT), which was developed by the World Bank and WWF as a means of tracking the progress against their joint forest initiative target of improving the management of 70 million hectares of forest PAs (Hockings et al., 2015). The GEF has required the use of the METT to assess management effectiveness at the initial, mid-term and final evaluation of all the funded projects in PAs (Hockings et al., 2015).

On the recommendation of the fifth park Congress, the CBD developed the PoWPA in 2004 (CBD, 2004; Hockings et al., 2015) with the goal and targets to promote the development and adoption of PAME systems. The CBD's target to achieve the assessment of 30% of the PAs by 2010 was not achieved. This goal is now targeted as the Aichi Targets during the conference of parties (2010) by the parties to expand and institutionalize management effectiveness assessments to work towards assessing 60% of the total area of PAs using various national and regional tools by 2020 (Hockings et al., 2015).

The State of Parks Program in New South Wales in Australia is one methodology applied in PAME and has evaluated all the reserves (650+) in one State (this has been conducted three times) (Leverington et al., 2010). The Department of Environment, Climate Change and Water conducted this effectiveness evaluation process (Growcock et al., 2009; Hockings et al., 2015; Leverington et al., 2010). This study was conducted to achieve all the four objectives of PA evaluation and has facilitated adaptive management, supported planning and decision-making and has provided clarity to the park managers in determining the priorities in their parks.

Apart from the results of evaluation, the process of evaluation has been reported useful. "In a survey of 62 management effectiveness studies in 19 countries, 97 percent of respondents said the process had been useful to staff" (Hockings et al., 2015, p.895). Hockings et al. (2015) found that many managers have reported that

they have gained major benefits during the process of evaluation from the reports generated from the PAME evaluation.

An example of evaluation of marine protected areas (MPAs) in the western Indian Ocean (Hockings et al., 2006) used the workbook prepared by the IUCN-EARO (Eastern African Regional Office) as the guiding document for the evaluation. This document follows the IUCN PAME framework and the methodology has been adopted from the UN-Foundation/UNESCO IUCN WCPA project *Enhancing the Heritage*. This methodology can assess within the "short period of time (e.g. 3 - 4 months) and complements (rather than being an alternative to) the more detailed method by WCPA-Marine which focuses on identifying and using indicators to assess outputs and outcomes" (Wells, 2004, p.53). It uses six worksheets for six elements (Context, Planning, Inputs, Process, Outputs, and Outcomes) and recommends these be adapted to the individual sites.

The findings from this study were that the longer established MPAs had sufficient required infrastructure but lacked the adequate human resources and sustained funding. The stakeholders of the MPAs were ignorant of the PA objectives, the associated legislation and how it operated. This indicated a poor working relationship between the MPAs and stakeholders and also a lack of advocacy program for the parks. The assessment reports the presence of the enforcement programs and protocol with demarcations and zones for implementation, but only a few of the PA staff could explain the basis of this demarcation and zoning. The results convey that the parks lacked the human expertise (which could be due to lack of financial capacity) to maintain records on the expenditure of the past, to forecast future financial needs, which is important information to attain financial sustainability (Hockings et al., 2006).

One of the important findings was that most of the objectives of the MPAs were focused on the conservation objectives and to improve livelihood of the local communities, but they were insufficiently addressed in measuring the progress. All the MPAs (eight studied) had management plans and were driven based on the analysis of issues prevailing during the period of preparation and were not objectivedriven and did not have strategies to achieve the overall goal of each MPA. Only one followed best practice standards, which made it harder to evaluate the effectiveness and make recommendations to follow the standards for effective management (Barber et al., 2004). There was a lack of data to show the progress towards the objectives as in most of the cases there was unreliable and insufficient data to form a baseline before the beginning of protection (Hockings et al., 2006).

There have been outputs of 8000 evaluations of PA management ranging from individual parks to network of PAs within 100 countries (Levering et al., 2010). It was found that more than 50 methodologies have been used in these countries to conduct the evaluation. This study was confined to the information from 14 widely applied methods to assign common indicators for measuring their goals within the IUCN PAME framework. The results from this study reports that the most commonly used methodology were, RAPPAM (Ervin, 2003a), METT (Stolton et al., 2007), ProAcra/CAPAs (Corrales, 2004), Assessment of Important Bird Areas (Birdlife International, 2006), Parks in Peril Site Consolidation Scorecard (The Nature Conservancy Parks in Peril Program, 2004) and New South Wales State of Parks evaluation (NSW Government, 2007).

This study found out that the Planning indicator (relates to the establishment of the national park and legal establishment, design, resolution of tenure issues, boundary demarcation) as defined by the IUCN PAME framework was strong but had weak management planning. Inputs of funding, equipment, infrastructures were severely lacking. Process measures relating to research, monitoring and evaluation, programs to benefit local communities were also rated weak in the study. Output and Outcome measures were below the "sound level but fall in the top 40%" of the similar indicators grouped together from different methodologies used (Leverington et al., 2010, p. 692).

2.9 Background on Protected Areas in Bhutan

PAs in Bhutan are the habitat of rich biodiversity and falls within the eastern Himalayan biodiversity hotspots (NBC, 2014). In addition to protection and conservation of the environment, the establishment of PAs in Bhutan is essential to preserve soil, water flow, and culture (RGoB, 1993). PAs are important for Bhutan because they encompass the major source of water in the country.

In addition, all the ten PAs (Figure 2.4) have confirmed the presence of tigers according to the recent nation-wide tiger survey (DoFPS, 2015) and 9% of the country's geographical areas are biological corridors connecting these tiger habitats. These biological corridors allow the movement of tigers and genetic flow of the other species (WCD, 2010). The presence of tigers in Bhutan's PAs is an indication of the extensive habitat and conservation significance offered by Bhutan amongst all the tiger range countries. This conveys the message of natural balance and sustainable forest dynamics and justifies the conservation of the environment in the form of the PA systems in Bhutan (NCD, 2005).



Figure 2.4: Protected area system of Bhutan (Source WCD, 2010)



Figure 2.5: Provisional zonation map of PNP (Source TNP, 2013a).

Biodiversity and other natural resources are accessible to utilization by the people in the government reserve forests with permission (FNCR, 2006) but inside the PAs, resource usage is restricted to the areas falling outside the core area (core zones are assigned to the prime wildlife habitat and restrict human intervention). Multiple use zones (have human settlements and conduct sustainable resource utilization program, buffer zones are demarcated outside park boundary of relevant distance to as cushion against the impact of activities outside PA) and buffer zones are areas of resource extraction by residents inside and in the fringes of the PA (Wangchuk, 2012) (Figure 2.5 shows PNP with different zones and similar principles apply to other PAs in Bhutan). The zonation framework for national parks and wildlife sanctuaries of Bhutan 2012 is in line with the principle to protect the prime wildlife habitat and also meet the resource requirement of the residents living inside and outside the PAs (Wangchuk, 2012).

The governance model of PAs in Bhutan is "Governance by government" as per the IUCN category (Dudley, 2008, p. 26). The Department of Forests and Park Services (DoFPS) prepares the management plans for the PAs (FNCR, 2006). This is a conventional government-governed PAs system. Governance by government is common for most of the world's official PAs and involves a "complex system of ministries, agencies, administrative levels and actors that work in coordination, and sometimes in tension, with one another" (Borrini-Feryeraband and Hill, 2015, p.181). Borrini-Feryeraband and Hill (2015) also reports that this form of governance model communicates with the public in the form of reports (state of protected areas, annual and external audit reports) to convey accountability. Using this model, in most cases, the relevant government agency retains overall control and makes all the major decisions (Borrini-Feryeraband and Hill, 2015). DoFPS makes the major decision for the Bhutan's PAs.

Bhutan has gained popularity in nature tourism and many of these tourism products are located within the PAs includes sightseeing, trekking, and for local culture experiences; tourism is one of the direct means to meet the socio-economic aspirations of communities living inside and around the PAs (Gurung and Seeland, 2008). This offers employment opportunities (Alavi and Yasin, 2000; Gurung and Seeland, 2008). It also offers an alternative source of income in addition to locals' daily routine work of livestock rearing and subsistence farming (Bajracharya et al., 2006). Nature tourism in PAs in Bhutan, with equitable sharing of benefits among the stakeholders, can potentially garner community support for the conservation and the survival of PAs into the 21st century and in a balanced approach called social-ecological system (Strickland-Munro et al., 2010).

The study site; PNP is centrally located in Bhutan's geography and is also biologically diverse stretching its area through different forest types. This park is home to the endangered Bengal tigers and many other mammal and bird diversity (TNP, 2013a). It is famous as the birding destination in Bhutan for the tourists. The different vegetation zones in PNP have led to an adoption of a variety of livelihood options, thereby would ensure to understand various forms of interaction between community and PNP. This study site will present as an interesting and relevant case study for Bhutan.

2.10 Governance Structure of Bhutan's Protected Areas

The PAs of Bhutan are under the technical administration of DoFPS under the Ministry of Agriculture and Forests (MoAF). The hierarchal governance structure for PNP (Figure 2.6) is as follows;

- 1. Ministry (Policy and Planning Division PPD) preparation of legislation and rules, formulation of central five-year plans, resources mobilization, monitoring, and evaluation
- Department of Forests and Park Services (DoFPS) identification of PAs, recruitment of park officials, resource mobilization, monitoring and evaluation and approval of management plans
- 3. Wildlife Conservation Division (WCD) provide technical assistance and resource mobilization
- 4. Phrumsengla National Park (PNP) preparation of management plans, conduct conservation activity as per the management plan and maintain relationship with local stakeholders
- 5. Local communities sustainable resource utilization and protection, maintain ecosystem services as per their culture and tradition

The PPD is the ministerial coordinating agency for all the departments under the MoAF (MoAF, 2016). There are four departments and five other agencies under the MoAF. A focal planning officer is identified for the each agency to fulfil the mandates of the PPD.

2.11 Past Protected Area Evaluation in Bhutan

The four evaluated PAs (Jigme Dorji National Park, Jigme Singye Wangchuck National Park, Phrumsingla National Park and Bumdeling Wildlife Sanctuary) of Bhutan were first assessed using RAPPAM method in 2002. This assessed the first decade of PAs in Bhutan and identified strengths and weaknesses, areas of improvement and established the baseline data for future assessments (Ervin, 2003b). This assessment was done to fulfil the requirement of the international donors

supporting the PA establishment in Bhutan. All the PAs in Bhutan were initially supported by the international and domestic donors and supported by the government (Choden et al., 2010).



Figure 2.6: Organogram of Ministry of Agriculture and Forests, Bhutan

The RAPPAM followed the IUCN PAME framework of evaluation and was designed with short and rapid questionnaires that could be answered during one or more participatory workshops. The responses to the questions were perception-based and assigned qualitative scoring and did not entail field verification. The RAPPAM study method conducted workshops for the participants, namely parks officials and other stakeholders, and through the discussions with consensus generating a score to each particular question (Ervin, 2003b). According to Hockings et al. (2006), since the RAPPAM method focuses on comparing the PA networks rather than the individual parks, the past assessment did not focus on identifying the absolute threats and challenges (Ervin, 2003b). This method gives an easy recommendation to the policy makers to identify the issues faced by the PA system that needs immediate attention to improve the management effectiveness (Hockings et al., 2006).

Park residents are important stakeholders (Wells and McShane, 2004) however, even if they attend the RAPPAM evaluation workshop, their opinions may be influenced by the presence of park officials. In addition, they are usually unable to express their opinions due to the fear that they will be labelled as working against the interests of park management (Barber et al., 2004).

The past assessment report does not inform on the representation of different stakeholders in the research. Hockings et al. (2006) report that broader representation from different stakeholders provides more accurate information even if there are conflicting responses between the park management and the community. The responses and points from the community would be reported in the report, although Hockings et al. (2006) also says that getting the right participants are challenging and crucial for such workshops.

Since the past assessment has set the baseline and identified the issues and challenges associated with PNP (Tshering, 2003), the present study will evaluate the influence of the past recommendations on improving the management of PNP. This particular study will also determine if the issues and challenges associated have changed with time and will identify the drivers of change. The progress of PNP since the first assessment will be understood and this may present strong evidence to continue periodic evaluations of PAs in Bhutan. This study will include an in-depth perspective of individual park residents, park officials, and other relevant government officials.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Method

The document analysis was done at global, regional and national levels on the different types of PA evaluation methods being used (Leverington et al., 2010). This was also focused to choose the most relevant assessment methodology based on the conditions of the study site, time, and resources available. The literature used the IUCN PAME framework (Hockings et al., 2004b; Hockings et al., 2006), which is commonly used in PAME. The other relevant documents are; past PA management assessment reports, management plans, periodic progress reports, newsletters and other relevant government documents. These were analyzed for its content to develop the background history of the study site. The documents referred were both published and unpublished works.

The four types of approaches to assess the effectiveness of PAs have been discussed in Chapter 2. In this study, IUCN PAME framework has been followed. This framework contains six elements, which covers all events of the management cycle according to Hockings et al. (2006). According to them to achieve the objectives of the PA management effectiveness study, all of these six elements and the relationship between them should be understood. This study assessed the management effectiveness of PNP and whether this approach has been fulfilled.

This IUCN PAME framework has been used to design many other assessment methodologies (Hockings et al., 2015). Since this framework could be implemented using the questionnaire-based assessment, this approach was selected as the research method. Of the six elements of this framework, only five elements of Context, Planning, Inputs, Process, and Outputs were assessed. The Outcome element that evaluates the long-term objective was not assessed because Hockings et al. (2006) discuss that this element focuses on assessing details such as a detailed survey of animal and plant population count, proper functioning of ecological systems and maintenance of cultural values.

Currently, there are no established baseline data on the population of animals and plants, and also on specific studies on the ecosystems and cultural values. The documentation of this baseline information during this research period was not possible due to time constraints. Evaluating trends for an ecosystem and cultural values requires longer study period. So due to time constraint and poor data availability, the Outcome element was not assessed. According to Hockings et al. (2006, p. 12), "evaluation studies may choose to assess only certain elements - in which case we need to interpret the results with care, knowing that information is incomplete" and not evaluating the Outcome in this research still qualifies this study as a PAME evaluation. Resources and time constraint are factors that determine which of the six elements of the IUCN PAME framework can be assessed as mentioned by Hockings et al. (2006).

During the document analysis, the primary documents of PNP consisting of reports were reviewed because PAME evaluation consists of a combination of descriptive information and specific assessment methodology (Hockings et al., 2006). These reports conducted by PNP management contained the progress of the activities conducted and some of them as physical and financial reports to the relevant donors. The socio-economic report (TNP, 2008a) and Evaluation of ICDP reports (TNP, 2008b) were the only available reports the researcher could access to learn the social dimension of PNP.

The interview method was selected because according to Platt (2012) interviews are often considered as an effective means to obtain the desired data on the topics that are of interest to both the interviewer and interviewee. The in-depth semi-structured interview was done for the data collection and according to Alasuutari et al. (2008), research interviewing is the most common way to construct knowledge in qualitative research. In qualitative interviews, semi-structured interviews in contrast to structured interviews are more flexible and dynamic as mentioned in Platt (2012). The information gathered involves interviewing the stakeholders and them sharing their perception and understanding on the topic.

To generate this information, the preferred means was to interview them by a researcher; who did not have any formal or informal relationship. The past PNP management effectiveness assessment was a self-assessment method done by the park officials. Research conducted by an outsider (researcher) has a reduced influence on the expression of the interviewees compared to an evaluation carried out by park officials (Wells and McShane, 2004).

The face-to-face interview was the only means of the interview for this study site within the limited time. To interview the park residents, other means of interviews such as posting questionnaires was not feasible due to lack of postal services. In addition, there were language barriers as most of the respondents were not fluent in English. If the questions had been posted, it would have taken a long time to deliver and also there is a large possibility for the questions to be interpreted with different meanings by different readers or interpreters. So to avoid this bias, the researcher travelled to interview all the respondents.

During the interview, the research objectives were explicitly introduced to every respondent. This according to Platt (2012) is necessary because interviewees who possess information will then be acquainted with the purpose to be interviewed and be prepared to share their opinions without hesitation. This face-to-face interview was useful in getting detailed information on individual attitudes and understanding as reported by Platt (2012).

A few small notes were taken during the interview, and the interview was recorded after getting the interviewees' approval to do so. According to Jovchelovitch and Bauer (2000), it is important to have an uninterrupted narration to preserve more original forms of information. The interviewer listened with attention, and this gave genuine enthusiasm to the interviewee to narrate events or facts undisturbed. Recording these sessions were necessary as recordings were the primary source of information, which assist in verification (the brief notes also assist). Jovchelovitch and Bauer (2000) also report that recording is important to support proper analysis later as the interviewer is unable to take note of all the information during the interview.

The questions were designed with words that could be easily understood by all respondents and were asked in an identical fashion to all the respondents. In social research, it is important to have simple and clear questions posed in the same manner because respondents are not a homogenous group. There is a higher chance of changing the meaning of the questions if this is not followed. According to Platt (2012), this is a means to avoid biases when the interviewee does not have the skills to answer. Researcher interviewing all the sample population removed the other potential biases of a different interpretation of questions by the different interviewer.

3.2 Interviews and Sampling

For the interviews, fourteen questions were devised in order to cover the five elements of IUCN PAME framework (Context, Planning, Inputs, Process, and Outputs) (Table 3.1 is Interview schedule). The questions were devised in line to fulfil the research objectives. Subsidiary questions where relevant were also asked.

Elements (IUCN PAME framework)	Key Question	Subsidiary questions
Context	 Why is PNP important PA? What are the threats and challenges associated with PNP? Is the govt. supportive of PA management? 	What makes PNP distinct from rest PAs in Bhutan? List the threats and challenges based on the severity. How to overcome these threats and challenges?
Planning	 Is there sufficient legislation to support conservation in PNP? Is the management planning appropriate for PNP? How is the planning done? 	What are different forms of legislation to support conservation? What is good or bad about this legislation? What is positive /negative about PNP management plan? What changes need to be incorporated into present plan?
Inputs	 What are current input/resources invested on the PNP? Does PNP have adequate resources to manage? 	What additional resources can help PNP implement plans effectively? Who is responsible to bring in the resources? What resources do you have now and who gave you these resources? Are the resources used judiciously?
Process	 9. What is the process of management? 10. Is management plan inclusive of effective governance? 11. How can management effectiveness be improved? 	What best standards of management are implemented? Who are the stakeholders of PNP management? What is the role of local community on PNP management? What is the relationship between PNP and local community?
Outputs	 12. What are the tangible or non-tangible outputs? 13. Have planned programs implemented? 14. What are significant achievements? 	What are major milestone achievements?

Table 3.1: Interview Schedule

The PNP was selected as the study site amongst the ten PAs of Bhutan. This was one of the parks assessed for its effectiveness in 2002 from four (Bumdeling Wildlife Sanctuary, Jigme Dorji National Park, Jigme Singye Wangchuck National Park and Phrumsengla National Park) studied. These four PAs were picked for the first assessment in Bhutan because during the time only five PAs were operationalized, and Royal Manas National Park could not be assessed due to political tensions along the Indian border (Tshering, 2003). Since the past assessment can be used as the baseline, this was the major criterion for having selected the PNP as the study site. Jigme Dorji National Park covers the northern Bhutan and some of the communities are located very far from the road (more than ten days of walking). Bumdeling Wildlife Sanctuary is also located in the extreme eastern Bhutan, and Jigme Singye Wangchuck National Park has residents living further from the roads. In the case of PNP, due to the presence of national highway inside the park, the residents live closer to roads. This enabled the researcher to save time and cover all the *geogs* (an administration unit of local government within the districts and Gup is the local administrator of geog) falling inside PNP.

Category of respondent	Number of respondent
Park residents	12
Park officials	4
Wildlife Conservation Division (WCD)	2
Policy and Planning Division (PPD)	1

Table 3.2: Category and Number of Respondents

Four eastern and central districts of Bumthang, Mongar, Lhuentse and Zhemgang partly fall inside the PNP. Eight *geogs* with the number of settled households falling within the PNP jurisdiction is shown in the map (Figure 3.1). In order to have fair representative samples from all these blocks of settlements, two respondents were interviewed from the blocks with larger areas (five *geogs;* Jarey, Metsho, Saling, Tsamang and Ura) falling inside PNP and one each from the blocks with less area falling inside PNP (two *geogs;* Chumey and Tang) (Table 3.2). A *geog* (Shingkhar: see in Figure 3.1) in Zhemgang district could not be interviewed due to poor road conditions as a result of the monsoon season in Bhutan (September).

For the selection of community respondents, the researcher gathered the contact numbers of the *Gups* of these *geogs* falling inside the PNP. The snowball sampling method was used to select the respondents based on the recommendation of the *Gup* (Heckathorn, 1997). Most of the recommended participants were village *Tshogpas* (acting village representative who is nominated by the village to represent the village). A *geog* can have as many *Tshogpas* based on the further demarcations of *geogs* into smaller village groups called *Chiwog*. For example, Jarey *geog* has seven *Tshogpas*. *Tshogpa* is regarded as a most knowledgeable person from the *chiwog*, and he/she has been nominated to represents *chiwog* for decision-making meetings at the *geog* level and further higher levels if required. The *Gups* and *Tshogpas* were nominated and preferred to be interviewed because they are the most informed and learned within the community. They are also nominated by community to represent them in the forums. Not choosing them for the interview would have had a high probability of not getting the required information for this research.

The participants from PNP were the park manager and the range officers managing their demarcated ranges (range is the administrative jurisdiction of PNP and is headed by range officer) (Figure 3.2: Park office and infrastructure location). The planning officer at the PPD who is the focal officer for DoFPS and a relevant officer from WCD were interviewed based on the availability during the interview period (Table 3.2).



Figure 3.1: *Geogs* falling inside PNP boundary with the number of households (Source TNP, 2013a). Different colours represent different *geogs*.



Figure 3.2: Park office and infrastructure location (Source TNP, 2013a).

3.3 Data Transcription and Analysis

The data was recorded mostly in *Dzongkha* (national language of Bhutan) and few in two other local dialects (*Kurtoepkha* and *Sharchopkha*) for those community members who were not fluent in *Dzongkha*. In the interviews, only a few notes were taken, and rest were recorded. The recording was necessary to engage with the interviewee and recording helped to store all the information, which were later referred during the transcription and analysis.

Voice recordings were later transcribed into MS word because the voice was recorded in the local dialects of the respondents. The word format of transcription is one of the forms of data that can be uploaded into NVivo software for data analysis. This software analyzes unstructured or semi-structured data like interviews, field notes and journal articles (QSR International, 2015). The transcribed text data was coded into themes to label, segregate and organize the data for analysis (Appendix A is an example of how the code 'achievement' generate queries). This software helped

to recognize themes and to draw results by running the queries. It helped to understand the relationship between different themes (Hilal and Alabri, 2013).

CHAPTER FOUR: RESULTS AND DISCUSSION

The interviews were conducted at seven *geogs* for the communities living inside and outside the PNP. These communities depend on the natural resources of PNP and have close interaction. In the PNP, the park officials were interviewed representing three ranges (Central, Eastern and Western) and an official from the park headquarter at Ura. Government officials at WCD and PPD of MoAF have also been the respondents for this research. These offices prepare central plans, policies and PNP is under their direct administration.

When presenting the results, the governance structure of PNP is discussed and reports on the role of governance in the management of PNP. The functions and role of the different levels of government offices involved directly or indirectly in the management of PNP is reported. In the results, efforts are made to differentiate between the governance and management study, and their roles in the effective management of PNP. The rest of the result are presented within the framework of the IUCN PAME framework and showcase how it responds to the research questions (Table 4.1).

Table 4.1: Relationship Between the Research Questions and the International Union for Conservation of Nature and Natural Resources' Protected Area Management Evaluation Framework

Research questions	Elements of IUCN PAME framework				
	Context	Planning	Inputs	Process	Output
To study the role of governance in effective management of PNP	1	1	1	1	1
To evaluate the effectiveness of PNP management model.	1	1	1	1	1
To identify the factors influencing the management effectiveness of PNP.	1	О	1	1	1
To study the role of important stakeholders in strengthening the management of the PNP.	О	1	1	1	1
To identify measures to strengthen the effective management of PNP.	0	1	1	1	1

Note: \checkmark shows a direct relationship and O shows an indirect relationship.

4.1 Governance and Management of Protected Areas¹

The distinction between the governance and management is not clear (Lockwood, 2010). They are closely related but a distinct phenomenon according to Borrini-Feyerabend and Hill (2015) (Table 4.2 shows the difference between two). Management is the means and actions to achieve the given objectives, while governance is "who decides what the objectives are, what to do to pursue them with what means, how those decisions are taken, who holds power, authority and responsibility and who is (or should be) held accountable" (Borrini-Feyerabend and Hill, 2015, p.171). It is indeed the decisions made by the responsible and authoritative levels of governance that influence the management of PA. Table 4.1 shows that governance influences the management of PAs. Management is the implementation of the activities to fulfil the objectives.

Table 4.2: Difference Between Management and Governance (Source Borrini-Feyeraband et al. (2013, p.11))

Management	is about	 what is done in pursuit of given objectives
		 the means and actions to achieve such objectives
Governance	is about	 who decides what the objectives are, what to do to pursue them and with what means how those decisions are taken who holds power, authority and responsibility who is (or should be) held accountable

Government governs Bhutan's PAs and this is one of the governance categories of IUCN. In the case of the PNP, the communities report that they were consulted during the initial planning of management plans but they believe that "it is ultimately in the authority of government (PNP is referred to as government) to decide what is to be implemented here" said a community respondent. Since the national government leads the governance, they are accountable for the governance quality and management effectiveness of the overall PA system. All the park officials interviewed agree that the government is responsible for developing and fostering the relevant capacities and to secure sufficient budgetary resources as mentioned in the *National Forest Policy of Bhutan 2011* (Appendix B shows the opinions of the respondents). The *National Forest Policy of Bhutan 2011* identifies DoFPS to lead the conservation programs in Bhutan. The park officials also expressed that the governance is respondent.

¹ Research question 1: What is the role of governance in management of PNP?

governance of PAs will depend on the healthy interaction between the actors. This statement of park officials is supported by Borrini-Feyerabend and Hill (2015, p. 189) as; "overall relations and mutual agreements among governments, private and corporate landholders, NGOs, indigenous and local communities and civil society at large" are important for the good governance of PAs.

In the governance structure of Bhutan's PAs, PPD is one of the central public planning agencies. According to Borrini-Feyeraband and Hill (2015) such government agencies, at the national level, have a crucial role to play as the policymakers, monitors and evaluators of performance, and distributors for the resources. PPD's respondent says that these responsibilities nested with them requires knowledgeable agency employees and require more capacity building as compared to the prevailing scenario. According to Hockings et al. (2006) skilled human resources are an important input for the timely delivery of the planned activities of the PA. PPD being one of the decision-making agency for PAs in Bhutan, this corresponds to Hockings et al. (2006) and Watson et al. (2014) on the need, relevance and important for decision-making agency and stakeholders to be communicated and be informed.

According to the PPD respondent, any policy matter of the Ministry or Department is spearheaded by the PPD and leads the preparation of the five-year plans. The respondent informed that the PPD coordinates project identification; preparation and approval and this responsibility demands in-depth knowledge and expertise to deliver these mandates. Currently the PPD coordinates with the DoFPS to prepare the national plan documents for PAs but they are not involved in the preparation of individual park management plans. The involvement of focal officers in preparation of park management plans is necessary according to the respondent because it will be easier to monitor and track the progress later as mandated. But the respondent added that technical competency is required to perform these mandated roles.

The WCD is the agency under the DoFPS that functions as the technical office and supports the field offices such as PNP in implementing planned activities as and when required (DoFPS, 2016). Though mandated, the respondent from this office in the interview shared the lack of skills and expertise amongst the officials working

there. The WCD respondent felt that this role could not be implemented and there had been less technical support rendered to the field offices such as the PNP. This interviewer learnt from the respondent that, there is a huge requirement of strengthening the capacity at the central offices such as WCD, in order to improve the technical delivery to the PNP. Additionally, apart from receiving some funding assistance from the WCD, the PNP officials report that they had not received major technical assistance and guidance from the WCD.

While in terms of legislation for conservation, all the respondents agreed on the existence of sufficient legislations and policies. All of them had a unanimous response on the farsighted conservation policy that was developed with the visions of the monarchs and leaders of Bhutan. This is similarly reported by Borrini-Feyeraband and Hill (2015), who indicate that the government needs to ensure fair and well-enforced legislation and rules for effective PA management and for its governance quality. On the other hand, the park management shared the challenges of enforcement of these legislations with the communities, which requires continuous resources to conduct education and advocacy programs.

These findings on the governance of PA convey that, governance has a direct influence on the management of PNP. The objective of the research to understand the role of governance in management of PNP has been established. It conveys that effective and quality performance at central decision making agency will ensure effective management in PNP. The policies and plans approved by the PPD and the WCD have an impact on the implementation of activities in PNP.

4.2 Context: Understanding the Current Situations

4.2.1 Conflict Between Phrumsengla National Park and Communities²

The natural resource governance in PAs is challenging and it leads to conflict between the rural population and government in many countries according to Borrini-Feyerabend et al. (2013). This arises due to control over the natural resource and neglect of customary rights of the traditional users (Borrini-Feyerabend et al., 2013).

² Research question 2: What are the roles of important stakeholders in strengthening the management of PNP?

In PNP, the Ura communities have a conflict of interest over the extraction of timber from an area called Khandupang, where the PNP management claimed that this falls within the core zone (Figure 2.5 shows types of zones in PNP) of the park and is also a tiger habitat. The communities do not accept this claim by the PNP management because, respondents share that local people have common understanding that there has been a decrease in the population of wild animals in the forests of PNP. According to one of the respondent, in the past, there were incidences of livestock kills by the tigers but there has not been any case lately. This is the reason they confirm as an absence of tigers inside PNP.

The Ura community have extracted timber from Khandupang and they are traditional resource users (Vadouhê et al., 2010; Vedeld et al., 2012). All the households of Ura have a huge desire to extract from there. They are traditional resource users according to the respondents and, this timber is known for its best durable wood as compared to all other areas of forests in PNP in their locality. Respondents share that since there are larger trees that will yield greater quantity of timber from Khandupang area and if allowed to extract, it will drastically reduce the number of smaller trees cut to meet the demand from the current allocated forests. Currently they have to cut more numbers of trees to make the timber volume they are entitled to extract as per the forestry rules. To them, this is also another practice by the PNP management that falls against the sustainable management principles of forest resources. According to them, this change of practice by the PNP management has caused conflict of interest between the PNP management and Ura communities (the PNP office is also located in Ura) and reports that all the households are not happy with this reform.

To them, the PNP management would be achieving their social objectives, only if they are allowed to extract the timber from Khandupang. They expressed that Ura communities are willing to cooperate and support the cause of the PNP but the PNP management should also cooperate and accommodate their request on this timber allocation. The respondents from Ura shared the antagonistic feelings for the PNP management and conveyed the existence of this consensus from the Ura communities. The communities accept that the PNP management has the authority to stop timber extraction from Khandupang. However, people perceive it as the infringement into their resource utilisation rights and prevalence of similar outcomes in PAs is also reported by Borrini-Feyerabend and Hill (2015).

According to Borrini-Feyerabend and Hill (2015), such management decisions should adhere to the long-term vision of the national park (Borrini-Feyerabend and Hill, 2015) but currently the communities are not equipped with the knowledge to understand the long-term benefits and this situation is a similar scenario in the PNP. The customary rights according to Borrini-Feyerabend et al. (2013) are important and PA management should invest in improving the governance of PAs to manage such conflicts. This conflict situation needs to be addressed with the identification of some mutual recognition and positive collaboration (Borrini-Feyerabend and Hill, 2015). The options such as such as identification of second priority area for timber extraction and allotment of part of Khandupang area for timber extraction may mitigate the conflict situation.

From the PNP management, there is need for empirical data generation and information sharing to the communities as to show that Khandupang area is an important wildlife habitat. Also the PNP management needs to acknowledge the communities' right and identify a mutually agreed ways to mitigate this conflict (Borrini-Feyerabend et.al, 2013; Borrini-Feyerabend and Hill, 2015).

The rest of the respondents from other *geogs* expressed that they have been able to use the resources as per the existing rules and their entitlements. PNP supplies timber, fuel wood and other form of produce (fencing posts, flagpoles, woodchips, mushroom billets, shingles) (Table 4.3) in commercial category to urban population, concessional for the rural population and free during the time of natural calamities and inevitable circumstances. Free timber is given to both rural and urban population based on the approval from DoFPS. The data record of six years (2010-2015) shows that 84.97 % of wood supplied from PNP was for the fuel wood (both urban and rural population).

Vear	Quantity in M ³ (against royalty type)			Total (M ³)	Fuel Wood Usage (M ³)
I cai	Commercial	Concessional	Free		obuge (IVI)
2015	3909.82	4585.49	0.00	8495.31	7171.12
2014	10190.90	10255.92	0.00	20446.82	19136.00
2013	526.78	3338.98	6.37	3872.13	2168.55
2012	11190.94	17793.32	0.00	28984.26	25120.00
2011	913.34	450.51	197.30	1561.15	1132.30
2010	38.87	2385.18	3.50	2427.55	1172.80
Total	26770.65	38809.40	207.17	65787.22	55900.77

Table 4.3: Quantity of Timber and Fuel Wood Supplied from PNP (Source PNP)

Note: Quantity of fuel wood supplied comprises of all three categories and is included in the total.

4.2.2 Distrust Towards Park Officials

The distrust towards park officials was expressed by 17% of the respondent. The issue was expressed in line with the penalty imposed by the park officials on the illegal activities conducted by the communities. They expressed the biasness to the amount of penalty imposed to different individuals and this has happened because there are no fixed amounts as per the rules for different illegal activities but have an option to impose as per the range available in the *Forest and Nature Conservation Rules 2006*. This is the issue of enforcement of forestry rules and according to all the park officials there are inconveniences in enforcing the penalty amount due to large range for the fine amount and, they are hopeful that rules amendment will solve this issue.

4.2.3 Relationship Between Phrumsengla National Park and Stakeholders ³

There are eight *geogs* of villages falling inside PNP and the PNP management does not approve permits for resources allocation to three of them namely Chumey and Tang (Bumthang district) and Shingkhar (Zhemgang district) (TNP, 2008c). These villages are located far from the nearest PNP offices and only a small area with fewer households fall within the buffer zone of PNP (informed by the respondent). For these households, it is easier to get the permits for resources collection from the office of Territorial Forest Division. Based on the proximity of the settlements and

³ Research question 2: What are the roles of important stakeholders in strengthening the management of PNP?

their intensity of resource collection from the PNP, the priority areas were identified for the distribution of the ICDP support to the communities in the past.

Mixed responses have been received from the different community respondents with respect to benefits and relationship with PNP management. Over all, they expressed that designation of PNP in their locality was for the good cause because the PAs protects common pool resources. Communities expressed that in the absence of PNP management; the common resources would have been depleted at faster rate because all users want to reap the greatest benefits, which Hardin (1968) describes as the tragedy of commons. For this protection role of the PNP management, communities expressed existence of positive relationship with the park management. The communities also inform PNP officials on the incidents of illegal activities happening inside and in the buffer zones of PNP. PNP management acknowledges this form of cooperation from the communities as positive and encouraging. However they also encounter multiple incidents where resident communities themselves indulge in carrying out illegal timber harvest, poaching and other illegal activities.

The entire respondents who were the recipients of the support from PNP management expressed their gratitude. While the respondent from Ganglapong (*Chiwog* under Tsamang *geog*) expressed that the PNP management did not provide major ICDP support to his village and to his village falling within the PNP boundary did not have much positive contribution from them (Appendix A). He conveyed this as the bias action of the PNP management. On the other hand, other communities expressed satisfaction over the services provided by PNP management for collection of natural resources as entitled annually. The relationship with the communities has been founded initially by provision of ICDP during the early years after the park operationalization but these have been discontinued. The communities look forward to a better relationship with the PNP management with more programs to support their livelihood and also to contribute to the conservation objectives.

The agencies at the ministerial and departmental levels (PPD and WCD) are mandated to prepare plans, secure funds, providing technical assistance and in monitoring and evaluation of progress. The communities living inside PNP do not have direct interaction with PPD and WCD. The officials from these two offices do not find any reason to interact with them directly because of the presence of PNP management on ground. They expressed that there should be good working relationship between PNP management and communities.

There is direct interaction between PNP management and WCD. PNP management shared that WCD coordinates approval of plans, sharing of funds, project approvals and compilation of progress reports for the national conservation projects located at WCD. There is weak enforcement of monitoring and evaluation by WCD in PNP. The interaction between PPD and PNP management are mostly during the formulation of central plans and proposals specific to PNP. The monitoring and evaluation of programs in PNP is also a weak program of PPD. All the respondents from three agencies expressed the need to strengthen the working relationship to fulfil respective mandates. The support from PPD and WCD will ensure PNP management to perform effectively.

The one problem at the PPD, WCD and in PNP is the transfer of the experienced officials to other area and their roles are then taken over by new officers. The Human Resources Division does not have any guidelines to deal with these situations, which may have impact on the delivery of the mandated responsibilities (G.Wangmo (Personal communication, January 21, 2016)). According to *Bhutan Civil Service Rules 2012*, forestry falls under the vulnerable group to corruption and officials have to be transferred periodically. The new officials joining as forestry officials have an induction program before they are sent to their placement areas but a refresher course for the existing staffs would depend on the respective agency (G.Wangmo (Personal communication, January 21, 2016)). The other finding is the change of park managers of PNP between 2008 and 2013. During this period, PNP was managed by five different park managers and two of them officiated as park managers.

4.2.4 Threats and Challenges of Phrumsengla National Park and Communities⁴

There are multiple threats and challenges facing both the PNP and community. For the community the largest challenge is protection of crops from the wild animals. The community have hopes that the PNP management will help them mitigate this human-wildlife conflict (HWC). The communities also need continuous education and information sharing by the park management on the rules and regulation, which they think will keep them informed on the developments.

Human Wildlife Conflict

HWC is common to the settlements closer to the PAs (Worboys and Trzyna, 2015). In Bhutan, 69% of rural population live closer to the forests and the interaction between wildlife and people are frequent (NSB, 2015). These rural populations are dependent on the locally available resources for their livelihood, which increases their interaction with the surrounding environment and in turn creates increased interaction between people and wildlife according to studies conducted in Bhutan by Wang et al. (2006) and Sangay and Vernes (2008). These incidences have threatened the population of the large carnivorous species such as tigers, snow leopards and leopards (Ripple and Beschata, 2004; Rostro-Gracia et al., 2016; Sangay and Vernes, 2008) and people may be prompted to retaliatory killings and develop negative attitudes towards conservation (Rostro-Gracia et al., 2016).

All the community respondents interviewed report to have experienced raiding of crops and killing of domestic animals by wild animals every year and share high level of sadness to this situation (Table 4.4 shows the livestock kills only and there are no reports on crop loss). Mitigation measures to combat the loss from the HWC have been introduced in some of the *geogs* (Jarey, Ura, Tsamang and Metsho) falling inside PNP. Community based compensation schemes have been established in these *geogs* and the crops and domestic animals are insured against the wild animals and predators. For example, communities of Ura pay an annual premium of Nu. 250 (equivalent to AUD 3) and the scheme will only come into effect after three years of establishment (2017). Though such innovative initiatives have been initiated, there

⁴ Research question 3: What are the factors influencing the management effectiveness of PNP?

also exists a sense of distrust to the park officials by the community. There was a central scheme called Tiger Conservation Fund maintained at WCD in the past where, during the initial period, compensation for domestic animals killed by any predator was promised (Sangay and Vernes, 2008) but the actual enforcement of monetary compensation was only provided to the kills made by tigers. This change in the implementation of the compensation scheme was narrated as one example of distrust in programs implemented by PNP management or central agencies by one of the community respondents.

Year	Wild Predators				
	Leopard	Tiger	Bear	Snow leopard	
2003	31	4	8	-	
2004	84	-	4	2	
2005	20	-	5	-	
2007	-	1	-	-	
2010	24	-	8	-	
Total	159	5	25	2	

Table 4.4: Number of Livestock Kills by Wild Predators (Source WCD, 2003-2010).

The exhaustion of Tiger Conservation Fund stopped the reporting of domestic animal kills to WCD or to PNP management after 2010. There are no data of livestock kills in PNP thereafter and no data exists for the year 2006. This will not rule out the existence of conflicts, which may not have been reported. The communities expressed the perception of decrease in tiger numbers and to them, it conveys the failure of the PNP management to achieve their conservation mandates (Appendix A according to one of the respondents).

The communities of Ura *geog* report that the population of the wild pigs and their damage to the potato crops has increased drastically over the last few years. They cultivate food crops once a year and are worried if the wild pigs continue to raid the crop at the current pace, the rural population will not have sufficient food for the year. Recently in villages of Ganglapong solar electric fences have been supplied by the PNP management and people have high expectations from this intervention to prevent the animals getting into the crop fields. They have a genuine feeling that the PNP management should help them to curb the HWC. Communities express that in

order to mitigate HWC, more practical intervention should be adopted and the community share the readiness to engage in attending the issue, which is important according to Rostro-Gracia et al. (2016). There was no data available on the crop damage in PNP and also communities do not report this because they do not get any compensation for their loss.

Illegal Outside Collectors of Non-Wood forest Product

Ura *geog* is known for the wild mushroom Masutake, which is a delicacy and fetches a good price if exported but the communities express that there are incidences that people from other villages come even before the allotted collection time and exhaust the resources. To these incidents, communities aspire PNP management to bring in rules and regulations to curb such incidents and they should be benefiting from the resources available in their locality. Another species; *Paris polyphylla*, which is an important ingredient for the Chinese and Bhutanese traditional medicine, is being collected illegally by the people outside the locality (DoFPS, 2011). The tuber species when collected during the appropriate harvesting season sells at good prices across the borders of China and India. It is important to follow the harvest period in order to have optimum production with desired quality and this is in line with the existing guidelines prepared for different types of non-wood forest products (NWFP) in Bhutan (Social Forestry and Extension Division, 2011). This enforcement of rules on the illegal collection of NWFP was also identified as weak in 2002 assessment (Tshering, 2003).



Figure 4.1: Location of Labour camps along the highway within Phrumsengla National Park's jurisdiction (Source TNP, 2008a).

Existing Roads and New Road Construction

The building of infrastructures and facilities, for example roads, are one of the largest threats and challenges to the biodiversity conservation. The roads especially the rural farm roads have been constructed with an objective to remove poverty but most of the roads are not pliable due to lack of maintenance budget according to the all the park officials. For the PNP management, some of the new roads constructed have caused habitat fragmentation.

PNP is the only national park where the highway runs through the park. The east west highway of 79.29 km cuts through the park and there are 19 labour camps with 101 houses (TNP, 2008d) (Figure 4.1 shows the location of labour camps on the national highway). The survey of the people residing in labour camps in 2008 reported 361 people resided in the camps and depend on the park for fuel wood and also collect other NWFP products (mushroom and wild vegetables). According to all the park officials these labourers also conduct illegal activities such as poaching and

have been a threat to wildlife population (TNP, 2008d). In the past they have killed Sambhar (deer species), jungle fowls, and pheasants for meat.

Apart from this old national highway, another new highway has been approved by the Parliament for construction, which will cut through PNP (east side) called Shingkhar-Gorgan road, which will be 62 km long (TNP, 2008d). According to all the park officials, this proposed road will go through the tiger habitat that falls in the core zone of old fir growth. Dorji et al. (2011), reported that old fir growth is an important vegetation for red panda habitat and officials are worried of habitat fragmentation due to this new road. Fir forest covers 26.5% and it is second to conifer forests covering 36.3% of PNP area (TNP, 2008e). Tshering (2003) reports that the road posed the highest threat to the PNP.

Poaching

Illegal wildlife trade is a multi-billion dollar industry and it is the largest threat to biodiversity conservation globally due to the high demand of wildlife products (Rosen and Smith, 2010). In the PNP, there are a few targeted species that fetch good prices in the market such as *Ophiocordyceps sinensis*, musk deer and tiger. About 63% of the respondents recognize poaching as a threat to the conservation in PNP. The roadside labourers, local communities and people from other districts as reported by the respondents usually conduct them. Table 4.5 shows poaching as one kind of offence in PNP over the year last five years.

Poaching has been ranked as a high threat (categories include mild, moderate, high and severe) in assessment findings of Tshering (2003). Some of the poaching activities are carried out for self-consumption, such as pheasant for meat and feathers for decoration of arrows (used for archery; the national game of Bhutan). According to the community respondents, wild pigs were killed and in the past for the meat but lately they are killed by the famers out of frustration due to the damage caused to the crops.
Offence type				Year			
	2011	2012	2013	2014	2015	Total	
Illegal transportation of stone and sand	1	0	1	3	0	5	
Illegal fishing	2	5	0	3	0	10	
Illegal timber	3	2	4	12	8	29	
Poaching and smuggling of animal products	0	1	3	5	0	9	
Illegal collection of Paris polyphylla	0	0	0	2	0	2	
Illegal collection of firewood	0	0	1	0	0	1	
Other illegal activities	1	6	4	16		27	

Table 4.5: Types of Offences Recorded in Phrumsengla National Park (Source PNP, 2011-2015).

Illegal Timber

Illegal timber harvesting is one of the major threats and all the government officials report this as a threat to PNP (Table 4.5). PNP management provided the available data but has been compiled and standardised against themes to make relevant for this research. Tshering (2003, p.19) in the assessment of four PAs, reported that it was "not a serious threat". This finding of Tshering (2003) could relate to fewer rural farm roads inside or outside PNP during that study period. According to all the park officials, the challenge of illegal timber increased with increasing accessibility provided by the construction of farm roads in the rural areas in the recent past, which did not have road connections.

There are increasing demands of timber in the market according to park officials and illegal timber is one of the means targeted to meet the demand. Table 4.5 records the highest frequency for illegal timber as compared to other categories of illegal activities. The timbers are illegally felled to respond to the increase in demand for construction activities such as, towns, schools, hospitals and rural house construction. The park officials also report that the incidents of illegal transportation take place during the night. In order to detect the illegal transportation, park officials conduct regular patrolling both during day and night and even during the weekends or government holidays.

Forest Fires

The forest fire records for Bhutan from 2010-2014 shows that there have been 45 forest fires incidences on an average and have destroyed about 19,844 acres of forests annually (MoAF, 2015a). PNP has had three forest fire incidences over the last three years (2013-2015). All the park respondents convey that forest fires in Bhutan's topography are hard to control due to the inaccessible terrain. To the park officials, it is a challenge because fires destroy huge tract of forests and also damages the habitat of many wild flora and fauna. But one of the respondents also shared that there is positive impact of fire by allowing the seeds to be released and induce germination of new plants but only the negative impact of forests fires; burning huge areas of forests are recorded in Bhutan by Tshering (2006).

4.3 Planning: Management Plan and Planning Process ⁵

The interview with the park officials generated that a management plan is an important document of PNP. The plan provides clear understanding of the context of the PNP as reported by Thomas and Middleton (2003). All of them expressed that the programs implemented should be guided by this plan document. To them the management plan should guide towards effective management. But all of the officials interviewed were not present during the preparation of the existing plan and due to this they did not know the detailed content of the plan.

In Bhutan, the *Forest and Nature Conservation Rules 2006* ensures that the DoFPS prepares and approves management plans for PAs (FNCR, 2006). The management plan has the legal status when it is supported by the legislation according to Thomas and Middleton (2003). This legal status supports the park managers to manage the park and expend the public monies. Planning indicator for PNP is strong because the management plan has identified programs relevant to implement for the plan period 2008-2013. The existing plan for the period 2013-2018 is the same plan document. Based on the content of the management plan, the preparation phase have invested a good time in consultation to identify the programs and also some of the respondents have taken part during that process.

⁵ Research question 4: How effective is the PNP management model?

Thomas and Middleton (2003) report that much time and effort are invested into preparation of management plan however, these are not always useable or are not used. In the case of PNP, the current management plan was prepared for implementation from 2008 to 2013 from Linking and Enhancing Protected Areas in the Temperate Broad-leaf Forest Eco-region (LINKPA) project funded by GEF/UNDP, WWF and the Bhutanese government (TNP, 2008f). According to the park officials this plan was not implemented due to lack of resources, which is a major problem associated with the PAs (Watson et al., 2014). However, some of the respondents from the WCD and PNP also shared that the park managers should have been proactive to secure the funds in order to implement the plans on time. In these respondents' opinion, not securing funding showcased the incompetency of the manager to manage the PNP during their tenure.

A large proportion of the park officials are not aware of the detailed programs in the management plan because they were not working in PNP during the time of its preparation (Table 4.6 shows that only three staffs were present during the management plan preparation). The non-presence of the park officials during the management planning process does not justify their lack of knowledge on the details of the management plan. According to Thomas and Middleton (2003) the management plan itself is a briefing document to the new staffs to rely upon to ensure the continuity and momentum of the management. But all the park officials informed the interviewer that they did not know the detailed contents of the management plan. They also indicated that there was no occasion to know the details because park officials at the range levels do not undertake any activity independently without the involvement of officials from park head office.

Qualification type	Number of staffs	Joined in/or before 2008	Joined after 2008
Bachelors degree and above (Forestry)	4	1	3
Diploma (Forestry)	7	0	7
Certificate (Forestry)	19	2	17
Total	30	3	27

Table 4.6: Staff Strength of Phrumsengla National Park (PNP, 2016a).

4.3.1 Communities' Understanding on Management Planning

Amongst the communities interviewed, 75% of the respondents were unaware about the management plans. The rest of the communities who were aware about the management plan participated in the management planning meetings conducted by the PNP management somewhere during 2002 and 2007, which was the first and the second management plan for PNP (TNP, 2002). Both the plans were prepared with the support of donor funds. The respondents who were aware shared that consultation were done for the management plan but does not know how successfully it was implemented. One of the *Gup* respondents expressed that it would be informative and useful to have a copy of PNP management plan in his office. Some of the respondent expressed that it would have been informative to learn about the progress of the plan from the PNP management.

Communities from Tang and Chumey *geogs* report that they have been disconnected for the last 7-8 years since the completion of the preparation of the second management plan. The respondent from Tang informed that an ecotourism project was implemented from 2009-2010. This project constructed trekking trails and campsites to be used by the tourists. But after the completion of the project, they did not receive any visitors and also PNP management did not carry out any follow-up. According to the respondent, this project demoralized residents of Tang *geog* because their expectations were set high by the PNP management and were positive to generate income for the communities. To them, this was an example of failure of the planning and plans of the PNP management.

However, in other *geogs* (Jarey, Metsho, Saling, Tsamang and Ura), park officials have been conducting meetings related to implementation of activities such as on HWC. The villages of Tang and Chumey had lesser interaction with PNP because there is less number of households falling inside the park administered areas (refer to Figure 3.1). In the *geogs* where there are frequent interaction between communities and park management, the meetings would not specifically be targeted on the preparation of management plans but as a process to implement the planned activities mentioned in the plan. As a result, these meetings also have a potential to give an impression of being ad hoc programs to the communities unless they are clarified. But the communities agree that such meetings are a platform for the PNP

management to share with the communities, the progress of the plans and also on the part of the communities to learn on the existence of management plan and its contents. All of the communities members interviewed say that they should participate to prepare such important plans for their community for the following reasons;

- To share their opinion and priority activities that will benefit the community during the preparation phase
- To share the ownership of the plans to be implemented in their villages
- Plans prepared in collaboration will be implementable and acceptable to communities
- Communities are implementers and they have to be involved from planning phase
- Involving the communities will help us to assess the progress and be informed on the progress
- Rural people's livelihood is too dependent on the natural resources from the park and they are primary stakeholder and they should definitely participate.

The justification for the community involvement in the management planning is also reported by Dovers et al. (2015). Participation of communities in decision-making is important because they are directly dependent on the park for natural resources and also share interest in efficient management of the park.

4.3.2 Protected Area Legislation and Policies

The Planning element of the IUCN PAME framework also includes the aspect of the PA legislation and policies. All the respondents expressed on the existence of sufficient and relevant legislation and policies. The park officials (100%) also find the policies enforceable and conducible to achieve conservation goals, apart from few ambiguities, which they have recommended for the amendment in the forestry rules. But on the part of the some of the communities, the rules are strict and rigid for compliance. One of legislation relevant to PNP management and to the communities was the *Land Act 2007*.

The community of Sengor is the only habitation inside the PNP and their livelihood is dependent on livestock rearing due to their location at high altitude (TNP, 2008a).

These communities had their individual grazing rights over their traditional registered grazing lands but the amendment of *Land Act 1979* changed this rights. The new *Land Act 2007* led to being returned ownerships of traditional grazing lands to the government and the community members had to take the rangelands on lease and were restricted to ten acres per household. People of Sengor (Saling *Geog*) now face shortage of areas for livestock use, but they also expressed that the changes have not restricted the livestock from foraging into the government lands. The impact of loss of this user right over their traditional grazing lands to the communities and to the park management is not understood currently.

The other policy that brought in changes to the natural resource accessibility and utilisation for the communities is the introduction of Government to Citizen (G2C) project, a form of E-governance. E-governance over the world is effort to integrate the Information and communication technology (ICT) to deliver the government services to the public with improved quality, accountability and efficiency (Gupta et al., 2008). The recent advancement of ICT has an impact on the function of the local, state and national governments (Gupta et al., 2008). In Bhutan, E-governance types are based on the kind of interaction by the government organization with a variety of stakeholders. G2C project was introduced to Bhutan to implement good governance by clearing lengthy and unclear bureaucratic process for the rural communities to access the services from government (Prime Minister Office, 2012).

The provision of online timber permits to the rural population is one of the government services that went online (Prime Minister Office, 2012) using the G2C procedure. This project has been an immense benefit to rural communities since the approval process can be submitted online. This has drastically shortened the time period required to acquire the approval and almost all the respondents were happy with this change. On the other hand, some of the respondents expressed that it takes a longer time than it was forecasted and sometimes the same time like in the past without G2C services. They were not sure what caused this delay.

4.3.3 Design of Phrumsengla National Park

On the design and location of the PNP, it is justified to protect biodiversity at the relevant location (TNP, 2013a) and both the government officials and communities

expressed the contribution of PNP in conserving biodiversity values. But the researcher learnt that the communities of Tang are unclear on the boundary demarcation of PNP and of another park called Wangchuck Centennial Park, which also partly falls in their *geog*. The communities expressed the need to clarify them on the clear park demarcation. Currently they access their resources approvals from office of Bumthang Territorial Forest Division and this arrangement has not affected their resources collection but rather has been efficient. The unclear boundary demarcation was also identified during the 2002 assessment. The park management expressed the implementation of the park zonation, which will clarify on different zones and park boundary to the communities. This is one aspect of assessing Planning on the design and extent of park boundary according to IUCN PAME framework.

Table 4.7: Forecast of Budget for the Management Plan (2008-2013) (Source TNP,

Program and activities	Donors (in Millions) 1AUD=Nu.50	RGoB (in Millions) 1AUD=Nu.50
Environmental education	0.804	0.400
Ensuring harmonious co-existence	23.473	0.150
Research: Understanding landscapes and species	3.660	0.000
Ensuring species persistence	1.050	0.300
Meeting resource needs sustainability	1.060	1.250
Promoting sustainable tourism	10.410	0.000
Information management	0.410	0.200
Infrastructure	4.000	6.500
Communication	1.600	0.000
Equipment	3.950	0.000
Human resource development	5.330	0.000
Institutional linkages, monitoring and evaluation	0.500	0.833
Administrative cost	0.000	61.654
Total	56.247	71.287

4.4 Inputs: Resource Investment in Phrumsengla National Park⁶

The management plan has budgeted a sum of Nu. 127.534 million (equivalent to AUD 2.55 million) for the 2008-2013 implementation period (TNP, 2008c) (Table 4.8). The major activities to be implemented are as shown along with the forecasted budget in Table 4.7. As per the records at the PNP office (Table 4.8 shows for the last 5 years but only the budget for the plan period is extracted here), PNP has received a budget of Nu. 67.85 millions for the period between 2013 July -2016 June

⁶ Research question 4: What are the factors influencing the management effectiveness of PNP?

and during the first three years 53% of the proposed budget was released for expenditure. The remaining two years of the plan period should be allocated 47% to implement the planned programs. In the IUCN PAME by Hockings et al. (2006), it is stressed that the levels of resources available for the PA management have an impact on the effective management. The respondents also share that resources have a pivotal role in efficient management.

Table 4.8: Approved Annual Budget for the Management Plan Period During the Last Five Years (1AUD=Nu.50 approx.) (Source PNP, 2016b)

Financial year	Government fund	Donor fund	Total (Nu. in
	(Million in Nu.)	(Nu. In Millions)	Millions)
2011-2012	14.420	0.000	14.420
2012-2013	13.323	0.000	13.323
2013-2014	19.578	0.000	19.578
2014-2015	15.919	4.116	20.035
2015-2016	15.747	12.466	28.213
Total	79.987	16.582	95.569

Note. The government fund is to provide salary and running cost of the PNP management. The since 2011 is considered to evaluate the latest 5-year budget. Also the budget for year 2008-2009 was not available to the researcher and the next two financial years had to be omitted.



Figure 4.2: Organogram of PNP (Source TNP, 2013a)

All the park officials report that there have been improvements in the management under the current park manager with funds from the projects (Table 4.8) and also an improvement in basic facilities such as communication, mobility and staff quarters. According to Hockings et al. (2006) these resources are a primary requirement for the successful implementation of the planned programs. There are three range offices for PNP namely Western, Central and Eastern Range (Figure 4.2). These range offices have their own area of jurisdiction and cater to the respective areas in delivering services to rural community and to implement the planned programs as per the management plan.

Park officials report that their normal duties are to permit and approve the communities to access the natural resources such as timber, fuel wood, NWFP, sand, stone and many others. The officials also carry out the periodic patrolling activities to prevent illegal transaction of natural resources (timber, fuel wood, sand, stone). The funds for carrying these activities are salary and travelling allowances, which are allocated as per the existing human resources in an agency and as per the financial rules of budget allocation (Ministry of Finance, 2016).

4.4.1 Inputs for Human Resources

The human resources and the budget to develop the human resources plans are required to be approved in the five-year plan document (MoAF, 2013) of the Ministry. PNP manager informed that there are approved slots for the PNP by the Royal Civil Service Commission and MoAF's human resource plan should be within this approved number of allotted slots. The capacity developments of the officials are as per the approved plans and indicated in the five-year programs of the agencies. Capacity developments of the park officials are not supported by the government funds but rely on the donor funds which was also expressed by all the park officials (MoAF, 2013).

The park officials (100%) report that they lack skills to manage "wicked problems and messy problems" which according to McCool and Stankey (2003, p.4) requires high skills to understand the problems and to address it by the park management. Park officials understand that "expectations from the PAs are growing in diversity" (McCool et al., 2013, p.9) because people now understand the value of conservation. Most of the officials working in PNP are either less experienced or did not get opportunities to enhance their skills with changing needs. Table 4.6 indicates the levels of experience of the current park officials. From the current strength of thirty technical staffs, 93.3% joined PNP after the current management plan was planned. On the skill levels, 13.3% have Bachelors and Masters degree in Forestry, 23.3% have Diploma in Forestry and 63.4% with Certificate in Forestry. During the entire service period (average number of years in service is 14.36 years) the average training opportunities availed by the park officials despite their qualification and experience is two times.

They identified development of research skills amongst park officials necessary to study the biodiversity and interaction of various components of PNP including park residents. Inadequacy of research was observed by Ervin (2003b) during the first assessment of four PAs in Bhutan. Currently there are no major research activities in PNP and this lack could also be due to lack of expertise to carry out such specific program. All the government officials interviewed expressed the need of strengthening research activities to establish baseline data and also to fill the missing information of the park. There is a lack of standard and systematic data generation and analysis in PNP.

The data at the national level is maintained at the Forest Information Management Section of DoFPS but at the field level, there is a need to enhance the capability to generate the first hand information and also to generate reports at the PNP level. Such information at the field level will adapt their strategies; learn from mistakes, share their lessons and gear towards effective and adaptive management (Ervin, 2003b). According to the Forest Information Management Section, trainings have been provided to the field offices (T. Norbu (Personal communication, May 10, 2016)) but the quality of data sourced from PNP office for this research conveyed the need to strengthen their data management skills. To realise this, they expressed that provision of sufficient budget to develop the capacity of the park officials is the primary requirement. All the government officials interviewed (WCD, PPD and PNP) expressed the need to strengthen relevant skills to improve the efficiency.

4.4.2 Inputs for Infrastructure

The PNP has sufficient infrastructure at the park head office and at the three range offices. The sufficient infrastructure is defined by the presence of office buildings at the park head office and at the three ranges according to the park officials interviewed. There are also sufficient residential quarters for the existing park officials at the head office and few residential units at the range offices (few range officials do not have residential quarters). The park office and the eastern range office buildings were funded by LINKPA project (TNP, 2008f). Hockings et al.

(2006) observed from the assessment carried out in MPA that the longer established MPAs have sufficient infrastructure for the offices but lacked the adequate human resources and funds for sustainable management. This scenario is similar in PNP.

Globally the trends of financial support from the government agencies and private donors have decreased while the proportion provided by the user fees and non-governmental organisations has increased (Borrini-Feyerabend and Hill, 2015; Dearden et al., 2005). But in PNP there is no source of user fees or non-governmental organisation support. There is an annual Mushroom Festival but according to the park officials, the park does not generate any funds but rather invest some budget to organise. During the event, communities of Ura sell their local produce to guests to generate income for them. This is one of the primary objectives of the festival besides other advocacy programs of the park.

4.4.3 Inputs for Communities

PAs are primarily designated to protect wildlife and their habitat but they are also recognized to fulfil the social, economic and environmental benefits (Hockings, 2003; Leverington et al., 2010; Watson et al., 2014). But to the communities as important stakeholders, they do not mention conservation as the primary objective of PNP in the interview. As recognized in the works of Dudley (2008) and Watson et al. (2014) for communities, PNP is primarily important as a source of rural livelihood.

There are about 6000 people in 32 villages with 1165 households depending on the natural resources from PNP (TNP, 2008c). The rural communities of Bhutan face poverty and at the national level, it stands at 16.7% as compared to urban poverty of 1.8% (NSB, 2012). According to Barber et al. (2004) poverty has impacts on natural resources because rural populations are more dependent on the natural resources than the wealthier ones. Understanding the relationship between the park and major stakeholders is important according to Ervin (2003a) and Leverington et al. (2010) for the purpose of evaluation. The eight *geogs* (Chumey, Jarey, Metsho, Saling, Shingkhar, Tang, Tsamang and Ura) falling inside the PNP are the primary stakeholders and interaction between PNP and communities should be understood.

There has been active and frequent interaction between the PNP management and communities during the period of LINKPA project implementation (TNP, 2008f; TNP, 2013a). Lockwood (2010) in his governance studies for terrestrial PAs, identified local communities as the important stakeholders. The widespread recognition that PA establishment cause displacement of indigenous and local communities and this demand to observe their rights has gained as political momentum according to Lockwood (2010).

As per the knowledge of all the park officials, the *geogs* falling within Lhuntse (Jarey and Metsho) and Mongar (Saling) have many poor households. They share that there is direct relationship between the poverty in the rural community and the incidence of illegal activities. According to their knowledge, poor rural communities are heavily dependent on the natural resources to sustain their livelihood and as source of income (Barber et al., 2004).

Some community members have received support from PNP in the form of goods, such as corrugated galvanized iron (CGI) roofing materials, lighting facilities and, solar electric fences and monetary support to mitigate HWC. Those communities who received these supports are positive and feel that PNP is contributing to their social welfare in addition to meeting their conservation goals. This form of support called ICDP and has been practiced in PAs, and Wells and McShane (2004) report that ICDPs have been instrumental in receiving support from the communities living inside and around the PAs.

The PNP management expressed the reduced funds for ICDP support recently but all the park officials and community respondents share the need for the ICDP to be continued. Park officials and communities share that priority locations and programs to be implemented can be identified during the period of fund deficiency. Targeting the areas with high incidences of poaching and illegal timber harvesting can be a priority according to the park officials. However, when ICDPs are continued to win the support of communities for conservation but to address this issue sustainably, education of communities on the importance of conservation will be effective in the long run. Park officials confess the lack of well-devised continuous education and awareness programs for the communities. The communities who have received good support from PNP management expressed the great benefits and they do not see major challenges by living inside the PNP jurisdiction. They are positive and expressed the hope to receive more supports in future. A respondent from Jarey responded, "…had it not been for the support of PNP, villagers here would not have been able to buy our own CGI roofing materials."

On the other hand, the communities share their genuine interest to be educated and to be informed on importance of the PNP and its conservation values. They expressed that education programs should not be focused just inside the PNP boundary but to be focused at the national level such as public media, schools and any other relevant medium and institutions. Hockings et al. (2006) confirms that advocacy programs and information sharing to the stakeholders will be effective and economical to curb illegal activities.

4.4.4 Resources for Sustainable Financing of Protected Areas of Bhutan⁷

The project, Bhutan for Life, has been planned to provide sustainable resources to fund the PA system and will also address the socio-economic development of the people interacting with the PAs. Ecotourism and organic farming programs are some of the options identified for the communities (WWF Bhutan, 2016). The funds will be sourced from WWF and Royal Government of Bhutan. In this ambitious plan, the respondent from WCD and PPD expressed high confidence that this could solve the financial problem of Bhutan's PAs. This project is visioned to ensure permanent financing of the PA system of Bhutan (S. Yangchen (Personal communication, May 24, 2016)). During the 11 FYP (2013-2018) the budget allocation for the financial years 2013-2014 and 2014-2015, the donor funds accounted for 24.2 % and 31% respectively (MoAF, 2015a).

This assessment of resources invested in the recent past in PNP shows the lack of sufficient resources to manage effectively. According to Hockings et al. (2006), the levels of resources available for the management have major impact on the effectiveness of the PA. Understanding the resources available for PNP management

⁷ Research question 5: What are the measures to strengthen the effective management of PNP?

was important to interpret its overall effectiveness and the results indicate that, PNP requires sustained financing to achieve the long-term conservation goals.

4.5 **Process: Current Management System⁸**

Evaluating the Process is to study the existence of best systems and standards of policies and procedures in place according to Hockings et al. (2006). Corresponding to Hockings et al. (2006), assessment of Process generally include some measure of the effectiveness of governance system, and the findings in PNP with respect to Process is directly impacted by the decisions made at the DoFPS and MoAF. For example, amendments to *Forest and Nature Conservation Act 1995* and *Forest and Nature Conservation Rules 2006* will impact the implementation of Process in PNP. Strategies and guidelines are developed by central agencies. For example, WCD and Nature Recreation and Ecotourism Division in Thimphu developed Human-Wildlife Conflict Management 2012 (Nature Recreation and Ecotourism Division, 2012) respectively, but the field offices such as PNP management implement these documents. The field offices are also consulted during the preparation phase of such documents.

The governance by government of PAs has been the only form of PA governance since the early inception of PA system in Bhutan. Recently in 2008- 2014 the newest and the largest national park, Wangchuck Centennial Park, was co-managed by the WWF Bhutan program. The co-management of Wangchuck Centennial Park-Terminal report (2014) reported positive advantages of co-management over a single agency management (Wang, 2014). Though it was the two different agencies responsible for the management but WWF Bhutan program stationed only a park manager.

The report mentioned that co-management was efficient in managing the park with presence of another skilled manpower that shared the workload of the park manager. The additional technical personnel helped to implement plans on time. It also reported that monitoring and evaluation component was conducted in the

⁸ Research question 3: How effective is the PNP management model?

requirement of WWF. The report reports that partnership with WWF Bhutan ensured continued financial resources during that five years term. These resources were used to build park head office, range offices and also to procure the first batch of equipment and tools required for the field activities. Capacity of the park officials could be developed with the resources from the project.

Although WCP co-management is successful, because is it the first and only example in Bhutan, it may not be better than the single government managed system. Mutanga et al. (2015) found that, successful co-management of PAs with communities may not be feasible due to lack of expertise and resources, which is likely to be the same for the Bhutanese context. In order to establish the positive and negative impacts of co-management and other PA management models established elsewhere will require adapting and experimenting into the context relevant for Bhutan.

On the communication protocol for the field officials from central agencies in Thimphu, the PNP management informed the interviewer that, the outcomes of important meetings at both the national and international fronts are updated in the periodic monthly meetings at the DoFPS. On many occasions the field offices were not present for the meetings but their issues for discussion can be submitted as agenda items. The minutes of the meetings are then circulated to all the offices at both central agencies in Thimphu and field offices and the minutes are also available as hard copies (T. Norbu, (Personal communication, April 15, 2016)). Specifically to discuss about the PAs of Bhutan, there is an Annual Park Conference to table and discuss the issues. The decisions and follow up actions are documented as Proceedings of conference and for the relevant offices to implement the decisions and recommendations (WCD, 2015).

Despite these existing procedures, the park officials expressed the need for a protocol for the periodic communication, information sharing and refresher meetings to update the officials at various levels (Refer Table 4.6). According to Muller et al. (2015) standard capacity building programs are important to inform park officials on the development and changes in the management system including higher authorities at ministerial and department levels. They agree that this will be effective in successful implementation of the agreed plans. From the interviews, it was learnt that the officials at the range officer's level attend meetings to prepare annual work plans, annual budget proposals and compiles the progress reports at the park head quarter. The rest of the staffs are not actively involved. All the park officials voiced their opinions for the need to be involved at the planning process and if newly transferred, to be provided a detailed briefing.

Currently there are thirty technical staff in the PNP (Table 4.6) and only 3.3% of the present staff were working in the PNP during the time of planning process of the management plan and 6.6% of them joined PNP at the end of the preparation phase of the management plan. It is probably due to their absence during the planning process of the plans that 75% of the staffs interviewed did not know the details contained within the management plan.

Since park officials were not aware of the management plan in detail, the researcher was prompted to learn about the existence of programs at MoAF and PNP for periodic updates and education of the park officials. Induction is a relevant event and Worboys and Trzyna (2015) agrees this as an important human resource input for PA management. As per the sources of Human Resource Division of the MoAF, the new graduates from the training institutes are required to attend an induction before joining the service, however, there is no protocol of induction for the staffs transferred from one office to another (G.Wangmo (Personal communication, January 21, 2016)). It was learnt in the interview that in PNP, the park headquarter office provides induction to the new officials (both fresh graduates and old officials) at the time of initial joining of PNP.

The communications within the hierarchical government officials are necessary and also to communicate to stakeholders outside the governance hierarchy is important. According to McCool et al. (2013), communication with the stakeholders and their involvement in the management of the park is necessary to communicate the plans and progress of the park. Communication is also important for negotiating the demands from the community (McCool et al., 2013). The rural communities expressed the lack of sufficient and relevant information on rules and regulations and on the recent developments and changes within the park and the management. This

could be the result of lack of consistent interaction between the community and park officials. For them it is relevant to keep themselves informed because of their dependence on PNP management to access the natural resources for their livelihood.

As per the existing practices, the funds for running the office such as salaries, travelling allowances and maintenance budgets are provided by the government (MoAF, 2013). The government budget does not support activities for human resource development, creation of new infrastructure, procurement of vehicles, and procurement of wildlife survey equipment such as camera traps (Appendix B shows that the government did not support the capital budget). This capital budget is completely reliant on donor agencies and this was also reported in the Public Environmental Expenditure Review (Department of Public Accounts, 2014). The complete reliance on the donor funds is justifiable, if the donor funds are secured for long period and also specifically to the particular park.

Since there is also the risk of not receiving the donor funds, there should be a secondary funding options for the PAs in order to avoid the situation that happened in PNP; failure to implement 2008-2013 management plan due to lack of donor funds. Almost all of the programs planned (Table 4.7) were not implemented according to PNP management and the plan was extended to 2013-2018. The PNP management have said that 25% of the planned programs in the management plan would have been implemented and this figure was an assumption because, there are no measurements of progress done since then. Also the PNP management expressed that, measuring progress in conservation is tricky due to longer time required to see the visible impacts of activities implemented. One example to measure the progress would be to count the number of patrolling conducted or illegal cases apprehended.

On the other hand, the research sought to understand the perception among the communities on the existing management process in PNP. When asked about the current management protocol, 64% of the community respondents reported that, PNP has a good management protocol in place. To the respondents, these protocols are with respect to provisioning of approval and permits to access the natural resources and also in the form of support received to mitigate HWC. However, the respondents of Ura and Tang communities (27%) were not satisfied with the management system

due to strict enforcement of rules with respect to timber allocation and enforcement of rules for illegal activities. One of the respondents of the Tang community identified a weakness of PNP management as a lack of follow-up programs for the activities initiated in their villages, for example, failure of ecotourism programs in Tang; Rodongla eco-trail.

4.5.1 Distribution of Resources⁹

The park officials have a perception that, the existence of donor funds is an advantage to carry out the activities effectively and on time. While one of the field range officer feels that there should be an equal distribution of resources to the field offices from the project funds. They share that these project funds can be used as additional resources to cover the deficit expenditure before the start of a new financial year. But they agree that the distribution of the funds would depend on the location of the project activities as per the approved proposal and the areas not covered in the project activities are enriching and encouraging to learn. To them such steps by the park management conveys sense of strong unbiased support from the park management.

Currently both the government and project funds are centrally located at the park head office in Ura. PNP receives fund annually based on the approved plans. The estimates of the budget are incorporated within the five-year plans of the DoFPS, which is the part of approved plan document of the MoAF. The budget proposal of PNP is also determined by the budget ceiling approved for the DoFPS by the Ministry of Finance (MoAF, 2013). Funds are released for the expenditure to the program heads in Ura and range offices based on the planned activity as mentioned in the management plan. The program or section heads based in the park head office coordinate the field programs in the ranges. According to range offices, they do not implement any planned activity in isolation from the program heads of the PNP management, except their normal duties of issuing approvals for resource utilization and patrolling. The range officers report that this arrangement of working modality

⁹ Research question 5: What are the measures to strengthen the effective management of PNP?

and has been effective in synchronization of the programs at different ranges under the same park management.

At the individual levels of park officials, they prepare individual work plan and submit to the head of the PNP management (MoAF, 2015b). This process was instituted in the civil service system to evaluate the performance of every civil servant. But the officials do not know any outcome of submitting these work plans to the park manager. The processes followed in PNP as learnt through this research covers both the management and governance aspect. The park ranges perform their normal duties of patrolling, natural resources extraction approval and besides these, their activities depend on the fund release from the PNP head office in Ura. The governance processes do not have direct impact to the daily performance of the PNP.

Overall, processes learnt through the interview convey the need to strengthen the communication and information sharing and periodic updates with park officials on policy changes in MoAF. At the PNP management level, the results indicate that park officials should be amply educated on the management plan and also involve them during the management plan preparation phase. Both the old and new park officials should revisit the plans to track the progress at the respective range level and at the park level.

4.6 Outputs: Achievement of Phrumsengla National Park¹⁰

At the output level, the recent achievement of the PNP management was the demarcation of the exterior boundary, which was conducted in 2013. The physical boundary demarcation is important for the purpose to inform people on the areas of the park on ground and also to prevent any form of encroachment by the people (TNP, 2013b). Another important achievement will be the zonation of areas into core zones, multiple-use zones and buffer zones, which will be the primary basis to plan and implement programs (Wangchuk, 2012). Clear zonation and boundaries are necessary to avoid the conflicts with the resource users (Hockings et al., 2006).

¹⁰ Research question 3: How effective is the PNP management model?

The achievement as per the park officials and others at the ministerial and departmental level are, the recent tiger survey (DoFPS, 2015) coordinated by WCD in collaboration with all the field offices including the Territorial Forest Divisions. The tiger numbers for Bhutan have been estimated (DoFPS, 2015) for the first time. PNP staffs participated in the survey inside PNP. The national tiger survey did not capture tigers in PNP but it was later confirmed through the survey on the presence of tigers (U. Namgyel (Personal communication, May 2, 2016)). The other area of progress is in the institution of *Geog* Environmental Conservation Committee for mitigating HWC in the villages. Currently the *geogs* of Jarey, Metsho, Tsamang and Ura have instituted the *Geog* Environmental Conservation Committee and rural communities are expecting positive results. Successful stories are reported from this mechanism in mitigating crops and livestock damage in Bhutan (T. Zam (Personal communication, April 4, 2016)).

PNP management have also strived to a conduct variety of research based on the available resources and capacities. Table 4.9 shows research conducted by different collaborators inside PNP (recent researches are at the beginning of the table). Park officials while undergoing studies, have recently conducted research in PNP in the form of dissertations. In the past, foreign experts, consultancy firms and park staffs have conducted research as rapid biodiversity surveys to generate the species list. The research section of the PNP management has also generated reports on the activities of anti-poaching and boundary demarcation. The species distribution studies on tiger, musk deer, red panda, hornbill, pheasants, capped langur and fishes are documented.

Торіс	Funding	Collaborator	Year
Report on presence confirmation of <i>Podocarpus neriifolius</i> (Brown Pine) in PNP area	RGoB	ReAMS and field Staffs, PNP	2015
Study on Status, Habitat Utilization of Capped Langur in Winter and Human – Capped Langur conflict in PNP	PNP	Mr.Dorji Wangdi 4 th Cohort B.Sc. Forestry, CNR	2015
Stand structure and regeneration of Blue Pine along the altitudinal gradient in PNP	PNP	Mr.Pema Tshewang, CNR B.Sc. student	2015
Fish Diversity survey in Central Park Range and Eastern Park Range	PNP	Central Range, Lingmethang	2015
Study Rufous Necked Hornbill: Movement ecology, Diet and Outreach	CLP	UWICE/PNP	2014-2015
Influence of Natural and Anthropogenic Disturbances on presence of Red Panda	Madanjeet Singh, UWICE	Pema Dendup, UWICE	2014
Study on Ecology and abundance of Paris in Sengor	PNP	Park staffs	2014
Oak distribution and regeneration in Sokshing and Natural stands	PNP	Central Range, Lingmethang	2014
Park Boundary Demarcation	RGoB	ReAMS, PNP	2014
Rapid Biodiversity Assessment for Eco-life Project along Chamkharchu Basin	WWF	WWF/PNP	2013-2014
Estimating Relative abundance of Pheasant along the national Highway II	PNP	Park Staffs	2013
Annual Anti-poaching Report	RGoB	Park staffs	2013
Exterior Park Boundary Verification Report	RGoB	Park staffs	2013
Status, distribution and Threats for Musk Deer Conservation	UWICE/WCD	DIBNS/WII/ UWICE/WCD and PNP	2012
Habitat Correlates of the Red Panda in the Temperate Forests of Bhutan	CEPF, WWF/UWICE	University of New England, Australia	2011
Tiger and its prey base survey using Camera Trap	WWF	WWF and PNP	2011

Table 4.9: Research Related Activities Carried out Till Date in Phrumsengla National Park

Торіс	Funding	Collaborator	Year
Traditional Use of Cane and Bamboo	PNP	Park Staffs	2010
An Ecological Study of Rufous-necked Hornbill in PNP	Rufford	Rinchen Drakpa	2009-2010
Study on Red Panda Ecology, distribution and abundance in PNP	WWF	PNP, NCF, India and WWF	2008
Rapid Biodiversity Assessment on Habitats and Vegetation, Mammals, Birds, People and livelihoods and Conservation Challenges	WWF/ UNDP	CFO and Park staffs	2008
Research on important mammals species	RGoB	Park staffs	2006 -2007
Baseline information on wetland sites in the park and corridor.	UNDP/ WWF	Park staffs	2006 - 2007
Documentation of trekking routes and campsites.	UNDP/ WWF	Park staffs	2006 - 2007
Plants, Mammals and Birds in the Biological Corridor connecting PNP to Jigme Singye Wangchuck National Park and Royal Manas National Park: A Rapid Biological/ Assessment Report.	WWF/ UNDP	NCD, Dr. John Singh/WII, All PA managers,	2006
Avifauna survey along the National Highway	RGoB	Sherub and park staffs	2004-05
Road Impact on Wildlife assessment along the national highway II	RGoB	Park staffs	2004-05
Study on Grazing, Cattle Migration and Tseri/Pangshing (Slash and burn)	WWF/ UNDP	ROOTS Consultancy Service	2004
Report on Social survey	RGoB/ WWF	PNP and Peter	2001
Vegetation Survey	RGoB/ WWF	PNP and Rebecca	2000
Wildlife Survey	RGoB/ WWF	PNP and Dr. Yonzon	2000
Report of Avifauna survey- cum- Training Program	RGoB/ WWF	PNP Inskipps	2000

Conservation for communities basically means the protection of the trees for them as learnt from interviews. The importance of the wildlife as a part of the ecosystem is not mentioned by them and this may be due to a lack of understanding on the role of the wildlife in maintaining functionality of the forest as an environmental service provider (Dimas and Gabriel, 2008). To them the tangible benefits of trees are understood as a source of timber and fuel wood. The communities recognize the annual allocation of timber and fuel wood to the communities and other user groups (urban users) are the achievement for the PNP in providing the resources to the stakeholders (Table 4.3). The communities say that the PNP management has been playing a big role in the protection of resources for their sustainable utilization. All of the respondents have a common agreement that, in absence of PNP management, the people would have finished cutting the trees in the forests (Appendix A conveys this statement). "Their works have been ensuring the protection and sustainability of the resources for the future use" says a resident from Ura *geog*.

The communities report on the support received from the PNP management during the past (2003-2007/08), where they were supplied with CGI, solar lighting facilities, hybrid and productive seeds for crops and vegetables. So they consider this sort of support as one of the achievements in fulfilling their mandates to support the rural livelihood. However, the communities who did not receive similar support from the PNP management or had conflict over resource utilization report that there has not been any visible progress in PNP.

The communities of Ura and Ganglapong claim that they did not receive major material support such as CGI sheets from the PNP management. This had led these communities to perceive as bias management practice of PNP management. The non-recipients of CGI in Jarey and Tang were promised to be supplied later, but this has not materialised. For this reason they do not agree that the PNP has achieved their objectives. To the researcher, Ura households have not received CGI support due to already existing better living standards as compared to other *geogs*. While this is not true with respect to Ganglapong *chiwog*, the reason for exclusion could be due to it farther location from park demarcation. The roofing of a standard traditional Bhutanese house would cost approximately AUD 2000 today. This is expensive and most of the rural households cannot afford this.

The respondents from both (Ura and Ganglapong) of this community say that the PNP is yet to achieve their conservation mandates. They report that, they just received their entitlement of resources and this did not make any difference to their lives even after falling in the buffer areas of the PNP. They expressed the hope and need for the PNP management to support their village like they have in other communities. According to one of the village representative from Ganglapong *chiwog*, he says that "it is important to establish a good relationship which is necessary for PNP management to fulfil their objectives and also to benefit the poor community."

CHAPTER FIVE: CONCLUSION

This study was conducted to assess the current management effectiveness of PNP in central Bhutan due to the growing need and interest in understanding the management effectiveness of PAs around the globe. The study evaluated five of the six elements of the IUCN PAME framework. These elements relate to the five research questions as shown in Table 4.1. The implementation of recommendations from the 2002 evaluation was also reviewed and is presented in Table 5.1. This chapter is presented serially with the research objectives and by showcasing the relationship between the research objectives and elements of the IUCN PAME framework.

Pressures and threats	Recommendation of 2002 evaluation	Results
	Develop anti-poaching strategy	No anti-poaching strategy was developed
	Institute trans-boundary cooperation	At DoFPS level cooperation initiated and PAs along the border have cooperation with PAs in India
Poaching and killing	Address HWC with compensation schemes	Community based compensation scheme instituted
	Develop ecotourism guideline for individual park	National ecotourism guideline developed and Mushroom festival started
	Develop and implement ICDP plans	ICDP program implemented from 2003-07 only
Grazing	Develop grazing mitigation program and monitor the impacts of grazing	Study on grazing and migration pattern conducted in 2004
Fishing	Study the aquatic diversity and population	Fish diversity survey underway in Central and Eastern Park range (2015)
Timber felling	Strengthen law enforcement	Patrolling is one of the primary activities at three ranges but needs to strengthened with better facilities
Road construction	Limit new road construction and use the best road construction practices	New road in the park has been approved and works have begun
Fire	Study impact of fire on the ecosystem	Not conducted
Non-timber products	Develop sustainable management guidelines	Framework for harvesting of NWFP have been developed by DoFPS
Slash and burn cultivation	No specific recommendation	Not a pressure any more
Fire wood collection	No specific recommendation	Quantity of fuel wood supplied is highest compared to other form of timber supplied Data accumulated didn't recommend any policy intervention

Table 5.1: Review	of Recommendation	of 2002 Evaluation	(Source Tshering, 2003)

Pressures and threats	Recommendation of 2002 evaluation	Results
	Develop and implement human resource plan	Human resource plan available at MoAF
	Decentralise financial management practices to PAs	Financial management has been decentralised
Financial resources	Provide additional equipment and facilities	Additional equipment and facilities have been provided but still inadequate
		Sustainable financing plan Bhutan for Life at an early stage and its success is not known
	Conduct PA assessment every two-three years	Second evaluation taking place after 12 years
	Zonation to be completed	Zonation not complete
Enhance research	Bio-prospecting potential	Bio-prospecting not implemented
	Collaborate with research institutes	Collaborative research conducted

5.1 To Study the Role of Governance in the Effective Management of Phrumsengla National Park

Table 5.2: Relationship Between Research Question and Elements of IUCN PAME Framework

Research questions	Elements of IUCN PAME framework				
	Context	Planning	Inputs	Process	Output
To study the role of governance in effective management of PNP	1	1	~	1	1

Note: \checkmark shows a direct relationship

In order to understand the role of governance in PNP management, the governance structure and the roles played by decision-making agencies involved in the management of PNP were assessed. Governance influences all of the five elements of the IUCN PAME framework (Table 5.2). Mandates and performance of the policy and decision-making agencies at the central government, such as PPD and WCD, were reviewed to understand the impact on PNP management. The lack of system and expertise in PPD and WCD to monitor and evaluate the progress of PNP management has led to the non-implementation of the management plan (2008-2013). The financial resources that were necessary for the implementation of the plan were not secured and here the PPD and WCD should have played a role.

The governance also includes provision of policies for supporting the conservation program in PNP and it has been sufficient according to all the respondents. It is also found practical for implementation by all the park officials. Communities report on the efficient enforcement of rules and regulations by the park officials and to them rules and regulations are necessary to protect resources for sustainable use. But the communities reported bias of the park officials in levying the penalties. This is because of the huge range of penalty amount (lowest to highest) provided under the *Forest and Nature Conservation Rules 2006* for defaulters. This has caused conflict situations between PNP management and communities and this issue should be resolved by amendment of the *Forests and Nature Conservation Rules 2006*. Also, there is need to educate the rural communities and other stakeholders on the rules and regulations periodically because communities expressed having little knowledge about them.

The other area to improve is the enforcement of these policies to minimise the various illegal activities that are reported inside PNP (Table 4.5). The weak enforcement of rules has been with respect to keeping away the illegal poachers and NWFP collectors from neighbouring areas. There were no strict guidelines to stop these activities according to the communities interviewed. DoFPS should have developed the anti-poaching strategy that was recommended by the 2002 evaluation (Table 5.1). Due to lack of technical expertise and resources at PNP management the development of anti-poaching was not feasible. Another weakness of enforcement is the recent construction of roads in PNP that is prohibited according to the *Forest and Nature Conservation Rules 2006*. Addressing these issues are the mandates of the higher decision-making offices such as DoFPS, PPD and WCD.

The lack of skilled human resources and frequent transfer of the park manager were impeding factors in the implementation of planned programs in PNP. The park manager who prepared the management plan was not involved in implementation. Four other park managers undertook implementation within the duration of five years (2009-2013). These multiple changes of park manager within five years is one important reason for the lag of implementing the management plan. The frequent changing of park manager in PNP should have been avoided by human resource rules at the ministerial level or by the civil service rules. The reason for the frequent change of park manager was not understood in the research. According to Muller et al. (2015), competent, motivated and adequately resourced workforce is required to manage an increasingly complex institution.

The situations identified above are the result of the performance of the higher decision-making government agencies. Due to the poor performance of PAs, CBD PoWPA encourages the Parties to recognize and support different PA governance types (Borrini-Feyeraband and Hill, 2015). This is to improve the quality of the governance of the PAs regardless of types according to Borrini-Feyeraband and Hill (2015). As a mandate to be accountable to the CBD as a Party, there is scope for the PNP or PA system of Bhutan to improve the quality of governance. The alternative may be to experiment other forms of governance in a few PAs, such as comanagement by non-government organizations/civil society organizations and private organizations (Borrini-Feyeraband and Hill, 2015). The co-management

report of Wangchuck Centennial Park was effective (Wang, 2014) but a few more experiments are needed to compare the performance with the current governance model. For PNP's governance, adaptive governance should be welcomed because it draws on the principle of "learning by doing" (Borrini-Feyerabend and Hill, 2015, p. 195). These are lessons and experiences gained since the establishment of PNP in 1998.

In analysing the role of governance in PNP management as one of the research objectives, the overall performance of the PNP was influenced by the performance of central agencies. PA governance is well structured and supported by sufficient policy and legislation to achieve the mandated objectives. But the performance of the decision-making agencies (Figure 2.6) should be enhanced in order to attain management effectiveness of PNP. There is a need to continue to evaluate the governance of PAs in order to improve the effectiveness of the decision-making agencies. Many of the CBD decisions and IUCN resolutions encourage evaluating governance for both individual PAs and PA systems (Borrini-Feyerabend et al., 2013).

5.2 To Evaluate the Effectiveness of the Phrumsengla National Park's Management Model

Table 5.3: Relationship Between Research Question and Elements of IUCN PAME Framework

Research questions	Elements of IUCN PAME framework				
	Context	Planning	Inputs	Process	Output
To evaluate the effectiveness of PNP management model.	~	1	1	1	~

Note: ✓ shows a direct relationship

The effectiveness of PNP model is also determined by the efficient delivery of all the elements of the IUCN PAME framework (Table 5.3). This is because the normal routine activities are dependent on the sound policies and planning to tackle the issues faced, the availability of adequate resources, standard and relevant process adopted to implement the planned programs and achieve the desired outputs. At the PNP management level, the financial resources to the field range offices are distributed from PNP head office according to the planned program and the range

officials are happy with this arrangement. But on the other hand, some officials expressed the lack of equal distribution of the resources amongst the range offices.

Park residents and those living around the PNP are primarily satisfied with the contribution of PNP management in protecting biodiversity values and natural resources around them. They are happy with the current management practices with regard to approval procedures for resource utilisation. They are also grateful for the enforcement role of park officials in protecting natural resources. On the other hand, the *geogs* of Tang and Chumey get permits for resource extraction from the office of Bumthang Territorial Forest Division, therefore they do not have interaction with park management. Their interaction in the past was during the period of ICDP provision. For the *geogs* of Jarey, Metsho, Tsamang and Ura, they communicate with PNP management in implementing the *geog* environmental conservation program, which is targeted to mitigate HWC.

Over all, the PNP management needs to identify areas to collaborate more frequently with the local communities and other stakeholders such as Department of Roads. One area is to improve the existing environmental education and advocacy program. The development of an environmental education strategy for PNP is relevant and necessary. The other avenue to increase collaboration is to involve them in the management planning process. It is important for the stakeholders to be involved especially during management planning and also during the implementation stages later. Their participation in the management planning will have identified the desirable future and will have identified consensually the course of action to get there. This form of planning is called participatory planning, where different interest groups have competing interests and goals and they have negotiations and alliances in the planning process (Spoelder, 2015).

Local communities are one of the primary beneficiaries and their involvement in the management planning is crucial. The communities of all the *geogs* are less aware of their participation in management planning because the present management plan was prepared nearly a decade ago (2007). This long gap has created disconnection between communities and PNP management. In order to avoid this situation, PNP

management should involve the communities in decision-making process periodically when relevant during plan implementation.

Another aspect in the effectiveness of PNP management is the evaluation of planned programs and their results. Although the old management plan (2008-2013) has been adopted for the 2013-2018 phase, it is mid-way through the implementation phase. There are no specific reports for progress reported, but the allocated budget for that period (Table 4.8) has been spent (except for the year 2015-2016) and this could be considered as progress (financially) of PNP management. To understand the physical progress of the management plan, PNP management should evaluate the progress at the end of management plan year (2018).

This study identifies that in order to achieve the desired level of management effectiveness, PNP management should strengthen their delivery in the areas of equitable resource distribution at field range offices, improving environmental education programs for stakeholders, enhance decision-making collaboration with stakeholders and evaluate the progress of the management plan at the end of each plan period. These recommendations are implementable with the current level of resources provided and authority defined for the park managers in the *Forest and Nature Conservation Rules 2006*.

5.3 To Identify the Factors Influencing the Management Effectiveness of the Phrumsengla National Park

Table 5.4: Relationship Between Research Question and Elements of IUCN PAMEFramework

Research questions	Elements of IUCN PAME framework				
	Context	Planning	Inputs	Process	Output
To identify the factors influencing the management effectiveness of PNP.	1	0	1	1	1

Note: ✓ shows a direct relationship and O shows an indirect relationship.

Table 5.4 shows that management effectiveness of PNP is influenced by the Context, Input, Process and Output elements of IUCN PAME framework. Indeed from Table 4.1, the Planning, Process and Output elements are linked to answering all the research questions identified for this study. The Planning element does not have a direct relationship to this objective because most of the factors prevailing within the PNP jurisdiction are of a local nature and have existed. Execution of plans to attend the local issues in the long run will change the stance of these issues and this depicts the indirect relationship of Planning element to this research objective. At the PNP management level, on ground situations arising from challenges and threats (Table 5.1) are important to be addressed to achieve the management effectiveness. The Process element will be discussed in section 5.2, Context and Input will be presented here.

PNP management is facing challenges from poaching, illegal timber, illegal collection of NWFP, existing highway and new road constructions and HWC (Table 4.5 and 5.1 shows the rest). These challenges were identified during the 2002 assessment (Table 5.1), and they have remained as challenges today. The trends of poaching and illegal timber harvesting have increased (Table 4.5 do not define the trends but park officials report on the increased trend) with increased accessibility by roads and telecommunication that is used amongst the defaulters to escape from being detected or apprehended. In order to tackle this, PNP management requires relevant capacity for enforcement and equipment to handle the situations. This is essentially a matter of adequate Inputs. The threats posed by the existing highway and new roads are more related to governance decisions, but at the PNP management level, enforcement and advocacy programs should tackle the illegal activities conducted by the roadside as discussed in section 5.2.

All the respondents report HWC in the form of crop destruction and livestock kills as severe challenges. HWC is a threat to their rural livelihood sustenance. The communities do not consider HWC as an outcome of the conservation in PNP, but since PNP management's primary objective is wildlife conservation and other allied programs, they consider PNP management as the relevant organization to solve this problem. Park officials (100%) foresee this to result retaliatory killings by trapping or snaring, which may be harmful to the targeted species, as well non-targeted species. Current measures implemented for HWC such as solar electric fencing and community insurance scheme should be evaluated of its ability to mitigate the problem. Other options to mitigating the loss caused by HWC could be explored in the context relevant to PNP. Another challenge is the conflict between PNP

management and Ura communities' over timber extraction from Khandupang. The communities have expressed resentment over the closure of timber extraction from Khandupang by PNP management. In order for this issue not to become worse, there should be dialogue to identify options for mutual benefit. Since communities were living there before the designation of PNP and co-existed with PNP since its establishment, their aspirations cannot be ignored. Options of allocation of a new area for timber extraction can be identified. Another option could also be to allocate part of Khandupang area for the extraction of timber for construction of new houses, which according to *Forest and Nature Conservation Rules 2006* is once in 25 years. On the other hand, if Khandupang falls inside the prime wildlife habitat, PNP management should provide empirical evidence to convince the communities and then educate the community on the advantage of saving trees in Khandupang to benefit conservation and their locality in the long run.

The primary factor influencing the overall management effectiveness is the adequate financial resources, which is Input in the IUCN PAME framework. The resources should be adequate at the decision-making agencies of PPD and WCD to develop their required capacity for officials and as well for the PNP officials. At the PNP management level, research skills should be developed (Table 4.9). Data management is poor for the existing information and require relevant skills for management and analysis. One potential measure to tackle this will be to collaborate with a research institute. In addition to this, collaboration with research institute may facilitate to generate first-hand information especially on the illegal activities. The collection of information by research institute as a neutral agency may gather most of the information, which according to park officials are not reported or noticed due to its illegal nature.

But in the areas of studying the biological, ecological and social aspects of the park, the current research and monitoring section (Figure 4.2) should be strengthened with capacity building and additional staff. Research in these areas will assist with recommending specific policies or actions relevant to effective management of PNP. Effective management is the pro-active step in preventing degradation of PA values according to Hockings et al. (2006). Simultaneously research should be conducted to understand the root cause and impact of these existing threats and potential threats,

as it can be "important for a more complete understanding of the context" (Hockings et al., 2006, p. 15).

Adequate financial resources are necessary for the implementation of management plans and its scarcity was understood at the PNP management level. Resources are required to build infrastructure, buy equipment, to develop the capacity of park staff and to support livelihood programs for park residents. All the park officials report on the improved availability of funding from donors in addition to the government budget in recent years under the current management (Table 4.8) but these resources were not adequate to implement all of the planned programs. There is need for sustained financing, as is discussed later at section 5.5.

5.4 To Study the Role of Important Stakeholders in Strengthening the Management of Phrumsengla National Park

Table 5.5: Relationship Between Research Question and Elements of IUCN PAME Framework

Research questions	Elements of IUCN PAME framework				
	Context	Planning	Inputs	Process	Output
To study the role of important stakeholders in strengthening the management of the PNP.	0	~	~	~	~

Note: ✓ shows a direct relationship and O shows an indirect relationship.

The important stakeholders of PNP are the decision-making agencies of the governance structure (Figure 2.5), local communities and donors. The contribution of stakeholders to the management of PNP is identified for Planning, Input, Process and Output of IUCN PAME framework (Table 5.5). PPD and WCD, which are the decision-making agencies for the PNP, should implement their mandates in preparation of national plans with adequate expertise. This was presented in section 5.1 of this chapter.

Looking at the achievement reported for PNP such as national tiger survey and park boundary demarcation, these were the results of the collaborative efforts of stakeholders. WCD coordinated the national tiger survey with funding support from donors and the approved plans of the MoAF (DoFPS, 2015). The process developed the capacity of PNP staffs to do the actual field survey. Support from local communities in reporting the illegal activities to PNP management is another important role played by community in helping PNP management to achieve the conservation objectives.

Due to the presence of multiple stakeholders in PNP management, this study recommends the Polycentric governance system (Andersson and Ostrom, 2008). This system is accepted as efficient because the different actors of different levels play their corresponding roles to achieve common goals. This is efficient in the management of natural resources according to Andersson and Ostrom (2008).

Although the collaborative effort mentioned above reflects the polycentric governance system, this model is not instituted as a guiding principle for future programs. This was a single event followed for that particular program, for example the national tiger survey. The roles of stakeholders should be identified through the consultation workshops for those stakeholders (especially outside MoAF) and also through the development of memoranda of understanding for compliance. For the agencies such as PPD and WCD, their role influences the effectiveness of PNP management in the areas of policy and plan preparation and approval. The cooperation of local communities by not conducting illegal activities of poaching, illegal timber gathering and other activities is important for PNP management in achieving their conservation objectives. The sustained financial support from the donors is important to implement the planned programs inside PNP. The roles played by the stakeholders as mandated and during relevant phase of plan implementation is crucial for attaining management effectiveness of PNP.

5.5. To Identify Measures to Strengthen the Effective Management of Phrumsengla National Park

Table 5.6: Relationship Between Research Question and Elements of IUCN PAMEFramework

Research questions	Elements of IUCN PAME framework					
	Context	Planning	Inputs	Process	Output	
To identify measures to strengthen the effective management of PNP.	0	1	-	1	1	

Note: ✓ shows a direct relationship and O shows an indirect relationship.
The fulfilment of research objectives has been presented above but the recommendations identified against each research questions are also relevant for this research objective. Table 5.6 shows that the Context element does not have direct but an indirect relationship to this research objective. This is because adopting the measures to strengthen effective management of PNP are determined by the Planning, Input, Process and Output elements. This section will identify the measures that were not reported in the earlier sections and also those that crosscut across all the research objectives.

5.5.1 Develop Protected Area Management Planning Guideline

Since a management plan is a guiding document for PA, there is a need for management planning guideline to help park managers to prepare the plan. This guideline should identify roles for stakeholders and stages of participation to help PAs achieve the conservation objectives. The capacity of the park manager and other park officials should be competent to prepare implementable plans. The guidelines should include protocols for monitoring and evaluation of the programs to ensure timely and effective implementation of planned activities. In future the preparation of the management plans should be guided by the availability of technical expertise and resource allocation for the park, rather showcase as the failure to implement the plan towards the end of the plan period. But the priority actions should be identified despite the status of resources and park officials' capacity, which may jeopardize the conservation efforts.

The management plan should be accessible to all other stakeholders. It should be used for educating the important stakeholders such as rural communities, local government offices and other stakeholders who have interaction with PNP management. This study found out that communities are not aware of the management plan and its contents. Also most of the park officials are not aware of the detailed contents. Its distribution to the field range offices needs to be ensured so that all the officials are aware of the details of the management plan.

5.5.2 Enhance Capacity Building

Capacity building programs for the PAs is an important recommendation of this study and it is strongly encouraged by the CBD's PoWPA (CBD, 2004) to raise the

professional levels. The PAs are becoming an increasingly complex system, demanding competent and motivated human resources at different levels. As recommended by PoWPA, capacity development needs assessment should be conducted and then instruments such as capacity development actions plans should to be developed (Muller et al., 2015). This can be done at the national level and adapted to the specific park based on the size, requirements and other factors. According to the Organisation for Economic Cooperation and Development (2006), for development not to fail, there should be sustainable capacity development, even though this requires increased funding.

As a part of the capacity building program, continuous learning is important in such complex natural systems. The park officials should be provided opportunities for experiential learning (Kolb, 1984) and also have vocational training and learning (Muller et al., 2015). Periodic vocational training will update the officials with evolving technical skills to adopt in their working areas. Induction trainings should be conducted in-house to inform the new employees of the new work area, mission, and vision, objectives and mandates to fulfil (Muller et al., 2015). PNP management should have periodic refresher courses to update the park officials on the new developments within the governance structure and on topics relevant to conservation.

The professional capacity should be enhanced at all four levels studied (PPD, WCD, PNP and community). At WCD, the officials do not have adequate skills to provide the technical assistance to PNP, while at PPD, the focal planning officer does not have required skills to prepare and approve plans and monitor the progress as mandated. Capacity building of local communities is important; primarily to keep them in the loop of developments and changes (Thomas and Middleton, 2003; Lockwood, 2010). The environment education program should be strengthened. Enhancement of capacity for these levels will contribute to the effective management of PNP.

5.5.3 Strengthen Stakeholder Relationship

Some of the roles of important stakeholders for PNP management were identified in section 5.4. Communities interact with PNP management to access natural resources and the study found the existence of good working relationship in this area. On the

other hand there is a lack of periodic interaction between the PNP officials and communities who do not interact with PNP management to access natural resources (Tang and Chumey *geogs*), and this had led to developing negative attitudes towards the PNP officials. Inside Tang *geog*, there is a lack of follow-up activities of ecotourism programs and other ICDP programs implemented in the past. This has led to developing distrust towards PNP management. Also, communities from these two *geogs* were unclear of which households and villages fall within the park boundaries creating confusion on natural resource extraction rights.

In the villages where major ICDP were not provided, communities express the lack of benefits and biased decision by PNP management. Communities express the need for PNP management to support them in order to have a mutual relationship to support each other and fulfil the objectives PNP. Where it has occurred the support from PNP management in the form of ICDP has developed the foundation for cooperation and for the relationship between PNP management and communities to grow stronger. The ICDP programs should be continued and supported to garner support from communities. At the PNP management level, relationships should be strengthened with roadside labourers because they conduct illegal activities inside PNP. The means to receive their cooperation should be explored with similar provisions to ICDP support to rural communities.

The communication with WCD and PPD should also be improved and this was also identified during the 2002 evaluation (Table 5.1). This study found out the existence of sharing financial resources by WCD with PNP management, but did not report on the technical assistances received. The improvement of communication and working relationship between them will strengthen management effectiveness of PNP.

5.5.4 Develop Sustainable Financing Mechanism

In order for all the plans to be implemented successfully on time, sustainable financing is necessary. The sustainable financing mechanism should be developed for Bhutan's PAs and the recent development called Bhutan for Life as announced by WWF Bhutan program would be instrumental in securing the resources for PNP. The development of sustainable financing mechanism was also recommended by the 2002 evaluation (Table 5.1). The presence of adequate and sustainable financial

resources for PNP will have positive impact and delivery of the entire six elements of the IUCN PAME framework, which are necessary to achieve PA management effectiveness.

5.6 Review of the 2002 Evaluation Recommendations

The progresses of the 2002 evaluation recommendations are presented in Table 5.1. The 2002 evaluation did not have a specific recommendation against the elements of IUCN PAME framework, but presented its findings (Table 1.1). The Outcome element was not included because it was evaluated only a few years after its establishment.

As per the recommendation of 2002 evaluation, the grazing study and fish biodiversity surveys were conducted for PNP. At the national level, DoFPS developed the ecotourism guideline and Mushroom festival was instituted as an annual event in PNP. The Mushroom festival has an objective to generate income for the local communities with sale of local products to guests and tourists. The framework for sustainable utilisation of NWFP was developed in order to guide the harvesting and utilisation by DoFPS. This framework contains harvesting methods and seasons for different NWFP collected in the forests of Bhutan. Another recommendation was to address HWC with a compensation scheme and the study has found the implementation of community based insurance schemes in the *geogs* of Jarey, Metsho, Tsamang and Ura, has made significant progress. The DoFPS initiated the trans-boundary collaboration, which was recommended to combat illegal poaching and transport of wildlife products, but the impact of this collaboration has not been documented.

Progress has not been made for the development of anti-poaching strategy, ICDP plans, limiting road construction, development of human resources plan, development of sustainable financing mechanism, PA evaluation after every 2-3 years, zonation and bio-prosecting. Approximately half of the recommendations have not been implemented.

5.7 Understanding the Outcome of Phrumsengla National Park

The outcomes of PNP management that was listed in the management plan were beyond the scope of this study. But when questions were asked on the achievement of park management, there was mention of achievements that could qualify as an Outcome element of the IUCN PAME framework.

Park officials and communities expressed that PNP management was able to achieve its conservation mandates. Approximately 74% of respondents said that there has been progress achieved by PNP management in working towards fulfilling these mandates. The communities do not know of any other specific achievement of PNP in detail, but report that PNP management has been effective in protecting natural resources. This study recommends further research on population of species (both fauna and flora) to understand the impact of conservation programs. Future studies could also be conducted on the quantification of other environmental services generated from PNP. These studies are important to understand the Outcome element of IUCN PAME framework.

5.8 Conclusion

This study evaluated the effectiveness of PNP management with five research questions and these were evaluated against the elements of IUCN PAME framework. The performance of governance has a direct impact on the management of PNP. The conservation programs in PNP are supported by adequate legislation and polices but the delivery of the decision-making agencies (PPD and WCD) should be enhanced. The location of PNP is appropriate to achieve the conservation objectives but the non-existence of zones has caused conflict with local communities over resource extraction rights. Planning is strong with a good management plan prepared, but due to weak Inputs, the management plan could not be implemented fully within the projected time frame. The Process of implementing activities is desirable according to all the park officials, but among the communities the different opinions were expressed. The communities who have received major ICDP and HWC mitigation interventions are happy with the current management process, but the communities who did not receive such support expressed biased management decision by PNP management. The presence of PNP management as an enforcement agency to protect natural resources from depletion is an achievement of conservation mandates according to the most of the communities. For the park officials, the programs and activities of PNP management are stepping stones to achieve the biodiversity conservation objectives.

References

- Alasuutari, P., Bickman, L., and Brannen, J. (2008). Social research in changing social conditions. *The SAGE handbook of social research methods. London and New York, SAGE Publications*, 1-8.
- Alavi, J., and Yasin, M. M. (2000). A systematic approach to tourism policy. *Journal of Business Research*, 48(2), 147-156. doi:10.1016/S0148-2963(98)00096-4
 Retrieved on February 25, 2015 from http://0-www.sciencedirect.com.prospero.murdoch.edu.au/science/article/pii/S014829639 8000964.
- Andersson, K. P., and Ostrom, E. (2008). Analyzing decentralized resource regimes from a polycentric perspective. *Policy Sciences*, 41(1), 71-93. Retrieved on December 25, 2015 from http://0dx.doi.org.prospero.murdoch.edu.au/10.1007/s11077-007-9055-6.
- Bajracharya, S. B., Furley, P. A., and Newton, A. C. (2006). Impacts of community-based conservation on local communities in the Annapurna conservation area, Nepal. *Biodiversity and Conservation*, *15*(8), 2765-2786. Retrieved on May 12, 2015 from http://0-link.springer.com.prospero.murdoch.edu.au/article/10.1007%2Fs10531-005-1343-x. doi:10.1007/s10531-005-1343-x.
- Barber, C. V., Boness, M. M., and Miller, K. (Eds.). (2004). Securing protected areas in the face of global change: issues and strategies. World Commission on Protected Areas, IUCN-the World Conservation Union. Retrieved on May 5, 2015 from http://lib.icimod.org/record/11727/files/3446.pdf.
- Barbier, E. B., Baumgärtner, S., Chopra, K., Costello, C., Duraiappah, A., Hassan, R., Kinzig, A.P., Lehman, A., Pascual, U., Polasky, S. and Perrings, C. (2009). The evaluation of ecosystem services. *Biodiversity, ecosystem functioning, and human wellbeing. An ecological and economic perspective. Oxford University Press, New York, USA*, 248-262. Retrieved on May 5, 2016 from https://www.researchgate.net/profile/Rashid_Hassan2/publication/260534686_'T he_valuation_of_ecosystem_services'/links/02e7e53c27e1f9dad5000000.pdf.
- Bhutan Civil Service Rules and Regulations (BCSR). (2012). Bhutan Civil Service Rules and Regulations (BCSR). Royal Civil Service Commission of Bhutan, Thimphu Bhutan.
- BirdLife International (2006) Monitoring Important Bird Areas: a global framework, Version 1.2. BirdLife International, Cambridge, UK.
- Birnbaum, M. and Mickwitz, P. (2009). Environmental program and policy evaluation: addressing mythological challenges, [Editor's notes], *New Directions for Evaluation* 122: 1–7.
- Borrini-Feyerabend, G., Dudley, N., Jaeger, T., Lassen, B., Pathak Broome, N., Phillips, A. and Sandwith, T. (2013). *Governance of Protected Areas: From understanding to action*. Best Practice Protected Area Guidelines Series No. 20, Switzerland: IUCN. Retrieved on May 10, 2016 from https://cmsdata.iucn.org/downloads/iucn_governance_1109_1.pdf.
- Borrini-Feyerabend, G., and Hill, R. (2015). Governance for the conservation of nature. In G.L. Worboys, M. Lockwood, A. Kothari, S. Feary and I. Pulsford (Eds).

Protected Area Governance and Management (pp.169-203). Canberra: ANU Press. Retrieved on May 1, 2015 from http://anulib.anu.edu.au/.

- Butchart, S. H., Scharlemann, J. P., Evans, M. I., Quader, S., Arico, S., Arinaitwe, J. and Boucher, T. M. (2012). Protecting important sites for biodiversity contributes to meeting global conservation targets. *PloS one*, 7(3), e32529. Retrieved on January 1, 2017 from http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0032529&ty pe=printable.
- Choden, S., Tashi, S., and Dhendup, N. (2010). Analysis of the Contributions of Protected Areas to the Social and Economic Development of Bhutan at National Level. Wildlife Conservation Division, Department of Forests and Park Services, Ministry of Agriculture and Forests, Royal Government of Bhutan, Thimphu, Bhutan.
- Coad, L., Leverington, F., Burgess, N. D., Cuadros, I. C., Geldmann, J., Marthews, T. R., Mee, J., Nolte, C., Stoll-Kleemann, S., Vansteelant, N., Zamora, C., Zimsky, M, and Hockings, M. (2013). Progress towards the CBD protected area management effectiveness targets. *Parks*, 19(1), 13-24. Retrieved on June 10, 2015 from http://parksjournal.com/wp content/uploads/2014/04/PARKS%2019.1%20low%20resolution%2010.2305:IU CN.CH.2013.PARKS-19-1.en.pdf#page=13.
- Convention on Biological Diversity (CBD). (2004). Protected Areas/ Programme of work. Retrieved on February 23, 2016 from https://www.cbd.int/protected/pow/learnmore/intro/.
- Convention on Biological Diversity (CBD). (2010). Strategic Plan for Biodiversity 2011-2020, including Aichi Targets. Retrieved on August 21, 2015 from www.cbd.int/nbsap/.
- Convention on Biological Diversity (CBD). (2011). National Biodiversity Strategies and Action Plans. Retrieved on, August 21,2015 from www.cbd.int/doc/training/nbsap/b1-train-intro-nbsap-revised-en.pdf.
- Convention on Biological Diversity (CBD). (2013). Quick guides for the Aichi Biodiversity Targets. Retrieved on September 19, 2015 from www.cbd.int/doc/strategic-plan/targets/compilation-quick-guide-en.pdf.
- Convention on Biological Diversity (CBD). (2016). List of Parties. Retrieved on June 7, 2015 from https://www.cbd.int/information/parties.shtml.
- Corrales, L. (2004) Manual for the Rapid Evaluation of Management Effectiveness in Marine Protected Areas of Mesoamerica, PROARCA/APM, USAID and TNC, Guatemala City.
- Dearden, P., Bennett, M., and Johnston, J. (2005). Trends in global protected area governance, 1992–2002. *Environmental Management*, *36*(1), 89-100. Retrieved on June 5, 2015 from http://0-search.proquest.com.prospero.murdoch.edu.au/docview/729684650?pq-origsite=summon&accountid=12629.
- Deguignet, M., Juffe-Bignoli, D., Harrison, J., MacSharry, B., Burgess, N., and Kingston, N. (2014). United Nations list of protected areas. *UNEP-WCMC*, *Cambridge, UK*. Retrieved on January 5, 2016 from

http://194.158.18.88/drupal/sites/default/files/documents/docs/2014%20UN%20 List%20of%20Protected%20Areas%20EN%20web.pdf.

- Department of Forests and Park Services (DoFPS). (2011). Forestry facts and figures. Department of Forests and Park Services, Ministry of Agriculture and Forests, Thimphu Bhutan.
- Department of Forests and Park Services (DoFPS). (2015). Counting the Tigers in Bhutan: Report on the National Tiger Survey of Bhutan 2014-2015. Department of Forests and Park Services, Ministry of Agriculture and Forests, Thimphu, Bhutan.
- Department of Forests and Park Services (DoFPS). (2016). Wildlife Conservation Division. Department of Forests and Park Services, Ministry of Agriculture and Forests. Retrieved on January 23, 2016 from http://dofps.gov.bt/divisions/wildlife-conservation-division/.
- Department of Public Accounts. (2014). *Public Environmental Expenditure Review of the Royal Government of Bhutan.* Department of Public Accounts, Ministry of Finance, Thimphu Bhutan.
- Dimas, S., and S. Gabriel. (2008). The economics of ecosystems and biodiversity: an interim report. *European Commission and German Federal Ministry for the Environment, Cambridge UK*. Retrieved on May 10, 2016 from http://www.teebweb.org/search/The+economics+of+ecosystems+and+biodiversit y%3A+an+interim+report.
- Dorji, S., Vernes, K., and Rajaratnam, R. (2011). Habitat correlates of the red panda in the temperate forests of Bhutan: E26483. *PLoS One*, 6(10). Retrieved on December 20, 2015 from http://0search.proquest.com.prospero.murdoch.edu.au/docview/1312183133?pqorigsite=summon&accountid=12629. doi:10.1371/journal.pone.0026483.
- Dovers, S., Feary, S., Martin, A., McMillan, L., Morgan, D., and Tollesfson, M. (2015). Engagement and participation in protected area management: who, why, how and when? In G.L. Worboys, M. Lockwood, A, Kothari, S. Feary and I. Pulsford (Eds) *Protected Area Governance and Management* (pp.413-438). ANU Press, Canberra. Retrieved on May 1, 2015 from http://anulib.anu.edu.au/.
- Dudley, N. (Ed.). (2008). Guidelines for Applying Protected Area Management Categories. Gland, Switzerland-IUCN. Retrieved on December 15, 2015 from https://portals.iucn.org/library/sites/library/files/documents/PAG-021.pdf.
- Dudley, N., and Stolton, S. (Eds.). (2008). Defining protected areas: an international conference in Almeria, Spain. *IUCN, Gland.* Retrieved on February 10, 2016 from https://cmsdata.iucn.org/downloads/almeria_proceedings_final.pdf.
- Ervin, J. (2003a). Protected area assessments in perspective. *BioScience*, 53 (9), 819-822. Retrieved on May 23, 2015 from http://bioscience.oxfordjournals.org/content/53/9/819.full. doi:10.1641/0006-3568(2003)053[0819:PAAIP]2.0.CO;2.
- Ervin, J. (2003b). Rapid assessment of protected area management effectiveness in four countries. *BioScience*, 53 (9), 833-841. Retrieved on May 23, 2015 from http://bioscience.oxfordjournals.org/content/53/9/833.full. doi:10.1641/0006-3568(2003)053[0833:RAOPAM]2.0.CO;2.

- Forest and Nature Conservation Act (FNCA) 1995. (1995). Department of Forests, Ministry of Agriculture, Royal Government of Bhutan, Thimphu Bhutan.
- Forest and Nature Conservation Rules (FNCR) 2006. (2006). Department of Forests. Ministry of Agriculture, Thimphu Bhutan.
- Geldmann, J., Barnes, M., Coad, L., Craigie, I. D., Hockings, M., and Burgess, N. D. (2013). Effectiveness of terrestrial protected areas in reducing habitat loss and population declines. *Biological Conservation*, 161, 230. Retrieved on June 10, 2015. doi:10.1016/j.biocon.2013.02.018.
- Government of Australia. (2013a). *Indigenous Protected Areas*. Department of Environment. Australian Government, Canberra. Retrieved on February 10, 2016 from https://www.environment.gov.au/land/indigenous-protected-areas.
- Government of Australia. (2013b). *Birriliburu*. Department of Environment. Australian Government, Western Australia. Retrieved on February 10, 2016 from http://olr.npi.gov.au/indigenous/ipa/declared/birriliburu.html.
- Growcock, A., Sutherland, E., and Stathis, P. (2009). Challenges and experiences in implementing a management effectiveness evaluation program in a protected area system. *Australasian Journal of Environmental Management*, *16*(4), 218-226. Retrieved on July 17, 2015 from http://www-tandfonlinecom.libproxy.murdoch.edu.au/doi/pdf/10.1080/14486563.2009.9725237?needAc cess=true.
- Gupta, A., Gupta, B., and Dasgupta, S. (2008). Adoption of ICT in a government organization in a developing country: An empirical study. *Journal of Strategic Information Systems*, 17(2), 140-154. Retrieved on February 16, 2015 from http://0-

www.sciencedirect.com.prospero.murdoch.edu.au/science/article/pii/S096386870 700065.

- Gurung, D. B., and Seeland, K. (2008). Ecotourism in Bhutan: Extending its benefits to rural communities. Annals of Tourism research, 35(2), 489-508. Retrieved on January 20, 2015 from http://0www.sciencedirect.com.prospero.murdoch.edu.au/science/article/pii/S016073830 8000236. doi:10.1016/j.annals.2008.02.004.
- Hardin, G. (1968). The tragedy of the commons. Science, 162(3859), 1243-1248.
- Heckathorn, D. D. (1997). Respondent-driven sampling: a new approach to the study of hidden populations. *Social problems*, 44(2), 174-199.
- Hilal, A. H., and Alabri, S. S. (2013). Using NVIVO for data analysis in qualitative research. *International Interdisciplinary Journal of Education*, 2(2), 181-186. Retrieved on July 12, 2015 from http://www.iijoe.org/v2/IIJOE_06_02_02_2013.pdf.
- Hockings, M. (1998). Evaluating management of protected areas: Integrating planning and evaluation. *Environmental Management*, 22(3), 337-345. Retrieved on February 1, 2016 from http://0search.proquest.com.prospero.murdoch.edu.au/docview/884861670?pqorigsite=summon&accountid=12629.
- Hockings, M., Stolton, S., and Dudley, N. (2000). Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas. Gland

(Switzerland): IUCN. Retrieved on September 1, 2015 from http://www2.ecolex.org/server2.php/libcat/docs/LI/MON-066280.pdf.

- Hockings, M., Stolton, S., and Dudley, N. (2002). *Evaluating effectiveness: a summary* for park managers and policy makers. WWF.
- Hockings, M. (2003). Systems for assessing the effectiveness of management in protected areas. *Bioscience*, 53(9), 823-832. Retrieved on February 15, 2015 from http://0-search.proquest.com.prospero.murdoch.edu.au/docview/216470574/fulltextPDF/BE37F2DCB05348B6PQ/1?accountid=12629. doi:10.1641/0006-3568(2003)053[0823:SFATEO]2.0.CO;2.

Hockings, M., Ervin, J., and Vincent, G. (2004a). Assessing the management of protected areas: The work of the world parks congress before and after Durban. *Journal of International Wildlife Law and Policy*, 7(1), 31-42. Retrieved on August 20, 2015 from http://0-www.tandfonline.com.prospero.murdoch.edu.au/doi/abs/10.1080/138802904904 80130#.V255nZN96u4.

- Hockings, M., Stolton, S., and Dudley, N. (2004b). Management effectiveness: Assessing management of protected areas? *Journal of Environmental Policy and Planning*,6(2), 157-174. Retrieved on December 17, 2015 from http://0www.tandfonline.com.prospero.murdoch.edu.au/doi/abs/10.1080/152390804200 0320731.
- Hockings, M., Stolton, S., Leverington, F., Dudley, N., Courrau, J., and Valentine, P. (Eds.). (2006). Evaluating effectiveness: A framework for assessing management effectiveness of protected areas, Gland. *Switzerland: IUCN*. Retrieved on September 1, 2015 from https://portals.iucn.org/library/efiles/documents/PAG-014.pdf.
- Hockings, M., Leverington, F., and Cook, C. (2015). Protected area management effectiveness. In G.L. Worboys, M. Lockwood, A, Kothari, S. Feary and I. Pulsford (Eds), *Protected Area Governance and Management* (pp.889-923). ANU Press, Canberra. Retrieved on May 1, 2015 from http://anulib.anu.edu.au/.
- Jacobson, C., Carter, R. W., and Hockings, M. (2008). The status of protected area management evaluation in Australia and implications for its future. *Australasian Journal of Environmental Management*, 15(4), 202-210.
- Jovchelovitch, S., and Bauer, M. W. (2000). Narrative interviewing. *Qualitative researching with text, image and sound*, 57-74. Retrieved on July 15, 2015 from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.474.2633&rep=rep1&t ype=pdf.
- Juffe-Bignoli, D., Burgess, N.D., Bingham, H., Belle, E.M.S., de Lima, M.G., Deguignet, M., Bertzky, B., Milam, A.N., Martinez-Lopez, J., Lewis, E., Eassom, A., Wicander, S., Geldmann, J., van Soesbergen, A., Arnell, A.P., O'Connor, B., Park, S., Shi, Y.N., Danks, F.S., MacSharry, B. and Kingston, N. (2014). Protected Planet Report 2014. UNEP-WCMC: Cambridge, UK. Retrieved on May 10, 2015 from https://portals.iucn.org/library/sites/library/files/documents/2014-043.pdf.
- Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. Prentice-Hall, Inc., Eaglewood Cliffs, New Jersey, 07632.
 Retrieved on April 17, 2016 from http://academic.regis.edu/ed205/kolb.pdf.

- Land Act of Bhutan 1979. (1979). Office of Chief of Survey. Royal Government of Bhutan. Thimphu Bhutan.
- Land Act of Bhutan 2007. (2007). National Land Commission. Royal Government of Bhutan. Thimphu Bhutan.
- Leverington, F., and Hockings, M. T. (2004). Evaluating the effectiveness of protected area management: the challenge of change. In Barber, C.V., Miller, K.R. and Boness, M. (Eds). 2004. *Securing Protected Areas in the Face of Global Change: Issues and Strategies*. (pp.169-215). IUCN, Gland, Switzerland and Cambridge, UK.
- Leverington, F., Costa, K. L., Pavese, H., Lisle, A., and Hockings, M. (2010). A global analysis of protected area management effectiveness. *Environmental Management*, *46*(5), 685-698. Retrieved on August 23, 2015 from http://0-search.proquest.com.prospero.murdoch.edu.au/docview/807405248?pq-origsite=summon&accountid=12629.
- Lockwood, M. (2010). Good governance for terrestrial protected areas: A framework, principles and performance outcomes. *Journal of Environmental Management*, *91*(3), 754-766. Retrieved on May 1, 2015 from http://0-www.sciencedirect.com.prospero.murdoch.edu.au/science/article/pii/S030147970 9003508.
- McCool, S. F., and Stankey, G. H. (2003, April). Advancing the dialogue of visitor management: Expanding beyond the culture of technical control. In *George Wright Society Biennial Conference, April* (pp. 14-18). Retrieved on June 1, 2015 from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.196.5512&rep=rep1&t

ype=pdf.

McCool, S. F., Nkhata, B., Breen, C., and Freimund, W. A. (2013). A heuristic framework for reflecting on protected areas and their stewardship in the 21st century. *Journal of Outdoor Recreation and Tourism*, *1*, 9-17. Retrieved on May 1, 2015 from http://www.sciencedirect.com/science/article/pii/S2213078013000030

http://www.sciencedirect.com/science/article/pii/S2213078013000030.

- Millennium Ecosystem Assessment (MEA). (2005). *Ecosystem and Human Well-being: Synthesis*. Retrieved on May 25, 2000 from http://www.millenniumassessment.org/documents/document.356.aspx.pdf
- Ministry of Agriculture and Forests (MoAF). (2013). Eleventh Five Year Plan for the Ministry of Agriculture and Forests. Ministry of Agriculture and Forests. Thimphu Bhutan.
- Ministry of Agriculture and Forests (MoAF). (2015a). Bhutan Renewable Natural Resources Statistics 2015. Ministry of Agriculture and Forests, Thimphu Bhutan.
- Ministry of Agriculture and Forests (MoAF). (2015b). Office Order, Ministry of Agriculture and Forests, Dated 29th July 2015. Thimphu Bhutan.
- Ministry of Agriculture and Forests (MoAF). (2016). Ministry of Agriculture and Forests. Retrieved on January 22, 2016 from http://www.moaf.gov.bt/agencies/secretariat/secretariat-about-us/.
- Ministry of Finance. (2016). Financial Guidelines. Ministry of Finance. Royal Government of Bhutan. Thimphu Bhutan.

- Muller, E., Appleton, M.R., Ricci, G., Valverde, A. and Reynolds, D. (2015). Capacity development. In G.L. Worboys, M. Lockwood, A, Kothari, S. Feary and I. Pulsford (Eds.) *Protected Area Governance and Management*, (pp.251-288). ANU Press, Canberra. Retrieved on May 1, 2015 from http://anulib.anu.edu.au/.
- Mutanga, C. N., Vengesayi, S., Muboko, N., and Gandiwa, E. (2015). Towards harmonious conservation relationships: A framework for understanding protected area staff-local community relationships in developing countries. *Journal for Nature Conservation*, 25, 8-16. Retrieved on May 1, 2015 from https://www.researchgate.net/profile/Gandiwa_Edson/publication/272478767_To wards_harmonious_conservation_relationships_A_framework_for_understandin g_protected_area_stafflocal_community_relationships_in_developing_countries/links/550550b20cf231 de0776a85f.pdf
- National Biodiversity Centre (NBC). (2014). National Biodiversity Strategy and Action Plan of Bhutan. National Biodiversity Centre, Ministry of Agriculture and Forests, Thimphu Bhutan.
- National Forest Policy of Bhutan 2011. Department of Forests and Park Services, Ministry of Agriculture and Forests. Thimphu Bhutan.
- Nature Conservation Division (NCD). (2005). Tiger Action Plan for the Kingdom of Bhutan 2006-2015, Nature Conservation Division, Department of Forests. Ministry of Agriculture, Thimphu Bhutan.
- Nature Conservation Division (NCD). (2008). Bhutan National Human Wildlife Conflict Management Strategy, Nature Conservation Division, Department of Forests. Ministry of Agriculture, Thimphu Bhutan.
- Nature Recreation and Ecotourism Division. (2012). Ecotourism development in the Protected Areas Network of Bhutan: Guidelines for Planning and Management. Department of Forests and Park Services, Ministry of Agriculture and Forests, Thimphu Bhutan.
- National Statistical Bureau (NSB). (2012). Poverty Analysis Report. National Statistics Beaureu, Royal Government of Bhutan, Thimphu Bhutan.
- National Statistical Bureau. (NSB). (2015). Statistical Year Book of Bhutan 2015. National Statistics Bureau, Royal Government of Bhutan, Thimphu Bhutan.
- New South Wales (NSW) Government. (2007). State of the Parks 2007. Office of the Environment and Heritage. Retrieved on July 4, 2015 from http://www.environment.nsw.gov.au/sop10/sop10-18.htm.
- Organisation for Economic Cooperation and Development. (2006). The challenge of capacity development: Working towards good practice. *OECD Papers*, 1-37. Retrieved on May 15, 2016 from http://www.ingentaconnect.com/content/oecd/16091914/2006/0000006/000000 01/0206011ec002. doi:10.1787/oecd_papers-v6-art2-en.
- Phrumsengla National Park (PNP). (2011-2015). Types of offences recorded in PNP (Source PNP, 2011-2015). Phrumsengla National Park, Department of Forests and Park Services, Ministry of Agriculture and Forests, Ura Bhutan.
- Phrumsengla National Park (PNP). (2016a). Staff strength of Phrumsengla National Park. Phrumsengla National Park, Department of Forests and Park Services, Ministry of Agriculture and Forests, Ura Bhutan.

- Phrumsengla National Park (PNP). (2016b). Approved Annual Budget for the Management Plan Period during the last five years. Phrumsengla National Park, Department of Forests and Park Services, Ministry of Agriculture and Forests, Ura Bhutan.
- Platt, J. (2012). The history of the interview. In Gubrium, J. F., Holstein, J. A. and Marvasti, A. B.*The SAGE handbook of interview research: The complexity of the craft* (pp. 9-26). Thousand Oaks, CA: SAGE Publications Ltd. Retrieved on May 2, 2015 from http://0methods.sagepub.com.prospero.murdoch.edu.au/base/download/BookChapter/ha ndbook-of-interview-research-2e/n2.xml.
- Prime Minister Office. (2012). Evaluation report of Government to Citizen Project. Royal Government of Bhutan, Thimphu Bhutan. Retrieved on December 15, 2015 from https://erc.undp.org/evaluation/documents/download/7226.
- Pumalin Park. (2013). Pumalin's History. Retrieved on March 1, 2015 from http://www.parquepumalin.cl/en/index.htm.
- QSR International. (2015). Training and resources; tutorials. Retrieved on October 1, 2015 from http://www.qsrinternational.com/nvivo-learning/nvivo-tutorials.
- Ripple, W. J., and Beschata, R. L. (2004). Wolves and the ecology of fear: Can predation risk structure ecosystems?*Bioscience*, 54(8), 755-766. Retrieved on July 3, 2015 from http://0-www.jstor.org.prospero.murdoch.edu.au/stable/10.1641/0006-3568(2004)054%5B0755:WATEOF%5D2.0.CO;2?pq-origsite=summon.
- Rodrigues, A. S., Andelman, S. J., Bakarr, M. I., Boitani, L., Brooks, T. M., Cowling, R. M., Fishpool, L.D., Da Fonseca, G.A., Gaston, K.J., Hoffmann, M., Long' J.S., Marquet P.A., Pilgrim, J.D., Pressey, R.L., JSchipper, J., Sechrest, W., Stuart, S.N., Underhill, L.G., Waller, R.W., Watts, M.E., and Xan X. (2004). Effectiveness of the global protected area network in representing species diversity. *Nature*, *428*(6983), 640-643. Retrieved on March 1, 2016 from http://www.nature.com/nature/journal/v428/n6983/abs/nature02422.html.
- Rosen, G. E., and Smith, K. F. (2010). Summarizing the evidence on the international trade in illegal wildlife. *Ecohealth*, 7(1), 24-32. Retrieved on April 1, 2016 from http://0-link.springer.com.prospero.murdoch.edu.au/article/10.1007%2Fs10393-010-0317-y.
- Rostro-García, S., Tharchen, L., Abade, L., Astaras, C., Cushman, S. A., and Macdonald, D. W. (2016). Scale dependence of felid predation risk: identifying predictors of livestock kills by tiger and leopard in Bhutan. *Landscape Ecology*, 1-22.
- Royal Government of Bhutan (RGoB). (1993). Application for notification of a Revised Protected Area System of Bhutan, Ministry of Agriculture, Thimphu Bhutan.
- Sangay, T., and Vernes, K. (2008). Human–wildlife conflict in the kingdom of Bhutan: Patterns of livestock predation by large mammalian carnivores. *Biological Conservation*, 141(5), 1272-1282. Retrieved on February 20, 2015 from http://0www.sciencedirect.com.prospero.murdoch.edu.au/science/article/pii/S000632070 800092X.
- Saout, S. L., Hoffmann, M., Shi, Y., Hughes, A., Bernard, C., Brooks, T. M., Bertzky,
 B., Butchart, S.H., Stuart, S.N., Badman, T., and Rodrigues Ana S.L. (2013).
 Protected areas and effective biodiversity conservation. *Science*, *342*(6160), 803.

Retrieved on January 1, 2015 from http://science.sciencemag.org.libproxy.murdoch.edu.au/content/342/6160/803

- Social Forestry and Extension Division. (2011). Interim framework for management and marketing of non-wood forest products. Department of Forests and Park Services, Ministry of Agriculture and Forests, Thimphu, Bhutan.
- Spoelder, P. (2015). Planning. In G.L. Worboys, M. Lockwood, A, Kothari, S. Feary and I. Pulsford (Eds) *Protected Area Governance and Management*, pp.11-40, ANU Press, Canberra. Retrieved on May 1, 2015 from http://anulib.anu.edu.au/
- Stolton, S., Hockings, M., Dudley, N., MacKinnon, K., Whitten, T., & Leverington, F. (2007). Management effectiveness tracking tool: reporting progress at protected area sites. *World Bank/WWF Alliance by WWF International, Gland*. Retrieved on June 11, 2015 from

assets.panda.org/downloads/mett2_final_version_july_2007.pdf

- Strickland-Munro, J. K., Moore, S. A., and Freitag-Ronaldson, S. (2010). The impacts of tourism on two communities adjacent to the Kruger National Park, South Africa. *Development Southern Africa*, 27(5), 663-678. Retrieved on June 11, 2015 from http://0www.tandfonline.com.prospero.murdoch.edu.au/doi/abs/10.1080/0376835X.201 0.522829.
- The Nature Conservancy Parks in Peril Program (2004) Measuring success: the Parks in Peril Site Consolidation Scorecard Manual (Updated May 10, 2004). Retrieved on 18 December, 2009 from http://www.parksinperil.org/.
- Thomas, L. and Middleton, J. (2003). Guidelines for management planning of protected areas. *Best Practice Protected Area Guidelines Series*, (10). IUCN Gland, Switzerland and Cambridge, UK. Retrieved on May 1, 2016 from https://portals.iucn.org/library/efiles/edocs/PAG-010.pdf.
- Thrumshingla National Park (TNP). (2002). Management Plan for Thrumshingla National Park 2002/03- 2006/07. Department of Forests, Ministry of Agriculture. Royal Government Bhutan. Ura Bhutan.
- Thrumshingla National Park (TNP). (2008a). *People and Livelihoods in Thrumshingla National Park*. Department of Forests, Ministry of Agriculture. Royal Government Bhutan. Ura Bhutan.
- Thrumshingla National Park (TNP). (2008b). *Evaluation Report on Environmental Education Program in Thrumshingla National Park*. Department of Forests, Ministry of Agriculture. Royal Government Bhutan. Ura Bhutan.
- Thrumshingla National Park (TNP). (2008c). Thrumshingla National Park Management plan July 2008-June 2013. Department of Forests, Ministry of Agriculture. Royal Government Bhutan. Ura Bhutan.
- Thrumshingla National Park (TNP). (2008d). *Conservation Challenges in Thrumshingla National Park.* Department of Forests, Ministry of Agriculture. Royal Government Bhutan. Ura Bhutan.
- Thrumshingla National Park (TNP). (2008e). *Habitat and Vegetation in Thrumshingla National Park. A rapid assessment report.* Department of Forests, Ministry of Agriculture. Royal Government Bhutan. Ura Bhutan.

- Thrumshingla National Park (TNP). (2008f). *Linking and Enhancing Protected Areas in the Temperate Broadleaf Forest Eco-regions: Terminal Report*. Department of Forests, Ministry of Agriculture. Royal Government Bhutan. Ura Bhutan.
- Thrumshingla National Park (TNP). (2013a). Thrumshingla National Park Management Plan (July 2013-June 2018). Department of Forests and Park Services, Ministry of Agriculture. Royal Government Bhutan. Ura Bhutan.
- Thrumshingla National Park (TNP) (2013b). *Exterior Park Boundary Verification, Thrumshingla National Park, Final Report.* Department of Forests and Park Services, Ministry of Agriculture. Royal Government Bhutan. Ura Bhutan.
- Tshering, K. (2003). *Bhutan: management effectiveness assessment of four protected areas using WWF's RAPPAM methodology*. WWF International. Retrieved on March 31, 2015 from http://www.worldcat.org/title/bhutan-management-effectiveness-assessment-of-four-protected-areas-using-wwfs-rappam-methodology/oclc/716829957?referer=di&ht=edition.
- Tshering, K. (2006). *Development of the effective forest fire management strategy for Bhutan* (Master's Thesis). Retrieved on June 20, 2016 from http://scholarworks.umt.edu/cgi/viewcontent.cgi?article=3068&context=etd.
- United Nations General Assembly. (1992). *Report on United Nations Conference on Environment and Development*. Retrieved on May 20, 2016 from http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm.
- Vedeld, P., Jumane, A., Wapalila, G., and Songorwa, A. (2012). Protected areas, poverty and conflicts. *Forest Policy and Economics*, 21, 20. Retrieved on March 24, 2016 from http://www.sciencedirect.com/science/article/pii/S1389934112000275
- Vodouhê, F. G., Coulibaly, O., Adégbidi, A., and Sinsin, B. (2010). Community perception of biodiversity conservation within protected areas in Benin. *Forest Policy and Economics*, 12(7), 505-512. Retrieved on March 25, 2016 from http://0www.sciencedirect.com.prospero.murdoch.edu.au/science/article/pii/S138993411 0000857.
- Wang, S. W., Lassoie, J. P., and Curtis, P. D. (2006). Farmer attitudes towards conservation in Jigme Singye Wangchuck National Park, Bhutan. *Environmental Conservation*, 33(2), 148-156. Retrieved on January 20, 2015 from http://0search.proquest.com.prospero.murdoch.edu.au/docview/203160990?pqorigsite=summon&accountid=12629&selectids=10000039% 2C1006985% 2C100 00155.
- Wang, S.W. (2014). *Co-management of Wangchuck Centennial Park: Terminal Evaluation Report*. Happiness Consulting Group. Thimphu Bhutan.
- Wangchuk. S, (2012). Zonation Framework for National Park and Wildlife Sanctuaries in Bhutan. Thimphu Bhutan.

Watson, J.E., Dudley, N., Segan, D. B., and Hockings, M. (2014). The performance and potential of protected areas. *Nature*, 515(7525), 67-73. Retrieved on March 30, 2015 from http://0go.galegroup.com.prospero.murdoch.edu.au/ps/i.do?p=ITOF&u=murdoch&id=G ALE|A389259562&v=2.1&it=r&sid=summon&userGroup=murdoch.

- Wells, S.M. (2004). Assessment of management effectiveness in selected marine protected areas in the Western Indian Ocean. IUCN Eastern Africa Regional Programme, Nairobi, Kenya.
- Wells, M. P., and McShane, T. O. (2004). Integrating protected area management with local needs and aspirations. *Ambio*, 33(8), 513-519. Retrieved on January 20, 2015 from http://0-www.jstor.org.prospero.murdoch.edu.au/stable/4315540?pqorigsite=summon.
- Wildlife Conservation Division (WCD). (2003-2010). Number of human wildlife conflict cases reported and maintained in Wildlife Conservation Division.
 Department of Forests and Park Services, Ministry of Agriculture and Forests, Thimphu Bhutan.
- Wildlife Conservation Division (WCD). (2010). Regulatory framework for Biological Corridor of Bhutan. Department of Forests and Park Services, Ministry of Agriculture and Forests, Thimphu Bhutan.
- Wildlife Conservation Division (WCD). (2015). *Proceeding of Third Annual Park Conference of Department of Forests and Park Services (2015),* Ministry of Agriculture and Forests, Thimphu Bhutan.
- Worboys, G. (2015). Concept, Purpose and Challenges. In G.L. Worboys, M. Lockwood, A, Kothari, S. Feary and I. Pulsford (Eds) *Protected Area Governance and Management*, pp.11-40, ANU Press, Canberra. Retrieved on May 1, 2015 from http://anulib.anu.edu.au/.
- Worboys, G. and Trzyna, T. (2015). Managing Protected Areas. In G.L. Worboys, M. Lockwood, A, Kothari, S. Feary and I. Pulsford (Eds) *Protected Area Governance and Management*, pp.11-40, ANU Press, Canberra. Retrieved on May 1, 2015 from http://anulib.anu.edu.au/.
- World Wide Fund for Nature (WWF). (2016). Bhutan for Life. Retrieved on May 24, 2016 from http://www.wwfbhutan.org.bt/bhutan_for_life/.

Appendix A

Node: Achievement

This node; Achievement was identified to understand the respondents' perspective and understanding on the achievement of the PNP management in fulfilling their mandated objectives. According to the park residents, the PNP management has achieved social mandates by providing support in the form of Integrated Conservation and Development Programs. Another important achievement of the PNP management is provisioning timber and fuel wood to the park residents annually as per their requirement. Park residents expresses that the presence of the PNP management has helped to protect the trees. For the park officials and officials at Ministry of Agriculture and Forests and Wildlife Conservation Division, there have been achievements in implementing the planned activities. Park officials also identify the recent boundary demarcation and zonation as a recent achievement of PNP management.

Internals\\Interviews\\Chumey_Tshogpa_Chungphel - § 1 reference coded [0.83% Coverage]

Reference 1 - 0.83% Coverage

On their achievement in our village, they have supported us on Yathra and solar lightings.

```
Internals\\Interviews\\Jarey_Mangapp - § 2 references coded [ 3.04% Coverage]
```

```
Reference 1 - 0.91% Coverage
```

I think their objectives on both the nature conservation and for social welfare are long term objective and they have not achieved yet.

Reference 2 - 2.13% Coverage

But on their short term plans, it is being implemented in our village to protect our crops by installing the solar electric fence and it has been installed in two places (Jatrong and Nganey) and next year will have this supported in all villages. We are hopeful that we will not have crop damage this time with this fence.

```
Internals\\Interviews\\Jarey_Umchay - § 2 references coded [ 4.52% Coverage]
```

```
Reference 1 - 1.58% Coverage
```

They have supported our roofing, solar lightings to our monastery and on the conservation of wild animals, I think they are successful under their protection and now people don't harm animals

Reference 2 - 2.94% Coverage

I think that they are able to fulfill their conservation mandates. And I also feel that

they are fulfilling the social mandates, it was not the situation like this when I was young. We didn't have any facilities in our village. They visit us frequently and also give us resource support. And also they protect wild animals and have been able to educate the people.

Internals\\Interviews\\Metsho_Gup - § 2 references coded [1.32% Coverage]

Reference 1 - 0.97% Coverage

On the achievement of their objectives, I am not able to say clearly but on their support to the rural community in permitting the resource utilisation, about 40% of their objectives are achieved. (21.52 mins).

Reference 2 - 0.35% Coverage

So, PNP is able to achieve the objective by especially protecting the trees

Internals\\Interviews\\Metsho_Tshogpa_Ungar - § 2 references coded [2.80% Coverage]

Reference 1 - 1.71% Coverage

With their presence there are stress to conserve the wild animals and conservation of forests. If there was no park, I think people would have finished cutting the trees.

Reference 2 - 1.09% Coverage

I feel that there are achievements for these objectives. Both the objectives are being fulfilled. (13.57).

```
Internals\\Interviews\\PM - § 4 references coded [ 3.62% Coverage]
```

Reference 1 - 0.42% Coverage

With the present scenario of the funding support from the donors I believe only 50-60 % of the plans are going to be achieved within the 5 years.

Reference 2 - 1.70% Coverage

Short term objectives that I have built so far are going well and we are expected to fulfill that and we are near to the achievement of the short term objectives. But the long term objectives or the goal towards achieving the conservation, I don't know because I won't be the permanent park manager here, so it will depend. So my short term objective is to zone this park and for zoning this park we are already carrying the activities, so it is going to be feasible and after zoning the park, I am going to come up with the operational plan for each zone unlike other park management plans.

Reference 3 - 0.46% Coverage

Major achievement in the last three years, one is infrastructure development, one if the mobility (vehicle), one is also the communication facilities.

Reference 4 - 1.04% Coverage

And the biggest achievement was demarcating the exterior boundary of park, the park was never demarcated, it is good in paper. It was not demarcated on the ground? Yes it was not demarcated. Yes I did it in 2013, physical boundary was not put, forget about the zoning. Zonation is kind of partition inside the park. Zonation will be completed by 2017.

```
Internals\\Interviews\\PPD - § 2 references coded [ 2.51% Coverage]
```

Reference 1 - 0.46% Coverage

Yes as of now they are doing very well and I am hope that they will continue towards carrying out their mandates

Reference 2 - 2.05% Coverage

In that case, we have completed mid term review for the 11 five year plan and MoAF is on the track and we have achieved few of our objectives like conducting national tiger survey and the tiger numbers had increased a lot and we also have many other objectives which we are on the track. So if we consider that the achievement of the objectives of the 11 FYP to be one indicator to measure whether we have achieved, the management, protection and preservation of biodiversity and then I should say yes.

Internals\\Interviews\\Ranger_Central RangeLingmethang - § 6 references coded [6.13% Coverage]

Reference 1 - 2.54% Coverage

PNP got the physical demarcation recently, they had the boundaries in the papers and maps but not done on-ground. They had the GPS coordinates but did not have the pillars. The pillars were put in place just two years back and it was done before I joined. I think now it will get better, so the next will be zonation and BTF will fund this program. For the zonation we have started the desktop planning and soon we will implement. During the zonation, there will be buffer zones, multiple use zones and core areas. So during that we will understand better and we will get detailed planning.

Reference 2 - 0.62% Coverage

Now this zonation exercise will give more clear and concise definition to the zones based on the results of surveys and meetings with people.

Reference 3 - 0.72% Coverage

The visitor center at the park head office is an achievement. There was an old visitor center and present one has been improved. We also have an orchidarium at the HQ.

Reference 4 - 0.24% Coverage

Till now I think the planned programs are implemented.

Reference 5 - 0.39% Coverage

The results of the planned activities are desirable but we need to have continued effort.

Reference 6 - 1.62% Coverage

It is so early to say if the conservation objectives of PNP are achieved but the achievement of this objective may be confirmed and convinced later down the years. Presently we have so much activity in pipeline and only after we have implemented all of the planned activities and also consulted the people on this, then we may understand if we have achieved the objective.

Internals\\Interviews\\Ranger_Eastern_RangePhawan - § 3 references coded [2.17% Coverage]

Reference 1 - 0.50% Coverage

Till now the planned activities have been implemented. When we had plans to establish nursery, we have been able to do that.

Reference 2 - 1.39% Coverage

The achievement I saw after I came here is the demarcation of exterior boundary and we have the pillars on the ground. Now with the exterior boundary, we are now able to show people on the boundary. And the next achievement will be the zonation. After the zonation, we will then be able to show the exact zones for different purposes with clarity.

Reference 3 - 0.28% Coverage

The conservation objectives at the range level have been achieved.

Internals\\Interviews\\Ranger_Western RangeUra - § 4 references coded [8.68% Coverage]

Reference 1 - 1.51% Coverage

I know some of the plans for the PNP during the 11 FYP and I feel that if there are sufficient budget, they plans will be able to achieve. (27.50).

Reference 2 - 4.09% Coverage

The achievement is the service delivery to the people. The other achievement is the camera trapping exercise, in the past in 2008, the first photo of tiger was caught from the east in Ungar and we also did the camera trapping exercise in 2010 but we didn't get the picture of tiger. Then this time during the nation wide tiger survey, we got the tiger captured and this is the achievement.

Reference 3 - 2.58% Coverage

I have worked under the previous PM and compared to past, the facilities in the office has improved. In the past we didn't have streetlights in our residential area and the cafeteria but this manager has brought in these facilities. (24.30).

Reference 4 - 0.49% Coverage

The objectives are fulfilled and desirable.

Internals\\Interviews\\Saling_Mangapp_Thridangbi - § 3 references coded [5.62% Coverage]

Reference 1 - 1.40% Coverage

One of their significant achievements is, they have improved the livelihood conditions of the local community here because on the first, the foreign tourists visiting Bhutan visit our place. This is the objective of the park and has been achieved

Reference 2 - 2.39% Coverage

In addition to these benefits, in our village changes to the livelihood have been brought by providing zinc sheets. People by then were using the shingles as roofing material and now all of the houses have been roofed with zinc sheets and now houses are completed protected from rains, which used to be some problem when roofed with shingles. This has solved the problem of the rural people. In the past it was a poor community.

Reference 3 - 1.82% Coverage

Say the animals like tigers, we do not know if we have tigers here and other variety of animals, if they do not conserve and protect them, like in BWS there is the bird Jadah and if these animals are not protected by the park, people will finish killing them, so if these animals are not there, then will be no tourists coming here.

Internals\\Interviews\\Saling_Sengor_Dorji - § 2 references coded [2.46% Coverage]

Reference 1 - 1.58% Coverage

I don't know if all their activities planned were implemented completely or not but the plan period is not complete. There was recent meeting with PM and there was update that plan implementation is on going. They didn't convey us if its complete. I also don't know on this. They didn't tell us their achievement. Since their objective is mainly for nature and wild life conservation, I think it is on going.

Reference 2 - 0.89% Coverage

Since this community is guided by Buddhist philosophy since olden times and they have been following the same till now. And with people's support not to kill the animals, I feel the conservation objectives of PNP are achieved.

```
Internals\\Interviews\\Tang_Tshogpa_Kharab - § 1 reference coded [ 2.83% Coverage]
```

Reference 1 - 2.83% Coverage

On achievement of their objectives, I am not able to say clearly but i think it been difficult on their part to fulfill their objectives. Now with democracy, forestry officials stress on their rules but there are only 1/3rd of people who listens and 2/3rd do not follow their advice.

Even their conservation objectives is not really fulfilled and even if they would have achieved, we don't know as none of them have shared the progress on it. Even the objective of improving rural livelihood has not been achieved and it will be difficult on their part. People have been working hard for themselves. (29 mins).

Internals\\Interviews\\Tsamang_Tshogpa_Drangmaling - § 2 references coded [0.98% Coverage]

Reference 1 - 0.29% Coverage

Yes they have been successful in achieving their objectives

Reference 2 - 0.69% Coverage

On the objective to achieve the social well being of the rural communities, I feel it is being achieved in one way but HWC is the issues in achieving it.

```
Internals\\Interviews\\Tsamang_Tshogpa_Ganglapong - § 3 references coded [ 2.88% Coverage]
```

Reference 1 - 0.59% Coverage

I feel that they are achieving their conservation objectives by implementing strict rules.

Reference 2 - 1.32% Coverage

But on the social objectives, this can only be achieved if they support us by providing facilities to improve our livelihood and just implementing strict rules on us will not achieve their social objectives.

Reference 3 - 0.98% Coverage

This progress will be more if they support us and then we can also support them in return. Enforcing just the rules will not ensure the achievement of rules.

```
Internals\\Interviews\\Ura.Dorji_docx - § 2 references coded [ 1.98% Coverage]
```

Reference 1 - 1.48% Coverage

I have not seen significant achievement after the designation of PNP, rather the population of birds and animals (Jara (not found in Ura)) such as musk deer and Jabari (in Urap and Ja in Dzo) which used to sighted nearby the villages are no more seen and decreasing these days.

Reference 2 - 0.50% Coverage

Conservation objectives are not achieved as the population of wild animals are decreasing.

Internals\\Interviews\\Ura_TW - § 1 reference coded [0.35% Coverage]

```
Reference 1 - 0.35% Coverage
```

I don't see that their plans are achieved successfully but I want to see that their plans have been affecting community here.

```
Internals\\Interviews\\WCD_Dr_docx - § 3 references coded [ 1.21% Coverage]
```

```
Reference 1 - 0.18% Coverage
```

Yes it is fulfilled and even more than fulfilled.

```
Reference 2 - 0.76% Coverage
```

Again, what do we call milestones in Bhutanese

1. We have been able to secure 51% of PA.

2. The constitution of country requires to set aside areas to habitat, endangered species.

3. To increase the stability of PAs through biological corridors.

Reference 3 - 0.27% Coverage

Now emerged global destination for bird watchers, one flag ship activities

```
Internals\\Interviews\\WCD_SW - § 2 references coded [ 3.50% Coverage]
```

```
Reference 1 - 2.01% Coverage
```

The no. one significant achievement I would say, as claimed by the people; the rise in number of tigers because the recent nation-wide tiger survey, it showed that if not increased, we are maintaining a healthy population of tigers in Bhutan. So that definitely is a success because tigers being the flagship species, so if we have been able to manage healthy population of tigers within and outside the PAs, we are now saying that we have managed the whole ecosystem that is dependent on the tiger. (45).

Reference 2 - 1.49% Coverage

Yes they are fulfilling the objectives but they may not be fulfilling 100% of the objectives, but like I said that they are managing more than half of the country's resources and till now we have been able to manage. I would say it may not be as per the international standards, the management effectiveness but we are with out own style managing the parks and we are succeeding. (44).

Appendix **B**

Node: Support by government

This node was identified to understand the levels and types of government support for PNP from the perspective of different levels of stakeholders. Some of the park residents did not understand how the government supported the park. However, some expressed that it was due to support from the government that PNP had been instituted and located in their locality. The park officials stressed the need for more support from the government to improve the facilities in the park and to develop human resources. Currently the government provides salaries, resources for maintaining facilities and allowances as the cost of running the offices. According to the government officials, the support of the government to the parks is to devise policies supportive of conservation activities within the PA.

Internals\\Interviews\\Chumey_Tshogpa_Chungphel - § 1 reference coded [0.80% Coverage]

Reference 1 - 0.80% Coverage

I am not sure if the government is supportive or not to park management and we don't understand.

Internals\\Interviews\\PM - § 3 references coded [3.43% Coverage]

Reference 1 - 1.71% Coverage

Well government support from the monetary perspective, I think ill stress this because it is very important. So there is small chunk of monetary support just to meet our monthly salary, cost of per diem for the field staff and running cost and that's it. Even for the infrastructure like construction of office, staff quarters are not supported by the government. Must be because our government has less money, that I should not be blaming the government. So in this case if we don't count the project or project that is funded by some donor agencies, then I think parks are going to be ruined in the future.

Reference 2 - 0.79% Coverage

No, not by the government. They give us meager amount for the maintenance of buildings, also we have to do throat to throat fight verbally in the budget meeting. Do you mean that you have more financial allocations from the donors than the RGoB? Yes you are 100 % right.

Reference 3 - 0.92% Coverage

No Government has no support for the infrastructure development, how can they support this livelihood programs, there is no way and even for the compensation for the crop and livestock depredation by wildlife, government is not supporting this. So there is no way that the direct livelihood programs will be supported.

Internals\\Interviews\\PPD - § 2 references coded [2.04% Coverage]

Reference 1 - 0.94% Coverage

There is actually strong governmental support in protecting and management of PAs. We have per se the DoFPS, government department under the MoAF, which primarily looks after the management of PAs, the watersheds and environment in general.

Reference 2 - 1.11% Coverage

Yes the government is supportive of the PAs. Government is taking pain in effort to raise USD 50 million for Bhutan For Life; Project. This is one striking example of government's support to PAs. The project intends to secure the required fund for the PAs for sustainable management of PAs by 2030.

Internals\\Interviews\\Ranger_Central RangeLingmethang - § 2 references coded [3.61% Coverage]

References 1-2 - 3.61% Coverage

The government is supporting conservation plans funded by the donors within and outside our countries. For instance, PNP Park Zonation funded by BTFEC is one of the typical examples. Through implementation of park zonation, we can now understand what species are there in the park, which has significant conservation values, and accordingly we could protect those species by having separate zones (Core zone etc).

In order to plan and execute conservation plans successfully, the governments sending relevant staffs on training or study tour to enhance their knowledge and build their own capacity. With the support and encouragement received from the government every year, the BTFEC and WWF are approving research proposals both flora and fauna as well. This is a good indication that our government. is supportive of conservation plans.

Internals\\Interviews\\Ranger_Eastern_RangePhawan - § 1 reference coded [0.78% Coverage]

Reference 1 - 0.78% Coverage

Presently government supports regular running of the park office by providing salary and travel allowances. If there is no donor funded projects, then the planned programs cannot be implemented.

Internals\\Interviews\\Ranger_Western RangeUra - § 1 reference coded [0.77% Coverage]

Reference 1 - 0.77% Coverage

They are supportive of conservation; they give us fund for activities.

Internals\\Interviews\\Tang_Tshogpa_Kharab - § 1 reference coded [1.37% Coverage]

Reference 1 - 1.37% Coverage

There is huge support to conservation, in the villages and forests, they don't allow us to kill and cut trees. We cannot make fires in forests and also for the construction of roads we need clearance from the park or forestry officials. So this indicates the support of government for conservation.

Internals\\Interviews\\Tsamang_Tshogpa_Drangmaling - § 1 reference coded [0.40% Coverage]

Reference 1 - 0.40% Coverage

Though government have been supportive till now but we still need their continued support.

Internals\\Interviews\\Ura_TW - § 1 reference coded [0.18% Coverage]

Reference 1 - 0.18% Coverage

I can't say if the government is supportive or not for the conservation.

Internals\\Interviews\\WCD_Dr_docx - § 4 references coded [3.95% Coverage]

Reference 1 - 0.51% Coverage

Of course we have committed to PA network, committed to conservation, so therefore government. Per say has been supporting and government needs to support.

Reference 2 - 0.81% Coverage

However we have to look at support qualities happening at the ground level. People are they supporting the PAs in the country? And who all are supporting and who all are not so in the favour? So I think the challenge is at that level.

Reference 3 - 1.25% Coverage

Support in the budgetary is like any other program. I don't think at this time government is differentiating between PAs should get more or should get less than other programs. I think it is a normal level, however is we want to take up some large programs then may be government may not be able to allocate budget for PAs and then we do need to look outside to the donors.

Reference 4 - 1.37% Coverage

And the government support, I think it is momentary cannot say yes or no and it will depend on the government, what that particular government for that period has committed during their campaign or in their manifesto. Because unlike in the past it has to be reflected in the manifesto of that particular government of that period. I think there is no absolute answer, yes or no, it depends on the manifesto of the government

Internals\\Interviews\\WCD_SW - § 2 references coded [2.23% Coverage]

Reference 1 - 0.93% Coverage

Government have policies that are implemented and the constitutional requirement. It is only due to the respect to these policies that there are conservation in the country or without it, we would have lost our natural resources.

Reference 2 - 1.30% Coverage

Government allocation in case of funding for PAs is there in the form of staff salary and management costs that is not funded by the donors, so government is investing a lot in conservation. At the activity level, there are potential to be funded by the donor funds and if such supports are not there from the donors, then the government will have to support.