Transforming theory and practice of environmental governance – A case study of Ayubia National Park, Pakistan

by

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

Parks and protected areas are long-regarded as effective measures for conservation of biodiversity. More recently, they are also recognized as a means to provide social and economic benefits and indefinite ecological and environmental services, particularly to local communities. Historically, parks and protected areas have been managed through an exclusive model, whereby local communities are regarded as a threat to biodiversity preservation. More recently, this model is being replaced by an inclusive model which regards local communities as important stakeholders and partners in sustainable resource management. Like other developing countries of the world, Pakistan is switching to the inclusive model, mostly under the influence and pressure of the world community and external donors.

This thesis focuses on the Ayubia National Park (ANP) in Pakistan. This park is managed by the provincial government of the Khyber Pakhtunkhwa Province through the Wildlife Department. At the same time, the park falls within the jurisdiction of the Forest Department by virtue of its being located within reserve forest. Until 1996, the traditional exclusive conservation model was predominant. Under the influence of the European Union (EU) and IUCN – The World Conservation Union – the inclusive approach has been tested in the park since 1996. Accordingly, the first park management plan was prepared with the active collaboration of all local communities, the WWF-Pakistan, and the Forest and Wildlife Departments. The planning document was designed to promote co-management and incorporate the viewpoints of all the local communities in park management.

Following termination of EU funding, the plan was implemented, but without active involvement of the local communities. Evidence presented in this thesis shows that, due to strict management in line with the traditional exclusive conservation model, park resources have improved to a certain extent. However, failure in implementing the mutually agreed planning document has resulted in local communities developing serious mistrust against the Wildlife Department.

This thesis suggests that short-term improvements in park resources mask the persistent problems of poor governance in the study area. The thesis shows that marked differences between the Forest and Wildlife Departments, and between local communities and the concerned government agencies provide a poor foundation for long-term sustainable resource management. Thus ineffective governance lies at the heart of resource management problems within the park.

The thesis recommends that in order to effectively address the current park-people conflicts a state-centric co-management model should be pursued. Such a hybrid model will have the strengths of both the exclusive and inclusive models. The thesis further presents a framework focusing on effective environmental governance, effective management and effective planning. Importantly, the thesis argues that for effective environmental governance to be realized, the management approach must be place-based and site-specific. Thus, the thesis recommends both micro and macro level environmental governance measures. Such measures can be undertaken through proper institutional reforms that are undertaken at three distinct levels: legislative reforms, educational reforms and organizational reforms.

Acknowledgements

Dedication

Ph.D. - From a dream to reality, my endeavours and pace of academic work were compromised by three heart surgeries of my youngest daughter, Ayla Mohsin in Sick Kids Hospital Toronto - our second home in Canada for quite some time. However, it was through the help, support and encouragement of our friends, colleagues and professionals of School of Planning, University of Waterloo and Sick Kids Hospital, which gave me an opportunity to turn those dreams, which I nurtured for decades in to a simple reality. I therefore dedicate this attempt to the wonderful friends, colleagues and professionals of School of Planning and Sick Kids Hospital.

<u>No words of thanks will ever be enough to acknowledge their help.</u>

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List of Acronyms

ANP	Ayubia National Park
ANPMC	Ayubia National Park Management Committee
BAP	Biodiversity Action Plan
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species
CMS	Convention on Migratory Species
DFO	Divisional Forest Officer
EERI	Earthquake Engineering Research Institute
EU	European Union
FANA	Federally Administered Northern Areas
FAO	Food and Agriculture Organization
FATA	Federally Administered Tribal Areas
FDC	Forest Development Corporation
FES	Fuel Efficient Stove
GEF	Global Environmental Facility
GoNWFP	Government of North West Frontier Province
GoP	Government of Pakistan
GRID	Global Resource Information Database
IUCN	International Union for Conservation of Nature and Natural Resources
KPP	Khyber Pakhtunkhwa Province
KWS	Kenya Wildlife Service
LPG	Liquefied Petroleum Gas
MEA	Millennium Ecosystem Assessment
MOPW	Ministry of Population Welfare
NAAEE	North American Association for Environmental Education
NESDA	Network for Environment and Sustainable Development in Africa
NGO	Non Government Organization
NRCP	Natural Resource Conservation Project
NRTEE	National Round Table on the Environment and the Economy
NTFP	Non-timber Forest Product
ORE	Office of Research Ethics
PA	Protected Areas

PFI	Pakistan Forest Institute
PMC	Park Management Committee
RO	Range Officer
TSC	Technical Steering Committee
UN	United Nations
UNDP	United Nations Development Program
UNDP	United Nations Development Fund
UNEP	United Nations Environment Program
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNRISD	United Nations Research Institute For Social Development
VCC	Village Conservation Committee
VCF	Village Conservation Fund
WCPA	World Commission on Protected Areas
WEC	Wildlife Enquiry Committee
WWF	World Wide Fund for Nature

Chapter 1
Context, rationale and scope

1.1 Introduction

Parks and protected areas are one of the most effective measures for biodiversity conservation (Brandon, Redford, & Sanderson, 1998; Brooks, da Fonseca, & Rodrigues, 2004; Child, 2004; Dearden, Bennett & Johnston, 2005; Eagles, 2009; Green & Paine, 1999; McNeely, 1996; Polet, 2003; Terborgh & Van Schaik, 2002; Van Schaik & Rijksen, 2002). Moreover, they provide immeasurable social and economic benefits and indefinite ecological and environmental services (DeFries, Hansen, Turner, Reid, & Liu, 2007; Hockings, Stolton & Dudley, 2000) such as biodiversity conservation, watershed protection, carbon storage, local climate mitigation, cultural services and recreational opportunities (DeFries *et al.*, 2007; Hockings *et al.*, 2000). During the last six decades, the area of terrestrial protected areas increased from 0.5 to 12% of the earth's surface (Mcdonald, Forman, Kareiva, Neugarten, Salzerd & Fishera, 2009; World Database on Protected Areas, 2010).

Protected areas are considered as "refuges of tranquillity and peace", however, these are also the "places where conflict occurs" (Lewis, 1996, p. 2). Thus irrespective of the countless social, economic and ecological benefits of the protected areas, they are often centres of conflicts. Critics believe that the management of natural resources as well as parks and protected areas can be a challenging task, due to the "characteristics of resource, the management group, and the socioeconomic and political environment" (Matta, Alavalapati, Kerr & Mercer, 2005, p. 867). A central challenge in managing the natural resources of parks and protected areas is how to preserve their ecological integrity and functions while assuring a flow of benefits to humans from them (Borrini-Feyerabend, Pimbert, Farvar, Kothari, & Renard, 2007). A key related challenge is how to respect the complex and often competing social characteristics of the environment and to fairly and effectively address the conflicting interests and concerns that inevitably arise from various social actors (Borrini-Feyerabend *et al.,* 2007). It is with these interrelated challenges that this thesis is centrally concerned.

The developing countries of the world support a majority of its biodiversity (Andresen, Walloe & Rosendal, 2009; Hempel, 1996; Kiss, 2004; Smith, Muir, Walpole, Leader-Williams & Balmford, 2003) and the rural areas of these countries have great environmental value to wider national and global interests (Swatuk, 2002). However, most developing countries have similar problems: low per capita income, high poverty and unemployment rates, low agricultural

productivity, unevenness between urban and rural areas, fewer women participating effectively and meaningfully in developmental activities, increased dependence on foreign aid and hostile political climate with a tendency toward authoritarian rule (Seth, 1997). In the inhabited areas around protected areas, these problems of underdevelopment combine with limited access to government programs and a heavy reliance on natural resources to place protected areas in jeopardy (Pandey & Wells, 1997; Wells, 1992). Consequently, management of parks and protected areas too often reflects the pathological behaviours generally associated with underdevelopment: design flaws stemming from government attempts to exclude local people from what they regard as their livelihood resource base, ineffective governance, disempowered communities, opportunism, greed, graft and corruption. Understandably, park-people conflicts are the norm throughout the developing world.

In theory, parks and protected areas across the world are managed through different models in line with the priorities and national needs of the country and the differences in the concerned institutional, legislative and financial support therein (Khan, 2004). In practice, the emphasis is mostly on 'inclusive' and 'exclusive' conservation and management models (Bhattacharya, 2004; Borrini-Feyerabend, 1996; Kiss, 2004; Lane, 2001; West & Brechin, 1991). The inclusive model is mostly used in developed countries, whereas the exclusive model is mainly followed in developing countries, where it was introduced during the colonial / imperial era of the late 19th and early 20th centuries. However, primarily due to increasing park-people conflicts and general resource degradation, the exclusive model has come under severe criticism in recent decades. Worldwide, the overall understanding and management of protected areas has been totally transformed (Hanna, Clark & Slocombe, 2008). Consequently, a dramatic paradigm shift has occurred, by promoting approaches which are increasingly participatory, geographically wider reaching and inclusive of human beings (Phillips 2003a; Rehman, 2006).

1.2 Rationale

Despite the transformation in the understanding and management of protected areas and the overall change in paradigm, critics argue that even the inclusive model is not a panacea that can halt the current unprecedented high rate of environmental degradation and solve associated problems. Proponents of the exclusive school of thought blame their opponents for being unscientific, irrational and working for their political agendas through different kinds of social experimentation. Whereas supporters of the inclusive school of thought regard their opponents as maintaining a colonial approach which violates human rights by regarding local people as 'poachers', thereby excluding them from access to resources they have long used as

part of their livelihoods. As this argument continues, so too do natural resources continue to degrade at an alarming pace.

This thesis argues that neither model, on its own, is sufficient for sustainably managing park resources. The replication of a one-size-fits-all approach – be it exclusive or inclusive – should be avoided and emphasis should be given to place-based and site-specific models which fit within the overall socio-economic and political situations of a country. It is, therefore, imperative to move beyond either/or arguments and to evaluate the relative merits of each model within the prevailing circumstances of a country before considering formal implementation. A model might be considered successful in developed countries, where the livelihood of people is not directly dependent upon natural resources, the literacy rate is high, environmental consciousness is better and people are more aware of their responsibilities. However, the same model may not or cannot be replicated successfully in developing or poor countries, where the livelihood of locals is directly dependent upon natural resources, the literacy rate is low, environmental consciousness is lacking and the masses have many other serious issues to tackle as opposed to thinking or worrying about environmental issues.

Based on my research findings, it is my view that the effectiveness of either of the two models is dependent upon various factors prevailing within a country: social structure, literacy rate, environmental consciousness, socio-economic conditions, social segregation, government policies, willingness of the stakeholders to accept and bring change, revenue generation and benefit sharing from conservation, management objectives, time-period for bringing change, human and financial resources, presence and pressure of local people on conservation areas and geography of the terrain.

This research study focuses on Ayubia National Park (ANP), which is situated in the Lesser Himalayas, Pakistan. The park is carved out of the Reserved Forests, and thus the area is managed jointly by the Wildlife and Forest Departments of the Khyber Pakhtunkhwa Province (Formerly North West Frontier Province). This dual management is compromising the biodiversity of the park and has created certain serious governance issues and conflicts among the sister organizations and the local communities. The resultant inconsistent situation is exploited by both the local communities for fulfilling their needs and by the opportunists for fulfilling their greed.

The provincial Wildlife Department was managing the park through the conventional exclusionary management model since its establishment in 1984. However during 1996, the department tested the co-management policy in the park with the hope that, with increased public participation in the planning and management of the park, the resources of the park can

be conserved sustainably. Accordingly, the first ever management plan of the park was prepared with the active collaboration and participation of the local communities as well as the senior officers of the provincial Forest Department, Wildlife Department and the representative of WWF Pakistan. The management plan was approved from the provincial Secretary of the Department and, thus, it became a policy document of the provincial government with respect to ANP. To ensure effective governance, the management plan recognized the local communities as key partners in conservation efforts of the Wildlife Department.

1.3 Purpose statement

In Pakistan, very little research has been conducted about the management practice of state Forest Departments (Geiser & Steimann, 2004).The Wildlife Department is also a sister organization of the Forest Department and, in the absence of any budgetary provision, there is no formal research conducted in this organization.

Although co-management is gaining popularity in Pakistan, its long-term impact on the associated flora and fauna is not yet determined, due to lack of any research opportunities. Moreover, the approach is evaluated neither in Pakistan nor in those countries of South Asia which strictly followed the colonial policies after gaining independence. Thus, there is no clear evidence to support the argument as to whether or not the shift from exclusionary management to co-management is favouring the conservation needs and sustainable management of the natural resources.

The primary objective of this research study is to assess the impact on park resources of the shift in governance policy of the Wildlife Department from a traditional authoritarian (exclusionary) management approach to a co-management (inclusionary) approach. A secondary objective is to provide a set of viable recommendations for improved governance of ANP.

To achieve these objectives, this research project examines the experiences and viewpoints of diverse stakeholders and compares their perceptions against the scholarly discourse and other relevant secondary data. This research project will contribute to the literature regarding the governance of state departments involved with the conservation and management of forests, wildlife and protected areas. Furthermore, it will also enhance the body of knowledge about the empirical outcomes of concerted attempts to implement a co-management approach in the parks and protected areas, especially in the context of those South Asian countries that were under the influence of traditional colonial forestry of British India for an extended period of time.

1.4 Research questions

The planning in ANP was designed with the following key goals:

- To reduce destructive resource utilization by local people, and
- To improve the livelihoods of local community members.

Thus, the objective of this research is to evaluate the impact of the transition to a new inclusive-oriented governance model on the state of the park's resources and neighbouring communities. Consequently, the major research question is:

<u>To what extent has the change in governance policy of the Wildlife Department from the conventional exclusionary management approach to a co-management approach affected park resources?</u>

The following sub-questions are addressed for answering the major research question:

- Is there any change in the consumption of park resources by local communities?
- What is the impact of this change on the flora and fauna of the park?
- What is the impact of the co-management model on the conservation of the flora and fauna within the national park?
- What accounts for the effects of current management plan implementation on park resources?
- What may be done to improve the situation for both the park and the people living near to the resource?

1.5 Research design

This study is inductive in nature and collects qualitative data. As for my choice of qualitative research design, I used the three components of research design as identified by Creswell (2009). Research design is defined as the "plans and the procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis" (Creswell, 2009, p. 3). Its three main components are broadly conceived methodologies, strategy of inquiry and the research method (Creswell, 2009).

Broadly conceived methodologies are the "basic set of beliefs that guide action" (Guba, 1990, p. 17). In undertaking this research, I used advocacy / participatory methodologies, because they "focuses on the needs of the marginalized or disenfranchised groups or individuals of the society" (Creswell, 2009, p. 9). The next component of research design is strategy of inquiry, which refers to "types of qualitative, quantitative or mixed methods designs or models that provide specific direction for procedures in a research design" (Creswell, 2009, p.

11). Due to the exploratory and explanatory nature of this research study, I used a case study as the strategy of inquiry. A case study method involves the systematic collection of "enough information about a particular person, social setting, event, or group to permit the researcher to effectively understand how the subject operates or functions" (Berg, 2004, p. 251). The last component of the research design is the research methods, which "involve the forms of data collection, analysis, and interpretation that researchers propose for their studies" (Creswell, 2009, p. 233). Thus, for providing ample opportunities to the research participants to openly discuss the key issues, I chose in-depth semi-structured interviews of the key informants and focus group interviews of the local communities.

Based on the choices of the above three components of the research design, I resultantly employed the qualitative research design for this research project. Qualitative research can be defined as "a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem" (Creswell, 2009, p. 4).

Purposive sampling is used for recruitment of the key informants for in-depth, semi-structured interviews. Likewise, for getting deeper understanding of the relevant issues, the focus group interviews were held with all the communities living in the immediate surrounds of the ANP. All the in-depth, semi-structured interviews as well as focus group interviews were audio recorded. The digital recordings were later transcribed and the final transcripts were imported into qualitative data management and analysis software NVivo 8. The transcribed data was coded, themes were developed and relationships were established among the themes through NVivo 8. Further details about the methodological approaches are discussed in chapter 6 dealing with methodology.

To handle the issues of validity in qualitative research, triangulation is important (Berg, 2004; Decrop 2004; Yin 2011). Therefore, besides collecting rich data through in-depth, semi-structured interviews of the key informants and the focus group, I employed literature review, document analysis and participatory observations for triangulation. The use of various research methods decreases the chances of personal and methodological biases and enhances the trustworthiness of the research findings (Decrop, 2004).

1.6 Scope of the research

The case study area has a distinctive and unique history, park-people conflicts and governance issues. Thus, some of the results and recommendations of this study may not be generalizable and scaled to other jurisdictions. It is repeatedly emphasized in this study that conservation of nature and natural resources through improved and effective governance is only

possible when the site-specific and place-based realities are taken into consideration by all the stakeholders. Wanton replication or export of policies and recommendations from outside cannot benefit the natural resources in a different geographical set-up.

In order to incorporate the viewpoint of multiple stakeholders and to make the research more meaningful, I conducted in-depth, semi-structured interviews of the key informants as well as focus groups interviews of the local communities and another interest group. For in-depth, semi-structured interviews of the key informants, I interviewed each and every official who was directly involved in the park protection, management and related policy formulation process. Those include the law enforcement staff, deputed in the Park. Besides those, I interviewed the Park Rangers (Range Officers), Park Managers (Divisional Forest Officers – Wildlife) and senior provincial level officers like Chief Conservator Wildlife. WWF-Pakistan is instrumental in the park area. Two of the three professional employees of the local WWF office were interviewed. One of the three employees declined to appear in the interview session. Similarly, focus group meetings were conducted with the members of each and every community residing in the neighbourhood of the park. A separate focus group interview was also arranged with the representatives of the union of hotels and restaurants. The details are given in section 6.5 of the sixth chapter.

As pointed out by Steimann (2004), the local men in northern Pakistan normally resist the involvement of women in the development efforts of the government on religious grounds. Therefore, despite all my efforts for conducting separate focus group meetings with the women, such efforts did not materialize. Based on cultural and religious grounds, the local communities showed their unwillingness to arrange my separate meetings with the local women. Similarly, it was not possible to gender balance the respondents of the research, because of the gender imbalance within the concerned organizations. There is not a single woman working for the Wildlife Department in the ANP. The only female interviewed in this research is the employee of WWF Pakistan, who is also local to the area and who willingly participated in the research.

The Forest Department is one of the key stakeholders in the case study area. The research was designed in a way to interview the staff of the Forest Department, and to incorporate their concerns and viewpoint in the research data. However, despite the initial verbal acceptance for participating in this research study, none of the staff members showed up for interview sessions. They were repeatedly contacted but, later, I was told that the staff had been asked not to participate. Consequently, they were not contacted again. Such apprehensions were completely expected from the Forest Department and it was categorically mentioned in the research proposal that the Forest Department may not be very cooperative,

particularly when asked questions regarding transfer of powers to local communities. Those apprehensions proved accurate during the research data collection stage. Thus, due to their own choice, the viewpoint of Forest Department staff cannot be incorporated. However, efforts have been made to utilize the official record available within the Wildlife Department, and to include the viewpoint of the Forest Department staff in the study through publicly available documents and secondary studies.

Certain local community leaders who were against one of the park managers also tried to sabotage the smooth research data collection process. Resultantly, the focus group interviews were temporarily stopped during July 2009. They also tried to pressurize some of the community watchers not to participate in the in-depth, semi-structured interviews of key informants. However, the issue was partially resolved once the local elders were involved and thus the focus group interviews were resumed. However, four former community watchers refused to participate in the in-depth, semi-structured interviews. Despite these various challenges, the methods employed, including extensive and exhaustive data triangulation, ensure that the findings in this thesis accurately reflect the reality on the ground.

1.7 Structure of dissertation

This chapter, Chapter One, outlines the fundamental background information along with the rationale, purpose statement and the research questions of this study. This chapter highlights the current governance issues in the case study area. This research study aims to investigate the role of local communities for improved and effective governance, thus decreasing the existing park-people conflicts. Finally, it explains the research methodology and scope of the research.

Chapter Two focuses on the appropriate literature covering the concepts of parks and protected areas and their evolution over time. It describes the two strategic models, i.e., exclusive and inclusive, used for management of protected areas and focuses on the current transformation in parks and protected areas from exclusive to inclusive models. Besides that, the chapter examines the nature and issues of parks and protected areas and focuses on the relevant issues within the context of developing countries.

Chapter Three deals with the relevant literature covering the theoretical aspects of the study. It explains the planning frameworks along with the major schools of planning thought and the perceptions of environmental planning. This chapter elucidates the concept of co-management, which is the basic focal point of this research study. This chapter also explains other relevant concepts of environmental education and good governance.

Chapter Four is an descriptive chapter about Pakistan. In this chapter, the focus is on the geography, weather, demography and biodiversity of Pakistan and the Khyber Pakhtunkhwa Province where the case study area is situated. In the end, the threats to biodiversity are highlighted.

Chapter Five deals with the historical background of the relevant institutions responsible for conservation and management of forest and wildlife resources in Pakistan. This chapter discusses the actual practices which submerged the theoretical aspects and the approved policies of these institutions. The ineffective forestry administration is described, which results in mass scale disappearance of the forests. Pakistan has the second highest deforestation rate in the world. The intense consequential devastation of such deforestation is also described here. The effect of such policy failures on wildlife conservation is also discussed. Finally the extent of protected areas and its management is described.

Chapter Six describes the methodological approach and theoretical framework of the study. It also describes the process of data collection, selection of participants, data analysis strategy and the strategies employed for data credibility and trustworthiness of research. Finally some difficulties encountered during the research project are discussed.

Chapter Seven focuses on the case study area – Ayubia National Park. It explains the gaps between the theory and practice in managing the park. The chapter assesses the legal status, history, geography and biodiversity of the park, along with description of the neighbouring resource-dependent communities. Park management and its planning documents are also described. Later on, the current threats faced by the park are highlighted.

Chapter Eight discusses the findings of the research and correlates the findings with the improvement of the park resources as well as with the prevailing ineffective park governance issues.

The final chapter, Chapter Nine, presents recommendations based on the lessons learnt and conclusions drawn from this research project. It comes with a set of recommendations aimed at improving the current gaps in the governance and suggests certain specific place-based and site-specific recommendations for improving the park and its resources. It also suggests future research opportunities.

Chapter 2

Nature and issues of parks and protected areas: A review of literature

2.1 Introduction

Experts believe that as environmental problems are complex, ill-structured, uncertain and political in nature (Bardwell, 1991; Bunch, 2000), so these problems have a variety of physical, social, economic and political implications (Bowonder, 1987; Bunch, 2000). Thus, environmental problems and concerns are perceived differently by different cultures, institutions, socio-economic groups and individuals (Bowonder, 1984; Bunch, 2000; Feijoo & Momo, 1991; Hackett, 1993). There is a gap between the theoretical aspects of conservation strategies and their implementations in the field. As very rightly pointed out by Wall, the current conservation practices and long-term perspectives cannot be easily adopted by those extremely poor populations who have no idea where their next meal is coming from (Tao, 2006; Wall, 2002). Keeping in view the nature of environmental issues and concerns, this literature review focuses more on the conservation practices and perspectives as faced in the developing countries[1] of the world, which support the bulk of global biodiversity (Andresen, Walloe & Rosendal, 2009; Hempel, 1996; Kiss, 2004; Smith *et al*., 2003; Swatuk, 2002).

The comprehensive literature review was carried out before initiation of the field research in Pakistan. This review explores the various concepts that contribute to and inform this study: e.g., the concepts of parks and protected areas, their nature and issues. Section 2.2 briefly goes over the concept of parks and protected areas and their allied benefits. Section 2.3 focuses on the nature of parks and protected areas, first explaining the historical background of protected areas and the current trends in growth and expansion of protected areas, and later discussing in detail the two major models used in planning and management of protected areas and their suitability in various situations. Section 2.4 describes the issues and challenges faced in managing the parks and protected areas. The discussion focuses on the multiple factors affecting the effectiveness of the planning and management models in developing countries of the world.

2.2 Defining parks and protected preas

Parks and protected areas are recognized as one of the most effective measures for the conservation of biodiversity (Brandon, Redford & Sanderson, 1998; Brooks, da Fonseca &

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[1] Also known as under developed, third world, emerging, or global South.

Rodrigues, 2004; Dearden *et al.*, 2005; Eagles, 2009; Green & Paine, 1999; McNeely, 1996; Polet, 2003; Terborgh & Van Schaik, 2002; Van Schaik & Rijksen, 2002). A protected area is defined by the Convention on Biological Diversity as "a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives" (CBD, 2010). It has also been defined as "an area of land/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means" (IUCN, 1994).

Protected areas provide countless social and economic benefits and unlimited ecological and environmental services (DeFries, Hansen, Turner, Reid & Liu, 2007; Hockings, Stolton & Dudley, 2000). Some of the important services are biodiversity conservation, watershed protection, carbon storage, local climate mitigation, cultural services and recreational opportunities (DeFries *et al.*, 2007; Hockings *et al.*, 2000).

2.3 Nature of parks and protected areas

The prevailing concept of parks and protected areas is the outcome of evolution of ideas over many centuries. In this section, I discuss the historical context of the parks and protected areas. Similarly, I deliberate on the current trends regarding the establishment of various categories of protected areas in different countries of the world. The rest of the discussion in this section is focussed on the two key strategic models i.e., exclusive and inclusive models as used in planning and management of parks and protected areas. According to Lane, "anthropocentric (inclusive) and biocentric (exclusive) approaches to conservation tend to be represented as polar opposites" (2001, p. 658). Therefore, for better understanding, these two models are examined and later the current trends of transformation from an exclusive to inclusive model are described. Finally, based on the literature review, I put forward criteria to evaluate the effectiveness of the two key models in various situations.

2.3.1 Protected areas – Historical context

In the Old World, the protected areas were created for spiritual, religious, aesthetic and hunting purposes (Colchester, 2003). The idea of establishing game reserves for game hunts was introduced in Assyria during 700 BC (Colchester, 2003; Dixon & Sherman, 1991), and Emperor Asoka of India presented the first formal idea to set up a separate protected area for animals, fish and forests, by passing a law in 252 BC (Mishra, 1994; UNEP / GRID-Arendal, 2010)[2]. He declared protection of many species from hunting and prohibited the unnecessary

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[2] However, according to Gadgil & Guha (1992) and Colchester (2003), the edict was rather passed during 400 BC.

use of fires for hunting and land clearing purposes (Poffenberger, 2000). This is considered as the earliest recorded model of any government-backed protection process (Mishra, 1994; UNEP / GRID-Arendal, 2010).

Later, Prophet Muhammad (pbuh) (570 - 632 AD) introduced two types of inviolable zones. 'Hima' is a designated conservation area where grazing and woodcutting are restricted, or where certain animal species are protected (De Chatel, 2003; Williams & Zinkin, 2010). Similarly, 'Harim' is an area where developments are restricted to avoid impairment of natural resources (Bagader, El-Sabbagh, Al-Glayand, Samarrai & Llewllyn, 1994). As per Islamic law, every town should have a 'Harim', where the right to acquire land is disallowed (Bagader *et al.*, 1994). It can also serve as a greenbelt and corridor for the associated wildlife. The King Srivijaya established the first nature reserve in Indonesia during 684 AD. In Europe, Alexander the Great introduced the idea of hunting reserves. Normans in England introduced the idea of hunting reserves during the 11th century (Coates, 1998; Colchester, 2003). The idea of forced removal of locals for establishing the reserves came from England, when during 1079 AD, King William I established the first royal hunt of 'New Forest' and forcibly displaced 2000 people (Coates, 1998; Colchester, 2003; The New Forest, 2010). The concept of hunting reserves gained popularity during the Moguls rule (1526 – 1857) in the Indian subcontinent (Colchester, 2003).

The concept of establishing 'modern' protected areas was initiated during the 19th century. In 1864, the US Congress dedicated the present Yosemite National Park for recreational use of the public (Phillips, 2004) and in 1872 the Yellowstone National Park was declared "as a public park or pleasuring ground for the benefit and enjoyment of the people" (Phillips, 2004, p. 4). The 'Yellowstone model' had little place for indigenous peoples (Stevens, 1986), and the critics argue that this model is responsible for excluding the local communities from the park and its affairs (Neumann, 1998; Pimbert & Pretty, 1995; Rehman, 2006). This model was initially replicated in North America, Australia, New Zealand and South Africa during the 19th century and later it was replicated in the poor southern countries (Lane, 2001; Phillips, 2004; Stevens, 1997). The number and area under national parks increased considerably after the Second World War, due to the influence of the international conservation discourse, which is endorsed by various international agencies like IUCN, WWF and UNESCO (Rehman, 2006). The Stockholm Declaration (1972) stressed the world community to protect the representative area of all ecosystems available in the concerned country (Natural Resources Canada, 2010). All these factors contributed to the global increase in the number of protected areas and their coverage.

2.3.2 Current trends in development of protected areas

There are more than 200 different names used for various types of parks and protected areas around the world (Phillips & Harrison, 1999). Some of the most common terminologies are national parks, provincial parks, wildlife sanctuaries, game reserves, conservancies, etc. In Australia, 45 different names are used for different protected areas (IUCN, 1994), even familiar designations like national parks "mean different things in different countries" (Phillips & Harrison, 1999, p. 13). Thus, for bringing an order to these terms, IUCN characterizes the parks and protected areas under different categories as mentioned in Table 2.1.

Table 2.1: IUCN categories of protected areas		
Category	**Name of category**	**Managed mainly for**
Ia	Strict Nature Reserve	science
Ib	Wilderness Area	wilderness protection
II	National Park	ecosystem protection and recreation
III	Natural Monument	conservation of specific natural features
IV	Habitat/Species Management Area	conservation through management intervention
V	Protected Landscape/Seascape	landscape/seascape conservation and recreation
VI	Managed Resource Protected Area	the sustainable use of natural ecosystems

The priorities assigned to various objectives in different categories of protected areas are outlined in Table 2.2.

Table 2.2: Potential primary management objectives, by category of protected areas							
Objectives	**Ia**	**Ib**	**II**	**III**	**IV**	**V**	**VI**
Scientific research	1	3	2	2	2	2	3
Wilderness protection	2	1	2	3	3	NA	2
Preserve species and genetic diversity	1	2	1	1	1	2	1
Maintain environmental services	2	1	1	NA	1	2	1
Protection of natural / cultural features	NA	NA	2	1	3	1	3
Tourism and recreation	NA	2	1	1	3	1	3
Education	NA	NA	2	2	2	2	3
Sustainable use of natural ecosystems	NA	3	3	NA	2	2	1
Maintain cultural / traditional attributes	NA	NA	NA	NA	NA	1	2
1 = Primary Objective 2 = Secondary objective			3 = Acceptable Objective 4 = Objective Not Applicable				

<div align="right">(Source: Phillips & Harrison, 1999)</div>

Except for Barbados and Yemen, all countries have developed a formal system for protected area legislation and designated areas under the protected area system (Nation Master, 2010). The areas declared as protected range from 0.03% in Afghanistan to 43.1% in Ecuador (Nation Master, 2010). Figure 2.1 indicates the percentage of designated protected areas in various countries.

Figure 2.1:Coverage (%) under protected areas in various countries
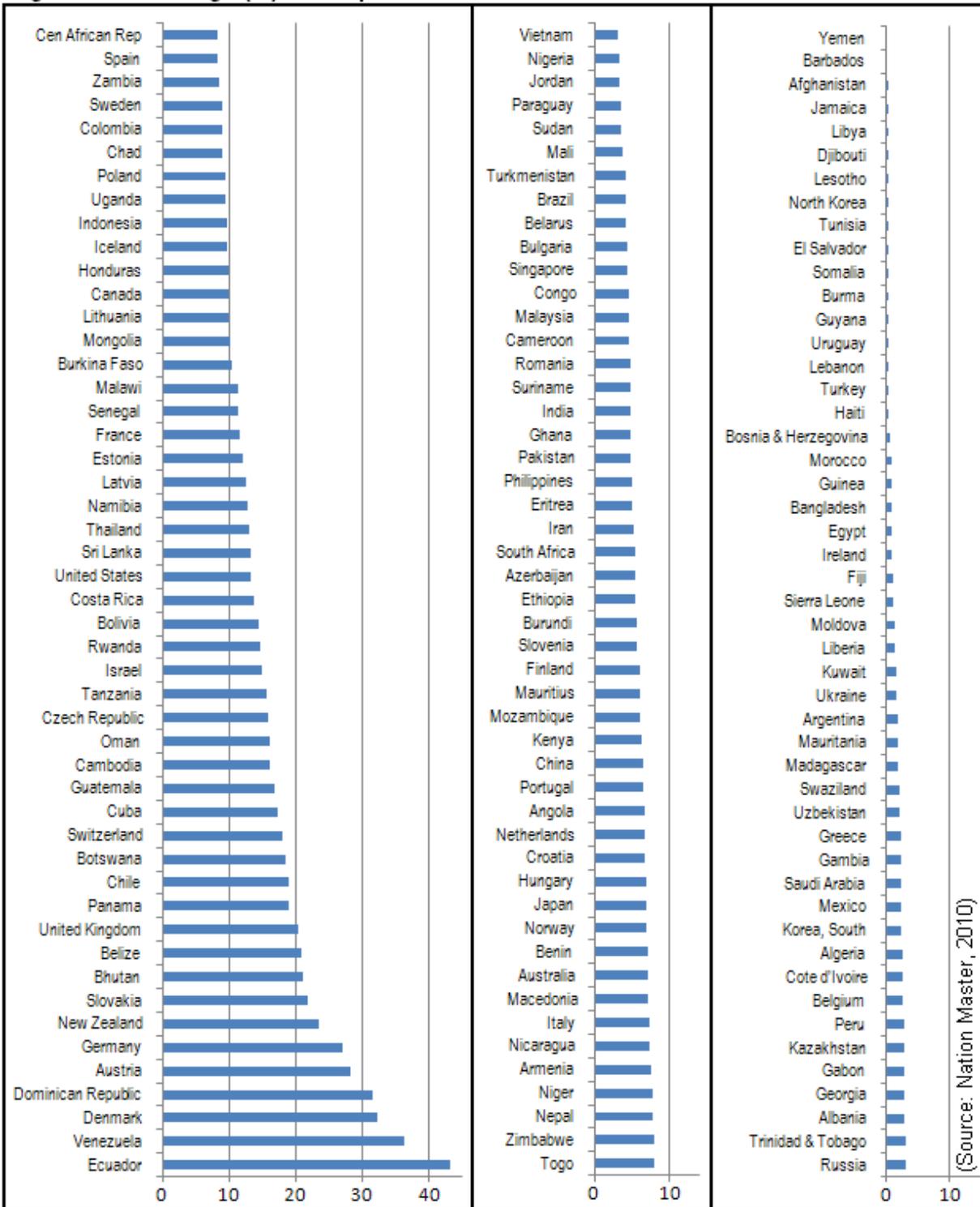
Overall, the global protected area estate has grown dramatically (Mcdonald *et al.*, 2009). It is estimated that currently more than 12% of the Earth's land surface is under terrestrial protected areas (World Database on Protected Areas, 2010), in comparison to the 1950s, where

less than 0.5% of the Earth surface was under protected areas (Mcdonald *et al.*, 2009). Similarly, there are 104,791 protected areas so far listed in the World Database on Protected areas, which globally spread over an area of 20 million sq km (CBD, 2010). However, it is believed that certain specific ecosystems are either left underrepresented like marine protected areas (CBD, 2010), or totally omitted even in countries with highly designated protected areas (Dudley, Gujja, Jackson, Jeanrenaud, Oviedo, Phillips, Rosabal, Stolton & Wells, 1999). The 10 largest protected areas of the world are outlined in Table 2.3.

Table 2.3: Largest protected areas of the world		
Name of protected area	**Country**	**Approx Area (million hectares)**
Northeast Greenland national park	Greenland	97.2
Ar-Rub'al-Khali wildlife management area	Saudi Arabia	64
Great Barrier Reef marine park	Australia	34.5
Hawaiian Islands' Coral Reef ecosystem reserve	United States	34
Amazonia forest reserve	Colombia	32
Qiang Tang nature reserve	China	25
Cape Churchill wildlife management area	Canada	14
Northern Wildlife management zone	Saudi Arabia	10
Alto Orinoco-Casiquiare biosphere reserve	Venezuela & Bolivia	8
Vale do Javari indigenous area	Brazil	8

(Source: UNEP/GRID-Arendal, 2009)

Similarly, some of the common threats faced by the protected areas throughout the world are indicated in Figure 2.2.

Figure 2.2: Common types of threats to protected areas

Impacts on Protected Areas

- Human migration
- Livestock grazing
- Invasive species
- Watershed impacts
- Political opposition
- Impacts of conflict
- Criminal activity
- Tourism
- Transport links
- Pollution
- Climate Change
- Isolation

External impacts on the protected area

- Settlement
- Agriculture
- Bushmeat hunting
- Trophy hunting
- Fishing
- Non-timber forest product collection
- Fuelwood
- Fodder collection
- Fire
- Logging for local use

Internal impacts within the protected area

- Bushmeat trade
- Animal trophy
- Commercial fishing
- Wildlife products (coral, aquarium fish, plants etc)
- Timber
- Commercial fuelwood trade
- Fossil fuels
- Other minerals

Resource exports from the protected area

(Source: Carey, Dudley & Stolton, 2000)

2.3.3 Planning and management of protected areas

The planning and management of protected areas are different in different countries of the world. These areas are managed through different models across the world in line with the priorities and national needs of the country, and according to the differences in the concerned institutional, legislative and financial support within the country (Khan, 2004). Eagles (2008) stated that 36 different models can be identified on the basis of three decisive factors[3]. However, in the literature, the emphasis is not on the combinations of factors identified by Eagles (2008), but the emphasis is mostly on two strategic models: 'inclusive' and 'exclusive' (Bhattacharya, 2004; Borrini-Feyerabend, 1996; Kiss, 2004; Lane, 2001; West & Brechin, 1991). These models emerged during the 1960s and 70s for the management of protected areas (Borrini-Feyerabend, 1996; West & Brechin, 1991). Some scholars consider these models to be polar opposites (Bhattacharya, 2004; Lane, 2001), whereas others consider these to be 'alternative', that can also be 'complementary' sometime (Kiss, 2004).

2.3.3.1 Exclusive model

In the literature, this model is also named as authoritarian protectionism (Wilshusen, Brechin, Fortwangler & West, 2002), exclusionary conservation (Kothari, 2008), fortress conservation (Jones & Murphree, 2004), authoritarian protectionist approach (Brechin, Wilshusen, Fortwangler & West, 2002) or biocentric approach (Jones & Murphree, 2004). This model is philosophically grounded in the intrinsic value of nature and biodiversity, and the primacy of biodiversity over cultural and social diversity (Jones & Murphree, 2004; Lane, 2001). Historically, such approaches were largely adopted in the US and later replicated extensively in the countries of the South (Borrini-Feyerabend, 1996). In this model, the planning and management of the protected areas are with centralized agencies, and the surrounding communities are excluded from the affairs of the park. This model aims to keep out local interests (Shahabuddin, 2001), and thus "excludes resident people from within protected areas, restricts human access to them, and prohibit customary use rights" (Bhattacharya, 2004, p. vii). This model normally emphasizes creation of protected areas, imposing bans on hunting and prohibiting trade in wildlife products (Kiss, 2004). It is believed that this model is generally successful in preserving areas of wilderness and scenic beauty (Borrini-Feyerabend, 1996). According to this approach, the interests of local residents are considered to be "irreconcilably opposed to the logic of conservation" (Bhattacharya, 2004, p.vii). In this approach, the options

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[3] i.e., ownership of resources (governmental, non-profit and for-profit corporation), sources of income (taxes, user fees, charges and donations) and management body (governmental agency, a parastatal, non-profit entity and for-profit corporation).

range from an open anti-participatory attitude to the outright resettlement of resident communities (Borrini-Feyerabend, 1996).

2.3.3.2 Inclusive model

This model is also referred to as the anthropocentric approach or co-management in the literature. This model "opposes total exclusion, argues for the rights of resident people within the forests, and sees no ineluctable hostility between humans and animals" (Bhattacharya, 2004, p.vii). It stresses "the inclusion of local communities, neighbours, NGOs and other stakeholders" to take part in the "planning and decision making" of protected areas (Hockings *et al.*, 2000, p. 47). It is believed that conservation objectives will not be achieved if they exclude the local communities from participating in the planning and implementation stages (Beresford & Phillips, 2000b; Lane, 2001; Menon, Singh, Shah, Lele, Paranjape & Joy, 2007; Sammy & Opio, 2005; Shahabuddin, 2001) and if they do not address the needs of the local populations, who were the traditional users of the resources (Ross & Wall, 2001). This model values biodiversity in terms of its social utility and emphasizes conservation strategies that integrate protected areas into the social and cultural fabric of the region in which they are located (Lane, 2001). This model "considers the politics of total exclusion to be ecologically unsound, practically unviable, and socially unjust" (Bhattacharya, 2004, p. viii). Historically, this model was largely adopted in Western Europe, whereby the interests of locals were essential in the management of protected areas (Borrini-Feyerabend, 1996). This model gained popularity after the 1982 Bali World Parks Congress (Menon *et al.*, 2007; Swatuk, 2005) and, thus, the traditional conservation approaches based on 'no-use' were replaced by approaches based on 'wise use' and 'sustainable use' (Swatuk, 2005). The success of this approach is more in those protected areas which include human residents and affect local livelihood in important ways (Borrini-Feyerabend, 1996).

2.3.3.3 Critique – Inclusive vs. Exclusive models

The proponents of the exclusive model argue that their approach is more effective in conserving the biodiversity (Reid, Fig, Magome & Leader-Williams, 2004). They believe that the protected areas are safe havens for biodiversity and term their counterparts as unscientific and accuse them of misrepresenting the facts for political reasons (Reid *et al.*, 2004). They think that the perception about parks providing a home and livelihood to the people conflicts with the concept of a national park (Terborgh, 1999). They object on the conservation agencies and argue that due to their inability to "grasp the stick of enforcement", these agencies "turned to the

carrot of economic assistance" (Terborgh, 1999, p. 164). They suggest that the future of the wild lands will be secured if the government controls them (Terborgh, 1999).

On the contrary, the proponents of the inclusive model are of the view that in the exclusive model the utilization of biological resources by locals is a threat and thus the removal of people is seen as the best solution for preserving protected areas (Eghenter, 2003; Persoon, Est & Sajise, 2003). They argue that in an exclusive model, managers fail to consider the interaction between the forest, wildlife and the humans (Rogers, Jalal & Boyd, 2008) and, thus, the locals are alienated from conservation programs and denied access to the necessities of life (Saberwal, 2000). Critics, thus, claim that the exclusive model is "imposed by those who have an adequate means of livelihood" on those "who are already living on the edge" (Kothari, 2008, p. 23). They assert that such a management style denies the poor the use of natural resources without providing any alternative means of livelihood and, thus, this model is inherently confrontational, socially as well as politically unsustainable, (Saberwal, Rangarajan & Kothari, 2001), often neither politically feasible (Brandon & Wells, 1992; Pandey & Wells, 1997) nor ethically justifiable (Kothari, 2008).

The proponents of the inclusive model claim that the exclusive model has repeatedly failed due to the retaliatory actions of the alienated disempowered communities and their conflicts with the staff of conservation agencies (Gizewski & Homer-Dixon, 1996; Kaur, Silori, Chowdhury & Khalid; 2009; Kothari, 2008; Schroeder, 2000). This is besides the increasing cases of anonymous crimes e.g., increased poaching, illicit tree felling, induced fires and killing of wildlife (Kaur *et al.*, 2009; Saberwal, 2000; Schroeder, 2000; Shahabuddin, 2001). The staff of park agencies may deter illegal activities to a certain extent (Stern, 2001), but they cannot enforce the unpopular exclusion policies on a sustained basis (Saberwal, 2000).

Although its proponents argue that conservation of biodiversity is possible through the inclusive model (Lane, 2001), in reality the exclusive model has spread most extensively, specifically in the southern countries without the social context in which the protected areas were being developed (Borrini-Feyerabend, 1996). Similarly, the exclusive approach has successfully conserved the important biological values in many parts of the world (Persoon *et al.*, 2003). Likewise, the proponents of the inclusive approaches argue that for achieving the overall conservation goals, it is imperative to respect the rights and aspirations of the local communities (Stern, 2001). They suggest that this is possible through a co-management approach, because through participation of local communities, much more can be achieved with much less (Rahnema, 1990).

2.3.4 Transformation in planning and management of protected areas

The overall understanding and management of the protected areas has been totally transformed during the last few decades (Hanna, Clark & Slocombe, 2008), and it is believed that biodiversity conservation in the long-term is neither possible through "gun and guards" (Kothari, 2008, p. 24) nor through "fence and fines" (Songorwa, 1999, p. 2061). It is further believed that 'the era of expert-knows-best decision-making is all but over' (Berkes, Armitage & Doubleday, 2007; Holling & Meffe, 1996; Ravetz, 2003). Critics argue that the exclusive model represents the traditional colonial approach (Van Schaik & Rijksen, 2002), and it has violated human rights (Kothari, 2008) by exacerbating hardship among many communities (Timko & Satterfield, 2008). They articulate that without winning the "hearts and minds" of the local communities, "conservation is at best a means of buying time" (Beresford & Phillips, 2000, p. 17).

Alternatively, in many parts of the world, participatory decision-making is becoming more common as an alternative to the exclusive models (Dearden *et al.*, 2005; Gallopín, Funtowicz, O'Connor & Ravetz, 2001). There is an increasing trend to integrate social and economic concerns with the ecological elements in management of parks and protected areas (Berkes, 2004; Borrini-Feyerabend, Pimbert, Farvar & Kothari, 2004; Ghimire & Pimbert, 1997; Hanna *et al.*, 2008; Hulme & Murphree, 1999; Western, 2000). Critics come with a number of different reasons for this transformation. The reasons put forward for the transformation in the planning and management of protected areas are outlined in the Table 2.4.

Table 2.4: Reasons for the transformation in the planning and management of protected areas
• The limited success of the exclusive model in fulfilling its promise (Berkes, 2004; Kothari, 2008; Persoon & Est, 2003).
• The growing recognition that the traditional top-down approach has limited potential to transform existing patterns of social integration and resource use (Vira & Jeffery, 2001).
• The growing realization that nature is complex (Levin, 1999; Murphy, 2006; Murphy, 1999) and natural processes are seldom linear and predictable and centralized management is a poor fit for complex systems (Berkes, 2004)
• The spread of the process of democratization in many countries, which stresses on giving greater prominence to local interests (Persoon & Est, 2003).
• The conservation history which is deeply entwined with injustice, exclusion and dislocation, and the alienation of local communities living in and around the protected areas, as once the local communities are denied the access to fulfill their necessities from resources of the protected areas, then it is difficult for the state to enforce such unpopular policies on sustained basis (Algotsson, 2006; Saberwal, 2000).
• The effort to provide an opportunity of a higher level of public participation (Oviedo & Brown, 1999).
• The difficulty faced by single agencies in managing the resources in a way that is sensitive to the needs of multiple stakeholders (Anderson *et al.*, 1998; & Vira & Jeffery, 2001).
• The insight that government agencies are unable to ensure the ecological and productive integrity of natural resources merely on the basis of protection and enforcement (Nurse &

Kabamba, 2001; Vira & Jeffery, 2001).
- The result of changes in epistemological and ontological aspects of the ecological sciences, as evident by the recent movement from traditional science to 'post-normal' science, and the wider shift from a state-driven development approach to the more 'communitarian' and civil society driven development (Menon, 2007; Shultis & Way, 2006).
- The advocacy of the co-management approach by strong environmental NGOs (Persoon & Est, 2003).
- The perception of the donors and certain governments that the participation of the local populations and indigenous groups, in the current situation of environmental deterioration, can be reversed (Jeffery & Vira, 2001; Persoon & Est, 2003).

Consequently, the traditional concept of protected areas, as islands which are isolated from the "surrounding areas and neighbouring communities" is transformed by the perception that "effective management in and around protected areas must account for human use of natural resources" (DeFries *et al.*, 2007, p. 1034). The proponents of this transformation insist on a need for a fundamental shift in the way development and the relations between society and nature are approached. They add that for sustainable development, it is imperative to constructively articulate the top-down approach with the bottom-up or grassroots initiatives (Gallopín *et al.*, 2001), as such initiatives place the control of the developmental agendas into local hands (Tao, 2006; Wall, 2002). This transformation is labelled as the "new paradigm" for protected areas (Beresford & Philips, 2000, p. 17) and "paradigm shift" in the literature (Phillips, 2003, p. 6; Hanna *et al.*, 2008, p. 21). Participation is being considered as an integral part of this "new paradigm" (Vira & Jeffery, 2001). International assistance programs are no longer supporting the policy of excluding people from parks (Van Schaik & Rijksen, 2002).

2.3.5 Criteria for evaluating the effectiveness of models in various situations

The decision about using exclusive or inclusive models in protected areas, specifically in the context of developing countries, is still considered to be a contentious issue (Stevens, 1997; DeFries *et al.*, 2007). Despite better attempts and investments in community-based conservation, there is a greater concern that it is not working (Berkes, 2004). Rather "the emphasis on 'community' and 'participation' is diluting the conservation agenda" (Berkes, 2004, p. 626). Keeping in view the problems associated with different models, there is a need to make decisions regarding preferring any conservation model on solid grounds based on site-specific (Hackel, 1999) and place-based factors (Berkes, 2004). The effectiveness of each model varies with the degree of different social, economic, political and environmental factors in the context of each protected area. The following factors affect the suitability of any model and need to be appropriately considered in the course of decision-making:

2.3.5.1 Social structure within the country

The experts recommend that while preparing plans and policies for protected areas, due regard should be given to the social structure of the area (Beresford & Phillips, 2000). Based on variations in public participation and centralization within the society, one of the founding fathers of classical sociology, Karl Mannheim (1935), recognized four different social structures as mentioned in Figure 2.3. Those are 'Democratically planned society' which results from high levels of participation and centralization, 'Dictatorship' which results from low levels of participation and high levels of centralization, 'Anarchy' which results from high levels of participation and low levels of centralization, and 'Anomie' which results from low levels of participation and centralization.

Figure 2.3: Social structures

High levels of Centralization

Low levels of Participation

Dictatorship

Democratically planned society

Anomie

Anarchy

High levels of Participation

Low levels of Centralization

(Based on Stiftel, 2000)
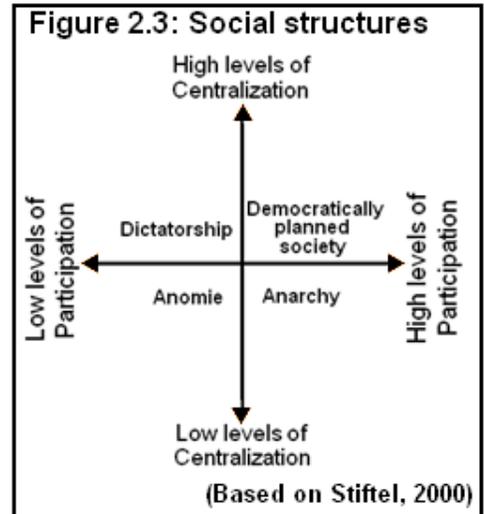
According to Mannheim, planning is necessary in free and open societies, yet, the major concerns are who are responsible for planning and what sort of social structures is it under? It is believed that democratization helps in development of community based conservation programs (Hackel, 1999; Western & Wright, 1994). Similarly, it is believed that in places which have a history of top-down political regimes, the locals consider themselves to be voiceless (Wismer & Mitchell, 2005) and, thus, it is relatively difficult to develop inclusive models. Likewise, in those countries which are under civil or military dictators, the participation of locals cannot be easily ensured in the planning processes. Pakistan is an emblematic example of such a country, as it got independence during 1947 and in the ensuing 64 years of history, military dictators have ruled the country for 33 years. Consequently, in such circumstances, the level of centralization remained much higher than the levels of public participation. Critics, however, warn that conservationists should not assume that increased democracy and decentralization would benefit the conservation efforts (Hackel, 1999). This can be a severe problem if the locals believe that "it is wrong to place the needs of wildlife above those of people" (Hackel, 1999, p. 730).

2.3.5.2 Literacy rate and environmental consciousness

A mature level of civic literacy among a widely informed public is necessary for collaborative planning (Brand & Gaffikin, 2007). In developing countries however, the literacy rate is relatively low compared to developed countries. Thus, the countries with lower literacy

rates and environmental consciousness have low chances of success of the inclusive model of planning and management of natural resources. According to some, even the exclusive model is more successful when the masses have better environmental consciousness as they are more interested in long-term environmental benefits (Briassoulis, 1989). According to Khanum and Gilani (2005) the low rate of literacy is the major constraint in creating conservation awareness among the local communities living around Ayubia National Park, which is the focus of the research study. Gizewski and Homer-Dixon (1996) consider environmental consciousness to be missing within both the Pakistani society and the government; moreover the overall adult literacy rate is quite low and stands at 55% (UNICEF, 2010), whereas the literacy rate for girls is 26% (UNESCO, 2010). However, the independent sources and the experts do not agree with government claims and they place the overall literacy rate at 26% and those of girls and women at 12% (UNESCO, 2010). Similarly, in the Khyber Pakhtunkhwa Province, where the research is being undertaken, the literacy rate estimated to be 17% (GoNWFP, 2007). Environmental consciousness is also lacking among the masses due to the low literacy rate and the low priority given by the government (Niaz, 2008). Development of any model for protected area management should consider and seriously weigh these factors.

2.3.5.3 Socio-economic conditions of the country

About 75% of the poor in developing countries live in rural areas (World Bank, 2007; World Resources Institute, 2005) and their livelihood mostly depends on subsistence agriculture, livestock or extraction of natural resources (Kiss, 2004). Although the level of rural poverty has declined globally, it still remains extremely high and tenacious in South Asia and Sub-Saharan Africa (World Bank, 2007). Experts believe that the outcomes of community-based conservation programs may not necessarily be positive in such countries (Hackel, 1999; Swatuk, 1995). The majority of the global biodiversity is found in the developing countries (Andresen *et al.*, 2009; Hempel, 1996; Kiss, 2004; Smith *et al.*, 2003). Likewise, rural areas in these countries are considered to have less economic, but often great environmental value to wider national and global interests (Swatuk, 2002) as they possess most of the renewable natural resources and act as a focal point for governance and management (World Resources Institute, 2005). However, the nexus of poverty and concentration of global biodiversity in these areas create severe conflicts among the different stakeholders in the developing countries, where population is increasing and resources are decreasing rapidly (Gizewski & Homer-Dixon, 1996). Pakistan is a classic example of such a country, being increasingly vulnerable to various environmentally induced conflicts (Gizewski & Homer-Dixon, 1996). According to Hackel (1999),

in those societies which struggle with poverty, long-standing economic stagnation, rapid population growth, and environmental deterioration, the chances of community-based conservation may not occur as readily or as successfully as its advocates would hope.

2.3.5.4 Social segregation

Success or failure of the inclusive model largely relies on the character of segregation within the society. Borrini-Feyerabend (1996) stated, "communities are complex entities, within which differences of ethnic origin, class, caste, age, gender, religion, profession and economic and social status can create profound differences in interests, capacities and willingness to invest in the management of natural resources". Neumann pointed out that "rural communities are often politically fractured and socially differentiated in complex ways" (2000, p. 231), and sometimes local elites marginalize women and households of lower class/caste in the decision-making process at the community level (Colchester, 2003). In societies where segregation is based on age, ethnicity, wealth, gender, communal or class system community-based conservation programs are less successful and sometimes such segregation can have a negative effect on the environment (Pretty, 2003). Rural communities in Pakistan are facing the same dilemma as social differentiation based on ethnicity and class become hurdles in treating the community as a homogenous entity.

2.3.5.5 Government polices and willingness of the stakeholders to accept and bring change

Another factor that contributes to the success or failure of either of the two models is the nature of the overall government policies and laws. Similarly, weak or improper environmental legislation can influence both the models. However, as the interaction in the case of the inclusive model is with diverse stakeholders, this model is subject to and influenced by various policies and laws (Swatuk, 2005). Therefore, willingness of the empowered actors within a state is also important to switch from a traditional protectionist approach to a co-management approach, as this will include the reversal of the historical order of things (Swatuk, 2005). As the government servants are "one of the main groups affected by the change to participatory management" because they were earlier able "to exploit their position" either by extracting bribes or ensuring public order in a particular way (Jeffery & Vira, 2001, p. 7), so they may resist the move towards an inclusive model. Critics argue that without proper institutional reforms, the implementation of the inclusive model is questionable at the hands of those government officials who represent the organizations where the protectionist style remained the norm for centuries (Ali, Benjaminsen, Hammad & Dick, 2005). This is very true for Pakistan as well, where the

government agencies responsible for managing the natural resources (specifically the Forest Department) are known for resisting the devolution of the control over natural resources (Ali & Benjaminsen, 2004; Ali *et al.*, 2005; Blaikie & Muldarin, 2004; Gohar, 2002; Ives, 2004; Knudsen, 1996; Nyborg, 2002). Therefore, potential opposition by agencies and powerful individuals should be evaluated before trying the co-management approach (Borrini-Feyerabend, 1999). Proper institutional reforms must be carried out for ensuring the implementation of the inclusive model.

2.3.5.6 Revenue generation and benefit sharing from conservation

Revenue generated from conservation initiatives may not be imperative under the exclusive conservation model; however, it has a profound impact on the success or failure of the inclusive model. According to Swatuk (2005), the revenue generated from conservation programs is considered as a measure of success of the inclusive approach. Hackel (1999) stated that the inclusive model is more realistic in those areas which support big game animals. He added that, "areas without big game animals will not have the revenue-generating potential required for conservation-based projects that rely on revenue sharing because there will be insufficient financial reward" (p. 731). The revenue generated from the trophy hunting of Markhor (*Capra falconeri*) in Pakistan is an excellent example, and it has a deep impact on the success of the inclusive model. In 2009, each permit for trophy hunting of Markhor was sold for US $ 81,000. Moreover, 80 percent of the revenue goes to the local communities and 20% goes to the respective government agencies as an administrative fee (UNEP, 2011). In the presence of such potentials, the inclusive model has more chances of success.

2.3.5.7 Management objectives

Depending on the nature of conservation objectives of the protected areas, either an inclusive or exclusive model may be opted. If the conservation goal is to preserve the wilderness or scenic beauty of the area, or when the conservation demands quick decision and actions, then the exclusive model is a better choice (Borrini-Feyerabend, 1996). Similarly, when the focus is to conserve certain specific endangered wildlife of the area, the exclusive model is a better option. The inclusive model in such circumstances may not be a good choice because of two dilemmas. First, the protected area needs to be large enough to maximize the degree to which its corresponding flora and fauna retain their integrity, thus minimizing the risks of species extinctions and maximizing the representation of the corresponding ecological communities and related species (Green & Paine, 1999; Soule, 1983; Wilcox, 1984). Secondly, in order to protect

and preserve large areas of natural habitat for wildlife, the land use options of the local communities will be reduced forever (Hackel, 1999). Thus, co-management agreements cannot be achieved, unless the conservation goals of protected areas are compromised (Borrini-Feyerabend, 1999).

2.3.5.8 Time-period for bringing change

Time is an important factor that determines the choice of either of the two models. In inclusive models, the maturity of community organizations is also an important factor for its success, and thus this model should be part of the long-term solutions to natural resource problems (Jeffery & Vira, 2001), as the establishment of proper participatory institutions may need 10-15 years for changing the laws and building the relevant institutions (Berkes, 2004; Thomas, Gardner & DeMarco, 2001). Thus, the success of the inclusive model in the short-term conservation projects is questionable due to limitation of time needed for maturity of the local-level institutions. One of the reasons for failure of most of the inclusive programs in Pakistan is due to the short-term projects, which on one hand weaken the existing exclusive model, and on the other are unable to make appropriate amendments in the governance structures and also to give enough time to local organizations to reach maturity and develop social capital.

2.3.5.9 Human and financial resources

The availability of adequate human and financial resources is vital for the success or failure of either of the two conservation models. In the exclusive model, human and financial resources are mostly required for effective and efficient law enforcement. Similarly, the success of this model is mostly dependent on the mobility of enforcement staff, most of whom are generalists. Whereas, in the inclusive model, the success mostly depends upon specialists who can handle diverse stakeholders of different backgrounds and interests. Thus the availability of proper financial and human resources within the organization is an important factor for the success of the co-management model (Borrini-Feyerabend, 1999). In Pakistan, conservation agencies are normally short of competent staff, technical expertise and funds, because the conservation efforts are not high on the governmental agenda.

2.3.5.10 Presence and pressure of local people on conservation areas

Experts believe that most large protected areas have people living within the boundaries and in others, the people live just outside the boundaries (Dudley *et al.*, 1999). Similarly, the people living in or near the conservation areas were traditionally dependent on forests for collection of firewood, fodder and other useful products (Shahabuddin, 2001). Proponents of the

inclusive model believe that the exclusive model has done "major injustice" to such local communities, by depriving them of "their basic resources" (Persoon & Est, 2003, p. 3). Therefore, the exclusive conservation model may not be a suitable choice, when the people are living within the protected areas and their livelihood is completely dependent upon the protected area and its resources. In such circumstances, both the park resources as well as the management are seriously affected due to park-people conflicts.

2.3.5.11 Geography of the terrain

Similarly, the success of any conservation model also depends upon the topography and geography of the terrain. According to Borrini-Feyerabend, Pimbert, Farvar and Kothari (2007), mountain environments are unique and they present unique difficulties for the development of co-management because of large territories, sparse population, difficult terrain and other barriers. However, in the long-term, the topography may not be a problem once the communities are organized and play an active role in the conservation efforts. In those mountainous areas where the nomads visit during a specific short period, the success of co-management is affected, until and unless they are involved, which is a challenging task in the given time and mode of life.

2.3.6 Which model holds the most promise and why?

As pointed out by Eagles (2008), "There is no one, universal approach that is suitable in all situations" (p. 58). So, the selection of any model in a certain region or country can be based on the factors discussed above. Table 2.5 can help in reaching an appropriate site-specific and place-based decision regarding the planning and management of protected areas.

Table 2.5: Criteria for evaluating the effectiveness of models in various situations			
	Inclusive model (Co-management)		Exclusive model
	More chances of success	Less chances of success	Chances of success
Social structure	In democratic settings (Western & Wright, 1994).	Under dictatorship (Wismer & Mitchell, 2005), anarchy or anomie.	Comparatively more chances of success under dictatorship and less chances of success in democratic setting, anarchy or anomie
Socio-economic conditions	In industrialized countries, where protected areas are conceived as being separate from people (Lane, 2001; McNeely, 1984).	In societies struggling with poverty, economic stagnation, rapid population growth and environmental deterioration (Hackel, 1999; Gizewski & Homer-Dixon; 1996; Swatuk, 1995).	Comparatively less chances of success when due to nexus of poverty and concentration of biodiversity, and the growing human population is dependent upon dwindling resource base (Gizewski & Homer-Dixon, 1996)
Social segregation		In societies having social segregation based on age, ethnicity, caste, class, wealth, gender, etc (Borrini-Feyerabend, 1996; Colchester, 2003; Neumann, 2000; Pretty, 2003).	Comparatively more chances of success in societies having social segregation based on age, ethnicity, caste, class, wealth, gender, community, etc
Literacy rate & environmental consciousness	In societies, where literacy rate is high and the environmental consciousness is more among the masses (Brand & Gaffikin, 2007).	In those societies, where literacy rate is less and the environmental consciousness is rare among the masses.	Comparatively more chances of success in societies where literacy and environmental consciousness is more among the masses (Briassoulis, 1989). The chances are also more in societies, where literacy rate is less and environmental consciousness is lacking or limited.
Revenue generation from conservation	In areas, where enough revenue is generated from the conservation efforts (Hackel, 1999; Swatuk, 2005).	In areas, where little revenue is generated from the conservation efforts.	
Government polices and willingness of stakeholders	In areas where the government policies and laws are complementary to support the inclusive model (Borrini-Feyerabend, 1999; Swatuk, 2005).	In areas where the government policies and laws are weak and they run against the spirit and methods of the community based conservation (Gizewski and Homer-Dixon, 1996; Swatuk, 2005).	
Human and financial resources	In countries, where the concerned agency have enough financial and human resources to promote co-management model (Borrini-Feyerabend, 1999).	In areas where the park agency staff face severe shortage of financial and human resources.	Meagre chance of success in countries, where the concerned park agency staff face severe shortage of financial and human resources to perform their enforcement duties.
Conservation importance			More successful in areas which requires more protection of the biodiversity against environmental degradation.
Time-period for bringing change	In long-term set-up having complete support of the government agencies.	In short-term project set-up or donor initiatives.	
Geography of the terrain		In mountainous tract (large territories, sparse population, difficult terrain (Borrini-Feyerabend *et al.*, 2007).	Comparatively more chance of success in mountain environment.
Religious beliefs in conservation	In societies, where religious beliefs are integrated in the conservation efforts (Gardner, 2006; Wilson, 2006).		Chances of success are more in societies, where religious beliefs are integrated in the conservation efforts (Gardner, 2006; Wilson, 2006).

2.4 Issues of parks and protected areas in developing countries

Wildlife conservation is a complex and often contentious subject, and there is a lack of consensus among conservationists as to what is to be protected, for, by and from whom (Saberwal, 2000). The bulk of global biodiversity is found in remote rural areas of the developing countries, where poverty is pervasive, access to government programs is limited, and the reliance of resource-dependent communities on natural resources for their livelihood heavily influences the sustainability of protected areas (Pandey & Wells, 1997; Wells, 1992). The local population often degrades resources gradually due to continuous consumption. Critics believe that the biodiversity conservation and management of protected areas are more complex in less-developed areas because of poverty and dependency of the locals on these resources (Danielsen, Burgess, Balmford, 2009; Masozera & Alavalapati, 2004; Matta *et al.*, 2005; Polet, 2003). Similarly, due to ineffective planning, poor governance and lack of financial resources, the protected areas are moving towards a situation best described by Hardin's (1968) "tragedy of the commons". Hardin's theory can be explained in the words of Aristotle as "that which is common to the greatest number has the least care bestowed upon it" (McKinney, Schoch & Yonavjak, 2007, p. 14).

2.4.1 Factors affecting the effectiveness of the models in developing countries

The fundamental question of the Stockholm (1972) and Rio (1992) conferences – "How to respond to urgent environmental problems in a politically, economically and culturally divided world" is still considered to be unresolved (Swatuk, 2002, p. 265). Critics believe that in future many protected areas of the world will undergo increasing pressures because of the land use and socio-economic dynamics of the area where they are located (DeFries *et al.*, 2007), and without proper management of the parks, there is no backstop against extinctions (Van Schaik & Rijksen, 2002). Some of the challenges and constraints that affect the effectiveness of the planning and management models in the developing countries are described below.

2.4.2 Factors internal to the management agency

Agencies responsible for planning and management of natural resources, in general and protected areas in particular, can face the following challenges that affect the effectiveness of the planning and management model:

2.4.2.1 Inadequate institutional capacity

The overall weakness of protected areas agencies in the developing countries, due to scarcity of resources and weak environmental legislation, is a big challenge. Resultantly, conservation does not become a government priority. The problem is severe in those developing countries where both funds and expertise are limited (Danielsen *et al.*, 2009). According to Terborgh (1999), parks in the tropical countries are failing due to weak and ineffective park agencies, and the weakness of park agencies is attributed to the low priority given by the concerned governments. He explained that as the guards are unarmed and lack the authority to arrest violators, so their maximum output is to submit the violation reports to their superiors, who are living far away from the parks. Gizewski and Homer-Dixon (1996) added that in Pakistan, the environmental legislation is weak and the efforts for improving the environment are confronted by old mind-sets, political gridlock, and institutional weakness. In Pakistan, shortage of trained staff is a serious problem faced by the provincial protected areas agencies. Most of the employees are trained in the Pakistan Forest Institute (PFI), which is the only academy providing two years of compulsory training, where the emphasis is on commercial forestry and timber production, rather than protected areas and conservation.

2.4.2.2 Design problems of the conservation projects

Experts believe that most of the conservation projects are designed to conserve the 'resource' being degraded by 'local people'. However, the real outcomes of such initiatives are "increased environmental degradation, increased poverty, and economic marginalization" (Swatuk, 2002, p. 267); and "endless conflicts and dislocation" (Broch-Due, 2000, p. 24). Brandon *et al.* stated "...many of today's field-based initiatives are not living up to their proclaimed potential" (1998, p. 10). They added that "many of the shortcomings in today's conservation projects are due to a belief among conservationists that what they are doing is conservation when, in fact, they are really doing large-scale social interventions in complicated macro-political settings" (1998, p. 11). Although the comprehensive analysis and critique is missing in the protected area literature (Hanna *et al.*, 2008), yet, critics expose that the genuine transfer of powers, as a result of decentralization and devolution, are rare and the "user-group committees often exist in a legal twilight" (Jeffery & Vira, 2001). Similarly, in developing countries, most of the co-management efforts have been tried and implemented in short-term project mode (Menon *et al.*, 2007). However, such projects are considered to be creating disturbance and problems instead of bringing fruitful changes. As Ghimire and Pimbert (1997) pointed out, "when funding is withdrawn, protection and park management activities are

jeopardized" (p. 22). Consequently, despite the funnelling of millions of dollars in the global conservation projects, the outcome specifically those of community-based conservation projects is considered to be mixed or complete failure.

2.4.2.3 Corruption

According to the World Bank report, corruption is present to some degree in all societies; however, such practices are widespread in the developing countries (Gould & Amaro_Reyes, 1985). According to Jabbra and Jabbra (2003), corruption and lack of accountability are common bureaucratic problems of the third world countries. It is a serious problem especially in the tropical countries, where the officials of park agencies accumulate vast wealth through illegal means (Terborgh, 1999). In those countries, where the politicians provide opportunities to the park officials for sharing the "spoils of pillage", the commitment of officials is to exploitation rather than the management (Terborgh, 1999, p. 159). Though accountability of decision makers is an important component of governance, in the protected areas literature, there is little analysis about the accountability mechanisms (Dearden *et al.*, 2005). In Pakistan, corruption is one of the main reasons that affects the effectiveness of the concerned government agencies. The Forest Department in Pakistan is believed to be a corrupt organization and its staff is considered responsible for resisting the devolution of control over natural resources (Akhter, Iqbal & Khalid, 2010; Ali & Benjaminsen, 2004; Ali *et al.*, 2005; Blaikie & Muldarin, 2004; Gohar, 2002; Ives, 2004; Knudsen, 1996; Nyborg, 2002).

2.4.2.4 Limited financial resources of protected areas agencies

Throughout the world, the number, area and coverage of the protected areas have increased considerably during last few decades. During 1950, less than 0.5% of the Earth's land surface was protected (Mcdonald *et al.*, 2009) and now more than 12% of the Earth's land surface is under terrestrial protected areas (World Database on Protected Areas, 2010). Despite this spectacular increase in the coverage of protected areas, the budgets provided to protected areas' agencies never increased with the same trends. This results in the failure to fulfill the required human and financial resources of the increasing estate of protected areas. Globally, there is a common trend of decrease in government funding provided to the protected areas (Dearden *et al.*, 2005; Hanna *et al.*, 2008; Hockings *et al.*, 2000). On a basis of survey conducted in 41 countries, Dearden *et al.* (2005) concluded that between 1992 and 2002, the number, size, complexity and the use of the protected areas had increased along with the responsibilities of the concerned agencies. They added that despite the growth and additional

use of the protected areas system, almost two thirds of the survey respondents felt that budgets had not kept pace accordingly.

2.4.2.5 Paper parks phenomenon

A number of protected areas are 'protected' in name only and such 'paper parks'[4] degrade with time (Dudley *et al.*, 1999) because they have no active management (Brandon *et al.*, 1998). These parks result from ill-planned decisions of conservation agencies either to fulfill their commitments or to show their performance at least on paper. Brazil is considered as the world's tenth-largest economy but it has more 'paper parks' than the park guards in the Amazon (Terborgh & Van Schaik, 2002). Such 'paper parks' are considered to be 'ecological islands' because these are the result of setting aside of the protected area, in an area which was not suitable for declaration in the first place or due to weak or no management of the past. Wasting limited human and financial resources on such 'paper parks' seriously undermines the overall management of the other deserving protected areas.

2.4.2.6 Social experimentation

Instead of building the human and financial capacities of existing weak conservation agencies within the developing countries, new approaches are tested in short-term by different conservation organizations and certain donors. Thus, the fragile environments are subjected to social experimentation, which results in further damage to the environment, weakens control of the government agencies and increases pressure on the natural resource. Many conservation organizations try novel approaches and, in this process, they treat the tropical developing countries as ideal sites for their social experimentation. Similarly, Swatuk (2002) pointed out that the "Western experts have continued to regard non-Westerners as inferior, and non-Western spaces as the proper terrain for social experimentation" (p. 274). Lane (2001) added that due to development of the convergent themes in planning fields, the protected areas acts as empirical testing grounds for these emerging ideas. Brandon *et al.* (1998) therefore suggested that "actions to protect parks need a level of conceptual rigor that moves beyond slogans and stereotypes" (p. 3). Because in the absence of proper legal, administration or regulatory frameworks, such attempts and experimentation are disastrous, especially in the short-term. One such social experimentation is the replication of western stereotypic forms of co-management approaches in traditional societies, without realizing the gulf between the rich and the poor and without endorsing the differences based on caste, class, gender, age or ethnicity.

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[4] The term 'paper parks' refers to those parks that have never been implemented in a proper manner, and which enjoy only a virtual existence as lines drawn on official maps (Hocking, Stolton & Dudley, 2000; Terborgh & Van Schaik, 2002)

2.4.2.7 Inadequate parks planning

A management plan is a basic tool of planning and management of parks and protected areas and is a key focus for public accountability because it holds decision makers accountable (Dearden *et al.*, 2005; Thomas & Middleton, 2004). However, according to a survey by Dearden *et al.* (2005) about protected areas' governance in 41 countries, management plans in many countries have no legal basis. Similarly, experts argue that in many countries, such plans are not even prepared despite designating the protected areas (Beresford & Phillips, 2000). Such inadequate planning is responsible for the global decrease in biodiversity and the inefficiency of protected areas in achieving their objectives.

2.4.2.8 Problems with the Donor funding

Another problem faced by the park agencies is associated with the provision of funds in donor projects. Normally the flow of money is more in the start and it stops immediately in the end. Consequently, the project activities cease when money stops coming. Terborgh (1999) concluded that, in such circumstances, the condition which the project was otherwise intending to ameliorate reverts to the former state, with little or nothing accomplished. Likewise, critics believe the collaborative strategies are considered fragile when they are dependent on the presence of external facilitators (Vira & Jeffery, 2001). There are also issues concerning the irrational expenses allocated in the donor-funded conservation projects. As Ghimire and Pimbert (1997) pointed out, international conservation organizations involved in implementing protected area strategies spend more funds on expatriate salaries, surveys and travelling and much less on capacity building actual field-based conservation activities.

2.4.2.9 Local problems - global solutions

Another dilemma faced by the park agencies is the advocacy of global solutions for local problems. The irony was explained by Swatuk (2002) as "well intentioned conservationists, ecologists, environmentalists and development experts step perhaps unwittingly" into such problematic relationship and accept "an unreflective theoretical framework that brings more harm than good" (p. 271). Likewise, Ostrom added that imposing a simple "ideal" solution from outside "can make things worse rather than better" (Ostrom, 2008). The Millennium Ecosystem Assessment (MEA) conducted a detailed review of the different global ecosystems during 2001 to 2005. One of their recommendations was that the policy makers should strive for solutions for specific niches (Millennium Ecosystem Assessment, 2005; Ostrom, 2008).

2.4.3 Factors external to the management agency

The different external constraints that affect the overall management of the park agencies are as follows:

2.4.3.1 Population pressure - Parks as islands in a sea of humanity

Human population is increasing at an alarming pace. According to the World Population Data Sheet (2009), the natural increase in human population is 158 per minute, whereas the rate of natural increase in population is 2.4% for the least developed countries, 1.7% for less developed countries and 0.2% for the more developed countries. At this rate, by mid 2050, the increase in population will be 100% for the least developed countries, 57% for less developed countries and 7% for the more developed countries. With such a projected increase in population, there will be immense challenges for the conservation of natural resources in both the least developed as well as less developed countries. Terborgh (1999) considers such over population as the "greatest challenge faced by conservation" (p. 17). Critics argue that protected areas are often islands in a sea of humanity (Green & Paine, 1999). It is anticipated that if the current trends continue, the protected areas of Africa will be overrun by a sea of humanity (Olindo & Mbaelele, 1994). This will increase the intensity of conflicts between wildlife and the people.

2.4.3.2 Social unrest and bad law and order situation.

The overall condition of the law and order within the region is another factor that affects the management of park agencies. According to Terborgh (1999), lawlessness is considered as one of the greatest challenges for conservation. In countries where effective law enforcement barely exists, integrity of parks cannot be ensured. The efforts to conserve biodiversity will fail in some countries due to the "combined effects of weak institutions, corruption, and social instability" (Terborgh, 1999, p. 186). Experts believe that in the presence of violent unrest, it is difficult to maintain the agreements of co-management (Borrini-Feyerabend, 1999), because community coherence is at the least and development of consensus in favour of the co-management is next to impossible.

2.4.3.3 Park-people conflicts

It is believed that "virtually no part of the habitable surface of the planet has been without resident people" and without a human utilization process (McNeely, 1996, p. ix). Hence, local communities used the areas now declared as protected areas, for generations (Polet, 2003).

Experts believe that throughout the world, there are failing human livelihoods in and around the protected areas (Hanna *et al.*, 2008). McNeely (1996) claimed that "protected areas are based on a charming myth that nature is separate from people, and that nature is diminished whenever people try to live among it" (p. ix). He added that the establishment and management of protected areas sometimes impose costs on the people who live in and around them by limiting their access to the resources, by increasing crop and personal damage from wild animals, and by increasing the opportunity cost of a loss of using the area for other purposes (McNeely, 1996). Thus, it is believed that in a world where "the bio-physical environment and socio-cultural systems are changing rapidly, conflicts involving protected areas are inevitable" (Lewis, 1996, p. 2).

2.4.3.4 One-size-fits-all approach for generalizing problems and standardizing solutions

Generalizing the problems of protected areas and standardizing the solutions is another challenge faced by the staff of the protected areas agencies. Such 'one-size-fits-all' solution is now globally condemned in the context of problems concerning environmental degradation (Berkes, 2004; Folke *et al.*, 2002; Guha, 1989; Millennium Ecosystem Assessment, 2005; Ostrom, 2008). Conservation planners have therefore to accept the reality that there is no 'one-size-fits-all' planning and management model for natural resource conservation. Experts believe 'one-size-fits-all' management ignores the scale issues, resulting in failure of environmental management regimes (Berkes, 2004; Folke *et al.*, 2002). Reviewing different global ecosystems from 2001 to 2005, the Millennium Ecosystem Assessment (MEA) recommended that policy makers should not generalize the problems and standardize the solutions (Millennium Ecosystem Assessment, 2005; Ostrom, 2008). Some ignorant but eager specialists have to realize that in traditional societies (where the literacy rate is low and the involvement of women in out-of-home activities is against the values and norms of the society), female communities cannot be organized at each village level. In northern Pakistan, the local men resisted the involvement of women in development work of the Forest Department, and they accused the department "of being too modern, thus confronting religion" (Steimann, 2004, p. 71).

2.4.3.5 Complications attached to simple questions and terms

Some apparently simple statements are too complex when implemented. Mbolo (2007) stated that though much is known about the stakeholders and their roles in the conservation programs, there are many conflicting results when confronted with the practicality in the field. The 'community' is one of such terms, which is conceived as "images of coherent, long-

standing, localized sources of authority tied to what are assumed to be intrinsically sustainable resource management regimes" (Brosius, Tsing & Zerner, 1998, p. 165). Menon *et al.* added, "Community is idealised as a harmonious and symbiotic entity glossing over internal differentiations of class, caste, gender and race and the micro-politics that arises as a result of this differentiation" (2007, p. 2). However, according to Berkes (2004) this term "is gloss for a complex phenomenon because social systems are multi-scale and the term community hides a great deal of complexity" (p. 623). He cautioned that within the field it is "often difficult to find a cohesive social group to work with" (p. 623), rather conflicts among the stakeholders are a big issue in community-based conservation initiatives (Swatuk, 2005). Similarly, 'participation' is another term which has many different meanings, and a certain level of ambiguity is attached to it when 'participation' is put into practice (Ananda, 2007; Buchy & Hoverman, 2000). There is no doubt about the importance of participation, but there is little agreement about the process of participation - how to include the public in decision-making processes (Ananda, 2007; Korfmacher 2001). In this regard, Swatuk (2002) suggested that there is a need to address critically some apparently simple questions[5], before formally implementing the community-based conservation programs.

2.4.3.6 The role of Western experts and Western establishments

Another challenge faced by parks agencies, especially in developing countries, is dictation from the Western donors and international conservation organizations. By adopting Western policies, conservation strategies of the developing countries depict Western insights and not their own socio-economic conditions (Guha, 1989; Seth, 1997). Similarly, Terborgh (1999) indicated that various conservation agencies 'bombard' the governments with different suggestions and strategies. The dilemma of such bombardment is severe, when each organization promotes a different approach. Most Western approaches are quite valid but they are not mostly compatible with diverse local demographics of tropical developing countries (Ghimire & Pimbert, 1997). Thus, in this process, both the financial and human resources are wasted, without understanding and appreciating the ground realities. Brandon *et al.* added that, "catchy phrases, slogans, assumptions, and stereotypes have shaped conservation policy, to the detriment of both people and wildlife. Implementing these slogans and basing actions on stereotypes have not led to progress in conserving biodiversity" (1998, p. 3). Thus, the transfer of Western conservation policies to developing countries sometimes can have adverse effects

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[5] Like what is participation? What is community? Who should participate? How to measure participation? How to resolve conflicts that inevitably arise? (Swatuk, 2002, p. 268)

on livelihoods of people living in and around protected areas (Ghimire & Pimbert, 1997). Indian sociologist Ramachandra Guha (1989) argued that the classical approach to conservation as followed by the West is adopted by international conservation organizations like IUCN and WWF. She added that such an approach is the product of a particular culture, specifically White North American, which is embedded in their own historical process. She warned that such an approach cannot be simply exported and imposed on other societies which have completely different history, culture and norms.

2.5 Summary

In this chapter, I have described the concept of parks and protected areas and how it evolved over time. The discussion was followed by the current trends in development of protected areas throughout the world. Afterwards, I explained the two key models of planning and management of protected areas and the current trends of transformation from the exclusive conservation model to a more inclusive conservation model. The current trends in parks and protected areas discourage the conventional approaches of 'gun and guards' as well as 'fence and fines' and demands the involvement of the all the stakeholders. The current trends emphasize on winning the hearts and minds of the local communities for the sustainable use of natural resources. The various reasons for such transformation have been listed in Table 2.4. After explaining the current trends, I offered critiques on both the models.

As a result of diverse perspective of both schools of thought and keeping in view the strengths and weaknesses of both the models, I illustrated the criteria to evaluate the effectiveness of these models under different situations. I focused on using the site-specific and place-based factors for reaching a proper decision for planning and management of protected areas. In this regard, 11 different factors have been identified. Likewise, owing to the completely different nature of developing economies and the dependency of people on parks in developing countries, it is important to understand the issues of parks and protected areas within the broader set-up of developing countries. So, in the final section I expressed various factors affecting the effectiveness of the park agencies in the developing countries. I focused more on Pakistan, as the case study area is located there. All these discussions help in improving the understanding about the parks and protected areas, the key models used in parks and protected areas and their effectiveness under different circumstances. It also helps in increasing the existing knowledge base about the various factors affecting the effectiveness of the planning and management model in developing countries. In the next chapter, I discuss the theoretical frameworks that guide the research.

Chapter 3

Transforming theory and practice of environmental governance: A theoretical framework

3.1 Introduction

This chapter deals with the background information and provides theoretical frameworks, which guide this research study. These are mostly interrelated concepts and theories, which are indispensable, while dealing with the planning and management of natural resources in general, and the parks and protected areas in particular. These concepts serve as a guide in undertaking the research and leading it in appropriate direction. These concepts include planning frameworks, conservation planning and management, participation and co-management, environmental governance and environmental education. This chapter connects these concepts as they are presented in the field of protected areas planning and management, specifically in the context of developing countries.

Section 3.2 deals with the concept of planning and planning theories. This section also discusses the taxonomy of the planning theories. Finally, it examines the planning frameworks used throughout the world at different points in time. It elaborates on the evolution, classification and salient features of the various planning theories and, finally, compares the major steps, evaluations, assumptions, suitability, reliance and limitations of the various theories. Section 3.3 examines different features of the co-management approach. Its different types and forms that prevail globally are outlined, followed by the advantages and disadvantages of co-management. Afterwards, the concept of environmental education is discussed in detail in the next section 3.4. Finally, the concept of good governance is examined in section 3.5.

3.2 Planning frameworks: Classification and salient features of planning theories

Planning is considered as an ill-defined field (Archibugi, 2004; Lawrence, 2000) and John Dyckman regarded the discussion about the question of – 'what is planning?' as a literature of controversy (Alexander, 1992). Table 3.1 presents how the term 'planning' has been defined in the literature. One of the component elements of the definition of a profession is that its skills are based on theory (Faludi, 1973). Moreover, the prestige of any profession is directly dependent upon the apparent degree of theoretical knowledge associated with that very profession (Bengs, 2005). However, critics argue that, like the term 'planning', it is equally

difficult to define 'Planning theory' (Archibugi, 2004). Table 3.2 presents how the term 'planning theory' has been defined in the literature.

Table 3.1: Various definitions of planning

Definition	Source
"The application of scientific method - however crude - to policy making" (p. 6). "The art of making social decisions rationally".	Faludi (1973)
"The application of foresight in formulating and implementing programs and policies" (p. 387).	Hudson (1979)
"A process by which society controls and directs itself" (p. 18-19).	Healey (1982)
"The rationality in the public interest".	Weaver *et al.* (1983)
"The deliberate social or organizational activity of developing an optimal strategy of future action to achieve a desired set of goals" (p. 43).	Alexander (1992)
"Attempts to link scientific and technical knowledge to actions in the public domain" "Attempts to link scientific and technical knowledge to processes of societal guidance or social transformation" (p. 38).	Friedmann (1987)
"Professional practice that specifically seeks to connect forms of knowledge with forms of action in public domain" (p. 482).	Friedmann (1993)
"The process by which we attempt to shape the future" (p. 9).	Brooks (2002)
"The intervention with an intention to alter the existing course of events" (p. 6).	Campbell and Fainstein (2003)

Table 3.2: Various definitions of planning theory

Definition	Source
"Substantive" planning theories are concerned about the object of planning. "Procedural" planning theories are concerned about the process of planning.	Faludi (1973)
"Theory (which) explores the planning process and examines its components" (p. 7).	Alexander (1992)
The process component of planning which "guides us through a continuous self-examination of what we are doing, how we are doing it, why, for whom and with what results" (p. 2).	Brooks (2002)
Theory that enquires, "what role can planning play in developing the city and region within the constraints of the capital system?" (p. 21).	Campbell and Fainstein (2003)

In the context of planning theory, the term 'theory' has been used as an umbrella term to encompass "numerous loosely affiliated concepts, themes, and frameworks" (Lawrence, 2000, p. 608). Critics believe that planning theory has a complicated taxonomy (Archibugi, 2004; Bengs, 2005; Law-Yone, 2007). Table 3.3 presents how various professionals have classified 'planning theory' within the literature.

Table 3.3: Taxonomy of planning theory

Classification	Source
Procedural (theory of planning) & Substantive (theory in planning)	Faludi (1973)
Rationalism, Pragmatism, Socio-ecological idealism, Political-economic mobilization & Communications and collaboration	Lawrence (2000)
Theories *in* planning, Theories *of* planning & Theories *about* planning	Friedmann (2003)
Positivist theory, Critical theory & Post modern responsive theory	Alfasi and Portugali (2007)

3.2.1 Major schools of planning thought

Planners have developed different frameworks which reflect the main philosophies prevailing in the planning field at different times (Nelson & Serafin, 1995). The fundamentals of the major planning theories and frameworks are discussed below:

3.2.1.1 Rational Comprehensive Planning Model

The rational-comprehensive model is the most dominant paradigm in planning practice, and it provides the discipline with its strongest theoretical foundation (Black & Wall, 2001; Campbell & Fainstein, 2003; Hostovsky, 2006; Seasons, 2003). It emerged due to problems associated with urban growth. This model uses scientific methods to find solutions to such problems (Hudson, 1979; Gunton, 1984; Hodge, 1991). It emphasizes objectivity, public interest, information and proper analysis of various alternative solutions to a problem (Hudson, 1979, Campbell & Fainstein, 2003). Mostly dominant during 1940-60, this positivist model is based on the Simon's (1955) synoptic model of rational decision-making. Due to its consideration of a wide range of variables, this model theoretically may lead to desirable solutions in the planning process (Hostovsky, 2006). Hudson (1979) asserts that in this model, a logical and deliberative framework is realized, because it incorporates the fundamental issues of planning practices, like ends, means, trade-offs and action-taking.

Although in the planning profession, it was widely used for decades, it was criticized for being unrealistic, complex and expensive in terms of time, human and other resources (Alexander, 1992; Campbell & Fainstein, 2003; Etzioni, 1967; Faludi, 1973; Forester, 1989; Lindblom, 1959). Other criticisms have focused on the idea that though it claims to be objective in its approach to solving problems, its reliance on scientific methods, numbers and quantitative analysis gives it a subjective outlook (Campbell & Fainstein, 2003; Hudson, 1979). It was also criticized for catering to the interests of the powerful while ignoring the needs of the weak and poor due to its dependence on experts and the lack of a public debate in the planning process (Lindblom, 1959; Nelson & Serafin, 1995). Explaining its limitations, Black and Wall (2001) explained that the process relies on the assumption that experts can "Permit the anticipation, evaluation and informed selection from all of the possible actions and their consequences". They, however, criticized it by adding, "Upon review of past planning fiascos, there has been a growing recognition that no person or team is capable of predicting all outcomes of a particular action" (p. 122). One of the major weaknesses of this theory is its own non-flexible strength, which was described by Friedmann as "avoiding any form of power other than the power of mind" (Friedmann, 1998, p. 249).

In the environmental field, this approach was first advocated and applied on the basis of "spatio-temporal interconnectedness of things in nature" (Briassoulis, 1989, p. 384). In developing countries, this model is most commonly used for environmental planning (Bunch, 2000). However, in the context of environmental fields, the main criticism of this framework was its limitations related to difficulty in getting enough data to gain complete knowledge about the complex environmental problems (Nelson & Serafin, 1995). Particularly, ecosystem planning is much more complicated, because ecosystems are dynamic, complex and are composed of many components and on-going processes (Murphy, 2006; Murphy, 1999). Critics argue that such complex situations involve uncertainty and surprise and, ultimately, give an impression that "there is no right way of looking at them and no right answer to the problems they raise" (Kay, 2008, p. 3).

3.2.1.2 Incremental Planning Model

This model offers a more realistic approach in the planning process and stresses the development of a few workable strategies. This model emerged during 1960s as a response to the weakness of the rational comprehensive model. The chief proponent of this model is Charles Lindblom, who considered planning as an irrational process dominated by petty political concerns (Gunton, 1984). This stance disregarded the rational model, according to which planning is a rational activity carried out by experts in a scientific discourse. According to Hudson (1979), "Policy decisions are better understood, and better arrived at, in terms of the push and tug of established institutions that are adept at getting things done through decentralized bargaining processes best suited to a free market and a democratic political economy" (p. 389). According to this model, the pluralistic society is comprised of different and competing interest groups and, thus, the planning is carried out in consultation with stakeholders based on actual experiences (Hudson, 1979). In this process, macro-decisions are first divided into a micro-framework, and then distributed among a large number of stakeholders who make independent decisions while pursuing separate interests (Friedmann, 1987). One of the main criticisms on this model is its view of a pluralistic society, which was questioned by Faludi (1973), who questioned - how groups can arrive at a common interest in a pluralistic society. The incremental planning approach has repeatedly been used in environmental fields, because it was considered as a practical and consistent approach for environmental planning (Bunch, 2000). However, critics argue that this model failed to meet the environmental soundness criterion because of its limited vision of unbounded environmental problems (Briassoulis, 1989; Bunch, 2000; Edmunds, 1981; Hudson, 1979).

3.2.1.3 Advocacy Planning Model

Dominant during the 1960s, this theory recognizes the existence of many public interests and defends the interests of the disenfranchised. This model views the planner as an advocate. One of the early promoters of this model is Paul Davidoff (1965), an American planner and legal practitioner. His article 'Advocacy and Pluralism in Planning' is considered as the foundation of advocacy planning and gives it an empirical base by broadening the planners' area of concern beyond physical planning (Checkoway, 1994; Krumholz, 1994). This model rejects the notion of a general public interest as the basis for planning practice. Rather, it recognizes a wide variety of groups within society with diverse and sometimes opposing goals and interests (Davidoff, 1965; Peattie, 1968). This model relies on mobilizing people to challenge established procedures and institutions for protecting their collective interests (Hudson, 1979). Though this model defends the interests of disenfranchised, oppressed and marginalized segments of the population, however, critics argue that such attempts can bring the opposite results (Peattie, 1968). In environmental fields, this philosophy reflects that one cannot plan for multiple interests and the solutions of environmental problems finally reflect the perspective and interests of those served (Briassoulis, 1989; Bunch, 2000).

3.2.1.4 Radical Planning Model

Grabow and Heskin (1973) proposed this model and considered the earlier planning models as elitist, centralizing and change-resistant; and emphasized system change, democratization, collective action, and empowering of those who have been systematically disempowered. It also stresses the role of human will and ideological cohesiveness that give effective power to technical knowledge (Hudson, 1979).

3.2.1.5 Transactive Planning Model

This theory is the brainchild of John Friedmann (See his articles of 1973, 1987, 1993) and has a strong human dimension (Bunch, 2000). Friedmann (1993) describes this model as "situation specific and thus appropriate to decentred planning, which seeks a diversity of solutions at regional and local levels" (p. 484). This model was dominant during the1970s and 1980s, and came about as a response to the excesses of the rational comprehensive model in planning theory. Rather than field survey and data analysis, it emphasizes face-to-face contact and learning by doing between planners and those affected by the planned initiatives. It stresses psycho-social and institutional processes that facilitate growth and mutual learning between the planner and his constituency (Hudson, 1979). Friedmann (1993) outlines five main

characteristics of this model: normative, innovative, political, transactive and social learning. One major critique of this model is that the process of participation may impose a pressure of time constraints, because it may be elusive to a large number of the population, especially those who are economically deprived (Friedmann, 1993). It is also not a suitable choice in large-scale problems, especially where more ideological disagreement is obvious (Bunch, 2000). Likewise, critics argue that this model is process-oriented and focuses on the effect of planning on people, and not on achieving the specific planned targets (Bunch, 2000; Hudson, 1979).

3.2.1.6 Communicative Planning Model

This model emerged during the 1990s and it is based on the Habermas disclosure ethics and the concept of communicative rationality as a normative principle for evaluating and challenging the qualities of interactive practices (Healey, 2003). In the literature, this model is also known as argumentative, planning through debate, inclusionary discourse or collaborative model. This model is supposed to neutralize power and helps in developing an approach to better understand and evaluate governance processes, especially those that have a focus on developing qualities of place and territory (Healey, 2003). Proponents of the communicative paradigm argue that collaboration through communication in the planning process would ensure that the skills, experiences, knowledge and information garnered from different stakeholders could be fused together for the attainment of tangible solutions (Margerum, 1999). They further argue that despite the concerns of the critics and sceptics, collaborative planning is moving forward and spreading (Innes & Booher, 2002).

This approach is most popular specifically in addressing environmental problems (Briassoulis, 1989), however, critics argue that this model neither addresses the problem of power nor takes into account the possibility that participants act strategically (Sager, 2006). Its weakness is more obvious, when dealing with heterogeneous group or when personal and group values conflict (Watson, 2006). In addition, despite its claim of objectivity, collaborative decision-making processes can be value-laden with participants bringing their values, interests, perceptions and attitudes to bear on the decision-making process (Bradshaw, 2003; McGuirk, 2001; Parkins, 2002; Paulson, 1998). This can result in conflicts if participants are unable to reach agreements favourable to their interests (Hooper, McDonald & Mitchell, 1999). Some experts do not consider it to be a theory. Rather, they consider it a "strong programme" (Barnes & Bloore, 1982), "world view" (Tewdwr-Jones & Allmendinger, 2002), "main paradigm" (Allmendinger & Tewdwr-Jones, 2002), a "form" (Harris, 2002), a "method" (Innes & Booher, 2003), an "emerging paradigm" (Innes, 1995).

3.2.1.7 Critique

Different planners prefer different planning models, whereas some planners declared a certain specific model to be the best among others, like for Harper and Stein, the collaborative model is the most appropriate for 'society' at the present time (Healey, 2003). Although, Healey herself does not claim that collaborative processes are inherently 'the best' (Healey, 2003), she considers communicative rationality to be the only possible alternative (Bengs, 2005). According to Friedmann, no theoretical object can remain unchallenged for long. He adds that the paradigms of theory shift either due to their potentials, which are exhausted and they no longer pose interesting questions, or due to other dominant approaches (Friedmann, 1998).

According to Innes and Booher (2002), the long-established models were unable to deliver as they were dependent upon predictability, approached problems piecemeal, and presumed that experts can design workable solutions for reaching the recognized goals. Moreover, according to those models, the world is like a machine "which can be designed to produce particular outputs by smart enough people, when in reality, the contemporary society is complex, dynamic, and evolving" (Innes & Booher, 2002, p. 6). Therefore, for addressing the issues of traditional models, some planners suggested adopting altogether a different model, whereas other suggested the merger of two or more planning models (Alfasi & Portugali, 2007; Archibugi, 2007; Briassoulis, 1989; Bunch, 2000; Hudson, 1979). In this regard, Briassoulis (1989) added that whether the planners combine the communicative planning with comprehensive, incrementalism, or other approaches, "the gist of these hybrid approaches seems to be that without participation, no step in the planning process can be executed successfully and effectively" (p. 389). Explaining this viewpoint, Black and Wall (2001) added, "the flavor of the blend depending largely on the concept of public participation, with the rationale being that through participatory planning, a more responsible, workable basis for the planning and the implementation of the plans will be possible" (p. 122).

3.2.2 Criticism of planning theories

Planning theories and different classifications have been criticized in the literature by different planning professionals, including academia, theorists, practitioners and students (see Beauregard, 1995; Bengs, 2005; Black & Wall, 2001; Faludi, 1973; Friedmann, 1998; Hightower, 1969; Hudson, 1979; Klosterman, 2003; Law-Yone, 2007; Sanyal, 2002; Thomas, 2003). Beauregard (1989) criticized planning theory by suggesting that practitioners have limited use for it, students find it a diversion from their learning, and planning academics, on average, tolerate it. He further added that within academia, planning theory is relatively marginalized,

whereas within planning practice, it is virtually ignored (Beauregard, 1989). According to Faludi, consensus is lacking on planning theory and thus the potential benefits cannot be derived from it (Faludi, 1973). For Campbell and Fainstein (2003), it is not easy to define planning theory, because they found it to be slippery, and with explanations which are often frustratingly tautological or disappointingly pedestrian. Beauregard (1995) criticized it by adding, "Planning theory was introduced to planning education only after planning's identity as a profession had been formed. This served to marginalize it…. Theory simply does not occupy a compelling position in academic circles" (p. 163). Keeping in view the common criticism of the planning theories, Friedmann added that planners are engaged in disagreeing, rather than building and refining a single theory of planning. He criticized planners for this illusion by adding, "... for them planning theory is some sort of Platonic universal, inhabiting the realm of pure ideas that float across the earth, shining their benevolent light upon humanity" (Friedmann, 1998, p. 248). The salient features of major planning theories have been outlined in Table 3.4.

3.2.3 Environmental planning

Environmental planning is considered as a functional area within the broader field of planning, and it has been defined as, "an activity undertaken by individuals and organizations dealing with problems arising at the society--environment interface and devising courses of action to solve these problems" (Briassoulis, 1989, p. 381). According to Lein (2003), environmental planning is "concerned with the problem of reconciling environmental functioning to broadly defined stakeholders, each with diverse and often conflicting interests" (p.1).

In the field of environmental planning, a variety of approaches has been used to address the environment issues (Briassoulis, 1989; Bunch, 2000). Each approach reflects a specific philosophy and mode of thinking about defining, analyzing and solving these environmental problems (Briassoulis, 1989).

In the efforts to find a logical solution to environmental problems, the rational comprehensive approach came across a number of obstacles during the implementation process. As a result, the rational approach is sometimes mixed with other planning approaches (Briassoulis, 1989). Mixing of the different planning approaches is also recommended in the literature to cover the limitations of one model with the strength of other model (Alfasi & Portugali, 2007; Archibugi, 2007; Black & Wall, 2001; Hudson, 1979). Archibugi argued, "Planning theory would work much better in the neglected direction of the integration of the approaches" (2007, p. 21; 2004, p. 435). Similarly, Hudson (1979) asserted that planning

approaches are like strings of a 'sitar'[6], they can be used alone or in combination just like strings of a sitar, which can be played by performing on a single string at a time, or by weaving a blend of harmony and dissonance from all five. He emphasized that the ability of mixing different planning approaches is the only way, which can assure planners confront sensitively diverse problems and complex situations (Hudson, 1979).

Archibugi (2007, 2004) stressed the new integrated theory of planning. He identified five different topics for a deeper methodological integration of planning science and activity. One of the topic was 'the integration between socio-economic planning and physical (or environmental or spatial or land use) planning'. In order to formulate appropriate solutions for halting the current unprecedented rates of environmental degradation, there is a need to integrate the exclusive conservation model with the inclusive model just like the rational comprehensive approach is mixed with other planning approaches.

Already, in the field of environmental planning and decision-making, there is a trend of hybrid approaches (Briassoulis, 1989), and the 'exclusive' and 'inclusive' models are mixed to complement one another (Kiss, 2004). It is believed that the community-based approaches may offer the means to augment or supplement the traditional protectionist policies to work effectively (Hackel, 1999). According to Roe *et al.* (2000), community-based conservation approaches can complement the enforcement because of better understanding among communities and park staff, but it cannot replace the enforcement or, in other words, an inclusive approach can complement an exclusive approach but cannot replace it.

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[6] A five stringed musical instrument from India

Table 3.4: Salient features of different schools of planning thoughts

Rational comprehensive	Incrementalism	Advocacy	Radical	Transactive	Communicative
Goal oriented - Goal is to reach one best solution Role of planner is technician or expert Methodology is scientific Audience are decision maker Focus is the problem Top-down Most influential and dominant Emphasize objectivity and public interest **Major steps:** Set goal, experts collect info, understand the situation, identify alternatives, evaluate means against ends of different alternatives, and come with appropriate alternative. **Evaluation:** Cost-benefit analysis, operations research, system analysis, or forecasting research **Assumptions:** Experts-know-best, People behave rationally, Rationality is part of daily life, People and events are predictable, Collection of information is easy & affordable, Alternatives can be find easily **Suitability:** Best for high understanding situations with simple and measurable parameters **Reliance:** Numbers and scientific data, Scientific /statistical analysis, centralized decision making **Limitations:** Unrealistic and complex, Unmanageably complex, centralized - failure to involve public in decision making, so not desirable in democratic societies, high level of resources. Costly in terms of time and human resources & gathering information, Treated environmental planning as technical, value free, & apolitical activity, Suggested quantitative solutions to environmental problems, Suggested solutions does not cover the issues of risks and uncertainty, Difficult to evaluate alternatives & assess the cost-benefit analysis of environmental projects, Suggested solutions rely on technical standards rather than seeking insights from different stakeholders. Limitation within developing countries: Weak database, Shortage of trained staff, Inadequate cooperation from other agencies, due to lack of appropriate mechanism, Inefficient and weak institutions.	Recognize the reality of organizational constraints Small and sequential changes be made to current practices Radical changes be avoided Value political decision making Starts with limited and imperfect information **Major steps** Set simple goal, identify realistic alternatives, analyze the alternatives, select most feasible alternative. **Suitability:** Better than RCM, while dealing social issues **Reliance:** Efficient institutions, Proper data integration system, Proper coordination mechanisms, Consensus on issues **Limitations:** Too timid in overall aims, Neglects need for transformational social change, Reinforce status quo, Applies to a narrow range of planning situations, Environmental issues are treated in isolation from larger context, Suggested solutions are not effective in addressing issues of communicative impacts Limitation within developing countries: Inefficient institutions, Inadequate data integration systems, Lack of proper coordination mechanism	Rational goal oriented Role of planner is catalyst / advocate Methodology is science + politics Goal is to reach best perceived solution Audience: Society / community group Focus is problem & potential actors Recognize the existence of many public interests Inclusion of principles of social justice in planning to defend the interests of weak against the strong Emphasizes on the transparency of social policy Develop multiple plans for different sectors Decentralized in nature Can be used in environmental planning through indigenous institutions **Suitability:** Better choice, for blocking insensitive planning like removing locals for establishment of protected areas **Reliance:** Participatory democratic institutions High degree of tolerance Independent judiciary **Limitations:** Inability to come with constructive and workable alternatives, May block efficient planning	Ideas to be tested in actions aimed at permanent change in social institutions and values. Stress on systems change & decentralization. Value power of society/community, facilitation of human development, Public involvement in planning process, Takes a more critical & holistic look at large scale social processes Focus less on field survey & data analysis & more on experiential learning. Concerning environmental planning, this approach acknowledges the impossibility of planning to serve pro-development and pro-environmental interests. **Limitations:** Suggest limited workable alternatives	Rational experiential Role of planner is that of facilitator, change agent & participant, (Planner is one of many who share knowledge & contribute to planning) Methodology is dialogue + politics Goal is to reach a working solution Audience: People Focus is problem & potential actors Learning by doing Knowledge is derived from experience and mutual learning Promotes decentralized planning institutions proposes face-to-face contact with the planning community Decentralized in nature people take control over social process governing their welfare **Suitability:** Better choice when dealing with the political nature of complex problems **Reliance:** Participation, Consensus building **Limitations:** Time consuming, Personal & subjective, Equates planning with citizen empowerment and democracy, Difficult to translate the theory into action	Decentralized & bottom up Most significant & popular Role of planner is that of experiential learner Use structured processes, the interested parties discuss conflicting issues, planner provides the required information, the participants gradually agree on acceptable option, develop consensus about differing viewpoint and neutralize power **Suitability:** Works well when dealing with likeminded & stable societies. Best when people consider collaborating in their own interest, or when they submerge differences due to cultural, religious, social or other factors. **Reliance:** Dialogues, Mediation, Communicative processes **Limitations:** Time consuming, difficult to translate theory into action. May results in developing conflicts, because the decision making process can be value laden, due to varying interests, values, attitudes & perceptions. Some experts do not consider it a theory – rather they consider it an emerging paradigm, a method, strong programme, worldview, a form, main paradigm.

(Based on Beauregard, 1990; Briassoulis, 1989; Brooks, 2002; Campbell & Fainstein, 2003; Etzioni, 1967; Hudson, 1979; Watson, 2006)

3.3 Co-management approach - Role, classification and salient features

The co-management model aims at the devolution of authority (Timko & Satterfield, 2008), and its underlying theory moves around the inclusion of local user groups in natural resources management (Misra & Kant, 2004). It emphasizes that planners should be inclusive in planning and managing the natural resources as the resources of parks are dependent upon the people. Thus, the sustainability of the park is attached to the proper involvement of the people and benefiting them from the park resources. An understanding is developing among those who are engaged in the planning and management of rural development projects that for the success and sustainability of the project, "a participatory, stakeholder-driven process at the planning stage is a prerequisite" (Black & Wall, 2001, p. 122).

Co-management is an umbrella term, which has been used in a broad and general sense and encompasses different concepts, which stress partnerships with and within communities (Borrini-Feyerabend *et al.*, 2007). It is not a new approach (Borrini-Feyerabend *et al.*, 2007); rather partnerships for resource management are considered as old as human cultures (Kropotkin, 1902). Co-management agreements between stakeholders offer substantial promise as a way of dealing with natural resource-based conflicts (Castro & Nielsen, 2001). In most countries, this model is gaining popularity among researchers, government, NGOs, international aid organizations and community-based actors, who are involved in the conservation and development activities (Armitage, Berkes & Doubleday, 2007; Eagles, 2008; Oviedo & Brown, 1999; Saberwal *et al.*, 2001; Singleton, 2000). Although, this approach is a significant change in international conservation policies (Kothari, 2008), it is becoming increasingly common in Asia (Persoon & Est, 2003) and Africa (Mbolo, 2007).

The argument of co-management is based on equitable treatment of the stakeholders (Fisher & Jackson, 1998), and its benefits may include appropriate, efficient, and even-handed governance (Armitage *et al.*, 2007). It holds a pluralistic management approach, which is based on the principle of subsidiarity, whose goal is to have maximum local solution and only require government regulation when necessary (Berkes, 2004; Plummer & Fitzgibbon, 2004). In an ideal co-management situation, the management of a protected area consists of the whole process of the identification and declaration of an area, institution building, the design and implementation of management plans, research, monitoring and evaluation. However, in many other situations, the process has started already and the local participants are involved in later stages (Osseweijer, 2003). It is suggested that for co-management, the existing social arrangement should be used, until and unless they are inappropriate, in which case there will be

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a need to create new social arrangements (Vira & Jeffery, 2001). In any case, the existence of an effective local organization is essential for the success of co-management (Nurse & Kabamba, 2001; Vira & Jeffery, 2001).

Agrawal (2001) claims that co-management strategy is working successfully, and in more than 60 countries, the local communities have been involved in joint conservation strategies. The supporters of this model believe that it helps increase protected areas networks, reduces conflicts and increases public support for conservation (Kothari, 2008). Rather, the successful co-management of protected areas is "revealed as a strong affirmation of new directions of planning theory" (Lane, 2001, p. 658). Similarly, utilizing the socio-economic argument, Kothari (2001) reiterated that wildlife conservation can only succeed where local communities are involved in the conservation efforts right from the planning stages. However, Shahabuddin (2001) argued, "Kothari's approach seems a little premature" (p. 4124). Critics warned that the perception that environment will deteriorate without participation and the understanding about participatory projects being a "silver bullet" that will resolve all the issues related to natural resource management should be avoided (Carlsson & Berkes, 2005; Jeffery & Vira, 2001).

3.3.1 Types of co-management

It is believed that co-management has a variety of forms and it has been used in literature as a catchall term to cover various responses. The concept is not clear, and there is no specific or generally accepted definition for it and it can mean different things to different people (Berkes, 2007; Borrini-Feyerabend *et al.*, 2007; Carlsson & Berkes, 2005; Castro & Nielsen, 2001; Dearden *et al.*, 2005; Eagles, 2008; Menon *et al.*, 2007; Persoon & Est, 2003). Various forms of co-management can be distinguished, based on the nature of natural resources involved, type of community and the organization, and the strength of concerned government (Persoon & Est, 2003). More than 50 different terms employed to describe levels, stages or areas of application of 'co-management situations' as identified by Armitage *et al.* (2007), Borrini-Feyerabend *et al.* (2004), Persoon *et al.* (2003) and other scholars are mentioned in Appendix 3.1.

It is, however, suggested to avoid lumping too much under the concept of co-management by covering all sorts of practices and behaviours (Borrini-Feyerabend *et al.*, 2007). Thus, in this study, the term co-management will be used as, "A resource management partnership in which local users and other stake-holders share power and responsibility with government agencies" (Armitage *et al.*, 2007, p. 328). In any form of co-management

arrangements, two elements are critical i.e., sharing of power and sharing of responsibility. Similarly, in this arrangement, government must be a partner in the co-management arrangement (NRTEE, 1998; Pretty, 2003). Similarly, it is emphasized that "when community-based management does not include government as a partner in the decision-making process, it is not co-management" (NRTEE, 1998, p. 13). Co-management is a continuous process in which relationships among the parties change constantly (Berkes, 2007; Carlsson & Berkes, 2005).

Carlsson and Berkes (2005) identified four different relationships between the state and the community with regards to co-management arrangements as shown in Figure 3.1. In 'co-management as an exchange system', the relation between the state and community is to fraternize with each other, through exchange of information, goods and services. It is the lower level of co-management arrangement. The second relationship is 'co-management as joint organization', where both community and state act as overlapping sectors, and they might form joint management bodies and also participate in joint decision-making. Both sectors however maintain their authority and relative autonomy. The third relationship is 'co-management as a state-nested system', in which the state might be the de facto holder of the legal rights in a certain area or a particular resource system. However, the other actors might be entrusted with certain rights and

Figure 3.1: Images of co-management

Co-management as an exchange system

Co-management as joint organization

Co-management as a state-nested system

Co-management as a community-nested system
(Source: Carlsson & Berkes, 2005)
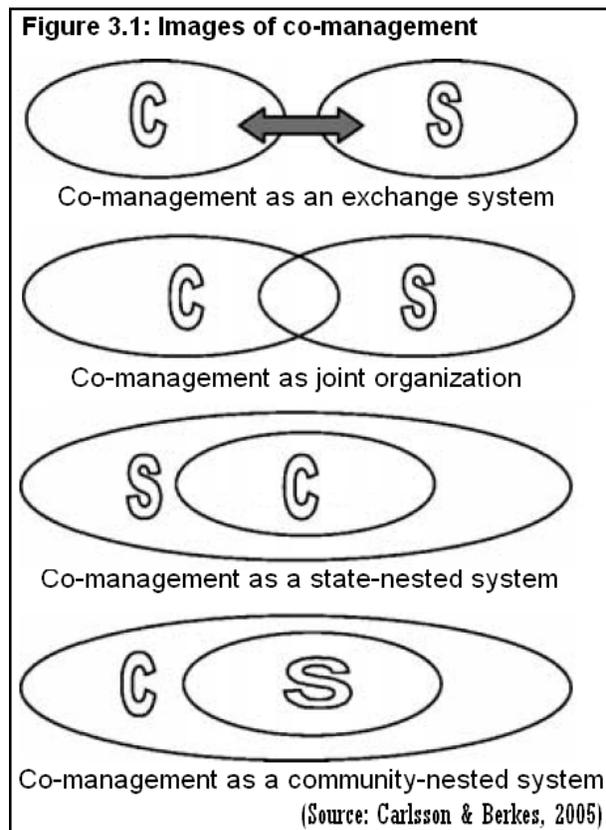
responsibilities. The last relationship is 'co-management as a community-nested system', where the state operates within the realm of non-public sphere, and the resource users might exercise all legal rights associated with the area or resource. However, the state can impose restrictions on the management. According to Carlsson and Berkes (2005), in the state-centric co-management approach, the state attempts to adapt the co-management arrangements according to its environment. Whereas, the society-centered arrangements are more concerned with the societal the coordination of social system and the focus is on coordination and self-governance.

3.3.2 Advantages and disadvantages of co-management

In the literature, there is a considerable conceptual gulf between the advocates of inclusive and exclusive conservation (Lane, 2001) and, during the last few decades, proponents of both the models "pitted against each other in an increasingly acrimonious debate" (Shahabuddin, 2001, p. 4123). The advantages of a co-management approach came mostly from the proponents and the disadvantages mostly came from the opponents.

3.3.2.1 Advantages

Co-management arrangements result in democratizing decision-making, fostering conflict resolution, and encouraging stakeholder participation (Armitage *et al.*, 2007). Various categories of protected areas are being managed worldwide by partnerships involving governmental and non-governmental actors (Borrini-Feyerabend *et al.*, 2007). Similarly, it is believed that such management can secure an expanded role for participation of the stakeholders in decision-making (Armitage *et al.*, 2007) and, consequently, it can mitigate some of the negative impacts on the protected areas by local people (Timko & Satterfield, 2008). According to Pinkerton (1989), well functioning co-management arrangements can easily accomplish various tasks like:

- Data gathering and analysis for understanding the state of the resource as the basis for sound decisions,
- Logistical harvesting decisions, such as licensing, timing, location, and vessel or gear restrictions to prevent over-exploitation, allow a sustainable yield, and to prevent undue interception of shared stocks,
- Harvest allocation decisions among individuals within local groups, among several local groups, and among local and non-local groups to allow equitable access,
- Protection from habitat damage by other water resource users: to preserve the health of resource,
- Enforcement of regulations or practices guiding harvesting logistics, allocation, and resource protection,
- Enhancement and long-term planning, and
- Broad policy decision-making.

Similarly, Carlsson and Berkes (2005) identified that co-management arrangements are good for allocation of tasks, exchange of resources, linking different types and levels of organization, reduction of transaction costs, risk sharing, and conflict resolution mechanisms and power sharing.

3.3.2.2 Disadvantages

Despite these benefits, many scholars consider that irrespective of the popularity and emerging trend of co-management, their outcome is mixed, highlighting a few success stories and failing in most cases to achieve long-term conservation benefits (Barrett, Brandon, Gibson & Gjertsen, 2001; Berkes, 2004; Brandon *et al.*, 1998; Fisher & Jackson, 1998; Hackel 1999; Kiss, 2004; Menon *et al.*, 2007; Newmark & Hough 2000; Oates, 1999; Wells *et al.*, 1999; Wilshusen *et al.*, 2002). Similarly, Jones and Murphree (2004) added, "It is fair to say" that the performance of community based conservation program "has rarely approximated promise," and in some cases, the performance has been "abysmal" (p. 86). Critics also argue that the concept of 'community' is disputed because they are treated as homogeneous entities, without any differentiation based on gender, class, socio-economic group, or ethnicity (Brosius *et al.*, 1998; Carlsson & Berkes, 2005; Jeanrenaud, 1999; Menon *et al.*, 2007; Neumann, 2000). However, communities are neither simple homogeneous entities nor do they share common interests to work harmoniously for promoting group objectives (Carlsson & Berkes, 2005; Neumann, 2000; Vira & Jeffery, 2001). Rather, in the struggle for access, conservation interventions produce winners as well as losers (Neumann, 2000).

The conflicts among the stakeholders are other big problems of such initiatives (Swatuk, 2005). Critics further argue that co-management agreements can set new conflicts or even cause old ones to escalate (Castro & Nielsen, 2001). Others suggest that co-management approaches have proven detrimental for ecological values in protected areas (Polet, 2003; Spinage, 1998). Proponents of this approach raise objections on the idea of sustainable use within strict nature preserves, such as national parks and/or other preserves of equivalent status. They consider that the idea of "permitting resource extraction to be conducted in parks flies in the face of the very concepts of what a park is and the purpose it should serve" (Terborgh & Van Schaik, 2002, p. 6). Critics argue that if rural people accept the community-based conservation approach based on "economic benefits", then they may reject it "at some point in the future, if a better economic alternative is presented" (Hackel, 1999, p. 731).

Even some of the biggest proponents of co-management endorse the fact that co-management lacks consistent methodological approaches (Berkes *et al.*, 2007). They added that performance evaluation is difficult due to diversity of conceptual factors in various co-management programs. Experts suggest that co-management is not a good and effective approach in all the cases, specifically in instances that entail quick decisions and actions; it is advisable to act, rather than to wait for consensus building (Borrini-Feyerabend, 1996).

Critics argue that people-centered approaches make "untested assumptions about the positive effect that benefit-sharing has on the conservation status of the environment" (Algotsson, 2006). Similarly, they believe that community-based conservation is based on the weak assumption that its implementation will "automatically ensure" adequate protection (Hackel, 1999, p. 727). Similarly, Algotsson (2006) described that people-centered approaches to natural resource management programs make assumptions about (1) people's motivation to make rational decisions about the ecological sustainability of wildlife, (2) their position to make well-informed decision about wildlife management, and (3) that those decisions will have a positive impact on the sustainable management of wildlife resources (p. 84). Algotsson (2006) added that such assumptions often fail to acknowledge external factors and internal stakeholders' stance towards the development in question. Critics, therefore, challenge such assumptions (Carlsson & Berkes, 2005). Moreover, the independent assessment of successes and failures of such programs are still in infancy (Vira & Jeffery, 2001). Roe *et al.* (2000) added that the community-based conservation could work under certain specific circumstances, which are not common in real-world situations.

Algotsson (2006) added that the current plans for inclusive approaches "have been unsuccessful in operationalizing policy goals of biodiversity conservation and sustainable development into transparent plans for implementation" (p. 79). Rather, there are chances that such initiatives may "reinforce and even intensify the class and gender inequities within the community (Colchester, 2003). Likewise, Blaikie (2006) added that community-based conservation programs have "substantially failed" in Central and Southern Africa "to deliver the promises to both communities and the environment" (p. 1947). Critics argue that this approach is being "oversold" at the cost of underestimating the "need for protectionism" (Hackel, 1999). Similarly, some consider this a model of idealism, which lacks robustness and application required for using it as a development tool (Polet, 2003; Roe *et al.*, 2000). The general impression is that despite the claims, formal community-based conservation programs have proved to be difficult and divisive (Swatuk, 2005). Overall, there is a gap between the rhetoric and the reality of co-management programs and, as mentioned by Hackel (1999), "it is easier to advocate" rather "than to implement it" (p. 730).

3.3.2.3 Critique

Critics argue that the co-management is "an obvious advance" because of its "inclusive philosophy" (Hackel, 1999, p. 731). However, they argue that the policy regarding co-management is not implemented in a proper manner at lower levels of administration (Geiser &

Steimann, 2004). Rather, only few conservation agencies are considered to have genuinely and systematically attempted to adopt participatory planning methods (Adams & Hulme, 2001; Malleson, 2001; Pimbert & Pretty, 1995; REDDA/NESDA, 1995; Reid *et al.*, 2004). Some experts think that those who are responsible for implementing conservationist initiatives are often game guards or wardens trained in protectionist techniques (Adams & Hulme 2001; Reid *et al.*, 2004). Thus, limited human resource capacity is also attributed as a hurdle in implementation of co-management approaches (Swatuk, 2005).

Similarly, some researchers think that there is a lack of interest by the concerned government in implementing the co-management programs (Swatuk, 2005). In the context of Sub-Saharan Africa, the lack of downwardly accountable decentralization is considered as the main barrier in promotion of exclusive approaches to conservation (Child & Dalal-Clayton, 2004; Jones & Murphree, 2004; Nelson & Agrawal, 2008). Thus, Ribot (2004) concluded that this failure to transfer the decision-making powers to local level "turns most decentralization reforms into charades" (p. 3). In Pakistan, the traditional protectionist style of management is believed to be the main barrier in promoting the inclusive approaches to conservation (Ali *et al.*, 2005). The possible outcome of co-management programs in case of their inability to conserve in the long-term is neither explored nor addressed in the literature (Hackel, 1999). There is a need to learn more about implementation of co-management strategies, understanding what it really means in practice, and documenting examples which illustrate the processes that lead to success (Fisher & Jackson, 1998).

3.3.3 Monitoring and evaluation of the co-management model

Monitoring has been defined as "the systematic measurement of variables and processes over time but assumes that there is a specific reason for that collection of data, such as ensuring standards are being met" (Spellerberg, 1991, p. 18). Similarly, Weiss (1998) defined evaluation as "the systematic assessment of the operation and/or outcomes of a program or policy, compared to a set of explicit or implicit standards, as a means of contributing to the improvement" (p. 4). In the context of protected areas, Thorsell (1982) defined evaluation as, "the process of making reasonable judgments about program effort, effectiveness, efficiency and adequacy with the objective of using these judgments to improve the effectiveness of management". According to Seasons, "monitoring implies a continuous evaluation or assessment of activities in policies, programs, processes, or plans" and "this involves the collection and interpretation of data on a regular basis" (2003a, p. 64; 2003b, p. 430).

Monitoring and evaluation are getting much attention due to "growing interest in performance, value for money and calls for accountability" (Seasons, 2003b, p. 64), and to "apply the findings to progressively improve on-going management" (Hockings *et al.*, 2000, p. vii). Critics believe that monitoring and evaluation are "recognized parts of the planning canon" but they are "overlooked and underused" in practice (Seasons, 2003b, p. 430). In planning and management of natural resources, the monitoring data are used for assessing the efficacy of management strategies (Holling, 1978; Marsh & Trenham, 2008) and it is, therefore, suggested monitoring and evaluation should be an integral activity of protected areas management (Hockings *et al.*, 2000).

In the environmental field, any model will be considered effective in the long-term if it fulfills the goals set forth for conservation. However, in the short-term, proper indicators are used for monitoring, evaluation and judging the efficacy of the planning and management model (Hockings *et al.*, 2000; Holdgate, 1991). Innes (1990) defined indicators as "a set of rules for gathering and organizing data so they can be assigned meaning" (p. 5). They are used to get quantitative or qualitative measures of trends and patterns and their appropriate use has great potential in assisting planning practice (Hoernig & Seasons, 2004; Seasons, 2003b). Wall (2002) advocated that proper monitoring indicators are required to implement the monitoring system and to inform judgments on whether or not an initiative is likely to move the system in the planned direction. Experts believe that in ecological restoration projects, the monitoring is not an easy task, because it takes a long period of time to reach critical decisions regarding the results of environmental plans and initiatives (Lein, 2003; Murphy, 2006). It is thus suggested to use appropriate social, economic, and biological or environmental indicators for monitoring and evaluation (Gubbi, Linkie & Leader-Williams, 2009; Seasons, 2003b).

3.3.3.1 Monitoring and evaluation under exclusive and inclusive models

The data from ecological monitoring are used for assessing the effectiveness of the exclusive model. Ecological monitoring is concerned with the systematic collection of ecological data in a standardized manner at regular intervals over time (Spellerberg, 1991). It is an important source of information, which makes a real contribution in improving the management of natural resources and helps in assessing trends, recognizing early warnings and early controls, and taking appropriate decisions (Burger, 2006; Danielsen *et al.*, 2009; Vos, Meelis & Ter Keurs, 2000). The nature of outcome measures in an exclusive model are more or less identical, irrespective of the area, because the indicators used for assessment are related to the flora, fauna or the overall ecological conditions of the area.

There is a consensus among the conservationists that research regarding the success or failure in co-management systems is in the early stages (Singleton, 2000) and, thus, the participatory projects are not adequately evaluated because they lack proper measures and criteria of success (Berkes, Armitage & Doubleday, 2007). It is further believed that performance evaluation is difficult in co-management initiatives, because the co-management model lacks consistent methodological approaches and very few co-management initiatives have had successes with outcome measures or metrics (Berkes, Armitage & Doubleday, 2007). Similarly, critics argue that the impacts of the inclusive model on the local communities are poorly defined (Mbolo, 2007), because the traditional research on protected areas was rational, scientific and under the influence of positivist perspectives. It is believed that, as such, research was mainly concerned with collection of information about trees, animals, local people and the economy; so there is relatively little understanding about management and implementation processes (Fisher & Jackson, 1998). Thus, the outcome measures cannot be generalized for the co-management settings, unless it is specified categorically, where and under what socio-economic, political and environmental set-up, the initiatives would be implemented.

Experts suggest that in the co-management arrangements, the "universally applicable, standardized assessment tool is not a realistic goal" for the evaluation (Hockings *et al.*, 2000, p. 47), rather co-management arrangements are assessed differently, mostly depending on the criteria for evaluation developed for any co-management settings (Carlsson & Berkes, 2005). In Appendix 3.1, different outputs and monitoring indicators have been suggested for an integrated planning approach, in a typical developing country setting, where the local communities are dependent on the natural resources of the conservation areas for subsistence and livelihood. Gubbi *et al.* however, warned that "whilst the monitoring of socio-economic indicators is essential for measuring project success or failure, placing too much emphasis on the socio-economic indicators could detract from the project's conservation focus, and further reduce its integrated balance towards a development project" (2009, p. 338).

3.3.3.2 Challenges in monitoring and evaluation of the inclusive model in developing countries

Monitoring involves a long-term investment in collecting and managing the relevant information (Hoernig & Seasons, 2004) and the proper data are collected at regular intervals over time (Spellerberg, 1991). Thus, availability of adequate financial and proper human resources is a prerequisite for monitoring and evaluation. Similarly, as the research about the effectiveness of co-management systems is in the early stages (Singleton, 2000), so identification of proper indicators for monitoring is a real challenge (Danielsen *et al.*, 2009;

Hockings *et al.*, 2000; Mace & Baillie, 2007), especially in developing countries, where both financial and human resources are scarce within the park agencies. Some of the common challenges faced in this regard within developing countries are as follows:

- Low literacy rate among custodian communities living in and around the protected areas,
- Low level of conservation awareness among communities living in and around the protected areas,
- Cultural and religious constraints, which make access to all stakeholders more difficult,
- Lack of trust among stakeholders, mainly the custodian communities and the conservation agencies,
- Inadequate human resource capacity of the concerned government agencies,
- Limited financial resources available to the conservation and protected area agencies,
- Design problems of the conservation programs, especially those donor projects which are planned without taking into account the ground realities,
- Lack of cooperation and collaboration among different line agencies, and
- Corruption, which compels the conservation agencies' staff to avoid any meaningful monitoring and evaluation of the conservation programs.

3.4 Environmental education

The renowned biologist, researcher and naturalist, E. O. Wilson, argued that the majority of the people around the globe are interested in taking care of the natural environment, but they have no formal education in this regard. Expressing his reservations about the issue, he added, "Part of the dilemma is that while most people around the world care about the natural environment, they don't know why they care, or why they should feel responsible for it. By and large they have been unable to articulate what the stewardship of Nature means to them personally. The confusion is a great problem for contemporary society as well as for future generations" (Wilson, 2006, p. 13). Similarly, Murphy (2006) added, "Awareness of problems is a necessary first step in attempts to correct them" (p. 386). Thus, proper education and awareness about the natural environment is important to address the current environmental issues. The well-known scholar of environmental governance, Lamont C. Hempel argued that global environmental problems can be addressed by taking actions on many different fronts and by using a variety of strategies and approaches; however the chief among all should be environmental education (Hempel, 1996).

The importance of environmental education was highlighted as early as the mid 18th century. A Swiss philosopher, Jean-Jacques Rousseau (1712 - 1778), highlighted the importance of education focusing on environment in 'Émile, or On Education', which was

published during 1762. However, formally among the academic circles, Anna Botsford Comstock (1854 – 1930) is a famous personality involved with nature study. She founded and remained head of the Department of Nature Study at Cornell University and promoted out-door nature study.

Comstock authored 'The Handbook for Nature Study' in 1911, which was used as a standard textbook for teachers and is still a favourite of those interested in nature study. Emphasizing the importance of nature study among children, she wrote, "... nature-study gives the child practical and helpful knowledge. It makes him familiar with nature's ways and forces, so that he is not so helpless in the presence of natural misfortune and disasters" (Comstock, 1939, p. 1). The book was translated into eight languages and printed over twenty-four times. The proponents of nature study were certain that studying nature both inside as well as outside the classroom setting, would increase the love and respect for the natural environment (Postma, 2006).

The modern environmental movement emerged during the mid-twentieth century, when the problems of urbanization and pollution started to threaten the integrity of the countryside and natural resources in Western Europe and North America (Postma, 2006). This environmental movement gained momentum during the 1970s. During that time, serious concerns emerged at the global level about the magnitude and seriousness of the environmental crisis (Braus & Wood, 1993; Postma, 2006; Schoenfeld, 1971). The scientists and environmentalists recommended radical changes in consumer behaviour, common practices and institutions, and warned that if such changes are not made in the short-term, these problems will lead to an irreversible situation (Postma, 2006). It was the time when the need for environmental education also increased with the increase in the gravity of global environmental problems (Jacobson, McDuff & Monroe, 2006; Postma, 2006). Environmental education initiatives have immense influence from the nature study movement and outdoor education (NAAEE, 2011).

Environmental education was first defined by Stapp *et al.* (1969), in the article 'The concept of environmental education' published in the first volume of 'The Journal of Environmental Education'. He added, "Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution" (Stapp, *et al.*, 1969, p. 30). He identified the following four objectives of environmental education:

- A clear understanding that man is an inseparable part of a system, consisting of man, culture, and the biophysical environment, and that man has the ability to alter the interrelationships of this system,

- A broad understanding of the biophysical environment, both natural and man-made, and its role in contemporary society,

- A fundamental understanding of the biophysical environmental problems confronting man, how these problems can be solved, and the responsibility of citizens and government to work toward their solution,

- Attitudes of concern for the quality of the biophysical environment that will motivate citizens to participate in biophysical environmental problem-solving.

Dr. Stapp later assumed the charge of first Director of Environmental Education in UNESCO, where he worked with the global experts in preparation for the Belgrade Working Conference on Environmental Education (1975) and the Tbilisi Intergovernmental Conference on Environmental Education (1977).

These major conferences and the Stockholm Conference – UN Conference on the Human Environment; give significant global importance to environmental education (Niaz, 2008; Postma, 2006). The 19th principle of the Declaration on Human Environment (Stockholm Conference) states, "Education in environmental matters, for the younger generation as well as adults, giving due consideration to the underprivileged, is essential in order to broaden the basis for an enlightened opinion and responsible conduct by individuals, enterprises and communities in protecting and improving the environment in its full human dimension" (Declaration of the United Nations Conference on the Human Environment, 1972). UNESCO, UNEP, and the Earth Summit gave further significance to environmental education in the subsequent decades (Niaz, 2008; Palmer & Neal 1994; Postma, 2006).

The global agenda for future actions, which is popularly known as Agenda 21, was the agreement, which the participating countries of Earth Summit accepted. This agenda identified environmental education as a tool to further sustainable development. The relevant chapter of the agenda states: "Education is critical for promoting sustainable development and improving the capacity of the people to address environmental and developmental education, the latter needs to be incorporated as an essential part of learning. Both formal and non-formal education are indispensable to changing people's attitudes so that they have the capacity to assess and address their sustainable development concerns. It is also critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour, consistent with sustainable development and for effective public participation in decision-making" (Chapter 36.3 of Agenda 21).

Environmental Education (EE) is now considered as an important aspect for developing environmental awareness with focus on nurturing a sense of responsibility and practical skills for a healthy environment (Niaz, 2008; Sokolov & Khromov, 1988). In the context of protected

areas, environmental education is now considered vital for its management and in creating awareness among the local communities, students and tourists (Niaz, 2008).

It is believed that the field of environmental education is undergoing continuous improvement and, during the last three decades, it has been influenced by various factors like the education reform movement, emergence of sustainable development, enhancing quality of human life and other such relevant factors (NAAEE, 2011; Postma, 2006). However, some critics are of the view that despite the global attention attained in many international conferences, environmental education is still highly variable and not coordinated and well organized (Niaz, 2008).

Postma (2006) criticized that it is the era of 'environmental neglect', as "the expansive needs of multi-national corporations, western consumer interests and the politically celebrated ideals of economic growth and technological progress appear to override any consideration for preserving natural beauty as well as consideration for those unable to speak and negotiate on their own behalf: third world citizens, future generations, animals, plants and landscapes" (p. 1). He argued, "In times like these, environmental education is a hazardous and primarily ambiguous enterprise, since it easily comes to function as a means to foist present responsibilities onto future generations" (Postma, 2006, p. 1).

Explaining the apathy of lack of conservation education in the Khyber Pakhtunkhwa Province, the former Chief Conservator of Wildlife, Dr. Malik stated that ignorance is an important factor that needs to be addressed for conservation of wildlife (Malik, 1994). He further added that the majority of the people in the province are ignorant about the wildlife resources of the province, its values and the relevant legislation. He attributed this ignorance to the paucity of proper environmental outreach programs (Malik, 1994).

3.5 Good governance

Governance deals with power, relationships, responsibility and accountability (Borrini-Feyerabend, 2005). According to Kofi Annan[7], "Good governance is perhaps the single most important factor in eradicating poverty and promoting development" (Annan, 1998). The term 'governance' is considered as a "hot" topic (Graham, Amos & Plumptre, 2003, p. 1). This term emerged after the end of the Cold War, as a state policy of the West to the collapse of Soviet Union, and to address the popular pressures in the Third World for ending the traditional authoritarian rule (Swatuk, 2009). In the development literature, the terms "governance" and "good governance" are increasingly being used these days (Menzies, 2004; UNESCAP, 2011).

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[7] Former Secretary General of UN

Critics argue that in the literature, the terms 'governance' and 'good governance' have been defined vaguely and without specifying its scope of application (Chhotray & Stoker, 2010; Hubbard, 2001; Rhodes, 1996; Stoker, 1998a; Stoker; 1998b). It is, therefore, imperative to explain the term 'governance' and its scope of application within the context of parks and protected areas. Table 3.5 presents some of the key definitions of the term governance:

Table 3.5: Various definitions of governance	
Definition	**Source**
Governance is about the rules of collective decision-making in settings where there are a plurality of actors or organisations and where no formal control system can dictate the terms of the relationship between these actors and organisations.	Chhotray and Stoker (2010)
The procedures and rules by which decisions are made and consensus is reached, as well as mechanisms to hold decision makers accountable for their actions.	Menzies (2004)
The process of decision-making and the process by which decisions are implemented (or not implemented).	UNESCAP (2011)
Governance is a process whereby societies or organizations make their important decisions, determine whom they involve in the process and how they render account.	Graham *et al.* (2003)
Governance refers to the people, political institutions, regimes, and nongovernmental organization (NGOs) at all levels of public and private policy making that are collectively responsible for managing world affairs.	Hempel (1996)

In simple words, governance seeks to understand the way in which collective decision-making is constructed (Chhotray & Stoker, 2010). Moreover, "a specific governance setting reflects what a society enables or is prepared to accept as fair in terms of who has authority, who is responsible and how this works in practice" (Borrini-Feyerabend, 2005).

Bad governance is regarded as the root cause of all the societal evils (UNESCAP, 2011). In contrast, good governance assures to minimize corruption and hear the voices of the most vulnerable within the society in decision-making (UNESCAP, 2011). Good governance is considered as an important measure of the community based management systems, as it distinguishes it from past management systems, in which equity and accountability were conspicuously absent (Menzies, 2004). The term governance has been used in different contexts, like corporate, global, international, national, economic, administrative, institutional, local and community (Eagles, 2009; Graham *et al.*, 2003; UNESCAP, 2011). However, the basic theme of good governance in all these various terminologies is concerned with the decision makers, process of decision-making and the process by which those decisions are implemented (UNESCAP, 2011). Similarly, 'governance' is not synonymous with 'government' (Graham *et al.*, 2003); rather 'governance' is more than 'governments' (Hubbard, 2001) and 'government' is considered as one of the actors in 'governance'; whereas the rest of the actors like corporations,

NGOs and individuals are grouped together as part of the civil society (Eagles, 2009; UNESCAP, 2011). Governance is both the means and the end (Graham *et al.*, 2003). This viewpoint is explained by Swatuk (2009) as governance is the outcome as well as a process and, thus, it involves a variety of legitimate and authoritative actors. In the literature, various terms have been used to identify good governance e.g., governance (Menzies, 2004), collaborative governance (Ansell & Gash, 2007), co-governance (Ackerman, 2004), etc.

It is difficult as well as controversial to define the principles of good governance (Graham *et al.*, 2003). Thus, various experts and organizations identified different characteristics or criteria of good governance. Experts warn that absence of some or all of these characteristics, results in "bad governance" (Swatuk, 2009). UNDP identified various characteristics of good governance in its policy document - Governance for Sustainable Human Development (1997). Those characteristics are cited in Table 3.6. UNESCAP (2011) identified eight characteristics of good governance i.e., participatory, consensus- oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive, and follows the rule of law.

Table 3.6: Characteristics of good governance as identified by UNDP	
Characteristics	**Explanation**
Participation	All men and women should have a voice in decision-making, either directly or through legitimate intermediate institutions that represent their interests. Such broad participation is built on freedom of association and speech, as well as capacities to participate constructively.
Rule of law	Legal frameworks should be fair and enforced impartially, particularly the laws on human rights.
Transparency	Transparency is built on the free flow of information. Processes, institutions and information are directly accessible to those concerned with them, and enough information is provided to understand and monitor them.
Responsiveness	Institutions and processes try to serve all stakeholders.
Consensus orientation	Good governance mediates differing interests to reach a broad consensus on what is in the best interests of the group and, where possible, on policies and procedures.
Equity	All men and women have opportunities to improve or maintain their well-being.
Effectiveness and efficiency	Processes and institutions produce results that meet needs while making the best use of resources.
Accountability	Decision-makers in government, the private sector and civil society organisations are accountable to the public, as well as to institutional stakeholders. This accountability differs depending on the organisation and whether the decision is internal or external to an organisation.
Strategic vision	Leaders and the public have a broad and long-term perspective on good governance and human development, along with a sense of what is needed for such development. There is also an understanding of the historical, cultural and social complexities in which that perspective is grounded.

Based on the nine characteristics of good governance as identified by UNDP, Graham *et al.* (2003) cited five principles of good governance, as mentioned in Table: 3.7.

Table 3.7: Principles of good governance	
Principles	**Relevant good governance characteristics of UNDP**
Legitimacy and Voice	Participation
	Consensus orientation
Direction	Strategic vision
Performance	Responsiveness
	Effectiveness and efficiency
Accountability	Accountability
	Transparency
Fairness	Equity
	Rule of Law

While striving to reach "good governance" as documented in theory, it is important to understand that good governance is not something that is universal in nature. Practically, good governance is one, which is place-based and effective at a micro-level, and is not imported by powerful actors from a different socio-geopolitical scale. Critics argue that the governance 'model' lacks roots, if it is extended from outside into developing countries, so they suggest that the professionals must resist received ideas, and an effective local governance should be readily constituted and observable at a local level (Swatuk, 2009; Swatuk & Vale, 1999).

In the environmental field, governance is now recognized as a critical aspect of effective conservation efforts and, therefore, it got prominent focus in the work program of the Convention on Biological Diversity on protected areas (Dearden *et al.*, 2005). Similarly, the World Commission on Protected Areas declared governance as ''central to the conservation of protected areas throughout the world'' (WCPA, 2003, p. 33). Likewise, the concept of governance of protected areas gained unprecedented attention during the 2003 World Parks Congress and 2004 Programme of Work on Protected Areas of the Convention on Biological Diversity (Borrini-Feyerabend, 2005). Moreover, the World Bank also laid emphasis on the role of good governance within its forest sector strategies (Barrett, Gibson & Hoffman, 2006; World Bank 2002).

Experts believe that community involvement within the protected areas can contribute to conservation in the presence of transparent governance (Clark, Bolt & Campbell, 2008). It is further believed that governance is a major factor which affects the abilities of protected areas in achieving goals (Dearden *et al.*, 2005), so there is a fundamental relationship between the quality of governance and the quality of biodiversity conservation (Eagles, 2009; Smith *et al.*, 2003). It is, therefore, argued that improved governance can open a space for inclusion of local voices in planning and management of local affairs that had formerly been the exclusive preserve of bureaucratic agencies (Menzies, 2004).

Public participation is now considered an essential aspect of natural resource governance (Matta *et al.*, 2005; Pretty, 2003). It is proposed that the participation should not be limited to a matter of representing people, but it should be ensured that the ideas and values of locals are included in the decision-making (Bulkeley & Mol, 2003). The scholars of protected areas governance therefore suggest that as the local communities bear the burden of conservation, so they should be given proportional representation in the park governance, through devolution of authority i.e., co-management (Timko & Satterfield, 2008). The concept of co-management for good governance of the parks and protected areas is the basic theme of this research study and it is explained in detail in the thesis.

In the field of environment, governance is considered to be an important yet a neglected topic (Borrini-Feyerabend, 2005; Hempel, 1996) and the indigenous communities have been provided with very little equity in decision-making (Timko & Satterfield, 2008), which ultimately resulted in promoting distortions regarding uses of resources (Tao, 2006; Wall, 1993). Critics argue that the scholarly discussion about governance of parks and protected areas is rare, and they suggest that more work needs to be done in this regard (Eagles, 2009; Hannah, 2006). Contrary to this viewpoint, there is also an understanding that "Good governance can never reach an end point" (Swatuk, 2009, p. 250). It is considered to be an ideal which is difficult to achieve in its totality; however, it is suggested that for ensuring sustainable human development, proper actions must be taken to work towards this ideal (UNESCAP, 2011).

According to Swatuk (2009),"The dominant discourse of good governance offers a standard, template solution to unsustainable, inefficient and inequitable outcomes of (resource) management through, inter alia, institutional reform, stakeholder participation and private sector involvement" (p. 250). However, he argued that in developing countries, realizing this agenda sometimes further deepens the problem. He warned that blind application of "good governance" as conceived by dominant world actors "constitutes part of problem, not the solution" (p. 250). Swatuk (2009) therefore suggested considering the following observations for sustainable resource use and management:

- Be aware of the value-laden and contested-nature of the "good governance" discourse,
- Be reflective in the construction and application of theory,
- Acknowledge that our science often has unintended social and environmental impacts, and
- Recognize the profoundly political nature of enforced institutional and societal change (p. 256).

3.6 Summary

In this chapter, I explained the theoretical framework used for guiding this research study. Starting with the basics of planning and planning theories, I focused on the major schools of planning thoughts. The communicative planning model is discussed in details as it support the inclusive model used in planning and management of protected areas. In the next part of the chapter, I described the role, classification, salient features, types, strength and weakness of co-management.

Environmental education is discussed next. In this section the history, need for and importance of environmental education is discussed. Finally, I highlighted the concepts of governance and good governance, and how these can be used in the environmental field. After the detailed literature review in the preceding and the current chapter, in the next chapter I focus on the distinctive biogeoclimatic character of Pakistan, which resultantly supports a remarkable number of the world's ecological regions along with its associated biodiversity.

Chapter 4

Pakistan and its biodiversity

4.1 Introduction

The case study research was conducted in Ayubia National Park (ANP), which is located in the Lesser Himalayas of Pakistan. In order to give proper backdrop information to the readers, the relevant geographical, legal, institutional and historical background is explained in detail in this chapter. Basic information about Pakistan is provided in section 4.2. It covers the geography, demography, administrative divisions, climatic variations and other related information. Afterwards, some fundamental details are given in section 4.3 about the Khyber Pakhtunkhwa Province, where the ANP is situated. The next section, 4.4, discusses the biodiversity of Pakistan along with the various vegetation types and the country's place within the different zoogeographical regions of the world. In the next section, 4.5, the various threats to the country's biodiversity are briefly described. Finally, section 4.6 deals with the planning and management of protected areas in the Khyber Pakhtunkhwa Province.

4.2 Pakistan at a glance

The Islamic Republic of Pakistan is a sub-tropical country of South Asia. It lies between 23° and 37° N latitude and 61° and 75° E longitude. The total area of the country is 796,095[8] square kilometres. Area wise, the country is smaller than the province of Ontario, and is roughly three times as big as the United Kingdom. China is situated to the North-East, India to the East and South-East, Iran to the South-West and Afghanistan to the West and North-West of the country (see Figure 4.1).

Punjab, Sindh, Baluchistan and the Khyber-Pakhtunkhwa Province are the four provinces of the country. Besides these four provinces, the other territories under the control of the Federal Government include the Federally Administered Tribal Areas (FATA), the Federally Administered Northern Areas (FANA) and the Azad Kashmir.

FATA is comprised of seven tribal agencies, i.e., Bajaur, Mohmand, Khyber, Orakzai, Kurram, North Waziristan and South Waziristan. These tribal agencies are mainly located along the Afghanistan border. Another independent area under the control of the Federal Government is the Federally Administered Northern Areas (FANA), which is comprised of seven districts i.e., Skardu, Ghanche, Gilgit, Ghizer, Diamer, Astore, and Hunza-Nagar. The Azad Kashmir is that

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[8] By including the disputed territory of Kashmir, the area is 881,888 square kilometres.

part of the disputed State of Azad Jammu and Kashmir (AJK) which is currently under the control of Pakistan (see Figure 4.2).

Figure 4.1: Map of Pakistan
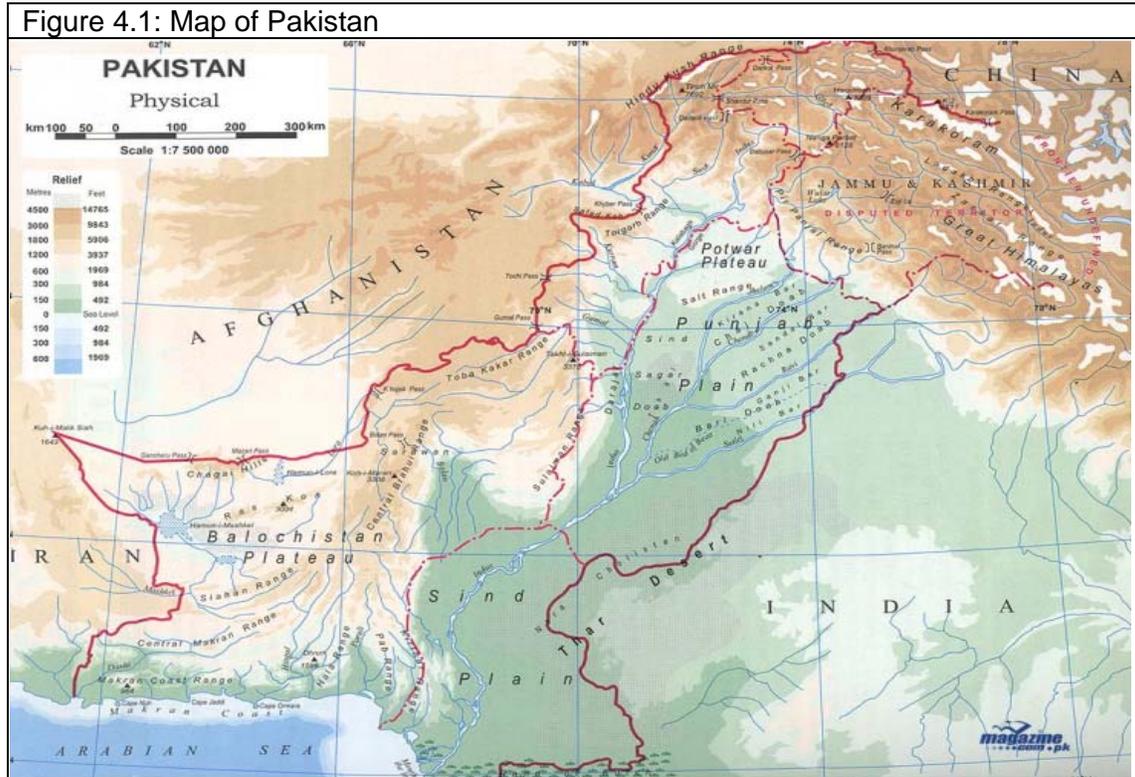
(Source: Magazine.com.pk, 2010)

Figure 4.2: Administrative units of Pakistan and their percent area
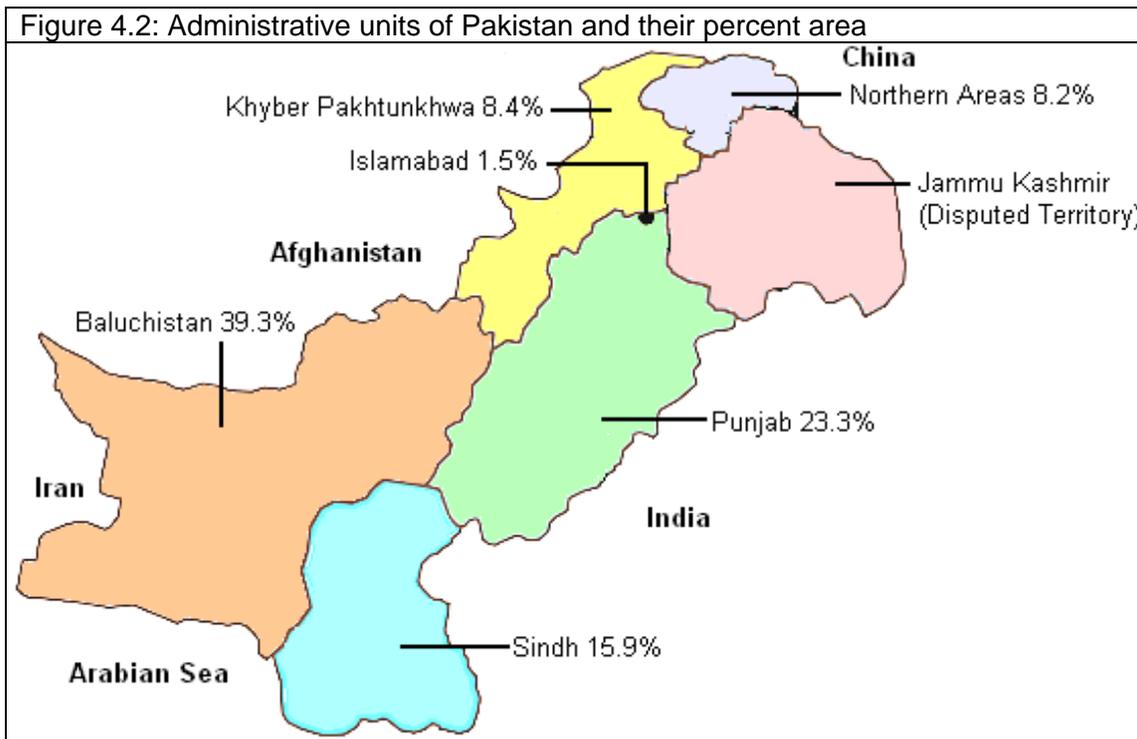
Pakistan is predominantly an arid and semi-arid country but on the whole, it is a land of great contrasts (IUCN, 1990). The climate of the country is diverse. There is a large variation in rainfall and temperature within the country (Qazi, 1994). Based on the variation in temperature, Champion, Seth and Khattak (1965) divided the country into four temperature zones as indicated in Table 4.1.

Table 4.1: Temperature zones of Pakistan			
Zone	**Mean annual temperature**	**Mean January temperature**	**Type of winter**
Tropical	Over 75°F	Over 60°F	Mild, no frost.
Sub-tropical	65 – 75°F	50 - 60°F	Definite but not severe. Frost occasional.
Temperate	50 - 65°F	30 - 50°F	Pronounced with frost & some snow.
Alpine	Under 50°F	Under 30°F	Severe; much snow.

The country lies within the monsoon region and receives most of its rainfall during the summer months (Ahmed & Mahmood, 1998; Qazi, 1994). The average annual rainfall in the northern parts is above 150 cm, which gradually decreases towards the southwest and the coastal zone hardly receives up to 15 cm annual rain (Qazi, 1994). Temperature variation is also extraordinary within the country (Ahmed & Mahmood, 1998; Qazi, 1994). Summers are cool and pleasant in the northern hilly areas with the temperature up to 20°C (68°F), but in the plains the summer temperature is above 35°C (95°F) and in some areas it may reach up to 50°C (122°F) (Ahmed & Mahmood, 1998; Qazi, 1994). During the winter season, the temperature is below 15°C (59°F) in the plains, but in the north-eastern parts, the temperature is well below 0°C (32°F) (Ahmed & Mahmood, 1998). Humidity in most of the parts is moderate falling below 10% in the plains, but relatively high in the coastal belts (Qazi, 1994). The major rivers include Kabul, Indus, Jhelum, Chenab, Ravi and Sutlej. Based on topography, the country can be divided into six distinct regions, i.e., the northern mountains, northern plateau, western mountains, Baluchistan plateau, south-eastern desert and the Indus plain (Ahmed & Mahmood, 1998).

Pakistan is the sixth most populous country of the world after China, India, the United States, Indonesia and Brazil. According to the Ministry of Population Welfare of Pakistan, the projected current population of the country is 174,747,559 (MOPW, 2010). Thus, Pakistan is a thickly populated country where 2.541% of the world's population lives on 0.594% of the land area of the world (Infoplease, 2011). According to the estimates of the government of Pakistan, the annual growth rate in the country is 2.69% (Population Census Organization, 2010). The

periodic increase in the population of Pakistan and its different administrative units are shown in Figure 4.3.

Figure 4.3: Population increase in Pakistan (1950-2011)
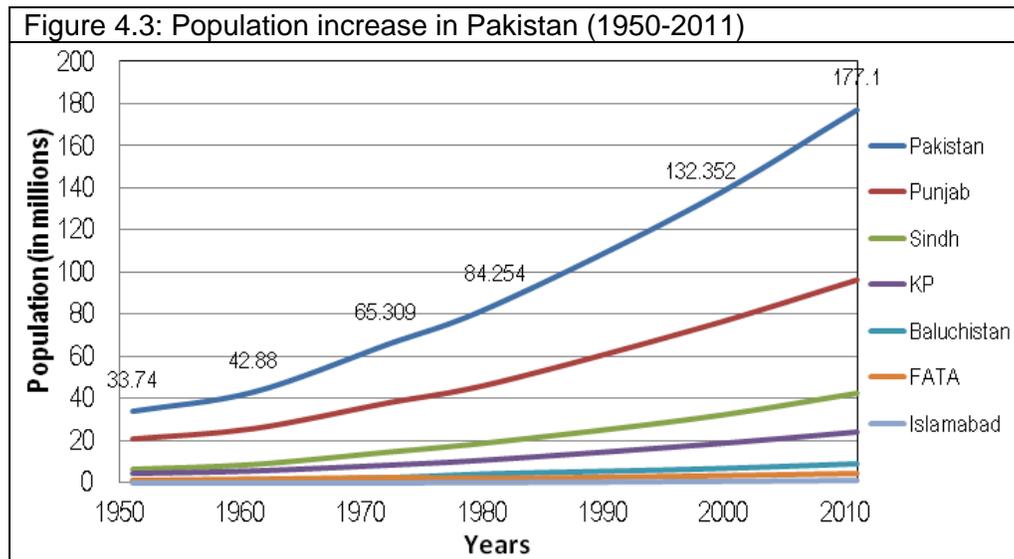
(Source: Population Association of Pakistan, 2010)

According to the World Resources Institute, it is assumed that by 2050, Pakistan will be the fourth most populous country in the world after India, China and the United States. Since independence in 1947 up to 2007, the population of the country has increased by 124.27 million with an average growth rate of 2.6% per annum (Khan, Inamullah & Shams, 2009). The current ratio of urban and rural population is 36 and 64 percent respectively; however, the urban population will equal the rural population by 2030 (UNFPA, 2007).

4.3 Khyber Pakhtunkhwa Province

The Khyber-Pakhtunkhwa Province is located between 31°4' and 36°57' N. latitude and 69°16' and 74°7' E. longitude. The total area of the province is 74521 sq km. Khyber-Pakhtunkhwa is bounded by Afghanistan to the north-west, FANA to the north-east, Azad Kashmir to the east, FATA to the west and south, part of Baluchistan and Punjab to the south and Punjab and the capital – Islamabad to the south-east (See Figure 4.2).The province is divided into 24 districts. The current population of the province is over 22 million (Government of Khyber Pakhtunkhwa, 2010b).

The province has a diverse landscape with dry rocky areas and vast barren plains in the South, low hills in the middle and high mountains and green plains in the north. The lesser Himalayas are situated in the western corner. The altitudinal variation ranges from 300 m in Dera Ismail Khan to 7,690 m at Tirichmir, located in the northern part of the province. The major rivers include Chitral, Swat, Panjgora, Kabul, Bara, Kurram, Tochi, Gomal, Indus and Zhob.

4.4 Biodiversity of Pakistan

Pakistan has a distinctive biogeoclimatic character (Grigoriev, 2000). Around 60% of the country consists of elevated plateaus and mountainous terrains, whereas the rest of the area is lowland having an elevation of less than 300 m (IUCN, 1990). Thus, its unique geology, broad latitudinal spread and immense altitudinal range supports a remarkable number of the world's ecological regions (Government of Pakistan, 2000). According to Roberts (1977), some of the world's highest cold areas and hottest low areas are situated in Pakistan. The area of the country is relatively small, but it supports many of the most important biomes of the world (Pfeffer, 1968; Roberts, 1977). These ranges from the sandy beaches, blue lagoons and the mangrove forests on the Arabian coastal areas in the south to the high mountain tops, scenic valleys and the endless glaciers in the north, where the three mighty mountain ranges of the world – the Western Himalayas, Hindu Kush and Karakoram ranges meet. In between there are vast sandy deserts, isolated plateaus, scrub forests, the highly fertile and productive Indus basin, irrigated plains, riverine tracts, sub-tropical forests, temperate forests, alpine pastures and permanent snowfields. Based on such geo-climatic variations, numerous vegetation types have been identified in the country (Qazi, 1994). Beg (1975) identified the following major vegetation types along with their associated wildlife:

1. Littoral and swamp forests
2. Thorn forests
3. Dry deciduous forests
4. Arid sub-tropical forests
5. Dry sub-tropical semi-evergreen forests
6. Sub-tropical pine forests
7. Dry temperate forests
8. Himalayan moist temperate forests
9. Sub-alpine forests
10. Alpine scrub and pastures
11. Cold deserts

Similarly, Tom, J. Roberts (1991) classified Pakistan into the following different vegetation zones (See Figure 4.4):

1. Permanent snowfields and glaciers
2. Dry alpine and cold desert
3. Alpine scrub and moist alpine
4. Himalayan dry coniferous with ilex oak
5. Himalayan moist temperate forest
6. Sub-tropical pine forest
7. Sub-tropical dry mixed deciduous scrub forest
8. Baluchistan juniper and pistachio scrub forest
9. Dry sub-tropical and temperate semi-evergreen scrub forest
10. Tropical thorn forest and sand dune desert

11. Mangrove and littoral
12. Sand dune desert

Figure 4.4: Vegetation zones of Pakistan

Legend:
- Permanent snowfields and glaciers
- Dry alpine and cold desert
- Alpine scrub and moist alpine
- Himalayan dry coniferous with ilex oak
- Himalayan moist temperate forest
- Sub-tropical pine forest
- Sub-tropical dry mixed deciduous scrub forest
- Baluchistan juniper and pistachio scrub forest
- Dry sub-tropical and temperate semi evergreen scrub forest
- Tropical thorn forest and sand dune desert
- Mangrove and littoral
- Sand dune desert

(Source: Roberts, 1991)

Based on the vegetation zones classification, Roberts (1977) described the wildlife of the country along with detailed description of their habitat. He identified the following distinct types of habitats in Pakistan:

1. Permanent Snowfields and Cold Desert
2. Alpine Meadows
3. Sub-Alpine Scrub and Birch Forest
4. Dry Temperate Coniferous Forest
5. Himalayan Moist Temperate Forest
6. Sub-tropical Pine Forest
7. Tropical Deciduous Forest
8. Steppic Forest in Northern Latitudes
9. Steppic Forest in Intermediate Latitudes
10. Steppic Forest in Southern Latitudes
11. Monsoon-influenced Arid Subtropical
12. Less Pronounced Monsoon Influence
13. Baluchistan Desert Scrub
14. Indus Plains
15. Sand-dunes

16. Inundation Zones, Seepage Zones, Jheels and Swamps
17. Riverine Tract
18. Littoral or Inter-tidal Zone

In the Khyber Pakhtunkhwa Province, all the above habitats except Littoral or Inter-tidal zone are represented to varying degrees (Malik, 1994). These distinct habitats support a wide variety of biota. The country is located in a transitional zone among three zoogeographical regions of the world i.e., Palaearctic, Ethiopian and Indo-Malayan (Grigoriev, 2000; Khan, 2003; Malik, 1994; Qaimkhani, 2009). Figure 4.5 indicates the location of the country within the transitional zone among three different zoogeographical regions.

Figure 4.5: Zoogeographical regions of the world
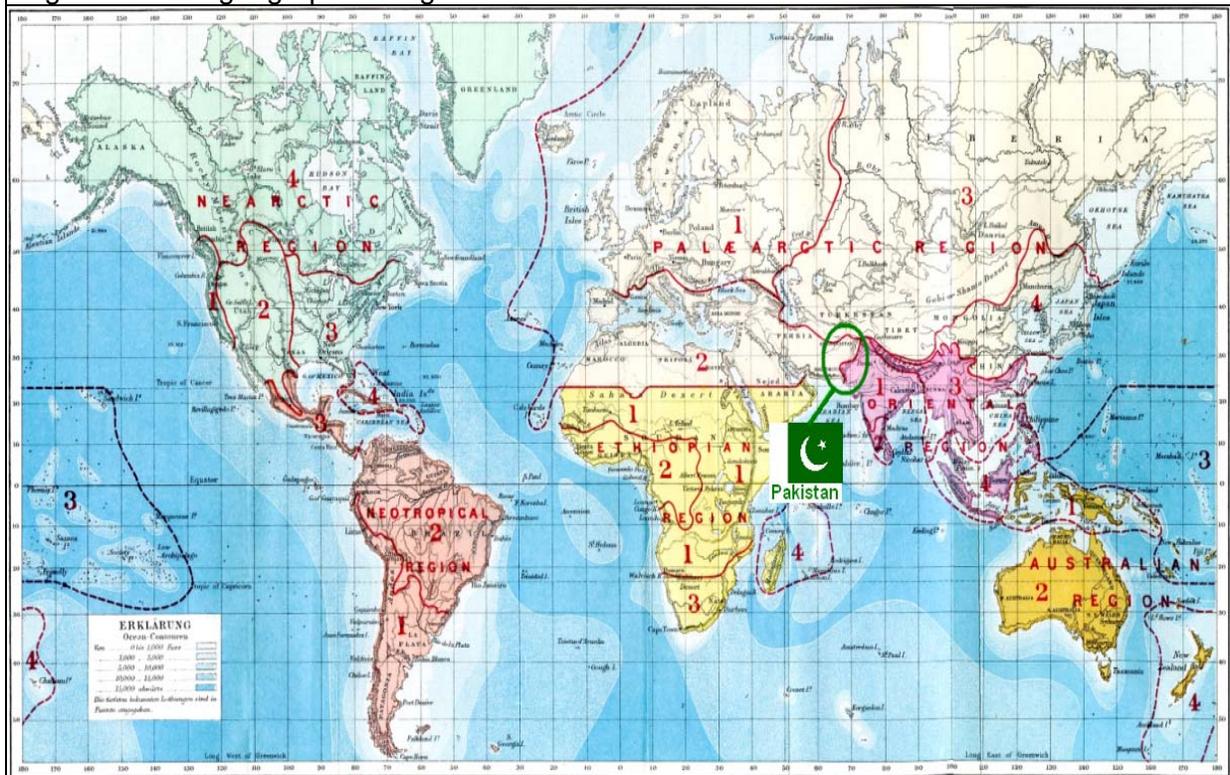
(Source: Wallace, 1876)

The biodiversity of the country is thus comprised of a blend of Palaearctic and Indo-Malayan elements, with some groups also containing forms from the Ethiopian region (Khan, 2003; Malik, 1994; Qaimkhani, 2009). The Palaearctic species are found in the Himalayas and Western mountain regions, whereas the species of Indo-Malayan regions are found mostly in the Indus plains located east of the Indus River. The species of the Ethiopian region are found in the dry southwest along the coast of Makran and Thar Desert (Malik, 1994; Qaimkhani, 2009).

On whole, 4950 plants, 195 mammals, 668 species of birds (including 237 species of breeding birds), 192 reptiles, 22 amphibians, 788 marine and 198 freshwater fishes, 20,000 species of insects and terrestrial and freshwater invertebrates; and 700 species of marine invertebrates have been documented (Anwar, 2007; Earth Trends, 2003; Government of Khyber Pakhtunkhwa, 2010a; Government of Pakistan, 2000; Grigoriev, 2000; Qaimkhani, 2009). Among those 6 mammals, 9 amphibians, 18 reptiles, 41 butterflies and 29 freshwater fishes are endemic to Pakistan (Grigoriev, 2000; Qaimkhani, 2009; IUCN, 2010). Similarly, 20 mammals, 25 birds, 6 reptiles are threatened with extinction (Qaimkhani, 2009). Similarly, according to IUCN Red List of threatened species for the year 2010, 23 species of mammals, 26 species of birds, 10 species of reptiles, 33 species of fishes and 15 species of other invertebrates are considered threatened with extinction in the country. Among these animal species, 9 are critically endangered, 21 are endangered and 77 are vulnerable. Besides these, 2 plant species are also considered vulnerable.

4.5 Biodiversity of the Khyber Pakhtunkhwa Province

In the Khyber Pakhtunkhwa Province, 98 species of mammals, 456 species of birds and 48 species of reptiles have been recorded (Government of Khyber Pakhtunkhwa, 2010a). The 3 endemic mammals of Pakistan i.e., Woolly flying squirrel (*Eupetaurus cinereus*), Murree Vole (*Hyperacrius wynnei*) and Indus blind dolphin (*Platanista indi*) are also recorded in the Khyber Pakhtunkhwa Province (Malik, 1994). Similarly, 2 species of lizards i.e., *Cryptodactylus chitralensis* and *C. mintoni* are endemic to the province (Ahmed, 1986; Malik 1994). The mountains of the province are considered as "important centres of plant endemism" as they contain 90% of endemics (Grigoriev, 2000, p. 1).

Although Khyber Pakhtunkhwa has an impressive diversity of wildlife, it has already lost some wildlife species, the populations of carnivores and herbivores is in decline, many species are considered to be on the verge of extinction and some have become endangered (Malik, 1994). The different factors that are responsible for depletion of wildlife in the Khyber Pakhtunkhwa Province include "socioeconomics, ignorance, modern technology, politics, legal constraints, ethics, financial constraints, administration, communities' disinterest, trade, and shortage of skilled manpower" (Malik, 1994, p. 10).

4.6 Threats to biodiversity

According to Wilson (2006), the biodiversity of the world is declining due to uninterrupted consequences of different factors that are enhancing due to human activities. Consequently, all

over the world, the wildlife species are facing serious threats to their survival, but the threats are more conspicuous and alarming in the developing countries, because of the dependency of the locals on the exploitation of the natural resources (Malik, 1994). Pakistan is no exception, and the biodiversity in general and the wildlife in particular are facing a number of threats. Some of the common threats as identified by BAP (2000), GoP & IUCN (1992) IUCN (1990), Malik (1994), Qaimkhani (2009), Shinwari (2010) and Virk (1999), are briefly outlined as follows:

- Loss and degradation of natural habitats,
- Over grazing,
- Over exploitation of the natural resources (specifically collection of firewood, fodder, non-timber forest products),
- Deforestation and over harvesting of the forests,
- Poaching, hunting and catching of various species,
- Haphazard protected areas network,
- Unplanned intensive agriculture and indiscriminate use of agro chemicals,
- Pollution and disposal and discharge of untreated sewage into water bodies,
- Invasion by introduced species,
- Soil erosion,
- Diversion of water for irrigation and drainage of wetlands,
- Expanding human population with high growth rate,
- Increasing poverty,
- Governance issues,
- Communities disinterest in conservation,
- Ignorance and lack of environmental education,
- Weak conservation agencies with lack of funds and skilled manpower,
- Financial constraints,
- Legal constraints,
- Political constraints.

In order to halt or to slow down the decline of global biodiversity, different sets of site-specific and place-based approaches are needed throughout the world. In this research study, the focus is on the developing countries in general and Pakistan in particular. So, in the subsequent chapters, the issues will be scrutinized and recommendations will be made in the final chapter.

4.7 Summary

As the case study research is conducted in Pakistan, so in this chapter I described the geography, weather, demography and biodiversity of Pakistan and the Khyber Pakhtunkhwa Province, where the case study area is situated. Later, I pinpointed the key factors which are threatening the biodiversity of the country. In the subsequent chapter, I switch from theoretical aspects to the actual practices regarding the planning and management of forest and wildlife resources in the Khyber Pakhtunkhwa Province of Pakistan.

Chapter 5

Transforming theory and practice of environmental governance: Past and present practices in the Khyber Pakhtunkhwa, Pakistan

5.1 Introduction

In Pakistan, the Wildlife Departments in various provinces and territories were part and parcel of the concerned provincial Forest Department at a certain point in past. Moreover, the wildlife and protected areas management is mostly under the control of professionals having formal training in forestry from the Pakistan Forest Institute. Likewise, most of the protected areas, specifically the national parks, have been carved out of the government-owned forests, specifically Reserve Forests. Resultantly, there is some degree of dual management issues as well. Each Wildlife Department is under considerable direct or indirect influence of the concerned Forest Department of that province or territory. Thus, to understand the issues concerning the planning, management and governance of protected areas, it is imperative to understand the history of forestry and forest management, forest administration, and other relevant issues of forests in Pakistan.

Proper recommendations can be made for the wildlife conservation and protected areas management only if the concerned Forest Department is also on board, otherwise, due to incompatible management objectives, the long-term goals of one organization are ruined by the other sister organization. Normally, it is the Wildlife Department that has to suffer due to the high handedness of the 'big brother' – the Forest Department. The logic is clear; the former is involved with conservation, which imposes costs on the society, whereas the latter is involved in timber harvesting and revenue generation, which are both preferred in the short-term, especially when the long-term costs are ignored.

In this chapter, first the history of forestry and forest management is discussed in section 5.2. Later, the forest administration under the British colonial rule is discussed in section 5.3. It was during the era of imperialism that the current forest agencies were established, and most of the current forest law is also owing to efforts made during the colonial period. Section 5.4 describes the forestry administration in Pakistan. This section focuses on the unique forestry education system, the forest departments and the forest laws. The outcome of such forestry administration is discussed in the next section, 5.5, which covers the forests of Pakistan, and the serious issue of deforestation, which is rated the second highest in the world. The next section, 5.6, deals with the intense consequential devastation of deforestation in Pakistan.

The history of wildlife conservation and management in Pakistan is discussed in section 5.7. This section explains how the Wildlife Department emerged and how it is brought under the influence of the Forest Department. This section also discusses the protected areas of the country along with some of the common issues of these protected areas. The various relevant laws are also discussed in this section. The next section, 5.8, deals with the Wildlife Department of Khyber Pakhtunkhwa Province, who is looking after the affairs of Ayubia National Park, which is the case study area of this research. The planning and management of protected areas in the Khyber Pakhtunkhwa Province are discussed in the next section, 5.9.

5.2 History of forestry and forest management in the Indian Subcontinent

The forest management in the Indian Subcontinent was dissimilar during different points in time. Generally, the forest management in the pre-colonial era can be considered as passive management, whereas the management in the later period can be considered as active management. Ayaz (2001) divided the history of forestry and forest management into the following four periods:

- Pre-historic times
- Middle Ages and the period of Rajas, Sultans and Kings
- British period
- Post-British period

The earliest period in the history of forestry and forest management is concerned with the prehistoric times (BC up to 4th Century AD). According to Ayaz (2001), during the pre-historic times, the forests having diverse vegetation were abundant and the local human population was very small in numbers. Most of the local people were gatherer-hunters and they were mostly collecting wild fruits, berries and tubers from forests, and thus their forest use was non-destructive in nature. Some of the civilisations were relatively more dependent upon forests for timber and firewood. Overall, forests were considered as no man's property and the people had free access to derive benefits from these forests. However, when the Aryans, who were an agro-pastoral society, invaded the area, they cleared vast areas for settlement, cultivation and grazing purposes (Ayaz, 2001).

The Middle Ages and the period of Rajas, Sultans and Kings covers the time between the 5th to mid-nineteenth century. During that period, the forests of the Indian Subcontinent were considered to be the property of the monarchs, who used to claim absolute ownership of the forests (Ayaz, 2001; Hassan, 2008). However, the public were allowed to fulfill their household requirements for firewood and timber from these forests (Alcorn & Molnar, 1996; Ayaz, 2001; Hassan, 2008). During this period, there was no systematic forest management; however, the

local rulers were able to protect these forests, despite heavy use by the public (Alcorn & Molnar, 1996; Ayaz, 2001). To this end, the rules regarding forest use were established and enforced through local leaders and, consequently, the forests were not eliminated, despite heavy use (Alcorn & Molnar, 1996). The rulers were conserving these forests, not for fulfilling other needs or using forest products for trade (Alcorn & Molnar, 1996), but they were more interested in using these forests as hunting grounds (Alcorn & Molnar, 1996; Ayaz, 2001). Specifically, those areas that were easily accessible and were rich in game species were preserved as royal hunting grounds (Ayaz, 2001).

The British period covers the time between the mid-nineteenth to mid-twentieth century, when the British colonial rulers governed the management of forests for almost one century (1857 to 1947). Although, this period was short, it was significant in the history of forest management in the Indian Subcontinent, because systematic forest management started during that period (Ayaz, 2001). This rule involved strengthening government control over forest resources to ensure their continued commercial availability and, for this purpose, the forest officers were trained in paramilitary traditions to implement colonial policies and undermine the traditional community rights and indigenous use of systems (Palit, 1996; Rishi, 2007). This unique colonial forestry was born in British India and was later transferred to other parts of the British Empire (Tucker, 1982). According to Gadgil and Guha (1994), the "imperatives of colonial forestry were largely commercial" and "its most significant consequence was the intensification of social conflict between the state and its subject" (p. 104). Critics argue that based on such an approach, the "powerful outsiders brutally suppressed" the resistance of local communities "to outsiders' extraction of forest resources" (Sponsel, Headland & Bailey, 1996, p. 96).

Finally, the Post British period covers the time after the mid-twentieth century to date. This period starts with the partition of British India in to Pakistan and an Independent Indian state. The period is discussed in detail in next few sections, with reference to Pakistan, as the research is conducted there.

5.3 Forest administration under British colonial rule / imperialism

Throughout South Asia, there was a great influence of British colonization on the forest management (Poffenberger, 2000), forest history and the related human ecology (Sponsel *et al.*, 1996). According to Poffenberger and Singh (1996), two thousand years ago, about 85 percent of the area of the Indian Subcontinent was covered with forests; however, with the passage of time, 90 percent of the forest cover disappeared (Myers, 1989). The recorded

decline of forests in British India started in the eighteenth century, when the East India Company became the de facto ruler of most of India and they started plundering the wealth of India (Brockway, 1979). Ghosh (2006) asserted that "the East India Company went on 'empire building' and the first 100 years of British rule witnessed a colossal plunder of half of India's forest vegetation. The resultant timbers went to feed the railways and the new and old shipyards in both India and England" (p. 1). The commercial exploitation under the British administration was so high that doubts were even raised in the 1850s about the sustainability of forests, and the deforestation between the 1850s and 1860s was considered as the period of the first massive deforestation in the Himalayas (Knudsen, 1996; Tucker, 1982). Similarly, both World Wars I and II accelerated deforestation in the Indian Subcontinent (Poffenberger & Singh, 1996). According to Rangan (1997), during the start of the nineteenth century, the "British Royal Navy faced severe shortages of timber for ship-building" and they ultimately requested the East India Company to provide steady supplies of timber (p. 76). During that period, the forest exploitation was concentrated on hardwood species. Later, softwood species were exploited after depletion of the hardwood forests (Knudsen, 1996).

After colonizing India, the traditional local system of forest conservation was banished and was later replaced by the Indian Imperial Forest Service, which was created in 1864. This system progressively reduced the rights of the local communities in the forests (Alcorn & Molnar, 1996). The first forest policy came during 1868, whereas the first forest act came during 1878, which ultimately banished the rights of indigenous communities from using the forests (Ghosh, 2006). Accordingly, the approach towards policy, planning and management was totally top-down. Moreover, "in the interests of the Queen and empire, the government proclaimed all 'unsettled' and 'ownerless' common property resources like pastures and forests as 'eminent domain', which meant that the colonial state would 'manage' the forests as it saw fit" (Ghosh, 2006, p. 2).

Similarly, this conventional forestry viewed the local communities as threat, their activities as biotic interference, and resultantly turned foresters into policemen or soldiers and gave the role of national thieves to the local people (Palit, 1996; Rishi, 2007; Shepherd, 1992). The centralized, authoritarian, formalistic, and inefficient bureaucracies of the forestry sector organization follow the policies which consider the local people as the "enemies of forests" (Thompson, 1995, p. 1521). They tended to blame people for the problems in the forestry sector, and thus imposed "stringent regulatory measures" and "military style controls" over the locals (Kumar & Kant, 2005, p. 662; Society for Promotion of Wastelands Development, 1992). Although, this sort of bureaucratic system was in line with the requirements of the colonial

government, however, it was non-responsive to the needs of local communities (Kumar & Kant, 2005). Critics argued that in the Indian Subcontinent, deforestation was accelerated during the colonial period due to the policies of the British Government, expansion of the commercial interests and the consequent decline of the role of local communities' regulation of forests (Sponsel *et al.*, 1996).

Forests historically have been the site of conflicts between states and those people whose livelihoods depend on the resources of those forests (Menzies, 2004). However, in the Indian Subcontinent, it was the forest policies of the British Government that resulted in unrest amongst the local populations (Agrawal, 2005; Gadgil & Guha, 1994; Knudsen, 1996). As a result, natural resources were degraded in certain areas and vanished in other vulnerable areas. In many places, the forests were set on fire so that the local people could gain agricultural land. During 1921, there were violent protests and a nationwide outcry against the colonial oppression and, consequently, hundreds of thousands of acres of natural forests were set on fire by the local communities in the Kumaon region of the Himalayas in an attempt to object to the establishment of state forest reserves (Agrawal, 2005; Knudsen, 1996). Thus, some critics feel that such state management of forests which alienated the local communities ultimately contributed to large-scale deforestation (Sponsel *et al.*, 1996).

5.4 Forestry administration in Pakistan

The forestry education system, the forest department and the forest laws are the three pillars of the forestry administration system which was established by the colonial government to further their goals in British India (Sial, 2000). In Pakistan, forestry is a provincial subject and all provinces manage their forests through provincial forest departments. Similarly, the policymaking, planning and management of the forests, wildlife and protected areas are mostly in the hands of professional foresters. The Wildlife Department, whether independent or attached to the Forest Department, is under the influence of foresters.

5.4.1 Forestry education system

The officers of the Forest or Wildlife Department(s), go through two years of mandatory, intensive forestry training before formally starting their job in the provincial Forest or Wildlife Department. The two years training, which leads to a B.Sc. or M.Sc. degree in Forestry, is completed in the PFI, which is the sole Forest Academy of the country. Strangely, the courses offered at B.Sc. and M.Sc. level are almost identical. Out of 37 courses, there is a difference in

just four. Check Appendix 5.1 for details. Thus, specialization has no scope in the current syllabi being offered at PFI.

Critics argue that the aim of the forestry education is to produce "generalists" who can "protect and manage the resource through coercive policing methods" (Sial, 2000, p. 75). It is further believed that such forestry education "leaves a deep imprint on forest functionaries" (Sial, 2000, p. 75). Similarly, it is believed that the two-year training "instils a hierarchical, authoritarian culture which prevents the new, more sensitive forest policies" from being implemented (Hannam, 2000, p. 285).

Not only in Pakistan, but also throughout the Indian Subcontinent, there is a growing recognition regarding reforms in forestry education (Anwar, 2007; Sial, 2000; McGean, Roy & Chatterjee, 1996; Palit, 1996). According to McGean *et al.* "without guidance through formal and in-service training, forestry staff were unable to respond to the changing needs of the forest department or the needs of participating forest communities" (1996, p. 235). Likewise Shinwari (2010) considers that at PFI little importance is given to the Non-Timber Forest Products; rather the focus of forestry education is timber management. Similarly, Anwar (2007) concluded that the courses taught in forestry and wildlife at the Pakistan Forest Institute are very out-dated and, consequently, there is a severe shortage of technically equipped staff for planning and managing the protected areas.

According to Sial (2000, p. 75), as the forestry education system lays the foundation for the forestry institutions in the country, so for long-term and sustainable reforms, it is essential to reform the education system. Palit (1996) added that as the forestry education gives little or no attention to the social and economic contexts in which forest management takes place, so consequently the "graduating foresters are unprepared to deal with forest-dependent communities, non-timber forest production systems, or with the challenges of integrated forest ecosystem management" (p. 223). It is, therefore, suggested that the curriculum of the PFI must be improved and upgraded, giving more emphasis to biodiversity conservation, participatory management, community involvement, obligations of international conventions and other emerging challenges in this field (Anwar, 2007).

5.4.2 Forest Department

Each provincial Forest Department in Pakistan is considered as the biggest landlord of the respective province, as most of the forests are owned and managed by these departments. With declarations of some parts of the forests as protected areas, the management is shared between the Forest Department and the concerned Wildlife Department, the latter being part of

the Forestry organization. Overall, the administrative machinery of the Forest Department is geared towards revenue generation, with a strong focus on timber harvesting from natural forests, and in doing so, it places government control above local needs (Sial, 2000). Consequently, in the past, timber harvesting was favoured over protected areas management and the overall conservation needs.

The forestry sector in Pakistan is considered to be one of the most distinctive of remaining colonial artefacts (Ahmed & Mahmood, 1998). The Forest Department of the Khyber Pakhtunkhwa Province is one of the many offspring of the Imperial Forest Department. The organization continues to be a top-down, authoritative, and hierarchical organization, which is centralized in management operations, insular in outlook, and bureaucratic in nature (Sial, 2000).

Fundamentally, the approach, legal commandments, decision-making, administrative and executive set-up, and jurisdictional structure of the department remain the same as they were in the parent colonial organization. The foresters still trust the outlook of colonial officials about conservation, according to whom, "forests could be saved only if managed in an authoritarian manner by foresters" (Hardiman, 1996, p. 109). Consequently, despite the fact that more than 60 years have passed since the country gained independence, the Forest Department is still not willing to change its bureaucratic, colonial form of governance, top-down attitude, and allow local people more say in forestry-related issues. The organization maintains an outmoded legislation and administration, which present many loopholes that can be exploited by influential individuals on the one hand, and affect the livelihood of large number of rural people on other hand (Sial, 2000). Similarly, the rules and procedures of the department have changed little since independence (Geiser & Steimann, 2004), and they focus on the state which alienates the local people through policing (Sial, 2000).

It is believed that the policing efforts of the Forest Department have seldom succeeded in protecting the forests; rather they have earned mistrust and confrontation with local communities and defamation for the department staff (Sial, 2000). Similarly, such colonial-style exclusionary policies of the Forest Departments never did work as intended because they disregarded the logic of indigenous institutions (Ahmed, 2001; Southwold-Llewellyn, 2006). Rather, such policies further marginalize the poor social groups whose subsistence and survival is dependent on the forest resources (Gadgil & Guha, 1994). Khan (2002) considers the attitude of foresters as being the masters and sole custodians of the state lands and forests as an important and predominant issue in natural resource conservation.

It is also believed that the Forest Department is a corrupt organization and its staff are considered responsible for resisting the devolution of control over natural resources (Ali & Benjaminsen, 2004; Ali *et al.*, 2005; Blaikie & Muldarin, 2004; Gohar, 2002; Ives, 2004; Knudsen, 1996; Nyborg, 2002). Similarly, Akhter *et al.* (2010) added that "it is considered a common practice" that the officials of the organization "take bribery and allow illegal traders to cut-down trees mercilessly" (p. 186). Moreover, due to the absence of any effective accountability mechanism, such corruption becomes more damaging (Akhter *et al.*, 2010; World Bank, 1997).

5.4.3 Forest laws

Following independence in 1947, the Forest Departments were established in all the provincial and independent territories of Pakistan. All these newly established organizations adopted the same policies of the former Imperial Forest Service of British India (Knudsen, 1996; Qazi, 1994), which was issued vide their circular No. 22-F, dated 19th October, 1894 which aimed at: "The protection, management and administration of forests for the general well-being of the country, preservation of climate conditions and for the fulfillment of the people's needs of local inhabitants but without detriment to forest resource".

Later different governments amended the forest laws during different periods. In the early years (fifties), the emphasis was on forest protection and commercial production of timber and firewood for generating revenue for the state, whereas in the later policies some importance was also given to the human dimension and protection functions (Ayaz, 2001). Critics, however, argue that despite the global change in management of natural resources, the critical dilemmas of the natural resource management policies in Pakistan are the absence of attention to human dimension aspects and the focus on "pro-conservation" approaches at the cost of local livelihoods (Shahbaz, Ali & Suleri, 2006, p. 10). Although successive governments repeatedly amended the policies, the authoritarian nature always remained the basis of all the policies. Resultantly, most of the forest policies have viewed the people as a prime threat to the forests (Sial, 2000).

Critics argue that there was much rhetoric in some recent amendments in the policies regarding the "concept of participation and sustainable livelihoods". However, in practice these policies are also considered to be a replica of the previously top-down, autocratic and non-participatory forest policies (Shahbaz *et. al.*, 2006, p. 441). Although, the policies of 1991 and 2001 are claimed to be participatory, the civil society organisations criticized these as "donor

driven" policies, ignoring the ground-level realities and needs of the local population (Shahbaz *et. al.*, 2006, p. 10).

The goal of the latest amendment in forest legislation of Khyber Pakhtunkhwa in 2002 was to make participatory and joint forest management an integral part of forest management and to replace the traditional authoritative approach (Sial, 2000). Accordingly, Forest Ordinance 2002 was promulgated in the province on June 10, 2002. However, democracy, good governance, participation or sustainable resource use was not defined explicitly in this ordinance (Southwold-Llewellyn, 2006). Moreover, this ordinance declared the territorial staff of the forest department as a "force", who can now carry weapons on duty (Steimann, 2004, p. 34). Critics consider that the ordinance now granted "... more powers than ever" (Steimann, 2004, p. 79), and goes against the intent of the forest policy that enshrines the principles of participation (Suleri, 2002, p. 20). They consider this as a serious contradiction in the ordinance and, resultantly, many civil society organizations held protests and demonstrations against it (Shahbaz, 2007).

5.5 Forests and deforestation in Pakistan

At the time of independence in 1947, 33% of the area of Pakistan was under forests, whereas now the government's own figures indicate tree cover to be just 4 – 4.8% of the country's land surface, the remaining lost due to deforestation (Gronewold, 2010; Qaimkhani, 2009). According to the Millennium Development Goals, the government of Pakistan aims at increasing the forest area up to 6% by the year 2015 (Qaimkhani, 2009). However, independent sources always questioned the government statistics about the forest area. The independent sources claimed that the percentage of land area covered by forest in Pakistan is between 2.4 –

2.5% (Bunseki, 2010; PakObserver, 2011). Almost 85% of the forests in Pakistan are state owned, and their management, conservation and protection are the responsibility of the state (Hassan, 2008). Around 40% of the total national forest area is in the Khyber Pakhtunkhwa Province, where the majority of the forests are in the mountainous tract of Malakand and Hazara civil divisions. The rest of the forests are in other

Figure 5.1: Distribution of forest area of Pakistan

Northern Areas, 15.7
Punjab, 14
Kashmir, 6.5
Sindh, 14.4
Baluchistan, 9.4
Khyber Pakhtunkhwa, 40
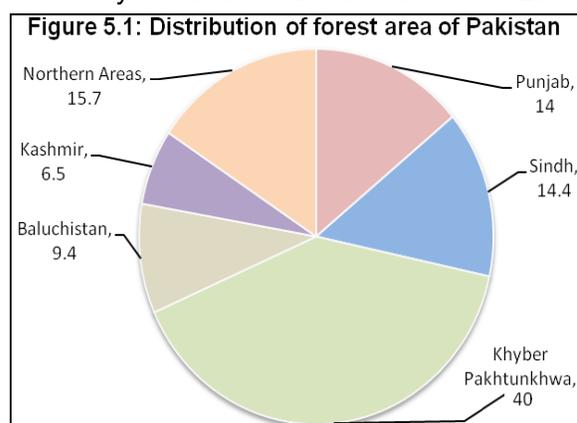
provinces and territories (Baluchistan 14%, Punjab 14.4%, and Sindh 9.4%, Northern Areas 15.7%, Azad Jammu and Kashmir 6.5%) (Hassan, 2008). Figure 5.1 shows the relative

distribution of the forest area among the provinces and territories within Pakistan. The forests of the Khyber Pakhtunkhwa Province in Malakand and Hazara civil divisions always remained under heavy social pressure (Geiser & Steimann, 2004). It is one of the major reasons that most of the natural forests of northern Pakistan are denuded, which is evident from the current rate of deforestation in the country, which is considered to be the second highest in the world (Government of Pakistan, 2005; World Fact Book, 2009). The current estimated rate of deforestation in the country is 13 million hectares per year (Tyab, 2011). Such massive deforestation results in large-scale disappearance of trees, shrubs and ground flora, together with the associated fauna (Government of Pakistan, 2000) and expose the denuded mountain slopes to the increased risks of landslides and floods (Stolton, Dudley & Randall, 2008).

Overall, South Asia has the lowest amount of forest area (16.3%) as a percentage of the total land area (Rogers, Jalal & Boyd, 2008) but in Pakistan, this percentage is comparatively much less i.e., 2.4 – 2.5% (Bunseki, 2010; PakObserver, 2011). Consequently, the country suffers from far more severe forest product scarcity than most other countries and the forest and woodland area per person is considered to be one of the world's lowest, at 0.03 of a hectare (Sial, 2000).

The dependency of local communities on natural forests in the Himalayas has been enormous for their subsistence since time immemorial (Agrawal, 2005). Similarly, in Pakistan 70% of the population lives in rural areas and a large part of this population is directly or indirectly dependent on exploitation of natural resources (Government of Pakistan, 2000). In Pakistan, the poverty amongst the communities living in the high-hill forests is very serious and severe, because these areas have no access to modern housing facilities like electricity, gas, etc. Thus, due to overall poor policies and planning of the government, harsh weather, limited accessibility, and remoteness from major urban centers and civic services, the inhabitants of the high-hill forests are dependent upon the natural forests in order to improve their living standards and to keep their houses warm during the harsh winters. Moreover, due to increased population of humans and livestock and the dependence on the natural forests, the traditional planning and legislation became totally ineffective in protecting the existing forests and parks. Resultantly, depletion and degradation of natural resources in general and forests in particular are evident.

5.6 Deforestation and some its intense consequential devastation in Pakistan

The government of Pakistan claims that it has been giving increasing importance to co-management, and emphasizes the involvement of local communities in the conservation and sustainable use of biodiversity (Government of Pakistan, 2000). However, in reality, the

traditional system of forest management is still too strong to be replaced by a co-management approach. Resultantly, despite the fact that the government spent millions of dollars on strengthening the conventional system for protecting these forests, in the long-term, the system failed to control the deforestation and conserve the limited forest resources (Malik, 2001). As the forest communities do not have any sense of ownership, they are reluctant to protect these forests (Rogers, Jalal & Boyd, 2008). The argument was narrated by Sponsel *et al.* (1996) who added that the deforestation accelerates in those countries where local communities' rights to forests are not respected and where efforts are made to protect the government-owned forests through paramilitary forest departments. It is believed that deforestation can be arrested if governments choose to assist communities in managing their forests (Sponsel *et al.*, 1996). Since Pakistan is a forest-poor country, the demands on its forests are getting higher, due to an annual 3% population growth and a 6% industrial growth (Sial, 2000, p. 69). Such a low amount of forested land and the continuing degradation of existing forest cover are considered to be serious threats to forest sustainability in Pakistan (Zubair & Chris, 2006).

5.6.1 Deforestation in Pakistan

Critics believe that in spite of the claims by the Forest Departments regarding planting of millions of trees every year and managing the forest resources through 'scientifically prepared' forest work plans, the country is losing its forest cover at a high rate (Malik, 1994). From 1880 to 1980, the forest area of the country decreased by 52% from 141,530 to 67,310 sq km (Hassan, 2001). As per the World Resources Institute (2006), during the ten-year period from 1990-2000, the total forest area of Pakistan decreased by 14% as opposed to the 1% overall decrease of forest area throughout the rest of Asia. According to the United Nations Statistics Division, the percent decrease in the forest area from 1990 to 2007 was 28% (UNSD, 2010). Similarly the total forest area decreased from 21,160 square kilometres in 2000 to 19,020 square kilometres in 2005 (World Bank, 2008). Likewise, it is also estimated that approximately 39,000 ha of forest are cleared every year (FAO, 2001). It is estimated that if the present rate of deforestation continues, the remaining forests will disappear by 2026 (Knudsen, 1996).

Deforestation is a complex phenomenon with multiple causes (Sponsel *et al.*, 1996). One of the basic signs of failure of state-centered forest policies is the degradation of the forest resources (Kumar & Kant, 2005). In Pakistan, the state failure in the forestry sector is evident in terms of its second highest deforestation rate in the world (Government of Pakistan, 2005; World Fact Book, 2009). Another key problem in the context of deforestation in Pakistan is the population explosion from 30 million in 1947 to 174 million during the next 63 years. Critics

stated that when the population densities go up, then deforestation must logically occur (Shepherd, 1992). Similarly, in rural areas of Pakistan, firewood is used for daily cooking and home heating (Malik, 1994). However, the key factor responsible for the current deforestation in Pakistan is mainly attributed to the failure of the forestry sector. The viewpoint is supported with the argument that in the neighbouring countries, i.e., India and China, the forest areas are increasing (Hunt & Srinivasan, 2011), despite their increased population, which is 6 and 7 times respectively higher as compared to Pakistan (Infoplease, 2010).

Consumption of woody biomass, primarily for use as firewood, is expected to increase in line with population growth of 3% per year; but the consumption exceeds its production in all the provinces of the country (Government of Pakistan, 2000). Similarly, according to the Pakistan National Conservation Strategy, the projected consumption of timber and firewood in the Khyber Pakhtunkhwa for 2018 is estimated to be 8.2 million M^3 (Government of Pakistan, 1992). The utilization of firewood and timber by locals in such a huge quantity is viewed as being another key cause of deforestation in the country (Government of Pakistan, 2000). An additional major reason for the current deforestation is the higher levels of corruption in the custodian agencies. The forest resources are depleted at the rate of 0.2 percent per year (Akhter *et al.*, 2010; Government of Pakistan, 2000). Mahatma Gandhi once said that this world has enough to meet the needs of everybody but not the greed of everybody (Rogers, Jalal & Boyd, 2008, p. 67), and the need and greed of increased population are considered to be the "ultimate causes of deforestation" (Sponsel *et al.*, 1996, p. 14).

5.6.2 Intense consequential devastation of deforestation in Pakistan

Some recent natural disasters in Pakistan were more severe in the areas where there were once natural forests, but they are now completely or partially denuded. The deadly earthquake of 2005 killed over 80,000 individuals and left 3.5 million people homeless (Dykstra, 2010). The earthquake injured 128,000 people and besides that, 1.13 million lost their source of livelihood and around 2.3 million people were made food insecure by the earthquake and its aftershocks (Stolton *et al.*, 2008).

The earthquake triggered a series of shallow type landslides specifically along the steep slopes and road cuts. Critics argue that most of the devastation was the result of a "large number of shallow landslides that were probably exacerbated by major forest loss in the region" (Stolton *et al.,* 2008, p. 54). According to a reconnaissance survey conducted by the Earthquake Engineering Research Institute (EERI) shortly after the earthquake, it was noticed by the team of experts that the "shallow landslides were not associated with specific geologic units and/or

type of slopes. They were as deep as the root zone of the vegetative cover, anywhere from several decimetres to a meter deep, and consisted of dry, highly disaggregated and fractured material that cascaded down slope to flatter areas at or near the base of steep slopes" (EERI, 2006, p. 3). Similarly, the destruction following the earthquake was less in the areas having more natural land cover (Stolton *et al.*, 2008). The various pictures in Figure 5.2 and 5.3 give a clear idea about the nature of devastation that was exacerbated due to the forest loss along the high hills.

Figure 5.2: Pictures of hilly areas affected in the deadly earthquake of 2005

Massive landslides in the otherwise denuded mountain area of Kashmir. The completely collapsed buildings with intact roofs can be seen in the foreground (Source: EERI, 2006).
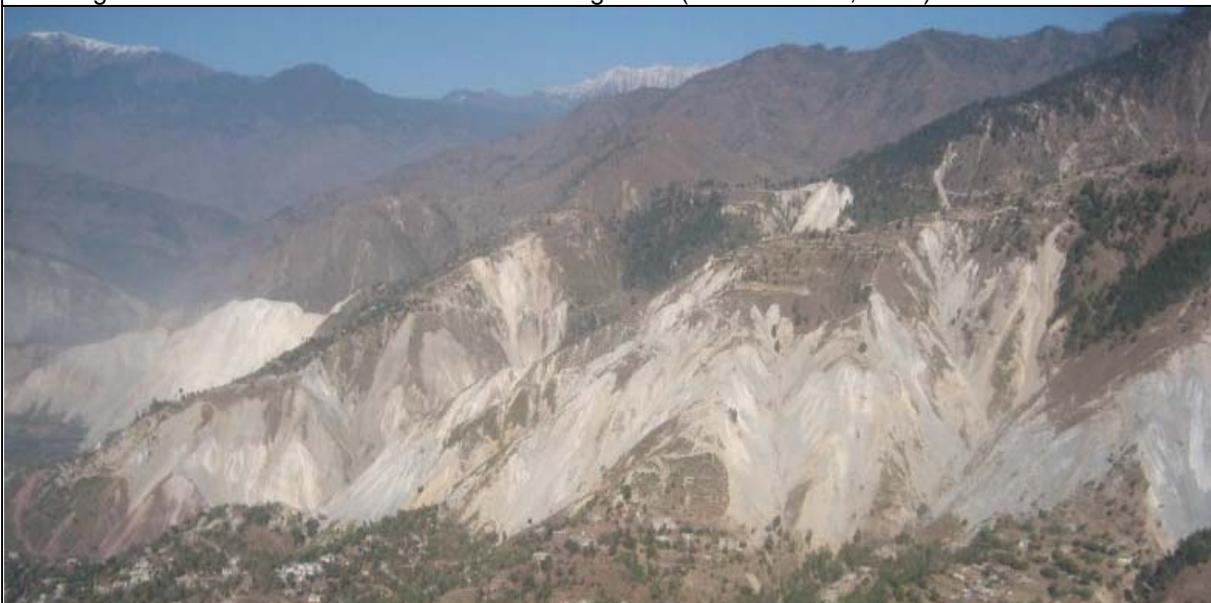
The concentration of landslides along the mid slopes in the earthquake zone of Kashmir. Note the partially denuded mountains in the background (Source: EERI, 2006).

Figure 5.3: Pictures of hilly tracts of Muzzafarabd after the deadly earthquake of 2005

Another view of extensive land sliding in the earthquake affected area in Muzaffarabad (Source: Durrani *et al.*, 2005).

Extensive land sliding along the road in Muzaffarabad (Source: Durrani *et al.*, 2005).

A satellite image of the Muzaffarabad area (Source: Durrani *et al.*, 2005).

Palas valley is located in Pattan Tehsil of Kohistan District in the Khyber Pakhtunkhwa Province. The area lies east of the River Indus in the Western Himalayas. The valley is not far from the epicentre of the 2005 earthquake, but the relative devastation of the earthquake was not so severe in this area as compared to the nearby areas (Birdlife International, 2011, Stolton *et al.*, 2008). According to Rab Nawaz, who was the Coordinator of Palas Conservation and Development Project, "Where the forest had been cut, landslides were much worse" (Birdlife International, 2011). Rab Nawaz further added, "The people of Palas are aware that their forests saved them from the kind of devastating landslides suffered in deforested areas, where whole chunks of the mountainsides crashed into the valleys" (Birdlife International, 2011, Stolton *et al.*, 2008).

Similarly, the recent crisis due to devastating floods of summer 2010 killed 2,000, injured 3,000 and affected 21 million people, besides damaging 2 million houses and inflicting $9.5 billion losses to the economy (Daily Times, 2010; Hunt & Srinivasan, 2011). The devastation of these floods can be easily correlated with the accelerated deforestation, specifically in the northern mountains. The intensity of these floods was more severe in areas where the 'timber mafia'[9] remained active in the past (Gronewold, 2010; Rodriguez, 2010; Shamsie, 2010). For years, the environmental groups, activists and journalists showed their concern about the increasing power of the 'timber mafia', which was engaged in illegal logging and the increasing vulnerability of the de-forested regions to floods, landslides and soil erosion (Shamsie, 2010).

One of the reasons for such amplified intensity of floods was the increased runoff due to absence of trees and ground flora in the deforested mountainous areas, which allowed the violent floodwater to flow without any hindrance, and immediately fill the waterways and rivers beyond their natural limits. Critics argue that deforestation over the past half century has worsened the flood damages, because more sediment has been flushed down to rivers during this period, which decreases their capacity to handle floods (Falcon-Lang, 2010). The water storage capacity of the biggest dam – Tarbela – is decreasing by 90,000 acre feet each year, (Khalid, 2011). This results in decreases in power generation and the control of floods, due to the limited capacity of the dams. Figure 5.4 gives an idea about the severity of flash floods and the siltation due to such flash floods.

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[9] The term is used in Pakistan for network of illegal loggers. It is described as "a shadowy network of politically connected individuals and firms that chop down trees at will and cart them away under cover of darkness, with bribes to local and national officials guaranteeing that forest managers look the other way" (Gronewold, 2010).

Figure 5.4: Pictures of the hilly areas affected by the deadly floods of 2010

Flood havoc in Swat area. Note the treeless mountains in the background (Source: Torwali, 2010).

Millions of people have been displaced by the floods (Source: Reuters, 2011)
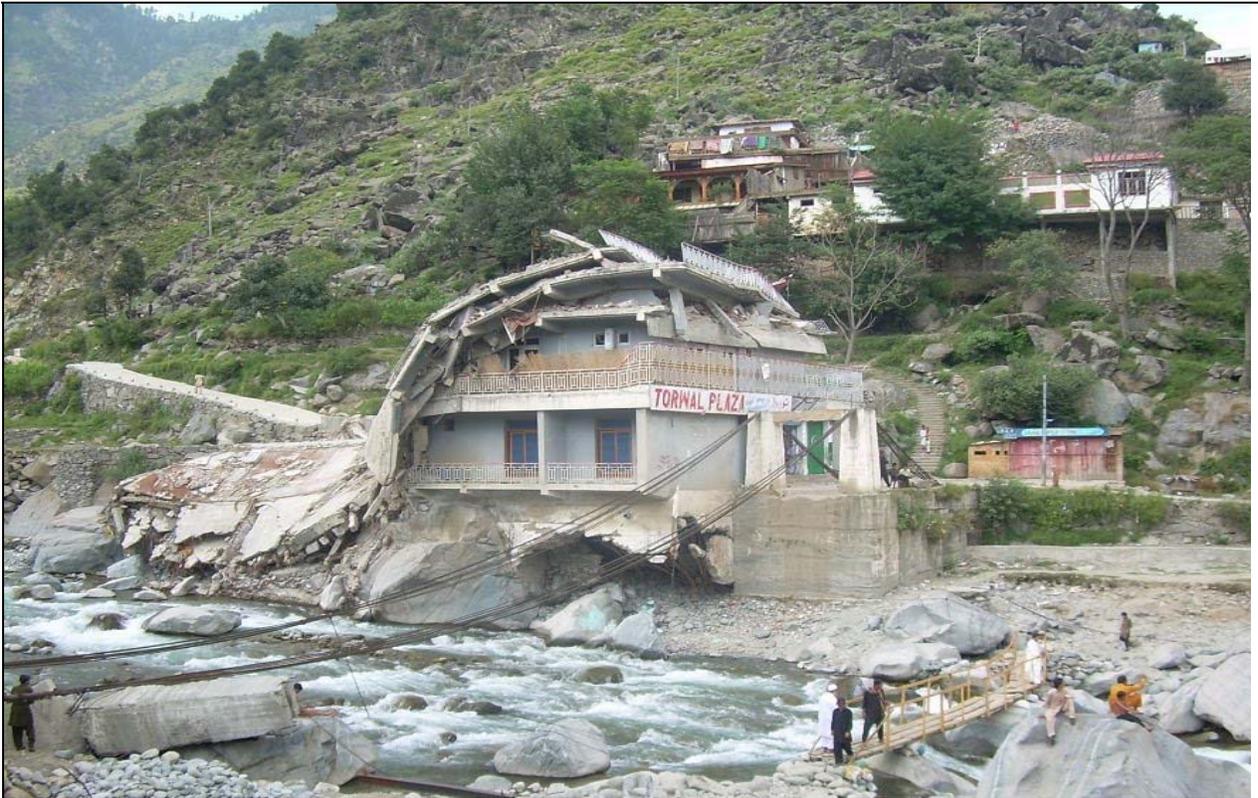
Damaged buildings and suspension bridge after the flood (Source: MinaAllah, 2010a).

Silt deposited in the shops after the floodwater receded (Source: MinaAllah, 2010b).

According to a recent UN report, the situation of deforestation was further worsened in Pakistan after the devastating floods of 2010 (Tyab, 2011). Renowned environmentalist and Director of the Pakistan Wetlands Program, Dr. Ghulam Akbar, said that "Deforestation played a tremendous role in aggravating the floods", adding that "had there been good forests, as we used to have 25 years back, the impact of flooding would have been much less" (Rodriguez, 2010). The other major reason for such amplified intensity of floods was the high volume of timber, which were dislodged by torrents of water and they swept away bridges, people and anything else in their way. This was also a key factor that weakens the dams and retaining walls, which were otherwise supposed to protect the land from floods (Shamsie, 2010). The various pictures in Figure 5.5 give a clear idea about the timber washed by the flash floods from the high hill natural forests.

Figure 5.5: Washed away timber in the deadly floods of 2010

People collecting timber from flood water washed away from the high hills (Source: Qayyum, 2010).

Over sized log washed away by the flood water. Such timber swept away bridges, people and anything else in their way and weakened dams / retaining walls (Source: Zada, 2010).

5.7 History of wildlife conservation and management in Pakistan

In the pre-partition era, hunting and other forms of resource exploitation were controlled within the areas declared as Reserved or Protected Forests, under the provisions of the Indian Forest Act, 1927[10]. Critics believe that the Act was not conservation-oriented, but it was more focused on commercial forestry (IUCN, 1990).

After independence in 1947, not much attention was given to nature conservation and wildlife because it was not a priority for the newly independent country (Grigoriev, 2000). However, until 1967, the token management of some game species of wildlife was the responsibility of West Pakistan Game Department. The department was later abolished and its functions were transferred to West Pakistan Forest Department (IUCN, 1990; Malik, 1994). Accordingly, the administrative control of the staff of the obsolete Game Department was also entrusted to Forest Officers, who were not clear about the duties and jurisdictions of the personnel of the obsolete Game Department (Malik, 1994).

At that time, the focus of management was to maximize the game species for shooting (Malik, 1994). When the West Pakistan province was dissolved during 1970, the Forest Department of West Pakistan was split in to four Provincial Forest Departments, which were established in Khyber Paktunkhwa, Punjab, Sindh and Baluchistan. Resultantly, the functions of the obsolete Game Department became the responsibility of the provincial Forest Department.

In the absence of a proper organization to take care of wildlife and its habitat, the wildlife of the country was continuously declining during the 1950s and 1960s (Grigoriev, 2000). Consequently, during 1966 and 1967, the government involved World Wildlife Fund (WWF) to undertake wildlife surveys and assess their status and to suggest measures for the wildlife conservation in the country. This was the beginning of formal wildlife conservation in the country. The WWF survey revealed that 34 mammals, 20 birds and 5 reptiles were rapidly declining in numbers and were on the verge of extinction. On the recommendation of that survey team, the then President of Pakistan, Field Marshal Mohammad Ayub Khan, established a Wildlife Enquiry Committee (WEC) during 1968 to determine the causes of decline in wildlife populations, and to formulate measures for wildlife conservation. Resultantly, the WEC was established, which submitted its report with eight key recommendations for the conservation of wildlife in the country. They attributed the loss of wildlife to the increasing human population, expanding agriculture, industries, and deforestation (Government of Pakistan, 1971).

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[10] Title of the same was changed to Pakistan Forest Act, 1927 after partition in 1947.

Similarly, on the recommendations of WEC, the following wildlife conservation legislation was finalized in all the provinces and territories of the country, between 1972 and 1979:

- Sind Wildlife Protection Ordinance, 1972
- Punjab Wildlife (Protection, Preservation, Conservation and Management) Act, 1974
- Baluchistan Wildlife Protection Act, 1974
- North-West Frontier Province Wildlife (Protection, Preservation, Conservation and Management) Act, 1975
- Northern Areas Wildlife Preservation Act, 1975
- Azad Jammu and Kashmir Wildlife Act, 1975
- Islamabad Wildlife (Protection, Preservation, Conservation and Management) Ordinance, 1979 (IUCN, 1990; Rao, 1984).

Under the provision of these legislations, it was the first attempt in the country to address the conservation of wildlife and its habitat, other than the usual game species (IUCN, 1990). Critics argue that wildlife personnel management between 1967 and 1974 was "marked by nonexistence of a Wildlife Organization, little personal or professional development of staff, lack of self-esteem, non-defined goals, non-effective performance evaluation system, no incentives, lack of self-respect among the personnel, and lack of accountability" (Malik, 1994, p. 71). Consequently, during 1974, the provincial government in the Khyber Pakhtunkhwa Province created a separate Wildlife Wing within the Forest Department, to create a much better setting for the relevant staff of the Wildlife Wing and thus to improve the status of wildlife through improved management. The Former Chief Conservator of the Wildlife Department explained this creation of the Wildlife Wing as "a significant move toward wildlife conservation in the province" and "the time of birth of a future organization under a foster parent organization, the Forest Department" (Malik, 2004, p. 75).

One of the major recommendations of the WEC was to establish a system of special areas for the protection of each of the country's representative ecosystems along with associated flora and fauna. The Committee suggested three categories of special areas i.e., Wildlife Sanctuaries, Game Reserves and National Parks. Consequently, upon the recommendations of WEC, 5 National Parks, 18 Wildlife Sanctuaries and 52 Game Reserves were established in the country for protecting various representative ecosystems along with their associated flora and fauna. These protected areas were mostly established between 1972 and 1979, in those territories that were under the jurisdiction of concerned provincial forest departments. With the passage of time, new areas were added to the list of protected areas in different eco-regions of the country.

5.8 Protected areas coverage in Pakistan

In Pakistan there are three categories of protected areas which are also mentioned in the legal documents as well. These are National Park, Wildlife Sanctuary and Game Reserve. Currently, there are 23 National Parks, 101 Wildlife Sanctuaries and 102 Game Reserves designated in various provinces and territories of the country. The details of different categories of protected areas are given in Table 5.1 and their locations have been marked on the Pakistan map in Figure 5.6.

Table 5.1: List of protected areas in various provinces of Pakistan				
Province / Territory	National Park	Wildlife Sanctuary	Game Reserve	Total
Khyber Pakhtunkhwa	5	8	38	54
Sindh	1	35	14	54
Punjab	3	37	20	59
Baluchistan	2	15	8	32
Azad Jammu & Kashmir	6	0	12	16
Northern Areas	4	5	9	18
Federal Territory	1	1	1	3
Total	23	101	102	236

(Qaimkhani, 2009; WWF, 2006)

Figure 5.6: Locations of protected areas
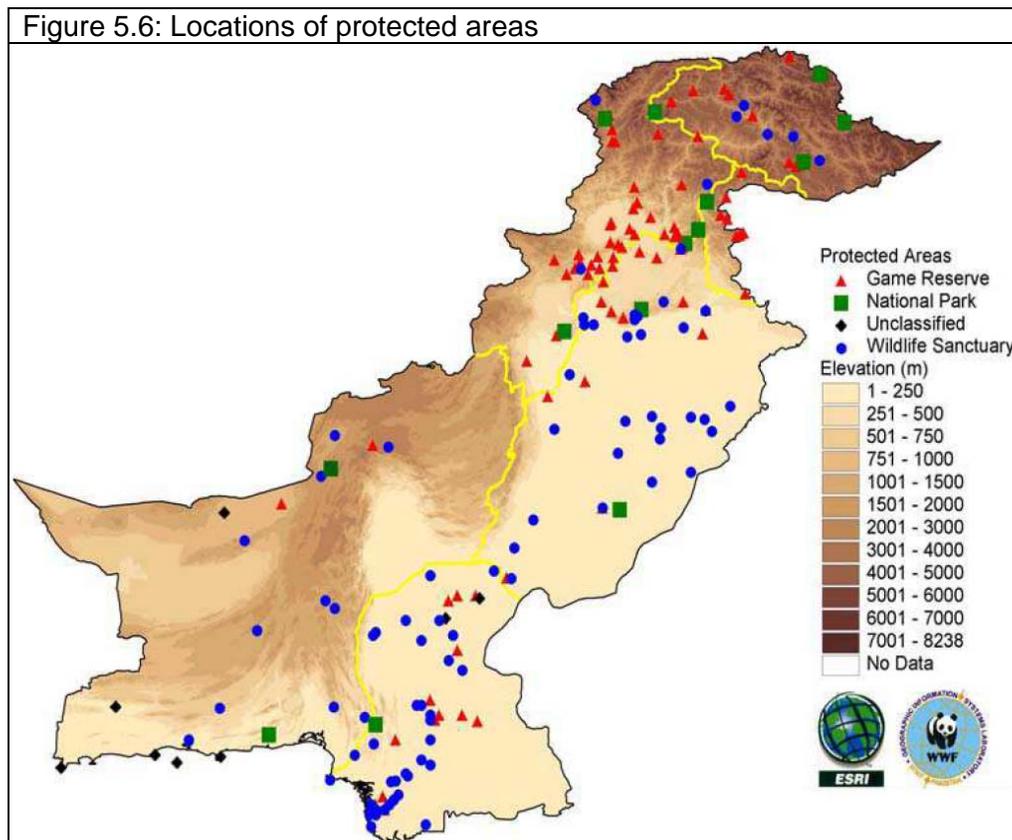
(Source: Qaimkhani, 2009)

The details of the National Parks of Pakistan are provided in Table 5.2.

Table 5.2: List of National Parks of Pakistan		
Name of National Park	Location (Province / Territory)	Year of establishment
Ayubia	Khyber Pakhtunkhwa	1984
Chitral Gol	Khyber Pakhtunkhwa	1984
Lulusar	Khyber Pakhtunkhwa	2003
Saif ul Maluk	Khyber Pakhtunkhwa	2003
Sheikh Budin	Khyber Pakhtunkhwa	1993
Kirthar	Sindh	1974
Hazarganji Chiltan	Baluchistan	1980
Hingol	Baluchistan	1997
Chinji	Punjab	1987
Kala Chitta	Punjab	2009
Lal Suhanra	Punjab	1972
Deva Vatala	Azad Jammu Kashmir	2009
Ghamot	Azad Jammu Kashmir	2004
Gurez	Azad Jammu Kashmir	2009
Machiara	Azad Jammu Kashmir	1996
Pir Lasora	Azad Jammu Kashmir	2005
Toh Pir	Azad Jammu Kashmir	2005
Central Karakoram	Northern Areas	1995
Deosai	Northern Areas	1993
Handrap Shandoor	Northern Areas	1993
Khunjerab	Northern Areas	1975
Margalla Hills	Federal Capital Territory	1980

(Source: Khan *et al.*, 2010)

Besides the above mentioned three legal categories of protected areas, there are some other categories of protected areas in different provinces and territories of the country. Those categories include Community Game Reserves, Wildlife Parks and Wildlife Refuges etc. The number of all these different categories of protected areas is 334 and its area is more than 67,823 sq km, which is equivalent to 11.73% of the area of the country. The details are provided in Table 5.3.

Table 5.3: Total number and respective areas of different categories of protected areas		
Category of protected area	Number	Area (Hectares)
National Park	23	1364895
Wildlife Sanctuary	93	8789397
Game Reserve	101	3606203
Community Game Reserve	62	390215
Private Game Reserve	17	1515
Wildlife Park	5	49373
Wildlife Refuge	2	3321
Unclassified	31	132070
Total	334	14336989

Though a significant area (11.73%) has been added in the protected areas network, these protected areas have some design and coverage issues (Government of Pakistan, 2000; IUCN, 1990; Qaimkhani, 2009). Critics are of the opinion that the "protected areas have been created haphazardly, often in the absence of any criteria for their selection, and boundaries drawn with little or no ecological basis" (IUCN, 1990, p. 74). The protected areas are mostly smaller in size and cannot provide adequate protection to the associated biodiversity (Stolton *et al.*, 2008). Most of the habitats have been represented within the current protected areas system (IUCN, 1990; Mackinnon & Mackinnon, 1986), there is a realization that the coverage of different ecological regions and habitats has not been equitable (Qaimkhani, 2009). Critics argue that the marine ecosystem has not been covered, at all, whereas the dry and sub-humid zones are comparatively over-represented within the protected area network (Qaimkhani, 2009).

Almost all the protected areas of the country are in reality managed by professional foresters trained in the PFI, and who have very little appreciation for conservation and community participation. Critics, therefore, argue that the concerned public sector organizations lack the capacity to effectively manage the protected areas network (Stolton *et al.*, 2008). During declaration of various categories of protected areas, little or no attention was paid to the requirements of local communities living within and around these protected areas (Government of Pakistan, 2000).

Similarly, almost all the protected areas of the country were established and managed by the government through an authoritarian enforcement approach. At the time of establishing wildlife organizations at territorial and provincial levels, these foresters-turned-managers of protected areas perceived that by restricting access to local people through law enforcement, they could effectively conserve the biodiversity, without paying any attention to the needs of local people. However, this arrangement offered little incentive to the local communities to prevent illegal resource use (Stolton *et al.*, 2008). Critics believe that such arrangements often give rise to a series of people-park conflicts (Masozera & Alavalapati, 2004).

The management of these protected areas is also haphazard and based on ad-hoc arrangements, if any. Most of the protected areas lack comprehensive management plans, and if the management plan is there, it is not implemented as planned (Stolton *et al.*, 2008).

5.9 Wildlife Department of the Khyber Pakhtunkhwa Province

Wildlife conservation and management in the Khyber Pakhtunkhwa Province is the responsibility of the provincial Wildlife Department, which is an attached department of the provincial Environment Department (Previously Forest, Fisheries and Wildlife Department). Legal support is provided to the department by the provincial Wildlife Act of 1975, and the rules framed there under.

Formerly, the Wildlife Department in Khyber Pakhtunkhwa was established in 1975, as a wing of the Forest Department. The status of the Wildlife Wing was elevated as an attached department of the Forest Department during 1994. The elevation granted the power to the organization to make formal independent decisions without the active involvement of the Forest Department.

Currently, the Chief Conservator of Wildlife heads the organization and is assisted by two Conservators of Wildlife. Overall, the province is divided into 13 Wildlife divisions, each headed by a Divisional Forest Officer (Wildlife), who is assisted by more than one Range Officers (Wildlife). The organizational chart of the department is provided in Figure 5.7, whereas the breakdown of the administrative units is shown in Appendix 5.2.

Figure 5.7: Organizational chart of the Khyber Pakhtunkhwa Wildlife Department
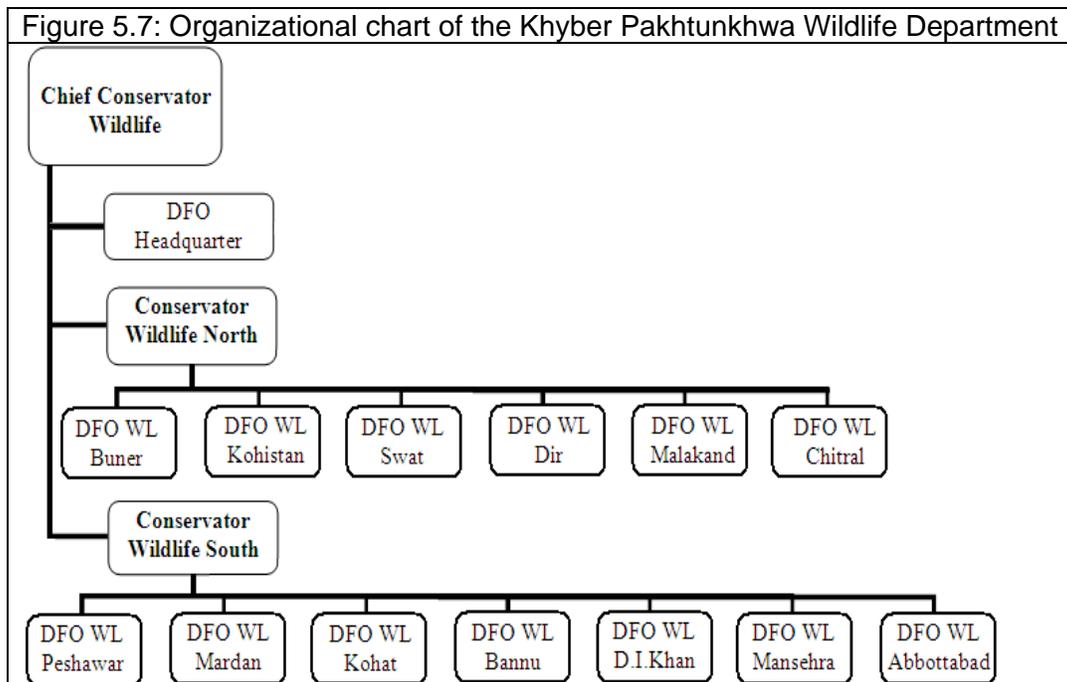
The major functions and responsibilities of the Wildlife department are as follows:

- To enforce the NWFP Wildlife Act of 1975. This Act extends over the entire Province except Federally Administered Tribal Areas (FATA). Through enforcement of the Wildlife Act, the Wildlife Department carries out the following functions:

- To control/regulate sport hunting by prescribing game animals, timing of the hunting season and its length, method of hunting, place of hunting, bag limits, etc,

- To control possession, trade, import and export of wild mammals, birds, and reptiles,

- To protect the legally protected animals and habitats in wildlife sanctuaries and national parks,

- To conduct surveys of wildlife and determine the distribution and status of various species to monitor population trends in the Province,

- To establish and manage national parks, wildlife parks, wildlife sanctuaries, refuges, reserves, and other protected areas (To this effect 467,135 hectares of land mass has been declared protected for in-situ conservation of wildlife species. These include 5 national parks, which extend over an area of 61,857 hectares; 3 wildlife sanctuaries, which extend over an area of 34,212 hectares; and 38 game reserves, which extend over an area of 371,066 hectares. Similarly, for ex-situ conservation, six wildlife parks and one bird pheasantry have been declared in the province. The total area allocated for ex-situ conservation activities is about 6,209 hectares),

- To maintain and improve critical wildlife habitats and to replenish the depleted wildlife populations through protection and/or reintroduction and captive breeding programs,

- To carry out an extension education program to create awareness for wildlife and nature conservation among the people (This is done through maintenance of Wildlife Information Centers, Pheasantries, Wildlife Parks; establishment of Nature Clubs in elementary schools; arranging seminars, workshops, wildlife weeks; distribution of educational material, assisting in research projects of university students etc,

- To ensure the participation of local communities in wildlife conservation (This is done through establishment and maintenance of Village Conservation Committees (VCCs), declaration of Community Game Reserves, and establishment of Village Conservation Fund (VCF), empowerment of the selected community members to exercise the powers of Wildlife Department Officer to enable him to apprehend and arrest poachers, seize arms used in poaching and produce the poacher before the court of law, etc),

- To ensure the implementation of international conventions and treaties on wildlife including CITES, CBD, Ramsar, CMS, UNFCCC.

Being the establishment of the Forest Department, the administration of the Wildlife Department is not much different from that organization. The senior management, mid-level Rangers, and the enforcement staff in the lower hierarchies of the Wildlife Department receive exactly the same professional forestry training and qualifications as that of equivalent positions in the Forest Department. The issue was highlighted by Anwar (2007), who argued that the present employees of the parks, being foresters, are not properly trained to tackle the issues of the parks. He further added that there is no institution in the country which offers separate degree courses in Wildlife Management or Conservation Biology, and the ordinary graduates of Forestry, Biology or Zoology do not have the required professional competence required for management of protected areas.

The policies of the organization tend to be non-participatory and favour the staff of the organization to gain more power. For instance, Section 23 of the provincial Wildlife Act reads, "when in any proceedings taken under this Act or in consequence of anything done under this Act, a question arises as to whether any wild animal, trophy or meat, is the property of Government, such wild animal, trophy or meat shall be presumed to be the property of Government until the contrary is proved". This is a classical example of using the legal aids to favour the organization. Due to such provisions, the wildlife is considered to be the state property, irrespective of the place of its occurrence, whether it is government or private land (Malik, 1994).

Dr. Mumtaz Malik, who headed the Wildlife Department for decades, admitted that the management of the organization is of a "bureaucratic nature" and the powers are centered on a few individuals (Malik, 1994, p. 149). When the territorial staff of the Forest Department was declared as a "force" as a result of ordinance, the Wildlife Department equally enjoyed and availed this opportunity by declaring itself as part of the greater Forest Department and received their fair share in the bounty of receiving the automatic weapons from the provincial government. Malik (1994) pointed out that one of the several causes of poor performance of the Wildlife Department of the province is its "strict bureaucratic management, autocratic leadership and a lack of participatory decision-making" (p. 151). Consequently, "an environment of distrust prevails in the organization, initiative is lacking, and there is a large communication gap among various ranks of the organization" (Malik, 1994, p. 150). It is highly recommended to modify such an approach in the interest of wildlife conservation and for the development of the organization itself (Malik, 1994).

5.10 Planning and management of protected areas in the Khyber Pakhtunkhwa Province

In the Khyber Pakhtunkhwa Province, the management of wildlife and protected areas is conducted through enforcement of the Wildlife Act of 1975 coupled with relevant rules and regulations. Though, throughout the world, public participation has become an essential aspect of natural resource governance (Matta *et al.*, 2005; Pretty, 2003), the conventional wildlife laws of Pakistan had no clear provision for public participation in protected areas. The general understanding among the general public in Pakistan is that conservation of resources is possible through the establishment of co-management regimes (Khan, 2003). The government of Pakistan also realized and acknowledged that the key to protecting the biological heritage of Pakistan lies in the involvement of local people and in the support provided by relevant

competent institutions in the conservation and sustainable use of biodiversity (Government of Pakistan, 2000). Similarly, the government also endorsed the idea that protected area management is effective when the communities living alongside the area can participate in management of protected areas and derive some benefits from these areas (Government of Pakistan, 2000).

As the key for collaborative management is to change the relevant national policies (Kothari, 2008), therefore, for empowering the local communities to participate in management of protected areas, the wildlife laws were amended in Pakistan (Government of Pakistan, 2000). To this effect, the government of Khyber Pakhtunkhwa Province started a programme of community participation in wildlife conservation during 1990 and trophy hunting was introduced as an incentive to this programme. Similarly, the government notified separate rules for declaration of community game reserves and certain areas were declared as community game reserves. The representatives of the relevant communities were empowered with the authority of wildlife officers under the provincial wildlife laws to apprehend poachers, confiscate their guns and produce them in the courts. Communities' bank accounts were opened in the form of a Village Conservation Fund and 80% of the income from trophy hunting of animals and 90% of the income from sport hunting of birds were deposited in the accounts of communities for community welfare and wildlife conservation (Malik, 2001). Moreover, Community Controlled Hunting Areas have also been established as a separate category of protected areas, which is being managed by the custodian communities with the help of respective wildlife departments (Anwar, 2007). However, in National Parks, public participation in its planning and management is not common.

5.11 Summary

There are always gaps between the theoretical aspects, laws and the actual practice. However, in case of Pakistan, the theoretical aspects are submerged with the totally different practices prevalent in conservation of natural resources. This chapter focused on the actual practices prevalent in the concerned agencies. The chapter described the history of forestry and forest management in the Indian Subcontinent as it paved the way for future actions, which ultimately resulted in the present complicated management of wildlife, which rests with one agency (the Wildlife Department) and the wildlife habitat that rests with another organization (the Forest Department). There is little likelihood for coherent policies to emerge from such compartmentalized arrangement. Later I discussed the three components of the forestry administration i.e., forestry education system, the Forest Department and the forest laws.

Afterwards I explained the ineffectiveness of the forestry administration, which results in mass scale disappearance of the forests and due to which, Pakistan is now having the second highest deforestation rate in the world. Next the intense consequential devastation of the deforestation was described focusing on the issues related with aftershocks of earthquake, siltation, and flash floods.

In the subsequent section, I explained the history of wildlife conservation and management in Pakistan. This section shed further light on the interplay of wildlife management by the Wildlife Department and Forest Department. Variety in protected areas and its coverage was illustrated. As wildlife conservation and management in Khyber Pakhtunkhwa is the responsibility of the provincial Wildlife Department, its role in conservation and management of wildlife and protected areas was discussed. The next chapter deals with the methodological approach that I followed in this research project and in undertaking this demanding research project in Ayubia National Park.

Chapter 6
Methodology

6.1 Introduction

This chapter deals with the research process and reflects upon the choices made in selecting the methodological approach and analytical techniques employed herein. To conduct this research study, a detailed methodology was devised in active consultation with Dr. Larry A. Swatuk[11], Dr. Paul F. J. Eagles[12] and Dr. Stephen D. Murphy[13]. As per policy of the university, the research was later approved from the Office of Research Ethics.

This research study was conducted as a theoretically driven case study employing inductive qualitative research methods to assess the efficacy of two opposing planning and management models used in protected areas. Ayubia National Park, Pakistan was used as the focus of this research. Here, the eight neighbouring communities are dependent upon the park resources for their subsistence. The case study research was conducted in Pakistan during two visits i.e., three months in 2009 and two months in 2010.

In this research study, key informant interviews and focus group discussions were held for gathering the qualitative data. The objective was to identify the key issues, investigate the observable facts and answer the questions concerning the research topic. All the respondents were informed about the recording of the interview sessions. All the interviews were digitally recorded using audio recorders. For the data's safety all the field notes, audio files and transcripts were saved at different locations and on the net through drop box, to avoid any data loss during the actual research work in the field, or during in-country journeys or the international flights.

The digital audio recordings were initially transcribed, then imported into the qualitative data management and analysis software NVivo 8. The transcribed data were coded and later the coded data were used for emerging themes using NVivo 8. The various themes and factors thus identified during the analysis are discussed in detail in the subsequent chapter.

As for the subsequent parts of this chapter, section 6.2 outlines the background factors that brought about the evolution of my perspectives and consequently influenced the research approach. Later, section 6.3 highlights the methodological approach and explains the rationale

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for using the qualitative inductive case study approach in this research study. This section gives explanation about the broadly conceived methodologies, strategy of enquiry, the research methods and finally the rationale of qualitative study. Section 6.4 deals with the strategies used in this research i.e., the actual fieldwork concentrating on the application of research methods, data collection, management and recordings. Section 6.5 deals with the selection of participants for the in-depth, semi-structured interviews and focus group interviews. The subsequent section 6.6, briefly outlines the interview guides used for interviews and focus groups.

In section 6.7, I discuss how the detailed data have been translated from other languages i.e., Urdu and Pashto into English, and later transcribed. In the next section, 6.8, I describe the preliminary data analysis strategy and how I overcome the limitations faced due to rich voluminous research data. The coding process is described in section 6.9. It describes the coding process through which the raw data are managed in a way to ultimately get the research concerns from it. Data credibility and trustworthiness of the research are described in subsequent section 6.10. Participant checking, data triangulation and the relevant factors for checking the trustworthiness of research are also discussed in this subsection.

Section 6.11 outlines my role as a researcher in this research project. The next section, 6.12, discusses how this research project has been completed among the various partners, who lack mutual trust and have conflicting viewpoints on how to address the current system shortcomings. It is also explained in this part how I tried to keep myself away from the internal differences of these partners to avoid the potential bias from the research process. Certain difficulties faced during the research project are discussed in sub-section 6.13. Finally ethical considerations are explained in section 6.14.

6.2 Factors affecting my perspectives, presentation and research approach

I started schooling in 1972, and finished the first phase of my studies during 1992, when I obtained an M.Sc. Forestry degree from the Pakistan Forest Institute. Later, I worked for twelve years (1993-2005) in different wings of the Environment Department of the Khyber Pakhtunkhwa Province of Pakistan. During that period, I worked in two dissimilar sections of the department: the Forest Development Corporation, which is responsible for harvesting of natural forests, and the Wildlife Department, which is responsible for conservation and management of wildlife and protected areas.

During that period, I was deputed in the hilly areas, where the parent organization, the Forest Department, is the biggest landlord and custodian of most of the natural forests. As is common in a traditional positivist approach, the efforts of the Forest Department were focused on the management of certain key timber species, mostly softwood, whereas the efforts of the Wildlife Department were mostly focused on the conservation of some charismatic mega fauna associated with those natural forests.

My positivist perspectives started changing when I had the opportunity to work in the remote mountains of northern Pakistan. In the early years of my professional job, my dedication and commitment was at its peak, and I was regularly visiting the remote and inaccessible forests by walking for hours in the high hill mountains. As a young professional, without any practical experience, once I argued with a local person who was caught red-handed while cutting a Diar (*Cedrus deodara*) tree in the Protected Forests of Northern Pakistan. After much intense argument, he concluded the discussion by saying that he will cut either the 'tree' or my 'head', if I created a problem in his illegal cutting of a tree. In these circumstances,

- The traditional approach taught me to exercise the official but unpopular option of taking legal action for illegal cutting of trees by registering a court case against the violator of the law or imposing a financial penalty on him by compounding the offence case

- My other option was illegal, unofficial but popular: to accept a bribe, share with others, forgive the violator and forget the incident.

However, the realist view compelled me to think critically about the collective action of such poor communities, and its long-term impact on the forest resources of the country. In this case, the survival of the poor individual and his family was directly dependent on the forest, as he was storing the wood for cooking his food and keeping his house warm in temperatures ranging below freezing. The law in the books is least important for such marginalized and under-privileged communities specifically when the state fails to provide the necessities of life to its citizens. I was experiencing such incidences almost every time during my field tours, especially when those took place without formally informing the local field staff of the department.

For better management of the resources, it was imperative to collaborate with the rural communities of high hill forests and better understand their real life problems. This was only possible by decreasing the gap between me, being an officer, and the marginalized poor communities of the area. It was during the mid-nineties when I started a sort of revolt against the so-called 'traditions and norms' of the organization, by decreasing my gap with the poor local communities of the high hills forests. Innes and Booher (2002) highlighted that for productive problem solving, collaboration leads to the breakdown of the institutional barriers. Thus, some of my colleagues discouraged me from breaking the institutional norms, as being an

"officer" of the military style public sector organization it was not expected of me either to take liberty with the lower staff of the department or the local people. However, my passion, commitment and quest to understand the genuine problems of poor communities was much more than the redundant and unwanted lessons, taught by my colleagues and seniors, who termed my behaviour as 'immature' and 'childish'.

By reducing the gap with these communities, I was given many opportunities to closely observe them, understand their situation and interact with them. Gradually, I also developed the skill of judging their problems through a completely different lens. Similarly, I realized the perceptions of the poor communities, who were expected to bear the burden of conservation, simply because the "state law" restricts the use of forests resources for one's livelihood. I also realized that the local staff members of the department were treating the communities in an extremely bad and disrespectful manner. Collusion of the lower staff with the violators of the law in such circumstances is expected and mutually beneficial. Smith *et al.* (2003) rightly highlighted this issue by adding that the situation is aggravated when poorly paid government officials are made responsible for managing natural resources with high financial value, as this encourages the acceptance of bribes. Violations may be due to need or greed, but in both or either case, it is detrimental to forests but rewarding and beneficial to both the parties. Failure in collusion increases the friction and escalates the rivalry. There have been multiple incidents where the timber smugglers assaulted or even killed the enforcement staff of the Forest Department (Southwold-Llewellyn, 2006).

It is due to such reasons that in many parts of the world, participatory decision-making is becoming more common as an alternative to the traditional technocratic and authoritarian style (Gallopín *et al.*, 2001). However, in Pakistan, despite the periodic changes in the policies, the Forest Department and its sister organizations are not yet ready to devolve their powers, as they still manage most of their forests and protected areas through a traditional exclusionary approach. This management approach is, however, no longer acceptable as a valid approach to conservation in most of the countries of the world. The reason for this paradigm shift is the result of changes in epistemological and ontological aspects of ecological science, as manifested by the recent movement from traditional science to "post-normal" science (Shultis & Way, 2006). There is a need for a fundamental shift in the way development and the relations between society and nature are approached; similarly for sustainable development it is imperative to constructively articulate the top-down approach with the bottom-up or grassroots initiatives (Gallopín *et al.*, 2001).

6.3 Rationale of selecting Ayubia National Park for the research study

Before starting the Ph.D. course in the University of Waterloo, I worked for about twelve years with the forests and forests dwellers in the Khyber Pakhtunkhwa Province of Pakistan. I learnt a lot from the poorest of the poor communities living in the hilly tracts of the province. This was my passion to contribute to the societal welfare without compromising the natural resources on which the poor communities dependent for their subsistence. Thus, my intention was to conduct the Ph.D. research in Northern Pakistan in the Khyber Pakhtunkhwa Province. The potential areas for research were the Hindu Kush range and the Lesser Himalayas.

Chitral Gol National Park is located in the Hindu Kush range in the district of Chitral and Ayubia National Park is located in the Lesser Himalayas in the Galliat tract of the Abbottabad district. Both the national parks are the oldest and well-established national parks of the province. Similarly, both parks have a history of park-people conflicts. Consequently, the concept of co-management was introduced in both parks for resolving the conflicts of park staff with the local communities in the greater interest of the parks and surrounding communities. Both parks had the potential for testing the research questions; however, there were a number of factors which hindered the selection of Chitral Gol National Park for the purpose of this research.

The first factor was the diversity of languages in Chitral. Out of the 69 different languages spoken in the country, 26 languages are spoken in Khyber Pakhtunkhwa and 12 in the Chitral district alone (Shinwari, 2004). Ethnically, Chitral is very diverse and it is considered one of the most-multi-lingual places on the face of the earth (O'Leary, 1992; Shah, 2008). The 12 different languages spoken in Chitral are Kativiri, Shekhani, Dameli, Gawar-bati, Kalasha, Phalura, Yidgha, Madaglashti Persian, Wakhi, Gujari, Pashto and Khowar (O'Leary, 1992). Undertaking the research with the communities in such an ethnically diverse area was not possible as I had no knowledge of 11 out of the 12 languages spoken in that area.

Similarly, there was a problem of security in Chitral, due to ongoing political problems and local insurgencies. As the area is located along the porous border with Afghanistan and due to conflicts between the government and some local and Afghan elements, the area was not suitable for research. In contrast to the potential problems I could have faced in Chitral, the Ayubia National Park is considered to be a safer place, being away from the war conflict zone. Moreover, the two major languages spoken at Ayubia are Hindko and Urdu - the national language; so it was easier to work with the local communities there, as I can speak and understand both these languages. The local management in Ayubia National Park also showed

their willingness and agreed to support the research. Finally as I worked for years with the local communities in Ayubia National Park, it was therefore easier to conduct the research there.

6.4 Qualitative – inductive, case study methodological approach and theoretical framework

Research designs can be defined as the "plans and the procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis" (Creswell, 2009, p. 3). Different authors categorize the components and elements of research design in a different manner. According to Creswell (2009), research design has three main components: broadly conceived methodology, strategy of inquiry and the research method. Whereas, according to Crotty (2003), the four basic elements of a research process are epistemology, theoretical perspective, methodology, and methods. All these individual components and elements inform the other and collectively contribute to the nature of research, which can be qualitative, quantitative or mixed (Creswell, 2009). In this research project, I followed the outline of Creswell (2009) for answering the epistemological questions of the research design.

6.4.1 Broadly conceived methodologies

The broadly conceived methodologies, which are also termed as "philosophical worldviews" (Creswell, 2009, p. 5), "paradigms" (Denzin & Lincoln, 2000, p. 157), and "epistemology and ontology" (Crotty, 2003, p. 10) are defined as "a basic set of beliefs that guide action" (Guba, 1990, p. 17).

The extreme poverty among the marginalized communities and their exclusion from the use, planning and management of the natural resources pushed my perspective to the advocacy / participatory approach, because in this approach the "researcher plans for the social world to be changed for the better, so that individuals will feel less marginalised" (Creswell & Clark, 2006, p. 23). Thus, in undertaking this research, the proposed broadly conceived methodology is advocacy / participatory, which "focuses on the needs of the marginalized or disenfranchised groups or individuals of the society" (Creswell, 2009, p. 9). This worldview arose during the 1980s and 1990s as a result of the understanding that the post-positivist assumptions imposed structural laws and theories that did not fit the marginalized individuals (Creswell, 2009). Research under this paradigm "contains an action agenda for reform, that may

change the lives of the participants, the institutions in which individuals work or live and the researcher life" (Creswell, 2009, p. 9).

This advocacy / participatory worldview assumes that the inquirer proceeds collaboratively, in a way not to further marginalize the participants of the research due to research inquiry (Creswell, 2009). Creswell & Clark (2006, p. 24) identified the following five different elements of the worldview:

- Ontology (what is the nature of reality),
- Epistemology (what is the relationship between the researcher and that being researched),
- Axiology (what is the role of values),
- Methodology (what is the process of research) and
- Rhetoric (what is the language of research).

In case of advocacy and participatory worldview, these five different elements are as follows:

- Ontology is political reality, i.e., findings are negotiated with participants,
- Epistemology is collaboration i.e., researchers actively involve participants as collaborators,
- Axiology is biased and negotiated i.e., researchers negotiate with participants about interpretations,
- Methodology is participatory i.e., researchers involve participants in all stages of the research and engage in cyclical reviews of results; and
- Rhetoric is advocacy and change i.e., researchers use language that will help bring about change and advocate for participants.

The advocacy / participatory worldview, is "more often associated with qualitative approaches than quantitative approaches" (Creswell & Clark, 2006, p. 22).

6.4.2 Strategy of inquiry

The second component of the research design is the strategy or approach to inquiry or plan of action, or research methodology, which is defined as "types of qualitative, quantitative or mixed methods designs or models that provide specific direction for procedures in a research design" (Creswell, 2009, p. 11). As the research involved deeper understanding of the relevant issues (Yin, 2002), and I was interested in exploring an issue by collecting detailed information and using multiple data collection procedures, so the social science case study approach was used as strategy of inquiry. Case study is not actually a technique of date collection, but it is a methodological approach, involving a number of data collection measures (Berg, 2004; Robson, 1993; Yin, 2002).

According to Berg (2004), the case study method involves the systematic collection of "enough information about a particular person, social setting, event, or group to permit the researcher to effectively understand how the subject operates or functions (p. 251). It can be defined as:

- "The strategy in which the researcher explores in depth a program, event, activity, process, or one or more individuals" (Creswell, 2009, p. 13).
- "A strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence" (Robson, 1993, p. 178).

Case studies are basically used to help researchers in understanding the "complex social phenomena" (Yin, 2002, p. 2) and in explaining the context of a story and the way different participants interpret the different events (Dion, 1998). The social phenomenon investigated in this research project is related to the overall involvement of local communities in the conservation initiatives of the concerned government agencies and, specifically, the role of these communities in the decision-making process. The role of local communities in conservation initiatives as well as in the decision-making process was clearly identified in the management plan of Ayubia National Park, which is an approved policy document of the provincial government and its prescriptions were bound by the government agencies to be followed in letter and spirit.

The focus of case study method may be "an individual, a group, or an entire community" (Berg, 2004, p. 251). According to Robson (1993), it is important to note that "case study research is empirical in the sense of relying on the collection of evidence about what is going on, and about a particular study of some specific case" (p. 179). As case study research typically involves multiple methods of data collection (Berg, 2004; Robson, 1993; Yin, 2002), so in this research project, in-depth, semi-structured interviews and structured focus group methods were used for primary data collection. Besides that the data collection was supplemented by field notes during direct observations and other concerned secondary data.

6.4.3 Research method

The last component of research design is the research method, which "involve the forms of data collection, analysis, and interpretation that researchers propose for their studies" (Creswell, 2009, p. 233). In this study, efforts were made to provide opportunities for the participants to discuss the issues openly, and thus the data were primarily collected through in-depth semi-structured interviews and focus groups.

In-depth semi-structured interviews involve a number of pre-set questions and certain special topics (Berg, 2004). Such interviews were held with key stakeholders of the park to seek their opinions about the issues, assess management needs and identify indicators to evaluate effectiveness under a co-management regime. The in-depth interviews are helpful for researchers in understanding the issues from the perspectives of the participants (Berg, 2004; Matta *et al.*, 2005). According to Patton (2002, p. 4), "interviews yield direct quotations from people about their experiences, opinions, feelings, and knowledge". In this way, the in-depth semi-structured interviews of all the key individuals who are involved with the park issues were conducted.

The focus group is basically an interview style which is designed for small groups (Berg, 2004). Such focus group interviews are considered to be time savers and also let the researcher experience a wide range of topics in a relatively shorter time period (Auerbach & Silverstein, 2003). Moreover, the informal group discussion atmosphere encourages the research participants "to speak freely and completely about behaviours, attitudes, and opinions they possess" (Berg, 2004, p. 123). Such focus group interviews are considered ideal for exploring collective experiences (Auerbach & Silverstein, 2003). Consequently, such focus group interviews were held with the members of all the eight surrounding communities living around the national park.

6.4.4 Rationale of qualitative study

On the basis of selecting advocacy/participatory as my worldview, case study as the strategy of inquiry and in-depth semi-structured interviews and focus group meetings as research methods, the resultant approach that was employed for data collection is a qualitative research design. Figure 6.1 indicates how the various components the of research design contributed to the final decision regarding the research design.

Figure 6.1: Methodological approach of the research (Components and their choice)
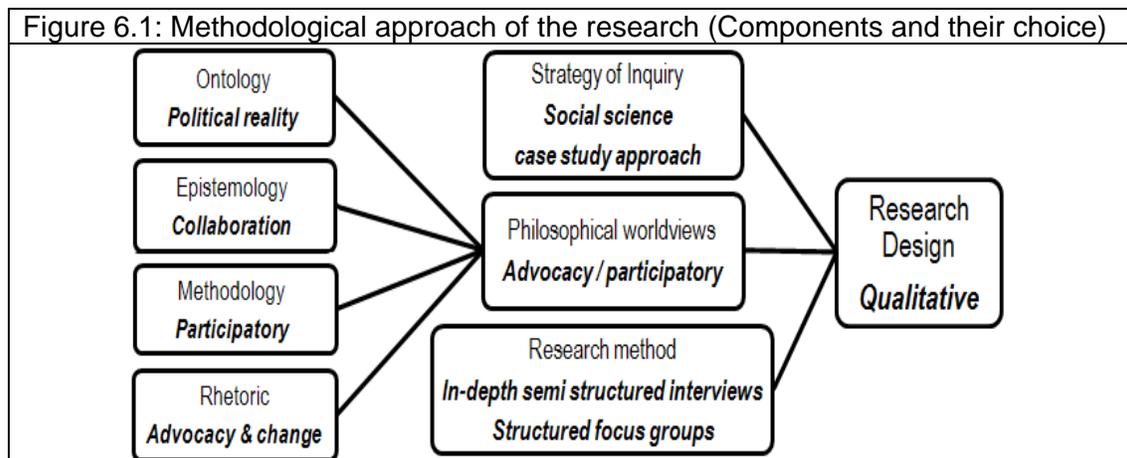
Qualitative research is "research about person's lives, stories, behaviour, ... organizational functioning, social movements, or interactional relationships" (Strauss & Corbin, 1990, p. 17), and it focus on the "subjective experience, diversity, and historical context" (Auerbach & Silverstein, 2003, p. vii).

Qualitative research can be defined as "a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem" (Creswell, 2009, p. 4). It can also be defined as "research that involves analyzing and interpreting texts and interviews in order to discover meaningful patterns descriptive of a particular phenomenon" (Auerbach & Silverstein, 2003, p. 3).

The qualitative approach enables the researchers to understand what the participants think or do, and the reasons for feeling and acting that way (Bowers & Becker, 1992; Matta *et al.*, 2005). Moreover, qualitative research produces findings that cannot be "arrived at by statistical procedures or other means of quantification" (Strauss & Corbin, 1990, p. 17). Other reasons which have also influenced the choice of using this methodology in the research project, are as follow:

- The objectives of the research are multiple and are not sufficiently focused to be covered by quantitative methodology,

- The nature of observations is exploratory and are not under controlled conditions, so quantitative research methods are not appropriate in the study, and

- My personal experience is more focused on qualitative research and in working with the marginalized communities.

As mentioned by Strauss and Corbin (1990), "qualitative methods can be used to uncover and understand what lies behind any phenomenon about which little is yet known" (p. 19), so the major features of this research are induction, discovery, exploration and qualitative analysis; whereas my focus is to understand different ways in which people perceive reality (Johnson & Onwuegbuzie, 2004). This approach is human-centered, phenomenological and emphasises the process (Palys, 1997). Qualitative research has the ability to create the power for positive, ethical and communitarian change (Denzin, Lincoln & Giardina, 2006).

6.5 Strategies used in the research

According to Patton (2002), in qualitative studies, the findings develop from three kinds of data collection: in-depth interviews, direct observation and written documents. So, in this research study, all these kinds of data collection have been used. As the data for qualitative analysis typically come from field work, during which the researcher spends time in the setting under study - a program, an organization, a community, or wherever situations of importance to

a study can be observed, people interviewed, and documents analyzed (Patton, 2002). Therefore, as part of this study, I visited the Ayubia National Park in Pakistan to conduct the field research for 3 months, i.e., June to August 2009. Another visit was made during July - August, 2010 to answer some additional questions and to collect additional secondary data. Both primary and secondary data were collected for conducting this research study. However, for discovering the perceptions of key stakeholders, the focus was more on the primary data collection methods including individual in-depth interviews of key informants and the focus group interviews of the local communities.

6.5.1 Collection of secondary data

One of the objectives of this research is to identify various reports and data sets that document the park's resources. The objective of collecting secondary data was to better understand the situation and to use it for triangulation purposes. Thus, in addressing the research question, the first step was to obtain the reports and data sets about planning and management and conservation of protected areas, review documents pertaining to the conservation and management of forests and wildlife in Pakistan, and access documents concerning the implementation of the management plan of the park.

According to Patton (2002), "document analysis includes studying excerpts, quotations, or entire passages from ....records; memoranda and correspondence; official publications and reports; personal diaries; and open-ended written responses to questionnaires and surveys" (p. 4). Thus literature concerning the protected areas planning and management, policy formulation and implementation documents, wildlife and forest offence cases, wildlife survey reports, research dissertations and reports of Ethnobotany Project of WWF-Pakistan were reviewed and analyzed during different stages of the research project.

In Pakistan, there is a perception about NGOs that they come and then disappear like flash floods. This was an issue in finding the relevant secondary data regarding the activities of another NGO i.e., IUCN Pakistan. Formerly, they had a well-established set-up in the city of Abbottabad and they were actively involved in the creation of a district conservation strategy, which also focussed on Ayubia National Park and its surrounding ecosystem. However, the staff members were discharged and the office was closed when I visited the area for research data collection. Consequently, I faced great difficulty in getting the secondary data from that source about their initiatives in and around the national park.

6.5.2 In-depth, semi-structured interviews of key informants

Overall, the questions asked during the interview sessions were mostly open-ended, and were focused on major issues, problems, expectations and successes. The objectives of the interviews, while using a guide, were to seek the opinions of various key players about the issues, assess management needs and to identify existing and potential indicators to evaluate the effectiveness of the co-management regime. Special emphasis was on gathering the data regarding the following:

- Benefits or problems with the national park,
- Benefits or problems due to change in management from exclusionary to co-management,
- Status of implementation of prescriptions of the management plan,
- Problems in implementation of prescriptions of management plan,
- Short-comings in the planning and the implementation process,
- Trend of violation cases registered against local communities for consumption of park resources after 2000,
- Changes in species richness of the park,
- Changes in population of various flagship and indicator species,
- Changes in number of depredation cases,
- Changes in poaching incidences and other wildlife offence cases,
- Role of local communities in protection of park resources,
- Monetary benefit to the local communities for their roles in conservation of the park and its resources, and
- Compensation for losses and damages to life and property, due to wildlife.

In-depth and open-ended interviews of the government officials in different hierarchies and representatives of NGOs were conducted. These interview sessions were held in various cities and towns including Ayubia, Nathiagali, Khanespur, Dungagali, Abbottabad and Peshawar. All the in-depth interviews were audio recorded with the help of digital recorders. For this purpose two different types of recorders were used simultaneously, to avoid any mishap, in case one of the recorders developed a technical fault. Short duration video clips were also recorded during each interview session. The digital recordings of in-depth interviews were transcribed before formal qualitative analysis.

6.5.3 Focus group interviews

The objective of the focus group interviews in this research study was to better understand the outlook of locals about the park and its resources, as a consequence of change in government policy to co-management. Special emphasis was made on gathering the data regarding participants' perceptions of the following:

- Benefits or problems with the national park
- Benefits or problems due to change in management from exclusionary to co-management
- Role of local communities in implementation of management plan
- Role of local communities in overall management of the national park
- Opportunities for getting jobs in park planning and management and promotion of ecotourism
- Opportunities for capacity building
- Cases of conflict with the custodian agencies for use of park resources
- Increase in awareness about wildlife and biodiversity
- Control of poaching
- Compensation for losses and damages to life and property, due to wildlife.

Before conducting the actual focus group interviews, the elders and notables of the area were contacted and they were briefed about the research study. Subsequently another meeting was held with them, after they had contacted their community. During that second meeting, some commitments were made with the elders and notables upon their demand regarding the confidentiality of the group discussion. It is believed that for getting truthful and free-flowing discussions during focus groups, it is critical to ensure confidentiality (Berg, 2004). Thus, upon the demands of local communities, some commitments were made to ensure confidentiality and thus to give confidence to the local communities to discuss freely about the issues during the focus group sessions. The following commitments were made:

- No personnel of the Wildlife Department or any other related government agency would participate in the actual focus group interview sessions,
- The discussion held during the actual focus groups would be considered as the common voice of the concerned community,
- The viewpoint of any individual persons would not be recorded anywhere, in a way which helps in identifying his identity among the group (The rationale they presented for doing so was to avoid pin-pointing any community member, in case he discussed something against the governmnet agencies and thus to avoid the wrath of the officers of the Wildlife Department),
- The focus group interviews would be audio recorded,
- Short duration video clips could be made only for the purpose of ascertaining who participated in the individual focus group interviews. It was further decided that all the discussion would not be video recorded to keep the anonymity of the participants, and
- From each community, six key individuals would participate in the focus group interview session.

I honoured all these commitments to ensure confidentiality. Focus group interviews were conducted with all the eight neighbouring communities to thoroughly investigate the research questions. Focus groups were arranged at different places convenient to the research participants. The venues of the various focus groups interviews is given in Table 6.1.

Table 6.1: Venues of the focus group interviews	
Name of community	Venue of the focus group interview
Darwaza	Khanespur - Restaurant
Khaun	Village - Home of the village elder
Kundla	Village - Home of the village elder
Lahur Kus	Village - Home of the village elder
Mallach	Nathiagali - Hotel
Moorti - Kuzagali	Kuzagali - Forest rest house
Pasala	Kuzagali - Lawn of Forest rest house
Riala	Khanespur - Restaurant
Hoteliers	Ayubia - Lawn of restaurant

Direct observations were also recorded before, during and after each of the focus group interview sessions. According to Patton (2002), "The data from observations consist of detailed descriptions of people's activities, behaviours, actions, and full range of interpersonal interactions and organizational processes that are part of observable human experience" (p. 4). Like in-depth, semi-structured interviews, all the focus group interviews were also audio recorded with the help of digital recorders, using two different types of recorders. Similarly, short duration video clips were also recorded. The digital recordings of focus groups interviews were transcribed before formal qualitative analysis.

6.6 Selection of participants for study

For getting diverse perspectives, purposive sampling was used in this research study. This type of sampling is also called judgemental sampling, because the researcher uses his special knowledge or expertise for selecting the proper research participants within a group (Berg, 2004). Thus, by using purposive sampling, the individuals who were in the best position to help in understanding the problems and questions (Creswell, 2009) were recruited for the in-depth, semi-structured interviews of key informants and focus group interviews. Consequently, those participants among the staff of the government agencies and representatives of NGOs, who were directly involved with the park affairs, were selected for participation in the research study. Likewise, all neighbouring communities which are located around the national park, and the activities of which have direct impact on the park resources, were included in the research study.

6.6.1 Participants for in-depth, semi-structured interviews of key informants

Initially it was planned to conduct in-depth semi-structured interviews of all the key individuals who are involved with the park issues. They include the staff of the Wildlife Department, Forest Department and the key local NGO of the area i.e., WWF Pakistan. It was

further planned that among the different government organizations, these interviews would be held with the different tiers within the organizations including the top management, middle level managerial staff and the lowest level enforcement staff deputed in and around the park. It was envisaged that this would give an opportunity to look at the park issues from the diverse perspectives of agency staff. Likewise, it was anticipated that 20 participants would be involved from the Wildlife Department, at least five participants would be involved from the Forest Department and about five participants would be involved from the NGOs.

However, during the actual data collection stage, certain individuals from the Wildlife Department and the WWF declined to appear in the interview, despite their initial willingness. The staff of the Forest Department initially showed willingness to participate in the research project, but none of them bothered to honour their initial commitment. Consequently, they were repeatedly approached to appear for interview sessions, but they neither bothered to decline nor bothered to appear for interview. Finally, one of the Forest Guards told, on the condition of anonymity, that their Range Officer had asked them not to participate in the research project. Resultantly, they were not contacted again for interviews and, thus, none of them was interviewed. The number of anticipated and actual participants in the in-depth interviews is shown in the Figure 6.2.

Figure 6.2: Anticipated vs. Actual participation in the interviews
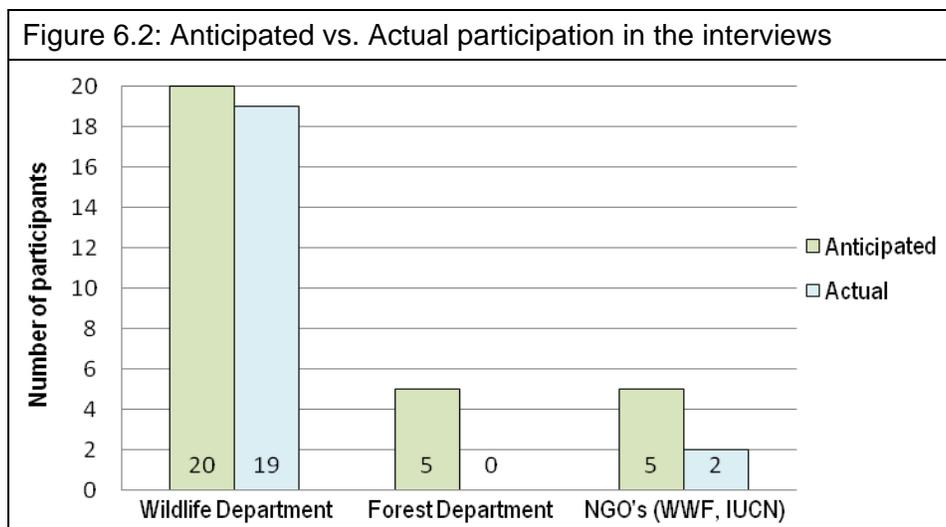
Twenty-one individuals participated in the in-depth structured interviews. Among them, two were employees of the WWF, Pakistan. The remaining participants were associated with the Wildlife Department. Among them, two were top provincial level officers, six were middle level managers, six were the local level enforcement staff, and five were the Community Watchers deputed from the local communities. The stakes of the research participants along with their age groups are shown in Figure 6.3.

Figure 6.3: Stake in the project vs. Age group – Cases by attribute value
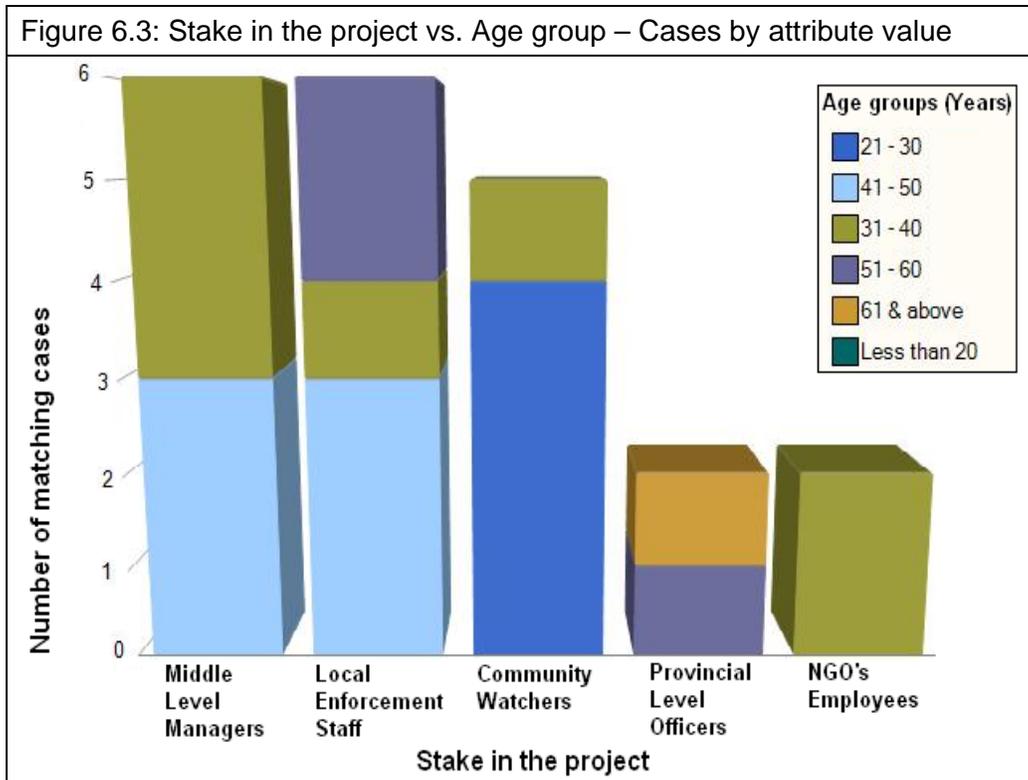
6.6.2 Participants for focus groups

The selection of participants for the semi-structured focus group interviews was made very carefully. For meaningful participation of the local communities in the focus group interviews, the researcher discussed the criteria of selection of participants for focus groups with the village elders and notables during the preliminary meetings. Consequently, it was decided that those individuals would participate in the focus group interviews who are either unanimously considered as the notables of the community, who are interested in the conservation activities at the local level and those with whom the management plan of the Ayubia National Park was prepared during 2001-02.

It was further decided with the local elders that in no circumstances would such meetings be held with the political figures and elites of the area, who are often interested more in their personal benefits rather than the benefits of the community in general. By including them, there are chances that the domination of elites may result in the neglect of the poor and marginalized sections of the community (Matta *et al.*, 2005).

It was initially decided that each focus group session would last for about one hour and six persons would participate in it. However, the number of participants who actually attended these sessions varied considerably from community to community. The numbers of anticipated and actual participants in various focus group interviews are shown in Figure 6.4.

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Figure 6.4: Anticipated vs. Actual participation in focus group interviews
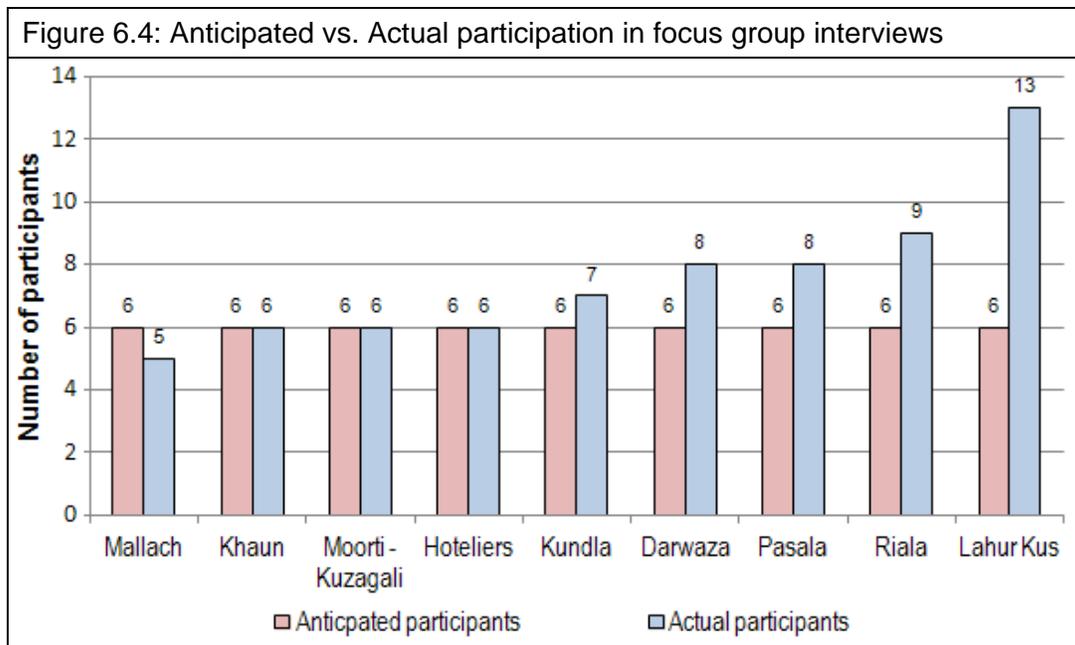
I made extensive notes of these focus group interview sessions in my field book, besides audio recording the actual interview sessions. However, efforts were made not to distract myself from the discussion while writing these notes.

6.7 Interview guide

In order to collect the data from the research participants, semi-structured interviews were held using interview guides.The interview guides were prepared to guide the discussions addressing the major research question i.e., To what extent has the change in governance policy of the Wildlife Department from the conventional exclusionary management approach to a co-management approach affected park resources? Accordingly, the following five sub-questions were identified to address the major research question:

- Is there any change in the consumption of park resources by local communities?
- What is the impact of this change on the flora and fauna of the park?
- What is the impact of the co-management model on the conservation of the flora and fauna within the national park?
- What accounts for the effects of the current management plan implementation on park resources?
- What may be done to improve the situation for both the park and the people living near to the resource?

The five sub-questions of the research which were investigated during the interview session with local communities, officials of Wildlife Department, representatives of NGOs and other interest groups are included in Appendix 6.1.

The interview guides for the in-depth semi-structured interviews of key informants and focus group interviews of local communities were prepared in English. However, for better understanding of the local communities and the enforcement staff, these guides were later translated into Urdu, which is the national language of Pakistan, and is well understood by the majority of the populace in the case study area. Technical jargon was avoided in the translated guides, to keep them as simple as possible for the respondents to understand.

6.8 Transcribing data

The services of two trained individuals were hired to transcribe the audio recordings of the interviews and to translate them into English. Both the individuals were well conversant with both the languages, i.e., Urdu and Pashto, in which I interviewed the respondents. Both the transcribers have a formal educational background of forestry, but none of them worked in the Forest or Wildlife Department. They were selected on the grounds that they have the required education to understand the discussion and none is working in the any of the relevant organizations, which might affect the transcription process due to bias.

For transcribing, I shared the interview guides with them and also explained the background of my research. One individual completed the transcription process and the transcribed data were later checked by another to correct any errors or misunderstandings in listening to the audio files. Finally, I reviewed the detailed transcripts against the audio files and my personal notes that I took during the interviews and focus group sessions. The reason for reviewing it personally was to ensure that the transcription process was done accurately and the different thoughts and relevant information were incorporated into the transcripts. During this stage, I made some necessary adjustments and later imported the final transcripts into the NVivo 8 for coding, data management and final analysis.

Only one respondent offered the interview in the English language, whereas other interviews were conducted in Urdu or Pashto or a mix of different languages, and thus it took much more time to translate and transcribe the audio files. I remained flexible in the choice of language so that the respondents could share their feelings without thinking about using appropriate jargon and vocabulary in a non-native language. Overall, this process of preparing the transcripts of 30 interview sessions held in three different languages was the most time consuming process throughout the research project.

6.9 Data analysis strategy

As opposed to quantitative research, the qualitative research data are normally very huge and bulky. As rightly indicated by Auerbach and Silverstein (2003), I was also 'overwhelmed' due to the presence of a huge amount of transcribed data and was consequently 'immobilized' for a long time (p. 32). However, to get out of that hibernation stage, I followed the useful suggestion of Auerbach and Silverstein (2003): "the best way to work through this paralysis is to remember that your interpretation of the data will be only one of several 'right ways' in which the data can be interpreted … that you must be able to support your interpretation with data (i.e., examples of text), so that other researchers can understand your way of analyzing it. If your interpretation is supported by the data, then it is valid, even if there are other ways to interpret the same data" (p. 32).

In qualitative research, it is not possible just to read the huge transcribed data and identify the key patterns for developing theory. In qualitative research, coding is thus suggested to discover patterns, and to overcome the limitations faced due to presence of voluminous data.

During the data collection as well as analysis stages, I experienced that the data were either not completely supporting the theories that I learned from the books or were not going to agree with the proposed research questions. Initially, I was embarrassed during the data collection stage; however, later after consulting the literature, I realized that the participants concerns are also important to formulate my own findings. Auerbach and Silverstein (2003) pointed out that, "If you are truly interested in the subjective experience of the participants, it is their concerns rather than the researchers' that must take center stage" (p. 33). Similarly, they also pointed out, "In most cases, the answers people give are more important than the questions you ask" (Auerbach & Silverstein, 2003, p. 16).

Consequently, during the course of this research project, some new questions were added to the interview guides to properly address those issues which were not initially anticpated. The objective of doing so was to make the research more meaningful, consequential and practical in nature.

6.10 Coding procedure

Coding is a basic process of analyzing qualitative data for discovering patterns or developing a hypothesis or grounded theory based on the viewpoints of the research participants. According to Foss and Waters (2010), coding is a critical part of qualitative dissertations because it enables the researcher to make an original contribution to the concerned discipline.

Coding can be defined as, "The analytic processes through which data are fractured, conceptualized, and integrated to form theory" (Strauss & Corbin, 1998, p. 3). Likewise, Auerbach and Silverstein (2003) defined coding as "a procedure for organizing the text of the transcripts, and discovering patterns within that organizational structure" (p. 31). Theory is subsequently "a description of a pattern" that is found in the data (Auerbach & Silverstein, 2003, p. 31).

Coding can be done as line-by-line, sentence-by-sentence, paragraph-by-paragraph or as a complete document. For coding of the voluminous transcripts, I used the NVivo software and followed the following procedure suggested by Auerbach and Silverstein (2003) for reaching the final 'theoretical narrative'.

1. Thoroughly listened to the audio recordings of the interviews or focus groups for developing a sense from the conversation,

2. Revisited the purpose and the research questions that guided the study to grasp ideas from the transcripts about my research concerns,

3. For getting the '*relevant text*' from the '*raw text*', I read the interviews and focus groups transcripts, and discarded that text from each transcript which was not relevant to my research concerns,

4. From the '*relevant text*' in the amended sets of transcripts, the '*repeating ideas*' were identified. These '*repeating ideas*' were in the form of some specific words or phrases to convey some definite idea or thought regarding my research concerns. These simple and precise '*repeating ideas*' were identified as free nodes in the NVivo software. This stage is also known as initial or open coding (Berg, 2004; Glaser, 1992; Strauss, 1990). At this stage, the codes are "provisional, comparative, and grounded in the data" (Charmaz, 2006, p. 48). During this stage, it is critical to work with "speed and spontaneity", and to limit the initial coding "close to the data" (Charmaz (2006, p. 47-48). I revisited the actual '*repeating ideas*' once again on the next day, just to make any changes felt necessary,

5. From the '*repeating ideas*', I identified various '*themes*'. These '*themes*' were basically the common ideas, among the groups of the '*repeating ideas*'. Consequently all the '*repeating ideas*' were organized around various '*themes*'. Some of the '*repeating ideas*' were organized under more than one '*theme*'. These '*themes*' were recorded in NVivo as tree nodes. This stage is also termed as axial coding in the literature (Berg, 2004; Strauss, 1990).

6. From the sets of *'themes'*, I identified the *'theoretical constructs'*, which are considered as larger but more abstract ideas (Auerbach & Silverstein, 2003). I identified these *'theoretical constructs'* by developing different types of relationships among the sets of *'themes'*. Again, I used NVivo to develop the different types of relationships,

7. Afterwards, the '*theoretical narrative*' was developed by organizing different '*theoretical constructs*'. The '*theoretical narrative*' was basically the synopsis of what I concluded from the research data about my '*research concerns*'. This '*theoretical narrative*' includes the theoretical framework developed during the data analysis and also confers the subjective experience of research participants, in their own words.

Figure 6.5: Steps in coding
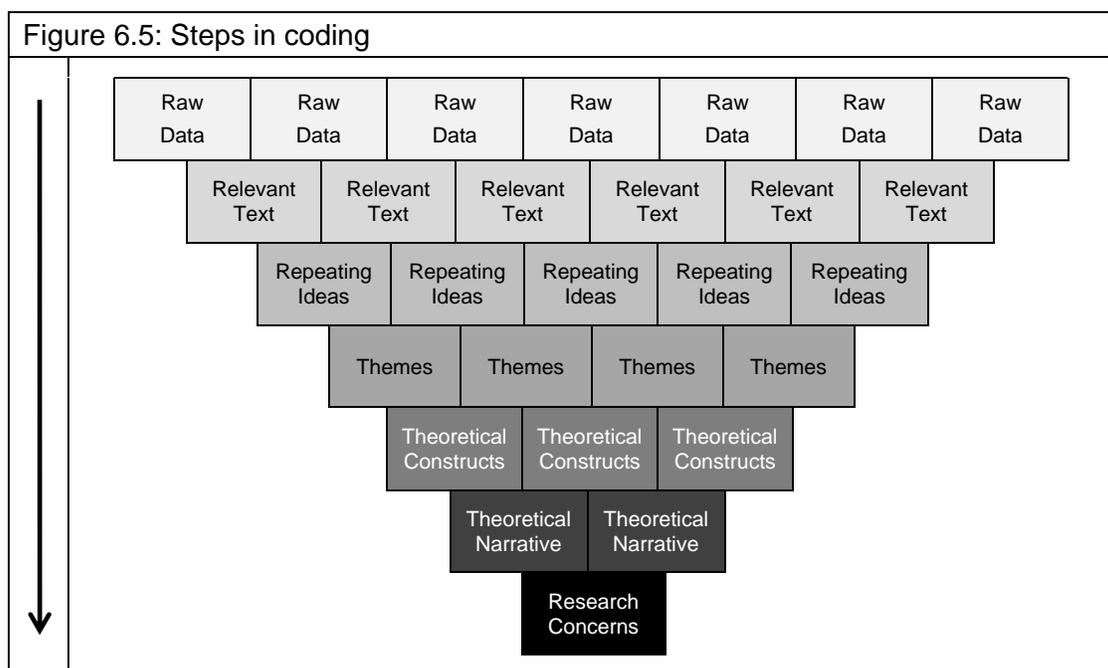
6.11 Data credibility and trustworthiness of research

For ensuring the credibility and authenticity of the data and the overall research, the following strategies were followed:

6.11.1 Participant checking

After each interview and focus group session, the salient features of the discussion were shared with the respondents. Thus, it gave an opportunity to the respondents to check the contents as recorded by me in my field notes during the interview session. Moreover, it also gave me the chance to ensure that I understood the things the way the respondents had explained during the interview sessions.

6.11.2 Data triangulation

The term 'triangulation' is commonly used in surveying and navigation (Bassey, 1999; Bryman & Burgess, 1994; Decrop, 2004; Yin, 2011). In that context, it is used to accurately locate a place or an object through intersection of three different reference points (Bassey, 1999; Yin, 2011). This concept is later adapted in the social science enquiry to strengthen the confidence of a statement (Bassey, 1999; Berg, 2004; Decrop, 2004). According to Babbie (1989), triangulation is "The use of several different research methods to test the same finding" (p. 99). According to Gerring (2007), triangulation is "The use of multiple methods, often at different levels of analysis" (p. 217).

As every research method has its own strengths and weaknesses, there is a risk that the research findings may be impacted due to use of certain specific methods of inquiry (Babbie, 1989). Triangulation is therefore used to enhance the trustworthiness by limiting the personal and methodological biases (Decrop 2004). For this purpose, the researcher looked at the same phenomenon or research question from multiple sources of evidence (Decrop 2004). For this purpose, the findings produced through one method or source are corroborated with the findings produced through another method or source (Bloor *et al.*, 2001; Decrop, 2004; Yin, 2011). Such corroborated findings cannot be the outcome of measurement biases (Bloor *et al.*, 2001) and, thus, it strengthens the validity and trustworthiness of the research study.

Jonker, Swatuk, Matiwane, Mila, Ntloko and Simataa (2010) summarized by adding, "Triangulation maximises the variety of sources of information (primary data collected by the research team; secondary data drawn from a combination of published and unpublished sources) and subjects it to iterative processes (e.g. confirming secondary data through face-to-face interviews) until a saturation point is reached – i.e. additional information adds no new knowledge; rather, it reinforces the findings already in hand" (p. iv). Denzin (1978) identified four critical types of triangulation i.e., data triangulation, investigator triangulation, theory triangulation and methodological triangulation[14] as shown in Table 6.2.

Table 6.2: Types of triangulation	
Type	Explanation
Data triangulation	involves time, space, and persons
Investigator triangulation	involves multiple researchers in an investigation
Theory triangulation	involves using more than one theoretical scheme in the interpretation of the phenomenon
Methodological triangulation	involves using more than one method to gather data, such as interviews, observations, questionnaires, and documents

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[14] Decrop (2004) called it data triangulation, investigator triangulation, method triangulation and theoretical triangulation.

In qualitative research, the role of triangulation is important to handle the issues of validity and enhance the trustworthiness of the research study (Berg, 2004; Decrop, 2004; Yin, 2011).

Critics, however, argue that like any other buzzword, the term 'triangulation' is open to misuse (Bloor *et al.*, 2001). Yin added that "triangulating even may be thought of as a frame of mind rather than as a methodological technique — something that helps to keep your eyes and ears open for corroborating or conflicting ideas or data, whatever you are doing" (2011, p. 153).

In this research, Denzin's (1978) typology of data triangulation i.e., the use of a variety of data sources and methods is used to corroborate the qualitative data. Thus, the data collected through diverse sources and methods, including government documents, NGOs reports, in-depth semi-structured interviews, and focus group interview are triangulated to enhance the trustworthiness of the research and limit the personal and methodological biases.

6.11.3 Judging the trustworthiness of research

The traditional positivist's criteria for judging the quality of research includes the internal validity, external validity, reliability and objectivity. However, in qualitative research the researchers cannot use these traditional criteria. Lincoln and Guba (1985) added, "How can an inquirer persuade his or her audiences that the findings of an inquiry are worth paying attention to?" (p. 290). For addressing this matter, they proposed alternative criteria i.e., credibility, transferability, dependability and confirmability, for judging the quality and trustworthiness of qualitative research. The criteria are given in Figure 6.6.

Figure 6.6: Criteria for judging quality and trustworthiness of research
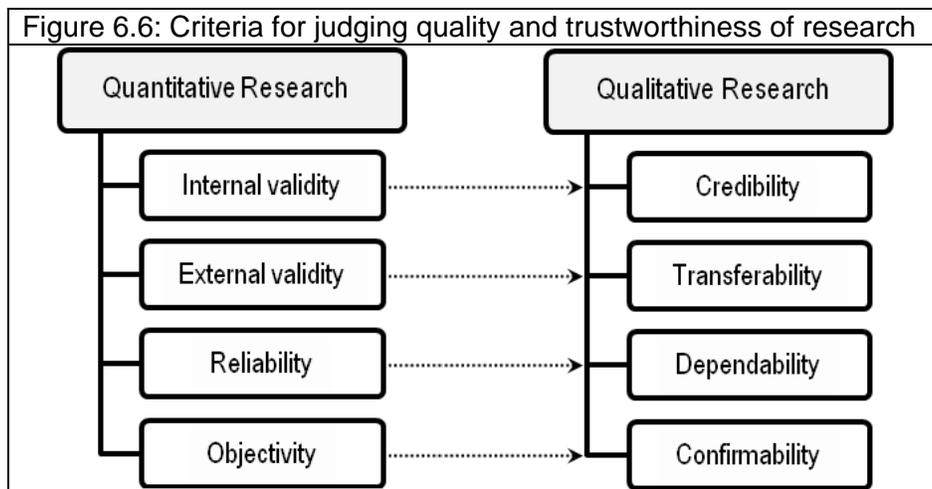
The different criteria and the way those were applied in this research project are described below:

6.11.3.1 Credibility

The criterion of credibility ensures that the results of the research study are credible or believable from the standpoint of the research participants. Thus, it deals with the confidence in the truth of data and its subsequent interpretations. For credibility, the interpretation of research data should truly represent the real world phenomena. For addressing the credibility criterion, the study needs to be carried out in a way which enhances the believability of the research findings and it needs to take such measures which exhibit the credibility to those interested in the research.

For ensuring the credibility of the research findings, I engaged myself in the research data collection for a prolonged period of time. Similarly, during the preparatory stages as well as the actual data collection stage, I took notes extensively. I continuously checked those detailed notes during the data analysis stage for the purpose of verification. As the credibility can be rightfully judged by the participants of the research study, so for ensuring the credibility of the research, I shared the notes that I took during the interview sessions with the respondents after the end of each interview session. Similarly, the final research report will also be shared with the neighbouring communities as well as with the custodian Wildlife Department as already agreed by mutual understanding.

6.11.3.2 Transferability

The criterion of transferability deals with the degree to which the research findings of a research study can be transferred or generalized to other settings or areas. It is related to the usefulness of the research findings of a study outside the context of that specific study area. The transferability of data can occur both at the level within the studied population or other populations. Transferability is more a responsibility of the individual who wants to generalize the results of the research project. However, in order to assist such generalizing, it is the role of the researcher to record detailed information and extensive descriptions in the research report, which can assist others to evaluate the outcome of the research in other similar contexts.

In this research study, the primary objective was not to develop a general model of resource management. However, the findings and results of this study can definitely be useful and can also provide deeper understanding for other protected areas, where the neighbouring communities are dependent upon the park resources for their survival, and where the custodian agencies are playing their role in enforcing their laws, without addressing the issues of those resource-dependent communities. Detailed information and extensive descriptions have been

recorded here for those readers who are interested in evaluating the outcome of this research in more or less similar contexts elsewhere.

6.11.3.3 Dependability

In this criterion, the integrated process of data collection, data analysis and theory generation is assessed to see how the methods chosen for this research affected the research findings as opposed to the phenomena studied. Dependability thus refers to the stability and consistency of data over time to know whether this study finding can be repeated again, if the enquiry is replicated with similar participants and context.

In this research project, the data collection took place over a range of time periods and the collected data was thoroughly documented. For this purpose, I remained involved in the field for an extensive period of time and interviewed all the key stakeholder groups for this research study. Some of the research participants were interviewed again, during the second visit to the case study area during next year. For enhancing this criterion, the chances of inaccuracy during data collection were minimized by consistent verification of the data collected through various methods and from various participants. Similarly, all the interviews were audio recorded and carefully transcribed to minimize the chances of inaccuracy.

6.11.3.4 Confirmability

The criterion deals with the objectivity, i.e., the degree to which the data accuracy, relevance or meaning can be confirmed by other researchers. In other words, this criterion gives us an idea as to how grounded is the analysis in relation to the data collected during the project. For fulfilling this criterion, the data must truly represent the information provided by the research participants. Thus, it ensures that the research findings are based on the reflections and voices of the research participants and not on the biases, perceptions, perspectives or imaginations of the researcher.

For fulfilling the requirements of this criterion, I documented the data collection methods in detail in the report. Similarly, my extensive notes and prolonged stay in the field also helped me in ensuring this criterion. Moreover, for enhancing this criterion, the chances of inaccuracy during data collection were minimized by consistent verification of the data collected through various methods and from various participants. Similarly, all the interviews were audio recorded and carefully transcribed to minimize the chances of inaccuracy. Whenever there was any confusion during the interview or focus group session, the same misconception was immediately clarified to enhance the confirmability of the data.

6.12 Role as researcher

I worked in the different wings of the parent Forest Department from 1993 to 2005, so it was easy for me to interact with the former colleagues and better understand their outlook. These 12 years of professional experience gave me an additional benefit in term of accessing all sorts of secondary data available with the concerned government organizations. Likewise, I worked as manager and planner in Ayubia National Park from 1997 to 2002. During that period, I was part of the multi-disciplinary team involved in community dialogues and was Head of Park Planning initiatives. At that time, I worked closely with the local communities living in different villages located around the national park. I am known in the area for my involvement in the development of the first park management plan, with the active involvement of local communities. This experience enabled me to interact with the local communities in local language, follow the local protocol and culture in contacting the notables and elders of various communities, and finally to ensure their active participation in the research data collection process. It was made clear to all the local communities that my current interactions with them should be considered as that of a researcher from the University of Waterloo (Canada), so that they must not develop any expectations, keeping in view my former role in the area as a manager and planner of the ANP.

6.13 Conducting field research among the partners in conflicts

It was repeatedly observed during the research data collection period and is also clearly evident from the transcribed data, that there is a lack of trust coupled with lot of conflicts, among the key stakeholders, specifically the local park management and the surrounding communities. As a result of this mistrust and conflicts these key stakeholders have filed a series of allegations against each other. During the data collection period, it was repeatedly observed that the nature of such allegations sometimes reached to a personal level. The research participants were given ample opportunities to bring up any unanticipated topic, as long as it shed some light on the research project. However, time and again, they were reminded to avoid focusing on personal allegations, rather to be positive and to look at the bigger picture and concentrate on the factors that led to the development of mistrust between the key stakeholders i.e., local communities and the public sector organizations looking after the affairs of the park.

In this thesis, all efforts have been made to avoid any engagement in judging the individual allegations of the local communities specifically against the park manager(s), as it was not the focus of the study at all. Instead, the key issues related to the failure on part of the

stakeholders have been reviewed and discussed in the light of a mutually agreed co-management model. Being a researcher, I tried to examine the issues, probe the findings and support the discussion and result statements with the primary and secondary data collected during the research process. The idea was that instead of becoming a judge, I should act as an interpreter, who exposes the reality based on the personal observations, direct quotes from transcripts of the research participants and analysis of primary and secondary data collected during the research data collection stage.

6.14 Difficulties faced in research data collection

The staff of government agencies in general and the Forest Departments in particular were not very cooperative when being asked questions regarding transfer of powers to local communities through co-management arrangements. Consequently, the staff members of the Forest Department did not bother to show up for the interview sessions. Rather a lot of time was wasted with them in consultation and in subsequent changes in arranging the interviews at different time periods. Certain local community leaders and activists, who were biased in their approach due to their status in the local set-up, tried to sabotage the research process of conducting the focus groups with various communities. Consequently, the research process was stopped temporarily during July 2009. However, the process was started again, after consulting the local leaders in consultation with whom I prepared the first ever management plan for the national park. Some community watchers, the services of whom were terminated by the then Park Manager, were also instrumental in creating issues, by neither participating in the research process nor allowing others to participate. The matter was resolved, however, once a detailed meeting was held with the other community watchers.

The severe floods of 2010 also badly affected the pace of data collection. The damage of floods was not so conspicuous in the study area, but these floods definitely affected the mobility and the access to research participants who were affected by the floods. The priorities of some of the research participants were focused on the rehabilitation of their property as opposed to participating in the research project. Consequently, I waited for more than one month to resume my research data collection process.

6.15 Ethical considerations

As the data collection process of this research project involved the participation of humans, so as per requirements of the University of Waterloo, the study was to undergo an ethics review. The ethics review process is primarily focusing on informed consent, recruitment

procedures, anonymity and confidentiality; and risks and benefits. Consequently, I sought approval of the research plan from the Office of Research Ethics (ORE) before formal initiation of research in the case study area.

The objective of the ethics review and clearance process is to ascertain that the proposed projects abide by the following:

1. Office of Research Ethics Guidelines for Research with Human Participants
2. The Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans,
3. Guidelines of various professional organizations, and
4. The safety, rights and welfare of participants are adequately protected.

Consequently the objectives, research questions, methodology, recruitment process of research participants along with the required forms went through the approval process in the ORE. The required forms included the following:

1. Letter of informed consent
2. Information consent letter and consent form for interview
3. Letter of appreciation
4. Verbal script for participation in research along with confidential recruitment card
5. Information letter for focus group along with agreement of participation.

6.16 Summary

The research methodology adopted in this research project is described in detail in this chapter. Conducting the field research among partners in conflict is a serious issue and all such difficulties are also explained in this chapter. Finally the ethical considerations were illustrated. In the next chapter, I completely focus on the case study site i.e., Ayubia National Park and discuss the various aspects of the park, to pave a way for the findings of the research, which are discussed in chapter 8.

Chapter 7

Ayubia National Park: The focus of case study

7.1 Introduction

The case study area in this research project is Ayubia National Park (ANP) in the Khyber Pakhtunkhwa Province of Pakistan. This is a classical example of a traditional national park model, termed as a 'Golden Era National Park' by Eagles (2008). The ownership of the land and resources of the park is with the provincial government; the source of the income is from societal taxes and a government agency (the Wildlife Department) is the management body looking after the park affairs. According to the IUCN criteria, the park falls into Category V, i.e., a Protected Landscape[15]. Various villages and hamlets surround the park and the local population is dependent upon the park resources for grazing of livestock and collection of firewood, fodder, medicinal plants, wild vegetables and morel mushrooms.

In this chapter, I give a detailed overview of the park, so that the reader should understand the ground realities and can assess the gaps between the theory and practice in the management of the parks and protected areas within the setting of a developing country. The legal status of the ANP is discussed in section 7.2. The various acts that are prohibited in the national parks as per relevant laws are also outlined in this section. The history of the park is touched on in section 7.3. This section also highlights the objectives of establishing the national park and the various developmental projects that have been implemented within the park. The geography of the park is discussed in section 7.4. Maps are provided to situate the exact location of the park and the neighbouring communities. The subsequent section, 7.5, discusses the biodiversity of the park and concentrates on its flora and fauna.

The neighbouring communities of the park who are dependent upon the park resources are discussed in section 7.6. The next section, 7.7, reflects upon the land tenure relationship within the park and the surrounding areas. Park management is described in detail in section 7.8, whereas the management plan of the park is discussed in section 7.9. The next section, 7.10, discusses in detail the various threats faced by the park. The threats to the park are from the local communities as well as the sister organization, i.e., the Forest Department. In this

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[15] A protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values. For further details about IUCN categories, check section 2.3.2.

section, the park-people conflicts are discussed in detail, as these conflicts need to be addressed to ensure the smooth management and sustainability of park resources.

7.2 Legal status of the Ayubia National Park

In the Khyber Pakhtunkhwa Province of Pakistan, a National Park is an area which is set aside by the government under the provisions of the Khyber Pakhtunkhwa Wildlife Act of 1975, for the protection and preservation of its outstanding scenery, flora and fauna in the natural state. Similarly, according to the Wildlife Act, the national park is accessible to the public for recreation, education and research activities, subject to such restrictions as imposed by the park management. Likewise, all the developmental works and forestry activities are carried out in the park in a way that must not impair the park objective. According to section 16 (4) of the Wildlife Act, the following acts are prohibited in a national park:

- Hunting, shooting, trapping, killing or capturing of any wild animal in a national park or within three miles radius of its boundary,

- Firing any gun or doing any act which may disturb any animal or bird or doing any act which interferes with the breeding places,

- Felling, tapping, burning or in any way damaging or destroying, taking, collecting or removing any plant or tree there from,

- Clearing or breaking up any land for cultivation, mining or for any other purpose, and

- Polluting water flowing in and through the national park.

Though, the government may, for scientific purpose or betterment of the national park, authorize the doing of the aforementioned acts (Wildlife Act, 1975).

7.3 History of the Ayubia National Park

ANP was established during the military rule of General Zia ul Haq. The incumbent provincial Martial Law Administrator[16], Lieutenant General Fazal Haq, was an avid hunter, who out of his personal interest in wildlife revived the Wildlife Department from scratch (Malik, 1994). It was decided by Fazal Haq during a meeting to declare part of the Reserved Forests as a national park. The decision was made without any consultation with the neighbouring communities. It is quite clear that when the government allocates certain land without taking into confidence the local communities, then the local communities either ignore the restrictions or get into violent conflicts with the government (Clark, Bolt & Campbell, 2008; Naughton-Treves *et al.*, 2006). It was due to martial law that none of the stakeholders bothered at that time to object to the decision of the military ruler. However, serious conflicts started later, once the martial law

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[16] He was also holding the position of Governor of the Khyber Pakhtunkhwa Province.

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was lifted. The nature of such conflicts is repeatedly discussed in the thesis. The park was established in 1984 over an area of 1,683 ha, with the following major objectives:

- To establish, manage and maintain the park for protection, preservation and development of natural fauna and flora,
- To develop facilities for tourists, naturalists and researchers for studying flora and fauna in the park.

The park area was later increased from 1,683 hectares to 3,312 hectares in 1998. The park is declared within the Reserved Forests of Galliat[17]. During the summer season, the park attracts a large number of visitors, due to its "cool climate and a vision of pristine nature – forest, streams and wildlife" (Hamilton & Hamilton, 2006, p. 104).

Figure 7.1: A view of Ayubia National Park

Park supports one of the best remaining examples of the moist temperate forest of Pakistan.

(Source: Safdar Ali Shah)

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[17] Galliat is a smaller administrative unit of the Abbottabad district.

The Wildlife Department has implemented the following three developmental projects in the park, since its inception:

- Establishment of Ayubia National Park (1984 to 1989),
- Development of Tourist Facilities in Ayubia National Park (1994 to 2000), and
- Implementation of a management plan for Ayubia National Park (2005 to 2011).

Critics believe that in the national parks of Pakistan, the emphasis of the management is mostly on the development of recreation facilities as opposed to conservation values (IUCN, 1990) and this is true in the case of Ayubia National Park as well.

7.4 Geography of the park

The park is situated in the Galliat area of the district Abbottabad in Hazara civil division. Geographically, it is located in the Lesser Himalayas, on a range of hills that runs North to South. The park lies between $34^O 1^/$ to $34^O 3.8^/$ N Latitude and $73^O 22.8^/$ to $73^O 27.1^/$ E Longitude.

According to the list of Global Ecoregions[18], the park is part of the 'Western Himalayan subalpine conifer forests', which is a component of the 'Western Himalayan Temperate Forests Ecoregion'. This Ecoregion is globally recognized for its unique biological diversity (Waseem, 2010) and is included in the Global 200 Ecoregions of International Significance (Saeed, 2008).

The elevation of the park ranges between 1,050 m at Lahur to 3,027 m at Meeranjani top. Mean annual rainfall has been recorded above 1500 mm (with heavy winter snow), whereas mean annual temperature is recorded as 21° C (Khan, 1988).

The park headquarters is at Dungagali, which is situated at a distance of 43 km from Abbottabad and 30 km from Murree. The park is approachable through a road running from Abbottabad to Murree, which also makes it the western boundary of the park (Figure 7.2). The park is bounded on the north by Namli Maira and Phalkot Reserve Forests and Bakot Forest Compartment 6, Kuzagali Location, Darwaza Reserve Forest compartment 3(ii) and Khanespur lies in the south. Birot Reserved Forest and Lahur village lie in the east, whereas Bagh Reserve Forest Compartment 10, Kalabagh-Nathiagali Location, Kundla and Tohidabad lie in the west of the Park.

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[18] According to the WWF, the Global Ecoregions is a science-based global ranking of the Earth's most biologically outstanding terrestrial, freshwater and marine habitats. It provides a critical blueprint for biodiversity conservation at a global scale. The aim of the Global Ecoregions analysis is to ensure that the full range of ecosystems is represented within regional conservation and development strategies.

Figure 7.2: Sub compartment map of Ayubia National Park

Compartment	Sub Compartment	Area (hectares)
Bagan 2		115.68
Bagan 3		90.24
Bagan 4		133.14
Bagan 5		101.58
Bagan 6		107.65
Bagan 7		47.65
Bagan 8	i,ii,ii	169.56
Bagan 9	i,ii,ii,iv	181.67
Bagan 11	i	59.89
Total area of Bagan Forest		**1007.06**
Tajwal 4	i	35.21
Total area of Tajwal Forest		**35.21**
Darwaza 1	i,ii	79.73
Darwaza 2	i, ii	142.45
Total area of Darwaza Forest		**222.18**
Kao 1	ii,ii,iv	193.32
Kao 2	ii,ii,iv	234.72
Kao 3	ii,ii	298.26
Kao 4	ii	143.67
Kao 5	ii,ii	272.77
Total area of Kao Forest		**1142.74**
Bakot 1	i,ii	130.71
Bakot 2	ii,ii	191.01
Bakot 3	i,ii	207.61
Bakot 4	ii,ii	196.68
Bakot 5	i,ii,ii	188.99
Total area of Bakot Forest		**915**
Total area of Park		**3322.19**

Legend

Park boundary	——
Compartment boundary	– - – -
Sub compartment boundary	··········
Tracks	••••••

(Source: Farooque, 2002)

7.5 Biodiversity of the Ayubia National Park

The park carries one of the best remaining examples of the moist temperate forests of the country, with a wide diversity of vulnerable plant and animal species (Aumeeruddy-Thomas, Shinwari, Ayaz & Khan, 2004; Hamilton & Hamilton, 2006; Khanum & Gilani, 2005; Shinwari, 2010). While most of the park area represents the moist temperate ecotype, it also includes elements of sub-alpine meadows and sub-tropical pine forest (Farooque, 2002).

7.5.1 Flora of the park

The park supports a rich diversity of native plants, wherein more than 757 vascular plant species have been recorded (Farooque, 2002). The key floral species are Blue Pine (*Pinus wallichiana)*, Yew (*Taxus wallichiana)*, Silver Fir (*Abies pindrow)*, Spruce (*Picea smithiana*), Deodar (*Cedrus deodara*), Horse chestnut (*Aesculus indica)*, Oak (*Quercus* spp), Maple (*Acer ceasium*), Poplar (*Populus ciliata*), Bird cherry (*Prunus padus*). Conifers dominate the forest crop, whereas the broadleaved trees are rather uncommon (Hamilton & Hamilton, 2006).

The park also supports a wide variety of medicinal plants, including the Yew, Zakham-e-Hayat (*Bergenia ligulata*), Bankakri (*Podophyllum emodi*), Mushk bala (*Valeriana jatamansi*), and Ner (*Skimmia laureola*) (Farooque, 2002). Other key plants include various species of Morel mushrooms and certain wild vegetable species including Kunji (*Dryopteris stewartii*), Mushkana (*Nepeta laevigata*), Kandor (*Dryopteris blanfordii*), Mirchi (*Solanum nigra*) and Tandi (*Dipsacus inermis*) (Aumeeruddy, Ayaz, Gillani, Jabeen & Jabeen, 1998; Shinwari, 2010).

Sub-Alpine Meadows/pastures are found on relatively gentle slopes around the two highest peaks of Merranjani and Mushkpuri, which are above the tree line. The Sub-tropical Pine Forest ecotype is present at lower altitudes in areas with Chir Pine (*Pinus roxburghii*) with associated broad-leaved plant species at altitudes ranging from 1,050 to 2,000 m. Chir pine is completely dominant in this ecotype (Farooque, 2002). Saeed (2008) described the landcover classes of ANP in Table 7.1:

Table 7.1: Area under various landcover / landuse classes		
Landcover / Landuse classes	Area (Hectare)	Percentage Area
Conifer Forest	1678.59	49.42
Shadow Conifer Forest	1103.12	32.48
Mixed Forest	379.65	11.18
Conifer Forest with shrubs and grasses	136.99	4.03
Pasture lands / grasses	4.67	0.14
Water / Wet soil	3.98	0.12
Land Soil / Settlement	89.24	2.63
Total	3396.24[19]	100

(Source: Saeed, 2008)

The landcover / landuse map of the ANP is attached as Appendix 7.1.

7.5.2 Fauna of the park

During 2000 and 2001, the experts hired by IUCN held various specialized resource assessment studies in the park. Based on those surveys, it was concluded that the park supports 31 species of mammals, 203 species of birds, 16 of reptiles, 3 of amphibians, 650

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[19] The area was calculated as 3,322 Hectares, when I conducted the detailed survey during 1999 for preparation of the management plan of the park.

known species of insects, and 757 species of vascular plants (Farooque, 2002). The comparative species richness of the park, the Khyber Pakhtunkhwa Province and Pakistan is indicated in the Figure 7.3.

Figure 7.3: Comparative species richness
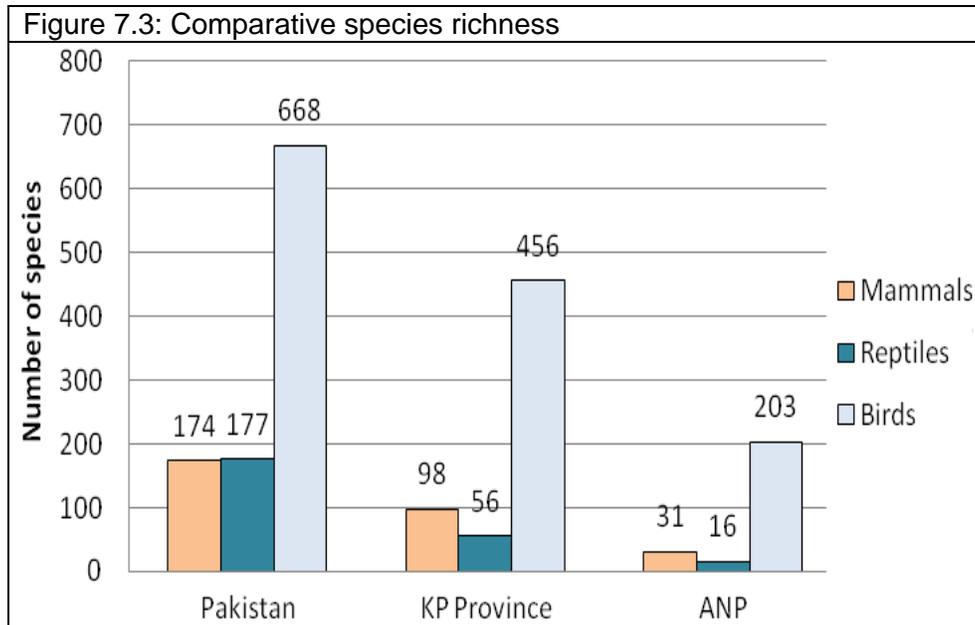
(Source: Farooque, 2002; Qaimkhani, 2009; Government of Pakistan, 2000;
Grigoriev, 2000; Earth Trends, 2003; Anwar, 2007; Government of Khyber
Pakhtunkhwa, 2010a)

In another study conducted for a Ph.D. research project, the researcher reported 420 species of plants, 22 species of mammals, 154 species of birds and eight species of herps (reptiles and amphibians) within the park (Chaudhry, 2003). The key wildlife of the park includes Common Leopard (*Panthera pardus*), Rhesus Monkey (*Macaca mulatta*), Yellow Throated Marten (*Martes flavigula*), Kashmir Flying Squirrel (*Eoglaucomys fimbriatus*), Giant Indian Flying Squirrel (*Petaurista petaurista*), Koklass Pheasant (*Pucrasia macrolopha*), White Crested Kalij pheasant (*Lophura leucomelana*), Orange Bullfinch (*Pyrrhula aurantiaca*), Murree Vole (*Hyperacrius wynnei*) etc.

Recorded extinctions during the last 40-50 years include Black Bear (*Selenarctos thibetanus)*, Musk Deer (*Moschus moschiferus)*, Grey Goral (*Naemorhedus goral)*, Barking Deer (*Muntiacus muntjak)* and Monal Pheasant (*Lophophorus impejanus)* (Farooque, 2002). It is believed that the park still supports 38 threatened plant species, 23 rare and threatened butterfly species, the endemic Murree Vole (*Hyperacrius wynnei*) and the Murree Hill Frog (*Paa vicina*) which was recently discovered in this area during specialized resource assessment studies of the park (Farooque, 2002).

7.6 Local community composition

According to the data sets of 2005, the total population of the surrounding villages is about 50,000 people, living in 8,333 households, with an average family size of six (Adnan, Ahmad, Afza, Hussain & Waseem, 2005; Khan & Arshad, 2005) with an annual population growth rate of 3% (Khanum & Gilani, 2005).

There are eight main villages around the National Park, i.e., Mallach, Pasala, Moorti - Kuzagali, Kundla, Darwaza, Riala, Lahur Kus and Khaun Khurd. Some of the villages are relatively bigger and are divided into smaller hamlets. The ethnic composition of the population is mixed. The two main ethnic groups are Karalls (dominant in Mallach, Pasala) and Abbasis (Darwaza, Mominabad, Riala, Lahur kas). Other ethnic groups including Syeds, Gujars, Mughals, Awans, Rajputs and Turks are scattered (Farooque, 2002; Aumeeruddy-Thomas *et al.*, 2004). None of these communities or any individual from the communities or outside own any piece of land within the park area. However, the local communities own communal as well as individual lands outside the park boundary.

Mallach is one of the biggest villages and is comprised of six different hamlets, i.e., Jaswara, Sair, Pata, Kanisan, Kala Ban and Soka Kas. In terms of human population, Jaswara is the biggest hamlet followed by Kala Ban, Soka Kas, Sair, Kanisan and Pata. Most of the violation cases were issued against the inhabitants of Kala Ban for lopping / fire wood collection in the park.

Pasala is another village which is comprised of three different hamlets, i.e., Badyar, Kundla and Toheedabad. In terms of human population, Toheedabad is the biggest hamlet followed by Badyar and Kundla. Most of the violation cases were issued against the inhabitants of Toheedabad for lopping / fire wood collection in the park.

Moorti is the smallest village / hamlet around the park. Similarly, Kuzagali is another small village around the park.

Riala is a large village and is comprised of two different hamlets, i.e., Khanespur and Mominabad. In terms of human population, Mominabad is the biggest hamlet. Most of the violation cases were against the inhabitants of Mominabad.

Another village is Lahur Kas, which is comprised of four different hamlets, i.e., Terhatti, Chalotay, Moohra / Talochapar and Thura. In terms of human population, Moohra / Talochapar is the biggest hamlet followed by Chalotay, Thura and lastly Terhatti.

Another village is Khaun Khurd, which is comprised of four different hamlets, i.e., Bari, Seri, Lundi / Mandri and Retri. In terms of human population, Bari is the biggest hamlet followed by Retri, Seri and Lundi / Mandri.

Darwaza is another village, which is comprised of two hamlets, i.e., Nakar and Dhara. In terms of human population, Dhara is the biggest hamlet (Farooque, 2002). The names of different villages and corresponding hamlets are given in Figure 7.4.

Figure 7.4: Local communities around Ayubia National Park
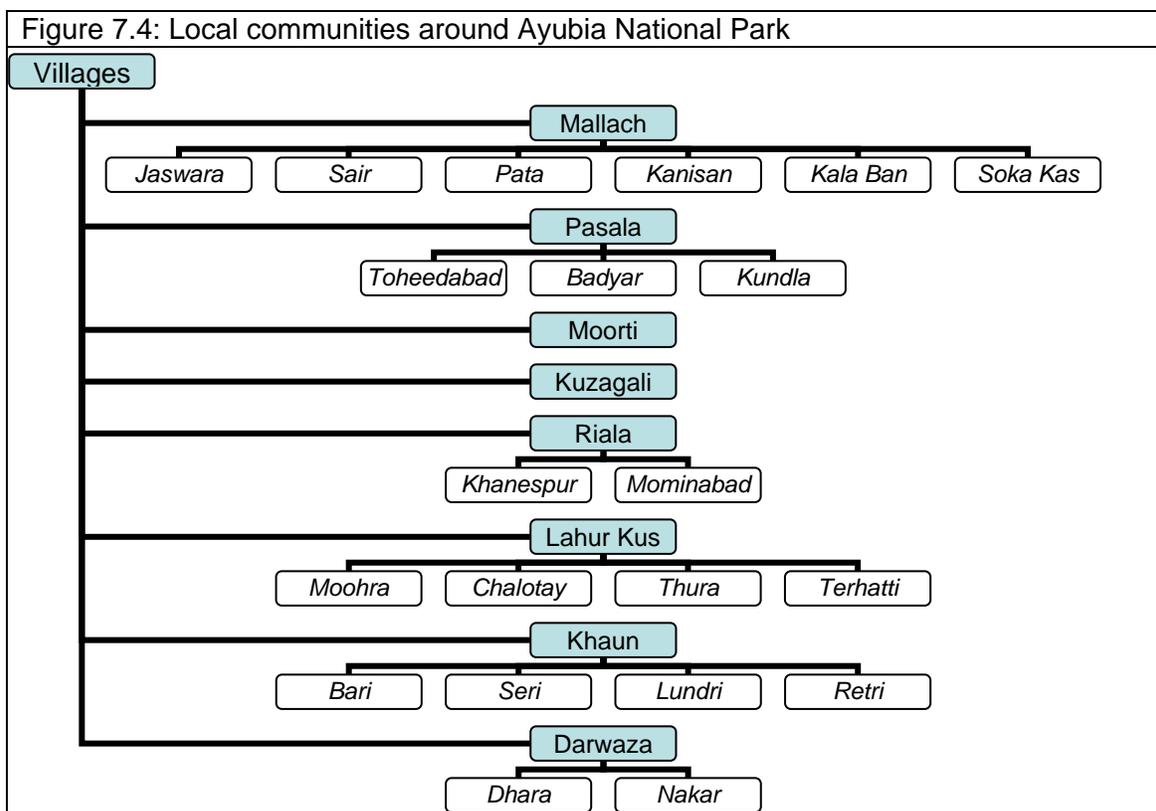
(Source: Farooque, 2002)

The local population is dependent upon the park resources, primarily for firewood and fodder, besides collecting medicinal plants, wild vegetables like kunji (*Dryopteris stewartii*) and morel mushrooms (*Morchella esculenta*) from the park (Aumeeruddy-Thomas *et al.*, 2004; Hamilton & Hamilton, 2006).

The local communities rear different farm animals primarily to cater for their demand of milk and other milk products. All these animals are stall-fed during winter, whereas the oxen and non-milking animals are released into the park during summer for free grazing (Hamilton & Hamilton, 2006). The details about livestock in the surrounding villages are stated in Table 7.2.

Table 7.2: Livestock population around ANP

Type	Number
Buffaloes	14,076
Goats	8,526
Cows	4,370
Horses & Donkeys	209
Total	27,181

Goats 31%
Horses & Donkeys 1%
Cows 16%
Buffaloes 52%

(Adnan *et al.*, 2005)

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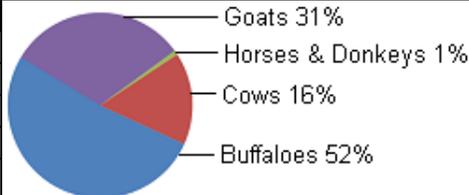
7.7 Land tenure relationship

Land tenure stands for the relationship, whether legally or customarily defined, among people, as individuals or groups, with respect to land (FAO, 2010). In the feudalistic society of Pakistan, 'might' is considered as the basis for most land tenure (Khattak, 2002). This land tenure system was created by the colonial powers and was inherited by the country in 1947. The basis of this system was to "win friends among enemies" (Qureshi, Khan & Adnan, 2002, p. 157). The land tenure in forests is determined by "history, local customs, laws, rules, government orders and manipulations of politically influential families" (Khattak, 2002, p. 150). Therefore, the land tenure system in Pakistan is complicated and complex, and it is considered to be one of the major causes for the gradual disappearance of trees from wastelands and common village wood lots (Jan, 1993).

Similarly, the neglect of intimate knowledge of the prevailing land tenure in the past was identified by Mulk (2002) as a major problem in the implementation of most developmental projects in Pakistan. He added that due to this problem, the full potential of most developmental projects aimed at benefitting the poor through development of natural resources was not attained. Mulk (2002) further argued that it is due to this problem that the inputs to benefit the poor were misdirected and benefitted the rich and powerful at the expense of the poor and powerless. Formerly, the first land settlement in Hazara was carried out in 1872 to 1874, whereby the forested areas were divided into two broad categories i.e., Government, State or Reserved Forests and Private, Communal or Guzara Forests. Currently the major land tenure in Galliat area is shown in Table 7.3:

Table 7.3: Major land tenure in Galliat area		
Land Use	Area (Hectare)	
Reserved Forests	15,716	
Guzara Forests / public wasteland	8,224	
Cantonment Forests	452	
Location Forests	279	
Communal / private grazing lands	49,280	
Cultivated private lands	27,123	
Total	101,074	
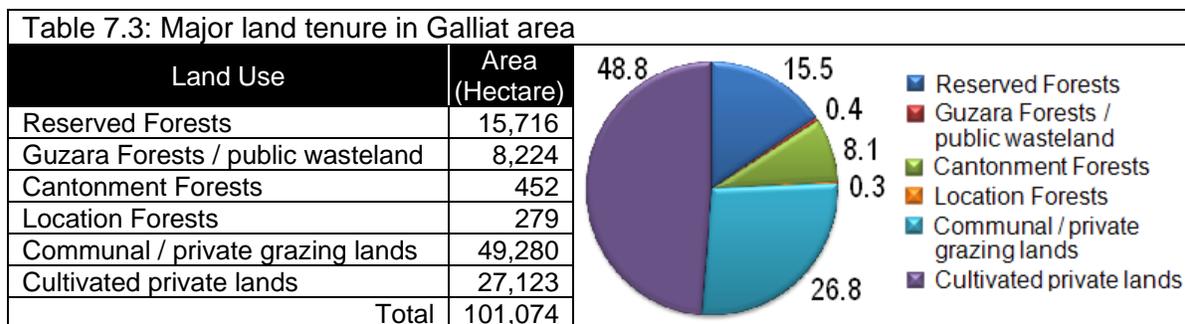
Reserved Forests is a category of forest lands where all acts are prohibited unless permitted. Such forests are properly demarcated with boundary pillars. In the Galliat tract, these forests are located mainly on the ridges above the habitations. In these forests some of the local communities have very limited rights. Concessions are occasionally granted to the local communities for grazing and collection of firewood and fodder.

The word guzara is a colloquial word used for subsistence. Guzara Forests are forest areas which are left around the Reserved Forests to meet the bonafide needs of the local communities (Jan, 1993). These forests are privately owned, but still permission is required from the Forest Department for cutting any timber tree (Hamilton & Hamilton, 2006). Since, as these are managed by the Forest Department, so they also charge 20% in administrative charges. These forests have almost been cleared of trees, due to permanent dependence of the local communities for grazing their domestic animals and obtaining timber, firewood, fodder etc. Critics believe that with the degradation of Guzara Forests, the biotic pressure on the surrounding Reserved Forests is increasing (Khanum & Gillani, 2005).

Cantonment Forests were carved out of the Reserved Forests of Galliat for establishing military summer stations. Cantonment Forests are declared in five different locations including Khairagali, Changlagali, Ghoradhaka, Kalabagh and Baragali. The management of this category of forests also rests with the Forest Department and these are free from all kinds of private rights.

Location Forests are also managed by the Forest Department, and these are also free from private rights. However, the area is either under the use of civil administration or the plots are leased to private individuals for construction of residences and other business centres. Location Forests are declared in four different locations including Kuzagali, Nathiagali, Dungagali and Thandiani.

Communal grazing lands are distributed in the lower ridges and are mostly inhabited. These areas are almost devoid of any tree growth and are used by locals for grazing of domestic animals and collection of grasses. Cultivated private lands are basically the small land holdings which are distributed all over the area. These small fields are the result of intensive terracing and are used for rain-fed agriculture especially for growing maize, potatoes and certain vegetables.

ANP is part of the Reserved Forests; however the concessions otherwise granted in Reserved Forests were withdrawn from the area, when it was declared a national park. Both the Forest and the Wildlife Departments are involved in park administration. Critics believe that such dual management within the park area adds to the complexity of the management and creates uncertainties about the relative boundaries of the authority of both the sister organizations (Aumeeruddy-Thomas *et al.*, 2004; Hamilton & Hamilton, 2006). It is further believed that such "narrow, short-term bureaucratic management approaches invariably turn into reactive treatment of symptoms rather than more effective and efficient, large-scale, long-term strategic actions guided by adaptive management" (Brunckhorst, 2000, p. 48).

7.8 Park management

Since 1984, the park has been managed by the provincial Wildlife Department under the Wildlife (Protection, Preservation, Conservation and Management) Act, 1975. It is responsible for protecting the park resources against consumptive uses, provision of ecotourism facilities, public awareness and extension, as well as opportunities for research and rehabilitation of endangered species.

Figure 7.5: ANP Park Management team

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                    Divisional Forest
                    Officer – Wildlife
                      (Abbottabad)

      Range Officers                      Range Officer
        Wildlife                            Wildlife
        (Ayubia)                           (Dongagali)

Deputy Ranger    Wildlife Watchers    Head Watcher    Wildlife Watchers
  Wildlife                              Wildlife
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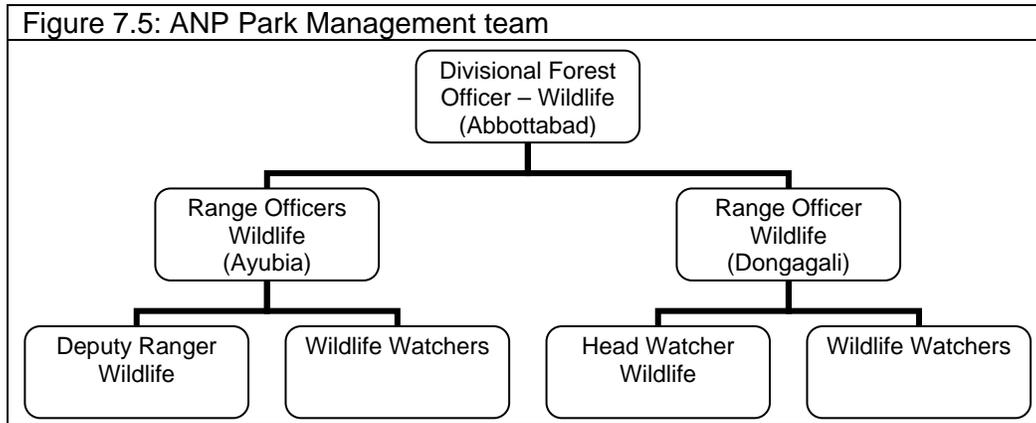
The Divisional Forest Officer (Wildlife) Abbottabad is responsible for looking after the affairs of the park. He is assisted by two Range Officers (Wildlife), who are responsible to ensure the law enforcement under the provision of Wildlife Act of 1975, within and around the national park through a team consisting of a Deputy Ranger, Head Watcher and Wildlife Watchers. Since the park is located within the Reserved Forest, so staff of the Forest Department are also present in the park area to implement the provisions of the Forest Act, 1927.

Since its creation, the park has been under heavy social pressure to cater to the daily needs of the local communities for firewood, timber, fodder, medicinal plants, wild vegetables and grazing of livestock (Khanum & Gilani, 2005). The collectors of firewood and fodder are mostly women and children (Aumeeruddy-Thomas *et al.*, 2004), and every year several deaths are reported due to falling off trees in a bid to cut branches (Khan & Arshad, 2005).

During 1984, when the law enforcement was initiated by the staff of the Wildlife Department, in the newly established national park, the local communities were the first to suffer as they were dependent upon the park resources specifically for firewood and grazing of domestic animals. Resultantly, the local communities developed resentments against the Wildlife Department (Lodhi, 2007). This resentment remained suppressed due to the vindictive military rulers of that time. As soon as the Martial Law was lifted, the local communities openly demanded the abolition of the park and the Forest Department was in the forefront to convey

the feelings of the local communities regarding de-notification of the park (Conservator Forest, Hazara Circle, letter number 11764/WP dated 22/06/1987).

However, the efforts to abolish of the park were not materialized on weak grounds. Without having any participation of the local communities in the park management, the resentments were getting serious with time. Once, the DFO Wildlife, during inspection of the park, stopped some women from collecting firewood, which created a law and order situation in the area, whereby the local communities blocked the main road and also stoned the enforcement staff. Finally the local police intervened and enabled the officer to leave the park area (Aumeeruddy-Thomas *et al.*, 2004).

From 1984 till 1996, the park was managed for resource conservation, primarily through law enforcement and policing by excluding the local communities from planning and management of the park (Farooque, 2002). However, due to illegal collection of firewood and fodder, especially in the absence of community involvement in the park management, the conventional management strategy of policing and fines resulted in hostility between the local communities and staff of the Wildlife Department (Farooque, 2002; Khan & Arshad, 2005). Consequently, thousands of cases of illegal activity were registered in the courts against local community members for illicit use of park resources. Nevertheless, these legal actions did not deter many people from fulfilling their requirements for timber, firewood and fodder (Farooque, 2002; Khan & Arshad, 2005) because such conflicts normally escalate in situations where locals depend on protected areas for food, energy, nutritional, medicinal and other subsistence needs (Bahuguna, 2000; Masozera & Alavalapati, 2004).

Due to the failure of the command and control approach and increased park-people conflicts, the government changed its conventional exclusionary conservation approach during 1996 to test a co-management approach. Consequently, it was decided to involve all the stakeholders, specifically the neighbouring communities, in the planning as well as management of the park. I was deputed by the Wildlife Department in 1997 as the Park Planner for the Ayubia National Park. My main responsibility was to prepare the first ever management plan of the park through the active involvement of all the stakeholders, including the previously excluded local communities.

During the initial year, the local communities were not welcoming me when I was visiting the local communities along with the staff of other organizations like the Forest, Agriculture and Livestock Departments. The reasons were obvious as I was representing the organization which was responsible for imposing all sorts of restrictions upon local communities for using park resources. It was at that time that I realized that any meaningful participation of the local

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communities is possible only once the local communities are given the assurance that their voices will be heard and their suggestions will be honoured in the planning process. As a result, I started regular dialogues with the local communities and invited their representatives in all sorts of local, regional and national workshops that were held during the planning stage. The management plan was thus prepared in consultation with all the local communities, so that they own the planning document and respect its recommendations for long-term conservation of park resources.

7.9 Management plan of Ayubia National Park

Management plans play a significant role in effective governance of protected areas (Dearden *et al.*, 2005), as these are considered to be the key focus for public accountability (Dearden *et al.*, 2005; Thomas & Middleton, 2004). Therefore, in order to improve the overall management of the park, and to ensure the public participation in the routine management of the park resources, the Wildlife Department decided to prepare the management plan of the park. It was also the first ever attempt of the provincial Wildlife Department to prepare a management plan for any protected area of the province. As global forces have much influence on the protected areas (Dearden *et al.*, 2005), so it was due to the influence of the European Union that the management plan was foreseen for the park. Consequently, the plan was prepared at the time when I was working on behalf of the Wildlife Department in a multi-disciplinary European Union (EU) funded project – the Natural Resource Conservation Project (NRCP) from 1997 – 2002.

It was aimed to prepare a socially desirable and ecologically sustainable management plan for Ayubia National Park. The vision was to "conserve the park's resources through the active involvement of the local communities for posterity and for their own long-term benefits" (Farooque, 2002). The goal of the management plan was to provide guidelines and action programs that ensure the sustainability of the Ayubia National Park and its resources. The plan provided a brief assessment of the status of the flora and fauna of the park, outlined strategic goals / objectives, and suggested a strategic shift in the management regime of the park. The plan formulated short and long-term goals, along with a detailed work program for the five years plan period.

For plan preparation, a number of different stakeholders were consulted including officials of various government organizations, relevant NGOs, conservationists, experts, academia, and local communities through national and regional level consultative workshops, coupled with community dialogues. The dialogues were held with the communities of eight main

villages located around the park, i.e., Mallach, Pasala, Moorti, Kuzagali, Darwaza, Riala, Lahur Kus and Khaun Khurd. As indicated by Innes and Booher (2002), in collaborative processes the goals are not predefined, but discovered during the problem solving, so the community dialogues were designed to develop consensus on the process and overall preparation of the plan and thus to develop a sense of co-management among the relevant communities. The broader principles and operational objectives of the management plan thus developed are stated in Table 7.4.

Table 7.4: Broader principles and operational objectives of management plan
Principles:
- Habitat is improved and maintained for the representative biodiversity of Ayubia National Park,   - Community dependence on Ayubia National Park should be minimized,   - Stakeholders are appropriately involved in the conservation of biodiversity of the Ayubia National Park,   - Conflicts between various stakeholders are resolved,   - The management of Ayubia National Park provides ample opportunities for scientific research, and   - The joy and knowledge of the visitors to Ayubia National Park is enhanced.
Operational Objectives:
- Protect natural biodiversity of the park,   - Seek communities' and other stakeholders' support for conservation,   - Promote sustainable tourism / ecotourism,   - Promote sustainable livelihood of the concerned communities,   - Promote awareness for nature conservation at all levels,   - Protect Park from pollution,   - Strengthen the institutional arrangements for the implementation of the management plan, and   - Encourage advance research.

(Source: Farooque, 2002)

Once the draft management plan was agreed with the local communities, the plan was shared with the subject specialists and staff of the park for their comments and feedback. The revised draft was later shared with the Technical Steering Committee (TSC), which was constituted for monitoring as well for plan preparation. In order to incorporate the viewpoint of all the stakeholders, the TSC was comprised of the Chief Technical Advisor of WWF-Pakistan and senior officers of the Wildlife Department and the Forest Department. The draft was once again revised in the light of recommendations from the TSC. For granting an authority and status to the plan as being an approved policy document of the provincial government, it was approved by the Head of Wildlife Department and finally by the provincial head of the organization – Secretary Environment Department, Government of the Khyber Pakhtunkhwa Province in 2002.

The management plan was thus prepared in consultations with all the stakeholders including the local communities, experts from the Forest and Wildlife Departments, policy makers and other stakeholders. While the provincial head of the organization approved the plan, deviations from the plan were still possible by the manager(s) of the park, because of the absence of any legislative directions that the plan must be implemented. This is a common issue in many countries, where the management plans have no legal basis (Dearden *et al.*, 2005).

The plan suggested a strategic shift in the management regime of the park (Farooque, 2002). Co-management was the essence of the management plan and, accordingly, the plan recognized the local communities as key partners in the conservation efforts of the Department with respect to the ANP. The success of collaborative policy is dependent upon building the capacity of the society and the governance system to be self-organizing, intelligent and sustainable (Innes & Booher, 2002). Consequently, it was envisaged that for improved governance, the local communities would be involved in the park management process through an Ayubia National Park Management Committee (ANPMC) comprising the Managers (DFOs and Park Rangers) of the Wildlife Departments and representatives from all the major surrounding communities. The plan also prescribed some short-term and a few long-term goals, along with a detailed work plan for each year.

In order to implement the approved park management plan, a project was approved from the federal government. The project titled "Implementation of the Management Plan for Ayubia National Park" was based on the approved management plan that I authored during 2002. The project regarding the implementation of that plan was prepared during 2005 and I was one of the two co-authors of that project as well. The federal government approved the project regarding the implementation of the management plan with the financial assistance of 72.70 million Pak Rupees (Government of Pakistan, 2006). The provincial Wildlife Department is has been tasked to implement the project since 2005.

7.10 Threats to the park

ANP is facing a number of threats due to the stakeholders. One of the major threats is due to the misadventures of Forest Departments, which occasionally attempted timber harvesting within the park. Besides that, the local communities are dependent upon the park for fulfilling their demands of firewood, grass and other minor forest products as well as grazing their animals in the park area. Critics believe that the poorly regulated collection of various park resources is leading to the overall degradation of the resource base, which seriously affects the

regeneration and tree growth (Shinwari, 2010). All these biotic pressures pose serious threats to the park resources. These threats are described below:

7.10.1 Timber harvesting

ANP is simultaneously managed by the Wildlife Department and the Forest Department. This dual management often creates policy issues, which ultimately affect the park resources. The Senior Director of WWF Pakistan, Dr. Ghulam Akbar, outlined the issue by adding that though both the organizations operate in common boundaries, the management objectives of both the organizations are totally different. He further explained, "Wildlife Department staff cannot manage the habitat the way it should be; on which the very survival of the wild animals rests. On the other hand, Forest Department staff does not seem much concerned about wildlife or the quality of habitat" (Akbar, 2003, p. 3). Such clash of interest is clearly visible in ANP, where the Wildlife Department is concerned with the conservation of flora as well as fauna of the park, but the Forest Department is more interested in the timber harvesting and revenue generation. The scholars of environmental governance argue that such overlaps of administrative functions, along with contradictions in conservation and developments goals, often lead to serious management problems (McBeath & Leng, 2006). Resultantly, the conservation goals are compromised due to lack of coordination among concerned organizations which have competing mandates (Brunckhorst, 2000). It is believed that such sector-based decision-making is partially responsible for the problem of biodiversity loss (Dale, 2001; Lister, 2008)

It was during December 2000 that the Forest Department initiated conversion of wind fallen trees in the ANP, without involving or informing the Wildlife Department. This activity was totally against the provisions of the Wildlife Act of 1975. Consequently the Wildlife Ranger approached the Forest Ranger and asked him to stop conversion of wind fallen trees into scants (square logs). However, he was not ready to stop that activity. Ultimately, the senior officers were involved to interfere and solve the issue at a higher level. On 12 December 2000, the Chief Conservator of Wildlife approached his counterpart in the Forest Department (vide 2884-86/WL) and he was informed that:

- any extraction of wind falls from the National park is violation of the Wildlife Act,
- extraction of wind falls is a management tool in forestry, but it is not so in national park management,
- such dead and dying trees provide food and shelter to a large number of organisms, besides improving the soil fertility.

He was thus requested to direct the concerned DFO of the area to respect the Wildlife Law and maintain the sanctity of the national park. Upon receiving the viewpoint of the Wildlife Department, the concerned DFO Galis Forest Division tried to justify his completely illegal act. In his explanatory letter (1214/GL dated 3 January 2001), he stated, "The conversion and solvage (salvage) of these windfalls was undertaken on the pretext (grounds) that these windfalls are lying on very vulnerable points and can be taken away by the local people anytime. Your (Wildlife Department) staff is not that organized to stop the illicit theft of these windfalls, hence if the windfalls will be taken away then why not the Government itself, where at least some revenue may be generated..." This reminds me of the quote ascribed to Chinese philosopher Confucius, "If rape is inevitable, lie back and enjoy it". Instead of realizing the duties of his organization (Forest Department), the officer concerned came with a novel approach for avoiding any potential illegal action of local communities through practical illegal action of the Forest Department. Further justifying his misadventures, the concerned officer added, "We should not compare Ayubia National Park with the National Park of Olympic Peninsula, Seattle, USA. I have seen with my own eyes the implementation of all these National Park laws in letter and spirit". I am still wondering what he wanted to prove by adding the above quote, as no-one else but he himself, being the officer in charge of the Forest Department, was breaking the national park laws.

Old habits die hard, and once again during 2004, another attempt was made by the Forest Department to invade the sanctity of the national parks and attack the dignity of the relevant National Park laws. This time the pretext was to extract the windfalls, dry and snowfall damaged trees from the park. In undertaking this endeavour, the Forest Department involved another rival – the Forest Development Corporation (FDC) - as well. The FDC is responsible for harvesting of natural forests within the province with the approval from the Forest Department.

Once again, the senior officers were involved to interfere and solve the issue at a higher level. On 22 September 2004, the Chief Conservator of Wildlife approached the provincial Secretary of the Environment Department (vide 1521-24/WL) and he was informed that:

- the extraction of trees whether green, wind fallen, dead or dying is against Section 16(4) of the Wildlife Act,
- the park is protected against all sorts of commercial harvesting,
- Such logging activities will have devastating effect on the ecological processes within the park and destroy the habitat of many species,
- Extraction of windfalls and dry trees is against the provisions of the approved management plan of the park.

The provincial Secretary Environment was requested to direct the Chief Conservator of Forests and the Managing Director of the Forest Development Corporation to withdraw the contract orders with respect to harvesting within the premises of the national park. Upon receiving the written official concern of the Wildlife Department, the relevant Conservator of Forests attempted to justify the completely illegal act, with his explanation vide his letter number 544-48/GB dated 27 September, 2004. He added that all the activities have been in conformity with the provisions of the Pakistan Forest Act 1927, Hazara Forest Act 1936 as revised through NWFP Forest Ordinance 2002. Playing with the 'if' and 'buts' of the various laws, he finally came with his demand that the Wildlife Department should cooperate with the Forest Department in fulfilling its obligations.

The question remains, however, how the Wildlife Department can cooperate with someone who is determined to continue violating the Wildlife Act of 1975. Similarly, the Conservator of Forests showed his concern about the management plan of the park by adding, "Management plan has been prepared quite in isolation by the Wildlife Department without consultation / consents of the Forest Department". However, this concern was baseless, because in order to get the acceptance of all the stakeholders and experts, the plan was prepared under the guidance and monitoring of a special Technical Steering Committee, comprising of the experts from various agencies and NGO. The details are in Table 7.5.

Table 7.5: Composition of Technical Steering Committee for management plan	
Designation	Affiliations
Project Director, NRCP	Forest Department of Khyber Pakhtunkhwa Province
Conservator Abbottabad Circle	Forest Department of Khyber Pakhtunkhwa Province
Conservator Wildlife	Wildlife Department of Khyber Pakhtunkhwa Province
Conservator Wildlife	Forest Department of Punjab Province
Chief Technical Advisor	WWF Pakistan

Available records indicate that only one member was from the Khyber Pakhtunkhwa Wildlife Department and two were from the Khyber Pakhtunkhwa Forest Department. Thus, the Technical Committee had the majority from the Forest Department of the Khyber Pakhtunkhwa Province. It is clear that elements of the Forest Department repeatedly violated the Wildlife Act of 1975 and also the management plan of the park, which was prepared under the guidance of the senior officers of the same department. Supporting the big brother in their illegal activity within the national park, the FDC expressed their concern against stopping the harvesting operations. They put in writing, "FDC harvesting operations are in progress and stoppage of works at this stage may create complications and subsequent litigation between the work contractors and FDC as huge amounts have been invested for extraction of timber from said forest" (22/H/FDC/Works/2302-6 dated 21 October, 2004).

Figure 7.6: Dried tree in Ayubia National Park

Such dried trees are ideal habitat of woodpeckers, flying squirrels and parakeets etc

(Source: Mohsin Farooque)

Thus, once again (and to paraphrase), the rationality of power invaded the power of rationality and the decades of conservation efforts in Ayubia National Park were ruined by sister organizations on the pretext of revenue generation. For Repetto (1990: p. 3), such actions of the Forest Department have long-term negative effects: "A country could sell off its timber and minerals, erode its soils, pollute its aquifers, deplete its fisheries, and the national accounts would treat all the proceeds as current income. Mistaking a decline in wealth for a rise in income is confusion likely to end in bankruptcy".

Figure 7.7: Dried tree in park

... much more than a dried tree, which worth a few dollars

(Source: Safdar Ali Shah)

Figure 7.8: Fallen tree in Ayubia National Park

A forester perceives it as a dead tree, which can be sold to earn some revenue. A conservationist considers it as an ideal habitat for the associated biodiversity

(Source: Mohsin Farooque)

The question arises as why the Forest Department is so much interested and determined in the harvesting of natural forests specifically, when the country already has the shameful and disgraceful grading of the second highest deforestation rate in the world (Government of Pakistan, 2005; World Fact Book, 2009). The answer is quite obvious that through such misadventure, the Forest Department makes an effort to prove their power that they are the actual 'landlord' of the park area. Secondly, extraction of dry or damaged trees is a pretext of a few officers to further their agenda of opening the comparatively better forest area for harvesting. In support of these objectives, Akhter *et al.* (2010) points out that it is a common practice of the officials of the Forest Department to accept bribes for allowing the traders to cut down trees from the forests. This issue has been discussed in subsection 9.1.1 dealing with the corruption of government officials. Such misadventure of the Forest Department sets the sister organizations against one another and initiates an inter-bureaucratic struggle to demonstrate their power and authority. In reality, such inter-departmental conflicts weaken the control of the government and, resultantly, the resources are abused by the outside opportunists.

7.10.2 Firewood collection

Firewood is the main source of energy in Pakistan and in rural areas 90% of the population rely on it (Aumeeruddy-Thomas *et al.*, 2004; Shinwari, 2010). Due to the non-

availability of natural gas and cheap electricity, firewood is the cheapest and most readily available resource for the local communities to survive the extreme winters of the Himalayan Moist Temperate Ecozone. Snowfall normally occurs between December and February and, with the onset of the snow season, the dependency on firewood increases greatly. The importance of firewood for keeping their houses warm enough is obvious in the area, when there is normally 10 to 18 ft of snow during the winter season and even some of the areas located at relatively higher elevation may receive up to 30 ft snow during the winter season. In the absence of any efficient system of snow clearing, the local communities are restricted to their own homes for an extended period of time.

It is next to impossible to survive the extreme weather conditions, as there is no formal insulation within the homes, and consequently, without any heating arrangements these homes can convert into freezers with the onset of freezing temperatures of winter season. Therefore, it is essential to understand that firewood is a necessity of the local communities as opposed to a luxury or any ordinary routine requirement. Resultantly, no planning can be successful for conservation of the natural resources in ANP and the surrounding Reserved Forests, until and unless this issue of extraction of firewood is properly addressed.

Figure 7.9: Firewood extraction by local woman

(Source: Paracha, 2011)

Figure 7.10: Winter in Dungagali

(Source: Safdar Ali Shah)

Figure 7.11: Winter in Dungagali and Ayubia areas

(Source: Safdar Ali Shah)

It is for these valid reasons that while preparing the management plan of the ANP, a lot of emphasis were given on addressing this critical issue. After repetitive consultations with the local communities, it was mutually agreed and decided that for minimizing the intake of firewood from the park, the government would establish three firewood depots in the neighbouring communities for five years. The idea was that during this period of five years, the firewood would be offered for sale to the local communities at a gradually decreasing subsidized price, while extensive energy plantations would be raised. The net result would have been the establishment of strategically located plantations in the communal areas and the Guzara Forests, which could be utilized in a sustainable manner by the local communities (Farooque, 2002). However, no such firewood depots could be established by the department due to their disinterest, despite the clear instructions in the management plan.

Figure 7.12: Excerpts of the management plan regarding establishment of firewood depots

Establishment of fuel wood depots

The Park supports rich biodiversity of the Galis tract, yet, it is under heavy biotic pressure, which disturbs the habitat. The local communities depend on the Park's resources to meet their needs, especially fuel wood collection which has become a major disturbance factor. Since snowfall in such areas is normally, severe and heavy, and consequently local people store fuel wood for daily use in long winters.

In order to minimize dependency of the local communities on the Park's resources, three fuel wood depots will be established around the Park, during winter months i.e., December, January, and February. The fuel wood depots shall be established in the communities in the immediate surround of the Park so that their urge of dependency on the forest resources could be largely averted to utilization of the depots for fulfilling their fuel wood demands. Potential sites for these depots will be near Nagri Tatial, Nathiagali, and Khanespur. These depots would be supplied with wood from Punjab and provided to the communities on subsidized rates. This provision has been discussed with the local communities during consultations with them regarding preparation of the Plan for the Park. Community will manage and run the depot. Account will be maintained properly and will be shared with the locals as well as the staff of Project/Environment Department.

For establishment of these depots, the local communities will ensure that they are raising and protecting energy plantations on their communal lands, so that in future the firewood should be obtained from these energy plantations, and not from the Park area. The subsidy on the fuel wood from these depots during 2002-03 will be 30%, which will be periodically reduced as under:

Year	2002 - 03	2003 - 04	2004 - 05	2005 - 06	2006 - 07
Subsidy %	30	25	20	15	10

The cost of subsidy will be borne by the Project during 2002-02 and 2003-04, but after the termination of Project, the same will be borne by Ayubia National Park Conservation Fund. Supposedly after five years time, the requirement of fuel wood can be fulfilled from the energy plantations raised by the beneficiaries i.e., local communities.

7.10.3 Grazing and fodder collection

Grazing of domestic animals and collection of fodder is illegal within the park. However, the women of neighbouring communities normally collect the fodder from spring to autumn and use the fresh fodder to stall-feed the livestock (Hamilton & Hamilton, 2006). Fresh fodder is obtained both from lopping of broadleaved trees and from harvesting of fresh herbaceous growth, specifically grasses. During the severe winters, the domestic animals are fed with the crop residues and by grazing the animals in the unmanaged areas around the habitation.

The local communities and especially the women folk are involved in these illegal activities which ultimately result in serious conflicts between them and the park staff (Hamilton & Hamilton, 2006).

Figure 7.13: Open grazing within Ayubia National Park
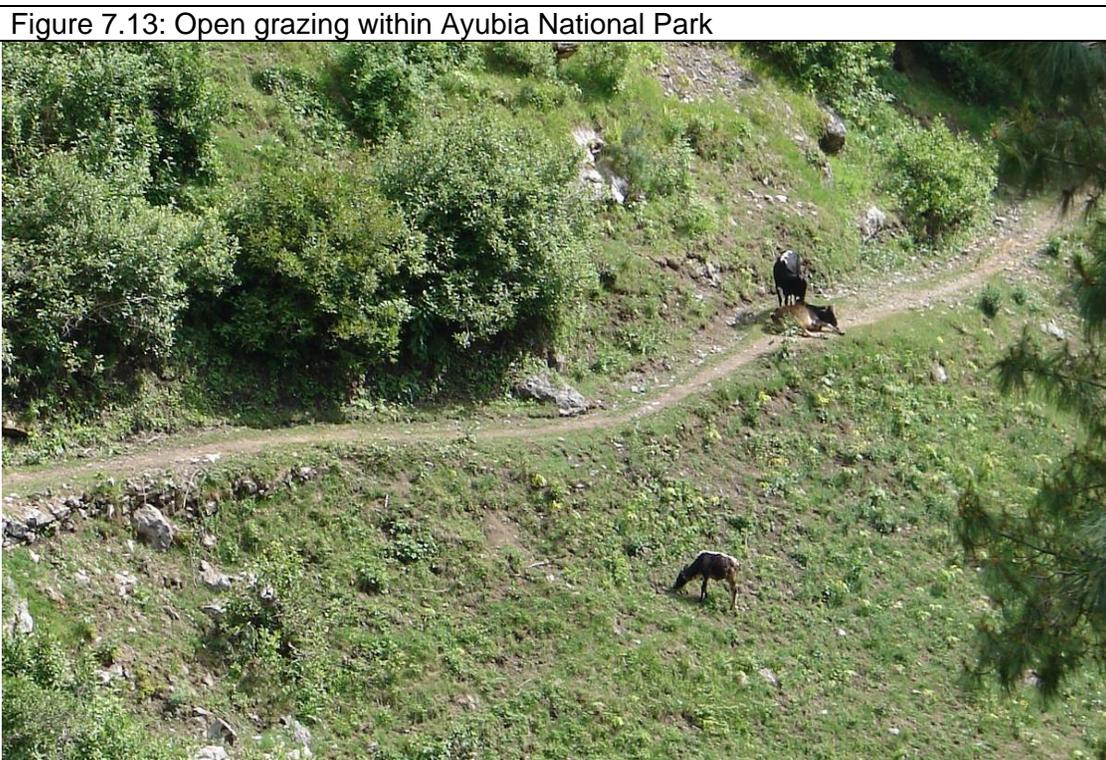
(Source: Safdar Ali Shah)

Such fodder collection cannot be controlled in the circumstances, when there is no formal channel for negotiations between the two key stakeholders (Hamilton & Hamilton, 2006).

7.10.4 Non-timber Forest Products (NTFP) collection

Besides the firewood and fodder collection, some other minor forest products are also regularly extracted from ANP. These include various mushrooms, medicinal plants, wild vegetables, wild flowers, etc. Such NTFPs are important sources of revenue generation for the local communities. During the summer months, children can be seen all along the main roads,

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selling the headbands made up of wild flowers (*Chrysanthemum leucanthemum*) to the tourists visiting the area.

Figure 7.14:Wild daisy (*Chrysanthemum leucanthemum*) in ANP	
Kids selling wild daisy headbands.	Kid selling flower headbands on the road.
(Source: Mahmood, 2011)	(Source: Ashraf, 2011)
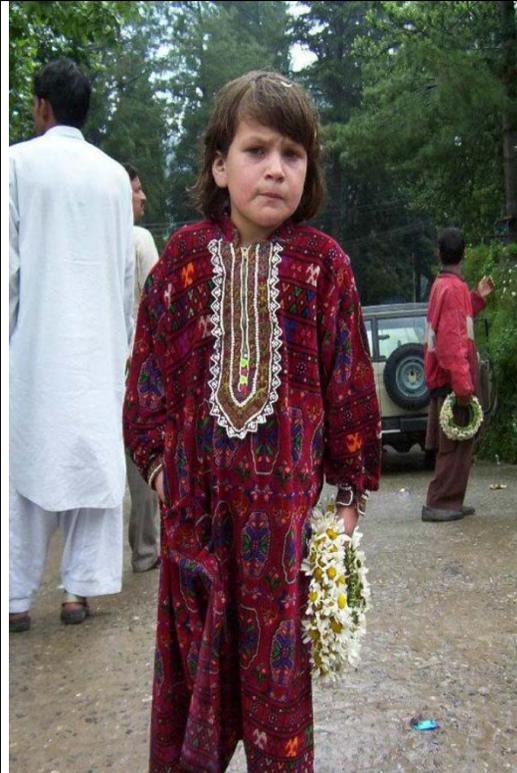
Wild daisy flowers in Ayubia National Park.

(Source: Mohsin Farooque)

The details of different minor forest products collected in ANP are as follows:

7.10.4.1 Mushrooms collection

Various types of mushrooms are extracted by the local communities from the national park during the spring season. These different species of morels are from the genus Morchella and the most common species that is extracted from the park is *Morchella esculenta* (Aumeeruddy-Thomas *et al.*, 2004; Shinwari, 2010). The mushrooms are mostly available in those moist, shady habitats within the park, where the deadwood is available, and that is one of the key reasons why the mushrooms are only extracted from the park, because the deadwood cannot be found outside the park boundary.

These mushrooms are considered as the highest priced non-timber forest products (NTFPs) in the region and, therefore, these mushrooms have many collectors (Hamilton & Hamilton, 2006). According to a study conducted by WWF Pakistan within ANP, it was concluded that the collectors of the mushrooms include women, men, boys and girls from the neighbouring communities. The relative proportion of these collectors is mentioned in the following graph:

Figure 7.15: Mushroom collectors in ANP

Men 30%

Women 52%

Girls 3%

Boys 15%

(Source: Aumeeruddy-Thomas *et al.*, 2004)
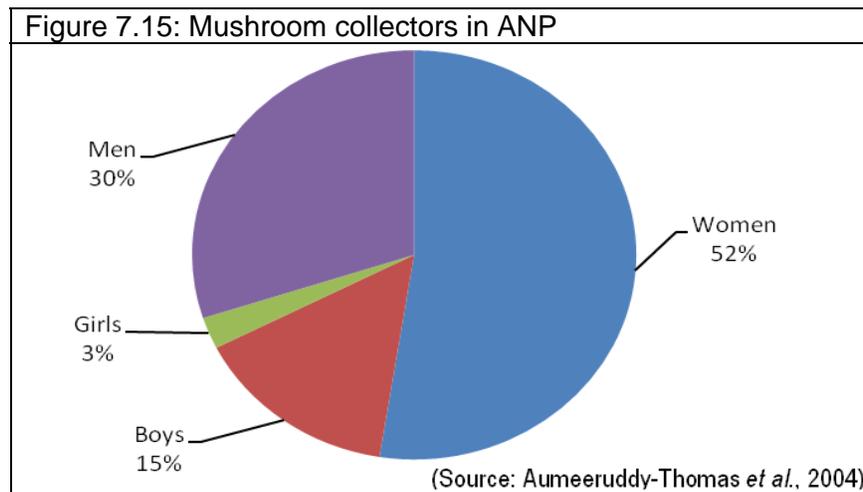
The researchers of the WWF study also reported that 38% of the respondents were involved in mushroom collection on a daily basis, whereas the rest of the respondents were not involved in collecting it on daily basis (Aumeeruddy-Thomas *et al.*, 2004). The mushrooms are mostly exported to Europe and, according to Hamilton and Hamilton (2006) 99% of the production of these mushrooms are exported, whereas the remaining 1% is locally consumed for medicinal purposes, e.g., analgesic, aphrodisiac and for the treatment of rheumatoid arthritis.

7.10.4.2 Medicinal plants collection

Medicinal plants are important for ordinary people within Pakistan as approximately 60 percent of the population uses herbal medicines for treating their minor and in some case major diseases (Shinwari, 2010). As a result of such huge demand, there are over 25 large manufacturing companies in Pakistan which are involved in commercial production of herbal medicine (Khan, 2008).

About 2000 medicinal plants species are known from Pakistan and among those 59 species are found in Ayubia National Park (Farooque, 2002). Similarly, a number of medicinal plants are collected from the ANP (Aumeeruddy-Thomas *et al.*, 2004; Hamilton & Hamilton, 2006; Shinwari, 2010). The collectors are mostly women and children (Shinwari, 2010). However, according to the literature, the wastage is much more serious with regard to the medicinal plants due to improper drying (Aumeeruddy-Thomas *et al.*, 2004; Hamilton & Hamilton, 2006). Moreover, due to over-collection, a number of medicinal plants have gone extinct, besides ruining the habitat for the associated wildlife species (Shinwari, 2010). Some of the key medicinal plants collected in ANP include the *Taxus wallichiana* (Yew), *Bergenia ligulata* (Zakham-e-Hayat), *Podophyllum emodi* (Bankakri), *Valeriana jatamansi* (Mushk bala), and *Skimmia laureola* (Sieb - Ner) (Farooque, 2002).

7.10.4.3 Wild vegetables collection

A number of wild vegetables grow in the park. The neighbouring communities of the park consume various kinds of wild vegetables. Aumeeruddy *et al.* (1998) and Shinwari (2010) reported that the following species of wild vegetables are collected from ANP as mentioned in Table 7.6.

Table 7.6: Wild vegetables collected in ANP		
Sr #	Common Name	Botanical Name
1	Kunji saag (Fern)	*Dryopteris stewartii*
2	Mushkana Saag	*Nepeta laevigata*
3	Kandor saag (Fern)	*Dryopteris blanfordii*
4	Mirchi	*Solanum nigra*
5	Tandi	*Dipsacus inermis*

Mostly the young leaves of the above species are collected by locals for consumption (Shinwari, 2010). They reported that these wild vegetables are mostly collected between April and the end of June. According to a survey conducted by WWF Pakistan, the most collected vegetables are the two species of ferns i.e., *Dryopteris stewartii* and *Dryopteris blanfordii*; followed by *Nepeta laevigata*. Per person per season consumption of these vegetables are seven kg, four kg and three kg respectively (Shinwari, 2010).

Figure 7.16: *Dryopteris stewartii* - Most commonly used wild vegetable in the area

(Source: Mohsin Farooque)

According to Aumeeruddy-Thomas *et al.* (2004), the wild vegetables and the mushrooms can be used as elements of negotiations with the local communities in the context of joint conservation strategies.

7.10.5 Killing and poisoning of Common Leopards

There is no compensation scheme for the damages inflicted by wildlife, specifically the common leopard, and the numbers of such incidences are also increasing, due to the increase in the number of these wildlife species. During 2005, the common leopards of the ANP killed six women in the area, which created a lot of public outrage against the Wildlife Department and the man-eater leopards of the park.

According to the data available with the Wildlife Department, 20 individuals have been killed or injured by the common leopards since the establishment of the national park in 1984. Strangely, almost all the killed individuals were women, who were probably easy prey for the man-eater leopards. The number of people attacked by common leopards during different years is given in Figure 7.17.

Figure 7.17: Number of people attacked by common leopards in and around ANP
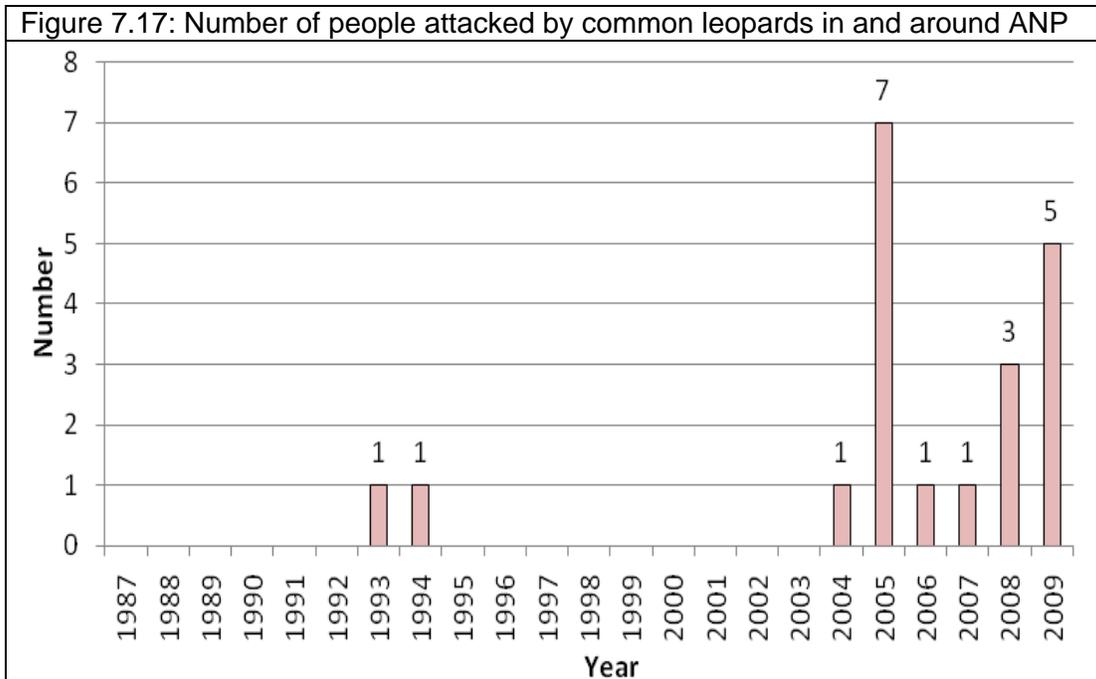
The common leopards of the park also normally attack the livestock and pets of the local communities. Since 1993 till May 2011, about 805 cases of livestock depredation by leopards have been reported in the park and the surrounding areas of Abbottabad district. Figure 7.18 indicates the number of livestock killed by the common leopards during different years since 1993.

Figure 7.18: Number of livestock killed by common leopards in and around ANP
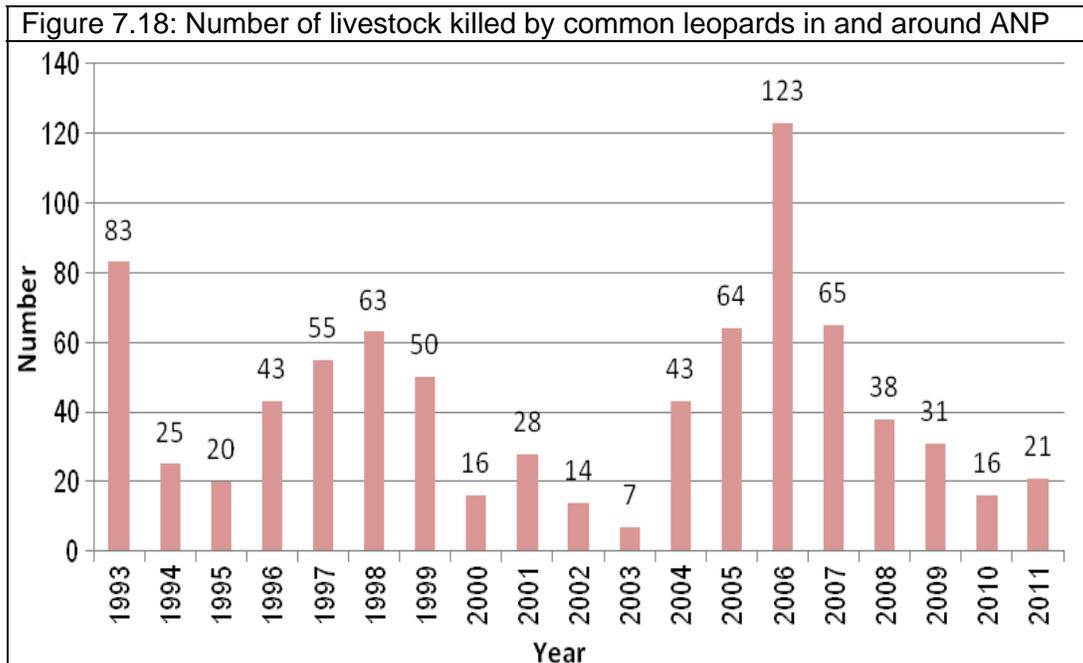
Following are the pictures of some of the local community members who survived leopard attacks.

Figure 7.19: Local community members attacked by common leopards in various villages

(Source: Safdar Ali Shah)

Following are some of the pictures of various animals killed by the common leopards.

Figure 7.20: Pictures of various animals killed by common leopards

Goat caracass found near the main road passing along the boundary of the park.

Wild boar body was found along the main road.

(Source: Safdar Ali Shah)

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Figure 7.21: Pictures of livestock killed in barn by common leopard

Caracass of the calf killed by common leopard, within the barn located in the house of a local community member.

Wound inflicted by common leopard on the calf.

(Source: Safdar Ali Shah)

As the local communities consider the leopard as a key threat to their life and their livestock, in the absence of any formal compensation system the local communities do not miss an opportunity to kill the leopards of ANP. Figure 7.22 indicates the number of common leopards which were reportedly killed in and around ANP, between 1986 and 2011.

Figure 7.22: Number of Common Leopards killed in and around ANP
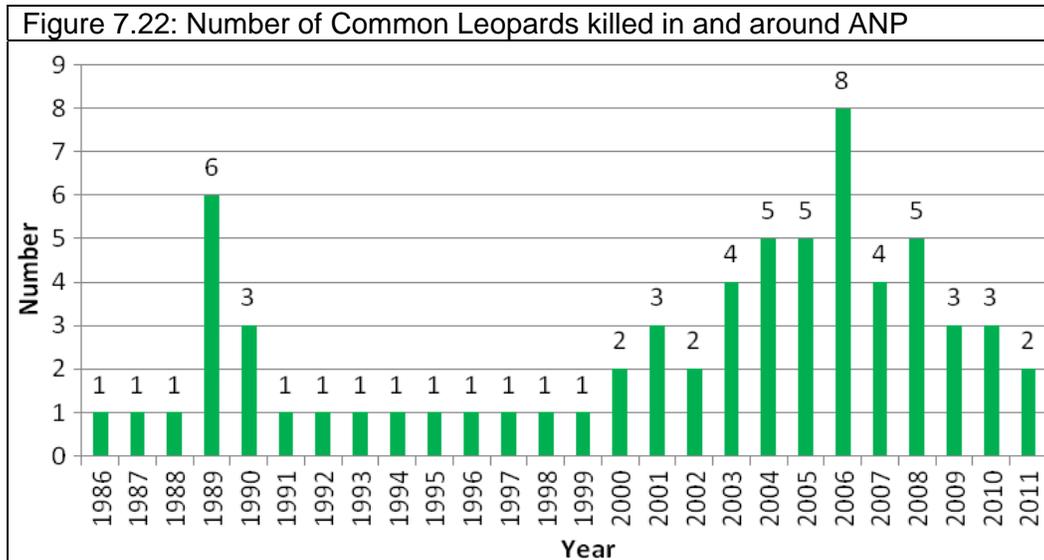
However, there is no data about the exact number of leopards killed in the area, and the above figures indicate only those incidents which were reported by the Wildlife Department during different years. Following are some of the pictures of common leopards killed by the local communities in various areas in and around the park.

As a result of the hue and cry of local communities against the man-eater leopards of ANP during 2005, many leopards were shot dead in the area, to ascertain that the man-eater leopard has finally been eliminated. However, later the histopathology reports negated the claims that those leopards were the man-eaters. Professor Dr. Fazale Raziq, who was head of Pathology Department in Ayub Medical College, Abbottabad; announced, "No human tissue have been found or parts identified in the specimen received" (Naqvi, 2005). The local police commandoes also tried to prove their bravery by spraying 15 bullets on a caged leopard, trapped in the area and, consequently, the senior police officer proudly claimed, "We are 100 percent sure it is the same leopard" (Dawn, 2005). The cutting of the relevant news of the Daily Dawn is as follows in Figure 7.24.

Figure 7.23: Common Leopards killed in and around ANP

Common leopard gunned down by the local communities

Common leopard poisoned by the local communities.

Taxidermist is removing the skin of the killed leopard for stuffing. Wounds and bullet marks are visible on the corpse of the common leopard.

(Source: Safdar Ali Shah)

Figure 7.24: Newspaper cutting about leopard killing by Police

Police shoot killer leopard dead

PESHAWAR, July 11: Police commandos on Monday shot dead a leopard which reportedly killed six women in northwestern Pakistan, officials said. They lured the leopard into a forested area with a caged goat and then sprayed the cat with bullets when it fell for the trap, said Feroz Shah, a senior police officer in Abbottabad.

"Police commandos fired 15 bullets to kill the leopard," Shah told AFP.

The big cat was killed about 200 yards (metres) from the spot where it was thought to have mauled a woman on Friday, he said.

"We are 100 per cent sure it is the same leopard," Shah said, without specifying how.

The leopard was blamed for fatal attacks on six women who had gone to collect firewood from the mountainous region during the last two weeks.

Shah said the authorities dispatched the commando team over the weekend to hunt down the animal and also warned people to stay away from the forest.

(Source: Dawn, 2005)

However, there was again no evidence that the leopard killed by police commandoes was the same blamed for fatal attacks on six women of the surrounding habitation of ANP.

7.11 Summary

This chapter focused on the case study area – Ayubia National Park. It described how the ideal concept of a 'national park' responsible for conservation of nature and natural resources differs from on-the-ground realities, where these national parks are like small islands located within the sea of humanity. The chapter examined the legal status and history of the park, focusing on how the park was carved out of the Reserved Forests of Galliat, just with a stroke of a pen of a powerful military ruler of the Martial Law Government. The geography and biodiversity of the park was described. Local communities living around the national park were also identified along with the land tenure system prevailing in the Galliat area. Park management was described and followed by the management plan of the park. In the later parts, the threats to the park were explained in detail. This discussion clearly indicates the complicated issues attached with the current ineffective park governance. The chapter ends with the rationale of selecting this very area for the Ph.D. research project. In the next chapter, I discuss the findings of the research, and correlate those with the prevailing ineffective park governance issues.

Chapter 8

Discussion and research findings

8.1 Introduction

The fundamental approach for evaluating long-term collaborative planning is "in terms of the degree to which it helps to build capacity of an organization or governance system to be self-organizing, intelligent, innovative, and adaptive to changing conditions" (Innes & Booher, 2002, p. 11). However, based on the research study, it can be concluded that though the overall park resources have improved during last decade, the Wildlife Department has failed to improve the overall park governance or build the capacity of the organizations or governance system. The department badly failed to implement the co-management arrangements as envisaged in the park management plan. As a result, there is a serious lack of trust among the local communities and the Wildlife Department.

The confidence of communities that was earned during the planning stage (1996-2002) was seriously shattered due to resumption of the conventional exclusionary management policy of the Wildlife Department. Consequently, the lack of trust was significantly more severe between the local communities and the Wildlife Department during the research data collection period of 2009 and 2010. The severity of the lack of trust reached such a height that the local communities as well as the community watchers employed by the Wildlife Department were involved in regular complaints against one of the park managers. The local communities repeatedly expressed their anger and reservations during the focus group interviews as well.

It is interesting to note, however, that despite the lack of trust, perceptions among all stakeholders, overall, are that the park resources are improving. This is not to say that degradation is not occurring in some places involving certain resources. As shown below, whereas some aspects of the park are improving degradation continues elsewhere.

This chapter divides its research findings into several sections:

Section 8.2 discusses the social pressures on ANP. The focus in this section is on those activities considered by locals as necessary and unavoidable for sustaining livelihoods: e.g., grazing of domestic animals, collection of firewood, fodder, medicinal plants, etc. Activities considered to be of marginal importance by a majority of people within the communities, e.g., hunting and timber extraction by locals are not discussed.

Section 8.3 presents the findings regarding (i) factors contributing to improvement of park resources, and (ii) factors contributing to degradation of park resources. Section 8.4

highlights the various factors that are responsible for the improvement of the park and its resources. In section 8.5, the various factors responsible for the degradation of park resources are discussed in detail.

At the heart of resource management problems in the ANP are issues of governance. There are marked differences among the government agencies working within the national park and again among the neighbouring communities and the concerned government agencies. The reasons for these differences and the resulting widespread mistrust among different stakeholders are discussed in section 8.6. In section 8.7, the claims of the public sector organizations in promoting co-management are compared with the actual actions of these organizations in failing to implement the co-management arrangements. The chapter highlights a key unexpected result: The return to exclusionary management practices leading to (temporary and partial) improvement of the resource base of ANP, but highlighting a problematic governance framework that suggests a return to widespread resource degradation in the future.

Two relevant indicators of weak governance are those relating to monitoring and enforcement, as well as on-going, and in some cases increasing, park-people conflicts. The issues related to weak monitoring within the government agencies are discussed in section 8.8. There are a number of park-people conflicts in ANP. The key conflicts are discussed in section 8.9. The changes over time in the perspectives of the local communities are discussed in section 8.10.

8.2 Social pressures on park resources: A necessity without alternatives

As highlighted in the literature review, the local communities are traditionally dependent on the park resources for their livelihood. These resource uses are without any formal management and are illegal, undesirable and argued by many people to be detrimental to the biodiversity of the park. Hamilton and Hamilton (2006), for example, argue that such activities contribute to declining forest cover within and around the park. Such issues of resource use and resource management were explained as, "Resource use without resource management is non-sustainable but, equally, any attempt to establish resource management without resource use is likely to be futile" (Murphree, 1991). Figure 8.1 indicates the general trends in the consumptive uses, as perceived by the 19 research participants from the Wildlife Department.

Figure 8.1: Change in consumptive uses overtime

(Research participants from Wildlife Department)
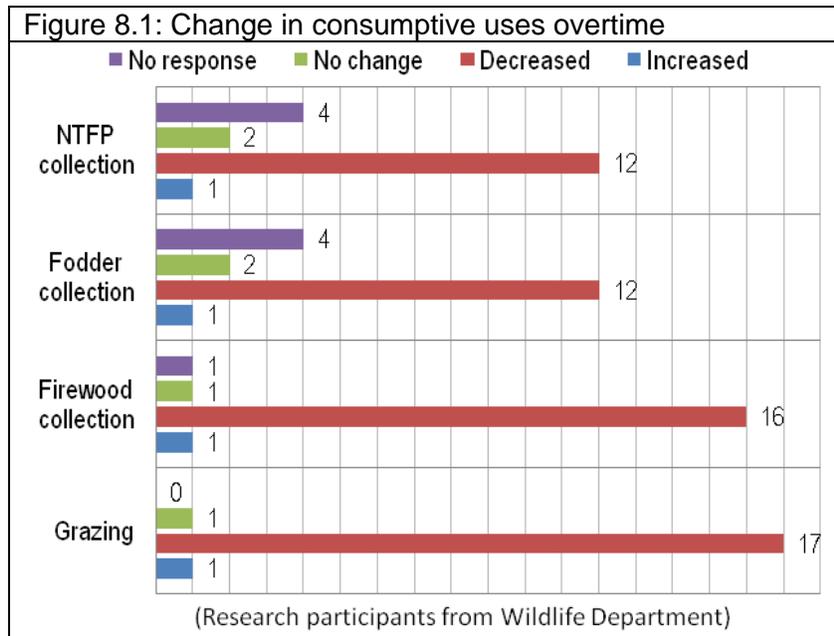
Based on the research data, it can be concluded that overall there is a decrease in the quantity of consumptive uses. The details about the impacts of these social pressures on the park resources are discussed in subsequent sections.

8.2.1 Firewood collection

During the severe winter climate, the survival of human life is more related to energy requirements as opposed to food or the conservation of the flora and fauna of the park. In the words of one focus group participant: "We can survive without food in winters, but not without firewood" (F8). Another research participant from a different community added, "People normally do not use gas cylinders in winter, because these do not properly work in winter. Secondly, it is very expensive and it is not readily available. We do not have any other thing to burn, except firewood. We need fire!" (F7). Likewise, another research participant made things quite clear by adding, "If firewood is not provided at subsidized rates, we will definitely cut the forests to obtain firewood. We do it to fulfill our basic requirements" (F9). Another participant justified this by adding, "If the local communities do not have firewood to light their stoves, why should they care about wildlife or the national park?" (N2). Even one of the Park Managers justified the collection of firewood by local communities by adding, "If the local communities are violating the law, there are valid reasons, because their survival is dependent upon the firewood" (M1).

During various focus group interviews, the local communities cited the implementation failure of the mutually planned initiative of establishment of firewood depots (F1, F5, F6). Expressing their dismay during a focus group interview, a participant of the research said, "As we planned earlier to establish firewood depots for five years, we have not seen anything like that" (F5). Similarly, another research participant added, "There is no firewood depot, there was no firewood depot and we do not know if there is going to be any" (F6).

In the absence of energy plantations, the locals have no recourse but to steal the firewood from the park, through either hoodwinking the park officials or bribing them (F3, F9). A participant showed his concern as, "The local people steal the firewood, or bribe the staff, but they ultimately take the firewood from the forest" (F9). A participant of the research added during another focus group interview, "it is now very easy to bribe the local staff, and then to remove the firewood from the park very easily and without any problem" (F3). Another added, "The local enforcement staff is interested in making money and we are interested in extraction of wood from the park" (F3)[20].

The firewood requirements also vary from community to community. According to the local communities, their firewood consumption during summer is half of the overall consumption during winter. Based on the data collected during the focus group interviews, Figure 8.2 indicates the average monthly firewood requirement in various communities during winter and summer months.

Figure 8.2: Firewood consumption in various communities

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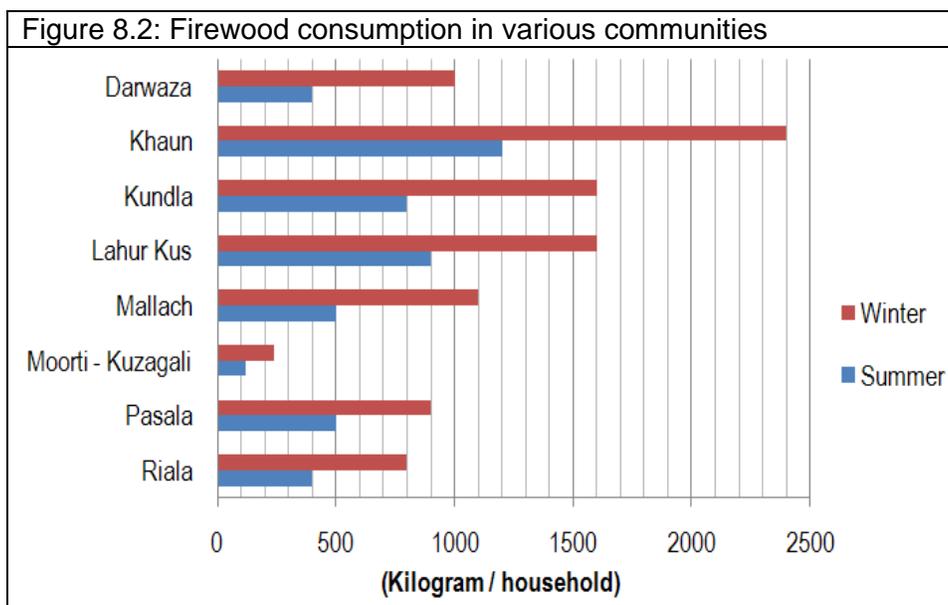
[20] The viewpoint is supported by Whale, Zaman, Zeb, Alam & Rehman, 1996; Whale, 1996 other reports of Ethnobotany Project of WWF-Pakistan.

The consumption of firewood is greater in the communities which are located at higher elevations or which are located on the northern aspects. In communities located at higher elevation, the snowfall is more and consequently the consumption of firewood is also high. Likewise, the villages and hamlets located on the northern aspects have different microclimate[21], because the land is not so much exposed to direct sun light and resultantly the melting of snow takes more time, which again increases the consumption of firewood in the area.

Besides these factors, the firewood consumption is also more in those communities that are far from park headquarters or the main road like Khaun, Lahur Kus and Kundla. This indirectly indicates that the enforcement staff is not so strict in controlling the consumptive uses of firewood, because of the poor monitoring associated with the location.

The Moorti Kuzagali community is located on the main road, which traverses the boundary of the park. The local enforcement staff thus closely monitor the area, because it is easily accessible by both the tourists as well as the officers of the department and other general people; and anyone can object to the illegal extraction of the firewood and fodder from the park. Moreover, some of the hamlets of this community are located near the boundary, park and road; whereas others are located at lower elevation and thus it takes too much time for locals to go to the park, so most of the people from these hamlets avoid going to the park for collection of firewood and fodder.

A research participant from Moorti Kuzagali clarified, "Those people who are living close to the national park, they go there; but those who live away from the park, they do not go to the park". When they were asked why the requirement of firewood is comparatively less in this community, they said that they have reduced their requirements, as they understand that there is now scarcity of firewood and they have to adjust their living according to ground realities. They added, "If something is available in less quantity, you will use it less". Another participant of the focus group added, "The other major reason for decreased consumption of firewood is the existence of the National Park; as we have to face two departments. We have to fight with the Forest department and National Park staff. Therefore, we have reduced our needs".

Besides the use of firewood by local communities for heating and cooking, another group of users of firewood are the owners of various hotels and restaurants. Previously, they were using the firewood for heating as well as cooking. However, based on the research data, it can be concluded that the use of LPG cylinders for cooking is also considerably increased in the

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[21] Variations of the climate within a given area, usually influenced by hills, hollows, structures or proximity to bodies of water. A microclimate differs significantly from the general climate of a region.

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hotels and restaurants located around the ANP. The firewood is mostly used in bakeries for baking of bread. During the focus group interview with the representatives of Local Union of Hotels and Restaurants, a respondent said that they fulfill 20% of the demand of firewood from the Reserved Forest and the remaining 80% of the firewood is purchased from the nearest firewood depot selling firewood procured from outside the area (F9). Another respondent added, "During the summer season, the firewood is purchased from private firewood depots, because due to tourists, no one has time to collect the firewood from the forest. However, in winter the firewood is collected from the nearby forests" (F9). The reasons for the shift from firewood to LPG cylinders are discussed in detail in the subsequent section concerning switching from firewood to alternative energy sources.

8.2.2 Grazing and fodder collection

Grazing and fodder collection in the ANP was a serious issue in the past. However, the severity of this issue has now decreased due to overall decrease in the livestock and consequent decrease in the demand for fodder. During 21 interviews, the respondents mentioned the decrease in the number of livestock in the area over time. The different sources[22] and the coding references[23] are mentioned in Figure 8.3.

Figure 8.3: Livestock is decreasing – Coding by Source[24]
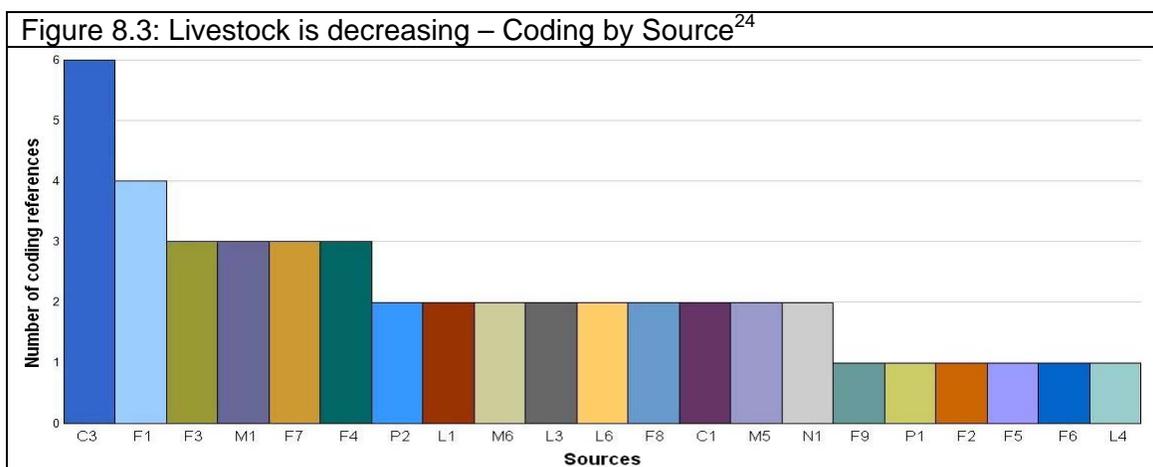
There is a considerable difference in the opinion of the research participants from the Wildlife Department regarding the magnitude of the park area used for grazing and fodder collection. Figure 8.4 indicates variation in the perception of the research participants regarding the magnitude of the park area used for grazing as well as for collection of fodder.

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[22] Sources refer to respondents e.g., in case of Figure 8.3, there are 21 respondents (sources), who are of the view that livestock is decreasing.

[23] Coding reference refers to count of the number of selections within that source that have been coded to any node. In case of Figure 8.3, the respondent (source) C3 mentioned six times during the interview that livestock is decreasing (node)

[24] 'Coding by source' compares the nodes used to code a particular source.

Figure 8.4: Departmental staff perception about % of park area used for grazing and fodder collection
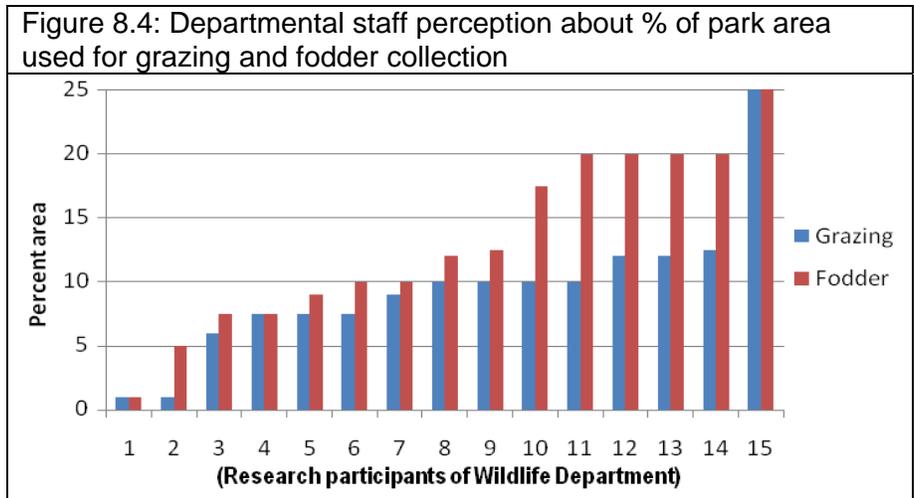
Similarly, the local communities also differ about the magnitude of the park area used for grazing and collection of fodder. Those located near to the park, and heavily dependent on livestock perceive that more area of the park is used for grazing and fodder collection e.g., Moorti Kuzagali community. Contrary to this, the communities whose livelihood is mostly dependent upon tourism and are less dependent on livestock mainly consider that not so much area of the park is used for grazing and fodder collection. These include Darwaza and Mallach communities, which are involved in provision of tourist services in towns of Ayubia-Khanespur and Nathiagali respectively. Similarly, all those communities which are comparatively far from the park area also consider that not much area of the park is used for grazing and fodder collection. These include Khaun and Lahur Kus communities. Figure 8.5 indicates the variation in the perception of the various local communities regarding the magnitude of the park area used for grazing and fodder collection.

Figure 8.5: Communities perception about % of park area used for grazing and fodder collection
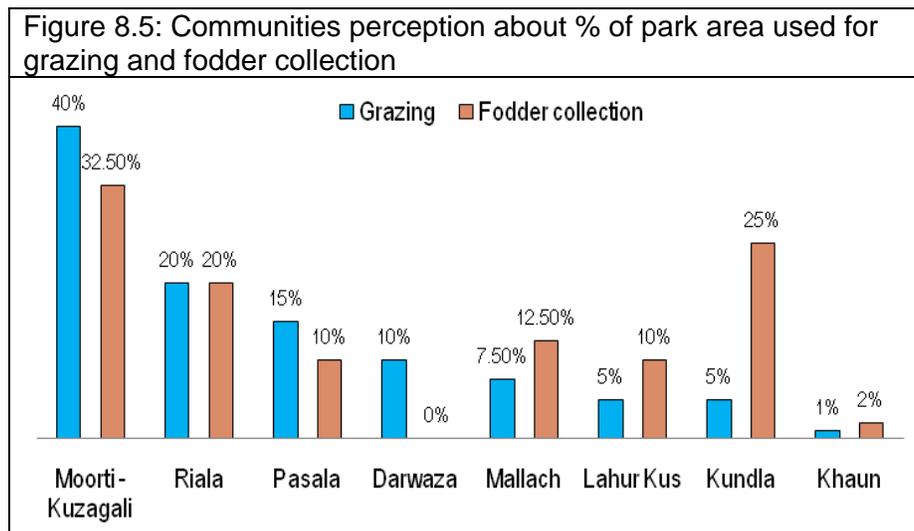
Overall, the local communities are of the opinion that there is decrease in the grazing due to decreased livestock (F1, F2, F3, F4, F5, F6, F7, F8, F9). This viewpoint regarding the changing life style is supported by the research participants from WWF as well as from the custodian Wildlife Department (N1, N2, C1, M1, C2, M3, L1, P1, L2, C3, P2, M5, L3, M6, L4, L5, L6, C4, C5). The local communities are now more dependent upon using tractors as opposed to bulls for farming (P2, L5). Access to readily available aseptic milk in tetrapak cartons is turning more people towards using it and shunning the expensive livestock (F3, P2, M6). The upkeep of livestock requires time and energy; and the risk of total loss due to diseases or leopard depredation (C2).

The younger generation and especially the girls are now more inclined towards education (F7, N1, L1, L3, M6) and other activities like sewing, stitching etc (C3), and thus they are least interested in rearing livestock. Similarly, because of improved protection by the enforcement staff; the chances of open grazing within the park and the chances of getting the fodder from the park also decreased considerably (C2, F1, F5, F7, P1, P2, L2, L3, L5, C4, C5, N2). Among those who are relatively poor, there is a trend of keeping fewer livestock, as opposed to the previous trend of keeping big herds (F1, C2, L1, C3, L3, M6). Similarly, I also observed that the local communities are now replacing the large herds of buffaloes with fewer goats to fulfill their demand for milk. The fodder demand of the limited livestock is now fulfilled from the communal lands (C1, C3, C4, F3, F5) or the park area, adjoining the local communities (M1, M6, C4, P2).

8.2.3 Collection of Non-timber Forest Products (NTFP)

The local communities are also involved in extraction of various NTFPs such as mushrooms, medicinal plants, wild vegetables, wild flowers etc. A park manager who participated in the research study is of the opinion that almost 95% of all the medicinal plants, wild vegetables and mushrooms that are extracted come from the park, because of its intact ecosystem; whereas the remaining 5% are extracted from the adjoining Reserved Forests (M1). In case of mushrooms, this claim is true, because the mushroom production within the park is associated with the availability of deadwood within the park, which is otherwise next to impossible to find outside the park boundaries (M6). A senior level officer of the Wildlife Department was of the opinion that though the local communities are illegally extracting the NTFP from the park, the quantity of such extraction is not so much that it affects the park resources in the long term (P1).

The local communities are of the view that due to the decrease in keeping livestock and reduction in the grazing, there have been corresponding increases in the production of various NTFP from the park (F8). Such increase in the production of NTFP is associated with decreased disturbance associated with livestock, grazing and other resource exploitation. Overall, 12 research participants were of the view that the collection of NTFP is gradually decreasing from the park. Check Figure 8.6 for the coding by source.

Figure 8.6: NTFP Collection is decreasing – Coding bu Source																			
Stakeholder	Sources																		12 / 30
Representatives of NGO	N1	N2																	
		✓																	
Neighbouring communities	F1	F2	F3	F4	F5	F6	F7	F8	F9										
	✓		✓				✓	✓											
Employees of Wildlife Department	P1	P2	M1	M2	M3	M4	M5	M6	L1	L2	L3	L4	L5	L6	C1	C2	C3	C4	C5
		✓			✓		✓		✓		✓	✓							✓
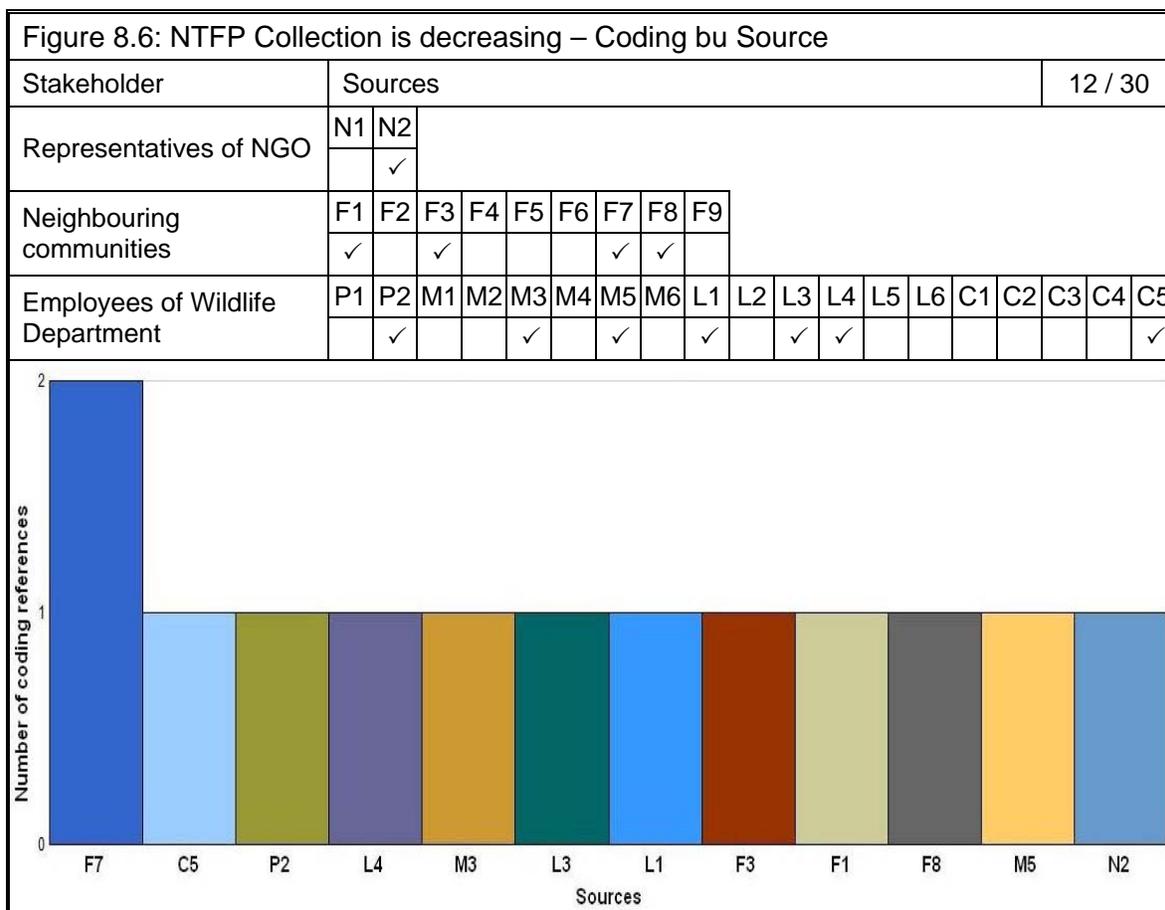
One of the reasons for the decrease in collection of the NTFP is associated with the decreased visitation of the locals to the park due to limited livestock and its consequential decrease on the requirements of fodder collection and grazing (F8). Similarly, increased enforcement staff and their better control of the consumptive uses by locals is another key factor which is responsible for decreased NTFP collection from the park (F3, F7, N2, C5). The various minor forest products extracted from the park area are discussed in Appendix 9.1. Whether the resource extraction is due to weak monitoring by the government and inefficiency of the enforcement staff or due to their involvement and collusion is not clear; in either case, the degradation of the park resources is expected and ultimately accepted.

8.3 Park resources: Improvement vs. degradation

Based on the analyses of the data collected, it is revealed that the overall park resources have improved due to various factors during the last decade, despite the fact that communities have not been formally involved in the park management. However, along with the overall improvement of the park resources there were some other factors which were simultaneously contributing to degradation of park resources. In between the two sets of factors responsible for improvement and degradation of park resources there are a series of park-people conflicts. One of the basic research questions asked to all the research participants was about their perceptions about the improvement or degradation of park resources since their involvement in the park planning efforts. In response to that question, a majority of all the stakeholders concluded that the park resources are improving during the last decade. The Figure 8.7 indicates the sources and references of the various respondents, who are of the view that the park resources are improving.

Figure 8.7: Park resources are improving – Coding by Source
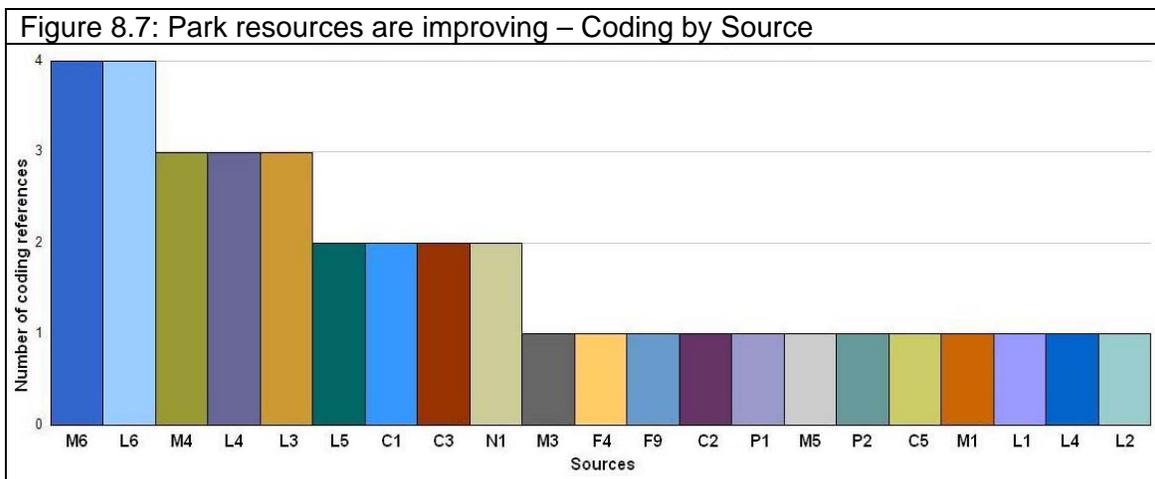
According to Figure 8.8, it is clear that just one of the 19 participants from Wildlife Department disagreed with rest of the participants by adding that overall the park resources are static i.e., neither improving nor degrading (M2). This stance of the staff of the custodian park agency was also supported by a representative (N1) of the WWF Pakistan.

Figure 8.8: Perception of agency and NGO staff about park resources
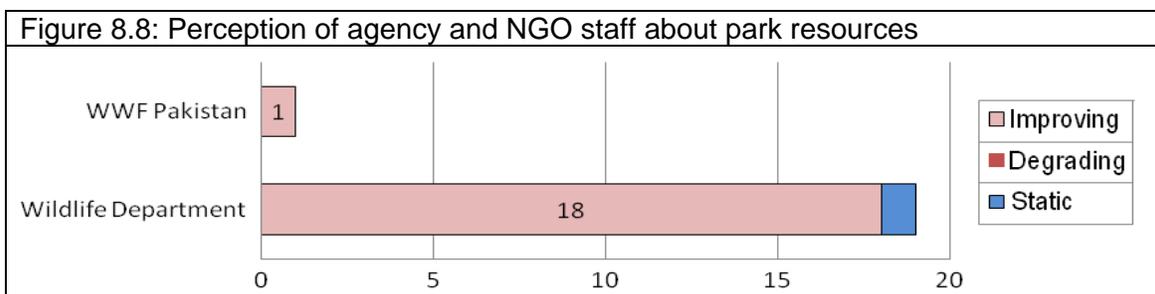
Similarly, all the participants from the custodian Wildlife Department who answered the questions regarding the status of vegetation, wildlife and overall park habitat, agreed that the overall vegetation of the park is improving and there is a marked increase in the species richness[25] as well as species evenness[26] within the ANP. All the research participants somehow endorsed this claim of the staff of the Wildlife Department. Figure 8.9 indicates the sources and references of the viewpoint that the status of wildlife is improving within ANP.

Figure 8.9: Wildlife is increasing – Coding by Source
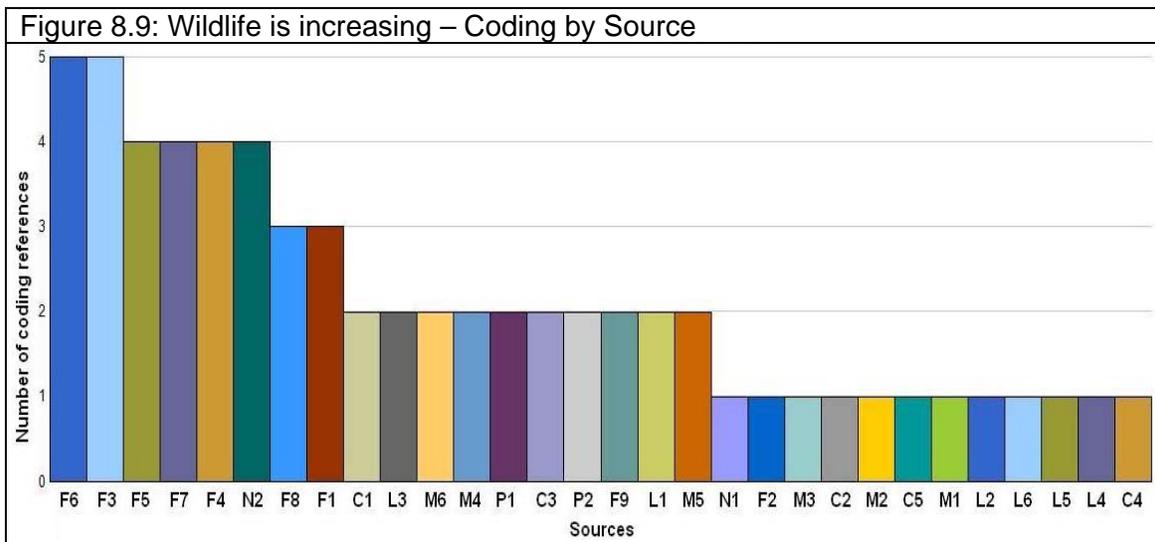
The staff of Wildlife Department also agreed that overall habitat of the park is also improving for the associated wildlife. Figure 8.10 indicates the response of the research participants from the Wildlife Department about the status of vegetation, wildlife and the park habitat.

Figure 8.10: Perceptions of agency staff about status of vegetation, wildlife and park habitat
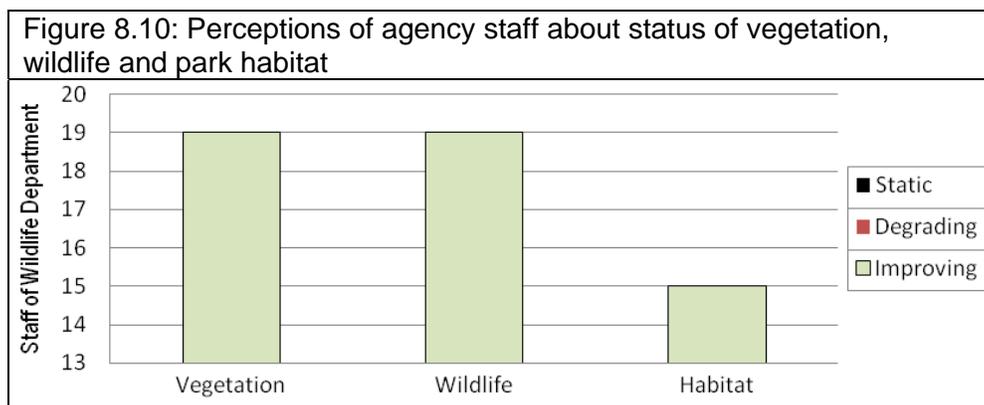
According to those who participated in the in-depth semi-structured interviews, the status of wildlife species within the park is improving. However, some of the research participants

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[25] The total number of species in an area
[26] The relative abundance of species

expressed their reservations about certain specific wildlife species. One of the research participants was of the opinion that those species that depend on dried trees like woodpeckers, parakeets and flying squirrels, are facing problems due to habitat degradation (N2). Another research participant was of the view that pheasant species like Koklass (*Pucrasia macrolopha*) and Kalij (*Lophura leucomelanos*) are on the decrease (M4).

Similarly, a majority of the research participants consider that the vegetation is improving and the park is considered to be having better plant density (thicker) now. This positive aspect of the park management is discussed in 27 out of the total 30 interview sessions. Figure 8.11 indicates the sources along with the coding references in this regard.

Figure 8.11: Plant density is increasing – Coding by Source
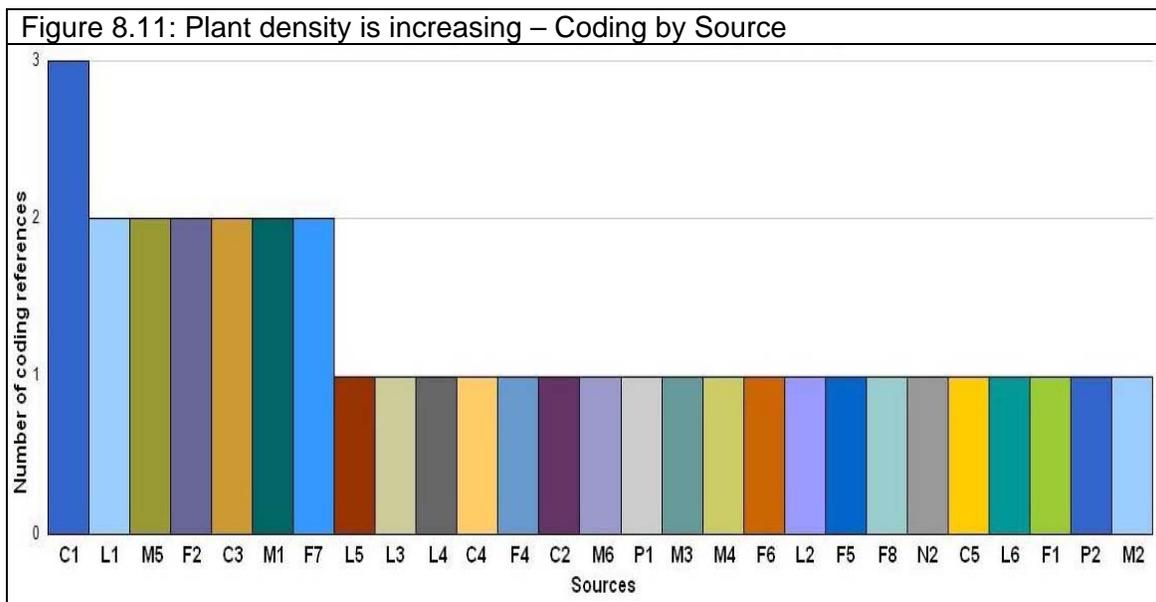
Just one of the research participants was of the view that the overall density of the plants is on the increase, however the density of medicinal plants and deodar (*Cedrus deodara*) is decreasing within the park (N2).

Likewise, the general consensus among the participants of in-depth interviews was that overall the park habitat is improving for the majority of associated biodiversity, however, some of those research participants expressed their concern as well. One of them was of the view that in the park periphery and in the Meeranjani area, the habitat has degraded due to consumptive uses of neighbouring communities, and in those areas wildlife sighting is not so easy now (N2). Another added that the Koklass pheasant, which loves to come to open areas, is gradually losing its preferred habitat within the park, because of the filling of gaps within the park (P1). Some key quotes of the research participants regarding the improvement of park resources are as under in Table 8.1:

Table 8.1: Some key quotes explaining the reasons for improvement of park resources	
Quotes (Translated from the original recordings)	Source
Previously, we did the job of policing by using force and our powers, which was not working very well because the whole family of that person against whom we took action, would rise against us.	C1
Due to the implementation of the management plan the number of watchers has considerably increased. Now, per unit area under each watcher is less, compared to that before the implementation of the management plan.	M1
There has been a social change in the community, one reason being that people have become easy going and modern, they do not go the forests so intensively. Similarly, well staffed department has a positive impact on the protection of the park resources.	M4

The viewpoint of the staff of the Wildlife Department about improvement of wildlife, park vegetation and overall habitat was also generally supported by those participants who attended the nine different focus group interview sessions. In response to the discussion regarding the status of park vegetation, the participants of six focus group interviews (F1, F4, F5, F6, F7, F8) endorsed the viewpoint of park staff that the park vegetation has improved. However, the participants of three focus groups (F2, F3, F9) were of the opinion that the park vegetation has degraded. Expressing the concern, the participants of a focus group interview (F2) added that the density of medicinal plants and wild vegetables is decreasing. Similarly, the density of the trees is less in the park periphery, due to consumptive uses of neighbouring communities.

In response to the discussion regarding the status of wildlife within the park, the participants in eight focus group interviews (F1, F3, F4, F5, F6, F7, F8, F9) endorsed the stance that the wildlife of the park has improved. Some key quotes of the respondents are in Table 8.2:

Table 8.2: Some key quotes from focus group regarding improvement of wildlife	
Quotes (Translated from the original recordings)	Source
Wildlife and specifically leopards are growing. Their population has grown by four times. We have also noticed the Musk Deer in these forests (Musk Deer was once abundant in these forests, but then disappeared due to biotic pressures and especially due to poaching).	F1
The number of monkeys has doubled. The population of common leopards has increased.	F3
Leopards are increasing.	F5
The wildlife is increasing. We observe the pheasant each year and every year they are more than the preceding year. The population of leopard, monkeys, foxes, mongoose, squirrels and pheasants is growing. 20 years back we would observe pheasants occasionally in the forest but now we see them all the time. Every morning I hear their calls close to my home.	F6
The wildlife is increasing, because of strictness. Now trapping of birds and monkeys has stopped, poaching of pheasants is also stopped. Similarly, shooting of leopards is also controlled.	F7
The number of monkeys has increased exponentially. The number of leopards has also increased. Wild boars have also arrived in the area. I have seen them twice in the area. The population of wild cocks (pheasants) is on the increase. One can hear their calls in the morning; previously their calls were heard once in a while. Now they are much more common. I have also observed the Musk Deer in the park.	F8

Being the top carnivore in the foodchain, the increase of common leopards in the park itself is an indication that the park ecosystem is healthy.

The participants in only one focus group interview (F2) were of the view that the wildlife of the park has decreased. It was pointed out in four different focus group interviews that the population of the majority of wild animals is increasing within the park, however, some of the wild animals are decreasing due to various reasons. The concerns of participants of those four focus groups are as presented in Table 8.3.

Table 8.3: Concerns of respondents about decrease in certain wildlife	
Quotes (Translated from the original recordings)	Source
Pheasants species like Koklass and Kalij are on decrease.	F3
Pheasants species like Koklass and Kalij are on decrease.	F5
Pheasants, cuckoos and certain birds of prey are on decrease.	F8
Generally birds population are on decrease.	F9

Likewise the participants in three focus group interviews (F2, F3, F9) were of the view that the park habitat has degraded. Whereas the participants of four focus groups interview sessions (F1, F6, F7, F8) were of the opinion that the overall park habitat has improved during the last decade. Figure 8.12 indicates the viewpoint of the local communities about the status of vegetation and wildlife; and the overall habitat of the park.

Figure 8.12: Perceptions of local communities about status of vegetation, wildlife and park habitat
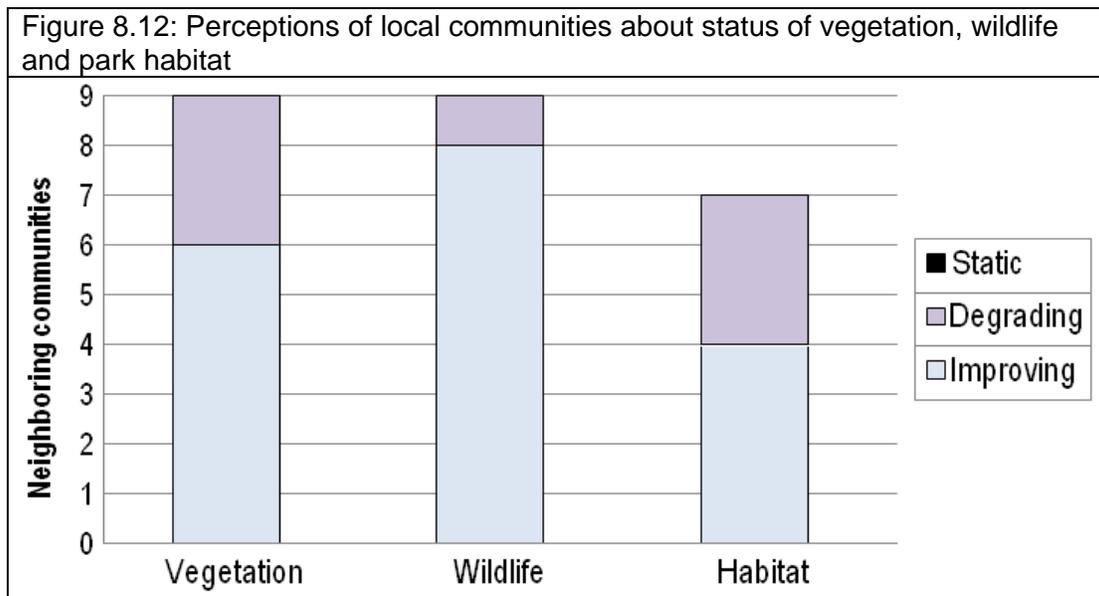
The sources and references developed during the coding process regarding the improvement of park and its resources are summarized in the Figure 8.13.

Figure 8.13: Sources and references of nodes regarding improvement of park and its resources
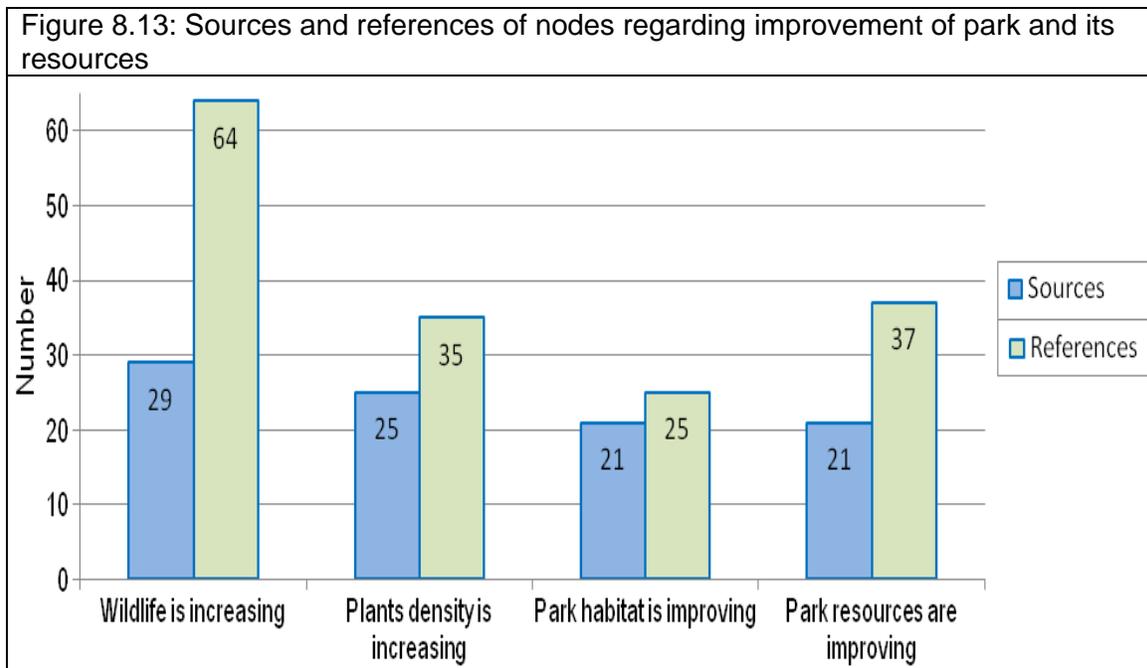
8.4 Factors responsible for improvement of park and its resources

During the initial interviews, it became clear that changing lifestyles and overall attitudinal change among the locals are key variables contributing to the improvement of park resources. Initially, I did not anticipate these factors, but once they were identified, I incorporated them into my list of expected questions to further explore. Attitudinal change among the local communities has occurred over the last two decades. As a result of a multitude of factors, the younger generation is not much interested in following the way of life of their ancestors. The herds of livestock are not as common in the neighbouring communities as in the past. With mechanized farming, tractors are replacing the herds of bulls.

The younger generations are inclined towards getting education and are also not much interested in collecting wild vegetables, fodder collection or taking care of livestock. The local communities inferred such attitudinal changes were a result of increased education among children (F7, F4), modernity (F5, F7), people becoming easy going (F7, F8), strict control by the government (F7, F8), increased conservation awareness (F1, F5, F7, F9), supporting park management (F5) and shortage / alternative use of time (F6).

Changing lifestyles because of attitudinal change is considered to be the major factor which contributes towards improvement of park resources. This factor was identified during all the nine focus group interviews and during 16 out of the total 21 in-depth individual interviews of the staff of the Wildlife Department (P1, P2, M1, M4, M5, M6, L1, L3, L5, L6, C1, C2, C3, C5, N1, N2). The relevant sources and references are given in Figure 8.14.

Stakeholder	Sources																			25 / 30
Representatives of NGO	N1	N2																		
	✓	✓																		
Neighbouring communities	F1	F2	F3	F4	F5	F6	F7	F8	F9											
	✓	✓	✓	✓	✓	✓	✓	✓	✓											
Employees of Wildlife Department	P1	P2	M1	M2	M3	M4	M5	M6	L1	L2	L3	L4	L5	L6	C1	C2	C3	C4	C5	
	✓	✓	✓			✓	✓	✓	✓		✓		✓	✓	✓	✓	✓		✓	

Figure 8.14: Perceptions of research participants about changing life style of local communities
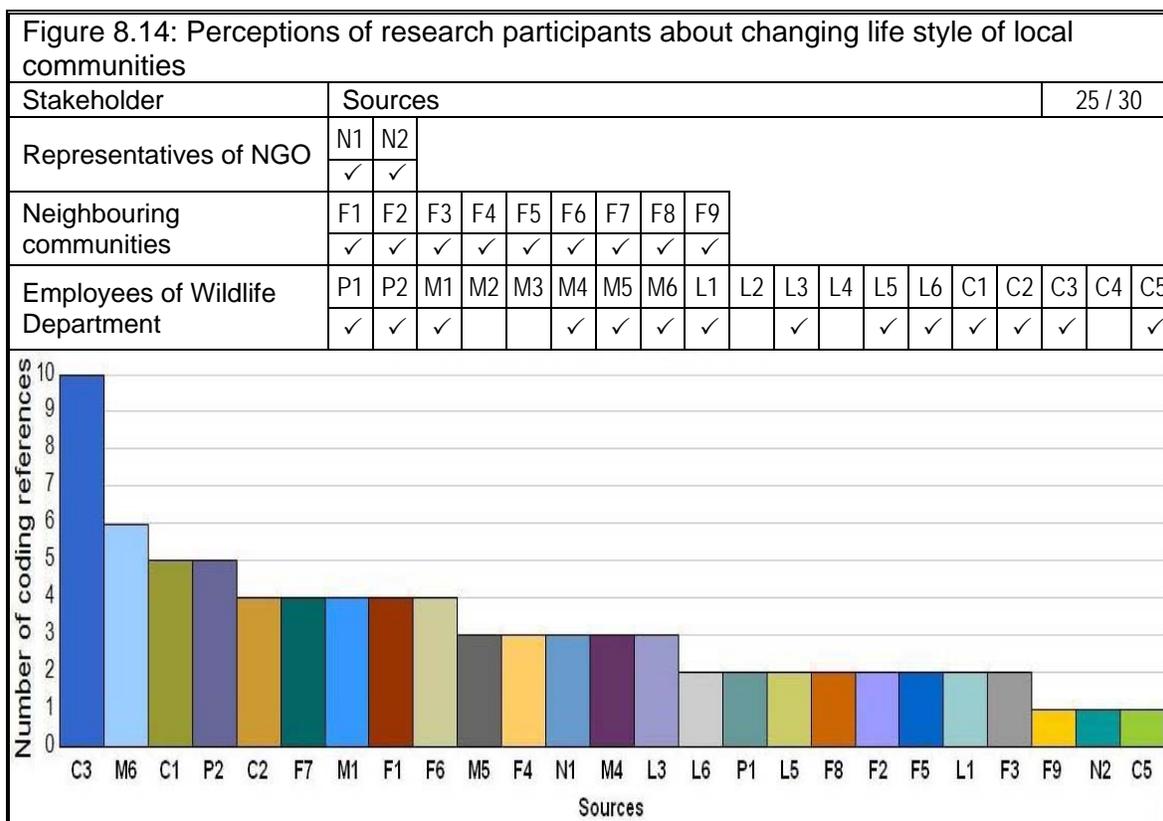
One of the major lifestyle changes is that people are not keeping as much livestock as they used to keep in the past (F6). Moreover, the local communities are also switching from firewood to alternative energy sources like LPG cylinders (F1) and collecting firewood from their farmlands as opposed to collecting it from the national park (F1). Resultantly, the people are now less dependent on the park resources for firewood collection, grazing their limited livestock or collection of fodder for their fewer animals from the park. This decrease in visitation to the park also indirectly decreased the quantity of wild vegetables and medicinal plants that are now collected from the ANP (F6). Now people do not have enough time to go specifically to the national park to collect wild vegetables (F6).

Similarly, with the decrease in livestock herds in the surrounding communities, now the leopard is not considered as a major threat (F6). The main reason for the decrease in the retaliatory killing of leopards by locals was described by one of the research participants during the focus group as, "Now the people do not have so much livestock, so there is no reason to kill the common leopards. Previously the locals were killing these leopards to save their animals, but not anymore" (F6).

All these changes together decreased the disturbances with the national park (F6) and consequently, resulted in the improvement of the park and its resources. Such findings are somewhat in conformity with the reports of the Ministry of Environment, which state, "Although local communities have no direct role in the governance of the protected areas, their participation in planning and management has raised their awareness of their rights and obligations. Further it has broken the communication barriers between them and functionaries. The increased awareness and improved interaction among stakeholders has improved the governance of the protected areas" (Qaimkhani, 2009, p. 80).

In addition to lifestyle changes, key factors contributing to improvement of park resources include the following:

1. Banning women from resource extraction in the park
2. Decreased firewood requirements due to availability of alternatives
   2.1 Switching from firewood to Liquefied Petroleum Gas (LPG)
   2.2 Hoteliers reliance on alternative energy sources
   2.3 Positive impact of Fuel Efficient Stoves (FES)

The sources and references of the above factors are given in Figure 8.15.

Figure 8.15: Sources and references of codes regarding factors affected by change in attitude of local communities
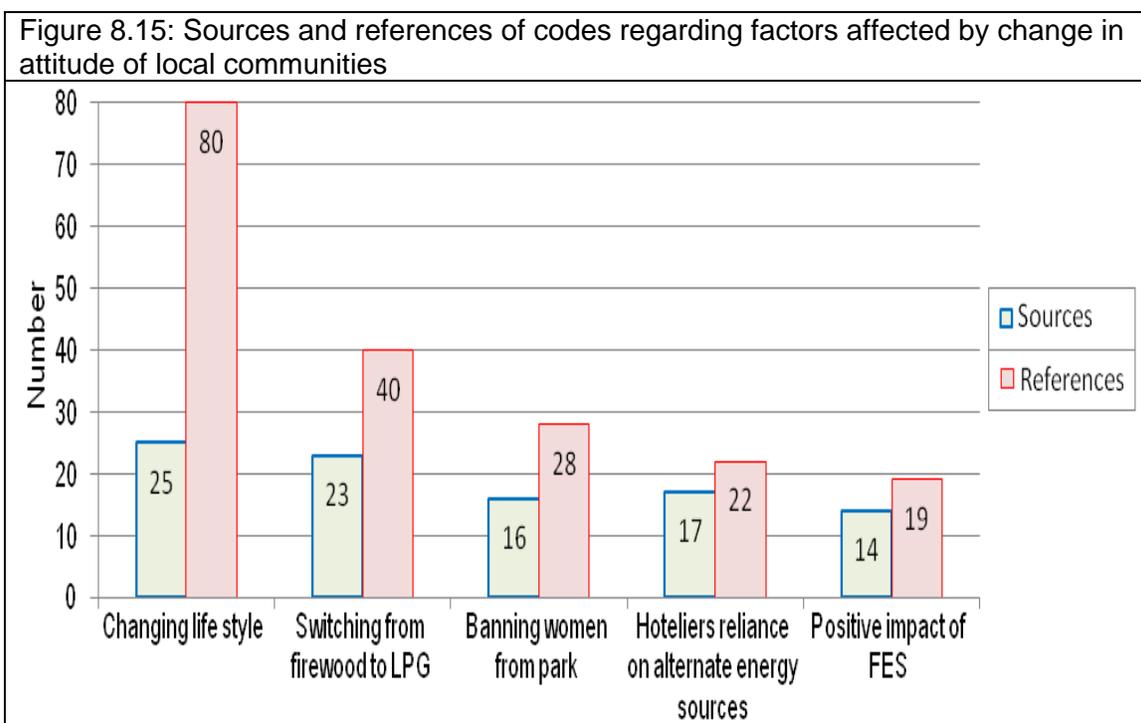
Increased community support for conservation is one example of overall attitudinal change. Reasons for this support include:

1. Increased conservation awareness
2. Involvement of local communities in planning efforts
3. Positive effects of co-management at planning level

Other factors that narrowed the choices of local communities and synergized the attitudinal change includes:

1. Increasing leopard attacks on humans within the national park
2. Increased leopard attacks on livestock and other pets, both within and outside the national park

As a result of the attitudinal change among the local communities, the dependency of the local communities on the park resources has also decreased. The sources and references to support this viewpoint are given in Figure 8.16.

Figure 8.16: Sources and references of codes regarding outcome of attitudinal change of local communities
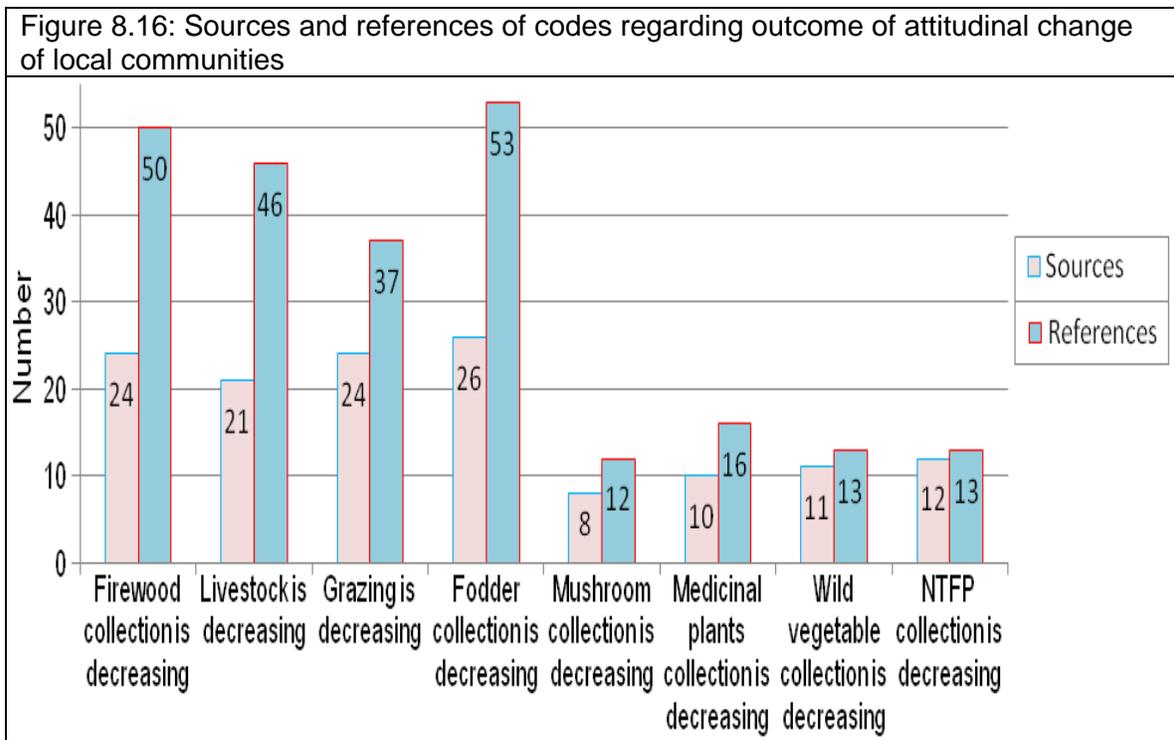
Similarly, better protection because of increasing the enforcement staff and hiring the community watchers also contributed towards improvement of park resources. A summary of the factors and their inter-linkages is illustrated in Figure 8.17, and discussed in detail in the subsequent sections.

Figure 8.17: Factors contributing to improvement of park resources. Figure is based on the nodes developed on the basis of coding of research data.
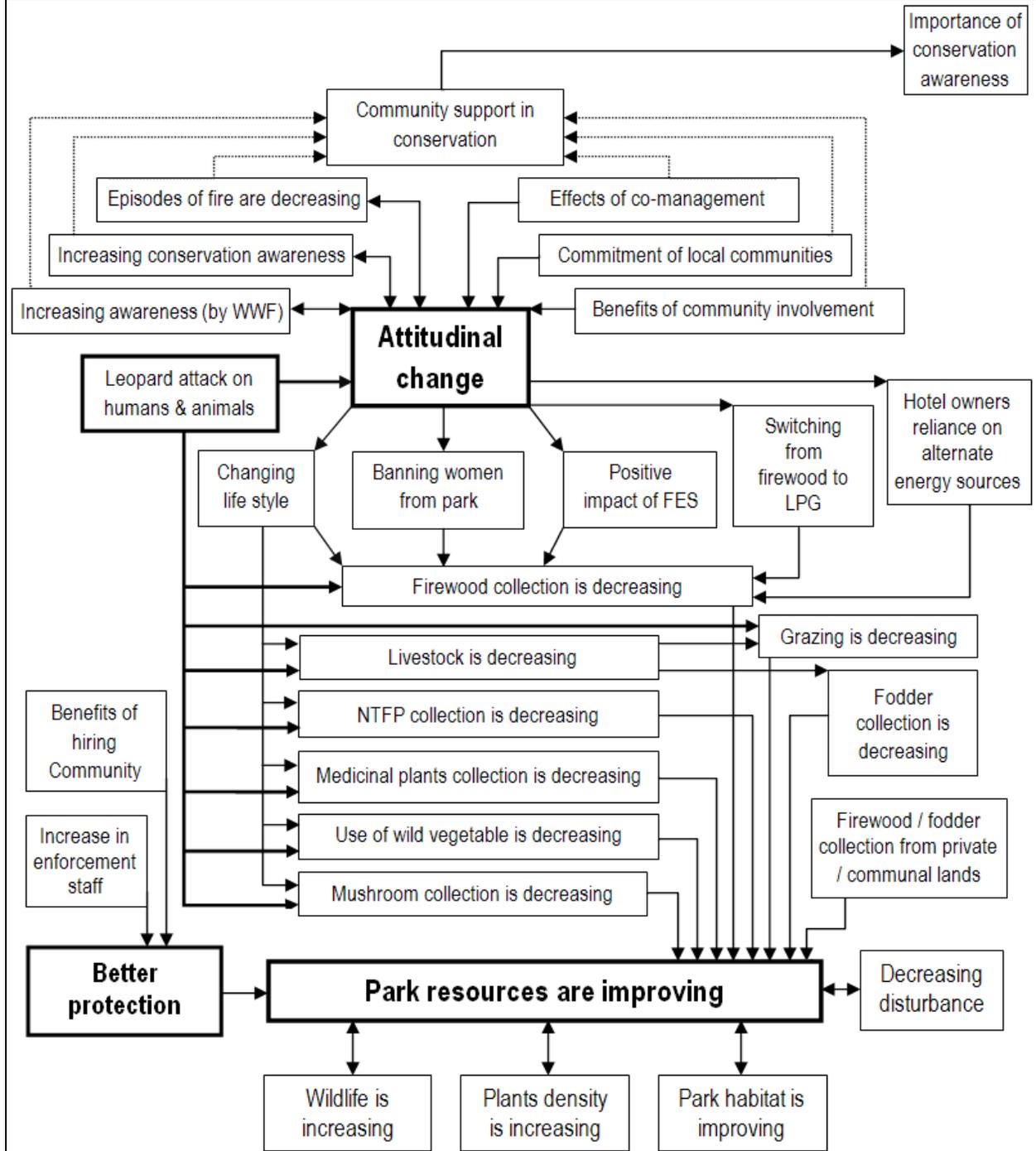
8.4.1 Banning women from park

As pointed out by Aumeeruddy (1996) and Shinwari (2010), in the context of Ayubia National Park, particular attention is required to the link between local women and resource management. The reason is that the women are the main harvesters and users of the park

resources, but they are least represented in the decision-making processes (Shinwari, 2010). In the absence of any formal co-management arrangement, the Wildlife Department was relying on the traditional role of policing and law enforcement; whereas the local communities and especially the women folk were collecting the park resources with full strength. These women of neighbouring communities used to visit the park on a daily basis from spring to autumn for collection of firewood and fodder (Hamilton & Hamilton, 2006). It was more of a norm and a source of recreation, as opposed to an activity to fulfill their requirement of firewood, fodder etc. (M6).

In one incident some women from the neighbouring community were photographed while collecting firewood and fodder in the park premises, and later those pictures were published in the local media (C2). The notables and elders of the area took a serious notice of that incident (C2). It was during March 2009 that the elders and notables of some villages held a meeting in the mosque, where they discussed the issue of women's visitation to the park on a routine basis (L2, L5). It was unanimously decided that a ban would be imposed on women in visiting the park on routine daily basis. They took an oath and the ban was thus imposed on religious and social grounds (L2, L3, L5). It was decided that the people would fulfill the demand of firewood from their own lands or from using alternative energy sources. The decision was binding upon the villagers to follow. This ban on local women was again an unanticipated factor, which was identified during the course of interviews. The banning of women by local communities was discussed during 16 interviews. Figure 8.18 indicates the sources and the references of such discussion regarding the ban on women.

Figure 8.18: Banning women – Coding by Source
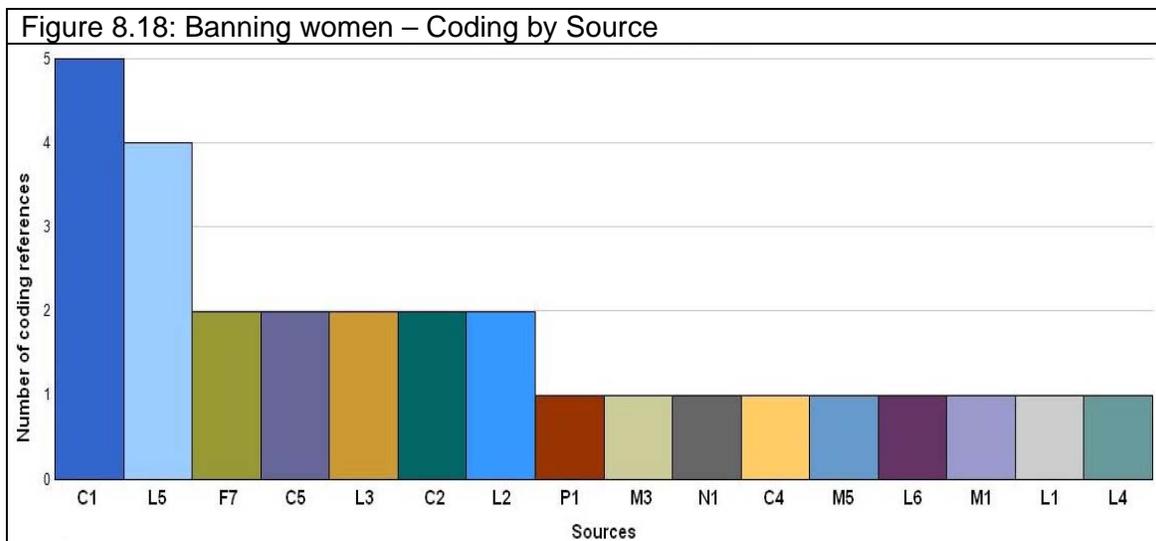
The research participants expressed their viewpoint about the ban on women as mentioned in Table 8.4.

Table 8.4: Viewpoint of respondents about ban on women	
Quotes (Translated from the original recordings)	Source
It was for the first time in 2009, that no woman has entered the national park. If any women will visit the national park, she will visit secretly, so that no one can see her.	C1
Previously we were unable to stop women from coming into the national park, but since the community has banned them, so we do not have any worries now.	M1
There has been marked improvement in the park resources due to helping hands provided by the elders of the local communities, as now the people do not allow their women folk to visit the park.	C2
The local communities are helping us in conservation efforts by banning their women from visiting the park.	M3
The community has helped us in banning their women from visiting the park area.	L1
Womenfolk of the area do not come to the park.	P1
In the past people never listened to us and they never stopped using the park resources, but now due to ban, all the women are controlled and they are not visiting the park any more.	L2
The women had advantage on social, moral and religious grounds. Enforcement staff members can beat a man and arrest him but they cannot even touch a woman. As a result, the women were causing most of the destruction. However, now the elders of the community have stopped the women from going into the forest.	M5
Women are not coming into the park, and the community is respecting their oath.	L3
Communities are playing a great role by stopping their women from visiting the park.	L4
The community promised and took an oath in the mosque that their women would no longer go to the forest for firewood collection. The community has thus helped us a lot by banning their women from visiting the park for firewood collection and grazing.	L5
The people are no longer allowing their women to visit the park area.	L6
The communities have stopped the womenfolk of the area from coming into the park area and this had a considerable impact on the conservation of park resources. The violation cases have dropped considerably.	C4
Womenfolk of the area no longer come to the park.	C5

Though, this ban was not imposed by all the surrounding communities, it was imposed by those villages and hamlets which are located very near to the park boundary, and from where the dependency on the park resources is relatively high. Accordingly, due to the ban on women, the collection of firewood, fodder and other minor forest products also decreased considerably. The ban has ultimately had a positive impact on the park and its resources, both due to decreased extraction of resources and decreased disturbances within the park. Though, it is the men who normally make decisions regarding the access to resources (Shinwari, 2010), so the continuity of the ban is questionable in the long term, because women were not part of making this decision.

8.4.2 Decreased firewood requirements due to alternatives

One of the key factors which resulted in improvement of park resources, is the comparatively reduced collection of the firewood from the ANP, because of the following factors:

1. Switching from firewood to alternative energy sources like Liquefied Petroleum Gas (LPG)

2. Switching from traditional stoves to Fuel Efficient Stoves (FES)
3. Collection of firewood from private lands

Though the above factors decreased the firewood requirements of individual households, this overall decrease in the collection of firewood is offset due to the increase in the overall human population (F8). However, these factors are described below to later help us in making inferences for the future course of actions:

8.4.2.1 Switching from firewood to alternative energy sources like Liquefied Petroleum Gas

It was noticed that the local communities were gradually switching from firewood to using LPG cylinders. This viewpoint was discussed in various focus group interviews as well as in the in-depth interviews of the key informants from the WWF and the Wildlife Department. This was discussed in 23 out of 30 interviews. The sources and references of this code regarding switching from firewood to LPG is given in Figure 8.19.

Figure 8.19: Switching from firewood to LPG

Stakeholder	Sources																		23 / 30

Representatives of NGO	N1	N2
	✓	

Neighbouring communities	F1	F2	F3	F4	F5	F6	F7	F8	F9
	✓	✓		✓	✓	✓	✓	✓	✓

Employees of Wildlife Department	P1	P2	M1	M2	M3	M4	M5	M6	L1	L2	L3	L4	L5	L6	C1	C2	C3	C4	C5
	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		
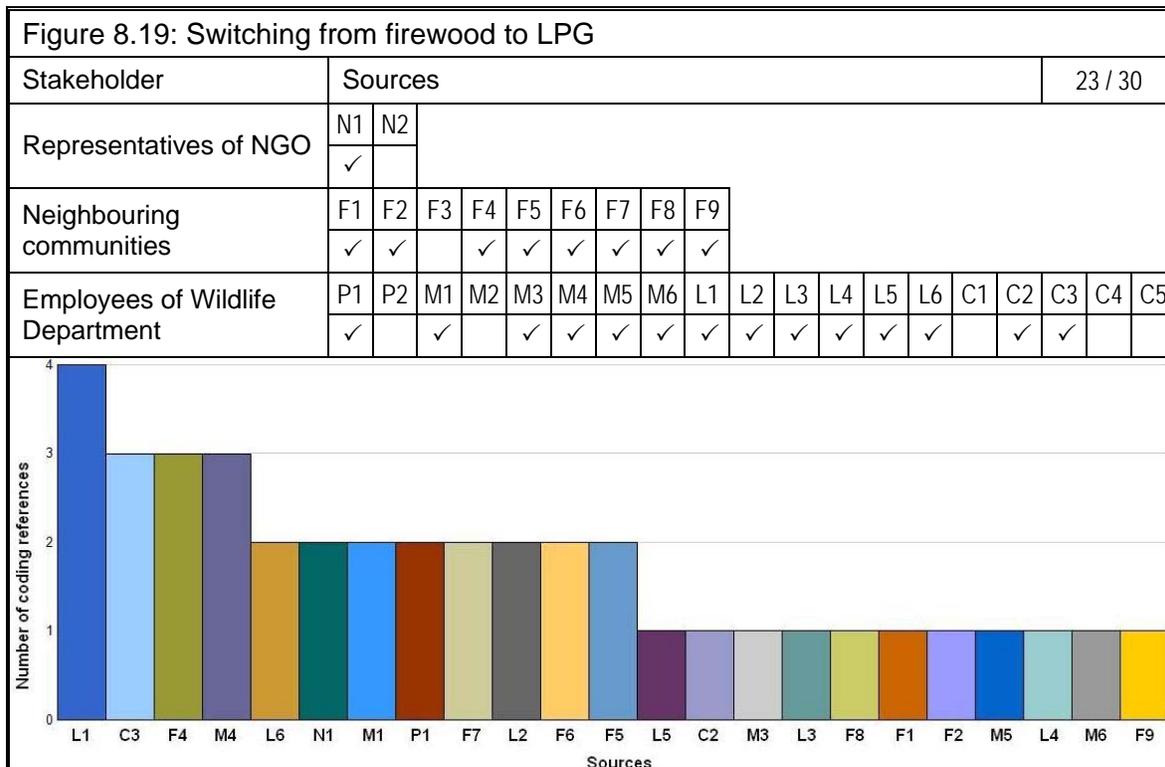
The local communities are now mostly using the LPG cylinders for cooking purposes, especially during summer months (F5). Some of the research participants were of the view that due to change in weather patterns, the winters are not so harsh, and consequently the local communities do not need so much firewood as they required in the past (F5). These changes in

weather patterns, which may be due to climate change, are contributing also to decreased dependency on the firewood from the ANP and surrounding Reserved Forests.

The use of LPG cylinders for cooking has also considerably increased in the hotels and restaurants located around the ANP, and as such, the firewood is mostly used in bakeries for baking of bread (F9). There are different reasons for this shift from firewood to LPG cylinders. The use of LPG cylinders has increased in the local hotels and restaurants because as opposed to using the firewood, the taste of food is not affected due to cooking through LPG cylinders (M5). Moreover, for faster cooking, dried firewood having little moisture content is required. Due to continuous extraction of such dried firewood in the past, it is now comparatively quite laborious and time consuming to find such ideal dried firewood within ANP or the surrounding Reserved Forests (M5). Another factor is that due to continuous insecurity and lawlessness in the once popular tourist destinations of Swat valley, the tourists are now focussing on the Galliat area. Consequently, due to a high influx of tourists, most of the hotel owners have also renovated their hotels and restaurants by replacing the old mud structures with fancy concrete buildings, and as such there is now no scope for using the firewood in such fancy buildings (M5). The owners of these renovated hotels are more comfortable using LPG cylinders as opposed to ruining their fancy hotels due to smoke associated with use of firewood (M5). However, the old hotels are still using the firewood for heating, especially during winter as it is not cost effective for the hotel owners to use the LPG for heating (F9). Moreover, it is also discussed that the LPG cylinders normally do not work in low temperatures of the winter season (F9, F6).

8.4.2.2 Switching from traditional stoves to Fuel Efficient Stoves

The local communities were traditionally using clay or brick stoves for cooking. In such open stoves, the waste of energy is much more and consequently the consumption of firewood was also too high. This wasteful utilization of firewood ultimately poses a threat to the park resources. In order to reduce the pressure on the forests and to conserve the dwindling park resources, one of the options is to improve the efficiency of stoves so as to decrease the overall firewood collection from the park and nearby Reserved Forests. For this purpose, WWF-Pakistan under the provisions of 'People and Plants Programme', provided 500 Fuel Efficient Stoves (FES) to the local communities at subsidized rates (Aumeeruddy-Thomas, *et al.*, 2004; Hamilton & Hamilton, 2006). Besides offering the stoves at subsidized prices, the WWF-Pakistan also trained a few local community members to make the stoves locally for onward sale to the local communities (N1, N2). Those people are still making the stoves, but the design

is altered according to the demand of purchasers. Such custom-made stoves are not as fuel efficient as the WWF provided up to 2004 (C1, N1, L5). Experts believe that these FES reduced the firewood use by 40 to 50 per cent in the case study area (Aumeeruddy-Thomas, *et al.*, 2004; Hamilton & Hamilton, 2006; Shinwari, 2010).

Keeping in view the success of this initiative and its impact on the park resources, about 500 FES were distributed during 2001 and 2002, when I was preparing the park management plan in collaboration with the local communities. Moreover, at that time, it was planned that the Wildlife Department under implementation of the management plan of the park would provide another 300 FES to the local communities at a subsidized price. The objective was two-fold: to reduce the pressure on the park and also to distribute stoves which are healthier and more hygienic (Farooque, 2002).

8.4.3 Improved staffing and better protection

Prior to the implementation of the management plan, there was a severe shortage of law enforcement staff within ANP. Moreover, at that time, the park was under the control of DFO Wildlife Abbottabad, who was responsible for looking after the affairs of the department within Abbottabad and the adjoining Haripur district. Thus, it was proposed in the management plan that a separate DFO Wildlife will be deputed to look after the park affairs. Similarly, the strength of the enforcement staff was also increased along with improving the mobility of the staff to ensure better protection of the park resources. This fact was endorsed during six out of eight focus group interviews. Moreover, this viewpoint was discussed during 24 interview sessions. The sources along with the references regarding the discussion about better protection are given in Figure 8.20.
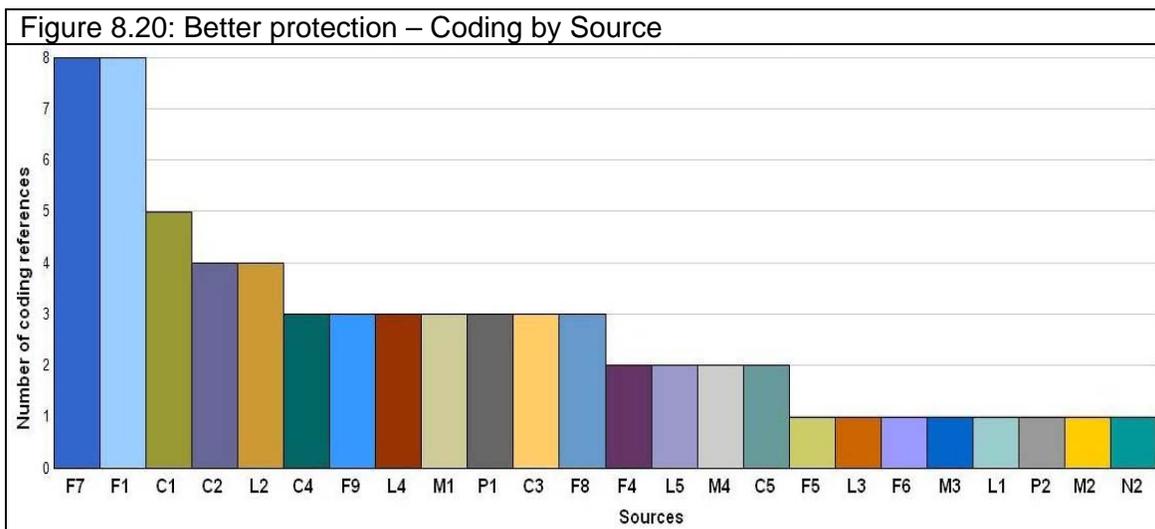
Figure 8.20: Better protection – Coding by Source

Due to the implementation of the management plan, the number of watchers has considerably increased. Now, per unit area under each watcher is less, compared to that before the implementation of the management plan. Previously 4-5 watchers were covering the area of 3,322 hectares, but now the same area is covered by 23 park staff (M1, C1). Resultantly there is better management and increased protection.

8.4.4 Increased conservation awareness

Under the auspices of the EU funded Natural Resources Conservation Project (NRCP), the local communities were organized and involved in conservation of natural resources from 1995 to 2002. As part of that project, the local communities were also involved in the preparation of a management plan for ANP. One of the remarkable outcomes of all those participatory initiatives is related to the increased conservation awareness among the local communities.

Due to increased awareness about the environmental issues, the local communities now 'own' the wildlife and they do not blame the Wildlife Department for 'their' problematic wildlife (L1, M5). One of the participants of the focus group explained it as, "There has been awareness among the local communities towards their natural resources and now they realize the importance of their natural resources more than ever" (F9). It was revealed during 21 interview sessions that now the local communities are taking interest in protecting forest and the wildlife. The sources and references in support of this viewpoint are given in the Figure 8.21.

Figure 8.21: Increased conservation awareness – Coding by Source
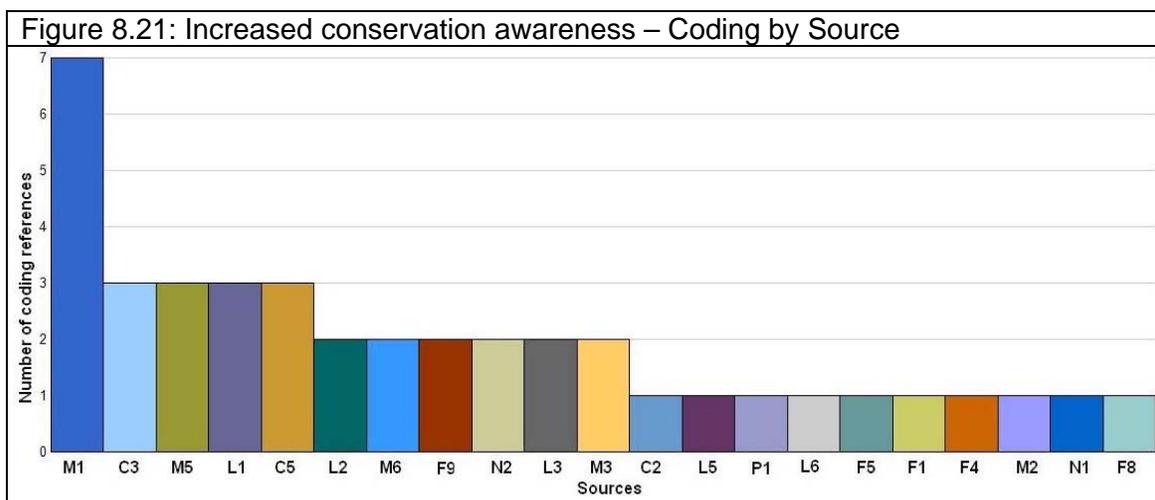
The communities are of the view that if they do not take care of the natural resources, the weather of the area will change and ultimately tourists will not come to this area (M1, M5, M6, F9), which is famous for its pleasant weather during the summer season. They have also

realized the importance of park resources in promoting tourism and improving the local socio-economic conditions (F8, F9, M1, M5, L5, C3, C5).

As a result of such increased conservation awareness, now the communities are raising their own energy plantations and also take an active part in the plantation campaigns of the government (N2). According to a participant of this research, a survey was conducted by two interns during 2008 about the usefulness of the ANP. He said that according to that survey, "Local communities were of the unanimous view that the establishment of the national park is beneficial towards the protection of trees and without the national park this area, like many more, would have been denuded" (M1).

According to the respondents, one of the key benefits of the increased conservation awareness is the reduced dependency of the local communities on park resources (M3, M5, L3, L5, C3, C5, P1) and the decrease in the incidences of induced forest fires within the ANP. The sources and references regarding the viewpoint that the induced forest fires have decreased in the park area are given in Figure 8.22.

Figure 8.22: Episodes of induced fire incidences are decreasing – Coding by Source
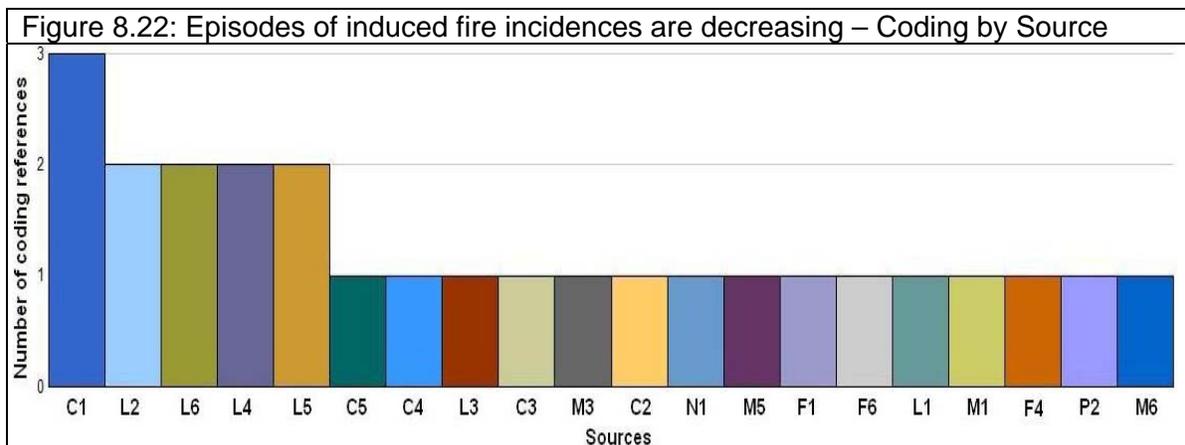
Besides the earlier efforts of increasing the conservation awareness under the auspices of the NRCP, WWF Pakistan is also active in enhancing the conservation awareness among the local communities (F9, N1, N2).

8.5 Factors responsible for degradation of park and its resources

In the context of ANP, there are certain factors which are contributing towards degradation of the park and its resources. These factors can be grouped together into the following categories:

1. Increasing human population and its dependence on limited degrading natural resources,

2. Mistrust and conflicts among the key stakeholders on the use of the park and its resources,
3. Failure of the government agencies in implementing its approved and agreed upon policies,
4. Lack of alternatives and substitutes, and
5. Weak monitoring mechanism within the government agencies.

Except for the wicked problem of increasing human population, the rest of the factors that are contributing to the degradation of park resources are ultimately concerned with poor governance and its consequential misuse of power and authority by the employees of public sector organizations.

Increasing population growth and the pressure it places on resources may be taken as a given, not only in the study area but across the developing world. In the study area, there is also very high pressure on the park resources due to high human population density in the surrounding areas (Aumeeruddy-Thomas *et al.*, 2004). Likewise, most of the environmental scholars regard the rapid population growth as the most sweeping and powerful driving force responsible for ecological destruction (Hempel, 1996). The severity of human population pressure on the park resources can be judged from the comparative high population density in the Galliat area, where the park is situated. The comparative population density can be ascertained from Figure 8.23.

Figure 8.23: Comparative human population density
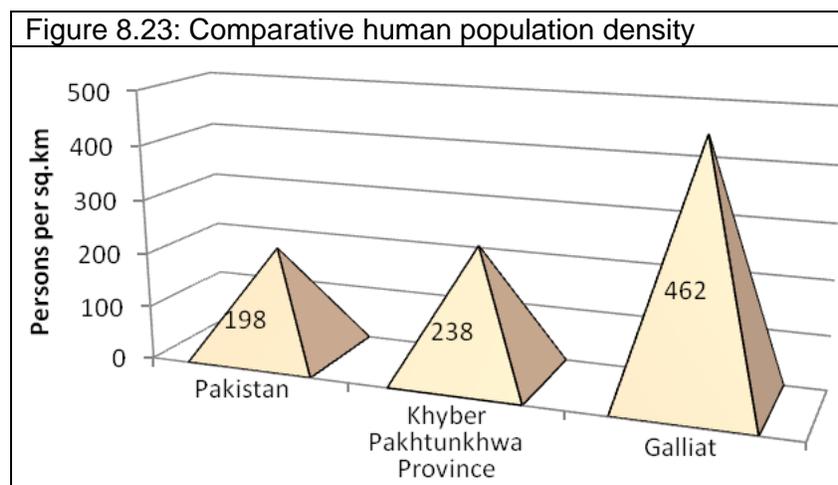
The human population density in Galliat is 462/km^2, and as a result of increasing population and limited available land, coupled with poverty, the local communities have no choice except to achieve their minimal level of subsistence by exploiting the forest resources both for food and firewood, besides attempting to utilize any available land on steep hills for

marginal agriculture and grazing their livestock. Such circumstances support the argument of neo-Malthusians that the population of humans is exceeding the ecological carrying capacity.

Similarly, poverty along with the increasing population further complicates the already complex issue. Hempel (1996) argued that the combined actions of increasing population coupled with poverty create ecological poverty[27]. In the absence of alternative energy sources, the pressures for firewood will eventually overwhelm the regenerative capacity of the natural forests. A summary of the factors responsible for degradation of the park resources and their inter-linkages is illustrated in Figure 8.24, and discussed in detail in the subsequent sections.

Figure 8.24: Factors contributing to degradation of park resources. Figure is based on the nodes developed on the basis of coding of research data.

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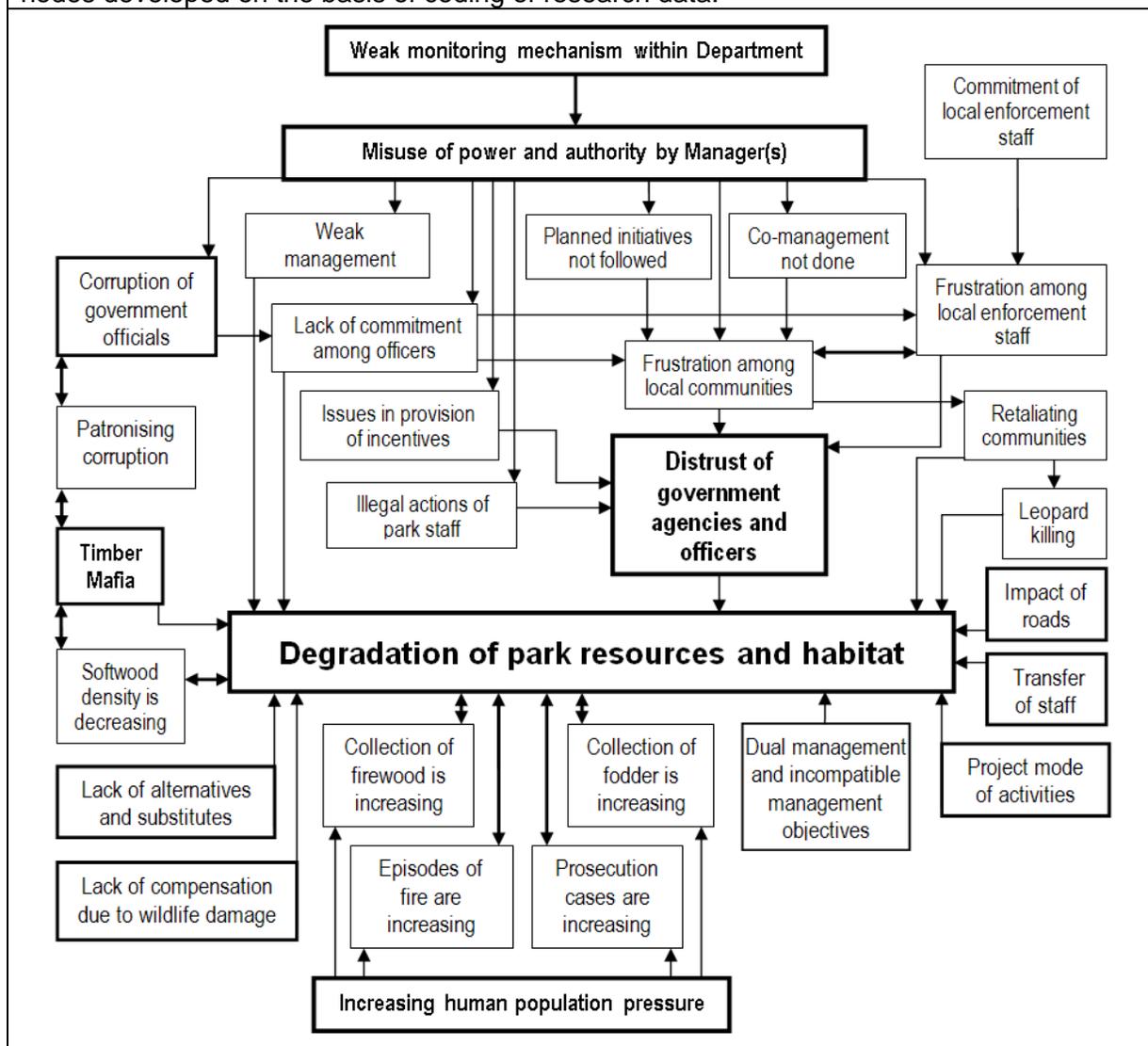
[27] Ecological poverty was defined by Hempel (1996) as "a condition in which over one billion individuals living at or near subsistence levels are devouring habitat and natural resources in their search for food, water, energy and other necessities of life"(p. 60).

8.5.1 Issues of governance and management in Ayubia National Park

In this thesis, the focus is more on discussing the factors that are related to the park governance, management, and abuse of power and authority by the employees of public sector organizations. The communities and staff were both unwilling to accept their responsibility in protecting the environment and conserving the park resources.

Both the stakeholders tend to blame each other. The government agencies blamed the local communities for the environmental damages that were done on the pretext of fulfilling their basic livelihood needs from the park. However, the local communities blamed the government agencies for the rampant corruption that is done in the pretext of park management, law enforcement and environmental rehabilitation. From my perspective, based on both systematic research and participatory experience, the allegations of both the key stakeholders are not wrong. However, none of the stakeholders bothered to judge their own weakness and blunders, rather both were trying to make the other into a scapegoat for the environmental degradations within the park.

In ANP, it is more the issues of effective and good governance as opposed to park management, which need attention of the stakeholders, specifically the government. The government agencies need to understand the reality that conservation is more than simple protection and controlling access to specific resources (Shinwari, 2010). As rightly pointed out by Ahmed and Mahmood (1998), the current governance form of Pakistan is inefficient, weak, corrupt and unaccountable. They suggest that for devolution of authority to become both possible and desirable, there is a need to improve the current governance (Ahmed & Mahmood, 1998). Improved governance will ensure better park management for the associated biodiversity and for the neighboring communities, which are dependent on park resources for their livelihood.

It is the failure of the overall governance which created serious mistrust among the key stakeholders of the ANP. However, it is the output of the strict management of the park which resulted in improvement of park resources during the last decade. Consequently, due to improved management, the deforestation within the ANP is less as opposed to the surrounding Reserved Forest, managed by the Forest Department. The satellite imagery of the park and its surrounding areas clearly indicates the difference between the forest crop within and outside the park area. The satellite imagery is shown in Figure 8.25. As mentioned in the literature review, the park staff can deter illegal activities to a certain extent (Stern, 2001), however they cannot enforce the unpopular exclusion policies on a sustained basis (Saberwal, 2000).

Figure 8.25: Satellite imagery of the ANP and surrounding areas (Park boundary in red)
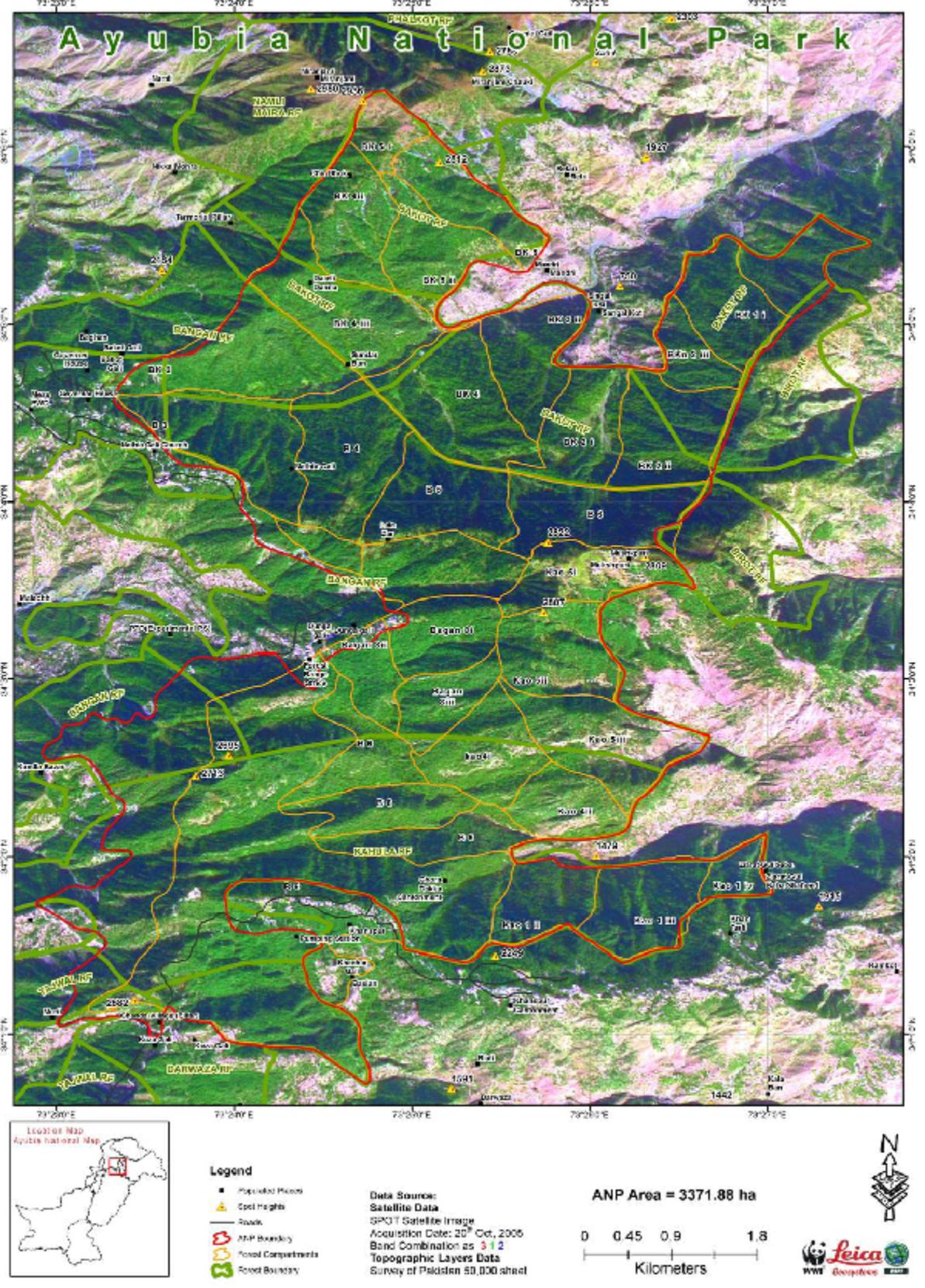
The government officials mostly failed to recognize the remnant poverty and lack of alternatives, especially the alternative energy sources, which are needed to survive the extreme winter conditions. It is also important to understand that for enhancing the environmental governance, simultaneous progress in the social and economic spheres is essential (Hempel, 1996). However, as suggested by Eagles (2009), the parks and protected areas can be conserved for current as well as future generations only through good governance and good management. Good management without good governance is not enough alone, as we noted in the case of ANP. Rather, the deteriorating governance is considered as a daunting challenge with regards to sustainable and equitable management of the natural resources in Pakistan (Mulk, 2002).

In the circumstances, when the finances, monitoring, management and the implementation of the conservation and development projects and activities are the responsibility of the same person within the organizations such as the Wildlife Department, it is unreasonable to expect that they will share the powers with the local communities for better park governance. Rather, effective park governance is possible when the government ensures that all the key stakeholders are involved in the park affairs by assigning proper authority as well as responsibility to each of the stakeholders. It is essential to understand the lesson of Murphree (2000), who added: "Authority without responsibility is likely to be dysfunctional or obstructive; responsibility without authority lacks the necessary instrumental and motivational components for its efficient exercise". Such arrangements can ensure that all the stakeholders "pursue strategies whereby the powerful may listen and the weak may be heard" (Swatuk, 2002, p. 275). This is only possible when some other individual(s) or organization(s) ensures that the general government policies are implemented by the concerned officials and other stakeholders. The current policy failure in ANP can be attributed to weak monitoring. However, a question which needs further research is whether weak monitoring is the root cause, or rather a symptom of the corruption or incompetency of the individuals responsible for monitoring.

8.6 Reasons for mistrust and conflicts among stakeholders

Based on the research data, it is believed that one of the key reasons for depletion of the natural resources within ANP is the outcome of differences between the two key government agencies (Forest and Wildlife Department) and among the local communities and the government agencies. All these factors are responsible for the failure in the implementation of any formal co-management arrangements which ultimately result in increased corruption, increased frustration among the stakeholders and ultimately abuse of the natural resources of

the park. It is therefore extremely important to understand these reasons for mistrust and conflicts, as it will be only then that the research project can produce some concrete results.

There are five key stakeholders concerned with the park and the adjoining Reserved Forests. The three stakeholders, who are apparently concerned with resource conservation include the Wildlife Department, Forest Department and the WWF Pakistan. Whereas the two stakeholders, who are concerned with resource exploitation, includes the eight neighbouring communities living in villages and hamlets and the tourist operators, like owners and managers of various hotels and restaurants. The stakeholder groups are shown in Figure 8.26.

Figure 8.26: Stakeholders map in ANP[28]
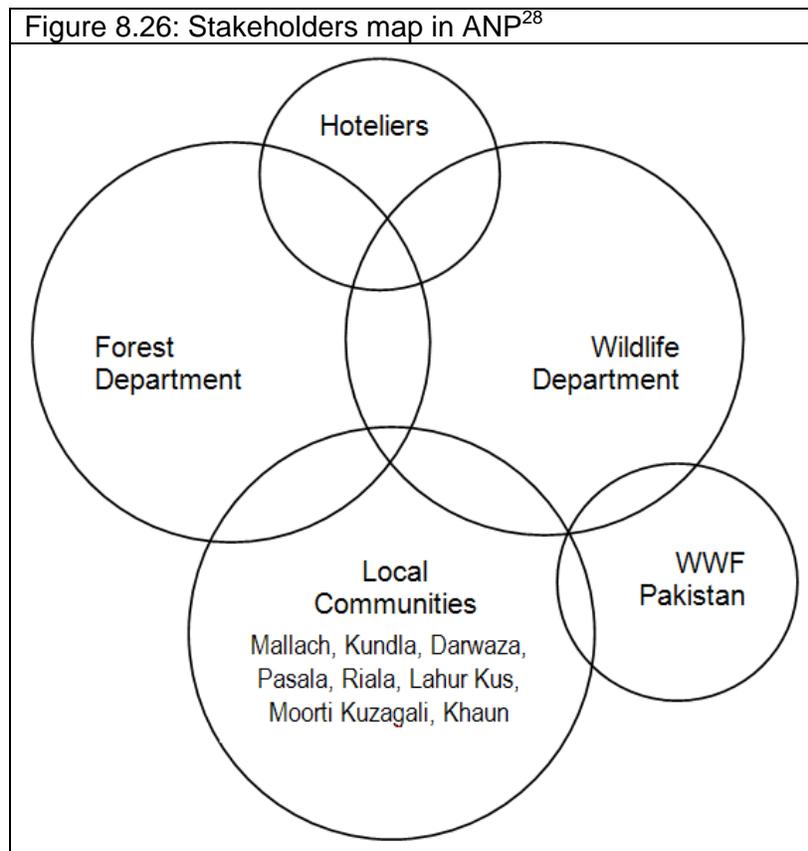
Although, all these stakeholders are either involved in resource exploitation or resource conservation, there is no single forum where these stakeholders formally get an opportunity to interact with each other and discuss issues concerning resource conservation in the ANP and/or Reserved Forests.

These research findings regarding the differences among the key stakeholders in ANP have been clearly identified in the literature. Aumeeruddy-Thomas *et al.* pointed out the "high level of conflicts between local communities and Wildlife and the Forest Departments" (2004, p.

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[28] The relative size of the circles is indicative of the relative influence between and among stakeholders, recognizing that this can not be measured in an absolute way.

6). Similarly, Shinwari (2010) also indicated that in ANP, the level of conflicts is high between local communities and the Wildlife and the Forest Departments. It was believed that without any formal forum, each stakeholder is trying to impose his existence, authority and even nuisance value on the rest of the stakeholders. Thus, in the absence of an integrated planning and management mechanism, the resources of the park as well as the adjoining Reserved Forests are liable to abuse and wanton exploitation by the stakeholder having more powers and due to the retaliation of those who suffer more due to actions of powerful stakeholder(s).

This issue was highlighted by Aumeeruddy-Thomas *et al.* as, "When considering what to conserve, and for whom, and what type of landscape to maintain, and for what long-term environmental aim, issues of power are important. Conflicts of uses or of values of different resources within a common space between different social groups at Ayubia ... is at the origin of many mismanagement problems" (2004, p. 3-4). This leads to the debates of rationality of power as identified by Bent Flyvbjerg in his first proposition that "power defines reality". He added "power defines, and creates, concrete physical, economic, ecological and social realities" (1998, p. 227).

The issue has been explained very well by Murphree (1998, 2001) as: "Power structures at the political and economic centre are not disposed to surrender their privileges and will use their power, including their abilities to shape policy and law, to maintain the monopolies of their position. Those who hold power at the local level – traditional leaders, local officials and business people – are likely to use that power to capture new sources of income and resist any erosion of their position".

In the subsequent subsections the issues concerned with this subject are explained in detail to make clear the factors responsible for degradation of park resources and to finally provide concrete suggestions for improvement.

8.6.1 Forest Department and Wildlife Department: The issue of royal versus non royal department

The Forest Department, being one of the last remnants of British imperialism, always tried to maintain its power, centralised management operations and traditional insular outlook. This issue has been discussed in detail in the review of the literature, where the viewpoint of various researchers, experts and a former Chief Conservator of Forest Department are discussed in detail.

To maintain its status of being one of the biggest landlords of the province, the Forest Department always resisted any move whereby they share their power or the area under their

jurisdiction with any local community or sister organization. It is due to such mentality that the Forest Department has never embraced the decision of the establishment of Ayubia National Park within the Reserved Forest of Galliat. They supported all such moves which resulted in abolition of the national park and they resisted all such efforts which were concerned with the extension of the park area.

When the proposal of extension of Ayubia National Park was under consideration, then the Forest Department opposed the idea of the ANP's increase in park area from 1,684 hectares to 3,383 hectares. Consequently, a meeting was arranged during November 1996, by the then Deputy Commissioner[29] of Abbottabad District. The arguments of both the parties (Forest Department and Wildlife Department) were heard, and consequently, the Deputy Commissioner being the District Administrator supported the idea of park extension. Expressing his concern to the Commissioner[30] Hazara Division, he added, "... Forest Department should support the idea of extension of the park; instead they are opposing it on flimsy grounds". The Deputy Commissioner also suggested, "I think it will be prudent to incorporate the adjoining area of 40,200 acres (16,268 hectares) in already existing park of 4,161 acres (1,684 hectares)" (559-561/DK dated 18/11/1996). Thus, instead of doubling the park area, the Deputy Commissioner suggested that the park area be increased by ten times, thus covering all the adjoining Reserved Forests of the Galliat area.

Another key reason for the differences between the Wildlife Department and the Forest Department is concerned with the use of the landscape under their control. The former organization is concerned more with the conservation of resources, whereas the latter is interested in resource exploitation and revenue generation. The priority of the forestry sector in Pakistan is timber management (Aumeeruddy-Thomas *et al.*, 2004; Shinwari, 2010), and the same was very rightly pointed out by one of the former Chief Conservators of the Forest Department, who added that the administrative machinery of the department is geared towards revenue generation, and timber harvesting from natural forests (Sial, 2000; Sial, 2001).

It was out of that mentality that the Department repeatedly tried to start timber harvesting within ANP. This is another key example of the insular way the Forest Department works and its approach of power defining reality and public discourse. In Khyber Pakhtunkhwa, the declaration of an area as a National Park is only possible under the provisions of Section 16 of the Wildlife (Protection, Preservation, Conservation and Management) Act, 1975. Likewise, as per Sub-Section 4(iii) of the above Section, "Felling, tapping, burning or in any way damaging or

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[29] Executive head having responsibility for law and order within the district.
[30] Executive head at the level of Civil Division, comprising of a few districts.

destroying, taking, collecting or removing any plant or tree there from" is prohibited in a National Park. Thus, under the Wildlife Act, there is complete restriction on taking, collecting and removal of any plants or trees, because the idea is to preserve the flora and fauna in their original state as natural heritage. However, despite these clear provisions of the Act, the Forest department has tried many times to initiate commercial timber harvesting within the ANP.

The insular outlook of the Forest Department focuses its attention on timber harvesting and management of around a dozen species of trees. Their focus of management in the northern part of the province revolves around various softwood species like Deodar (*Cedrus deodara*), Blue pine (*Pinus wallichiana*), Chir pine (*Pinus roxburghii*), Spruce (*Picea simthinana*), Silver fir (*Abies pindrow*) etc. This viewpoint was also categorically pointed out by Shinwari (2010) who added that the officers of the Forest Department are interested in timber management, a subject that is given more importance during their preliminary training in PFI. Similarly, Aumeeruddy-Thomas *et al.* added, "The interest of foresters actually lies in timber production and especially conifers species" (2004, p. 3).

Such limited species-level management has insufficient scope, particularly in the light of the current global conservation efforts, where the emphasis is more on ecosystem management as opposed to species-level management of certain key species. The Forest Department thus failed to understand that any commercial harvesting within a smaller size protected area like Ayubia National Park will be devastating to the forest ecosystem and will have an ever-lasting impact on other associated species of flora and fauna. For example, the dried trees of the park are the ideal habitat of various birds like woodpeckers and parakeets and mammals like two species of flying squirrel. Moreover, the deadwood of the park provides an ideal environment for particular varieties of mushrooms whose market value can help provide a sustained source of income for local communities, if properly managed.

Various research participants reported a decrease in the number of such species within the park which are dependent on the dried trees (F8, M2, M6). As and when objections were raised by the Wildlife Department against any such misadventures and illegal activities within the ANP, the response of the Forest department was not much except to tell the Wildlife Department that they should not be concerned about the trees. Such misadventure of the Forest Department set the sister organizations against one another and initiated an inter-bureaucratic struggle to demonstrate their power and authority. In reality, such inter-departmental conflicts weaken the control of the government and, resultantly, the resources are abused by the opportunists.

Another simple but very relevant example of the lack of understanding of the Forest Department, and its desire of not working with other sister organizations, concerns the participation of the Forest Department staff in this research project. The Park Ranger of the Forest Department was consulted before formally starting the research data collection. The relevant details and interview guides were also shared with him. During the meeting, he agreed to participate in the research along with his four enforcement staff members. However, in the end, neither he nor his staff bothered to honour their initial commitment. Despite the fact that he and his staff were repeatedly approached, no response was given. Finally, none was again bothered, when I received a message that the Park Ranger had asked his staff that no one should participate in the research. I personally attribute this attitude of the Forest Department officials to following two factors:

1. My previous involvement with the Wildlife department, where I worked as Park Planner in the Ayubia National Park, and
2. My current involvement with the research project, which is relevant to co-management arrangements. The subject is not a favourite about which any of the employees of the Forest Department is interested.

The outlook of the foresters of the Forest Department is locked in the globally abundant imperialist forestry of the eighteenth and nineteenth century. They still consider themselves to be 'special' people of a 'special' department. The foundation of such a mentality is associated with the mandatory two years training of the officers of Forest and Wildlife Department in the Pakistan Forest Institute, which is the sole Forest Academy of the country. I still remember the words of one of the instructors, while I was doing the M.Sc. in Forestry from the Pakistan Forest Institute. In inculcating the superiority complex, one of our instructors told us, "You are not like ordinary people. Rather you are different from others. You should keep a distance from ordinary people ... You should even avoid using public transport, which is used by ordinary people". That was the day when I realized that this organization was in need of serious overhauling to deliver any good to the society.

As very clearly pointed out by Hannam (2000), such training instils an authoritarian culture, which prevents the implementation of more sensitive forest policies. Resultantly, despite the commitment of the Pakistan government to increase the area of natural forests within the country as stated in different policy documents, the actual "activities on the ground do not always seem to be in line with this policy" (Stolton, Dudley & Randall, 2008, p. 95).

8.6.2 Government agencies of the park and the local communities

Both the Forest and Wildlife Department are involved in the management of park resources. Theoretically, both organizations emphasize the benefits of co-management, but during research data collection it was noted that neither organization really bothers to embrace this shared management of resources especially when it comes to devolution of power and authority. As a result, the local communities have no trust in either of these agencies.

During the research data collection, I interacted with an individual from a local community (F8). He was very concerned about the misuse of resources by local communities and was also cursing the government agencies for their failure to improve things. In an informal discussion that was held in the Information Centre of Ayubia National Park, he narrated that through his personal contacts he got some funding from various donors and started raising plantations on the communal lands. The plantation was raised successfully and protected from the grazing and other damages through vigilance. Expressing his concern, he said, "... because of that, the Forest department became my enemy", as they are unable to protect the plantations they were responsible for. Out of jealousy and to undermine his efforts, the staff of the Forest Department came to his planted area in the wee hours and rooted out all the plants, which were planted by him and protected for a long time from grazing and other disturbances. He further added that the Forest Ranger has forbidden him twice from undertaking plantations, and due to non-compliance of his orders, he was sent to jail three times. According to him, the "local Forest Guards are haughty and antisocial" (Minutes of the meeting at Dungagali, 27/10/2008).

Such attitude and the overall unwillingness of the Forest Department in establishing a working relationship with the local communities is a serious issue throughout the country, and it threatens the existence of the already depleting forests of the country. Such a grim situation on the part of Forest Department was explained by WWF Pakistan staff as, "There are virtually no examples of successful forest conservation projects involving communities in northern Pakistan" (Khan & Arshad, 2005, p. 9). Some of the quotes from the various interview transcripts that shed light on the level of understanding between the local communities and the Forest Department are given in the Table 8.5.

In an atmosphere of such mistrust between the locals and government officials, it would be naïve to expect any credible and sustainable use of the park resources. This is one of the key reasons that the local communities keep on filing complaints against all the officials deputed in the area. Once the officials are trapped in the web of complaints, it is difficult to get out of those complaints, whether or not those complaints are genuine.

Table 8.5: Quotes regarding the lack of understanding between the local communities and the Forest Department staff	
Quotes (Translated from the original recordings)	**Source**
The employees of the Forest Department are involved with timber mafia. A forester sold 25 trees from the national park.	F8
Once to hide the illegal selling of one log, the staff of Forest Department, burnt the remains of the log, and that fire burnt for nearly fifteen days, resulting in colossal loss of trees.	F8
The staff (of both the organizations) is corrupt. The staff has increased, and so have their requirements (greed).	F3
The employees of both the Forest and Wildlife Department are involved in illicit cutting and selling of the trees of the park. Years back, there were only two Forest Guards in the area, but now there are 40-50 individuals from both the departments. With the increase in staff, their requirements and demands (bribe) have also increased.	F3

One of the participants told me on the condition of complete anonymity (no audio recording) that once the highest-ranking individual from the Federal Ministry came to the area to personally observe things and probe the authenticity of complaints. He stayed in the park area with a large entourage of 16, comprising of his immediate family, drivers and guards. During this stay of three days, all the expenses regarding boarding and lodging were borne by the concerned official. Such expenses are more than the monthly pay of the officers that they are getting from the government. Without any formal budgetary provisions in place, it is no secret as to how such a big chunk of expenses was borne by the concerned official. Therefore, in order to settle the complaints, the officers are trapped in another web of problems, which cannot be addressed, until and unless they get some money from unknown sources. Thus, it is a sort of vicious circle that never ends. The result is obvious and in the end it is the park resources that bear the burden.

8.6.3 Communities' perceptions about the reasons of conflicts

As already mentioned in the land tenure section, the park is located within the Reserved Forests and thus this additional designation of National Park further intensified the strictness on the use of local resources within the park area. In such circumstances, the conflicts between the local communities and the law enforcement staff are simply expected as normal. The nature of such conflicts is intense in the National Park area as opposed to the rest of the Reserved Forests, because in the ANP the enforcement staff of both the Forest and Wildlife Department are involved in enforcing their respective laws. If the locals are able to avoid the staff of one agency, the staff of other the agency may nab them, and if the locals bribe the staff of one agency, the staff of other agency may also look forward for the bounty (F3). In such circumstances, the locals prefer to focus on Reserved Forests, where they can either easily avoid the fewer staff members or bribe the staff of a single agency i.e., the Forest Department (F3, F7).

During a focus group interview, a research participant added, "The staff of both the Forest Department and Wildlife Department demands money (bribes)" (F7). Another participant of the same focus group interview added, "This is the reason that nobody prefers to go to the ANP, because you have to face two groups there" (F7). It is further added by another participant, "The Wildlife Department staff will not leave you and will follow you up to your home" (F7). Resultantly the degradation of the forest is worst in the Reserved Forest as compared to the ANP. A participant showed his concern as, "Almost 90% Reserved Forest is denuded, and whatever is left can be easily exploited by bribing the local enforcement staff of Forest Department" (F3).

The local communities blame the concerned government agencies (Wildlife and Forest Departments) for imposing all sorts of restrictions upon them, without understanding their problems (F6). During a focus group interview session, a participant showed his concern as, "The government agencies have to consider the realities and problems that the local communities are facing. If a man is hungry, he may even eat his own child. Whichever department is working here, they should first judge the problems of the local communities and then they should try to solve them. Once our problems are solved, we do not need to go to the national park for any sort of resource extraction" (F2).

To discuss the concerns of local communities, a meeting was held in Dungagali on 27th October 2008, which was attended by the local community leaders, the senior officers of the Wildlife Department and the Federal Ministry of Environment. During that meeting, a local leader expressed his concern as, "We are cognizant and acknowledge the importance of ANP and the services it has rendered in the protection of the forests and wildlife of the area. We also love the wildlife species, but we assert that the compensation scheme for the depredation caused by leopards should be included in the project. Salary of contract staff should be released and plantation works should be carried out. Alternate energy resources should also be provided to the village communities in the periphery of park" (Minutes of the meeting: 27-10-2008 at Dungagali). Similarly, another local leader added, "We (people) had to face hardships due to the ban on firewood collection by National Park establishment, but I always remained a vocal supporter of the establishment of National Park and the services rendered by the Wildlife Department".

One of the Park Managers (M1) validated such viewpoints of local people during the fieldwork of the research project. He added, "The local people are law-abiding and not criminal minded, their basic need is firewood". He explained, "People are collecting firewood because in winter the temperature reaches below zero and for their survival, people collect the firewood.

This damage can be reduced if alternative means of energy are provided to local people". He suggested, "The community should be genuinely involved, because they support us and they can monitor and keep a check on us. They will help us, but they should be given some alternatives and sustained source of energy". He further admitted, "Unless the local people support us in conservation activities, we cannot accomplish anything". Thus, it is imperative to address the key issues of conflicts and to genuinely involve the local communities in the park management for achieving the long-term conservation goals.

8.7 Failure of government agencies to establish any meaningful co-management arrangements at the local level

As opposed to the planned initiatives, the output of the research data analysis revealed some unexpected facts. One of the key unanticipated factors which was identified during the course of interviews was the unexpected shift of the Wildlife Department from a mutually agreed and planned co-management governance model to a traditional authoritarian management policy. It is noted that despite the clear policy which was agreed upon by the local communities and was later approved in the form of the management plan of the ANP, the park management followed the traditional approach in managing the park and its resources. Such shift from proper implementation of management plans is a common dilemma in Pakistan (Stolton, Dudley & Randall, 2008).

All the local communities and the hoteliers accused that the planned initiatives were not followed by the Wildlife Department as per the approved management plan, which was developed in consultation with all the stakeholders. According to one of the research participants, "The management plan was not implemented in true spirit. The staff never bothered to involve us. It was rather paper work" (F3). The employee of an NGO also supported this stance and added, "The Wildlife Department is doing only paper work and whatever they are doing is without any interest and sincerity" (N1). This viewpoint was even also supported during the interviews of the Wildlife Department staff, as 17 out of 19 participants (except L2, C5) indicated that the planned initiatives were not followed by the park management. The key issues are discussed in the following subsections.

8.7.1 Failure to establish a viable Ayubia National Park Management Committee

The 5th management objective of the approved management plan stated, "Strengthen institutional arrangements for the implementation of the management plan". Accordingly, for achieving this objective, various activities and prescriptions were identified in the management

plan. One of the key prescriptions was to establish an Ayubia National Park Management Committee (ANPMC). It was suggested that this committee would be comprised of the concerned Divisional Forest officers (Wildlife) and Range officers (Wildlife) and a representative from each of the eight neighbouring communities. It was further decided that ANPMC would be used for discussing the park-people conflicts and this forum would be involved in the preparation of an Annual Work Plan for the park. Moreover, the representatives of the various communities would be responsible for sharing the decisions pertaining to park and its resources with their local communities and would thus act as a liaison between the park management and the local communities. The rationale was thus to ensure the transparency in the overall park management activities and to ultimately promote the co-management model.

Despite unambiguous instructions in the management plan, the ANPMC was never established to bridge the gap between the Wildlife Department and the local communities. When a senior level officer was asked about the non-existence of the management committee, despite its clear-cut recommendations in the plan, he defended the department and blamed the local communities for their differences which resulted in the failure to establish the management committee. He added, "As such ANPMC does not have a significant role, because the local communities do not agree on one point, and everybody wants to be in charge. That is why the management committees have not succeeded so far in the area, because everyone has his own priorities. The hindrance lies from the community side" (P1). However, this stance of the senior most officer of the department was negated by the various park managers and the local law enforcement staff of the Wildlife Department, who showed their concerns as mentioned in Table 8.6:

Table 8.6: Concerns of the park staff about issues in declaration of ANPMC	
Quotes (Translated from the original recordings)	Source
No formal committees have been constituted for the purpose. Though, some of the people are very interested in joining the affairs of the national park, so much so that they want to know about the problems of the National park pertaining to the financial matters.	M1
There is no management committee constituted in the Ayubia National Park.	M2
The management committee do not exist in the first place, and for this I would blame the Department.	M4
There is no management committee, and no one tried to establish it.	L1
Establishment of formal committee is yet to be done.	P2
The committee has to be established.	M6

It is pertinent to mention that the ANPMC was not only envisaged in the policy document (management plan) as my wish being the Park Planner, but this planned arrangement was the outcome of regular community dialogues, which were held between 1997 and 2001, during the planning stage. Failure of the department to establish this management committee was the first

step, which created suspicions among the local communities about the sincerity of the Wildlife Department in promoting the co-management arrangements at the local level.

8.7.2 Theory vs. practice: Co-management in planning documents only

As the local communities were not formally involved in the park management in any other way, there were no formal co-management arrangements in place in the case study area. This serious issue was raised during 17 interview sessions, and the research participants from different stakeholder groups endorsed this issue. The relevant sources and references are provided in Figure 8.27.

Figure 8.27: Co-management not done																			
Stakeholder	Sources																		17 / 30
Representatives of NGO	N1	N2																	
	✓	✓																	
Neighbouring communities	F1	F2	F3	F4	F5	F6	F7	F8	F9										
	✓	✓	✓	✓	✓	✓	✓	✓	✓										
Employees of Wildlife Department	P1	P2	M1	M2	M3	M4	M5	M6	L1	L2	L3	L4	L5	L6	C1	C2	C3	C4	C5
	✓			✓		✓		✓	✓								✓		
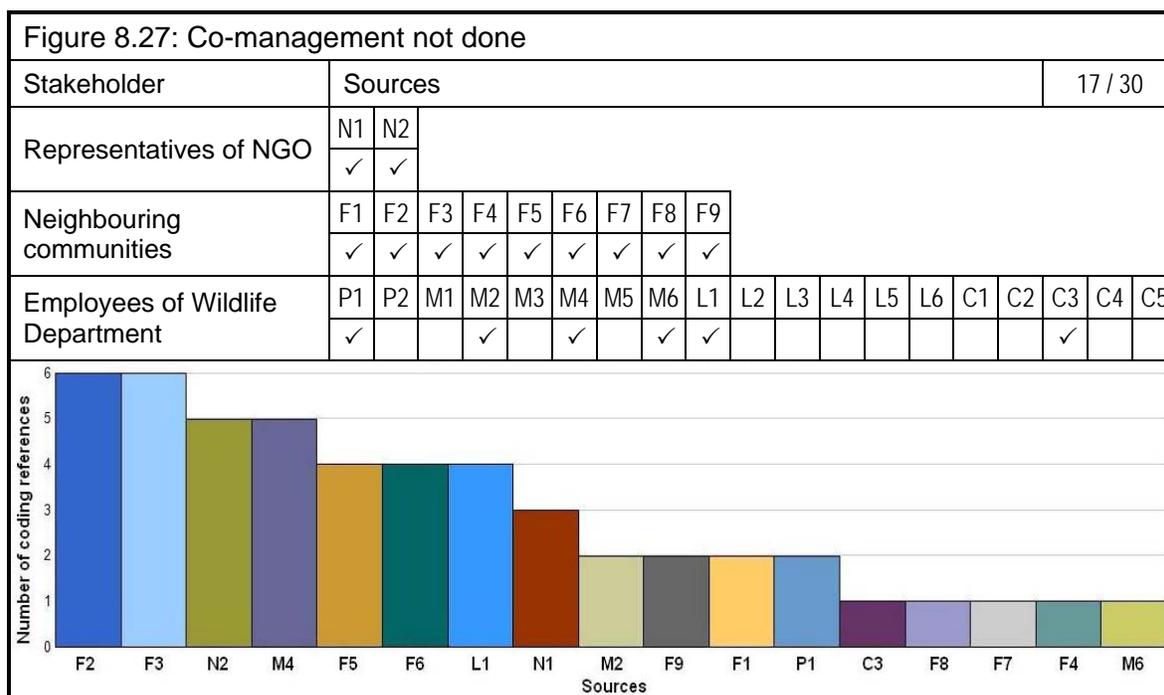
The issue was pointed out in all the focus group interviews, where the local communities expressed their serious concerns. Some of the concerns of research participants during various focus group interviews are mentioned in Table 8.7.

Table 8.7: Concerns of participants of focus group interview about failure of the Wildlife Department in implementing co-management arrangements	
Quotes (Translated from the original recordings)	Source
The local communities have never been asked for help, and they have never been involved in the park management. The department is doing everything on their own and they have not involved the local community.	F1
During NRCP (planning stage), we were involved but after that we were not involved. Now no one has tried to implement co-management. The management plan is not implemented the way it was planned. The local communities did not get any benefit from implementation of the management plan.	F2
No benefit of co-management at all has been witnessed in our opinion. The project was never implemented in true spirit. The staff member never bothered to contact the local communities.	F3

It was rather all paper work. No one bothered to actually implement the things or to involve local communities. Co-management is good, but if it is implemented in true spirit.	
No one has ever involved the local communities in park management, so how can they get involved themselves.	F4
The local communities have not been involved so far.	F5
The department has not involved the local communities in park management. The officers of the department are more like monarchs and there is no check and balance on them. Whenever they want they can impose their 'law' on the local communities to obey.	F6
For promoting the co-management, the department should establish the local committees and they should be involved in all the activities through regular meetings.	F7
We were involved in the planning process, but not in management process. Now, the local communities have no role in the implementation of project objectives. Rather, the local communities have never been associated by the department in the implementation of project activities.	F8
The co-management has not been done by the department, except some paper work, no practical work has been done. No co-management can happen in the presence of Mr. X (the then park manager).	F9

The viewpoint of the local communities regarding the non-existence of co-management arrangements was also supported by the participants representing the local NGO (i.e., WWF Pakistan) as in Table 8.8:

Table 8.8: Concerns of representatives of the NGO about failure of the Wildlife Department in implementing co-management arrangements	
Quotes (Translated from the original recordings)	Source
The Wildlife Department has not involved the locals and they have not done anything. Once the Wildlife Department and Forest Department join hands with the local communities, then they can achieve a lot, without their help the local population cannot do anything. The Wildlife department is simply not serious.	N1
The involvement of the community in park management is very weak. Though the park management was supposed to take the community with them for decision-making, the park management has failed in establishing any committees yet. There is no shared management now and because of that, we see conflicts on different occasions. The buffer communities should be involved in the park management. The concept of committees that was in management plan should be established, and then their decisions should be considered during park management. If these committees are structured in a way where Wildlife Department can maintain its authority and during ongoing management the viewpoint of communities is considered, then it is good and the park resources can be managed sustainably.	N2

This perspective of the local communities and representatives of the NGO regarding the non-existence of co-management arrangements was also testified even by the participants representing the Wildlife Department. They showed their concerns as in Table 8.9:

Table 8.9: Concerns of the employees of the Wildlife Department about failure of the organization in implementing co-management arrangements	
Quotes (Translated from the original recordings)	Source
The role of the Department was to involve the communities in the park management, but it was not done so. No CBO's were formed; there was no dialogue with the communities. There is no co-management being carried out. The park is rather being managed in the same manner as it was done historically prior to the preparation of management plan. Community has not been involved except that a few watchers were employed from them. As	M2

such, there is no change whatsoever in favour of co-management.	
Co-management was not started in the initial phase of the project. I do not see any co-management. The concept of co-management has been implemented all over the world, here in our country we are drum beating about the effectiveness of the system , but we are yet to embrace the system with open hearts and have been unable to change the old traditional mindset of the park management. The Department has not tried to empower the community. The efficacy of co-management could only be judged in true sense if the concept is implemented in true spirit. The reason that co-management could not be applied by the Department is that we are basically arrogant, we do not want to accept the knowledge of local community, secondly we do not want the involvement of local communities in the finances of the project. Conservation can only be done if there is transparency in the matters. It is our national problem that every officer wants to exercise the powers granted to him, and this starts at the training level at the Forest Academy. We should consider ourselves as conservation partners and not officers, only then we could succeed.	M4
The local communities have not been involved in the project implementation and park management. There are no committees at community level. Neither someone has ever asked us to establish a committee nor has someone even tried to make one. The department in general is not interested in involving the communities because once they are involved then our 'system' will not work (sarcastic remarks).	L1
We cannot talk to anyone, we cannot finish the difference in between the communities, and we cannot even face the criticism by the communities. There were two things, first to finish the differences among the communities and secondly face and accept the criticism that has been done by the communities and then the officers should be accountable to the local communities. The communities are not viable enough for co-management and more work has to be done. It has to be a big long-term program.	P1
Department talk about co-management, but the department do not want to involve the communities. The officers are not ready to share the powers with the local communities.	C3
There is no contact between the local communities and park management and thus to me there is no co-management in strict terms. Rather, in typical terms the co-management does not exist at all in this area.	M6

Such viewpoints of the research participants corroborates earlier evidence from Hamilton and Hamilton (2006), who added that without any formal channel for proper negotiations between the park officials and the local communities, the authorities of the park cannot stop the illegal exploitation of park resources by the locals.

This unexpected shift of the Wildlife Department from a mutually agreed and planned co-management model to traditional authoritarian management policy was hard for all the local communities to digest or absorb since 2005 to date. Consequently a series of conflicts started between the park management and all the neighbouring communities. For maintaining the conventional supremacy of the Department, the local management further alienated the local communities from the implementation of the park management plan and specifically from the process of hiring the Community Watchers from the neighbouring communities.

These actions of park management resultantly opened a Pandora box at various levels; a never-ending series of allegations started against the concerned department in general, and a former Park Manager in particular, for misusing the powers and being involved in financial corruption. The local communities discussed this viewpoint repeatedly before, during and after

the focus groups' interview sessions. In general, it was discussed during 15 interview sessions, including the various focus group interviews (F2, F3, F6, F7, F8, F9, M2, M3, M4, M5, L1, L3, L4, L6, N1).

The relevant literature also supports such viewpoints of the research participants regarding the non-existence of any formal co-management arrangements. According to Hamilton and Hamilton (2006), if the local communities are brought into the management system, then it is possible to make such arrangements, which serve the dual interests of biodiversity conservation and local livelihoods. Expressing his concern about this apathy, one of the park managers added, "I think the department was not committed and the local communities have not been involved in park management. Local people are very active but the department has overlooked them. Instead of co-management, an enmity or rivalry has developed between the department and the local community" (M5). This state of affairs was expressed by the former President of WWF-Pakistan more than 10 years ago, "It was in fact the exclusion of the dependent people that brought the country's already dwindling natural resources to their present sorry state" (Ahmed, 2001, p. iv). My research shows that, far from being alleviated through the implementation of a park management plan, this problem persists in the ANP area. While reversion to exclusionary management practices has improved the resource base in the short-term in some areas, such a governance arrangement suggests longer-term degradation as has been experienced in the past.

8.7.3 Power and special interests of public sector organizations

In his letter to the provincial Secretary Environment Department, the Chief Conservator of Wildlife objected to the decision of the Forest Department regarding the extraction of windfalls and dried trees from the ANP. He stated that, "the extraction of windfalls and dry trees is against the provisions of the approved management plan of the park" (Vide 1521-24/WL dated 22/9/2004). So, in other words, it was endorsed by the head of the Wildlife Department that the management plan is an approved policy document of the park. However, the paradox is that while the Wildlife Department used this plan as a tool against any misadventures of the Forest Department, the Wildlife Department itself failed in implementing its provisions regarding promotion of co-management arrangements.

Failure to implement its own participatory management policies at the local level is a common dilemma, both in the Forest and Wildlife Departments. This viewpoint was explained by senior staff of WWF Pakistan as, "The Government of Pakistan and the provincial governments have formulated various strategies and policies to guide the sustainable uses of natural

resources. However, gaps are still there as implementation of such strategies and policies is not in accordance with the limits imposed" (Khan & Arshad, 2005, p. 12). Niaz (2008) also pointed out that in Pakistan, the policies are not properly followed and these policies lack coordinated efforts, consistent implementation and assessment mechanisms.

In both the Forest and Wildlife Departments, the overall administration, planning and resource management are influenced by the power dynamics. Both the organizations develop policies which help in maintaining their power or attaining more, if there is any chance. This viewpoint was repeatedly discussed during the individual interviews and the focus group interviews. Figure 8.28 indicates the sources and references of the various interview sessions, where the respondents complained that the officers of the Wildlife Department are not committed in bringing a change.

Figure 8.28: Lack of commitment among officers – Coding by Source
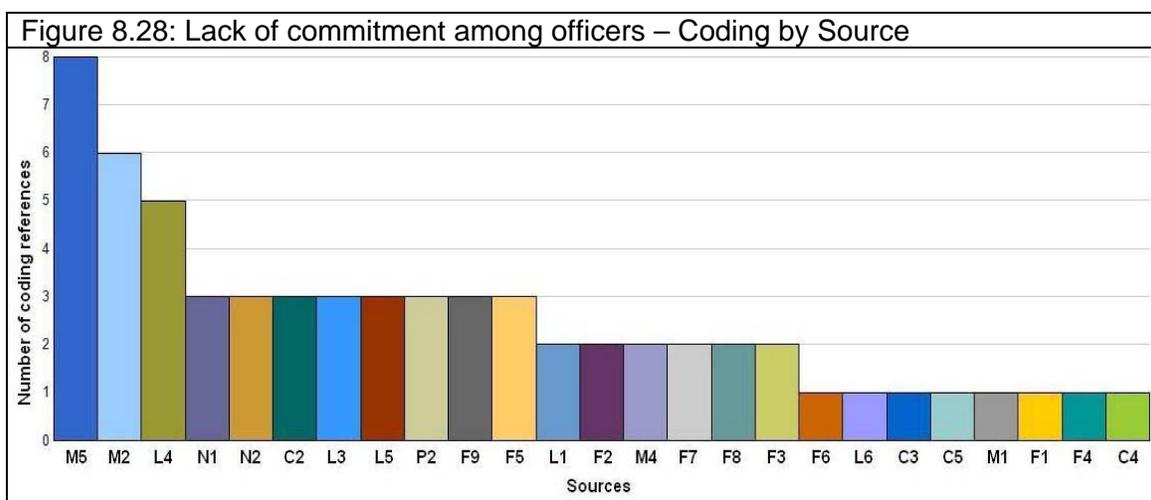
The failure of the Wildlife Department in implementing its approved policy regarding promotion of co-management and specifically involvement of the local communities in the park management endorses the viewpoint of Bent Flyvbjerg that institutions that are supposed to represent the public interest are "deeply embedded in the hidden exercise of power and the protection of special interests" (Flyvbjerg, 1998, p. 225).

8.8 Weak monitoring mechanism within the government agencies

Monitoring is considered as an essential component of biodiversity conservation programs, because it assists in learning from the successes and/or failures of the management prescriptions (Farooque, 2002). Efficient monitoring within the organization is thus essential to achieve the goals and objectives envisioned in various strategies and policies. In the absence of any viable monitoring mechanisms, there are chances that the strategies and policies are not followed, and the power and authority is misused by those working in the

organization, which ultimately results in increased corruption, increased frustration among the partners, and ultimately abuse of natural resources.

To ensure adherence to the subsidiarity principle[31], the management plan of the ANP suggested a completely different governance regime to ensure the participation of all the local communities in the park management. However, in the absence of any effective monitoring system in place, this basic prescription of the management plan was set aside by the concerned park manager(s). Resultantly, the once disempowered and marginalized communities who were completely involved in the planning stage and who were promised the due role in the future management of the park were once again marginalized by the Wildlife Department.

Expressing his concern, a park manager added, "Monitoring is very weak, rather absent in the organization, and in this scenario each officer applies his own approach in managing the park" (M2). Explaining his viewpoint, he added, "Monitoring is a tool by which you can sustain your management approach. If there is monitoring regularly on quarterly or six months basis to see if the local communities are satisfied with the management or interventions of the project, then the manager is bound to do so, and he has to involve the community. Secondly we can monitor the community - are they committed or involved? But there is no monitoring for the managers or communities. There is no check on the managers, for promoting the co-management model. If benefits are accrued to the community, then the local communities will protect the resources themselves" (M2).

During the data collection phase, I noticed that the various partners repeatedly referred to weak monitoring within the Wildlife Department. As a result of weak monitoring of implementation of the approved policies, a number of initiatives which were included in the management plan after years of consultation with the different stakeholders were not implemented. This concern was shown during 28 out of the total 30 interview sessions. The sources and the references of this viewpoint are given in Figure 8.29.

Figure 8.29: Planned initiatives not followed – Coding by Source

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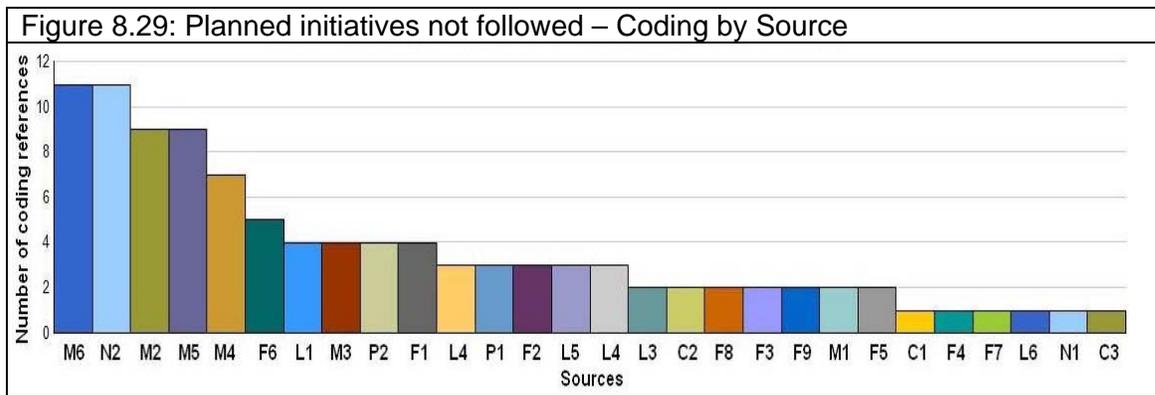
[31] Meaningful participation of all the key stakeholders at the level of resource

Some of the key initiatives, which were planned in consultation with the local communities, but which were not implemented by the park management include the following:

1. Constitution of Ayubia National Park Management Committee to improve the park governance by ensuring that the voice of local communities are heard by the park managers and the messages of managers are promptly conveyed to the local communities through members of ANPMC.

2. Establishment of conservation fund. The initiative was planned primarily to mitigate losses due to depredation of livestock and crops and injuries to human beings.

3. Zonation of park. The idea was to divide the park area into two different zones i.e., core and buffer zones. Accordingly it was decided that the tourist and visitor facilities as well as limited use of natural resources should be limited to buffer zone. Core zone was intended to serve as a true representation of Galliat forest ecosystem and to manage the zone for biodiversity conservation. Visitors and tourists should not be allowed in the core zone. This zone should also be a strictly protected area against any consumptive use of natural resources.

4. Establishment of firewood depots for providing firewood to local communities at subsidized prices. This initiative was planned for five years, so that during this period intensive energy plantations would be raised on the communal lands, from where the local communities fulfill their firewood requirements after five years interim period.

5. Raising of energy plantations to fulfill the future firewood requirements of the local communities on sustainable basis.

6. Provision of Fuel Efficient Stoves to decreases the bulk of firewood requirements of the local communities, and to simultaneously instil the message among the local communities about the use of such stoves and its ultimate role in the conservation of natural resources.

7. Establishment of eight community guest houses within the active involvement of the local communities. The idea was to generate revenues for the local communities, so that they value the park resources and use the income for their community welfare projects.

The policy failure in implementation of management plan was unnoticed, because of the fact that those responsible for monitoring the progress of implementation of management plan were not competent enough to pinpoint the issues well on time. One of the basic reasons for this dilemma is the weak monitoring indicators like financial and physical targets against which the progress of the projects are monitored. Innes and Booher (2002) stated this issue as, "Unfortunately, the only paradigm for evaluation that many decision makers understand is grounded in the machine model of the world. In this model, programs and their outcomes are evaluated against their presumed goals according to the 'rational' or positivist model of research, paying attention primarily to what is quantifiable and assuming a fixed and well-defined program that a bureaucracy would have or that a nonprofit organization might be implementing" (p. 10).

8.8.1 Corruption of government officials

The local communities accused the staff of the Wildlife Department of being involved in corruption and using the departmental funds for their personal benefits as opposed to the benefits of the local communities or the park. This issue was discussed during 15 interview sessions. The sources along with references are given in Figure 8.30.

Figure 8.30: Corruption of government officials – Coding by Source
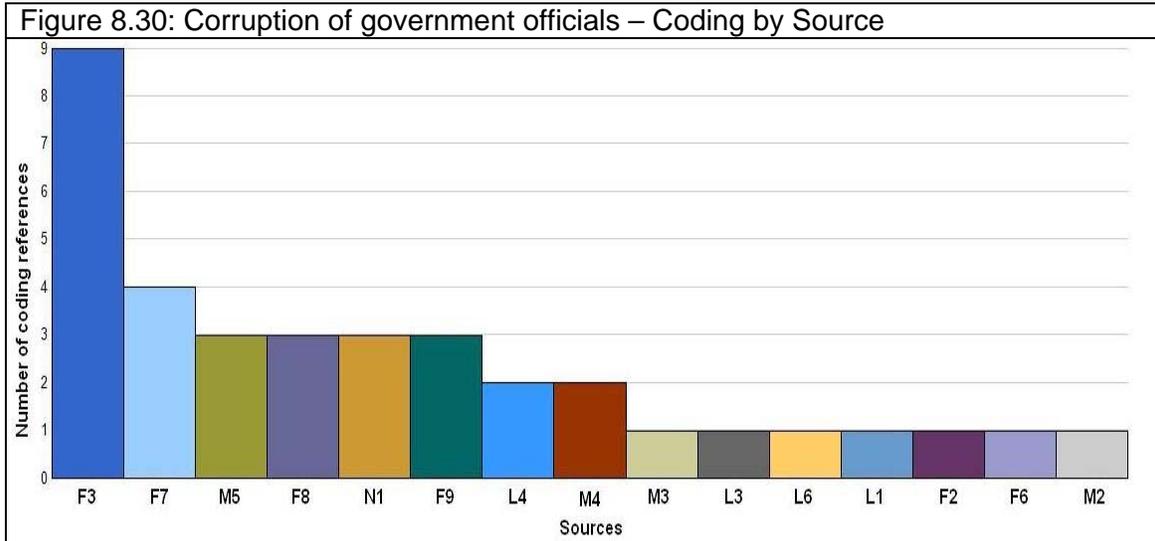
Some of the key quotes from the transcripts of various focus group interviews are mentioned in Table 8.10.

Table 8.10: Concerns of participants of focus group interview about corruption in public sector organizations	
Quotes (Translated from the original recordings)	Source
The department staff is the real timber mafia.	F8
The department staff is very corrupt, how the protection of forests can be ensured? They are involved in illicit cutting of trees. We cut the firewood from anywhere, once we bribe the officials of Forest and Wildlife Departments.	F3
The department has done nothing for the wildlife conservation or us.	F5
The forest is destroyed because both Forest and Wildlife departments are making money.	F9
The departmental staff members are only working to make money and build their homes. They all have houses about which we cannot even think.	F6
Both the Forest and Wildlife department staff take the money for selling the trees of the park. People avoid going to Park as against the adjoining Reserved Forest, because in park we have to bribe the staff of both the agencies.	F7
The department is doing nothing, why it is not being abolished?	F4
All the staff of the department are 100% dishonest.	F2

This above stance of the local communities regarding corruption of the park staff was not clearly endorsed by the staff of the Wildlife Department, though some mentioned various reasons for the weaknesses. Those are mentioned in Table 8.11.

Table 8.11: Concerns of the employees of the Wildlife Department about corruption in the Wildlife Department	
Quotes (Translated from the original recordings)	Source
The allocation of funds is haphazard.	M2
Unfortunately some of our officers do not want the involvement of local communities in the finances of the project.	M4
No one asked us to establish communities for co-management arrangements and no one has ever tried to establish one. The department is not interested in involving the local communities, because if they are involved then our 'system' will not work.	L1
The department is doing nothing, and they do not want to involve the communities.	C3
Due to personal greed and motives of some officers, the department did not fulfill the promises made with the local communities.	M5
Local enforcement staff and the local communities are interested in the co-management model, however, not all the officers want to implement co-management model. We cannot ask them, as why they are not interested. They are interested in the construction of buildings and they do not want to share their power.	L3
Some officers in the organization do not want the co-management model, rather they want to manage the things in the way as they were managed in the past	L6
The managers have done nothing. They are not interested in co-management model or in working with the local communities. They will not be able to make the 'earnings', if they involve the locals.	L4

The employees of an NGO added that, "the Wildlife Department is just kidding", and further added that, "once the manager is not serious, then the enforcement staff is also not serious" (N1).

Figure 8.31: Mixing of cheap barbed wire with the expensive galvanised barbed wire

Corruption is an attitude. It can be done in anything, once there is an intention.

(Source: Mohsin Farooque)

The local communities condemn the government agencies for increasing the number of enforcement staff and added that with the increase in enforcement staff, the level of corruption has also increased. They expressed their concern as, "Earlier, one person was in charge and accountable, but now with the increase in number of enforcement staff, the responsibility is divided and diluted and, thus, the level of corruption has also increased" (F3).

Repeatedly, during the fieldwork the research participants discussed how the local enforcement staff of both agencies i.e., the Forest and Wildlife Department, who are deputed in the park, are involved in the illegal selling of trees from the national park. Outside experts have conducted periodic wildlife surveys in the park area, and the survey reports clearly indicated the issues concerning the illegal removal of park resources and the corruption of the park staff. Such reports are often intentionally 'misplaced' from the official record of the Wildlife Department to keep the record 'clean'. However, available survey reports indicated the grazing incidences, cutting of trees, collection of firewood and medicinal plants and the connivance of the park staff in illegal activities within the park area (Whale, Zaman, Zeb, Alam & Rehman, 1996; Whale, 1996).

The research participants accused the park staff of their involvement in damaging the trees of the park. The research participants discussed this concern in detail during a focus group interview session (F3). They added that the enforcement staff of the park is involved in girdling[32] of trees, and whenever the trees are dried and subsequently fall, they are either illicitly sold or officially disposed of by the Forest Department (F3). Different individuals who conducted surveys and training within the park (Whale, 1996; Whale *et al.*, 1996), repeatedly reported such incidences of ringing and debarking. Likewise, Aumeeruddy-Thomas *et al.* (2004) also pointed out that the trees are ring-barked, so that the locals have access to deadwood, once the trees progressively dry up.

Such damages are very common, as I personally observed a lot of trees in the park that were girdled. Similarly, those trees which were near the tracks and easy to be noticed by others, were also burnt at the base. The intention was to give an impression that the base of the tree got damaged due to fire. However, those who are experienced with forest fires know very well that fire damage is not concentrated to the base, but the upper parts as well.

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[32] Stripping off the bark, this damages the secondary phloem tissues and thus stops the food supply, which results in death of wood tissues.

Figure 8.32: Forced to die – The girdled tress of the ANP

The girdled part is burnt by the custodians to hide their efforts of forced death of trees.

(Source: Mohsin Farooque)

Figure 8.33: Dried due to lightning

The tree is rather struck by lightning, which often causes bark cracks

(Source: Mohsin Farooque)

Thus, the custodians are involved in damaging the very resource being handed over to them for safe-keeping. There are valid reasons to endorse the viewpoint of the former President of WWF-Pakistan, who expressed his concern as, "History is witness to the fact that forest management resting with the provincial Forest Departments has not been a success story (Ahmed, 2001, p. iv). In the Figure 8.32, it can easily be seen how the trees have been forced to slow death.

Corruption within these concerned organizations in Pakistan has a long history and is well-documented (e.g., Sial, 2001; Jan, 1993). It is simply unchecked and is patronised by those who are at the helm of affairs in the government. A former Chief Conservator of Forests in the Khyber Pakhtunkhwa Province, who later became the Inspector General of Forests of Pakistan, admitted that the forest legislation is ineffective. He added, "Forests are exposed treasures, within the grasp of greedy and unscrupulous persons who have scant respect for the law. The existing forest legislation is no longer adequate to protect and safeguard the forests, and to promote expansion of forest resources" (Jan, 1993, p. 31).

Another former Chief Conservator of Forest expressed his concerns about the corruption in the Forest Department, by adding,

> Forest revenues are channeled into the election coffers of politicians seeking
> elections. Ministers from outside the forest service systems, began playing a
> greater role in the placement of officers, in some cases down to the levels of
> foresters and even guards (the lowest enforcement staff in the hierarchy).
> Corruption within the Forest Department became a growing problem. This
> system operates at the expense of the resource-dependent rural poor, who have
> been legally alienated from the management of nationalized forest lands.
> Excluded from any formal role in management, they were left to struggle to meet
> their subsistence forest needs through their private lands or illegal use of State
> domain, often done in a non-competitive and unsustainable manner (Sial, 2001,
> p. 58).

8.9 Park-people conflicts

There are a number of park-people conflicts in the context of Ayubia National Park. These conflicts between park and people have a long history, beginning with the gazettement of the National Park, and will remain in place in the years to come, due to the dependency of local communities on park resources and the lack of alternatives. With respect to the Wildlife

Department, the intensity of these park-people conflicts either increases or decreases depending upon the strictness of the park management, the overall management model (inclusive or exclusive) and the losses incurred by the local communities due to wildlife, e.g., leopard attacks on humans and livestock; and crops raided by monkeys. The different park-people conflicts are mapped out in Figure 8.34.

Figure 8.34: Park-people conflicts
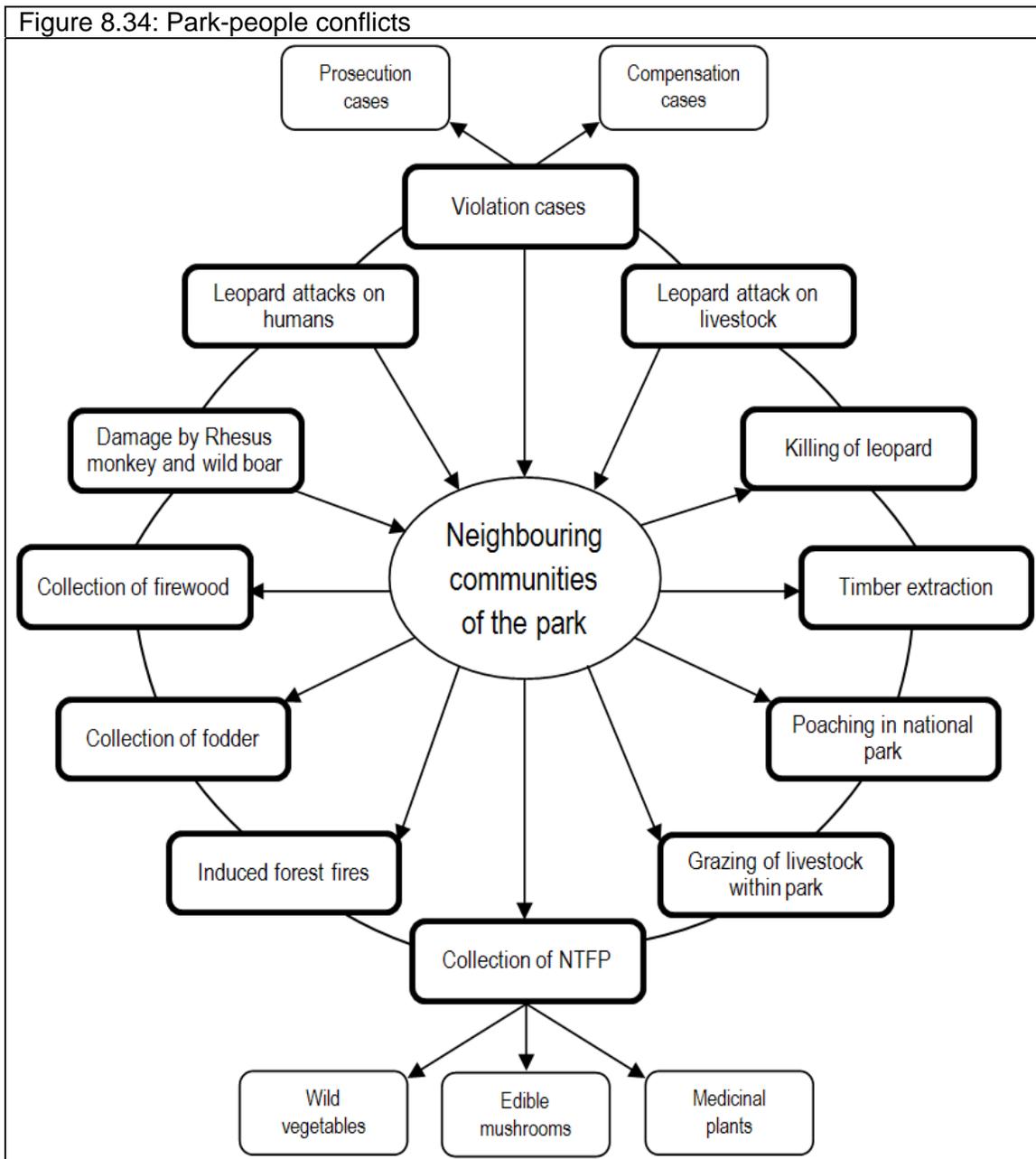
The issues concerning the collection of firewood, fodder and NTFP, and grazing have already been discussed. Besides those, some other serious park-people conflicts like the

damages inflicted by the wildlife are discussed in the subsequent sections along with the violation cases filed against the local communities.

8.9.1 Damages due to wildlife without any compensation

The key damages due to wildlife include the attack of common leopards on humans, livestock and pets of neighbouring communities of the ANP. As a result of such attacks and without any compensation for such damages, the local communities normally kill the leopards when they get the chance. Such actions of local communities invite the reaction of officials of the Wildlife Department against the local communities. The local communities object to the Wildlife Department's having no compensation system in place, in case the wildlife damages their life or property (F7). A participant of a focus group described his concern as, "If a leopard eats the dog of someone, it may not be a big deal for the officers of the Wildlife Department, because it was a dog and that person may get another dog. However, in reality for that person it was a loss of thousands of rupees. Because now he does not have a dog, so the leopard will eat his goats, jackal will eat all of his chicken, monkeys will destroy all his crops. In the morning when his children are ready to go to school they do not have eggs to eat or milk to drink. We cannot buy milk from the stores every day. So he will not be able to give them the milk of his goats. We are feeding the leopards and we are paying for them in cash in the shape of our goats, our chicken, our agriculture. For all these losses, no package has been brought up by the Wildlife Department to address this problem" (F4). Some of the key quotes of the participants of various focus group interviews are mentioned in Table 8.12.

Table 8.12: Concerns of participants of focus group interview about lack of compensation	
Quotes (Translated from the original recordings)	Source
The population of leopards and monkeys has increased considerably, and now they follow us up to our homes.	F1
The number of monkeys has doubled. The population of common leopard has increased, but they are diverting towards local populations.	F3
Leopards are causing damages to the local communities. People are scared of them. They should be restricted to the park, otherwise, we will bring our guns and bullets.	F5
Monkey population is growing a lot and they destroy our crops a lot.	F6
The leopard population is increasing a lot. We have seen them close to the road at night. We have also seen them in groups with cubs. Previously we will hear them growl once in years but now we hear them a lot and almost everywhere. Previously if a leopard was attacking someone's cattle, he would just kill it. Now they cannot. If they did, other community members will complain against him and he will be fined or arrested.	F7
The number of monkeys has increased exponentially, they have made our lives miserable, and they eat our maize crop.	F8

The Wildlife Department has no power or system in place to compensate the local communities for the damages due to wildlife. This inability of the Department also puts the staff

in an extremely embarrassing position in front of the local communities, particularly at the time when a leopard has attacked some human being. At times, the staff of the Department have to contribute from their own pocket to compensate the injured person and thus to avoid the wrath of the local communities. Keeping in view this serious issue, and based on lot of discussions with local communities during the planning stage, it was finally decided that the idea of establishing a conservation fund be included in the management plan of ANP. It was envisaged that this fund would be used to mitigate losses due to depredation upon livestock and crops and injuries to human beings. However, due to unknown reasons that prescription of the plan was not materialised by the park management.

There is a widespread misconception among the local communities that the common leopard has been introduced in the ANP by the Wildlife Department (F5). Resultantly, they expect compensation from the Wildlife Department for any damage to them or their property due to the common leopard (F5; Shah, 2001). Such claims of the local community are much stronger when the livestock are killed within the premises of the house, as opposed to killing within the national park. Expressing their concern, a participant of a focus group interview said, "Monkeys and leopards now follow people to their homes ... Two years back my two bulls were killed by leopards in the forest; at that time I did not have any problem with it but now the leopards come to our house for preying on our livestock (F1).

8.9.2 Killing of leopards by local communities

The park is the permanent breeding territory of the leopard, due to the abundance of its main prey (the Rhesus Monkey) and due to overall protection within the park area (Chaudhry, 2003). The common leopard is the key species of the park, but it is also one of the major sources of park-people conflicts, because it is an opportunistic hunter, and normally preys on livestock and sometimes attacks humans as well. Leopards normally attack children or women, when they become the easiest available prey. This could be due to either the decrease of the usual prey within the natural habitat or when the attacking leopard is injured or too old to kill the usual prey. Attacks on humans are not too common, except when during 2005, a leopard reportedly killed five women within and around the national park. Resultantly, the shooting and poisoning of the common leopards are on the increase in and around the park.

Moreover, in the absence of any compensation scheme, the shooting or poisoning of leopards is the last resort of the local communities to take revenge. A local community member who participated in a focus group discussion added, "My ten goats were killed by the leopard and I know its skin is very expensive. If I am not getting any compensation, then I have the right

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to (kill leopards and) sell its skin and get my money" (F4). These are not just empty threats of the local communities; they repeatedly killed the leopards of the ANP, as discussed in the earlier chapters.

8.9.3 Offence cases against the local communities

As a result of illicit collection of park resources and violation of park rules, thousands of cases have been registered by the enforcement staff of the Wildlife Department against the local communities. Critics believe that a conflict situation persists between the local women and the law enforcement staff of the park (Shinwari, 2010). According to Aumeeruddy-Thomas *et al.* (2004) the confiscation of axes by the park staff is considered very bad, and normally the women in the group also refuse to surrender if confronted by a single enforcement staff member.

The violators are encouraged by the park staff to compound the case by paying an appropriate fine (M2, M5, C3, L4, L5). If the violator is not ready to accept the offer of the park staff regarding compensation, then the offense case is referred to the court of law. Such prosecution cases are tiresome and may take up to five to six years to decide (M5). As of August 2011, 548 prosecution cases are still lying pending in the court of law for various offences related to breach of park rules (M2). However, such court cases have little impact on the local communities, when their livelihood is dependent upon park resources (Farooque, 2002). During the research data collection, three of the research participants who remained park managers at various points in time or who were holding a senior position within the Wildlife Department, were of the view that the offence cases are neither increasing nor decreasing, as the local communities have to fulfill their minimum demands from the park area (P2, M2, M6).

Generally, the research participants from the Wildlife Department were of the view that violators prefer to compound the offence case so as to avoid the lengthy procedures and the complications involved in the prosecution cases. Among the 19 participants from the Wildlife Department, 12 were of the view that the compensation cases are increasing (M2, M3, M5, L1, L2, L3, L4, L5, L6, C2, C3, C5). The increase in compensation cases was mostly attributed to increased staff and the resultant better protection within the park (P1, C2, M3, L2, C3, M5, C4, L4, L5).

Contrary to this, some of the park staff were of the view that due to increased staff and better protection, now fewer people are involved in exploitation of park resources, and consequently the number of offence cases also decreased (C1). Others were of the view that compensation cases have decreased, as the local communities have decreased their

dependence on park resources due to increased environmental awareness and availability of alternatives (L1, M1, M6). Figure 8.35 indicates the trend in the two different types of violation cases registered against the offenders.

Figure 8.35: Violation cases registered against the offenders
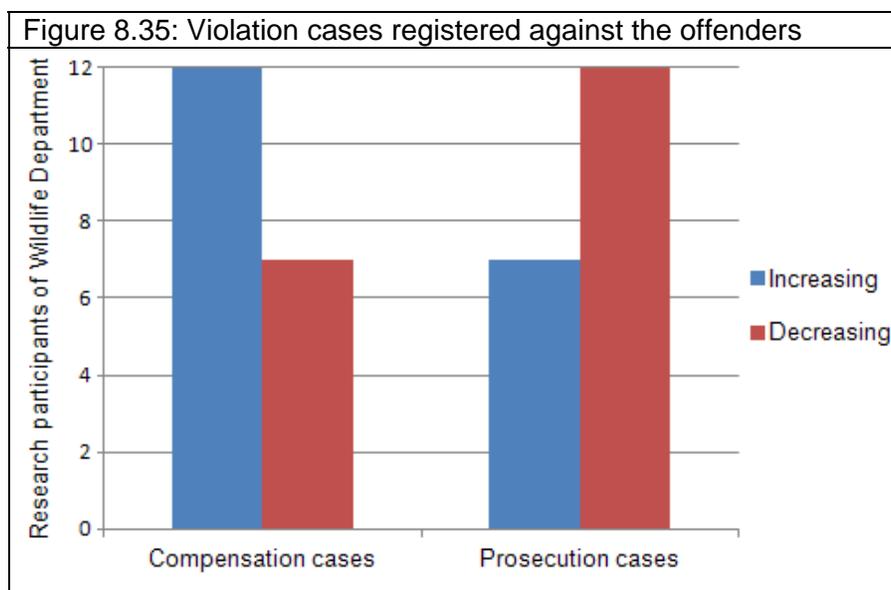
One of the reasons for the increase in compensation cases and decrease in prosecution cases is concerned with the nature of disposal of such offense cases. The compensation cases are easily disposed locally by the enforcement staff and the offenders are not involved in the long and tiresome court proceedings which are expected in the prosecution cases which are currently disposed by the lower courts at district level. For prosecution cases, the offender has to hire the services of lawyer and to attend the court proceedings in the nearby city – Abbottabad.

8.10 Summary

This chapter has presented the key findings of the research. The park resources improved during the last decade after the preparation of the management plan with the active involvement of the local communities. However, the improvement of the park resources cannot be attributed to the successful implementation of the approved policies envisaged in the planning document; rather, improved protection through a return to exclusionary management approaches is one of the factors for the overall improvement in park resources. At the same time, the analysis of the data indicates that another key reason for improvement of the park resources is due to the change in attitude and lifestyles of the local communities, which ultimately decrease the biotic pressures on the park resources. A number of reasons are identified for this attitudinal change.

Another key reason is the increase in the leopard attacks on the humans and the livestock, as a result of which the local communities are avoiding going to park area. Similarly, some of the local communities also banned their women folk from going to the ANP for grazing of animals and collection of firewood and fodder.

Besides the improvement in the park resources, there are a number of other factors that are simultaneously driving the park resources towards degradation. These factors primarily derive from a combination of poor governance and increasing human population pressure. Thus, if these problems are not addressed in an appropriate way, the future of park resources is bleak due to incompatible management objectives of the sister organizations and the dependency of the increasing local population on the park resources.

There is a need to ensure that the policies in the papers are implemented on the ground. This can ensure a decrease in park-people conflicts and simultaneously help in attaining the approved long-term objectives and overall goals of conservation of biodiversity. Toward this end, the dissertation turns, in the final chapter, to a set of recommendations for improved park resource governance.

Chapter 9

Transforming theory and practice of environmental governance: The future

9.1 Introduction

It is an accepted social scientific viewpoint that the exclusive model cannot solve problems in those regions where the state itself is a fundamental part of the complex problem (Swatuk, 2001). The current form of governance in Pakistan is inefficient, weak, corrupt and unaccountable (see Ahmed & Mahmood, 1998; Akhter *et al.*, 2010; Ali & Benjaminsen, 2004; Ali *et al.*, 2005; Blaikie & Muldarin, 2004; Gohar, 2002; Ives, 2004; Knudsen, 1996; Nyborg, 2002). Thus, in the current circumstances, there is no second opinion about the failure of the exclusive model – which is dependent on a capable and accountable state – in Pakistan to fulfill officially stated long-term conservation objectives. However, the inclusive model – which depends on effective state-civil society relation – is not an effective model either for halting the current unprecedented high rate of environmental degradation and for solving associated problems.

The literature shows that this is a problem not uncommon to the developing world, but, as this research shows, it is particularly pernicious in the case of Pakistan. Thus, the purported choice between using exclusive or inclusive models in protected areas, specifically in the context of developing countries, is debatable (see Stevens, 1997; DeFries *et al.*, 2007).

In order to conserve nature and natural resources in Pakistan, there is a need to improve the current ineffective governance and to ensure the meaningful participation of local communities in the conservation efforts of the government. Good governance practices aim to restrict corruption and incorporate the viewpoint of diverse stakeholders in decision-making processes (UNESCAP, 2011). Community based management systems can thrive well only in the presence of good governance (Menzies, 2004).

9.2 The rationale of suggested framework

In the literature, there is a plethora of generalized recommendations and suggestions for improving governance. The principles and characteristics of good governance are also explicitly discussed. Such recommendations, principles and characteristics of good governance are cast as universal and wide-ranging. Thus, their efficacy, especially in relation to specific local contexts, is questioned by the critics (see Chhotray & Stoker, 2010; Hubbard, 2001; Swatuk, 2009; Swatuk & Vale, 1999). Moreover, it is a common dilemma among all generalized policies

that their efficacy is compromised by abstraction and vagueness (the Millennium Development Goals being a case in point).

At the same time, several scholars argue that governance is a neglected topic in the field of environment (see Borrini-Feyerabend, 2005; Hempel, 1996). Keeping in the view those criticisms and the generality of the principles and characteristics of good governance as available in the literature, I suggest that in the context of the environmental field in general and parks and protected areas in specific, there should be a separate framework for overall effective environmental governance. Such an 'environmental governance framework' should not be based solely on general principles and broad characteristics, which are consequently difficult to apply at local levels, specifically in developing countries.

Similarly, the framework should avoid using one-size-fits-all policies imported by donors and other international conservation agencies. Such policies are the result of the 'bird's eye view approach' to the environmental issues. As shown in the literature review, these policies rarely work in developing countries as they lack the local context. Therefore, implementable policies need to look at the local environmental issues using a 'worm's eye view', without losing sight of the possible relevance of general principles based on international 'best practice'. As discussed below, place-based and site-specific policies will take care of the local context and prevailing perspectives. Such policies may more readily amalgamate relevant social and ecological dimensions, as they will be rooted in the ground realities of the livelihood needs of the people and their impact on their local environment.

9.3 Foundation of suggested framework

In the second chapter, I identified criteria for evaluating the effectiveness of different models. Based on that criteria and the research findings, I suggest that neither the strict form of exclusive nor the inclusive model can work in the ANP for attaining the long-term conservation objectives. Rather I support the idea of a hybrid approach as suggested in the literature about mixing of various planning theories and conservation models (see Alfasi & Portugali, 2007; Archibugi, 2007; Black & Wall, 2001; Briassoulis, 1989; Bunch, 2000; Hudson, 1979).

I therefore suggest the state-nested co-management system, identified by Carlsson and Berkes (2005). Figure 9.1 gives an idea about the relationship between the state and the community, whereby both are given due role. The state is the de facto holder of the legal rights in an area or a particular resource system, whereas the community is entrusted with certain rights and responsibilities.

Figure 9.1: Co-management as a state-nested system

(Source: Carlsson & Berkes, 2005)
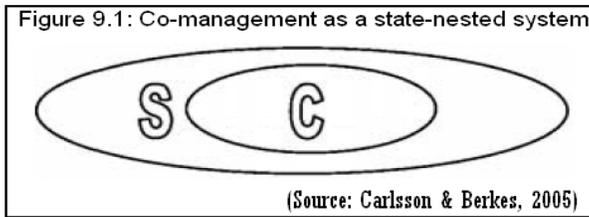
I further suggest that by mixing the exclusive and inclusive approaches, the strength of both can be combined together to overcome the weaknesses of both the models. Same is the rationale for blending the rational comprehensive planning model with the communicative planning model. Such blending can ensure the public participation, so that through participatory planning a more responsible implementation of plans can be ensured (Black & Wall, 2001).

9.4 The theoretical solution - Framework

Based on the above rationale and background, I developed a framework for effective governance and sustainable management of natural resources through active involvement of the local communities living in the surrounding villages of ANP. This framework is articulated in the Figure 9.2.

Figure 9.2: Framework for effective environmental governance and sustainable management of natural resources within ANP
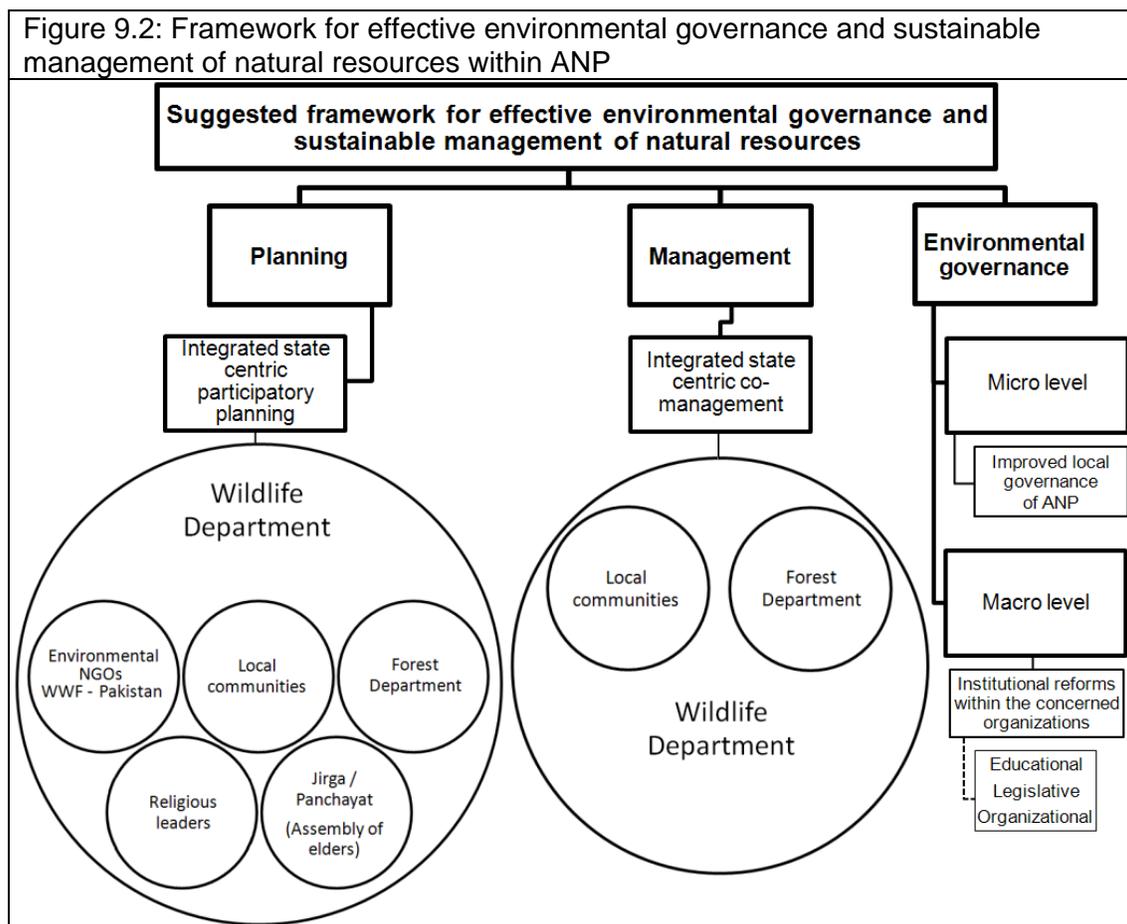
This can address the current issues, specifically those concerned with ineffective governance and weak management. For undertaking proper structural changes, I hence propose the following framework for effective environmental governance and sustainable management of natural resources, especially within the context of ANP.

This framework has three basic components:

1. Effective planning
2. Effective management
3. Effective environmental governance

These components are described as under:

9.4.1 Effective planning

In order to ensure effective environmental governance and sustainable management of natural resources within ANP, the integrated state-centric participatory planning model will be promoted. It is believed that in the traditional Pakistani society, winning the support of religious leaders is important, specifically for messages concerning environmental issues which are otherwise entirely in concordance with the teachings of Islam (Najam, 1995). The park management will take the lead role and they will ensure that the different stakeholders and other interest groups like religious leaders are involved in the park planning process. The outcome of the planning process should be in the form of a revised management plan for the park. For this purpose the park management has to ensure the active participation of the local communities, the Forest Department, environmental NGOs like WWF-Pakistan and IUCN-Pakistan, religious leaders and the members of local jirga / panchayat[33]. The participation of such diverse interest groups and stakeholders will ensure the broader acceptability of the planning document and will ensure that the prescriptions of the management plan are socially acceptable and environmentally sustainable.

9.4.2 Effective management

In order to ensure the effective environmental governance and sustainable management of natural resources within ANP, the integrated state-centric co-management model will be promoted. For this purpose, the park management will take the lead role and they will ensure that the two key stakeholders, i.e., local communities and the Forest Department, are actively involved in the routine park management. Such state-centric co-management model will ensure that the management objectives of the Forest and Wildlife Departments are not contradictory as

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[33] Assembly of local elders of the area.

repeatedly experienced in the past. Similarly, this model will also ensure the decrease in the park-people conflicts. The participation of the local communities in this model will be ensured through the Park Management Committee (PMC).

9.4.3 Effective environmental governance

For including the local context, I suggest that there should be two levels in the effective environmental governance: macro-level environmental governance and micro-level environmental governance. Both levels should take into consideration the local context. However, the macro-level environmental governance should address the broad principles which may be generalizable to a certain extent. Whereas the micro-level environmental governance should suggest the site-specific and place-based measures which cannot be generalized in a dissimilar context.

9.4.3.1 Macro-level environmental governance

In this case study research project, improved environmental governance at a macro-level is possible through proper institutional reforms, which ensures that the following ten factors are properly taken into consideration:

1. That for ensuring the strategic vision, consistency is developed among the management objectives of the concerned organizations (e.g., Forest Department, Wildlife Department and Forest Development Corporation),

2. That for consensus orientation, the management objectives of the concerned organizations do not conflict with each other and if there are any differing interests, then for reaching the best interest the environmental cause should get priority as opposed to immediate short-term benefits like revenue generation,

3. That for ensuring participation of various public sector organizations, a mechanism is developed where the sister organizations are bound to coordinate with each other and to come to mutually agreed best solutions aimed at conservation of nature and natural resources,

4. That for ensuring participation and equity among the stakeholders, all the marginalized groups should be involved in such a way that they are free to speak and their voice is heard and their apprehensions are addressed,

5.   That for ensuring accountability, the planning, monitoring and evaluation of the projects and other conservation and development initiatives are in the hands of experts and specialists and not in the hands of clerks, accountants or generalists,

6.   That for ensuring transparency, those who are entrusted to implement the policies in the field conditions should not be entrusted the responsibility to judge, monitor and evaluate their own performance through using the traditional positivist approaches like physical targets and financial targets,

7.   That for ensuring the rule of law, the collaborative management strategies are translated into actions and the traditional authoritarian management strategies are replaced within a fixed limited period of time with participatory strategies which ensure the fair participation of locals at the micro-level environmental governance initiatives,

8.   That for ensuring effectiveness and efficiency of the system, the protected areas, specifically National Parks, are made independent entities to generate revenues and to use that for improvement of the natural resources. Creation of park funds should be made mandatory, and the park should be given the autonomy to maintain the revenues in the long-term as opposed to depositing it in the government treasury at the end of each financial year,

9.   That for ensuring transparency as well as effectiveness and efficiency of the system, the utilization of park funds should not be in hands of a single department, rather it should be in the hands of those entities/organizational bodies which are created as a result of improved micro-level environmental governance strategies. It should have representatives from the concerned public sector organization, local communities and NGO's,

10. That for ensuring responsiveness, each National Park and other major protected area should have a vital Management Committee to serve all the stakeholders, oversee the routine management and decide the long and short-term strategies. This leads to hybrid planning arrangements where specialists are there to come up with scientific solutions, but local communities agree upon those, so that in future they own the planned initiatives. Simultaneously the scientists will have to base their decisions not solely on scientific grounds but they will have to take into consideration the ground realities that are responsible for exploitation of natural resources. In other words, the

rational comprehensive planning approach has to be mixed with a communicative planning approach as suggested in the literature.

9.4.3.2 Micro-level environmental governance

In this case study research project, improved environmental governance at micro-level is possible when the custodian government agency ensures that the following ten factors have been taken care of:

1. That a Park Management Committee (PMC) is constituted to ensure the participation of the local communities as well as the representative of the Forest Department. One individual is selected from each of the eight major villages to represent their communities and to act as a link between the local communities and the park management,

2. That the PMC ensures the participation of truly marginalized groups of the local communities as opposed to involving the local elites who are interested more in their personal benefits. The members of PMC should be nominated by local communities for certain fixed term and the members should be replaced through a proper mutually agreed formula,

3. That the PMC is entrusted with the task of ensuring the transparency in park management decisions and allied conservation activities,

4. That a transparent system of compensation is in place for damages due to livestock depredation by leopards and crop raiding by monkeys. The system should be developed with the active participation of the park management committee,

5. That a park trust fund is established, and the local communities, NGOs, multilateral donors and others are encouraged to contribute to the trust fund. Additional sources of income should also be identified like sale of publicity material, logos, proceeds from gate fees and park rest houses, donations, etc,

6. That a 'no objection certificate' is obtained from the provincial government regarding the park's rights in retaining the park revenues in the form of a trust fund for an indefinite period of time,

7. That a transparent system is developed in collaboration with the park management committee for using the trust fund for damages due to wildlife, payments of community watchers and other shared projects of the communities, aimed at conservation of the

associated biodiversity of the park and promotion of ecotourism in and around the park,

8. That firewood depots are established for a period of five years, and during this interim period extensive energy plantations are raised with the assistance of the Forest Department and the WWF-Pakistan, as both are already involved in the plantations,

9. That the management plan of the park is revised with the active participation of the local communities and on the basis of lessons learnt during the implementation of the first management plan,

10. That ecotourism is promoted in the area to compensate the local communities for bearing the cost of conservation and thus to benefit them from the ecotourism in a way that they value the park and its resources for their own benefits.

9.5 The practical solution – Approach

It is an established fact that without proper institutional reforms the implementation of the inclusive model is questionable at the hands of those government officials who represent the organizations where the protectionist style remained the norm for centuries (Ali, Benjaminsen, Hammad & Dick, 2005). Indeed, as shown above, the Forestry Department and certain forestry officers behave as though the park is their private property. The preceding section proposes a framework for moving beyond the current inefficient, weak, corrupt and unaccountable forms of governance. However, for implementing that framework, it is essential that proper institutional reforms are undertaken within the Wildlife and Forest Departments. Such institutional reforms should transform the current system which is not delivering the social and environmental goods as envisaged in the existing park management plan.

For initiating such institutional reforms, the dissertation proposes an approach for effective environmental governance, participatory planning and sustainable management of natural resources. This approach is articulated in Figure 9.3.

This approach anticipates the following three different types of institutional reforms:

1. Legislative reforms
2. Educational reforms
3. Organizational reforms

These reforms are described as under:

Figure 9.3: Institutional reforms for effective environmental governance, participatory planning and sustainable management of natural resources

Institutional reforms for effective environmental governance, participatory planning and sustainable management of natural resources

- **Legislative Reforms**
  - Participatory Wildlife Management
  - Joint Forest Management
- **Educational Reforms**
  - **Formal Educational**
    - Forest Management
    - Wildlife Management
    - Range Management
    - Protected Areas Management
    - Watershed Management
    - Natural Resource Monitoring
  - **Informal Education**
    - Schools
    - Media
- **Organizational Reforms**
  - General Management
  - **Specialized Units**
    - Planning, Monitoring & Evaluation
    - Coordination (International / Local)
    - Research and HRD

9.5.1 Legislative reforms

The current laws and associated legal documents have authoritarian nature and are based on the exclusionary approaches to natural resource management. The 'Khyber Pakhtunkhwa Wildlife Act of 1975' has no clear-cut provisions for community involvement in wildlife conservation and protected areas management, except for some minor provisions regarding management of community game reserves. Under the auspices of the Mountain Areas Conservancy Project of Global Environmental Facility (GEF) / United Nations Development Program (UNDP), some efforts were made in the past to amend the policies and the laws for promoting community-based conservation within the province. However, for the last many years, those proposed amended documents are gathering dust in the offices due to red tape and the irrational objections of the Forest Department.

As part of the legislative reforms, proper amendments are required in all the laws and other legal documents to ensure participation of the communities in the conservation efforts of the government. Amendments will also be needed to incorporate the proposal of creation of trust funds, retaining revenues in these trust funds, compensation of damages due to wildlife, inclusion of different stakeholders in planning and management of protected areas etc.

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9.5.2 Educational reforms

The contemporary forestry education and training has narrow scope and the Pakistan Forest Institute is primarily responsible for the pre-service training of the employees of the Forest Departments of all the provinces. The current forestry education is producing generalists who are trained in using coercive policing methods for resource management. As an outcome of such education and training, the generalist foresters consider timber harvesting and revenue generation as the key forest management initiatives. As the emphasis of forest education is primarily on the management and exploitation of the forests, so the outcome of such flawed education is evident from Pakistan having the second highest deforestation rate in the world. Experts therefore suggest that it is imperative that the public as well as the policy makers in Pakistan better understand the role of natural land cover against the intense consequential devastation of the deforestation (Stolton *et al.*, 2008). The emphasis of current forest education is thus flawed and has no future in the changed environmental paradigm, which gives much more importance to the social and ecological roles of forests and its associated wildlife, minor forest products, etc.

The overall weightage in terms of marks for Wildlife Management course in M.Sc. level is just 0.0083% (25/3000) and in B.Sc. level is just 0.0086% (25/2900). The irony is that the officers of the Wildlife Department still have to undergo such mandatory forestry education leading to B.Sc. or M.Sc. degrees in Forestry from PFI.

In order to address such issues, the current forest education needs substantial reorientation and restructuring, which is possible through appropriate educational reforms in the forestry sector. The need for such educational reforms has been previously advocated by many experts (see Anwar, 2007; Hannam, 2000; Sial, 2000; McGean *et al.*, 1996; Palit, 1996; Shinwari, 2010). The proposed reforms should place significant emphasis on producing specialists who also have generalist knowledge. To this end, it is recommended that the current two years B.Sc. Forestry course should be replaced with a three years intensive B.Sc. course work degree in which the basic common courses are taught during the first two years and the specialized courses are taught during the third year. Similarly, the current two years M.Sc. Forestry course, which is almost the same course as offered in B.Sc. Forestry, should be replaced with the specialized research based degrees where the focus is in the specialized courses. Specialization should be offered in Forest Management, Range Management, Watershed Management, Wildlife Management, Parks Management, and Natural Resources Monitoring.

It is public opinion that decides the future of wildlife and protected areas (Malik, 1994). In Pakistani society, three groups are essential and central in disseminating values, i.e., various religious reform movements, the schoolteachers and mothers (Najam, 1995). Thus for spreading conservation and environmental ethics within the traditional Pakistani society, it is imperative to engage these three groups. Thus, public awareness can be created at all levels of society through informal education. For this purpose, the schools and the media should be used to create conservation awareness and promote environmental education among the public in general and school students in particular. Similarly, awareness should be created about the commandments of Islam, which emphasizes the intrinsic value of an object and gives explicit attention to environmental protection.

9.5.3 Organizational reforms

The current organizational structure is favouring the generalists and has no scope for the specialists and the specialized units. Consequently, the responsibility for planning, finances, implementation, monitoring and evaluation lies with the same individuals / organization, which can be easily manipulated through interplay of greed and gifts. Those who are otherwise involved in the monitoring are mostly low paid clerks and they are incapable of conducting proper monitoring and evaluation of the projects and their finances. The zenith of current monitoring is to compare the figures of physical and financial targets with the physical and financial achievements. The result of such an ineffective system of monitoring is obvious in the form of widespread corruption within the organizations. Such organizational reforms have been undertaken in various countries of the world. The Kenya Wildlife Service (KWS) has been reorganized into three different divisions, i.e., biodiversity division, tourism division and partnership division (Reid & Sindiga, 1999).

As part of organizational reforms, a separate cadre of specialists should be introduced who will serve in the proposed specialized units: Research and Human Resource Development Unit; Planning, Monitoring and Evaluation Unit, and Coordination Unit.

The primary function of the proposed Research and Human Resource Development Unit will be to arrange short courses for the officers as well as the field level enforcement staff. For adaptive management, they also will be responsible to conduct field level research and to come up with proper lessons learnt from specific conservation and management initiatives. They will also arrange short-term trainings for the local communities to improve their skills to play a more effective role in the conservation of natural resources.

The primary function of the proposed Planning, Monitoring and Evaluation Unit will be to ensure that proper projects are prepared which are aimed at conservation of biodiversity as opposed to other secondary or least important objectives. They will be responsible to identify proper monitoring indicators and evaluation tools for each activity and project. They will also be responsible to ensure transparency of the implementation of designed activities within the field through field inspections and other monitoring indications.

The primary function of the proposed Coordination Unit will be to coordinate with the sister organizations and to ensure that the management objectives of the sister organizations are not contradictory. Moreover, this unit will also be responsible for coordinating with the international partners for implementation of the international conventions and understandings. This unit also will be responsible for interacting and coordinating with the international environmental NGOs and other multi-lateral donors for getting conservation and development projects.

9.6 Reflections on co-management theory

The essence of co-management theory is to devolve authority and include local user groups and multiple stakeholders in natural resources management. Thus, through participatory decision-making, both power and responsibility are shared for sustainable resource management. Co-management is based on the principle of subsidiarity (see Berkes, 2004; Plummer & Fitzgibbon, 2004) and accordingly in the context of protected areas, the success of co-management is considered as a new direction in planning theory (see Lane, 2001).

Both in theory as well as in practice, the term co-management has been used in a broad and general sense, and thus the concept is not very clear (see Berkes, 2007; Borrini-Feyerabend *et al.*, 2007; Carlsson & Berkes, 2005; Castro & Nielsen, 2001; Dearden *et al.*, 2005; Eagles, 2008; Menon *et al.*, 2007; Persoon & Est, 2003). Resultantly, and as shown in chapter 3, co-management theory is a disunited body of theory and pre-theoretical frameworks. It is therefore fair to conclude that there is no single theory of co-management on which its proponents or opponents can agree. Thus, it is not logical to strive for a single effective co-management model, which can work in varying socio-geo-political conditions. Within the context of developing countries, the generalized model of co-management can be very different as compared to the generalized model for developed countries.

Based on the theory and the lessons learnt from this research project, it can be concluded that the effectiveness of co-management arrangements is dependent upon certain

critical aspects. In Chapter 2, these were broadly outlined in Table 2.5. Here, those categories have been refined and reduced to three: political, economic and social-cultural.

9.6.1 Political factors affecting co-management

The four different political factors that are responsible for success or failure of co-management arrangements are democratic values, social cohesiveness, general literacy and environmental consciousness within the society, as identified in the figure 9.4.

Figure 9.4: Political factors affecting co-management
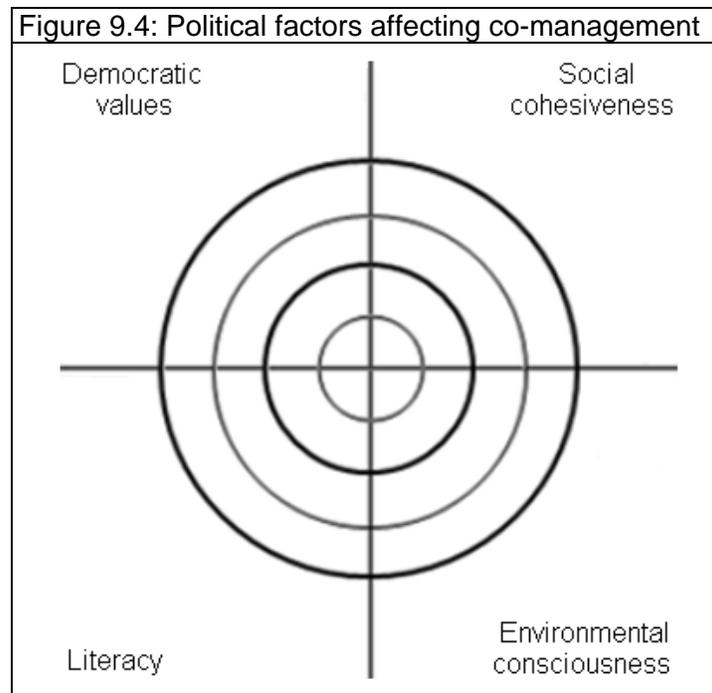
As suggested in this thesis, increasing concentration of these four decisive factors near the core also increases the chances of success of viable co-management arrangements within the community / society.

It is believed that in those societies which have a history of top-down political regimes, the locals consider themselves voiceless (see Wismer & Mitchell, 2005). Such conditions are mostly prevailing in countries being under the influence of non-democratic forms of government such as Martial Law, Dictatorship, Monarchy, one party rule etc. It is believed that democratization gives greater prominence to local interests, thereby enhancing the chances of both resource and social sustainability. Consequently, with the spread of democratization, the inclusive model – based as it is on democratic principles – spread throughout the world (see Hackel, 1999; Persoon & Est, 2003; Western & Wright, 1994). As shown in the case study above, however, this transfer of ideals as embodied in the inclusive model of co-management has resulted in unexpected outcomes.

Also contributing to the partial realization of the goals of co-management and to unexpected outcomes, is the complexity of society. Societies or communities are not homogenous entities; they are often divided based on ethnicity, class, caste, gender, religion, profession, economic or social status (see Borrini-Feyerabend, 1996; Brosius *et al.*, 1998; Carlsson & Berkes, 2005; Jeanrenaud, 1999; Menon *et al.*, 2007; Neumann, 2000). Therefore, in such complex situations there are chances that the powerful elites marginalize the weaker among the community. As shown in this thesis, powerful stakeholders such as the Forestry Department were reluctant to facilitate the implementation of the co-management plan. At the same time, the Wildlife Department chose to implement the project without participation of the communities. To overcome the weaknesses of co-management in such divided and unequal societies, purveyors of such forms of resource management must strive to work within the social parameters set by the particular case. With regard to Ayubia National Park, for example, the thesis argues that an entry point for sustainable management is through the elders of the communities that border on the resource. Donors too often focus on the formal structure of government in identifying suitable partners for resource management, in this case the Forestry and Wildlife Departments. However, at the local level, people's trust in authority resides with the elders of the community. These people, moreover, regard the formal government actors as part of the problem due to the historical exercise of power through policing and exclusion.

Theorists contend that conservation efforts in general and co-management initiatives in particular are successful in those societies which have a mature level of civic literacy and environmental consciousness (see Brand & Gaffikin, 2007; Briassoulis, 1989; Khanum & Gilani, 2005). Otherwise, there are chances that those individuals, who have little appreciation for conservation of natural resources and environmental protection, will abuse the co-management arrangements for personal gains. The findings of this thesis, support such a conclusion (see chapter 8 with regard to changing lifestyles).

Whether the exploitation of power is by the state functionaries or the elites of the society, such unfavourable political situations go against the basic essence of co-management. For addressing such power inequality within the society, the role of genuine leadership is vital for the success of co-management. However, the leadership is again associated with power, which can be abused for personal or political reasons. Thus, to minimize the chances of abuse of power by any stakeholder, it is imperative that proper amendments are made in the relevant laws, so that the powerful individuals have minimum chances for manipulating the co-management system. By having clear-cut provisions within the legal documents, it can be ensured that the policy regarding co-management is implemented in an appropriate manner at

lower levels of administration. In the presence of weak laws, the chances of success of co-management are also less (see Gizewski & Homer-Dixon, 1996; Swatuk, 2005).

9.6.2 Economic factors affecting co-management

Based on the findings of this thesis, it is clear that there are three major economic factors that are responsible for success or failure of co-management arrangements: (i) human and financial resources available with the concerned government agencies; (ii) local and national poverty levels and economic vitality; and (iii) revenue generated through conservation efforts.

The availability of both human as well as financial resources is a prerequisite for the success of any co-management model (see Borrini-Feyerabend, 1999; Danielsen *et al.*, 2009; Gizewski & Homer-Dixon, 1996; Terborgh, 1999). If sustainable resource management objectives are to be realized, these resources are needed right from the initial design phase to the outreach and involvement of local communities in co-management initiatives up to and including the program's long-term monitoring and evaluation. Regular monitoring can ensure the efficacy of co-management, once the concerned agencies have both the human and financial resources at hand to get involved in the long-term investments associated with the monitoring (see Hoernig & Seasons, 2004; Spellerberg, 1991). Thus, because successful co-management is dependent upon the concerned park agencies having sufficient financial and human resources (see Borrini-Feyerabend, 1999), the chances of success are greater in industrialized countries, where protected areas are generally seen as being separate from the livelihood needs of rural people (see Lane, 2001; McNeely, 1984). At the same time, the chances of success are less in societies struggling with poverty, economic stagnation, rapid population growth and environmental deterioration at both national (so having limited national resources available for parks) and local (where rural people see the park as part of their livelihood base) levels (see Hackel, 1999; Gizewski & Homer-Dixon; 1996; Swatuk, 1995).

For successful co-management arrangements and sustainable resource use, continuous flow of funds and revenues is obligatory. Therefore, the chances of success of co-management arrangement are more in those areas where enough revenue is generated from the conservation efforts (see Hackel, 1999; Swatuk, 2005). The trophy hunting of Markhor (*Capra falconeri*) in Pakistan is a symbolic example of successful co-management due to revenue generated from conservation (see section 2.3.5.6 for details). Such revenues can be augmented from the donors, state or even the local communities, if there is a transparent system in place. The idea of a trust fund established for this purpose can be productive for the long-term

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conservation efforts, especially in those countries where conservation does not become a government priority (see Danielsen *et al*., 2009; Terborgh, 1999). The continuing absence of revenue generating activities in the case study area suggests future difficulties for resource management.

9.6.3 Social-cultural factors affecting co-management

As international conservation organizations follow the Western approach to conservation, so these approaches cannot be replicated successfully in developing countries of the world due to their completely different history, culture, values and norms (See Guha, 1989). Historically, the co-management model was mostly adopted in Western Europe (see Borrini-Feyerabend, 1996), where the society is not so much fractured as in rural areas of developing countries. The ideal co-management model generally regards the community as a 'homogenous entity' and emphasizes 'participation' of all social groups in resource management.

It is however not possible to have such an ideal homogeneous community in a real life situation. Specifically, as described in the case study area, and tribal societies in particular, it is virtually not possible to have a coherent society, interested in achieving singularly agreed upon group objectives. Likewise, access to all stakeholders is difficult based on cultural and religious grounds, which resultantly affects the implementation as well as monitoring of the co-management model. In this research study, for example, efforts were repeatedly made to conduct separate focus group interviews with women. However, based on religious and cultural barriers, such efforts proved futile.

Similarly, the co-management theory places emphasis on 'participation' of different stakeholders especially 'community'. However, participation itself has different meanings, when it is put into practice (see Ananda, 2007; Buchy & Hoverman, 2000; Korfmacher 2001). Critics therefore argue that the conservation agenda is being diluted due to the emphasis on 'community' and 'participation' (see Berkes, 2004). The findings of this thesis suggest that it is neither community nor participation that dilutes or disrupts the conservation agenda. Rather, it suggests that both community and participation are central elements of success if and only if they are understood in the proper local social, cultural and geographic contexts. For example, in the study area, international conservation agencies sought to establish Community Based Organizations (CBOs) for both men and women within the community. However, they overlook the social and cultural barriers, which became a hurdle in establishing female organizations in traditional conservative societies. These outside interventions, then, become disruptive to the local social order and often lead to the opposite effect of that intended (see below).

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9.6.4 Monitoring of co-management arrangements

Monitoring is an important part of the planning canon and an integral activity of protected areas management, but it is being overlooked and underused in practice (See Burger, 2006; Danielsen *et al.*, 2009; Hockings *et al.*, 2000; Holling, 1978; Marsh & Trenham, 2008; Seasons, 2003b; Vos, Meelis & Ter Keurs, 2000) or subsumed (and therefore watered-down) under general frameworks such as 'governance'. One of the key factors responsible for policy failure in the case study area is the absence of an effective monitoring mechanism within the concerned government agencies.

Based on the findings, it is clear that monitoring in co-management arrangements should be concentrated at four distinct levels: policy, process, people and product. The following questions need to be addressed:

- Policy – Are co-management arrangements working in a specific socio-geo-political conditions?
- Process – Are the powerful state actors properly involving local communities in co-management?
- People – Are the different stakeholders who have varying interests within the community being genuinely involved and representative of the concerned community?
- Product – Are there any improvements in the resources for which the co-management arrangement was developed in the first place?

The same individuals, who are responsible for the implementation of the co-management arrangements, should not perform such monitoring at any of the four distinct levels mentioned above. Rather, the monitoring should be done by an independent specialists, who uses proper social, biological and economic indicators for judging the efficacy of monitoring and evaluation of co-management arrangements.

9.6.5 Recommendations

In societies where the literacy rate is low and environmental consciousness is lacking, a viable compromise solution can be state-centric co-management arrangements, where the state is de-facto holder of the legal rights, but it shares power and responsibilities with the various stakeholders for sustainable resource management.

This case study as well as the review of literature supports the perspective that in developing countries the switch to co-management is mostly under the influence of donors, international conservation agencies and strong environmental NGOs (see Persoon & Est, 2003). Thus, the most effective option can be one, in which the donors and international

conservation agencies tie the international assistance with the availability of proper co-management system in place along with complete support to that system in the concerned laws and regulations. If the system is not in place, then the concerned government has to ensure the proper amendments within the relevant laws of the land, in a fixed period. Amendments are not required only to support and ensure the participation of the local communities in co-management, but the amendments must take care to incorporate the proposal of trust funds, so that the financial limitations may not become a hurdle in co-management arrangements. Such trust funds should be provided with appropriate autonomy to retain the revenues for an indefinite period of time and to generate revenues on their own.

For increasing conservation awareness and environmental consciousness, both formal and informal methods should be used. In traditional conservative societies, religious beliefs can be integrated in the conservation efforts (see Gardner, 2006; Najam, 1995; Wilson, 2006) and to increase the chances of co-management in the long-term.

Over time, when the local communities develop an appreciation for the conservation of natural resources and environmental protection, the state-centric co-management system can be replaced with an alternative co-management system, whereby more power and responsibilities are transferred to the local communities. However, such devolution and decentralization should be part of a long-term conservation agenda, as in the short-term project mode there are meagre chances of success of co-management arrangements (see Ghimire & Pimbert, 1997; Menon *et al.*, 2007). Some regard the term state-centric co-management as an oxymoron. However, based on the findings of this case study, it is clear that the state must have a strong presence in partnership with communities that require improved literacy, conservation awareness, and so on. Thus, time is a decisive factor for maturity and establishment of co-management arrangements (see Jeffery & Vira, 2001). It is believed that establishment of proper institutions and development of social capital may take 10-15 years for changing the laws and building the institutions (Berkes, 2004; Thomas, Gardner & DeMarco, 2001). Therefore, success of co-management arrangements in the short-term project mode is questionable as observed in the case study area.

For co-management arrangements in the developing countries, the existing local institutions and social arrangements should be used (see Vira & Jeffery, 2001), as against establishing new organizations based on the suggestions of those donors who have little knowledge about the norms and values of the developing countries.

Keeping in view the above arguments, it is obvious that there is no single effective model of co-management. Rather, keeping in view the basic principles of co-management and

effective governance, the co-management model should be developed on site-specific and place-based realities. The political, economic and social-cultural factors as discussed above can help develop a co-management arrangement, which has wider acceptability among the range of stakeholders. The thesis shows that, in attempting to implement a 'one-size-fits-all' co-management program based on general categories derived mainly from Western models, more problems were created than were solved. In the view of this author, exposure to a donor-dictated co-management model (based on the creation of new institutions such as CBOs), combined with partial implementation without a sophisticated understanding of the local context, served only to disturb a delicate balance between the state and local communities. At the end of the day, all that was realized was a return to exclusive management models and heightened levels of enmity between people and park managers.

9.7 Summary

In this chapter, I highlighted the difficulties in effectively realizing park management goals in conditions of ineffective and corrupt governance. In order to move toward more effective governance, the chapter provided a detailed description of my suggested framework for effective governance and sustainable management of natural resources. Its three components, i.e., effective environmental governance, effective management and effective planning, are explained. To move beyond this theoretical framework for effective governance and sustainable management of natural resources, a practical approach concerning institutional reforms is necessary. To this end, the chapter describes the shape of three distinct institutional reforms: legislative, educational, and organizational. The chapter further relates the case study back to the theoretical literature, suggesting that co-management approaches must be place-based and site-specific, have sufficient financial and human resources, be anchored in relevant policies and laws, be under the guidance of appropriate socio-political and socio-cultural leadership, involve local communities in a meaningful way, and be committed to over a long time horizon, if they are to realize their objectives.

Based on the research findings, I have the firm belief that such a proposed framework and approach can definitely improve the resources of Ayubia National Park and will also minimize park-people conflicts. Moreover, some parts of this framework and approach are flexible and can be generalized by making proper adjustments according to the site-specific and place-based realities of other protected areas.

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Appendix

Appendix 3.1: Concepts and terms identified for collaboration in natural resource management

Term	Concept
Mutual aid	In the practice of human aid we can retrace the earliest beginning of evolution, we thus find the positive and undoubted origin of our ethical conceptions, and we can affirm that in the ethical progress of man, mutual support- not mutual struggle- has had the leading part. In its wide extension, even at the present time, we also see the best guarantee of a still loftier evolution of our race (Kropotkin, 1902).
Adaptive management	A guiding principle for the design of the interface between society and biosphere, between community and ecosystem, between household and environment…. The release of human opportunity requires flexible, diverse and redundant regulation, monitoring that leads to corrective action, and experimental probing of the continually changing reality of the external world…. The emphasis is on social learning about the complex adaptive systems of which we are a part. Human institutions are crucial factors in this learning (Holling, 1978 and others quoted in Roling & Maarleveld, 1999).
Participation	Organized efforts to increase control over resources and regulative institutions in given social situation, on the part of groups and movements of those hitherto excluded from such control (UNRISD, 1979).
Networking	A number of autonomous… groups link up to share knowledge, practice solidarity or act jointly and / or simultaneously in different spaces. Based on moral (as distinct from professional or institutional) motivations, networks are cooperative, not competitive. Communication is of their essence…. Their raison d'etre is not in themselves, but in a job to be done… They foster solidarity and a sense of belonging. They expand the sphere of autonomy and freedom. The source of the movement is the same everywhere- people's autonomous power- and so is their most universal goal, survival (Nerfin, 1986).
Co-management	… A political claim (by local people) to the right to share management power and responsibilities with the state … (McCay & Acheson, 1987).
Co-management	A political claim (by users or community) to share management power and responsibility with the state (McCay & Acheson, 1987).
Collaboration	The pooling of appreciation and/or tangible resources (e.g., information, money, labour) by two or more stakeholders to solve a set of problems neither can solve individually (Gray, 1989).
Popular participation	As an end in itself, popular participation is the fundamental right of the people to fully and effectively participate in the determination of the decisions which affect their lives at all levels and at all times (African Charter for Popular Participation in Development and Transformation, 1990).
Co-management	The shared decision-making between local resource claimants and formally trained resource managers on policies guiding the use of protected areas (Rao & Geisler 1990).
Community forestry	The control and management of forest resources by the rural people who use them especially for domestic purposes and as an integral part of their farming system (Gilmour & Fisher, 1991).
Co-management	The sharing of power and responsibility between government and local resource users (Berkes, George & Preston, 1991).

Co-management (of protected areas)	The substantial sharing of protected areas management responsibilities and authority among government officials and local people (West & Brechin, 1991).
Democratisation	The act of subjecting all interests to competition, of institutionalizing uncertainly. The decisive step towards democracy is the devolution of power from a group of people to a set of rules (Prezworki, 1991).
Co-management	Power sharing in the exercise of resource management between a government agency and a community organization of stakeholders (Pinkerton, 1992).
Joint forest management	Collaboration in forest management between with legal authority over state owned forests and the people who live in and around these forests (Fisher, 1995).
Environmental partnerships	Voluntary, jointly defined activities and decision-making processes among corporate, non-profit, and agency organizations that aim to improve environmental quality or natural resource utilization (Long and Arnold, 1995).
Collaborative management	A situation in which some or all of the relevant stakeholders in a protected area are involved in a substantial way in management activities (Borrini-Feyerabend, 1996).
Co-management	A partnership by which various stakeholders agree on sharing among themselves the management functions, rights and responsibilities for a territory or set of resources under protected status (Borrini-Feyerabend, 1996).
Joint protected area management	The management of a protected area and its surrounds with the objective of conserving natural ecosystems and their wildlife, as well as of ensuring the livelihood security of local traditional communities, through legal and institutional mechanisms which ensure an equal partnership between these communities and governmental agencies (Kothari *et al.*, 1996).
Participation	A process through which stakeholders influence and share control over development initiatives and the decisions and resources that affects them (World Bank, 1996).
Collaborative management for conservation	A partnership in which government agencies, local communities and resource users nongovernmental organizations and other stakeholders negotiate as appropriate for each context, the authority and responsibility for the management of specific area or set of resources (IUCN, 1996).
Co-management	True co-management goes far beyond mere consultation. With co-management, the involvement of indigenous peoples in protected areas becomes a formal partnership, with conservation management authority shared between indigenous peoples and government agencies … or national and international non-governmental organisations [...] true co-management requires involvement in policy-formulation, planning, management and evaluation (Stevens, 1997).
Affirmative democracy	In analogy to (the concept of) "affirmative action" prevailing in the USA, in affirmative democracy marginalized social groups are to be given the same capacities and rights as those enjoyed by the groups of top (Navarro, 1997).
Collaborative management agreement for a conservation initiative	Representatives of all key stakeholders agree on objectives for the conservation initiative and accept specific roles, rights and responsibilities in its management…. [They] ensure that the trade offs and compensations are clear and that all parties are aware of the commitments made by others (Borrini-Feyerabend, 1997).
Patrimonial	Patrimonial refers to all material and non-material elements that maintain and develop

mediation	the identity and autonomy of the holder in time and space through adaptation in a changing environment ....The mediation establishes long-term patrimonial objectives, legitimates them by culturally appropriate rituals, elaborates strategies to achieve the objectives and sets up natural resource management organizations (Weber, 1998).
Stewardship	People taking care of the earth … a range of private and public approaches to create, nurture and enable responsibility in users and owners to manage and protect land and natural resources (Mitchell & Brown, 1998).
Shared production regimes	Regimes that produce goods or services by utilizing inputs from at least two individuals or legal entities which are not part of the same organisation and are not part of the same principal. Each party independently decides the level of input to contribute to the shared production process and the overall goal or goals are jointly determined. Responsibility for bearing the costs of inputs is negotiated between the partners as is the share of any eventual profit and no single entity has the right to modify these terms unilaterally (Vira *et al.*, 1998).
Natural resource co-management	The collaborative and participatory process of regulatory decision-making among representatives of user-groups, government agencies and research institutes (Jentoft *et al.*, 1998).
Co-management	A system that enables a sharing of decision-making power, responsibility and risk between governments and stakeholders, including but not limited to resource users, environmental interests, experts and wealth generators....Essentially a form of power sharing … by degrees… through various legal or administrative arrangements…often implying a discussion forum and a negotiation /mediation process (NRTEE, 1998).
Pluralism	The recognition of the presence and role of multiple actors and their influence in shaping the performance of both natural systems and man-made institutions (Ramirez, 1998).
Democratic experimentalism	Citizens in many countries directly participating with government in solving problems of economic development, schooling, policing, the management of complex ecosystems or drug abuse. Central governments of nearly all political colours at times encourage these developments by devolving authority to lower levels and loosening the grip of public bureaucracies on the provision of some services while wholly privatising others. At times they simply tolerate local experimentation by waiving formally, or through inaction, their statutory rights to specify how programmes are administered (Sabel, 1998).
Co-management	The term given to governance systems that combine state control with local, decentralized decision making and accountability and which, ideally, combine the strengths and mitigate the weaknesses of each (Singleton, 1998).
Community Based Conservation (CBC)	Conservation efforts that involve rural people as an integral part of a conservation policy. The key elements of such programs are that local communities participate in resource planning and management and that they gain economically from resource utilization (Hackel, 1999).
Platform for collective action	A negotiating and/or decision-making body (voluntary or statutory) comprising different stakeholders who perceive the same resource management problem, realize their interdependence in solving it, and come together to agree on action strategies for solving the problem (Stein & Edwards, 1999).
Collaborative management	A situation in which some or all of the relevant stakeholders in protected areas are involved in a substantial way in the management activities (Borrini-Feyerabend, 1999).

Co-management	The world bank has defined co-management as 'the sharing of responsibilities, rights and duties between the primary stakeholders, in particular, local communities and the nation state (The World Bank, 1999).
Co-management	A decentralized approach to decision-making process as equals with the nation-state (The World Bank, 1999).
Co-management of natural resources (also participatory, collaborative, joint, mixed, multi-party or round table man agreement)	A situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources (Borrini-Feyerabend *et al.*, 2000).
Collaborative management	The partnership of local communities of forest users (almost always an identifiable group) with government in the management of a public resource. This partnership ideally takes the form of control and management of forest resources by rural people, who use government staff as advisers, rather than as protection and enforcement agents (Vira & Jeffery, 2001).
Community conservation	Those principles and practices that argue that conservation goals should be pursued by strategies that emphasize the role of local residents in decision-making about natural resources (Adams & Hulme, 2001).
New social partnerships	People and organisations from some combination of public, business and civic constituencies who engage in voluntary, mutually beneficial, innovative relationships to address common societal aims through combining their resources and competencies (Nelson & Zadak, 2001).
Deliberative democracy	Deliberation is the "careful consideration" of the "discussion of reason and against". Inclusion is the action of involving others, with an emphasis on previously excluded citizens. Deliberative inclusionary processes enable participants to evaluate and re-evaluate their positions in the light of different perspectives and new evidence. Democracy without citizen deliberation and participation is ultimately an empty and meaningless concept (Pimbert & Wakeford, 2001).
A management-centered paradigm	In contrast with a benefit-centered paradigm, this approach to community participation is concerned with transforming the way the forest is managed and seeks to achieve this through a transfer of responsibility with authority to the forest – local communities. This is a power sharing rather than a product-sharing process (Alden Wily & Mbaya, 2001).
Co-management	Set of institutional arrangements for park management that facilitates the development of an effective partnership between local stakeholders and conservation planners (Lane, 2001).
Decentralization (de-concentration) Privatization (delegation) Democratic	Decentralization is any act in which a central government formally cedes powers to actors at lower levels in a political –administrative and territorial hierarchy. De-concentration involves the transfer of power to lower branches of the central state, such as perfects, administrators or local ministry agents. Privatization is the transfer to non-state entitles, including individuals, corporations, NGOs, etc. Democratic decentralization is the transfer to authorities representatives of and downwardly

decentralization (devolution)	accountable to local populations (Ribot, 2002).
Multi-stakeholders processes	Processes that bring together all major stakeholders in new forms of communications and decision-finding (and possibly decision-making),... recognize the importance of equity and accountability… and the democratic principles of transparency and participation (Hemmati, 2002).
Sound Governance	Sound governance is based on the application of UN principles, such as legitimacy and voice (through board participation and consensus-based decisions), transparency and accountability, performance (including responsiveness to stakeholders, effectiveness and efficiency), fairness (equity and the rule of law) and direction (including strategic vision and the capacity to respond to unique historical, cultural and social complexities) (Institute on Governance, 2002).
Public involvement in governance	Public involvement is generally recognised to have three pillars: public access to information, public participation in decision-making process and access to justice. As a practical matter, it is also implicates the right to free association and free speech. These rights operate synergistically. (Bruch & Filbey, 2002).
Co-management	The sharing of power, responsibilities and benefits with respect to the many of natural resources (including their exploitation and conservation) among government and individual as collective users (Persoon & Est, 2003).
Co-management	The sharing of management power and responsibility usually refers to a two-link partnership between community and government (Berkes, 2004).
Co-management	A power sharing arrangement occurring between state-based and community-based systems (Carlsson & Berkes, 2005).
Co-management	This refers to arrangements whereby local people and their organizations are given responsibility for decision-making about access to and use of natural resources, in exchange for assured benefits, through agreements with government authorities (Tyler, 2006).
CBNRM	Any situation where the local community is involved in some manner in the management of natural resources in its immediate environment (Menon, 2007)
Co-management	The sharing of management, power and responsibilities between governments, resource users, and resource based communities (Charles, 2007)

Appendix 3.2: Matrix for components and monitoring of integrated and sustainable planning and management of natural resources.

	Relevance	Outputs	Monitoring
Inclusive / anthropocentric approaches to conservation (Co-management)	In a traditional developing country set up, the planning and management of natural resources in general and the protected areas in particular are the subject of the relevant government agencies. In most of the developing countries, the concept of co-management has been tested in isolated cases, either due to the popularity of the co-management approach or due to requirements of the international conservation agencies and donors. Consequently, the arrangements for implementing co-management approaches are weak in the third world countries. The relevant agencies as well as the local communities face such weaknesses in the implementation stages. In order to use co-management approach for the planning and management of natural resources, there is a need to develop and strengthen the institutional as well as human capacities of the stakeholders. The communities should be helped to realize and understand the value of natural resources. Similarly, it is imperative to identify proper components of biodiversity, which can be used sustainably by the local communities as an incentive for bearing the cost of conservation. The relevant government agencies need to assist the local communities in marketing those products, with minimum involvement of intermediaries. Likewise, there is a need to establish appropriate biological, social and economic indicators for monitoring the process and assessing the resources. Finally, the establishment of conservation fund is also essential to ensure the sustainability of co-management process and the management of natural resources.	• Institutional and human capacity of the communities will be developed and strengthened to conserve the local natural resources • All the stakeholders will be involved in the design, planning, management, and monitoring activities • Proper resource management plans will be conceived together by the concerned agency, local communities and all other stakeholders, on the basis of site-specific and place-based realities and experiences • Appropriate social, economic and biological indicators will be established to monitor conservation efforts, jointly by all the stakeholders • Communities will be connected with various donors and conservation organizations to enable them undertake future conservation initiatives without assistance of any government agency • Components of biodiversity that are appropriate for sustainable use will be identified and marketed as an incentive to local communities • Conservation policies and regulations will be amended in a way that better supports inclusive conservation approach (co-management) • Conservation funds will be established for sustainable management of natural resources and recurring the management costs • Protected area is financially sustainable	• Presence of viable community level organizations • Conservation plans are prepared and implemented by the stakeholders as envisaged during preparation • All the caste, class, ethnic, age groups are represented in the community organizations • Communities are undertaking proper resource surveys to assess the status of various resources • Communities are controlling poaching, smuggling and illicit use of resources • Proper monitoring and evaluation system is in place at different levels • Both communities and the concerned agency are participating actively in timely monitoring surveys and are jointly preparing the monitoring reports • Volume / quantity of sustainably harvested products marketed by the local communities • Preparation and implementation of proper resource management plans for sustainably harvested products • Revenue generated from the exploitation of sustainably harvested products • Proper policies and regulations are in place that supports co-management approach • Local communities are granted usufruct rights for sustainable harvesting of resources • Agreed proportion of the revenue / proceeds generated from sustainable use of harvested products is deposited in the conservation funds • Conservation fund is in place • Management committees are dealing independently with the donors and conservation organizations • Conservation funds are augmented through donations and financial assistance of various donors • Management committees are in place

|	Relevance	Outputs	Monitoring
Exclusive / bio-centric approach to conservation	In most of the developing countries, natural resources in general and the protected areas in particular are managed according to the exclusive approach. The concerned agencies uses different sorts of surveys to assess the status of flora and fauna and other ecological processes. Similarly, policing and law enforcement is the basic management tool in this approach. Court cases are filed against the violators or the cases are compounded locally by imposing penalties and fines on the violators. In such planning and management approach, the experts act in isolation and the local communities are alienated. Resultantly, the pressure on the natural resources increases and the conflicts between the relevant government agencies and locals increases as well. This sometime also results in anonymous crimes.	• Improvement in the status (species richness, species diversity, species frequency) of different flagship, keystone and rare species • Increase in the density of the vegetation • Improvement in the structure of vegetation. • The presence of top predator species in the area, • Relative abundance of prey and predators in the conservation area • Occurrence of indicator species. • The court cases filed against violators of the law, • The incidences of subsistence or commercial hunting, poaching, grazing, etc • The incidences of anonymous crimes like poaching, illicit tree felling, induced fires, retaliatory killing of wildlife	• Periodic surveys are conducted to assess the status of flora and fauna of the area (more importance to the keystone, flagship, rare and endemic species) • Number of offence cases • Number of the court cases filed against violators • Attainment of financial targets • Status of implementation of prescriptions of the management plan • Number of depredation cases around the PA. • Degree of offences related to retaliatory killing of predator and other vermin species

	Relevance	Outputs	Monitoring
Environmental education	In most of the developing countries, the literacy rate is low, and resultantly the conservation awareness is also limited among the masses. Likewise, if the locals are not involved in the planning and management of natural resources, then such circumstances, totally head towards environmental disasters. It is therefore essential to increase the environmental awareness among the masses through one or the other way. Waiting for improving the overall literacy rate and subsequent awareness of the environmental matters is not a choice in the given conditions, when the environmental degradation is at its unprecedented higher rate. The local communities need to be educated about the values of conservation, wildlife, protected areas, etc. Various techniques should be used for this purpose, including the distribution of different types of publicity material, advertising the conservation messages in newspapers, radio, TV, etc. Information centres attract many people and serves as a hub for dissemination of conservation awareness. Conservation education imparted in schools has deep imprint on individuals, so proper conservation education programs need to be initiated in schools, where the students attend relevant lectures and also take part in competitions like debates, painting, photography, visits to wilderness areas etc.	• Conservation values and principles of protected area management will be imparted to the local communities • Publicity / extension material will be distributed • Conservation messages will be advertised in print and electronic media • Information centres will be established for disseminating information about various components of biodiversity, • Conservation education programs initiated in schools	• Quantity of publicity material distributed • Number of individuals visiting the information centres • Number of conservation education initiatives started in schools • Students enrolled in conservation education initiatives in schools • Attitudinal change (Long-term)

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	Relevance	Outputs	Monitoring
Integration of religious beliefs in conservation	Both the exclusive as well as inclusive approaches to conservation failed to deliver as promised. In the given circumstances, there is a need of shift in philosophy, wisdom and judgments. About 85% of the global population follows one of the many religions. Thus, religious beliefs play an important role in the life of individuals. Use of such beliefs can be helpful in conservation as well. The Vth World Parks Congress emphasized that attention should be given to the religious practices, while devising the protected areas strategies. Religious scholars and leaders can thus play a very significant role in this regard, especially in those developing countries, which harbour diverse flora and fauna, and where religion is an important factor in the life of an individual.	• Meetings held between environmentalists and religious leaders for joint cause. • Guidebook developed according to local conditions for integrating religious beliefs in conservation initiatives. • Sermons delivered by religious leaders about the conservation and environmental issues.	• Number of meetings held • Number and copies of guidebook distributed • Number of sermons delivered • Attitudinal change (Long term)

Appendix 5.1: Forestry courses offered in Pakistan Forest Institutes, Peshawar

M.Sc. Forestry course (2 Years)			B.Sc. Forestry course (2 Years)	
Subjects	Maximum marks		Subjects	Maximum marks
Mensuration & Biometrics	100		Mensuration & Biometrics	150
Conduct and Extra Curricular Activities	100		Class room Performance marks	100
Exploitation / utilization of Forest Products	75		Forest Utilization	175
Field Engineering	50		Field Engineering	50
Fish & Wildlife Management	50		Fish & Wildlife Management	50
Forest Ecology	100		Forest Ecology	125
Forest Engineering - (Building + Roads)	150		Forest Engineering	125
Forest Genetics	50		Forest Genetics	25
Forest Law and Policy	100		Forest Law & Policy	75
Forest Management	100		Forest Management	75
Forest Management Plan	100		Forest Management Scheme	100
Forest Protection (Entomology)	75		Forest Protection (Entomology)	75
Forest Protection (Pathology)	75		Forest Protection (Mycology & Pathology)	50
Forest Surveying	100		Forest Surveying	100
General Silviculture	100		General Silviculture	175
Forest Mathematics	75		Forest Mathematics	75
Photogrammetry & Photo-Interpretation	75		---	------
Plant Taxonomy	75		Plant Taxonomy	75
Forest Economics	50		Forest Economics	75
Range Management	125		Range Management	125
Recreation & Park Management	50		Recreation and Park Management	50
Research & Research Methods	50		Research Methods	50
Resource Economics	75		---	------
Seminar on Silviculture	50		Term Paper	25
Sociology, Public Admn & Extension	50		Sociology, Public Admn & Extension	50
Soil Science & Geology	100		Soil Science & Geology	125
Soil-Plant-Water Relationship	50		---	------
Statistics	50		Statistics	50
Timber Technology & Forest Industries	100		---	------
Watershed Management	125		Watershed Management	150
Tour Examination	275		Tour Examination	175
Viva Voce of all courses studied in Two years	100		Viva Voce	100
Specialization (Thesis/Research Project)	200		Forest Biology	125
---	------		Islamiat	60
---	------		Pak Studies	40
---	------		Forest accounts and procedures	50
---	------		Specimen Botanical and Zoological	50
Total Marks	**3000**		**Total Marks**	**2900**

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Appendix 5.2: Administrative units of Khyber Pakhtunkhwa Wildlife Department
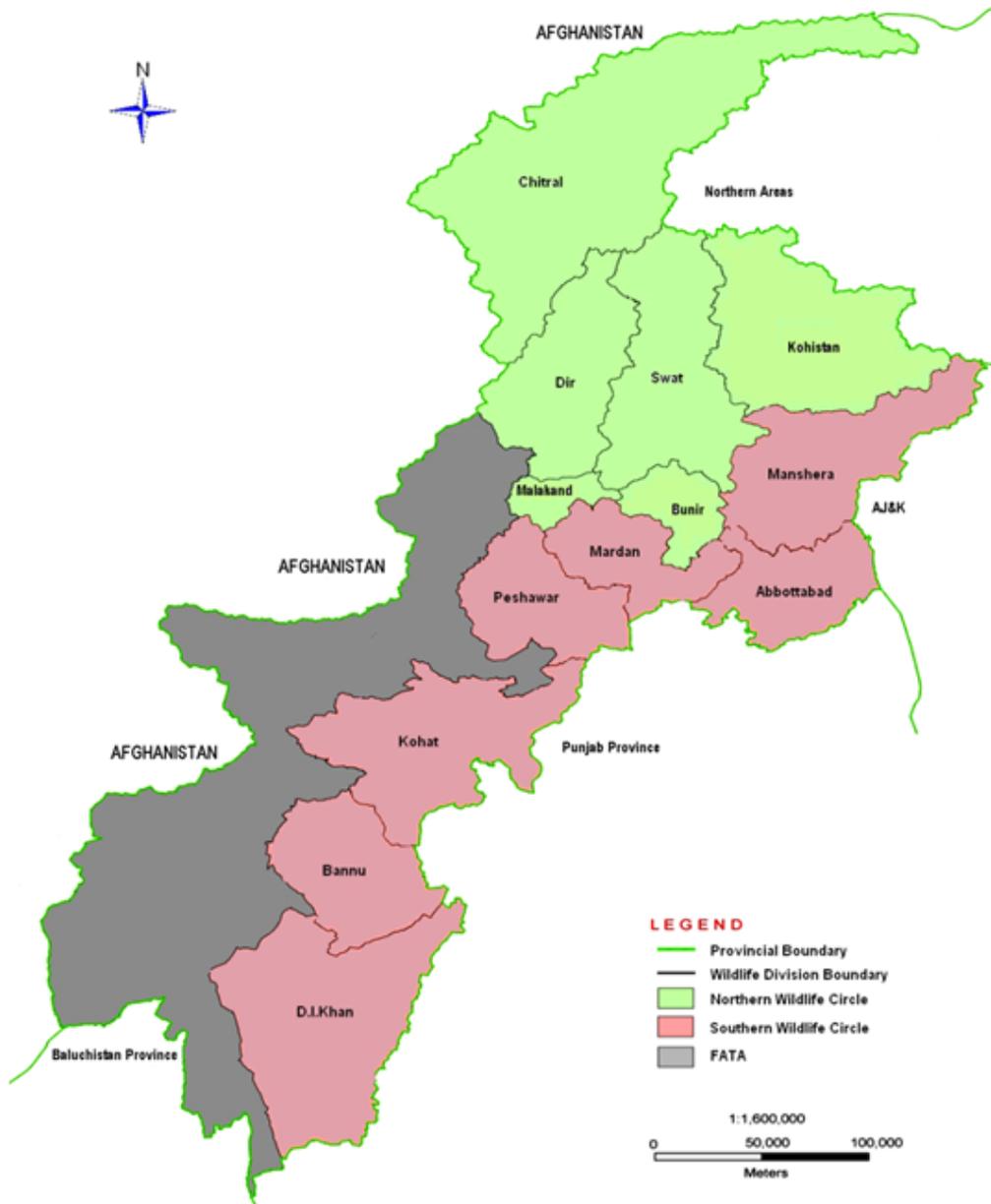
Appendix 5.2: Questions for interviews

The major question that was investigated in the study is as under:

> *To what extent has the change in governance policy of the wildlife department*
> *from the conventional exclusionary management to the co-management affected*
> *park resources?*

The three sub-questions, which were investigated, from officials of Wildlife Department, representatives of NGOs and other interest groups are as under:

Sub question a:

Is there any change in the consumption of park resources by local communities?

Questions for officials of Wildlife / Forest Department

1. Do you consider that the park resources are improving or degrading since the approval of the management plan in 2002? What are the reasons for improvement / degradation?
2. Is there any change in the grazing and extraction of firewood, fodder and NTFPs from the park?
3. Is the consumption of firewood changed due to introduction of fuel-efficient stoves?
4. How much is the extraction of firewood by hoteliers?
5. Are the communities involved in the extraction of NTFP? If yes, how much is the magnitude of such extraction?
6. How often is the park area used for grazing and fodder collection?

Questions for representatives of NGOs

1. Do you consider that the park resources are improving or degrading since the approval of the management plan in 2002? What are the reasons for improvement / degradation?
2. Are local communities and hoteliers interested in alternative energy sources for cooking and heating?
3. Do you think that communities are interested in the fuel-efficient stoves?
4. Are the community members buying fuel-efficient stoves from the individuals trained in various villages, for preparation of fuel-efficient stoves?
5. Has the park management plan affected the amount of firewood, fodder and NTFP collection in the park (Increased / decreased / same)?

Questions for other stakeholders / interest groups like Hoteliers)

1. How much is your average firewood requirement during winter / summer season?
2. Where from you are getting the firewood for cooking as well warming of your hotel rooms?

3. Has your consumption of firewood decreased or increased since the approval of the park management plan?

4. Has the park management plan affected the amount of firewood, fodder and NTFP collection in the park (Increased / decreased / same)?

5. What is the effect of grazing and fodder collection on the park resources?

Major question b:

What is the impact of this change on the flora and fauna of the park?

Questions for officials of Wildlife / Forest Department

1. Are violation cases registered against offenders increasing or decreasing?

2. Do you think the park vegetation is getting thicker or thinner (change in density) due to collection of firewood, fodder, NTFP, grazing? Please explain.

3. Do you think that after involving the local communities in the park management and preparation of management plan with the active involvement of local communities is there any change in the collection of firewood, fodder, NTFPs, grazing?

4. Do you think that ANP and surrounding forests can fulfill the requirement of the locals for firewood, fodder, NTFPs in the coming years, when the population is increasing at an increasing rate?

5. What is the status of wildlife and its habitat in ANP? Increasing/improving or decreasing/degrading or static?

6. Is there any benefit to the flora/fauna of the park due to division of park area in to core and buffer zones? Is there any damage to buffer areas due to restricted use by the local communities?

Questions for representatives of NGOs

1. Do you think the park vegetation is getting thicker or thinner due to collection of firewood, fodder, NTFP, grazing? Please explain.

2. Do you think that the requirements of local communities for firewood have decreased due to introduction of fuel-efficient stoves?

3. Is there any change in controlling the free grazing and in collection of firewood, fodder, NTFPs, after involving the local communities in park planning and management?

4. Do you think that ANP and surrounding forests can fulfill the requirement of the locals for firewood in the coming years, when the population is increasing at an increasing rate?

5. What is the status of wildlife and its habitat in ANP? Increasing/improving or decreasing/degrading or static?

6. How successful is the co-management approach in planning and conserving the resources of Ayubia National Park? Are the key partners i.e., Wildlife Department and local communities serious in co-management approach?

Questions for other stakeholders / interest groups

1. Do you think the park vegetation is getting thicker or thinner due to collection of firewood, fodder, NTFP, grazing? Please explain.
2. Do you think that ANP and surrounding forests can fulfill the requirement of the locals for firewood, fodder and NTFP in the coming years, when the population is increasing at an increasing rate?
3. What do you think about the leopards of ANP in terms of its attraction for the tourists, depredation, and attack on human and animals?
4. Are the sighting of the key wildlife species like common leopard, koklass pheasant and kalij pheasant increasing or decreasing?
5. How successful is the co-management approach in planning and conserving the resources of Ayubia National Park?

Major question c:

Evaluate the impact of the co-management model on the conservation of the flora and fauna within the national park

Questions for officials of Wildlife / Forest Department

1. Is there any effect of co-management model on the flora and fauna of the park, due to change in resource extraction from the park?
2. Is there any effect of co-management model on the flora and fauna of the park, due to changed level of community support for park objectives?
3. Is there any effect of co-management model on the flora and fauna of the park, due to change in political support for park objectives?
4. How many leopards have been reportedly killed in ANP in last 10 years?
5. Is the number of induced fire incidences with in the park increasing or decreasing, please explain?
6. The number of court cases against violators are increasing or decreasing
7. Do you think that the Wildlife department and the local communities are committed in promoting the co-management approach for the conservation of flora and fauna of the national park? How effective role are the local communities playing in ANP management committee?

8. How much involved are local communities in promotion of ecotourism within and around the national park?

Questions for representatives of NGOs

1. Is there any effect of co-management model on the flora and fauna of the park, due to change in resource extraction from the park?

2. Is there any effect of co-management model on the flora and fauna of the park, due to changed level of community support for park objectives?

3. Is there any effect of co-management model on the flora and fauna of the park, due to change in political support for park objectives?

4. How much benefits the communities are getting in terms of ecotourism which was promoted by the NRCP and which is one of the basic incentive tool perceived in negotiated management plan?

5. Do you think that the Wildlife department and the local communities are committed in promoting the co-management approach for the conservation of flora and fauna of the national park? Is there any problem in the shared management, if yes how those can be mitigated?

6. How much involved are local communities in promotion of ecotourism within and around the national park?

Questions for other stakeholders / interest groups

1. Is there any effect of co-management model on the flora and fauna of the park, due to change in resource extraction from the park?

2. Is there any effect of co-management model on the flora and fauna of the park, due to changed level of community support for park objectives?

3. Is there any effect of co-management model on the flora and fauna of the park, due to change in political support for park objectives?

4. How much benefits the communities are getting in terms of ecotourism which was promoted by the NRCP and which is one of the basic incentive tool perceived in negotiated management plan?

5. Do you think that the Wildlife department and the local communities are committed in promoting the co-management approach for the conservation of flora and fauna of the national park?

6. How much involved are local communities in promotion of ecotourism within and around the national park?

QUESTIONS FOR FOCUS GROUPS

The major question that was investigated in the study is as under:

> *To what extent has the change in governance policy of the wildlife department from the conventional exclusionary management to the co-management affected park resources?*

The three sub-questions, which were investigated, from the representatives of the local communities are as under:

Sub question a:

Is there any change in the consumption of park resources by local communities?

1. How much is your average firewood requirement during winter / summer season? Where from you are getting the firewood?
2. Has your consumption of firewood decreased or increased in last 10 years (since the approval of the park management plan and introduction of fuel-efficient stoves)?
3. What is your perception about amount of extraction of Non-timber Forest Products (NTFP) from the park (medicinal plants, grass/fodder, wild fruits, and stone quarrying)?
4. Has the extraction of NTFP changed over the last 10 years? Who are involved in its extraction of NTFP from the park?
5. What is the magnitude of grazing and fodder collection in the park area?
6. Has the park management plan affected the amount of firewood, fodder and NTFP collection in the park (Increased / decreased / same)?
7. How common is poaching within the national park? Who are involved and which species are normally hunted?

Major question b:

What is the impact of this change on the flora and fauna of the park?

1. Do you think the park vegetation is getting thicker or thinner due to collection of firewood, fodder, NTFP, grazing? Please explain.
2. How easy it is for you to collect the firewood / fodder for your household requirement from the park and surrounding areas?
3. What is the status of wildlife and its habitat in ANP? Increasing/improving or decreasing/degrading or static
4. What do you think about the leopards of ANP in terms of its beauty for park, depredation, attack on human (animals)
5. Do you think that the number of leopards, Koklass pheasant, and Kalij pheasant are increasing or decreasing? Please explain.

6. How successful is the co-management approach in planning and conserving the resources of Ayubia National Park?

Major question c:

Evaluate the impact of the co-management model on the conservation of the flora and fauna within the national park

1. Is there any effect of co-management model on the flora and fauna of the park, due to change in resource extraction from the park?

2. Is there any effect of co-management model on the flora and fauna of the park, due to changed level of community support for park objectives?

3. Is there any effect of co-management model on the flora and fauna of the park, due to change in political support for park objectives?

4. How much benefits you are getting in terms of ecotourism which was promoted by the NRCP and which is one of the basic incentive tool perceived in negotiated management plan?

5. How much involved are you or your community in the planning / management of Ayubia National Park and the implementation of the management plan?

6. Do you think that the Wildlife department and the local communities are committed in promoting the co-management approach for the conservation of flora and fauna of the national park?

7. What role the community watchers are playing for the conservation of the flora and fauna within the national park. Is there any accountability of community watchers?

8. How much involved are local communities in promotion of ecotourism within and around the national park?

Appendix 7.1: Landcover / landuse map of Ayubia National Park
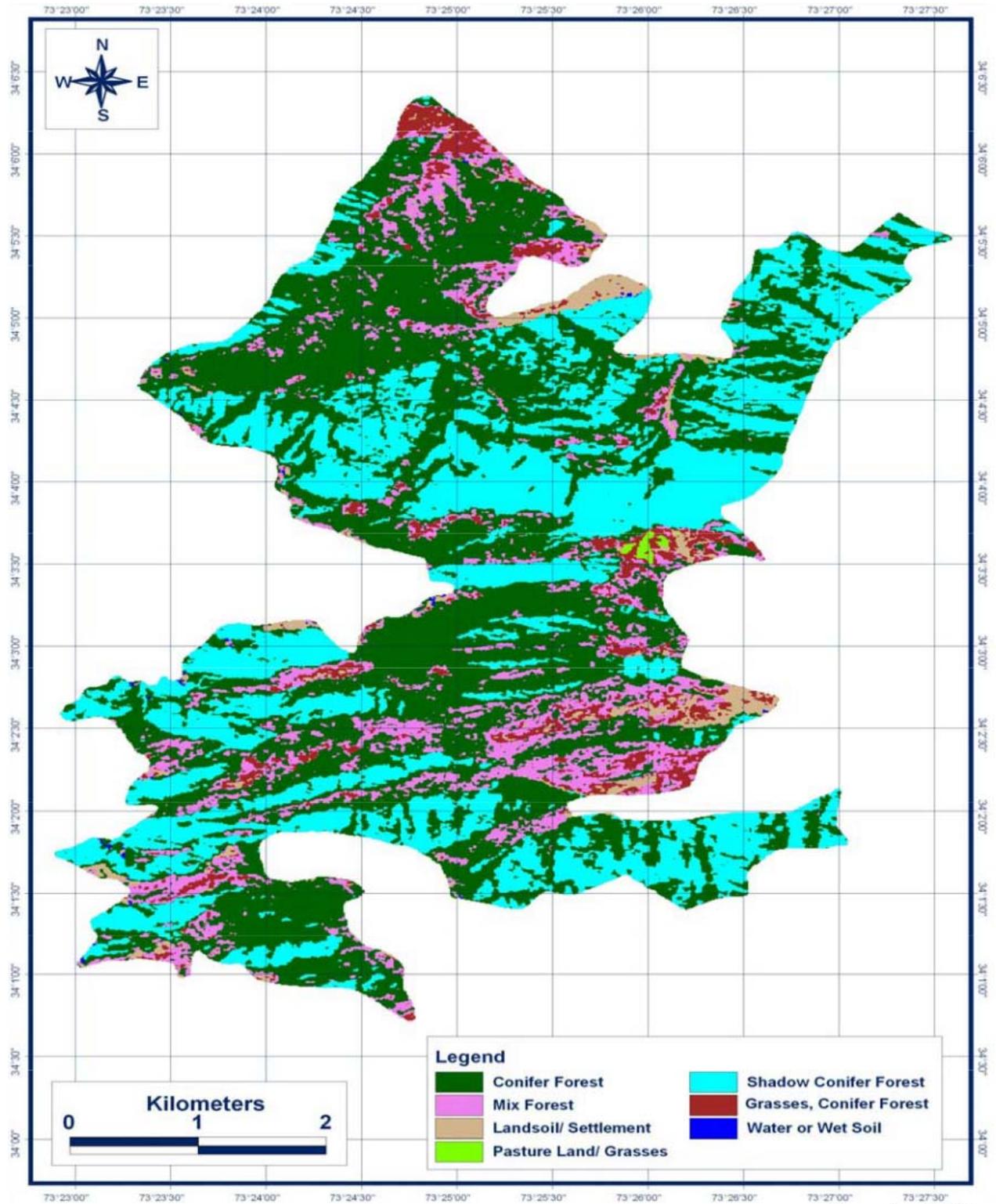
(Source: Saeed, 2008)

Appendix 7.1: Non - timber forest products

Wild vegetables

The local communities collect various wild vegetables from the ANP. According to the participants of the research, the wild vegetables which are collected from the ANP include the following:

Sr #	Common Name	Botanical Name
1	Kunji saag (Fern)	*Dryopteris stewartii*
2	Mushkana Saag	*Nepeta laevigata*
3	Kandor saag	*Dryopteris blanfordii*

According to the research participants the three different wild vegetables i.e., Kunji (*Dryopteris stewartii*), Mushkana (*Nepeta laevigata*) and Kandor (*Dryopteris blanfordii*) are consumed locally as against selling it in the open market (F8, C1, C2, L1, L6, C3, M5, M6, F3, F5, F6, N1, P2, L3, F1, F4). Just one of the research participant mentioned that only one of the wild vegetable (Kunji) is also collected for commercial purpose as well (F3). The research participants, added that Kunji (*Dryopteris stewartii*), Mushkana (*Nepeta laevigata*) are the most collected species and consumed in large quantity as compared to other wild vegetables. However, according to Aumeeruddy *et al.* (1998) and Shinwari (2010), the two fern species i.e., Kunji (*Dryopteris stewartii*) and Kandor (*Dryopteris blanfordii*) are the most collected vegetables, followed by the Mushkana (*Nepeta laevigata*). According to the research participants the collection period is between March and July. The research participants added that almost every local family, cook 1-2 meals from these different wild vegetables each year (C1).

According to the research participants, most of the wild vegetables were traditionally consumed with the butter milk, and with the decrease in livestock, the dairy products, including butter milk is not so common now in the local communities. Consequently, the consumption of these wild vegetables is also decreasing in the local communities. The following chart indicates the viewpoint of different stakeholders regarding the decrease in the use of wild vegetables:

Stakeholder	Use of wild vegetables is decreasing	11 / 30

Representatives of NGO	N1	N2
	✓	

Neighbouring communities	F1	F2	F3	F4	F5	F6	F7	F8	F9
			✓		✓	✓			

Employees of Wildlife Department	P1	P2	M1	M2	M3	M4	M5	M6	L1	L2	L3	L4	L5	L6	C1	C2	C3	C4	C5
		✓							✓	✓	✓				✓		✓	✓	

Overall, the following reasons were pointed out for the decrease in the consumption of various wild vegetables within the local communities:

a. The butter milk is not so common now among the communities (C3, F1),

b. Due to modernity, the locals are not much interested in consuming this traditional food (F3, F5),

c. People are now more inclined in the tourist industry and other seasonal employments and now they do not have so much time to collect these wild vegetables from the forest (F6, P2),

d. Previously, people were using it both during winter and summer season. For this purpose, they were collecting it in large quantity and were drying and storing it for later consumption during winter season. However, it is no more stored for use during winter season (N1, C1),

e. The younger generation is not at all interested in consuming such wild vegetables and they even do not recognize these wild vegetables within the forests. There were some instances that the locals collected more or less similar plants, and after eating those, they lost consciousness. Consequently, the use of these wild vegetables was decreased to avoid such incidents (L3, F1, F2),

f. People are now easy going, and they do not go to park for collection of edible (F8) and

g. There are many other vegetables in the market, so the local communities are not so much interested in consuming these wild vegetables (F1, L1, L2, C4).

Some of the research participants were of the opinion, that as against other wild vegetables, there is no decrease in consumption of Kunji (*Dryopteris stewartii*) and it is consumed by about 90% within the local communities (F7, M5).

Medicinal plants

A number of medicinal plants are collected by the local communities from the ANP and used for both preventive and curative treatments. According to the research participants the following medicinal plants are collected from the park:

Sr #	Common Name	Botanical Name
1	Neer	*Skimmia laureola*
2	Masloon, Anjabar	*Bistorta amplexicaule*
3	Bankakri	*Podophyllum emodi*
4	Mamekh, Mamaikh	*Paeonia emodi*
5	Zakhm-e-Hayat	*Bergenia ciliata*
6	Chau	*Artemisia fragrans*
7	Gul Khaira	*Althea rosa / officinalis*

Most of these medicinal plants are collected by the women, during their trips to the park for firewood and fodder collection. There is a gradual decrease in collection of the medicinal plants by the locals.

Stakeholder	Medicinal plants collection is decreasing.																			10 / 30
Representatives of NGO	N1	N2																		
Neighbouring communities	F1	F2	F3	F4	F5	F6	F7	F8	F9											
			✓	✓			✓		✓											
Employees of Wildlife Department	P1	P2	M1	M2	M3	M4	M5	M6	L1	L2	L3	L4	L5	L6	C1	C2	C3	C4	C5	
		✓				✓	✓			✓					✓		✓			

Regarding the trend in medicinal plants collection, ten of the research participants were of the view that the collection is on decrease from the park (F3, F4, F7, F9, P2, M4, M5, L2, C1, C3).

One of the research participants (N2), informed that the trend of collecting medicinal plants from the ANP is increasing, specifically among those communities which are located near the Meeranjani, which is the highest peak of the park. He added, "I once counted 20 donkeys, which were loaded with sacks; when I asked them what is in these sacks, they told me they have collected medicinal plants from the forest". He was of the opinion that due to continuous collection, some of the medicinal plants like Masloon / Anjabar (*Bistorta amplexicaule*) and Bankakri (*Podophyllum emodi*) are now decreasing within the ANP (N2). Showing his concern, he added, "We have seen people drying these medicinal plants especially Masloon (*Bistorta amplexicaule*) on their roof tops; and we have seen them burning its roots because the plants are picked with the roots. This is why these species are under severe threat" (N2).

Mushrooms

During the field work, the research participants informed that these mushrooms are mostly extracted for commercial use, as it is very expensive. According to research participants, women and school going children are involved in the collection of mushrooms from the park area (M6). The buyers are mostly from Mingora, Swat; which is situated in the northern part of the province (F2) and is considered to be the main supply centre of herbal material for national markets (Ghafoor, 2005). The price of dried mushroom varies between Pak Rs 6000 – 7000 per kilogram (F2).

During the fieldwork, the research participants told that the local people extract as much mushrooms as they can find in the park (F2, F5). Regarding the trend in mushroom collection from the park, eight of the research participants were of the view that the mushroom collection is decreasing within the park (P2, L1, L3, L4, C1, C2, C3, C4). However all of them were employees of the Wildlife Department, so it makes this claim a bit weak. On the contrary three

research participants (F7, N1, M5) were of the opinion that the mushroom collection from the park is gradually increasing.