

Measuring the Sustainability of Protected Area-Based Tourism Systems:

A Multimethod Approach

by

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ABSTRACT

This research assessed the sustainability of protected area-based tourism systems in Nepal. The research was composed of three interrelated studies. The first study evaluated different approaches to protected area governance. This was a multiple-case study research involving three protected areas in Nepal: the Annapurna Conservation Area, Chitwan National Park, and the Kanchenjunga Conservation Area. Data were collected from various published and unpublished sources and supplemented with 55 face-to-face interviews. Results revealed that outcomes pertaining to biodiversity conservation, community livelihoods, and sustainable tourism vary across these protected areas. The study concluded that there is no institutional panacea for managing protected areas. The second study diagnosed the sustainability of tourism in two destination communities: Ghandruk and Sauraha, which are located within the Annapurna Conservation Area and Chitwan National Park, respectively. A systemic, holistic approach—the social-ecological system framework—was used to analyze the structures, processes, and outcomes of tourism development. Data collection involved 45 face-to-face semi-structured interviews and a review of published and unpublished documents. Results revealed that tourism has several positive and a few negative sociocultural, economic, and ecological outcomes in both communities. Overall, tourism has progressed towards sustainability in these destinations. The third study examined tourism stakeholders' perspectives regarding sustainable tourism outcomes in protected areas. The study compared the responses of residents with residents, as well as tourists with tourists, across the Annapurna Conservation Area and Chitwan National Park. Tourism sustainability was evaluated with six tourism impact subscales measuring negative and

positive ecological, economic, and social impacts. Data were collected using the survey method. Respondents included 230 residents and 205 tourists in Annapurna, and 220 residents and 210 tourists in Chitwan. The findings revealed that the residents across these protected areas perceived positive and negative impacts differently, as did the tourists, suggesting that the form of tourism development affects the sustainability outcomes in protected areas. Overall, this research concluded that protected areas and tourism are intricately related, and sustainable management of a protected area-based tourism system requires a polycentric adaptive approach that warrants a broad participation of relevant stakeholders.

DEDICATION

To Saavi, Sapana, and the rest of my family.

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CHAPTER 1

INTRODUCTION

The purpose of this research was to examine the linkages between protected areas and tourism through the lens of sustainability. It is widely accepted that a reciprocal relationship exists between protected area management and tourism development. There is an increasing demand for nature-based tourism pursuits globally, which predominantly requires visitation to parks and protected areas (Jones, 2013; Puhakka, Cottrell, & Siikamäki, 2014; Thapa, 2013). For example, 49% of the tourists in Nepal visit national parks and wildlife reserves (Ministry of Culture, Tourism, and Civil Aviation, 2014). Research shows that tourism products offered by protected areas are highly diverse, including enjoyment of nature, learning about natural systems, interaction with indigenous and tribal people, and experience of native cultures (Eagles, McCool, & Haynes, 2002; Fennell & Weaver, 2005; Puppim de Oliveira, 2005; Reinius & Fredman, 2007).

Tourism, in turn, offers economic rationale and provides the revenue required for protected area management (Butler & Boyd, 2000; Eagles, 2009; Stronza, 2010; Wilson, Nielsen, & Buultjens, 2009). In many protected areas, tourism revenue exceeds the income derived from other competing land use options such as mining, logging, farming, and grazing (Eagles et al., 2002; Jones, 2013). Tourism has been accepted as a principal source of income for management of protected areas worldwide (Emerton, Bishop, & Thomas, 2006). Self-financing of protected areas through tourism dollars is the most viable way to meet the budgetary requirements compared to alternative options, such as government funding and donor support (Alpizar, 2006; Baral, Stern, & Bhattarai, 2008).

Past experiences reveal that government funding of protected areas through tax dollars is (a) limited—governments have other competing priorities, (b) uncertain—it is politically motivated, (c) complex—it has to go through a thorny legislative process, and (d) inflexible—it has no provision for emergency expenditures (Dlamini & Masuku, 2013; Eagles, 2014). Donors are usually enthusiastic in establishing protected areas, but they turn their backs when it comes to supporting the operating and maintenance costs. In lieu of escalating costs and stagnant or decreasing support from governments and donors, self-financing seems the only viable option to maintain protected area operations.

Well-managed tourism in protected areas provides livelihood opportunities for local communities (Ahebwa & Duim, 2013; Nyaupane & Poudel, 2011; Puppim de Oliveira, 2005). The majority of biodiversity-rich protected areas are located in developing countries, where people are living in abject poverty induced by unemployment, discrimination, political instability, and civil war (Jones, 2013; Nepal, 2000; Puppim de Oliveira, 2005). Economic development indisputably deserves priority over environmental and social issues in such situations. It has been found that tourism benefits people residing in and around protected areas (Ahebwa & Duim, 2013; Jones, 2013; Puhakka, Sarkki, Cottrell, & Siikamäki, 2009; UNEP & UNWTO, 2005). It is particularly important that local residents realize this additional value of their natural resources in order to gain their support in conservation programs (Imran, Alam, & Beaumont, 2014; Puppim de Oliveira, 2005; Strickland-Munro & Moore, 2013).

The discussion above suggests that protected area-based tourism is likely to contribute to sustainable development through biodiversity conservation, community livelihoods, and quality of life (i.e., through recreation). The realization of these

outcomes, however, requires synchronous growth of protected areas and tourism at global, national, and local levels.

Growth of Protected Areas

The protected area movement began in the United States with the establishment of Yellowstone National Park in 1872. A protected area is “a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” (Dudley, 2008, p. 8). The initial intent to establish the protected area was to save the natural areas from privatization and exploitative use of their resources (Nash, 2014). The concept of protected area persisted for almost a century in the Western world as the only measure to protect rare and endangered species of flora and fauna. For almost 100 years, the growth in number and coverage of protected areas was sluggish (Figure 1). There were only 154 sites extended over 113,635 km² in 1911, which increased to 20,054 sites covering 2,849,048 km² in 1971 (IUCN & UNEP-WCMC, 2012).

With the progression of the protected area movement, protected areas were deemed essential for a variety of reasons, such as protection of biodiversity, preservation of geological/geomorphological features, conservation of cultural heritage, scientific research, tourism and recreation, and sustainable use of natural resources (Dudley, 2008; Gardner et al., 2013; Hassanali, 2013; Pfueller, Lee, & Laing, 2011; Tumusiime & Vedeld, 2012). In the past forty years, the movement has reached virtually every part of the globe and the growth rate is exponential. Data shows that there were 157,897 national and international protected areas covering 24,236,478 km² of terrestrial and marine area by the end of 2011 (IUCN & UNEP-WCMC, 2012). The reason for rapid expansion of

protected areas is a paradigm shift from protection- to people-oriented conservation and broadening of the definition of the protected area, for example to include conservation areas.

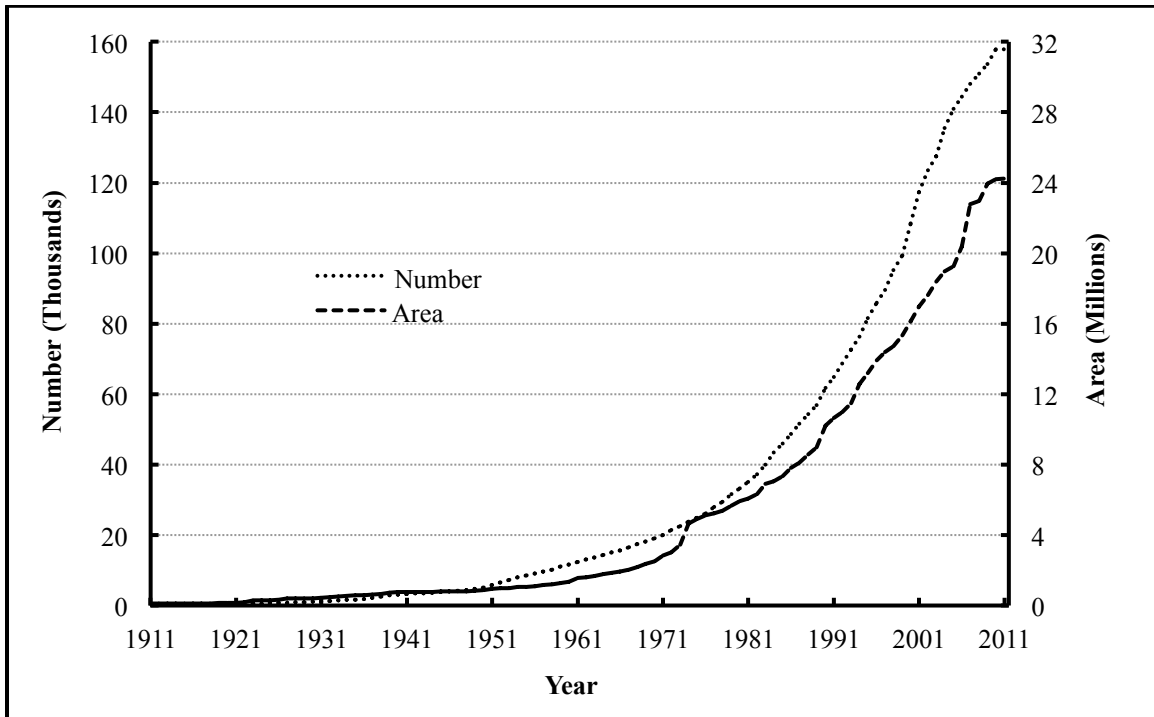


Figure 1. Number of and area covered by protected areas.

Source: IUCN and UNEP-WCMC (2012).

There is hardly a country untouched by the protected area movement and a vast majority of newly declared protected areas are located in developing countries. Nepal first espoused this paradigm with the establishment of Chitwan National Park (formerly Royal Chitwan National Park) in 1973. The National Park and Wildlife Conservation Act of 1973 provided the legal basis for establishment and management of protected areas, such as national parks, wildlife reserves, and hunting reserves (Government of Nepal, 1973). For the next 15 years, the Government of Nepal focused on declaring new protected areas to expand the area under protection. This action was triggered by the

government's commitment in international forums to protect rare and endangered species of wild flora and fauna, as well as economic incentive provided by international conservation agencies, such as the International Union for Conservation of Nature (IUCN) and the World Wide Fund for Nature (WWF). The protected areas, however, were highly criticized for favoring wildlife and their habitat over the needs and priorities of local people (Nyaupane & Poudel, 2011). In fact, the establishment of protected areas resulted in loss of livelihood opportunities of forest dependent people, either by displacement or placing restrictions on traditional use rights (McLean & Straede, 2003). Additionally, the increased frequency of wildlife attacks on humans, livestock depredation, and crop damage further intensified the discontent over the formation of protected areas (Nepal & Weber, 1995). Moreover, many of the protected areas existed only on paper because of the lack of sufficient funds for protection, habitat management, and wildlife management programs (Wells, 1993).

In the 1990s, the Government of Nepal introduced the integrated conservation and development project (ICDP) approach to deal with the problems associated with protected area management (Spiteri & Nepal, 2008). The ICDP approach is a paradigm shift from protectionist, or "fines and fences" approach, to a participatory approach that reconciles conservation goals with societal needs. The approach advocates for the inclusion of stakeholders, specifically local people, in the management of protected areas. The National Park and Wildlife Conservation Act of 1973 was amended in 1989 to include the legislative provision to declare conservation areas and a provision to declare buffer zones was added to the Act in 1993. Protected areas in Nepal are renowned worldwide for their biodiversity conservation initiatives. To illustrate, Chitwan National

Park now contains the second largest population of one-horned Asian rhinoceros (*Rhinoceros unicornis*) in the world. The number of one-horned rhinoceros was 100 in 1966, which increased to 310 in 1978, 372 in 2005, and 503 in 2011 (Chitwan National Park, 2013). Nepal is committed to international agreements to increase the area covered by protected areas, including the Aichi Biodiversity Target 11, which aims to protect 17% of world's terrestrial and inland water areas, and 10% of world's coastal and marine areas, by 2020 (Bertzky, Corrigan, Kemsey, Kenney, Ravilious, Besançon, & Burges, 2012). By the end of 2013, there were 20 protected areas in Nepal, which include 10 national parks, three wildlife reserves, one hunting reserve, and six conservation areas. In addition, a total of 12 buffer zones have been declared, which encompass the areas around nine national parks and three wildlife reserves. The protected areas cover 34,186 km² of land, which is almost a quarter (23.23%) of the total area of the country (Department of National Parks and Wildlife Conservation, 2014).

Growth of Tourism

Tourism is a major global industry that contributes to 9% of world's gross domestic product, provides 1 in 11 jobs globally, and measures US\$ 1.4 trillion in worldwide exports (UNWTO, 2014). In addition, it is one of the fastest growing economic sectors in the world. Statistics show that the number of international arrivals increased from 25 million in 1950 to 1,087 million in 2013 (Figure 2; UNWTO, 2014). Similarly, international tourism receipts reached to US\$ 1,159 billion worldwide in 2013, increasing from only US\$ 2.1 billion in 1950. Tourism is becoming more diverse with the opening of new destinations and entry of new segments of tourists. Though the

destinations in the Western countries are still dominant, the market share of emerging economics has astonishingly increased to 47% in 2013 (UNWTO, 2014).

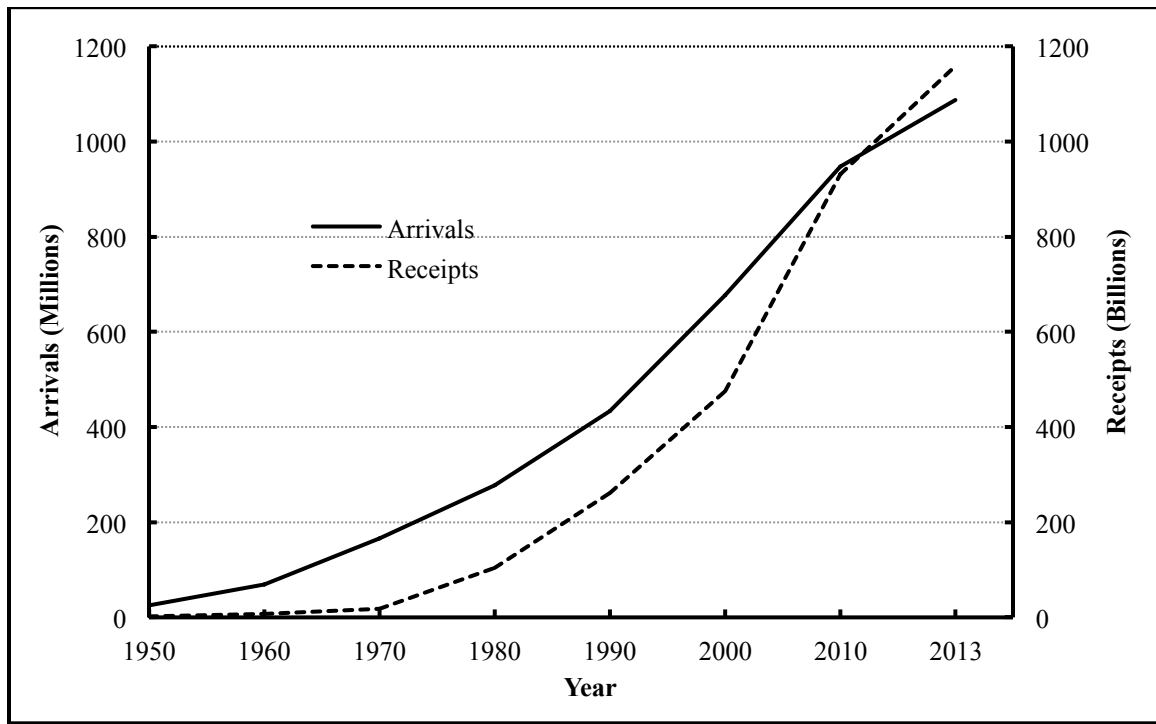


Figure 2. International tourist arrivals and receipts.

Source: UNWTO (2007, 2014).

Tourism is one of the major economic sectors and a principal source of foreign exchange in Nepal. In the fiscal year 2012-2013, the gross foreign exchange earnings from tourism were US\$ 390.3 million, or about 4.7% of total foreign exchange earnings and 2.0% of gross domestic product (Ministry of Culture, Tourism, and Civil Aviation, 2014). The history of tourism in Nepal is relatively short, as the country opened its doors to international visitors in 1950 (Ministry of Tourism and Civil Aviation, 2009). The official tourism statistics for 1950 to 1961 are missing. However, statistics show that the growth of tourism is slow and steady since 1962, except between 2000 and 2006 (Figure 3; Ministry of Culture, Tourism, and Civil Aviation, 2014). Visitation was at 6,179 in

1962, which climbed to 491,504 in 1999. This number plunged to 275,468 in 2002 due to the so-called people’s war launched by the Communist Party of Nepal (Maoist; Bhattarai, Conway, & Shrestha, 2005). Though the rebel group vowed not to harm tourists, several incidents of misdemeanors such as gunpoint robbery, beating, and forced donation were reported by national and international media (Poudel, Nyaupane, & Timothy, 2013). However, the growth of tourism has been impressive since the Comprehensive Peace Accord was signed between the Government of Nepal and the Communist Party of Nepal (Maoist) in 2006. Nepal received 797,616 international tourists in 2013 (Ministry of Culture, Tourism, and Civil Aviation, 2014).

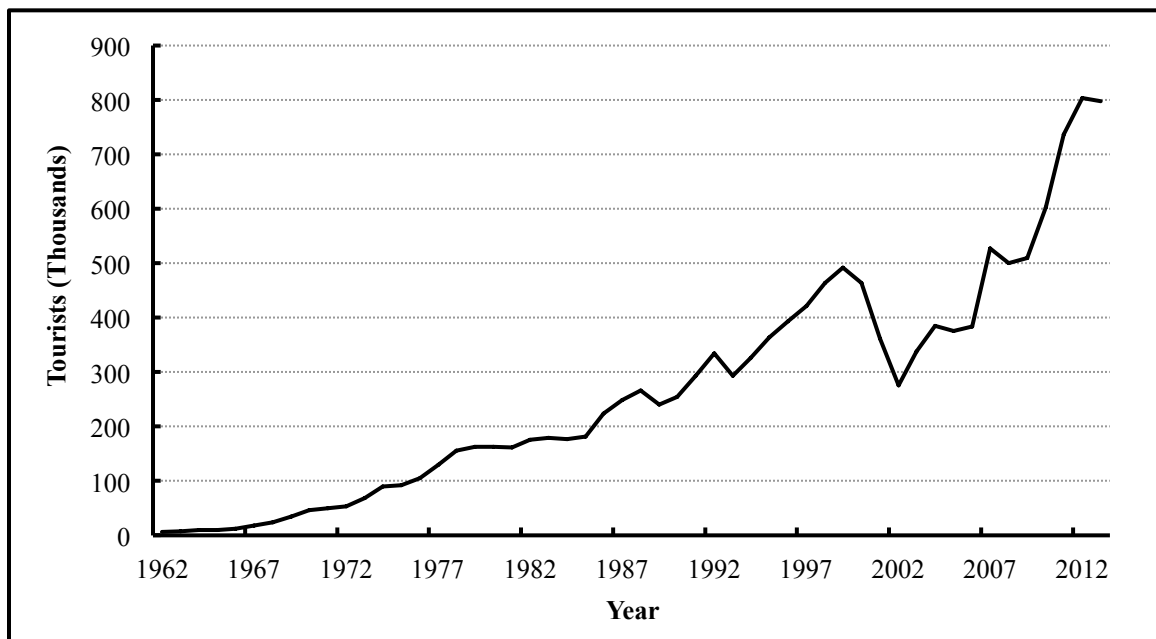


Figure 3. Number of tourists visiting Nepal.

Source: Ministry of Culture, Tourism, and Civil Aviation (2014).

Problem Statement and Justification for the Study

Modern day protected areas are not uniform entities and have been managed for several purposes (Dudley, 2008). The need for establishment of protected areas has been

justified on the basis of their scientific, ecosystem, recreational, and economic significance (Dlamini & Masuku, 2013; Nash, 2014; Nepal, 2000; Ruschkowski, Burns, Arnberger, Smaldone, & Meybin, 2013; Zube & Busch, 1990). On scientific grounds, protected areas are the only means to conserve biodiversity at genetic, species, and ecosystem levels (Dudley, 2008). The areas also provide various ecosystem services such as clean air, fresh water, food security, climate regulation, and aesthetic beauty (Bertzky et al., 2012). Protected areas are entrusted as a measure to enhance health and wellness of the general public by providing recreational opportunities (Eagles et al., 2002). Many protected areas allow sustainable use of resources, especially to local people to fulfill their livelihood needs (Nyaupane & Poudel, 2011). The revenue to government (e.g., national and local governments) and private sector (i.e., businesses) constitutes the economic rationale for establishment of protected areas (Eagles et al., 2002).

The IUCN developed a global framework that categorizes protected areas according to their management objectives. The framework consists of six categories: (a) category Ia “strict nature reserve” and category Ib “wilderness area,” (b) category II “national park,” (c) category III “natural monument or feature,” (d) category IV “habitat/species management area,” (e) category V “protected landscape/seascape,” and (f) category VI “protected area with sustainable use of natural resources” (Dudley, 2008). According to this framework, all protected areas should focus on conservation of biological diversity. Other purposes vary according to the management category—conservation is combined with scientific research in strict nature reserves, education and recreation in national parks, and traditional natural resource management systems in protected areas with sustainable use of natural resources. This suggests that the services

offered by protected areas, including recreation and tourism, depend on the management objectives and the governance approach adopted to achieve these objectives.

Tourism is undoubtedly a major revenue source for protected areas. The proportion of revenue generated from tourism, however, is highly variable, ranging from negligible to more than the annual budget of protected areas (Dlamini & Masuku, 2013; Eagles, 2014; Eagles et al., 2002; Walpole, Goodwin, & Ward, 2001). Research shows that the economic potential of many protected areas has yet to be adequately exploited—the revenue in protected areas can be increased substantially with virtually no impact on visitation rate and visitor experience (Baral et al., 2008; Thur, 2010; Walpole et al., 2001). Quality visitor experience is essential to cultivate public support for protected areas (Eagles, 2014; Weiler, Moore, & Moyle, 2013). This suggests that tourism has immense potential to contribute to sustainable financing of protected areas.

Despite widespread support for protected area-based tourism, some researchers and park managers caution not to consider tourism as a benefactor because of the adverse impacts of tourism on park resources. Rapid and unplanned tourism development in many protected areas has induced many negative ecological and sociocultural impacts (Buckley & Pannell, 1990; Saarinen, 2006). The negative impacts of tourism in the ecological environment of protected areas includes trampling, deforestation, damage to coral reefs, wildlife disturbance, and species extinction (Buckley, 2003; Deng, Qiang, Walker, & Zhang, 2003; Nyaupane & Thapa, 2006). The negative impacts of tourism extend to the communities living in and around protected areas, as well as to the tourists visiting protected areas. While most of the revenue generated from protected area-based tourism goes to local, regional, and national governments and private entrepreneurs, local

residents experience the negative externalities. Some examples of negative tourism impacts on local communities are crime, social exclusion, acculturation, begging, and changing family and social structure (Nepal, 2000; Nyaupane & Thapa, 2004; Stronza, 2010). Additionally, tourists have experienced several negative impacts, such as crowding, crime, and pollution, in spite of spending a considerable amount of time and money for travel (Manning, 2007; McIntyre & Boag, 1995). This mixed effect of tourism on protected areas has created a contradictory image of protected area-based tourism.

Sustainable tourism, which espouses the principles of sustainable development, has been advanced as a means and end to conserve tourism resources, including protected areas (Eagles et al., 2002; Hassanali, 2013; Puhakka et al., 2014). The concept of sustainable tourism envisions a balanced development of sociocultural, economic and ecological spheres (Stoddard, Pollard, & Evans, 2012). The ecological sphere requires conservation of biological diversity at species, ecosystem, and landscape levels to maintain essential biological processes (Nyaupane & Poudel, 2011). Sociocultural sustainability guarantees long-term survival of built and living cultural heritage of host communities (Puhakka et al., 2009). The economic dimension entails equitable distribution of the economic benefits among all stakeholders in perpetuity (Imran et al., 2014). Accepting that it is not possible to develop tourism without any negative impacts, the concept of sustainable tourism maintains that every form of tourism should strive to be sustainable. Given the complex relationship between tourism and protected areas, the issue of sustainable tourism development in protected area merits academic attention.

Study Purpose and Research Objectives

It is evident that protected areas and tourism are integral parts of sustainable development strategies. The above discussion suggests that protected areas and tourism are intricately related and that the protected area management approach and the nature of tourism development shape the linkages between them. The purpose of this research was to examine sustainability in protected area-based tourism systems. The objectives of this research were:

1. To evaluate the governance approaches adopted in management of protected areas to achieve the goals of biodiversity conservation, community livelihoods, and sustainable tourism.
2. To diagnose the sustainability of protected area-based tourism systems by analyzing the structures, processes, and outcomes at tourist destinations.
3. To examine the perspectives of stakeholder groups regarding sustainable tourism development in protected areas.

This dissertation comprises six chapters. The growth of protected areas and tourism in the global and Nepali contexts and the linkages between protected areas and tourism are already discussed in Chapter 1. The rest of this dissertation is organized as follows. In Chapter 2, the methods used to conduct this research are described. Chapter 3, 4, and 5 are respectively related to objectives 1, 2, and 3. These three chapters are written in manuscript format required by academic journals. This means each chapter presents an introduction, literature review, theories, methods, results, discussion, and conclusions for one of the aforementioned research objectives. The last part of this dissertation, Chapter 6, presents the overall discussion and conclusions of this research.

CHAPTER 2

RESEARCH METHODS

Study Design

This research employed the case study method to collect data. The case study is a preferred strategy to study (a) the research questions beginning with how and why, (b) naturally occurring events over which researchers have little or no control, and (c) contemporary phenomena within its real-life context (Yin, 2014). This method is particularly useful when the contextual conditions affects the phenomenon under consideration or the boundaries between the context and phenomena are blurred. Case studies include both quantitative and qualitative evidence; sources of data include documents, artifacts, interviews, surveys, and observations. Case studies are particularly useful when the variables of interest are numerous and there are multiple data sources for those variables. The goals of the case study method are to understand complex social phenomena, draw theoretical propositions from findings of multiple case studies, and make analytical generalizations based on the cases studied.

While designing a case study, it is crucial to decide whether to use holistic or embedded design and whether to include single or multiple cases (Yin, 2014). This research adopted the embedded case study design, which involves two or more units of analysis (Scholz & Tietje, 2002). The units of analysis are protected areas, communities situated within protected areas, and individuals residing within communities. This research chose the multiple-case study design, in which several single-case studies are simultaneously conducted in more than one context but the unit of analysis is the same (Scholz & Tietje, 2002). The cases selected for this research are three protected areas in

Nepal: the Annapurna Conservation Area, Chitwan National Park, and the Kanchenjunga Conservation Area (Figure 4).

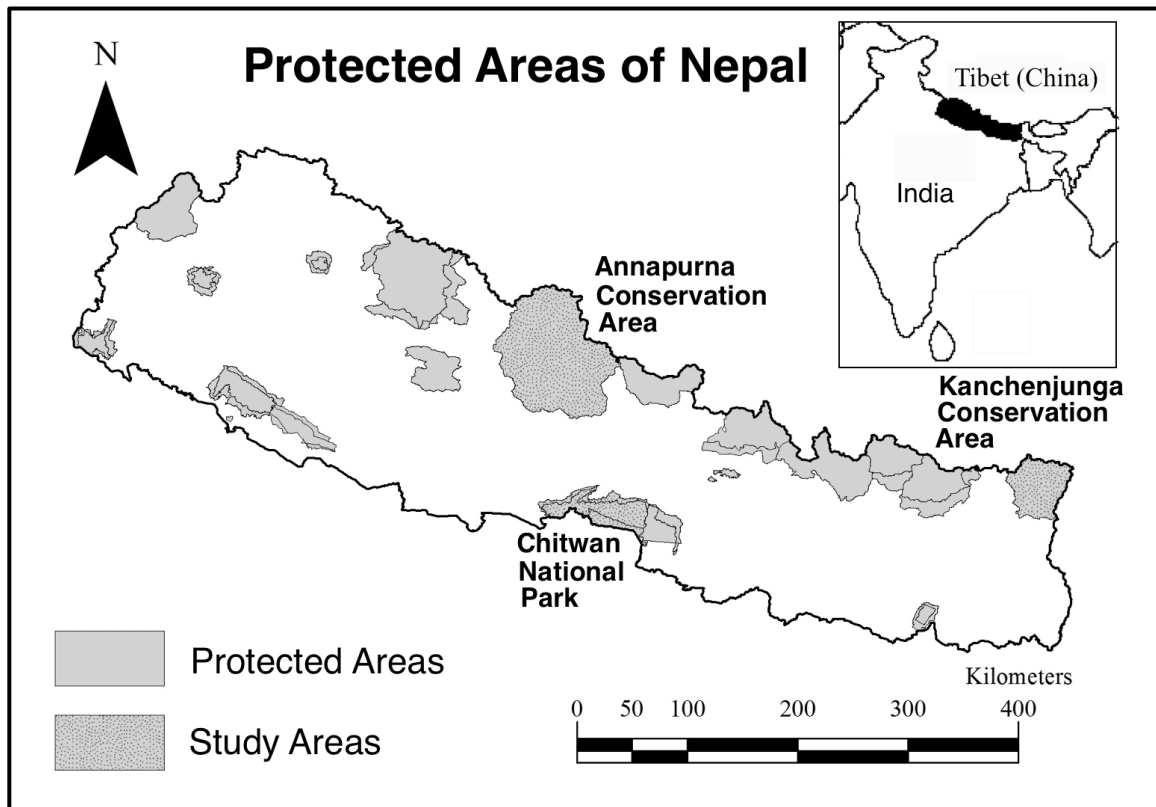


Figure 4. Map of Nepal showing study areas.

Study Context

Annapurna Conservation Area

Established in 1992 as Nepal's first conservation area, the Annapurna Conservation Area covers an area of 7,629 km² in the northern part of central Nepal (King Mahendra Trust for Nature Conservation, 1997). Land use of the conservation area involves forest areas (15.21%), shrublands (4.04%), grasslands (21.27%), agriculture lands (3.07%), barren lands (49.67%), and other (6.74%; National Trust for Nature Conservation, 2009). The altitude ranges from 1,000 m to 8,091 m and the conservation area encompasses renowned geologic features including Mount Annapurna (8,091 m)—

the tenth highest peak in the world, Mount Machhapuchchhre (6,993 m)—one of the most beautiful mountains in the world, Kali Gandaki Valley—the world’s deepest gorge, and Tilicho Lake—the world’s highest altitude glacial lake. Due to variation in altitude and other geographical features, the climate ranges between subtropical to nival, which has produced high floral and faunal diversity. There are 29 types of ecosystems and 22 forest types containing 1,233 plant species, including 38 species of orchids and nine species of rhododendrons (National Trust for Nature Conservation, 2009). The Annapurna region has the world’s largest rhododendron forest. The conservation area harbors 102 species of mammals, 488 species of birds, 40 species of reptiles, and 23 species of amphibians (National Trust for Nature Conservation, 2009). The Annapurna Conservation Area is a habitat for several rare and endangered wildlife species, including the snow leopard (*Uncia uncia*), musk deer (*Moschus chrysogaster*), Tibetan argali (*Pantholops hodgsonii*), Tibetan fox (*Vulpes ferrilata*), Tibetan wolf (*Canis lupus*), Tibetan wild ass (*Equus kiang*), and Himalayan brown bear (*Ursus arctos*). All six species of Himalayan pheasant are found in the conservation area including the endangered impeyan pheasant (*Lophophorus impejanus*), and crimson-horned pheasant (*Tragopan satyra*).

Extended over five districts of Nepal (Kaski, Lamjung, Manang, Myagdi, and Mustang), the Annapurna Conservation Area encompasses 57 village development committees. The conservation area allows local residents to live within the area; these residents are entitled to exercise traditional use rights and use natural resources in sustainable manner. The population of the conservation area is 90,000 people in 18,680 households (National Trust for Nature Conservation, 2009). People are diverse with

respect to race (Tibeto-Burman and Indo-Aryan), religion (Hindu, Buddhist, and pre-Buddhist), and ethnicity (more than 10 ethnic groups). The Muktinath Temple and Upper Mustang—the former Kingdom of Lo—are the major religious and cultural sites of the conservation area. Two cultural heritage sites in the Annapurna Conservation Area, the Cave architecture of Muktinath valley of Mustang and the Medieval Earthen Walled City of Lo Manthang, are included in the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Tentative List (UNESCO, 2008).

The main occupation of the local people is agriculture, which includes farming and livestock. Agricultural production barely meets the subsistence needs of local population. Other income sources are service, trade, and tourism. The Annapurna region is the most popular trekking destination in Nepal and receives more than 100 thousand visitors every year. Forests are also an integral part of the local economy; people harvest timber, fuelwood, fodder, and non-timber forest products. Tourism development has increased the demand for timber and fuelwood in several communities.

The National Trust for Nature Conservation, previously known as the King Mahindra Trust for Nature Conservation, is responsible for management of the Annapurna Conservation Area. The Trust is an autonomous and not-for-profit organization established by a legislative act of Nepal in 1982 to work in the field of nature conservation. The Trust launched the Annapurna Conservation Area Project in 1986 as a pilot project in Ghandruk (King Mahendra Trust for Nature Conservation, 1997). With the declaration of the conservation area in 1992, the management authority was officially given to the Trust for 10 years and later it was extended for additional 10 years until 2012 (Annapurna Conservation Area Project Monitoring and Evaluation

Team, 2012). The Trust experimented with the ICDP approach in the Annapurna Conservation Area Project (National Trust for Nature Conservation, 2009). The approach considers local communities as partners in conservation and development programs. It was the first time in the conservation history of Nepal where local people, instead of Nepalese Army, were directly involved in conservation of a protected area.

The key actors involved with the management of the Annapurna Conservation Area are the Government of Nepal, the Ministry of Forests and Soil Conservation, the Department of National Parks and Wildlife Conservation, the National Trust for Nature Conservation, and local people. The Government of Nepal, the ministry, and the department primarily assume a supervisory role. Additionally, the department maintains a liaison office that acts as a bridge between the Government of Nepal and the Trust and executes law enforcement. The Trust is responsible for planning and implementation of conservation and development programs. The headquarters, established under the leadership of a project director, oversees overall management of the Annapurna Conservation Area Project. Administratively, the project divided the conservation area into seven management units, called unit conservation offices, which carry out day-to-day activities. The project has helped to build managerial and technical capacity of local institutions and to connect local communities with various development partners, donors, and line agencies.

Chitwan National Park

Established in 1973 as the first protected area in Nepal, Chitwan National Park extends over 932 km². The area surrounding the national park that extends over 750 km² was designated as a buffer zone in 1996. Situated in the southern part of central Nepal,

the national park and its buffer zone include four districts: Chitwan, Nawalparasi, Parsa, and Makwanpur. The core area is covered with forests (84.6%), grasslands (4.7%), shrublands (.5%), and other (10.3%). Similarly, the buffer zone encompasses settlements and agriculture lands (46.25%), forests (42.9%), shrublands (1.26%), grasslands (1.13%), and other (8.43%). The elevation ranges between 110 m and 815 m above mean sea level. The national park has tropical and subtropical monsoon climates and receives 80% of its annual rainfall between June and September.

The seasonal climatic differences produced by variation in precipitation, temperature, and humidity have a profound influence on the vegetation and wildlife in the national park. The national park harbors more than 570 plant species, 68 mammal species, 545 bird species, 120 fish species, 150 butterfly species, and 49 reptile and amphibian species (Chitwan National Park, 2013). Globally threatened species of wildlife found in the national park are one-horned rhinoceros, royal Bengal tiger (*Panthera tigris tigris*), and gharial crocodile (*Gavialis gangeticus*). Other important mammals are Asian elephant (*Elephas maximus*), common leopard (*Panthera pardus*), wild dog (*Cuon alpinus*), sloth bear (*Melursus ursinus*), gaur bison (*Bos gaurus*), and Gangetic dolphin (*Platanista gangetica*).

Three major rivers (i.e., Narayani, Rapti, and Reu) flow through the national park, and 40 lakes and marshes, including the Beeshazar and associated lakes, are contained in the national park and its buffer zone. The water bodies are habitat for several aquatic animals, including the gharial crocodile and Gangetic dolphin. Terai-Duar savanna and grasslands, one of the Global 200 WWF identified ecoregions, is included in Chitwan National Park. The national park is one of the UNESCO World Heritage Sites under

natural category and the Beeshazar and associated lakes is listed in the Ramsar's list of Wetlands of International Importance. Bordering Parsa Wildlife Reserve of Nepal to the east and Valmiki Tiger Reserve of India to the south, the national park occupies a strategic position for landscape level and cross border conservation.

The buffer zone of Chitwan National Park covers 34 village development committees and two municipalities in four districts: Chitwan (16 village development committees, two municipalities), Parsa (two village development committees), Makwanpur (one village development committee), and Nawalparasi (15 village development committees). The buffer zone has a population of 260,352 individuals in 45,616 households (Chitwan National Park, 2013). The population is so diverse that virtually every major ethnic, cultural, and linguistic groups of Nepal reside there. Famous religious sites of the national park are the Bikram Baba in Kasara and the Valmiki Ashram in Tribeni; both sites are located inside the core area of the national park.

The income sources of the local people are farming, livestock, trade, service, and tourism. Chitwan National Park is the most visited protected area in Nepal and receives more than 150 thousand domestic and international visitors every year. Tourism has helped considerably in the creation of jobs and establishment of businesses. Dependency on forest resources such as timber, fuelwood, fodder, grazing, thatching, and non-timber forest products has decreased in last two decades due to improvement in the local economy and availability of alternative options such as biogas for cooking. However, people living in rural areas, landless people, and indigenous groups (Tharu, Bote, Majhi, Musahar) are still dependent on forests for their livelihood needs.

The Department of National Parks and Wildlife Conservation has managed Chitwan National Park since its establishment. Initially, the department used the protectionist approach to ensure the protection of biological diversity. Attempts were made to keep local people out of the area using the fences-and-fines approach. There was huge public outcry due to displacement of local communities, the ban on collection of forest products, and wildlife damage to crops, livestock, and humans. Learning from domestic and international experience, the Government of Nepal decided to adopt the ICDP approach in the early 1990s.

The main actors involved in management of Chitwan National Park are the Government of Nepal, the Ministry of Forests and Soil Conservation, the Department of National Parks and Wildlife Conservation, the Nepalese Army, local people, and nongovernmental organizations (NGOs) such as the National Trust for Nature Conservation and WWF Nepal. The department is responsible for handling of all management, legal, and technical matters. A chief warden appointed by the department implements forests and wildlife conservation programs. The Nepalese Army has been involved in protection of the national park since 1975. To protect the invaluable wildlife and their habitats, the army conducts patrol, search, ambush, and sweep operations. The buffer zone is managed by the department in collaboration and partnership with local people. The chief warden carries out work relating to management of the buffer zone, including preparation and implementation of the management plan (Government of Nepal, 1996). The role of the community-based organizations (CBOs) is to enhance, promote, and ensure people's participation in conservation and development programs.

The importance of local, national, and international NGOs in Chitwan National Park and its buffer zone cannot be overemphasized. Most notable support comes from the National Trust for Nature Conservation and WWF Nepal. The Trust started the Nepal Conservation Research and Training Center to conduct biological research and monitoring of flora and fauna in 1989. More recently, the Trust, through the Biodiversity Conservation Center, has helped Chitwan National Park with wildlife research (e.g., rhino count, rhino translocation), *ex-situ* wildlife breeding (e.g., gharial, vulture, and elephant breeding), and a Wildlife Display and Information Center. In addition, the Trust supports local communities in capacity building, income generation, alternative energy, and health and sanitation activities. The WWF Nepal provides financial support to the Office of Chitwan National Park, CBOs, and local NGOs to execute conservation and development programs. There are countless other independent researchers, academic institutions, and NGOs working in the area of conservation and community livelihoods in Chitwan National Park and its buffer zone.

Kanchenjunga Conservation Area

Established in 1997 as Nepal's third conservation area, the Kanchenjunga Conservation Area extends over 2035 km² in the Himalayas of eastern Nepal, bordering Tibet Autonomous Regions of China to the north and Sikkim of India to the east. Land cover of the conservation area is 41.2% rocks, 22.8% snow and glaciers, 16.1% forests, 10% shrublands, 9.3% pasturelands, 0.5% agricultural lands, and 0.1% lakes and landslide areas (Kanchenjunga Conservation Area Management Council, 2004). The conservation area is popular for its stunning scenery of snow-covered mountains, steep valleys, diverse flora and fauna, alpine pastures, and human settlements. Thousands of

years of work of glaciers and rivers have carved the landscape of the conservation area, forming high ridges and deep valleys. The lowest point of the conservation area has an elevation of 1,200 m (Thiwa Khola), whereas the highest point measures 8,586 m (Mount Kanchenjunga, the third highest peak in the world). Owing to its wide-ranging elevation, accompanied by rugged topography and exposure, the climate ranges between subtropical to nival. Average annual rainfall of the conservation area is 2,013 mm, which falls in form of rain (southern part) and snow (northern part).

Because of the altitudinal and climatic variations, the conservation area is rich in plant and animal diversity. The Kanchenjunga area hosts two of the Global 200 WWF identified ecoregions—the eastern Himalayan alpine meadows and the eastern Himalayan broadleaf and conifer forests. The ecoregions are the world’s most unique and biologically representative places. The Kanchenjunga Conservation Area encompasses 16 forests types and 844 species of plants, including 24 species of rhododendron and 48 species of orchids (Kanchenjunga Conservation Area Management Council, 2013a). The diverse ecosystem is home to 22 species of mammals and 252 species of birds. Snow leopard, red panda (*Ailurus fulgens*), Himalayan black bear (*Ursus thibetanus*), musk deer, Tibetan wolf, and macaque (*Macaca assamensis*) are the rare and endangered wildlife species inhabiting the conservation area. Other important wildlife species are the common leopard, blue sheep (*Pseudois nayaur*), and common langur (*Semnopithecus entellus*). Owing to its unique features, the Government of Nepal declared the Kanchenjunga region as a “Gift to the Earth” in April 1997 as part of the WWF’s Living Planet Campaign. Bordering the Khangchendzonga National Park of Sikkim (India) to

the east and the Qomolangma National Nature Preserve of Tibet (China) to the north, the conservation area provides an unparalleled opportunity for trans-boundary conservation.

The Kanchenjunga Conservation Area is sparsely populated; approximately 6,500 people belonging to about 1,250 households reside in 35 settlements of four village development committees, namely Lelep, Tapethok, Wolanchung Gola, and Yamphudin (Kanchenjunga Conservation Area Management Council, 2013a). Rich in cultural heritage, the settlements are a mosaic of ethnicities with diverse lifestyles and religious practices. The major ethnic groups of the conservation area are the Limbu, Sherpa, Rai, and Bhote, who practice Hinduism, Buddhism, and Animism. The major religious places are the Dikicholing Gompa and the Pathibhara Devi Temple.

Because of limited economic opportunities, poverty is widespread in the Kanchenjunga Conservation Area. Subsistence agriculture is the main source of local livelihood, supplemented by pastoralism, non-timber forest products, and tourism. The shifting cultivation practice, also termed as slash-and-burn agriculture, has survived in the area through generations. Though the Kanchenjunga area was opened to foreign tourists in 1990, it has yet to develop as a mainstay of the local economy. The area receives less than one thousand tourists every year. People are traditionally dependent on forest products, including timber for house construction, firewood for cooking and heating, and fodder for livestock.

The Government of Nepal, the Ministry of Forests and Soil Conservation, the Department of National Parks and Wildlife Conservation, WWF Nepal, and local communities have managed the Kanchenjunga Conservation Area since its establishment. The department and WWF Nepal started the Kanchenjunga Conservation Area Project in

March 1998, with the goals of improving the socioeconomic conditions of local people and safeguarding the biodiversity of the area. The project has focused on formation and strengthening of local institutions to achieve its mission. In 2003, the Kanchenjunga Conservation Area Management Council was formed, representing seven conservation area user committees, 44 user groups, and 32 mother groups.

The management council was given management responsibility of the Kanchenjunga Conservation Area in 2006, making it Nepal's first protected area under community management (Parker & Thapa, 2011). Recognizing the efforts of the management council and other CBOs, in 2012, the Government of Nepal extended the management responsibility of the conservation area for five years. After the handover, the roles and responsibilities of the government agencies, WWF Nepal, and local communities were redefined. The management council assumed primary responsibility, while the government agencies and WWF Nepal were assigned supporting positions. Presently, the role of the government agencies is to help the management council for protection and management of the conservation area (Government of Nepal, 2007). The WWF Nepal serves as a facilitator to secure technical and financial assistance from donors. For example, the MacArthur Foundation donated US\$ 450,000 to WWF Nepal to prepare the management council for the sustainable management of the Kanchenjunga Conservation Area (Baral & Shrestha, 2011).

Data and Instrument

Researchers suggest that a case study should use multiple sources of information (Scholz & Tietje, 2002). The sources of information for this research were semi-structured interviews, surveys, and secondary data. Fifty-five face-to-face interviews (15

short interviews and 40 in-depth interviews) were conducted with various stakeholders in the Annapurna Conservation Area, Chitwan National Park, and the Kanchenjunga Conservation Area, including national park staff members, hotel owners and employees, tour operators and guides, officers of NGOs and CBOs, and local residents. A total of 435 surveys in Annapurna and 430 surveys in Chitwan were collected. Secondary data were obtained from various published and unpublished sources, including journal papers, books, newspaper articles, periodic plans, laws and policies, and Master's and doctoral theses. The data collection instruments and data analysis procedure vary across the studies and are discussed in detail in the 'Methods' section of each study.

CHAPTER 3

MANAGING PROTECTED AREAS FOR BIODIVERSITY CONSERVATION, COMMUNITY LIVELIHOODS, AND SUSTAINABLE TOURISM: AN INSTITUTIONAL ANALYSIS

Introduction

The modern day protected area management paradigm began with the establishment of Yellowstone National Park in the United States in 1872. This paradigm has spread across the globe and evolved over time. The initial intent to set aside natural areas as national parks was to assure government ownership, so that privatization of the land and exploitative use of its resources could be avoided (Nash, 2014; Pfueller et al., 2011). Protected areas now vary not only in terms of ownership of the land, but also with regards to management authority, management goals, and use of resources.

Protected areas are owned and managed by many actors, including state, private individuals and companies, local communities, and environmental organizations (Dudley, 2008). Management goals vary between strict protection for preservation of biodiversity and sustainable use of natural resources (van Wilgen & Biggs, 2011). Protected area resources are used for a variety of purposes including scientific research, recreation and tourism, and community livelihoods (Gardner et al., 2013; Hassanali, 2013; Pfueller et al., 2011; Tumusiime & Vedeld, 2012).

Protected area literature is rich with studies documenting successful and failed cases (Kingsford, Biggs, & Pollard, 2011; Parker & Thapa, 2011; Sebele, 2010; Tumusiime & Vedeld, 2012). In addition, an extensive body of knowledge has been produced looking at different aspects of governance in protected areas (Lockwood, 2010;

Schultz, Duit, & Folke, 2011; Tumusiime & Vedeld, 2012; van Wilgen & Biggs, 2011). Past studies, however, are predominantly descriptive and there is a dearth of research oriented towards developing or testing the theories that explain the linkages between governance approaches and protected area outcomes (Hayes, 2006; Nolte, Agrawal, Silvius, & Soares-Filho, 2013).

Protected areas that allow some degree of consumptive or non-consumptive use are classic examples of common-pool resources (Hardin, 1968). Research on protected area management can benefit immensely from theoretical development on common-pool resources. The common-pool resource problems entail actions at both higher (e.g., international and national) and lower (e.g., community) levels, which require nested and overarching institutions (Gruby & Basurto, 2013; Mansbridge, 2014). Empirical evidence suggests that neither the state nor the market nor communities are uniformly successful in managing common-pool resources (Mansbridge, 2014; Nagendra & Ostrom, 2012).

Common-pool theorists argue that the governance debate should transcend the private-public-community trichotomy, since a monocentric approach envisions oversimplified and idealized institutions, which cannot address the complex common-pool problems (Nagendra & Ostrom, 2012). The theorists posit that a multilevel, polycentric system is more efficient than a single layer state, community, nonprofit, or private sector mechanism (Ostrom & Cox, 2010). Protected areas are complex systems with polycentric and nested structures that require analysis of interdependencies across multiple scales (Gruby & Basurto, 2013; van Wilgen & Biggs, 2011). Nevertheless, the protected area literature is somewhat slow to adopt the theoretical development in the area of common-pool resources.

The purpose of this study was to evaluate the governance strategies adopted in managing protected areas. This research explored biophysical, socioeconomic, and institutional contexts, analyzed the cross-scale interactions between the actors, and evaluated protected area outcomes with respect to biodiversity conservation, community livelihoods, and sustainable tourism. This paper demonstrates that the theories on common-pool resources help understand the governance approach under which diverse stakeholders acting across multiple levels can successfully manage protected areas.

Literature Review

Governance of Common-Pool Resources

Common-pool resources are the resources with low excludability (i.e., it is costly to exclude potential beneficiaries) and high subtractability (i.e., one person's use of resources diminishes availability of the resources for other beneficiaries; McGinnis, 2011). Forests, pasturelands, irrigation systems, and fishing grounds are typical examples of common-pool resources (Ostrom, 2005). Common-pool resources have historically been governed by states, communal groups, private sector (individuals or corporations), or no one (Ostrom, 2010). In his seminal article, Hardin (1968) argued that the only solution to avert the tragedy of the commons would be exclusion of users through privatization or state control. Ostrom (1990) contended that local people acting together effectively manage common-pool resources. This debate initiated the state-market-community trichotomy in governance of common-pool resources (Nagendra & Ostrom, 2012).

The views of both Hardin and Ostrom have received mixed reaction in the literature. Hardin (1968) is widely appreciated for unveiling the issues of open access to

natural resources. However, his argument is very theoretical and resource-centric that disregards the needs, priorities, and actions of traditional resource users (Dietz, Ostrom, & Stern, 2003). Ostrom (1990) noted that local communities manage common-pool resources more effectively than the public and private sectors in many instances. Her argument was based on successful cases of community management of forests, fisheries, irrigation systems, and grazing lands worldwide (Ostrom, 2005, 2010). However, some scholars argue that the top-down, as well as the mixed governance approach, solves common-pool resource dilemmas in certain circumstances (Mansbridge, 2014; Pennington, 2013). Therefore, more recently, the discourse on common-pool resources has shifted towards polycentric governance.

Polycentricity

A polycentric system is characterized by a social system with numerous actors belonging to state, market, and community that can make autonomous decisions within their specified domain (McGinnis & Ostrom, 2012). The system has several independent, nested decision-making centers that operate under an overarching system and function coherently. The interplay of actors across vertical and horizontal levels is deemed necessary in polycentricity (Tumusiime & Vedeld, 2012). The strength of the polycentric governance system is that it assigns responsibilities to individuals or organizations at different levels, providing considerable autonomy and independence to enforce policy and rules within their scope of authority (Nagendra & Ostrom, 2012).

Scholars argue that excessive emphasis on a single form of governance (e.g., state, market, or communal) without recognizing the real-world conditions results in panacea problems (Ostrom & Cox, 2010). There are many situations involving small- and

medium-size common-pool resources that are best suited for a decentralized, bottom-up institutional arrangement, whereas for large-scale and mobile resources institutional arrangements can be more complex and challenging, largely due to the complexity and scale of the resources (Nagendra & Ostrom, 2012; Pennington, 2013). The polycentric theory opposes the tenets of both top-down and bottom-up approaches, and argues that the contribution of actors at both higher and lower levels are required to manage complex common-pool resources. The essence of polycentricism is that a productive symbiosis among various actors at different levels produces the desired outcomes.

In a polycentric governance structure, the institutions are nested, the authority modestly overlaps, and the responsibilities are voluntarily divided among the actors based on their capability (McGinnis & Ostrom, 2012). This does not mean there is no formal institutional arrangement at all, but the reality is that the players acting at different levels are given the roles that they want to play and they are compatible with. The goal in a polycentric arrangement is to achieve an equilibrium solution rather than maintain a status quo, so the institutional arrangements should be flexible enough to respond to the shifting priorities with social innovation and technological development. A polycentric system allows for several independent trial-and-error exercises in policy-making that not only enhance the adaptability of a system, but reduce the chance of whole system failure as well. The compatibility of polycentrism with the emerging adaptive co-management paradigm further enhances its applicability in management of common-pool resources (Ostrom & Cox, 2010).

Adaptive Co-management

Adaptive governance or co-management is a flexible, collaborative, and learning-based governance system that relies on teamwork among several stakeholders operating at multiple levels (Bixler, 2014; Childs, York, White, Schoon, & Bodner, 2013; Gerlak, 2014). Often labeled as opportunistic approach, it combines adaptive management, the learning-by-doing approach, with co-management, the collaborative approach (Kingsford et al., 2011; Schultz et al., 2011). The adaptive co-management approach embraces an iterative decision making process, wherein management strategies are changed or adjusted with availability of new information (van Wilgen & Biggs, 2011). The polycentric structure is critical in building the adaptive capacity to deal with the problems of common-pool resources. Nagendra and Ostrom (2012) noted that a polycentric, multilevel, and decentralized arrangement emboldens adaptive co-management by allowing trial-and-error learning. Both polycentric governance and adaptive co-management are guided by the principles of involvement of diverse stakeholders, sharing of power and responsibilities, and linkages between two or more spatial scales (Bixler, 2014).

The adaptive governance of common-pool resources requires management strategies to be flexible enough to respond to changing social, economic, and ecological environments. The best result that can be obtained from a conventional top-down approach is maintenance of status quo, since the approach focuses on maintenance of stability (Bown, Gray, & Stead, 2013). Hence, under the auspices of the state and private ownership, adaptive co-management cannot be imagined. On the other hand, locally

devised and enforced rules can be adapted more quickly to changing contexts than state sponsored laws and regulations.

Protected Area Governance

Four broad types of governance approaches, namely state, private, community, and shared governance, have been recognized for protected areas (Dudley, 2008). In state governance, a government body—national, provincial/state, or local—holds the authority, responsibility, and accountability for managing protected areas. Private governance involves management of a protected area by an individual (single person or family), for-profit corporation, or not-for-profit organization, such as an NGO. In community governance, protected areas are managed by indigenous peoples or local communities. The shared governance or co-management approach advocates for sharing of the management authority and responsibility among multiple actors, in the form of collaborative management or joint management (Bown et al., 2013; Dudley, 2008). This is a relatively new approach that was initiated in response to the escalating conflict between the parks and local people in developing countries. Moving away from a protectionist to a participatory approach is considered a paradigm shift in the history of protected areas (Hassanali, 2013).

A collaborative approach envisions community participation in biodiversity conservation initiatives and aims to integrate the needs of local people while managing natural resources (Clifton, 2013). Because of its potential to contribute to biodiversity conservation and local livelihoods (Gardner et al., 2013; Tumusiime & Vedeld, 2012), the shared governance approach has been highly promoted by international donor agencies such as the World Bank, the Asian Development Bank, the United Nations

Development Program (UNDP), WWF, and the United States Agency for International Development (USAID) as the ICDP approach (Gardner et al., 2013; Sebele, 2010). The projects have been implemented under various names such as the Buffer Zone Program in Nepal, the Community Based Natural Resource Management (CBNRM) Project in Botswana, the Conservation of Biodiversity Resource Areas (COBRA) Program in Kenya, the Living in a Finite Environment (LIFE) program in Namibia, the Tchuma Tchato “Our Wealth” in Mozambique, the Communal Area Management Program for Indigenous Resources (CAMPFIRE) in Zimbabwe, the Administrative Design (ADMADe) for Game Management Areas in Zambia, the Ujirani Mwena “Good Neighborliness” in Tanzania (Agrawal & Ostrom, 2001; Mbaiwa, 2005; Mburu & Birner, 2007; Sebele, 2010; Stone & Nyaupane, 2014; Stone & Rogerson, 2011). The ICDP approach at its best offers a win-win situation for both resource managers and local people (Hassanali, 2013; Sebele, 2010; Tumusiime & Vedeld, 2012). Critics acknowledge that the approach reconciles the trade-offs between conservation and development camp, but a scenario where ‘everybody wins’ is not realistic (Schultz et al., 2011).

Polycentric Adaptive Co-management Approach in Protected Areas

The global challenge regarding protected areas is how to devise governance models that help achieve anticipated outcomes (Bown et al., 2013). Gardner and colleagues (2013) noted that we know little about how to manage protected areas realistically. The more than 140 years of experience in protected area management resists the blueprint approach (Ostrom, 2010; Ostrom & Cox, 2010). The problem with panacea institutions is that they ignore the polycentric and nature multilevel of linkages among

organizations. The management of a protected area will be suboptimal if its multiscaled nature and the cross-scale interactions are not systematically examined. Protected areas are simultaneously used by various stakeholder groups and the interests of the groups could be similar, different, or independent (Kitamura & Clapp, 2013; Pfueller et al., 2011). The biggest advantage of the polycentric approach in the context of protected areas is its potential for multiple stakeholders to concurrently achieve their goals while supporting others (Lockwood, 2010; van Wilgen & Biggs, 2011).

Protected areas are comprised of coupled human and natural systems called social-ecological systems (Gruby & Basurto, 2013; van Wilgen & Biggs, 2011). Polycentrism argues for a shift in thinking from the conventional cause and effect linear model to the holistic systems approach. Researchers interested in governance of protected areas have conducted a large number of case studies across the globe (van Wilgen & Biggs, 2011). However, the study of protected areas from a polycentric perspective and systems approach is still in its infancy (Gruby & Basurto, 2013; Lockwood, 2010; van Wilgen & Biggs, 2011). In addition, the problem with the current protected area management approaches is that they are not sufficiently flexible, dynamic, or iterative, despite the increasing consensus among scholars and practitioners on the need for adaptive management. This research links protected area research with the literature and theory on polycentric and adaptive governance of common-pool resources.

Protected Area Governance Evaluation Model

The institutional analysis and development framework is the most extensively used diagnostic and analytical tool to study governance of common-pool resources (Ostrom, 2005, 2011). The framework is a multi-tier framework and allows multiple

levels of analysis. Several theories (e.g., economic theory, game theory, theory of common-pool resources) and models have been developed and tested under this framework (Ostrom, 2010, 2011). This research developed a model based on this framework to evaluate governance of protected areas (Figure 5). Protected areas are the action situations, where interactions among the actors occur. The interactions are affected by three variables describing the context or setting: biophysical attributes, community characteristics, and institutional arrangements. The protected area outcomes in the present model include biodiversity conservation, community livelihoods, and sustainable tourism (Nyaupane & Poudel, 2011). The author believes that the evaluation of outcomes help determine the relative success of the governance approaches used in management of protected areas.

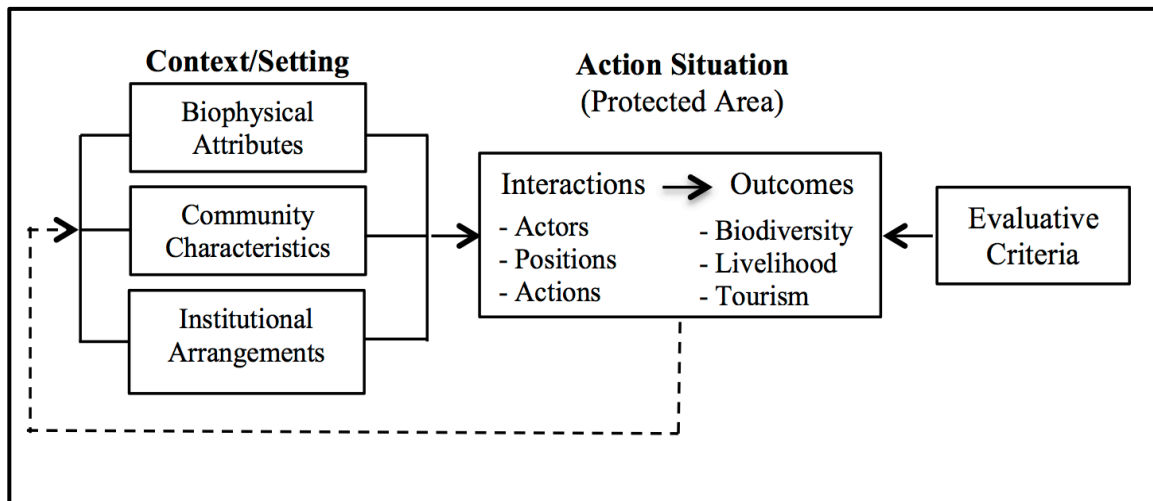


Figure 5. Protected area governance evaluation model.

Source: Adapted from Ostrom (2011, p. 10)

Methods

The case study method is the most common approach used to study common-pool resources (Agrawal, 2003). Logically, this method can be used to analyze governance of

protected areas through the lenses of polycentricity and adaptive co-management. The unit of analysis in this research is the protected area. This research employed the multiple-case study method (Yin, 2014), which enables researchers to compare and contrast the cases to explore the similarities and differences between them. Using the purposive sampling strategy, three protected areas in Nepal—the Annapurna Conservation Area, Chitwan National Park, and the Kanchenjunga Conservation Area—were chosen as the cases because the areas are representative of the protected areas in Nepal in terms of physiographic location, sociodemographic characteristics, IUCN category, and governance system.

The empirical data for the study were collected over a four-month period between July and October 2012. One of the key strategies for successful data collection in case study research is to use a variety of data sources, which is believed to enhance credibility and trustworthiness of the information. This study largely relied on secondary data obtained from various published and unpublished sources. Additionally, 55 face-to-face interviews (15 short interviews and 40 in-depth interviews) were conducted with national park staff members, hotel owners and employees, tour operators and guides, officers of NGOs and CBOs, and local residents. The short interviews lasted 10-20 minutes and were particularly useful for locating the secondary data sources and triangulating the secondary data. The in-depth interviews were longer (30-60 minutes) and the information obtained was used to complement the secondary data. A snowball sampling method was employed to identify the interviewees. Interview guides were prepared in advance to maintain consistency across the interviewees and protected areas. The interviews were conducted with the support of locally hired research assistants. Notes were taken for both

types of interviews and the in-depth interviews were audio-recorded with the permission of interviewees.

The data collection, both primary and secondary, and analysis process occurred concurrently, with obtained information guiding further data collection. At first, the author collected and reviewed various published and unpublished sources related to the protected areas. The published sources include the books, journal papers, newspaper articles, periodic plans, laws and policies, and Master's and doctoral theses. The author also searched grey literature, including annual progress reports, periodic financial reports, meeting minutes, and internal databases for additional information. The author made several field trips and office visits to interview relevant stakeholders at local and central levels. The interviews were largely centered on possible data sources, accuracy of available data, and information held by the interviewees. The interviews and secondary sources produced a massive amount of data, which were organized into a Microsoft Excel spreadsheet according to the variables in the model developed to evaluate protected area governance approaches (see Figure 5). The author tried to be objective during the data analysis process and the presented results are the summary of data obtained from the secondary sources and the responses of interviewees.

Context/Setting

Biophysical Attributes

The biophysical attributes of the Annapurna Conservation Area, Chitwan National Park, and the Kanchenjunga Conservation Area are presented in Table 1. The Annapurna Conservation Area was established in 1992 as Nepal's first conservation area covering an area of 7,629 km² in the northern part of central Nepal (King Mahendra Trust for Nature

Conservation, 1997). The conservation area is known for its diverse geography, wherein the altitude ranges between 1,000 m and 8,091 m (Mount Annapurna, the 10th highest peak in the world). The Annapurna region is rich in floral and faunal diversity that includes 1,233 species of plants, 102 species of mammals, 488 species of birds, 40 species of reptiles, and 23 species of amphibians (National Trust for Nature Conservation, 2009). The conservation area is home to several rare and endangered wild animals including the snow leopard, musk deer, Tibetan argali, Tibetan fox, Tibetan wolf, Tibetan wild ass, and Himalayan brown bear.

Chitwan National Park was established in 1973 as the first protected area of Nepal and an area surrounding the national park was designated as a buffer zone in 1996. The core area is extended over 932 km², and the buffer zone is 750 km². More than 570 species of plants, 68 species of mammals, 545 species of birds, 120 species of fish, 150 species of butterflies, 47 species of reptiles and 9 species of amphibians have been recorded in Chitwan (Chitwan National Park, 2013). The national park provides habitat for many globally threatened species of wildlife, including the one-horned rhinoceros, royal Bengal tiger, and gharial crocodile. The national park contains the second largest population of one-horned rhinoceros in the world. The national park hosts the Terai-Duar savanna and grasslands, one of the Global 200 WWF identified ecoregions. The national park was designated as UNESCO World Heritage Natural Site in 1984. In addition, the Beeshazar and associated lakes is included on the Ramsar's list of Wetlands of International Importance in 2003.

Table 1

Biophysical Attributes of Protected Areas

Attributes	Annapurna	Chitwan	Kanchenjunga
Establishment	1992	1973 (core area), 1996 (buffer zone)	1997
Area (km ²)	7,629	National park: 932 Buffer zone: 750	2,035
Location	North central Nepal	South central Nepal	North eastern Nepal
Altitude (m)	1,000-8,091	110-815	1,200-8,586
Biodiversity	1233 plants, 102 mammals, 488 birds, 40 reptiles, 23 amphibians	>570 plants, 68 mammals, 545 birds, 120 fishes, 150 butterflies, 47 reptiles, 9 amphibians	844 plants, 48 orchids, 24 rhododendrons, 22 mammals, 253 birds
Important wildlife species	Snow leopard, musk deer, Tibetan argali, Tibetan fox, Tibetan wolf, Tibetan wild ass, and Himalayan brown bear	One-horned rhinoceros, royal Bengal tiger, gharial crocodile, Asian elephant, and Gangetic dolphin.	Snow leopard, red panda, Himalayan black bear, musk deer, Tibetan wolf, and blue sheep
Ecoregions	-	Terai-Duar savanna and grasslands	Eastern Himalayan alpine meadows and eastern Himalayan broadleaf and conifer forests
International significance	-	World Heritage Site in 1984; Ramsar's list in 2003	Gift to the Earth in 1997

The Kanchenjunga Conservation Area was designated as Nepal's third conservation area in 1997. It is extended over 2035 km² in the Himalayas of eastern Nepal. The elevation ranges between 1,200 m to 8,586 m (Mount Kanchenjunga, the third highest peak in the world). The Kanchenjunga area is rich in floral and faunal diversity and hosts two of the Global 200 WWF identified ecoregions: the eastern

Himalayan alpine meadows and eastern Himalayan broadleaf and conifer forests. The conservation area is home to 844 species of plants, including 24 species of rhododendron and 48 varieties of orchids, 22 species of mammals, and 252 species of birds (Kanchenjunga Conservation Area Management Council, 2013a). Endangered species recorded in Kanchenjunga are the snow leopard, red panda, musk deer, and Tibetan wolf. Appreciating its unique features, the Government of Nepal declared the Kanchenjunga region as a “Gift to the Earth” in April 1997 as part of the WWF’s Living Planet Campaign.

Community Characteristics

The sociodemographic characteristics of the Annapurna Conservation Area, Chitwan National Park, and the Kanchenjunga Conservation Area are presented in Table 2. The Annapurna Conservation Area includes 57 village development committees of Kaski, Lamjung, Manang, Myagdi, and Mustang districts and is inhabited by 90,000 people in 18,680 households (National Trust for Nature Conservation, 2009). The population is diverse in terms of race (Tibeto-Burman and Indo-Aryan), religion (Hindu, Buddhist, and pre-Buddhist), and ethnicity (more than 10 ethnic groups). Two cultural heritage properties—the Cave architecture of Muktinath valley of Mustang and the Medieval Earthen Walled City of Lo Manthang—contained in the conservation area are on the UNESCO World Heritage Tentative List.

The Annapurna region is relatively more accessible compared to other mountain protected areas of Nepal. Several points in the conservation area are connected by all-weather and seasonal roads to Pokhara, a major city and tourism hub of Nepal. People in the Annapurna region are historically dependent on agriculture, with livestock being the

secondary livelihood option. The agricultural practices are traditional and barely meet the subsistence needs of local population. Other sources of income are service (foreign and domestic), trade (Tibet and other parts of Nepal), and tourism. People are traditionally dependent on forest resources for timber, fuelwood, fodder, grazing, and non-timber forest products. The demand for timber and fuelwood is very high in the areas receiving large number of tourists.

Table 2

Socioeconomic Characteristics of Protected Areas

Characteristics	Annapurna	Chitwan	Kanchenjunga
Districts/VDCs	5/57	4/36	1/4
Population	90,000	260,352	6,500
Ethnic groups	Gurung, Magar, Thakali, Manange, Brahmin, Chhetri, and Dalits	Tharu, Brahmin, Chhetri, Newar, Bote, Majhi, and Musahar	Limbu, Sherpa, Rai, and Tibetan refugees
Religion	Hindu, Buddhist, and pre-Buddhist	Hindu, Buddhist, Other	Hindu, Buddhist, and Animistic
Livelihood options	Farming, animal husbandry, tourism, and foreign employment	Farming, animal husbandry, tourism, business, service, and foreign employment	Farming, animal husbandry, trade
Access	Moderately accessible by road	Highly accessible by road and air	No connection to road networks and airstrip is seasonal
Dependency on natural resources	Fuelwood, timber, fodder, and NTFPs	Fuelwood, timber, and fodder	Fuelwood, timber, fodder, and NTFPs

The buffer zone of Chitwan National Park extends over 34 village development committees and two municipalities of Chitwan, Parsa, Makwanpur, and Nawalparasi districts, where the population is 260,352 individuals in 45,616 households (Chitwan

National Park, 2013). Until the beginning of the twentieth century, the area was sparsely populated with a few ethnic groups, such as the Tharu, Bote, Majhi, and Musahar. The buffer zone has witnessed significant population growth in the last six decades due to immigration of people from the hilly areas of Nepal. The current population is so diverse that virtually every major ethnic, cultural, and linguistic group of Nepal can be found there.

The area is very accessible and well connected via road and air networks with major cities of Nepal, including Kathmandu and Pokhara. The economy of the area is diverse with farming, animal husbandry, trade, service, and tourism being the major engines of the local economy. The agriculture sector is more modernized and profitable when compared to other parts of Nepal. Many people own micro-enterprises, such as retail, grocery, and hardware stores, hotels, and restaurants. Jobs in the government, nonprofit, and private sectors (e.g., guide, cook, and server) are growing rapidly. Further, people go for foreign employment to Malaysia, the Middle East, and the Western countries. People are dependent on forest resources for timber, fuelwood, fodder, grazing, thatching, and non-timber forest products.

The Kanchenjunga Conservation Area extends over four village development committees of the Taplejung district and is sparsely populated with approximately 6,500 people in 1,250 households (Kanchenjunga Conservation Area Management Council, 2013a). People of more than 10 ethnicities live in the area, where the Limbu, Sherpa, Rai, and Bhote are the major ethnic groups. People practice Hinduism, Buddhism, and Animistic religious traditions. The region is very remote and lacks basic infrastructure. It has no connection to road networks and the nearest road head is about a one-day walk (12

hours) away. There is an airport in Suketar, but air access is curtailed by poor infrastructure and unpredictable weather conditions.

Agriculture is the main livelihood for a majority of the households (Parker & Thapa, 2011). Other available options are pastoralism, non-timber forest products, and tourism. The agricultural practices are traditional and hardly meet subsistence needs. People estimate that less than 10% of the households in the Kanchenjunga area produce enough food grains for household consumption for the entire year. Shifting cultivation, also termed as slash-and-burn agriculture, has been practiced through generations. In recent years, cultivation of chiraito (*Swertia chirayita*) and cardamom (*Amomum subulatum*), herbal plants, has appeared as a major income source. Forests supply timber for house construction, firewood for cooking and heating, and fodder for livestock.

Institutional Arrangements

The institutional arrangements for management of the Annapurna Conservation Area, Chitwan National Park, and the Kanchenjunga Conservation Area are presented in Table 3. The National Park and Wildlife Conservation Act, 1973 (Government of Nepal, 1973) and the regulations and guidelines formed under the provisions of the Act provide legal basis for establishment and management of protected areas (i.e., national parks, wildlife reserves, and hunting reserves) in Nepal. The third amendment made in the Act in 1989 included a legislative provision to declare conservation areas; a similar provision for buffer zones was made in the fourth amendment of the Act in 1993. National parks are IUCN category II protected areas, whereas conservation areas and buffer zones belong to the category VI “protected area with sustainable use of natural resources.” The Act requires the Department of National Parks and Wildlife Conservation to manage the

buffer zone along with the core area. The management of conservation areas may be entrusted to any institution established with the objective of conserving nature and natural resources for an agreed period.

Table 3

Institutional Arrangements for the Management of Protected Areas

Institutions	Annapurna	Chitwan	Kanchenjunga
Act	NPWC Act, 1973 Conservation area: 3rd amendment in 1989	NPWC Act, 1973 Buffer zone: 4th amendment in 1993	NPWC Act, 1973 Conservation area: 3rd amendment in 1989
IUCN category	VI	II (core area) and VI (buffer zone)	VI
Management	NTNC	DNPWC/CNP	KCAMC
Approach	ICDP	ICDP	ICDP
Duration	1992-2012	1973-now	2006-now
Partners	GON/MFSC/DNPWC and CBOs	Nepalese Army, CBOs, NTNC and WWF Nepal	GON/MFSC/DNPWC, and WWF Nepal
CBO structure	One tier: village development committee	Three tiers: protected area, management unit, and settlement	Three tiers: conservation area, management unit, and settlement
CBOs formed	> 1,000	> 1,850	> 110

The management responsibility of the Annapurna Conservation Area is entrusted to the National Trust for Nature Conservation. The involvement of the Trust in the Annapurna area began with the launch of the Annapurna Conservation Area Project in 1986 (King Mahendra Trust for Nature Conservation, 1997). When the Annapurna Conservation Area was officially gazetted in 1992, the management authority was given to the Trust for 10 years and was later extended for additional 10 years until 2012

(Annapurna Conservation Area Project Monitoring and Evaluation Team, 2012). The Trust has been managing the conservation area with the help of the government and local people. A total of 174 full time employees work for the project. The Government of Nepal assumes the power to entrust the management responsibility, approves laws and policies, monitors and evaluates the progress of the project, and issues executive orders to the Trust for sustainable management of the conservation area (Government of Nepal, 1997). The Department of National Parks and Wildlife Conservation maintains a liaison office to act as the bridge between the Government of Nepal and the National Trust for Nature Conservation. The office is also responsible for law enforcement to control wildlife related crimes. The Annapurna Conservation Area is the first protected area in Nepal without military protection.

The National Trust for Nature Conservation is globally credited for pioneering the ICDP model through the Annapurna Conservation Area Project (National Trust for Nature Conservation, 2009). The model considers local communities as both principal actors and prime beneficiaries of the conservation and development programs. In the conservation history of Nepal, this is the first time local people were directly involved in managing protected areas. The guiding principles of the project's ICDP model are people's participation, catalytic role, and sustainability (King Mahendra Trust for Nature Conservation, 1997).

People's participation is sought in planning, decision-making, and implementation stages of the project through CBOs. The project assumes the catalyst role to build the managerial and technical capacity of local institutions, and the matchmaker role to connect local communities with various development partners, donors, and line agencies.

The structure of CBOs parallels the village development committee model—the main grassroots organization, called conservation area management committee, is formed at the village development committee level (Government of Nepal, 1997). In more than 25 years of project implementation, the project has formed more than 1,000 CBOs, including 57 conservation area management committees, 135 forest management subcommittees, 46 tourism management subcommittees, 75 green force clubs, 303 women groups, and 58 saving and credit groups (Annapurna Conservation Area Project Monitoring and Evaluation Team, 2012).

The Department of National Parks and Wildlife Conservation handles the financial, legal, and technical matters related to forests, wildlife, and the natural environment in Chitwan National Park. In the early years of the establishment of the national park, the department used the Yellowstone model (Kitamura & Clapp, 2013), also called the protectionist approach, in which strict measures were adopted to ensure the protection of biological diversity. The Nepalese Army has been deployed for park protection since 1975. The role of the army is to safeguard the invaluable wildlife and their habitat through daily patrolling and periodic search, ambush, and sweep operations. The national park has 50 security posts distributed in and around the park, and there are 139 national park office staff members and 1,086 army personnel deployed in the park (Chitwan National Park, 2013).

The buffer zone of Chitwan National Park is jointly managed by the Department of National Parks and Wildlife Conservation and local people embracing the ICDP approach. This approach recognizes the traditional rights of local people and considers public participation as an indispensable tool to achieve conservation goals. The Office of

Chitwan National Park carries out the works related to management of the buffer zone, such as providing technical support to establish CBOs (Government of Nepal, 1996).

There are three tiers of CBOs in the buffer zone. The buffer zone user groups are formed at the settlement (neighborhood) level, buffer zone user committees are formed at the management unit level, and a buffer zone management committee is formed at the park level. The buffer zone has special provision for community forestry—the chief warden, head of the national park office, may directly hand over the buffer zone community forests to the user groups. Data show that one buffer zone management committee, 21 buffer zone user committees, 1779 buffer zone user groups (856 women only, 850 men only, and 73 mixed groups), and 52 buffer zone community forests have been formed in the buffer zone (Chitwan National Park, 2013).

The Department of National Parks and Wildlife Conservation, WWF Nepal, and local communities have been involved in the management of the Kanchenjunga Conservation Area since its establishment. The department, with the technical and financial support of WWF Nepal, launched the Kanchenjunga Conservation Area Project in March 1998. The project also embraced the ICDP approach and focused on formation and strengthening of local institutions (Parker & Thapa, 2011). As a result, the Kanchenjunga Conservation Area Management Council was formed in 2003, representing seven conservation area user committees, 44 user groups, and 32 mother groups.

The Government of Nepal handed over the management responsibility of the conservation area to the management council for five years in 2006, and the responsibility was extended for another five years in 2012 (Kanchenjunga Conservation

Area Management Council, 2013a, 2013b). This decision is a major milestone in the history of conservation movement in Nepal, as the Kanchenjunga Conservation Area became Nepal's first community managed protected area (Parker & Thapa, 2011). The management council has established its office and hired 19 full time employees to manage its programs (Kanchenjunga Conservation Area Management Council, 2013b). After the handover, the department has provided the necessary technical, legal (including law enforcement), and financial support. The WWF Nepal works as a middleman in garnering technical and financial assistance of donors to the management council.

There are three layers of CBOs in the Kanchenjunga Conservation Area. The management council formed at the protected area level is the apex body representing all CBOs formed in the area. The conservation area user committees are the middle-tier CBOs formed at the management unit level. User groups and mother groups are formed at the settlement level representing each and every household in the area. The management council can directly hand over the community forests to locally formed forest user groups. Within the last seven years of community management, significant progress has been made regarding the formation of CBOs, including seven conservation area user committees, 46 conservation area user groups, 35 mother groups, and 26 community forests (Kanchenjunga Conservation Area Management Council, 2013b; Kanchenjunga Conservation Area Project, 2013).

Outcomes in the Protected Areas

The achievements in the protected areas were evaluated with respect to three criteria: biodiversity conservation, community livelihoods, and sustainable tourism.

Biodiversity Conservation

Biodiversity conservation is touted as one of the major accomplishments in the Annapurna Conservation Area, Chitwan National Park, and the Kanchenjunga Conservation Area. A community forestry program has been implemented in Chitwan and Kanchenjunga, but no such provision exists in Annapurna. There are 53 community forest user groups managing 8,542 ha of forests in the buffer zone of Chitwan National Park (Chitwan National Park, 2013) and 26 community forest user groups manage 73,327 ha of forest and pasturelands in the Kanchenjunga Conservation Area (Kanchenjunga Conservation Area Management Council, 2013a).

Illicit collection of forest products, forest fires, and encroachment pose varying degrees of threat to the forests in the protected areas. Illegal extraction and smuggling of timber and fuelwood is a ubiquitous challenge. Non-timber forest products suffer from improper harvesting, illegal collection, and smuggling in Annapurna and Kanchenjunga. Forest fires are also recurring problems in Annapurna and Kanchenjunga. The encroachment of public lands to resettle so-called landless people under the protection of political parties has yet to be regulated in all areas. Further, hotel construction in Annapurna, infrastructure projects in Chitwan, and slash-and-burn agriculture and non-timber forest products (chiraito and cardamom) farming in Kanchenjunga have also encouraged forest encroachment. A resident in Ghandruk expressed that “several hotel owners are knocking the door of politicians in Kathmandu in the hope of registering the public lands in which their hotels are built.”

Several studies on wildlife including population status, species ecology, and habitat condition have been conducted in the protected areas. A total of 246 research and

documentation projects have been completed in the last 25 years in the Annapurna Conservation Area (Annapurna Conservation Area Project Monitoring and Evaluation Team, 2012). There is a considerable increase in the populations of wildlife in Chitwan National Park, including the one-horned rhinoceros (800 in 1950, 100 in 1966, 310 in 1978, 544 in 2000, 372 in 2005, 503 in 2011), royal Bengal tiger (60 in 2000, 120 in 2013), and gharial crocodile (235 in 1950, 53 in 1970, 108 in 2013; Chitwan National Park, 2013; Department of National Parks and Wildlife Conservation, 2013). The national park has conducted special programs for *ex-situ* conservation of selected species through the Gharial Conservation and Breeding Center since 1978, the Elephant Breeding Center since 1985, and the Vulture Conservation and Breeding Center since 2008 (Chitwan National Park, 2013).

Research shows that a sizable population of the snow leopard (19-29 adults), blue sheep (1404 individuals), and musk deer (310 individuals) live in the Kanchenjunga Conservation Area (Kanchenjunga Conservation Area Management Council, 2013a; Kanchenjunga Conservation Area Project, 2013). Use of state-of-the-art technology (e.g., camera trapping, GPS tracking, and conservation drone) for snow leopard monitoring in Annapurna and Kanchenjunga, and rhino, tiger, and gharial research in Chitwan, are worth mentioning. However, a systematic mechanism to record the populations of wildlife and disseminate the research findings is nonexistent in all three protected areas.

Wildlife protection efforts are found to be successful in Chitwan compared to Annapurna and Kanchenjunga. The Department of National Parks and Wildlife Conservation, with the help of the Nepalese Army and other security forces, has been successful in law enforcement for the protection of wildlife in Chitwan. Data show that

148 rhinos were killed in the ten year period between 2001-2010, but the casualties dropped to four in the last three years (2011-2013; Chitwan National Park, 2013). Park officials in all three areas repeatedly acknowledged the support of local communities in conservation initiatives in their interviews. An officer in Chitwan National Park said that “the community-based anti-poaching groups are doing tremendous job, which includes raising awareness, patrolling, and informing us the suspicious activities. Now we feel like we have our eyes in every village.”

Hunting and poaching involving local people have been significantly reduced and the CBOs have been proactive to control wildlife-related crimes. Due to the high market value of and escalating international demand for wildlife parts, anti-poaching operations need concerted and continuous efforts. However, the Annapurna and Kanchenjunga Conservation Areas do not have a strong mechanism to deal with organized wildlife crimes. The department liaison offices are located distantly and are too understaffed to perform regular patrolling of the conservation areas. The CBOs are not given adequate power to punish the offenders. A conservation area management committee member expressed that “the poachers are not scared of us, as they know we do not have legal right to punish them.” Sustainability of funding and other resources was repeatedly mentioned by the interviewees as the major challenge to anti-poaching operations in all three protected areas.

There is a consensus among the respondents in all three protected areas that the incidents of human-wildlife conflict due to crop damage, livestock depredation, and human casualties are frequent. Some people even felt that the protected areas give precedence to wildlife over humans and their property. The conflict incidents frequently

sour the relationship between the protected areas and local people, as well as increase retaliatory killing of wildlife. Local people are dissatisfied over crop damage by pest animals, such as monkeys and deer, almost everywhere in all three protected areas. A resident furious over crop damage in Ghandruk said “Annapurna Conservation Area Project is here for monkeys, not for us. If they are here for us, why don’t they allow us to kill monkeys?” Human and livestock casualties due to predators, such as the snow leopard, common leopard, and royal Bengal tiger, are also significant. In Chitwan, the incidents of human injury and death associated with wildlife attack are disturbing; fifteen people were killed and 21 were injured in the fiscal year 2012-2013 alone (Chitwan National Park, 2013).

Various preventive and compensatory mechanisms have been put in practice to reduce human-wildlife conflicts. Preventive measures include fencing of crops, guarding of livestock, and construction of predator proof corrals in Annapurna and Kanchenjunga; and construction of electric fences, watch towers, game proof (mesh wire) fences in Chitwan. Chitwan National Park provides cash compensation to the victims of human-wildlife conflict based on the government-approved wildlife damage relief guidelines. In Kanchenjunga, all four snow leopard conservation subcommittees run community-based livestock insurance schemes and endowment funds have been established by all seven conservation area user committees to provide compensation for wildlife caused financial loss. However, the budget allocated for compensation is limited in both Chitwan and Kanchenjunga, and a systematic compensation mechanism is absent in Annapurna.

Community Livelihoods

The interviewees reported that the protected areas have brought many livelihood benefits, including access to natural resources, capacity building, income and employment, saving and credit facilities, and infrastructure development to local communities. Residents are allowed to collect forest products, such as timber, fuelwood, fodder, and non-timber forest products, from the community forests in the Kanchenjunga Conservation Area and the buffer zone of Chitwan National Park according to locally prepared norms. There is no provision for community forestry in the Annapurna Conservation Area; instead, in some areas, forest management subcommittees have been formed to manage the forests. The subcommittees are not given the level of autonomy enjoyed by the community forests user groups regarding self-organization, forest management, forest product distribution, and use of community funds, which obviously disregards the principles of decentralized forest governance practiced in Nepal and elsewhere (Agrawal & Ostrom, 2001).

The protected areas have offered many capacity building opportunities to local people through leadership development, empowerment, and skill development. The various levels of CBOs provide leadership opportunities to local people. Specifically, the groups formed at the community level offer countless opportunities for the socioeconomically disadvantaged groups, such as the poor and women, to raise their voice and advocate for their rights. Special programs have been conducted to empower these disadvantaged groups. A woman in Ghandruk recalled that:

Before the Annapurna Conservation Area Project, women in this village were limited to household domains. We used to feel uncomfortable talking to

strangers. Now we are organized into mother groups and more active than men in social domains. Truly speaking, the project opened our eyes.

Stipends are provided for students (both girls and boys) from poor and marginalized families. Non-formal education courses have been offered to illiterate women. Various skill development trainings, such as bee keeping, cash crop farming, horticulture, sewing, weaving, carpet cutting, tour guiding, and cooking/baking, have been conducted with small farmers and economically disadvantaged groups to enhance their livelihood.

The protected areas have brought several economic benefits at the household level, including income diversification, enterprise development, and access to saving and credit. In addition to traditional agriculture, local people now derive income from cash crops, vegetable farming, fruit orchards, livestock, and non-timber forest products. For example, the Annapurna Conservation Area Project is credited with the introduction of tea and coffee farming and improvement of animal husbandry practices (Annapurna Conservation Area Project, 2012). In the buffer zone of Chitwan National Park, four buffer zone user committees run veterinary centers and the buffer zone program supports the purchase of drugs and vaccines. The Kanchenjunga Conservation Area promoted green enterprises based on non-timber forest products, such as handmade paper from lokta (*Daphne bholua* and *Daphne papyracea*), essential oils from dhupi (*Juniperus recurva*) and sunpati (*Rhododendron anthopogon*), concentrated juice from sea buckthorn (*Hippophae salicifolia*), and knitting fiber from allo (*Girardinia diversifolia*). Local people now have easy access to saving and credit schemes that provide soft loans for income generating activities and household needs. There are 58 saving and credit groups in the Annapurna Conservation Area, 23 saving and credit cooperatives in the buffer zone

of Chitwan National Park (Chitwan National Park, 2013), and 23 saving and credit schemes (run by mother groups) in the Kanchenjunga Conservation Area.

Development of community infrastructure has been a focus area since their establishment in the Annapurna and Kanchenjunga Conservation Areas, and declaration of the buffer zone in Chitwan National Park. The infrastructure projects contribute to transportation (road, trails, and bridges), education (school buildings), health (drinking water systems, toilets, and waste management), culture (temples and monasteries), and energy (biogas, solar, and hydro power).

Alternative energy has been ubiquitously adopted as a measure of forest protection. The Annapurna Conservation Area Project was the first project to promote micro-hydro projects; the project has helped to construct 28 micro-hydro power projects that generate 468.3 KW electricity and benefit 2,228 households (Annapurna Conservation Area Project, 2012). Special emphasis has been given to biogas installation at the household level, using human and animal waste in the buffer zone of Chitwan National Park. About 1,400 households (more than 80% of total households) in the Kumroj Village Development Committee alone have already installed biogas plants. A biogas unit reduces fuelwood needs by up to 80% and helps sanitation if toilet waste is connected with it. An officer of Mrigakunja user committee in Chitwan said that:

We are focusing on the biogas program here. Most of the households own at least one water buffalo or cow, so they already have the raw material required for their biogas plant. We are encouraging people to construct and connect their toilets with biogas tanks, which helps increase the production of gas and improve health and sanitation.

Installation of solar panels (in 947 households) and a micro-hydro plant (benefits 66 households) substitute the use of kerosene for lighting in Kanchenjunga (Kanchenjunga Conservation Area Management Council, 2013b). Both Annapurna and Kanchenjunga Conservation Areas have distributed several hundred units of energy saving devices, such as improved cooking stoves, low wattage cookers, back boilers, and solar water heaters.

Sustainable Tourism

Chitwan National Park is the most visited protected area in Nepal. The number of tourists visiting the park has increased from 47,050 tourists in the fiscal year 2003-2004 to 122,467 tourists in the fiscal year 2012-2013 (Figure 6; Chitwan National Park, 2013; Department of National Parks and Wildlife Conservation, 2013). The Annapurna Conservation Area is the most popular trekking destination in Nepal. The area received 113,213 international tourists in the fiscal year 2012-2013, or about 2.5 times the 44,969 visitors in the fiscal year 2003-2004 (Department of National Parks and Wildlife Conservation, 2013; Ministry of Culture, Tourism, and Civil Aviation, 2014). The volume and growth of tourism is very low in the Kanchenjunga Conservation Area; the area received 418 tourists in the fiscal year 2003-2004 and 606 tourists in the fiscal year 2012-2013 (Department of National Parks and Wildlife Conservation, 2013; Kanchenjunga Conservation Area Management Council, 2013a). The low visitation is due to its remoteness, lack of infrastructure, and closure of the area for free independent tourists.

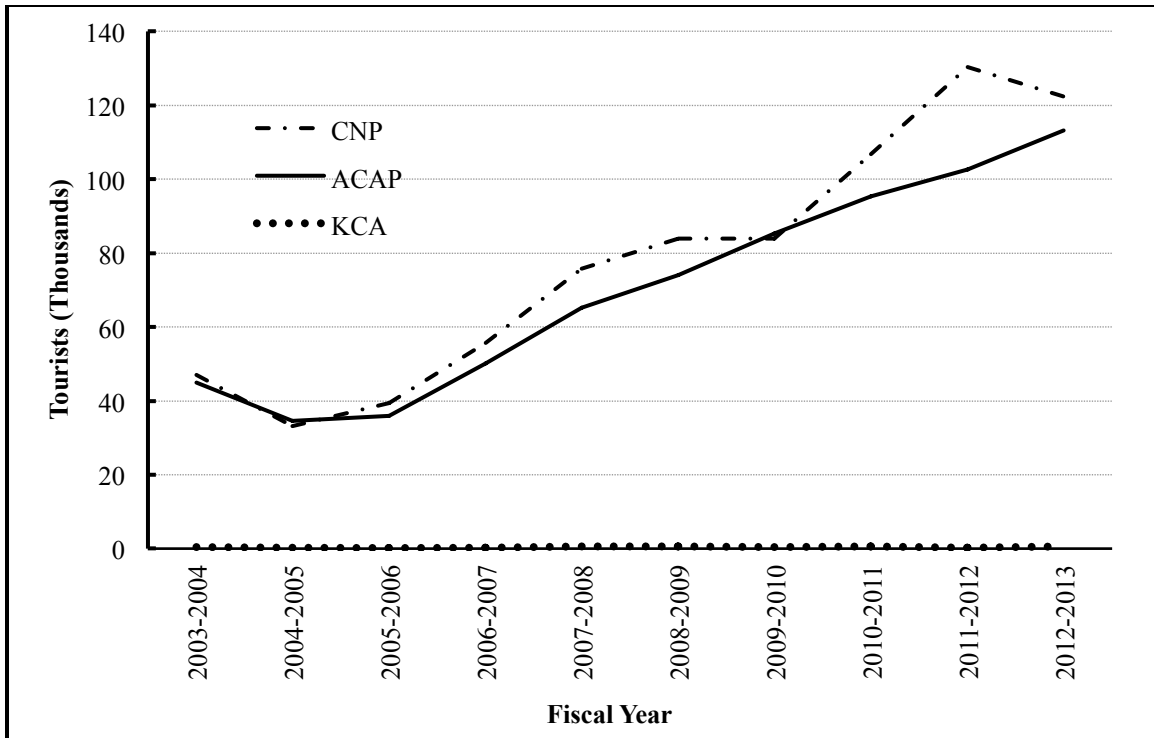


Figure 6. Number of international tourists in protected areas.

Source: Chitwan National Park (2013); Department of National Parks and Wildlife Conservation (2013); Kanchenjunga Conservation Area Management Council (2013a); Ministry of Culture, Tourism, and Civil Aviation (2014).

The marketing of tourism is poor in the Kanchenjunga Conservation Area, while the Annapurna Conservation Area and Chitwan National Park have been respectively promoted as trekking tourism and wildlife tourism destinations nationally and internationally. The tourism facilities and services are highly developed in Chitwan, moderately developed in Annapurna, and poorly developed in Kanchenjunga. The buffer zone of Chitwan National Park contains well-developed tourism superstructure, including more than 90 professionally managed hotels and numerous home stays, restaurants, cybercafés, guide offices, convenience stores, and souvenir shops. There are more than

500 village inns/home stays in Annapurna, which are predominantly locally owned and operated. Tourism establishments in Kanchenjunga include 46 village inns/tea shops and 53 campsites (Kanchenjunga Conservation Area Management Council, 2013a).

Tourism is the main source of revenue in Annapurna and Chitwan. In the fiscal year 2010-2011, the Annapurna Conservation Area Project collected US\$ 1,641,960 from tourists, which is about 95% of total revenue. Chitwan National Park collected US\$ 2,115,217 in the fiscal year 2012-2013, which came from tourist entry fees (83.7%), other tourism related income (8.2%), and non-tourism sources (8.1%). Tourism revenue in the Kanchenjunga Conservation Area was US\$ 11,356 in the fiscal year 2012-2013 (Ministry of Culture, Tourism, and Civil Aviation, 2014) and detailed information on sources of income is not publicly available.

The impact of tourism varies across the protected areas. The economic impact of tourism is high in Chitwan (due to high multiplier effect), medium in the Annapurna (due to high leakage), and negligible in Kanchenjunga (due to low volume). The economic benefits are asymmetrically distributed in Annapurna (only few families owning tourism businesses along the trekking routes are benefitted) and Chitwan (tourism is concentrated in Sauraha). A resident in Ghandruk said that “tourism is for rich people only. They have opened the hotels; they employ their relatives and outsiders. Once I asked for a job, the hotel owner replied that I don’t know ABCD of tourism.” The social impacts (e.g., crowding), and environmental impacts (e.g., littering) are visible in Sauraha of Chitwan National Park, and Ghandruk and Ghorepani of the Annapurna Conservation Area. A nature guide in Sauraha expressed that “you can see heaps of trash on the road and sidewalk. Hotel and restaurant owners are busy collecting tourist dollars. They think it’s

not their duty to keep the surrounding clean. They are making money from tourism, who is going to clean this trash?”

Overall, the outcomes related to biodiversity conservation, community livelihoods, and sustainable tourism are different across the Annapurna Conservation Area, Chitwan National Park, and the Kanchenjunga Conservation Area. The author attempted to summarize the outcomes in a four-point scale with response options being “poor,” “fair,” “good,” and “very good.” An outcome is labeled “poor” when there is no or little progress and “very good” when the progress is close to ideal. Accordingly, the label “fair” indicates that there is plenty of room for improvement and the label “good” signifies that there is some room for improvement.

To minimize researcher bias, two researchers (the author and his colleague) independently read detailed outcomes organized in a spreadsheet and assigned a response category. In case of discrepancy in assigned values, the researchers met face-to-face, exchanged each other’s views, and agreed to a common value. The purpose of this exercise was to summarize, but not to quantify, the outcomes. The assessment shows that outcomes are more desirable in Chitwan than in Annapurna and Kanchenjunga (Table 4). The achievements of Chitwan National Park are notable with respect to biodiversity conservation and mediocre regarding community livelihoods and sustainable tourism. The Annapurna Conservation Area has attained mediocre success in implementing conservation, livelihood and tourism development programs. Though the condition of tourism development is poor, conservation and livelihood outcomes are mediocre in the Kanchenjunga Conservation Area.

Table 4

Summary of Outcomes Across Protected Areas

Interactions and outcomes	Annapurna	Chitwan	Kanchenjunga
Biodiversity conservation			
Community forests	Poor	Good	Fair
Forest protection	Fair	Good	Fair
Wildlife research and monitoring	Fair	Good	Fair
Wildlife protection	Fair	Good	Fair
Human-wildlife conflict mitigation	Poor	Fair	Fair
Community livelihoods			
Access to resources	Fair	Fair	Fair
Capacity building	Fair	Fair	Fair
Economic opportunities	Fair	Fair	Poor
Community development	Fair	Good	Fair
Sustainable tourism			
Visitation and growth	Fair	Fair	Poor
Tourism marketing	Fair	Fair	Poor
Facilities and services	Fair	Good	Poor
Tourism impacts	Fair	Fair	Poor

Discussion

This research evaluated the governance approaches to managing three protected areas of Nepal: the Annapurna Conservation Area, Chitwan National Park, and the Kanchenjunga Conservation Area. The protected areas are unique in terms of biophysical attributes, community characteristics, and institutional arrangements. The actors involved in management of protected areas are the state (e.g., Department of National Parks and Wildlife Conservation), NGOs, CBOs, tourism businesses, and local people. The relative importance of various actors and their positions and actions are distinctive across the protected areas. Owing to the dissimilarity in the context/setting and nature of interaction among the actors, the outcomes pertaining to biodiversity conservation, community

livelihoods, and sustainable tourism also varied across the protected areas. The findings have several substantive and theoretical implications.

Nepal is a world leader in sharing management responsibility of protected areas with NGOs and CBOs. The idea of stakeholder participation is ubiquitous and pervasive in the context of protected areas. All three protected areas the author studied claim to espouse the participatory natural resource management approach. It has been reported that elite dominance of CBOs promote favoritism in allocation of protected areas benefits (Parker & Thapa, 2011; Tumusiime & Vedeld, 2012). This study confirmed that the poor and other disadvantaged groups are underrepresented in decision-making and marginalized in revenue sharing processes (Agrawal & Gupta, 2005). For example, the Annapurna Conservation Area has funneled a large share of its revenue to tourism development, benefitting a few well-off people who can invest in tourism business. Similarly, the buffer zone revenue in Chitwan National Park has been mainly spent on infrastructure development programs (e.g., schools, roads, and community center), which are the priorities of middle and upper class people. Likewise, the activities in the Kanchenjunga Conservation Area have been concentrated on protection of the snow leopard and its habitat in the interest of WWF Nepal. The priorities of the poor and ultra poor have always been livelihood improvement activities, which were vehemently ignored in all three areas. The results indicate a need for meaningful participation of every segment of communities in management of protected areas. Otherwise, the elite capture of resources marginalizes the poor and pushes them to the vicious cycle of the poverty trap (Gardner et al., 2013).

The concept of sharing of park revenue between conservation and development programs, as envisioned in the ICDP approach and practiced in the protected areas of Nepal, is controversial (Tumusiime & Vedeld, 2012). Some scholars have questioned the effectiveness of development programs in promoting biodiversity conservation (Clifton, 2013). The idea of exchanging conservation with development emerges from the belief that direct economic incentives trigger positive attitudes towards conservation. This research found that the awareness of the importance of protected areas, social pressure, and improved income foster positive attitudes towards biodiversity conservation. A resident in Chitwan expressed that “local people are happy to receive the economic benefits, but they put more value on recognition of their contribution to conservation.” This could be a reason that many donor-funded ICDPs are unsuccessful in bringing intended outcomes.

Worldwide experience shows that once the protected area revenue enters into the government treasury, it is impossible to extract a fair share of money for community development (Tumusiime & Vedeld, 2012). The Nepalese mechanism to distribute the incentives to local communities in exchange for conservation is extremely ineffective. First, the budget allocated for development programs is usually small and the programs need a hefty amount of community contribution in form of labor and cash. Second, the process of fund disbursement is so slow that local people perceive it like begging money from the government. The untimely release of the community share of revenue diminishes local trust towards government authorities and impedes local involvement in conservation. Third, the lack of a transparent revenue sharing mechanism fuels suspicion of corruption and embezzlement of funds. Thus, a mechanism to directly remit a certain

proportion of protected area revenue to community fund should be instituted for successful implementation of the ICDP approach.

This research supported that the concept of conservation for development is nothing more than a band-aid on a bullet wound. The benefits of protected areas should be evaluated with reference to the cost experienced by local people in the name of conservation (Tumusiime & Vedeld, 2012). Protected areas should provide livelihood alternatives to the families who are about to sink deeper into poverty due to strong restrictions on park resources. In addition, local people should be compensated for the externalities of protected areas, such as crop raiding and livestock depredation, in a more participatory, transparent, and sustainable way. This research found a startling gap exists between the protected area benefits, such as infrastructure development and employment opportunities, and the loss experienced by local people including livestock depredation and crop damage in all three protected areas. As a result, local people are unceasingly and unfairly suffering from the cost of conservation.

This study revealed that protected areas are not uniform entities and there is no institutional panacea to manage protected areas. On paper, the management responsibility of the Annapurna Conservation Area, Chitwan National Park, and the Kanchenjunga Conservation Area remain with an NGO, the state, and a CBO, respectively. In practice, the state, private sector, NGOs, CBOs, and local people are involved in management of all three protected areas. The management outcomes pertaining to biodiversity, livelihood, and tourism are also mixed. The results indicate that no single governance approach should be regarded as the silver bullet to solve challenges associated with protected areas. Thus, it is worthless to discuss whether protected areas should be put

under government, private, or community governance (Dudley, 2008). Correspondingly, it would be naïve to prescribe a governance approach according to the IUCN category or management objectives of protected areas without considering the biophysical, socioeconomic, and institutional contexts.

The results indicate that sustainable management of common-pool resources requires a polycentric, multi-level, adaptive, and democratic governance model that emboldens the collaboration of multiple social actors across levels and institutions. The mixed form of governance offers more robust solutions to common-pool problems than state, private, or community ownership. The difficulty with the monocentric approach is finding an ideal scale that alleviates institutional mismatch. Further, the centralization, decentralization, and privatization debate causes tension between the stakeholders. The results neither dismiss the potentiality of a decentralized community-based approach nor reject the involvement of state in the management of common-pool resources. As discussed earlier, many common-pool theorists argue that the role of state should shift from manager to facilitator to provide enough space for community management. This proposition is not realistic in the case of protected areas that contain globally significant flora and fauna, as the state must exercise some degree of control to prevent poaching and illegal trade. This means both participatory and legal measures should be concurrently used to achieve biodiversity conservation objectives.

The results indicated need of an adaptive co-management approach in the management of protected areas in Nepal. This research found that the institutional arrangements to govern protected areas are unnecessarily rigid. Protected area management seemed to focus more on marketing of limited successes rather than learning

and improvement. For example, the Annapurna Conservation Area is proud to claim itself as the first community-managed protected area in Nepal and reluctant to involve the state in protecting wildlife, despite the fact that the biodiversity conservation results are poor. In Chitwan National Park, no systematic reviews have been conducted to evaluate the effectiveness of the Nepalese Army in park protection, given that the national park has to spend a large amount of its budget on their salary and logistics. Tourism in the Kanchenjunga Conservation Area is marred by the faulty policy of banning free individual tourists.

This discussion articulates that the agencies responsible for the management of protected areas want to run them in an ad hoc manner to maintain their domination, cut management cost, or for other reasons. Nevertheless, this approach is counterproductive to the sustainability of protected areas. Thus, the protected area governance and management approach should be responsive to changing internal and external environments. In doing so, it should be taken into account that a successful adaptive co-management approach necessitates certain enabling conditions such as social capital, resource crisis, political will, external catalyst, legislative basis, and financial support (Bown et al., 2013).

Conclusions

The governance system in protected areas of Nepal varies by structure, process, focus, and scale. This research examined what types of governance structures and strategies are most effective in managing protected areas in the given human-environment systems. The author found that there is no institutional panacea for governance of protected areas. Instead, the polycentric and adaptive co-management

approach offers a multitude of positive biodiversity conservation, community livelihoods, and sustainable tourism outcomes. This indicates that a successful protected area management model should involve the state, communities, NGOs, and private sector acting at different scales. Thus, a thorough reform is needed to change the mindset of park officials so that they consider local people and other stakeholders as equal partners in conservation.

Researchers and practitioners in common-pool resources in general and protected areas in particular should go beyond finding an institutional panacea for governance of complex resources. Instead, it is imperative to know how to maximize the resilience and adaptability of protected area systems. The protected areas may vary in terms of institutional structure and process, including power distribution among stakeholders and provision of CBOs. The achievement of trust and reciprocity among local people is important in the success of the protected areas. However, without any external support, the reciprocity among local actors alone cannot completely resolve the challenges of common-pool resources. The nature of external support depends on resource attributes (e.g., size) and community characteristics (e.g., heterogeneity).

The author argues that researchers and practitioners should focus on what works in which context instead of prescribing a one-size-fits-all approach. Emphasis should be placed on encouraging learning and adaptation across the stakeholders active at multiple scales. The author cautions that adaptive co-management is also context-dependent and should never be promoted as a sole remedy to the problems of protected areas (Ostrom, Janssen, & Anderies, 2007). Future research on protected areas and other types of common-pool resources should concentrate on evaluating whether a particular

governance model fits the local context, and if the governance model is flexible enough to adapt to changing social, ecological, and economic environments.

CHAPTER 4

DIAGNOSING THE SUSTAINABILITY OF TOURISM SYSTEMS: A SOCIAL- ECOLOGICAL SYSTEMS APPROACH

Introduction

The long-term sustainability of destination resources has been widely discussed in the tourism literature for more than five decades (Holden, 2005; Saarinen, 2006; Stronza, 2010). Tourism, specifically the so-called conventional mass tourism, has long been blamed for producing negative sociocultural, ecological, and economic impacts in tourism destinations (Buckley & Pannell, 1990; Fennell, 2008; Nyaupane & Thapa, 2006). With the widespread adoption of the sustainable development paradigm, sustainable tourism has been treated as a panacea for averting the tragic loss of tourism resources (Saarinen, 2006; UNEP & UNWTO, 2005). Several scholars have sought empirical evidence to support the notion that sustainable forms of tourism can produce desirable outcomes (Blanco, 2011; Hassanali, 2013; Moore & Rodger, 2010; Stronza, 2010). As a result, the evaluation of tourism outcomes against the principles of sustainability is an enduring research topic in the area of resource-based tourism.

The purpose of this study was to diagnose sustainability in tourism systems. Previous approaches to assess sustainability in tourism have been objective (Baggio, 2013; Getz, 1983; Manning, 2007; Northcote & Macbeth, 2006) and/or based on public perception (Andereck, Valentine, Knopf, & Vogt, 2005; Frauman & Banks, 2011). These approaches cannot adequately capture the complexity and dynamism inherent in tourism systems. This research, therefore, uses the social-ecological system (SES) framework (McGinnis & Ostrom, 2014; Ostrom, 2007), a systemic and holistic approach, to analyze

the structures, processes, and outcomes of tourism systems. Recently, there has been an upsurge of research utilizing the SES framework to investigate diverse resource sectors, such as urban lakes, fisheries, and irrigation networks (Basurto, Gelcich, & Ostrom, 2013; Blanco, 2011; Cox, 2014; Nagendra & Ostrom, 2014). A review of extant literature shows that there is a lack of research that explicitly uses the SES framework in the context of tourism. An exception is Blanco's (2011) paper on voluntary environmental initiatives in nature-based tourism. The paper is based on secondary data on more than 100 successful voluntary environmental initiatives related to tourism; and does not directly address the issue of sustainable tourism development at destinations.

Two communities in Nepal, Ghandruk and Sauraha, provided the context for examining sustainable tourism. Ghandruk is a tourism hub in the Annapurna Conservation Area—the most popular trekking destination in Nepal. Sauraha is the gateway to Chitwan National Park—the most visited protected area in Nepal. Both places have been promoted as destinations for the related concepts of ecotourism, wildlife tourism, alternative tourism, responsible tourism, nature-based tourism, and cultural tourism, wherein the sustainable treatment of natural and cultural resources is imperative. This study focused primarily on the social and ecological factors that enable sustainable tourism development in selected communities. The results have both substantive and methodological implications and are expected to help navigate more sustainable tourism policies and practices. Policy makers and destination managers find the outcomes useful in optimizing the positive impacts of tourism. This paper demonstrates the usefulness of the SES framework to analyze sustainable tourism development and serves as a guide for tourism studies in the future.

Literature Review

Sustainable Tourism

Sustainable tourism denotes a holistic approach to managing the natural and sociocultural resources in a tourism system. The concept of sustainable tourism is regarded as a natural outgrowth of the sustainable development paradigm (Saarinen, 2006), which requires the conscientious and careful use of resources for today and tomorrow (WCED, 1987, p. 43). Sustainable tourism has been defined as “tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities” (UNEP & UNWTO, 2005, p. 12). The discourse on making tourism more responsible began approximately five decades ago with the realization of negative impacts of the so-called mass tourism on the ecological, sociocultural, and economic environments of tourist destinations (Choi & Sirakaya, 2005; Fennell, 2008; Saarinen, 2006).

Tourism often carries with it the seeds of its own destruction and may kill the goose that lays the golden eggs (Plog, 1974). Rapid and unplanned tourism development produces many ecological and sociocultural problems (Andereck et al., 2005; Saarinen, 2006). The harmful impacts of tourism on the natural or physical environment include damage to vegetation, deforestation, introduction of invasive species, wildlife disturbance, habitat destruction, wildlife poaching, pollution, soil erosion, deteriorated built heritage, and damage to coral reefs (Buckley & Pannell, 1990; Holden, 2005; Nyaupane & Thapa, 2006). Crime, migration, social exclusion, acculturation, begging, changing family and social structure, damage to cultural sites, souvenir hunting and vandalism, and trespassing are among the most salient sociocultural impacts of tourism

(Fennell, 2008; Poudel & Nyaupane, 2013). Tourists themselves have also experienced adverse impacts, resulting in reduced satisfaction, despite spending significant time and money (Manning, 2007). Increased concerns about tourism's negative implications and the realization that the sustainable use of resources in tourism systems is essential for a thriving tourism industry parent the notion of sustainable tourism.

Despite its potentially devastating effects when not planned correctly, tourism has immense power to contribute to the sustainable development. Accordingly, as Fennell (2008) noted, sustainable tourism has been hailed a panacea for all the vices of mass tourism. Sustainable tourism is not a form of tourism, but rather an ideal condition or end result of careful planning and responsible practices. UNEP and UNWTO (2005) suggest that all forms of tourism, including conventional mass tourism or niche tourisms, such as ecotourism and adventure tourism, should strive to be more sustainable. There is great variation within sustainability practices, and many scholars are skeptical about whether tourism can be a practical route to sustainable development. This cynicism has been accentuated by the differences between academics and tourism practitioners regarding what is to be sustained, what is to be developed, and for what period of time (Butler, 1999). The lack of clarity about sustainable tourism exacerbates the problem of monitoring and measurement. Nevertheless, several frameworks, models, and methods related to the measurement of sustainable tourism have evolved in recent years (Saarinen, 2006).

Sustainability Diagnosis in Tourism Systems

In evaluating sustainability, the main consideration has been to set limits on tourism. Commonly considered limiting factors are resource capacity, community

concerns, and visitor satisfaction (UNEP & UNWTO, 2005). Though all of these factors espouse the concept of limits to growth, the understanding and interpretation of this concept varies in their approach. The resource capacity approach, also referred to as the resource-centric approach, is guided by the concept of carrying capacity, which suggests that there are precise and measurable physical limits to human growth and exploitation of the environment (Manning, 2007; Northcote & Macbeth, 2006; Saarinen, 2006). This concept has been successfully used in natural sciences to study the populations of individual wildlife species. According to the carrying capacity concept, the limits to growth is a scientifically determined number beyond which gradual deterioration of natural or sociocultural elements of the destination occur (McCool & Lime, 2001). Different kinds of carrying capacity have been recognized in the context of tourism, including ecological, social, cultural, economic, infrastructure, and management capacities (Getz, 1983; Manning, 2007; UNEP & UNWTO, 2005).

Community concerns and visitor satisfaction are psychological measures of tourism impacts (Andereck et al., 2005; Choi & Sirakaya, 2005; Frauman & Banks, 2011). The measures could collectively be labeled a people-centric approach since the limits of acceptable change are set by communities or perceived by visitors. Being a subjective measure, the perception of impacts varies within and between communities and tourists, as they may have their own perceptions of impacts or different preferences about the nature of tourism development (Frauman & Banks, 2011; McCool & Lime, 2001; Saarinen, 2006). For example, tourists may expect different levels of crowding during festival celebrations compared to residents, or the concept of wilderness may vary from tourist to tourist. Thus, this approach is more suitable to measure site- or activity-

specific impacts. Provided that all actors are equally represented or participate equally in the decision-making, the people-centric approach recognizes the needs of local people, conserves resources, and benefits the tourism industry (Saarinen, 2006).

Resource- and people-centric sustainability traditions have been widely used to measure sustainable tourism, but criticism over the applicability and efficiency of these approaches is increasing (Getz, 1983; McCool & Lime, 2001; Northcote & Macbeth, 2006). The common criticism pertinent to both traditions is that they do not properly recognize the complexity, dynamism, resilience, and robustness of the tourism system (Becken, 2013). To illustrate, the resource-centric tradition concentrates on the stock and flow of a single resource. This approach is objective and reductionist, and there are specific and limited real-world situations where it may be appropriate (McCool & Lime, 2001). The people-centric tradition, on the other hand, overly relies on subjective or perceptual evaluation of impacts and overlooks the merit of scientific knowledge. Sustainability diagnoses under these approaches have been challenging because there is no consensus over what should be sustained and at which spatial and temporal scale (McCool & Lime, 2001; Saarinen, 2006). Therefore, researchers and practitioners have argued for a systemic and holistic approach to assessing the sustainability of tourism systems (Baggio, 2013; Northcote & Macbeth, 2006).

The systems approach to sustainability diagnosis entered into tourism discourse after the adoption of the sustainable development paradigm (Hamzah & Hampton, 2013; Saarinen, 2006). Tourism systems are living social-ecological systems, which are nested with each other and embedded in higher human and environment systems (Becken, 2013). There are horizontal and vertical linkages among the systems, and many of the

observed interactions among the systems and the outcomes are stochastic (Baggio, 2013). The change in social, ecological, and economic systems is inevitable and they may take linear and nonlinear paths (Hamzah & Hampton, 2013). Tourism scholars are striving to develop diagnostic tools that capture the complexity and dynamism inherent in tourism systems (Becken, 2013; Hamzah & Hampton, 2013).

Measuring the Sustainability of Tourism Systems

In response to the call for a systemic and holistic approach in sustainable tourism research (Baggio, 2013), this study used the SES framework to analyze the structures, processes, and outcomes in tourism systems. Developed by Elinor Ostrom, a Nobel Laureate, and her colleagues (Anderies, Janssen, & Ostrom, 2004; McGinnis & Ostrom, 2014; Ostrom, 2007, 2009; Ostrom & Cox, 2010), the SES framework is an extension of the institutional analysis and development framework, which has been extensively used to study various types of resource systems (Cox, 2014; Ostrom, 2011; Ostrom & Cox, 2010).

The SES framework involves simultaneous study of coupled human and environment systems called social-ecological systems. A social-ecological system is defined as “an ecological system intricately linked with and affected by one or more social systems” (Anderies et al., 2004, p. 3). The SES approach has potential to be a common framework that transcends the conventional divide between social and ecological systems and is expected to facilitate a more detailed analysis of complex systems (Ostrom & Cox, 2010). The framework has been used in different resource sectors, including urban lakes (Nagendra & Ostrom, 2014), fisheries (Basurto et al.,

2013), forests (Nagendra, 2007), irrigation networks (Cox, 2014), recreation (Hinkel, Bots, & Schlüter, 2014), and nature-based tourism (Blanco, 2011).

The SES framework assumes that social-ecological systems are complex, multivariate, nonlinear, cross-scale, and changing systems (Ostrom, 2007). In its most general form, it demonstrates the relationships among eight variables referred to as first-tier variables: resource systems (RS), resource units (RU), governance systems (GS), actors (A), interactions (I), outcomes (O), social, economic, and political settings (S), and related ecosystems (ECO) (Figure 7; McGinnis & Ostrom, 2014; Ostrom, 2007). At the heart of the framework is the action situations where the actors interact and generate outcomes (Ostrom, 2011). The framework shows that four first-tier variables: resource systems, resource units, governance systems, and actors directly affect and are indirectly affected by interactions and the outcomes produced by the interactions (Ostrom, 2009). The framework also shows that the variables affect or are affected by larger social, economic, and political settings and related ecosystems in which the subsystems are embedded (Ostrom, 2007).

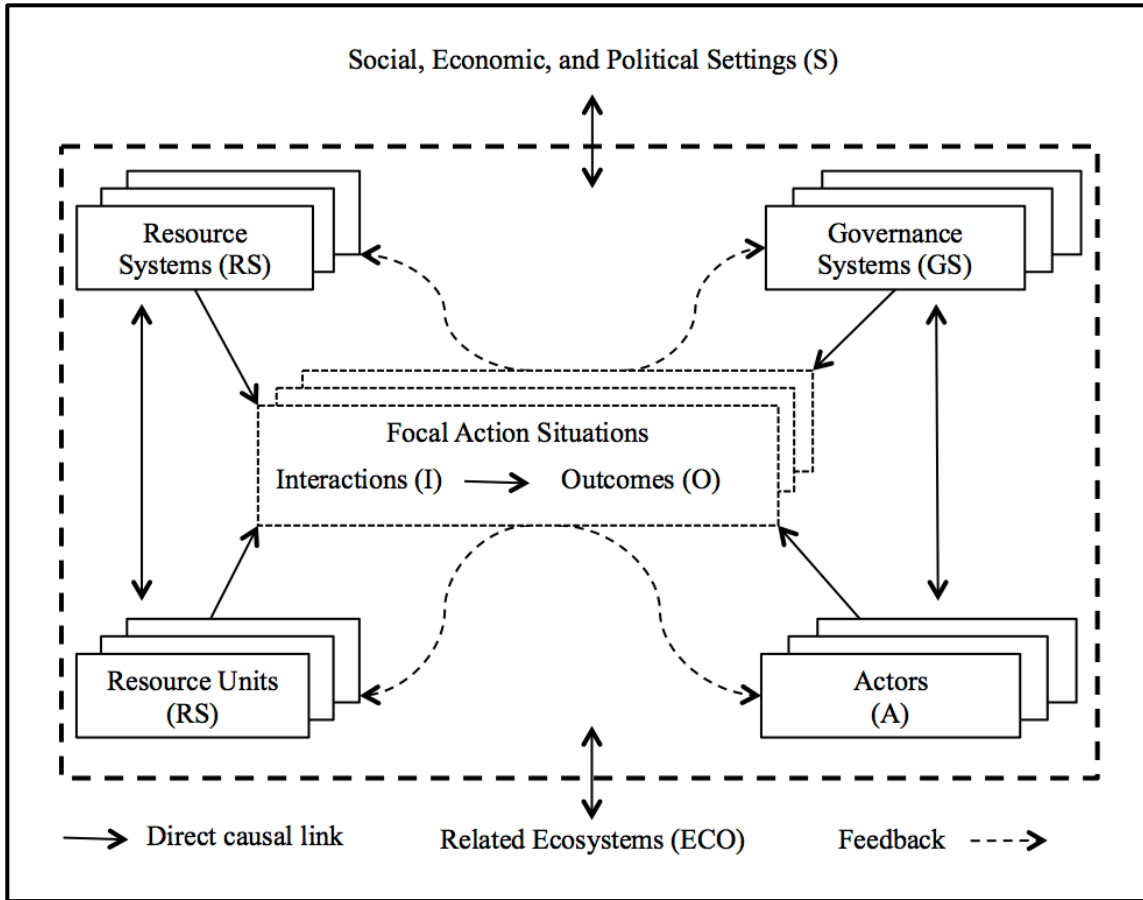


Figure 7. Social-ecological system (SES) analysis framework.

Source: Adapted from McGinnis & Ostrom (2014).

The main challenge associated with the use of a systems approach to diagnose sustainability is the operationalization of variables. This can be overcome in the SES framework in two ways. First, the SES framework is highly adaptive (Ostrom, 2007). The researchers are free to choose a set of variables among the first-tier variables to fit the research context. For example, Nagendra and Ostrom (2014) used five first-tier variables—resource systems, actors, governance systems, interactions, and outcomes—to diagnose governance of urban lake commons in Bangalore, India. The selection of variables is guided by research questions, the types of SES, and the spatial and temporal

scale of analysis (Ostrom, 2009). Second, the framework is nested and multi-tiered; the highest-level variables can be unpacked multiple times (Ostrom, 2007; Ostrom & Cox, 2010). This means first-level variables can be decomposed into second-level variables, second-level variables can be decomposed into third-level variables, and so on (Ostrom, 2009). Decomposition of variables helps in operationalization and captures more detailed information. In Nagendra and Ostrom's (2014) study, "actors" is a first-level, "number of actors" is a second-level, and "socioeconomic groups excluded" is a third-tier variable. Past studies have identified numerous second- and third-tier variables that potentially influence action situations in social-ecological systems (Agrawal, 2001; Ostrom, 2007, 2009). The author adapted the SES framework to fit the study context.

Study Methods

The multiple-case study method (Yin, 2014) was employed in this research. The unit of analysis is the tourism system. The focal SESs are tourism systems of Ghandruk and Sauraha. Data were collected through secondary data and field interviews. Secondary data were obtained from various published sources and unpublished documents, including annual reports and meeting minutes. Forty-five face-to-face, semi-structured interviews (10 short interviews and 35 in-depth interviews) were conducted with tourism stakeholders, including the park staff members, tourism entrepreneurs and employees, officers of NGOs and CBOs, and local residents.

Participants were selected using a snowball sampling method. An interview guide was prepared in advance to ensure that the conversations focus on relevant topics (Padgett, 2008). All interviews were conducted during four months of fieldwork between July and October 2012. The short interviews were 10-20 minutes long, while the in-depth

interviews lasted 30-60 minutes. Notes were taken during the interviews and the in-depth interviews were audio-recorded with the permission of participants. The author transcribed the audio files soon after the interviews so as not to lose any important cues in the data. The interview process continued until a saturation point was reached (Padgett, 2008). The total number of interviews was 29 in Sauraha (two short interviews and 27 in-depth interviews) and 16 in Ghandruk (eight short interviews and eight in-depth interviews). A larger number of people were interviewed in Sauraha because of higher diversity of tourism stakeholders.

Data analysis identified a suite of second-tier SES variables and located the information relevant to the variables. A hybrid analysis was employed, combining the template approach and open coding procedure (Padgett, 2008). Data analysis started by reviewing the studies using the SES framework. More specifically, second-tier variables were enumerated and scrutinized to see whether the variables could be measured in the research context. The tentative list of variables helped develop the interview guide and locate additional relevant literature. At the outset of data analysis, the tentative list was used as a template, and the second-tier variables were considered as initial or open codes (Bailey, 2007). After each interview, the author looked for the text relevant to pre-specified codes in an iterative process. As data collection and analysis progressed, second-tier variables were added, revised, or deleted so that the SES framework better fit the data. Thus, the codes did not emerge solely from the data, but they were initially derived from secondary data and revised with new information. The codes were organized into themes, which are the first-tier variables in the SES framework.

To enhance the trustworthiness of the results, two researchers (the author and his colleague) analyzed the data. Both worked together to develop a tentative list of second-tier variables; then, the author completed the coding procedure and his colleague checked for discrepancies. In addition, the interview data were triangulated with secondary sources whenever possible. The SES framework used in this study contains eight first- and 39 second-tier variables (Table 5). The number of second-tier variables under resource systems is eight (RS1-RS8), resource units is six (RU1-RU6), governance systems is three (GS1-GS3), actors is six (A1-A6), interactions is six (I1-I6), outcomes is three (O1-O3), social, economic, and political settings is four (S1-S4), and related ecosystems is three (ECO1-ECO3).

Table 5

Second-Tier Variables of a Social-Ecological System Framework for Tourism Systems

Social, economic, and political settings (S)	Governance systems (GS)
S1 Population	GS1 Organizations
S1.1 Size	GS1.1 Government organizations
S1.2 Trend	GS1.2 Nongovernment organizations (NGOs)
S2 Economic development	GS1.3 Community-based organizations (CBOs)
S2.1 Livelihood options	GS1.4 Private organizations
S2.2 Growth rate	GS2 Property-rights system
S3 Markets	GS2.1 Private
S3.1 Tourism market	GS2.2 Community
S3.2 Competition	GS2.3 Government
S4 Political stability	GS3 Monitoring and sanctioning rules
	GS3.1 Graduated sanction
	GS3.2 Conflict resolution
Related ecosystems (ECO)	Actors or stakeholders (A)
ECO1 Geography	A1 Number of relevant actors
ECO2 Climate	A1.1 Types of actors
ECO3 Biodiversity	A1.2 Group size
ECO3.1 Plants	A2 Socioeconomic attributes
ECO3.2 Wildlife	A3 History of tourism management
	A4 Importance of resources
	A5 Knowledge of tourism system
	A6 Entrepreneurship
Resource systems (RS)	Interactions among actors (I)
RS1 Sector	I1 Tourism product
RS2 Clarity of system boundaries	I2 Conflicts
RS3 Size of resource systems	I3 Investment activities
RS4 Human-constructed facilities	I3.1 Natural and cultural resources
RS4.1 Attractions	I3.2 Infrastructure and superstructure
RS4.2 Infrastructure	I4 Self-organizing activities
RS4.3 Superstructure	I5 Networking activities
RS5 Productivity of the system	I6 Monitoring and evaluation
RS5.1 Built resources	
RS5.2 Natural resources	
RS6 Equilibrium properties	
RS7 Predictability of system dynamics	
RS8 Storage characteristics	
Resource units (RU)	Outcomes (O)
RU1 Resource unit mobility	O1 Social performance measures
RU2 Growth or replacement rate	O1.1 Social capital
RU3 Interaction among resource units	O1.2 Heritage conservation
RU4 Economic value	O2 Ecological performance measures
RU5 Number of units	O2.1 Forest management
RU6 Spatial and temporal distribution	O2.2 Wildlife management
	O2.3 Environmental education
	O3 Economic performance measures
	O3.1 Sustainable livelihoods
	O3.2 Infrastructure
	O3.3 Capacity building

Source: Adapted from Ostrom (2009, p. 421).

Findings

Broad Social, Political, Economic, and Ecological Contexts

The Ghandruk Village Development Committee of Kaski district, referred to as Ghandruk, is located within the Annapurna Conservation Area. The area was established in 1992 as the first conservation area and covers an area of 7,629 km² in the northern part of central Nepal. The Annapurna region is the most popular trekking destination in Nepal, especially among international tourists. Tourism has grown rapidly in recent years; the number of international tourists increased from 60,274 in 2007 to 104,426 in 2012 (Figure 8).

Ghandruk is situated in the southern part of the Annapurna Conservation Area covering an area of 297.41 km². It is geographically diverse (ECO1), and the altitude ranges from 1,000 to 8,091 m (Mount Annapurna, the tenth highest peak in the world). The altitudinal variation has resulted in distinct climatic zones ranging from subtropical to nival zones (ECO2). The geographical and climatic variations have produced diverse flora and fauna (ECO3). The area encompasses subtropical to alpine forests (ECO3.1) that contain several species of plants including the needlewood (*Schima wallichii*), Nepalese alder (*Alnus nepalensis*), oaks (*Quercus spp.*), and rose tree (*Rhododendron spp.*). The forests are home to several wildlife species, including the Himalayan thar (*Hemitragus jemlahicus*), goral (*Naemorhedus goral*), snow leopard, common leopard, musk deer, impeyan pheasant, and crimson-horned pheasant (ECO3.2).

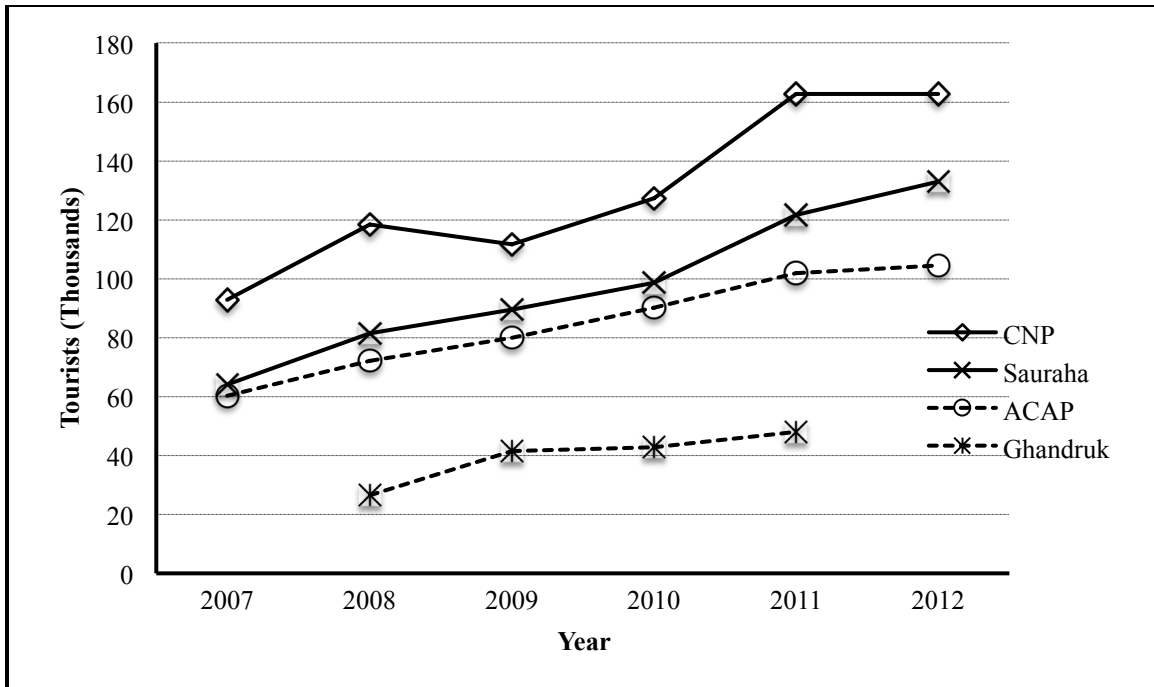


Figure 8. Visitation data for Ghandruk and Sauraha.

Source: Internal records of the Annapurna Conservation Area and Chitwan National Park.

Ghandruk has a population of 4,265 in 1,102 households (S1.1; Central Bureau of Statistics, 2012). About half of the population is Gurung; other major ethnic groups are Dalits (Kami, Damai, and Sarki), Magar, Brahmin, and Chhetri. The population has decreased in the past two decades owing to a lack of quality education, inaccessibility/remoteness, lack of employment opportunities, inadequate income opportunities, youth attraction to foreign employment, and the Maoist insurgency (S1.2). People are dependent on agriculture (crop farming and animal husbandry), tourism, and foreign employment remittances (S2.1). Economic growth is rather slow because tourism is the only flourishing economic activity (S2.2). Ghandruk is the most popular destination within the Annapurna Conservation Area, receiving 40-50% of international tourists (S3.1). The tourism system encompasses many small communities along trekking routes,

including Ghandruk village, Tadapani, Jhinu, and Chhomrong. The area does not face direct competition from other tourism destinations in Nepal (S3.2). Political stability since the Community Party of Nepal (Maoist) joined the democratic process has also contributed to tourism growth (S4).

Sauraha, including the entire Bachhauli Village Development Committee of Chitwan district for this study, is the gateway to Chitwan National Park. The national park was established in 1973 as the first protected area in the country and extends over 932 km² in the southern part of central Nepal. An area of 750 km² surrounding the national park was declared a buffer zone in 1996. The national park is the most visited protected area of Nepal, and visitation continues to grow annually. Some 162,833 domestic and international tourists visited the area in 2012 compared to 92,856 visitors in 2007 (Figure 8).

Located in the buffer zone of Chitwan National Park, Sauraha is 19.26 km². The area's topography is largely flat with an average altitude of 190 m (ECO1); it has a tropical monsoon climate (ECO2). The area within and around Sauraha is exceptionally high in plant and wildlife diversity (ECO3). The major forests types are tropical sal (*Shorea robusta*) forests; riverine forests consisted of catch tree (*Acacia catechu*), Indian rosewood (*Dalbergia sissoo*), and silk cotton tree (*Bombax ceiba*); and grasslands with over 50 types of grasses including elephant grass (*Saccharum spp.*) (ECO3.1). Some iconic wildlife species inhabiting the area are one-horned rhinoceros, Asian elephant, gaur bison, royal Bengal tiger, gharial crocodile, mugger crocodile (*Crocodylus palustris*), great hornbill (*Buceros bicornis*), Bengal florican (*Houbaropsis bengalensis*), and vultures (*Gyps spp.*) (ECO3.2).

Sauraha is densely populated with 10,905 people residing in 2,321 households (S1.1; Central Bureau of Statistics, 2012). Almost half the population is Tharu; other major ethnic groups are Brahmin, Tamang, Chhetri, Newar, and Dalits. Some rare ethnic groups of Nepal, such as Musahar, Kumal, Majhi, Darai, and Bote, also inhabit in Sauraha. The area has witnessed rapid population growth as a result of quality education, accessibility, infrastructure, and employment and business opportunities (S1.2). Agriculture is the main occupation, while tourism and other businesses, service, and foreign employment are secondary options (S2.1). Economic growth is moderate as the area offers myriad opportunities for investment in agriculture, tourism, and other business and industry sectors (S2.2). Unequal income distribution is the primary barrier to economic development in the area. Sauraha is the gateway to Chitwan National Park and receives 70-80% of the international and domestic tourists visiting the national park (S3.1). Similar to Ghandruk, it does not face direct competition from other destinations in Nepal (S3.2) and political stability has contributed to recent tourism growth (S4).

Resource Systems and Resource Units

Tourism in Ghandruk is based upon mountain landscapes and cultural heritage (RS1). The mountain landscape is composed of forest and shrublands, agriculture and grazing lands, snow-covered mountains and barren lands, settlements and village trails, and meandering streams and rivers. Traditional Gurung culture and undisturbed mountain lifestyle are thriving in the area. The tourism system does not have a clearly defined boundary (RS2), and it is difficult, albeit possible, to estimate the size of the resource systems (RS3). There are several human-constructed facilities in the tourism system that can be grouped as attractions, infrastructure, and superstructure (RS4). Gurung museum

and Jhinu hot spring pool are examples of built attractions (RS4.1). The infrastructure includes well-maintained trekking trails, two helipads, and a dirt road connecting the area with a highway that leads to the major cities of Nepal (RS4.2). The facilities exclusively developed for tourism include rubbish bins, waste collection centers, incinerators, and signposts (RS4.3).

The system is relatively productive as the built resources can be improved and the natural resources are renewable (RS5). The cultural attractions can be renovated and cultural activities can be promoted to a certain extent (RS5.1). For example, tourism provides an impetus for preserving traditional festivals and dances, such as Jhyaure, Krishna Charitra, and Ghatu. Many resources in the tourism system, including forests and wildlife, are renewable and thus can be restored after a certain level of disturbance (RS5.2). Theoretically, a tourism system upholds equilibrium according to the demand and supply in long term, but in reality the complete destruction of some resources is likely (RS6). The functioning of tourism systems, however, is predictable to a certain extent (RS7). The number of tourists at a destination can be forecasted based on visitation trends. The products of a tourism system are predominantly perishable (RS8). For example, a spectacular mountain view or the beautiful dance of a bird may last only for few moments and cannot be stored for future consumption.

The resources in Sauraha's tourism system are wildlife and Tharu culture (RS1). Chitwan National Park, Bagmara Community Forest (2.15 km²), and Jankauli Community Forest (.67 km²) provide a habitat for several endangered and charismatic wildlife species including the one-horned rhinoceros, Bengal tiger, Asian elephant, Indian bison, and gharial crocodile. The area is popular for bird watching; 545 species of

resident and migratory birds have already been recorded. The Tharus are the indigenous inhabitants of the Chitwan valley who have unique rituals, celebrations, and music.

Tourists can observe various Tharu cultural activities (e.g., Stick Dance) and artifacts including handicrafts, paintings, instruments, costumes, ornaments, and jewelry. As in Ghandruk, the tourism system does not have a clearly defined boundary (RS2), and it is difficult to estimate the size of resource system (RS3).

The system encompasses several human-constructed facilities (RS4). The Tharu Cultural Museum and Research Center, the Wildlife Display and Information Center, and the Elephant Breeding Center are major attractions (RS4.1). In addition, the system involves infrastructure (e.g., motorable and gravel roads, bridges, and community centers; RS4.2) and superstructure (e.g., watch towers, sign posts, rubbish bins, and forest roads; RS4.3). The tourism systems of Sauraha and Ghandruk are identical with respect to system productivity (RS5), equilibrium properties (RS6), predictability of system dynamics (RS7), and storage characteristics (RS8).

The characteristics of resource units are also identical in Ghandruk and Sauraha. As the tourism systems are composed of multiple resources, so are resource units extracted from the systems. To illustrate, the satisfaction derived through wildlife watching or cultural experience is resource unit for tourists, whereas the number of visitors received is resource unit for the tourism industry. The resource units can be mobile (e.g., wildlife) or stationary (e.g., mountain view; RU1). The growth and replacement rate of resources depends on the nature of the resources (RU2). The resource units (e.g., tourists) interact with each other, which influences the overall tourist experience (RU3). The economic value of tourism resources is usually high, but many of

the resources may not have any other utility besides tourism (RU4). The view of snow-capped Himalayan mountains at sunrise is a once in a lifetime experience for most tourists, but it has little or no value for residents. It is difficult to estimate the number of resource units present in the tourism systems (RU5). The resources also have a spatial and temporal distribution (RU6). For example, the chance to see wildlife depends on location and time of day.

Governance Systems and Actors

The governance system is rather complex in both Ghandruk and Sauraha. Several organizations are involved in managing tourism in Ghandruk (GS1); most notable contributions come from the Annapurna Conservation Area Project (GS1.2) and CBOs including conservation area management committees, mother groups, and tourism management subcommittees (GS1.3). The role of tourism entrepreneurs, such as hotels and lodge owners, cannot be overemphasized (GS1.4). The governance system of Sauraha comprises government organizations (e.g., Chitwan National Park; GS1.1), professional associations (e.g., the Regional Hotel Association, Chitwan; the Restaurant and Bar Association of Nepal, Sauraha Chapter; the Small Tourism Entrepreneurs' Group, Sauraha; the Nature Guide Association, Sauraha; GS1.2), CBOs (e.g., the Mrigakunja Buffer Zone User Committee, Bagmara Community Forest, and Jankauli Community Forest; GS1.3), and the private sector (e.g., owners of hotels, resorts, lodges, restaurants, and nature guide offices; GS1.4).

Other characteristics of governance in Ghandruk and Sauraha are similar. The property-rights system varies across the resources (GS2). To illustrate, the tourism establishments belong to the private sector (GS2.1), the forests are community managed

(GS2.2), and the core area of Chitwan National Park is under government control (GS2.3). Tourism operations and tourist activities outside the park are self-regulated; monitoring and sanctioning rules are locally developed and enforced (GS3). The sanction depends on type of offense (GS3.1), and organic mechanisms exist to handle conflicts at different levels (GS3.2).

There are numerous relevant actors (or stakeholders) in the tourism systems of Ghandruk and Sauraha (A1). The actors can be categorized as primary, secondary, and tertiary. In Ghandruk, tourists are primary actors, hotels and lodge owners are secondary actors, and other stakeholders such as hotel and lodge employees, tourist guides, travel agents, the Annapurna Conservation Area Project, and local people may be seen as tertiary actors (A1.1). The area is visited by 40,000-50,000 tourists every year, hosted by 107 hotels and lodges that are locally owned and operated (A1.2). The actors are diverse in terms of social economic attributes (A2). For example, tourism entrepreneurs are local residents who hold dominant positions in society due to their wealth. Though nonlocals are not allowed to purchase land and open businesses, entrepreneurs may hire employees from outside. The poor, especially small farmers and forest-dependent people, bear the cost of conservation, but they are the ones who get the least benefit from tourism.

The area does not have a very long history of tourism management, which started only after the inception of the Annapurna Conservation Area Project in 1986 (A3). As mentioned earlier, tourism is the mainstay of the local economy, and this dependency has been static over the past few years (A4). Tourism entrepreneurs have some practical experience in managing tourism, but they are unaware of the demand side, including the factors influencing the Western tourist market (A5). Entrepreneurship capacity has

improved through the learning-by-doing process, but it is not enough to address the changing market (A6). Despite the growing domestic market and its potential, domestic tourists are still neglected.

The tourism system of Sauraha is also comprised of primary (i.e., tourists), secondary (i.e., owners of hotels, resorts, restaurants, and nature guide offices), and tertiary (i.e., hotel and restaurant workers, tourist guides, travel agents, Chitwan National Park, and local people) actors (A1.1). Visitors are served by 72 hotels and resorts, 25 restaurants, and 150 nature guides. In recent years, annual visitation has been more than 100 thousand domestic and international tourists (A1.2). The socioeconomic characteristics of the actors are heterogeneous (A2). Unlike Ghandruk, the area is open to everyone to start and operate any type of tourism business. Hotels and restaurants are owned by locals and nonlocals. A majority of employees in tourism establishments are nonlocals, but more than 75% of the nature guides are local.

The history of tourism management in Sauraha is as long as the history of tourism in Nepal, which started in the 1950s (A3). Reliance on tourism has gradually increased over the last 60 years (A4). Tourism entrepreneurs are aware of recent changes in both demand and supply (A5). For example, tourism marketing now focuses on growing the Chinese and Indian markets instead of the Western market. Tourism establishments are run by educated and experienced people who know the needs and priorities of different tourist segments (A6). The businesses have adjusted to fit with newly developed nature-based mass tourism instead of traditional small-scale alternative tourism.

Interactions Among Actors

The resource units generated by the tourism systems are tourist satisfaction and the number of tourists received by the tourism industry. Thus, the experience of tourists and tourists themselves are the products of the tourism systems (I1). It is difficult to quantify the tourist experience. Visitation is growing in Ghandruk; data show that 48,116 tourists visited the area in 2011 compared to 26,458 in 2008 (Figure 8). However, there exist some conflicts within and between stakeholders (I2). For example, the price of food and accommodation is fixed for every community irrespective of hotel and lodge quality. However, the small lodges secretly offer discounts during off-season to attract more tourists. The hotels on public lands are owned by a handful of local elites who indirectly block the opening of new hotels, encouraging a monopolistic system.

Investments in tourism development are substantial (I3). The Annapurna Conservation Area Project is allowed to collect conservation entry fees from international tourists (US\$ 2.00 for SAARC and US\$ 20.00 for other foreign nationals [US\$ 1 = NPR 100]); a portion of this revenue is spent on preserving natural and cultural resources (I3.1). For example, the project partially supports the salaries (US\$ 20/month) of forest guards. Similarly, youth and mother groups are funded to organize local festivals and other cultural activities. The project revenue is spent on developing infrastructure and superstructure (I3.2), including trail improvement, micro-hydro power, and bridge construction. Tourism entrepreneurs also support conservation and development activities (I3.1 & I3.2). The Tourism Management Subcommittee of Chhomrong maintains the trekking trail between Chhomrong and the Annapurna Base Camp every year. Local

entrepreneurs reinvest a certain proportion of their profit to upgrade the facilities and services in hotels and lodges.

Tourism entrepreneurs in Ghandruk and adjacent areas are organized into a Sanctuary Tourism Entrepreneurs Committee (I4), which makes operations-related decisions for tourism development, including menu standardization and room rates. The committee and tourism entrepreneurs have established connections with other institutions and associations such as the Annapurna Conservation Area Project, the Nepal Tourism Board, and the Trekking Agents Association of Nepal (I5). The activities of tourists and tourism establishments are monitored and evaluated by tourism stakeholders, including the Annapurna Conservation Area Project, tourism entrepreneurs, trekking guides, and local people (I6).

The number of tourists visiting Sauraha has grown, as 132,973 people visited the area in 2012 compared to 64,054 in 2007 (I1; Figure 8). Tourism stakeholders, however, have different opinions about the forms of tourism development (I2). Residents and national park staff members are concerned about uncontrolled tourism development, entrepreneurs worry about unfair price competition, and visitors are dissatisfied with crowding and poor service quality. The tourism sector has enjoyed substantial investments from the public and private sectors (I3). The annual budget of Chitwan National Park includes programs for wildlife conservation as well as tourism development (I 3.1 & I3.2). The national park collects entry fees from Nepali (US\$ 1), SAARC (US\$ 7.5), and other foreign (US\$ 15) tourists. Local communities receive 30-50% of national park revenue through the buffer zone program. The revenue is spent on protecting forests and wildlife in the national park and community forests, infrastructure

development, livelihood improvement programs, and conserving indigenous culture (I3.1 & I3.2). Tourism entrepreneurs also fund activities for the development of attractions (natural and cultural resources) and amenities (infrastructure and superstructure; I3.1 & I3.2).

Tourism entrepreneurs have formed several professional associations, including the Regional Hotel Association Nepal, Chitwan by hotel and resort owners; the Restaurant and Bar Association of Nepal, Sauraha Chapter by restaurant and fast food owners; the Small Tourism Entrepreneurs' Group, Sauraha by the owners of convenience stores, handicraft shops, and cyber cafés; and the Nature Guide Association, Sauraha by national park guides (I4). These professional associations and tourism entrepreneurs are linked to other local, regional, and national organizations for tourism development, such as Chitwan National Park, the Nepal Tourism Board, the Trekking Agents Association of Nepal, and the Federation of the Nepalese Chamber of Commerce and Industry (I5). The monitoring and evaluation systems are similar in Sauraha and Ghandruk (I6).

Social, Ecological and Economic Outcomes

The outcomes in the tourism systems of Ghandruk and Sauraha can be organized into sociocultural, ecological, and economic domains.

Social performance measures. The sociocultural outcomes are related to social capital and heritage conservation. In both Ghandruk and Sauraha, tourism has contributed to formulate social capital, such as social cohesion and solidarity, community institutions and leadership development, and cross-cultural understanding (O1.1). Interviewees in Ghandruk reported that tourism has a mixed effect on social cohesion and solidarity. Tourism has restructured the traditional roles within family and community. Women are

more active now in both household and public domains than ever before. Long-standing social stratification and segregation rules based on class and culture are disappearing. Several CBOs, including one conservation area management committee, three tourism management subcommittees, 23 mother groups, and one forest management subcommittee, have been formed to implement conservation and development programs. The organizations provide leadership opportunities to socially disadvantaged groups such as the poor, women, and Dalits. The Annapurna Conservation Area Project has provided advocacy and leadership trainings to the representatives of CBOs, which also enhance leadership development. Participants agreed that tourism has helped enhance cross-cultural understanding since it provides plentiful opportunities to interact with people from different parts of the country and the world. Tourism has also supported cultural heritage conservation by establishing museums and the revitalization of cultural activities, such as local events and festivals (O1.2).

In Sauraha, the effect of tourism on social cohesion and solidarity is equivocal. People generally agreed that there has been a reduction in gender, caste, and class-based discrimination inherent within families and communities. On the contrary, some indigenous people expressed that tourism is partially responsible for eroding their family traditions and social cohesion. Others also accept that the youth of indigenous groups, such as the Tharu, are less interested in their traditional culture, which might be due to the influence of tourists, immigration, technology, or urbanization. The buffer zone program funded by tourism revenue has helped form many CBOs. In Sauraha, these include the Mrigakunja Buffer Zone User Committee, two community forests (Bagmara and Jankauli), and 87 buffer zone user groups (40 male, 42 female, and 5 mixed).

Interviewees believed that the formation of CBOs has increased solidarity among residents and provided exposure and leadership opportunities for disadvantaged groups, such as the poor, women and indigenous peoples. Like Ghandruk, the people of Sauraha agreed that interactions with people from all over the world through tourism have deepened cross-cultural understanding. Tourism in Sauraha has provided an incentive for the conservation of local heritage, including the Tharu culture (O1.2). The Tharu Cultural Museum and Research Center receives 22,000 visitors annually on average and there is high demand for Tharu cultural activities.

Ecological performance measures. Tourism has, directly and indirectly, contributed to the conservation of ecological environment in Ghandruk and Sauraha (O2). Protection of forests and wildlife is a prerequisite for sustainable nature-based tourism. Forests promote greenery, provide habitat for wildlife, and supply forest products. In Ghandruk, the Annapurna Conservation Area Project revenue has been spent for forest management programs, such as plantation and forest protection (O2.1). Tree plantation on private lands has reduced dependency on forests for fodder and fuelwood. Afforestation on public land has enhanced greenery and increased the supply of forest products for local and tourist consumption. Forest protection activities include controlling the illicit collection of forest products, forest fires, forest encroachment, and smuggling of non-timber forest products.

Tourism revenue has also been utilized for wildlife management (O2.2). Locals noted an increase in the population of many wildlife species, including the snow leopard, musk deer, impeyan pheasant, and crimson-horned pheasant. The successes pertaining to ecological conservation are partly due to environmental education programs (O2.3). Most

notably, the Annapurna Conservation Area Project provides free textbooks, honoraria (supplemental salary) to teachers, and free teaching materials to deliver conservation education courses to students in grades six, seven, and eight.

The core area of Chitwan National Park area adjoining Sauraha, the Khorsor Buffer Zone Forest, and the community forests are biodiversity hotspots. Tourism provides a rationale and economic incentive for conserving biological diversity in Chitwan National Park (O2). The national park office, CBOs, and NGOs are proactive in protecting forests, grasslands, and wildlife (O2.1 and O2.2). The national park offices, with the help of the Nepalese Army, regularly patrol the area. The CBOs manage the buffer zone forests. The funding for forest conservation activities such as patrolling, reforestation, electric fencing, conservation education, biogas promotion, and habitat management comes from tourism. For example, the Bagmara Community Forest raised US\$ 126,744 in the fiscal year 2011-2012, in which the share of tourism was 96%. The NGOs, such as the National Trust for Nature Conservation, WWF Nepal, the Bird Education Society, and the Wildlife Conservation Society, provide technical and financial support to the activities of the Office of Chitwan National Park and CBOs.

The achievements of biodiversity conservation initiatives are noticeable. To illustrate, the one-horned rhinoceros is regularly observed in the Bagmara Community Forest, which was an overgrazed barren land before community-based management. There has also been a remarkable reduction in wildlife poaching. Nepal celebrated a “zero poaching year” when not a single incident of rhino poaching was recorded in any of country’s protected areas for more than 365 days in a row beginning February 16, 2013.

Economic performance measures. The economic outcomes are related to sustainable livelihoods, infrastructure development, and capacity building (O3). Tourism development in Ghandruk has contributed to sustainable livelihoods through increased employment and income (O3.1). The hotels and lodges are locally owned and family managed. Tourism establishments, however, provide few jobs to local people, as they are small in scale and mostly employ family members, relatives, and people from outside. Outsiders are not allowed to open hotels and lodges in the area. Though this provision has resulted in local control over tourism, it has limited healthy competition and outside investments. The Annapurna Conservation Area Project has used tourism revenue for various farm-based and off-farm income-generating opportunities. Some examples include support for kitchen gardening, fruit orchards, cash crop farming, animal husbandry, and non-timber forest products. The revenue is also used to compensate the victims of human-wildlife conflicts and establish saving and credit schemes.

Infrastructure development through tourism includes tourism infrastructure (e.g., sign posts, incinerator construction, and internet installation) and community infrastructure, including trail improvement, bridge construction, irrigation canals, drinking water projects, health centers, and micro-hydro installation (O3.2). Tourism revenue has also been spent to build local capacity, including education and skills development (O3.3). The Annapurna Conservation Area Project provides stipends for girls from poor and needy families. Skills development comprises training for cooking and baking, tour guiding, English competency, hotel and lodge management, fruit and vegetable production, cash crop farming, and non-timber forest product collection and processing.

The contribution of tourism to community livelihoods in Sauraha by increasing income and employment cannot be overemphasized (O3.1). The area has more than 150 tourism enterprises that directly employ 1,000-1,500 people depending on the tourist season. Most tourism establishments, particularly small and medium-size businesses, are owned by local people and about 50% of tourism employees are also local. In addition, the enterprises purchase local produce, such as meat, milk, honey, fruits and vegetables, which support local farmers. Tourism revenues received through the buffer zone program and community forests have been spent on livelihood programs. For example, the Mrigakunja Buffer Zone User Group provides soft loans, veterinary services, compensation for the economic losses caused by wildlife, and relief for flood victims. Some innovative projects supporting community livelihoods are the Sapana Women Skill Development Project, the Women's Community Souvenir Shop, the Community-Based Elephant Dung Paper Production Enterprise, and a community fishery for the Musahar people—an indigenous group.

The second area in which tourism revenue has been used is infrastructure development (O3.2). The infrastructure is used by tourists (e.g., wildlife watchtowers), communities (e.g., school buildings, irrigation canals, community buildings, and library), or both (e.g., roads and bridges). Tourism revenue has also been spent on programs oriented towards education and skills development (O3.3). Non-formal classes have been conducted to educate illiterate adults and children, who do not attend school. The younger generation has benefitted from the trainings that provide hands-on skills such as cooking, handicraft making, nature guiding, fabric painting, tailoring, bee keeping, animal husbandry, poultry farming, and vegetable cultivation.

Discussion

This research diagnosed sustainability in tourism systems using a systemic and holistic approach: the SES framework (McGinnis & Ostrom, 2014). Aside from Blanco's (2011) work, this is one of the few attempts to use the SES framework in a tourism context. More precisely, this study examined the combined effects of governance systems, actors, resources systems, and resource units on the action situations comprised of interactions and outcomes in two tourism communities in Nepal: Ghandruk and Sauraha. Results revealed that tourism development in the selected communities has several positive and a few negative sociocultural, economic, and ecological impacts. This indicates that tourism development in the destinations has progressed toward sustainability, though present conditions do not meet the ideal state envisioned by the concept of sustainable tourism.

Sustainable tourism functions as a process, guiding concept, and product in tourism destinations (UNEP & UNWTO, 2005). The only realistic strategy to achieve the goal of sustainable tourism is to maximize positive and minimize negative outcomes (Saarinen, 2006; Butler, 1999). This research uncovered the attributes or factors that impact patterns of interactions and outcomes in the focal tourism systems. For example, social capital formation is aided by the creation of CBOs, whereas traditionally constructed social stratification and segregation systems wane with increased exposure to the outside world through tourism. Similarly, tourism revenue can be a vehicle for biodiversity conservation, providing funding for forest and wildlife management programs. Collaboration and cooperation among diverse actors, including visitors, entrepreneurs, NGOs, and CBOs, are essential in achieving anticipated social, economic,

and ecological outcomes. This indicates that sustainable tourism requires support and involvement of all relevant stakeholders—tenets of collaborative and participatory development (Jamal & Stronza, 2009; Timothy, 1998, 1999).

The author additionally observed that every stakeholder has a unique role in management of tourism resources. To illustrate, government agencies can provide technical, legal, and financial resources. Local actors are involved in managing the focal SESs through CBOs and professional organizations. The findings illustrate that people's participation is an essential tool as CBOs are effective in managing tourism systems. This approach not only enhances the local ownership of tourism resources, but also reduces transaction costs for the government and private organizations. External stakeholders should support the activities of the government and local actors. The results indicate that sustainable management of tourism requires a polycentric and multilevel governance approach that warrants the participation of a diverse array of actors active at different levels (Ostrom, 2010).

The results also revealed that the broad social, economic, and political contexts determine the nature of tourism development and its impacts. In both Ghandruk and Sauraha, political stability, the international tourism market, and an absence of competitive destinations favored the growth of tourism. The cumulative economic impact, however, is low in Ghandruk. One reason is that the area has to import goods and services due to an absence of other economic activities. In addition, communal rules in Ghandruk prohibit outsiders from operating hotels and lodges. As a result, the tourism establishments are small-scale, the service quality is low, and the generation of employment is negligible. This suggests that learning and adaptation are crucial for the

sustainable development of tourism (Plummer & Fennell, 2009). It can be surmised that the cookie-cutter or blueprint governance approaches that fail to take into account the unique social-ecological context and system dynamics are more likely to fail (Ostrom, 2009; Ostrom & Cox, 2010).

This research supports that a systems approach is essential to studying sustainable tourism (Baggio, 2013). First, tourist destinations are complex systems comprised of natural, sociocultural, and built resources, which have often been referred to as background tourism elements, tourism landscapes, and objects of the tourist gaze (Briassoulis, 2002; Healy, 1994; Holden, 2005). Second, there is not a single product to harvest, such as water from an irrigation system, nor is it possible to quantify the amount of product that can be harvested without diminishing resource flow, as in a pasture where a certain number of sheep can graze without influencing the amount of grass production (Cox, 2014; Hardin, 1968). Third, different sets of actors are engaged in managing distinctive resource systems, and there are multiple users of the resources (Briassoulis, 2002; Moore & Rodger, 2010). This means the resources in a tourism system are shared by multiple stakeholders in a destination including tourists and local residents (Blanco, 2011; Holden, 2005). For example, the celebrations of traditional events and festivals are a part of the lifestyle of local people in Ghandruk and Sauraha, but for tourists they are merely cultural attractions.

Fourth, the nature of the use of resources in tourism systems is diverse (Blanco, 2011; Moore & Rodger, 2010). This study observed that the use of resources in the tourism system, such as enjoying mountain scenery, wildlife viewing, or attending a cultural event, is non-extractive, non-exploitative, or non-consumptive. Fifth, the demand

for resources, especially the resources used by tourists, is highly volatile because of the fluctuations in visitation (Briassoulis, 2002). Demand can be short-term and predictable as a result of seasonality, or long-term and unpredictable as the destination matures. To illustrate, Sauraha has witnessed exponential growth in Chinese tourists in recent years, whereas the number of Western tourists has remained the same for several years. This illustrates that the heterogeneity of resources and patterns of resource use makes sustainable tourism management more challenging. A review of literature revealed that similar experiences have long been realized in the management of common-pool resources, such as forests, grazing lands, wildlife, and fisheries (Ostrom, 2009; Ostrom, Burger, Field, Norgaard, & Policansky, 1999). This indicates that the theoretical development in the area of common-pool resource management could be useful in studying tourism resources (Briassoulis, 2002; Holden, 2005; Moore & Rodger, 2010; Stronza, 2010).

The SES framework is gaining popularity as an apposite theoretical framework for assessing the sustainability of common-pool resources (McGinnis & Ostrom, 2014; Ostrom, 2007). This research demonstrates the utility of the SES framework to study coupled human and environment systems in tourist destinations. The framework is not intended to be the blueprint for analyzing all sorts of resource systems (Ostrom & Cox, 2010; Ostrom et al., 2007). It is impossible to use all variables in the SES framework in one particular analysis (Basurto et al., 2013; Cox, 2011). In addition, new variables continue to emerge with its wider application (Basurto et al., 2013; Cox, 2014; Hinkel et al., 2014; McGinnis & Ostrom, 2014; Nagendra & Ostrom, 2014). This study also added new variables and dropped those that do not apply to the focal SES (Table 5). However, it

was difficult to determine whether a variable is internal or external to the focal SES. Following Hinkel and colleagues (2014), this research considered a variable internal if it directly influenced or was influenced by the variables of the SES. Thus, it is necessary to understand in detail the local context where the framework is being applied while adapting the framework.

Conclusions

Sustainable tourism is not just academic lexicon, but it is both a means and end towards sustainable development. Determining how to develop tourism sustainably and the best way to measure the outcomes is challenging. The author inferred that sustained efforts by local actors, as well as the scientific community, are crucial for the long-term viability of tourism systems. The study findings supported that sustainable governance and management of tourism resources warrants a polycentric approach. Collaboration between public, private, and community organizations acting at different scales provides a more inclusive, equitable, and sustainable solution to the problem of tourism resource management (Timothy, 1998). Tourism systems are complex because they contain more than one resource sector that delivers several types of resource units, and the resources are under diverse governance systems involving multiple sets of actors, users, or stakeholders. Thus, the analysis of tourism systems demands a systemic and holistic approach that captures the complexity and dynamism inherent in the systems.

The SES framework, therefore, can be used as a common framework to guide future studies that aim to diagnose the sustainable development of tourism. In analyzing an SES, it is important to understand and communicate which attributes are unique to the focal SES and which attributes are comparable with and generalizable to other settings.

While adapting the SES framework, it is necessary to develop new second- or lower- tier variables to capture the particularities of tourism systems. The addition of variables into the SES framework enhances its applicability in empirical investigations. The variables used in this study should not be accepted as a blueprint for evaluating sustainable tourism, but rather as a manifestation of how it played out from secondary data and interviews. Some crucial variables in evaluating sustainable tourism may have been overlooked or omitted. Researchers may choose to adapt the SES framework according to their study contexts.

The author urges tourism scholars to use the SES framework in sustainable tourism research because a shared framework allows better comparisons between multiple studies and enable theory building. The merit of this framework will be more obvious as the number of individual- or multiple-case studies increases. Caution should be exercised, however, in realizing that the findings reported here neither can be generalized to other types of SESs, nor does the linkage between variables signify a causal relationship. The observed interactions and outcomes may be due to complex and non-additive interactions between the SES and external variables. This implies that an identified variable might be necessary, but not a sufficient condition, to produce causality (Cox, 2011). Further work is required to verify the observed relationships between different variables and confirm causal relationships. Scholars and practitioners are frequently interested in determining the role of a particular variable in generating a given outcome. The author contends that the focus should be on which combinations of variables are associated with the resultant outcomes. The identification of these groups is an important step toward a more systematic understanding of SES in theory development.

CHAPTER 5

STAKEHOLDERS' PERSPECTIVES OF SUSTAINABLE TOURISM DEVELOPMENT: A NEW APPROACH TO MEASURING OUTCOMES

Introduction

Protected areas are globally recognized as the only means for in-situ conservation of biodiversity (Dudley, 2008; Walpole et al., 2001). It is also argued that ecosystem services, recreation, and poverty alleviation functions of protected areas are equally important (Dlamini & Masuku, 2013; Dudley, 2008; Nepal, 2000; Ruschkowski et al., 2013; Zube & Busch, 1990). As a result, protected areas have proliferated globally—almost 24.24 million hectares of terrestrial and marine area conserved under 157,897 protected areas as of 2011 (IUCN & UNEP-WCMC, 2012). The protected area goals, however, are often at odds with each other (Eagles et al., 2002; Jones, 2013; Thur, 2010).

The establishment of protected areas has threatened livelihoods of surrounding communities, more specifically that of indigenous and tribal communities, by constraining traditional use rights (e.g., collection of forest products) or displacing these communities from their ancestral territory (Agrawal & Redford, 2009). Local residents are often blamed for deteriorating vitality of protected areas by reckless harvesting and illicit collection of resources for self-consumption as well as commercial purposes (Jones, 2013). Relatedly, tourism is often criticized for destroying the natural and cultural resources on which it is based (Deng et al., 2003; Dlamini & Masuku, 2013; Nepal, 2000; Ruschkowski et al., 2013; UNEP & UNWTO, 2005). This indicates that protected areas have to serve several ecological, economic, and social functions, while immunizing themselves from various anthropogenic stressors. However, inadequate funding persists

as a major challenge to conduct management interventions necessary in achieving the protected area goals (Baral et al., 2008; Dlamini & Masuku, 2013; Eagles, 2013; Thur, 2010; Walpole et al., 2001). As such, there exist many protected areas, often referred to as paper parks, with minimal or no on-the-ground impact (Eagles et al., 2002; Jones, 2013; Thur, 2010).

Sustainable tourism development is widely promoted as panacea to the dilemmas of protected areas (Eagles et al., 2002; Hassanali, 2013; Puhakka et al., 2009). Potential benefits of sustainable tourism in protected areas include enhancement of economic opportunities, protection of natural and cultural heritage, and improvement of quality of life of local communities (Eagles, 2013; Fennell & Weaver, 2005; Puppim de Oliveira, 2005; Strickland-Munro, Allison, & Moore, 2010; UNEP & UNWTO, 2005). In other words, sustainable tourism provides tangible economic benefits to management authority (e.g., offset the cost of protection) and local communities (e.g., improve people's livelihoods), while conserving the ecological and sociocultural integrity of the entire protected area system (UNEP & UNWTO, 2005; Walpole et al., 2001).

The interrelationship between sustainable tourism and protected areas is not static though; there is no one-size-fits-all answer to manage tourism in protected areas (Imran et al., 2014). The outcomes depend on the nature of tourism development as determined by the biophysical, socioeconomic, and management characteristics of protected areas (Lai & Nepal, 2006; Reinius & Fredman, 2007; Ruschkowski et al., 2013). In addition, sustainable management of tourism in protected areas requires cooperation and partnership among tourism stakeholders including tourism industry, government agencies, residents, NGOs, and tourists (Byrd, 2007; Dlamini & Masuku, 2013;

Hassanali, 2013; Weiler et al., 2013). This is because the stakeholder groups have a direct interest in and are affected by tourism management decisions (Eagles et al., 2002; Waligo, Clarke, & Hawkins, 2013).

Past research has established that the perceptions of tourism stakeholder regarding impacts of tourism in protected areas vary (Puhakka et al., 2009; Ruschkowski et al., 2013; Thapa, 2013). These studies have compared the perceptions of different stakeholders within a protected area. However, there is paucity of research that compares the perceptions of similar stakeholder groups between tourism destinations. Therefore, the main objective of this study was to compare protected areas in terms of sustainable tourism outcomes through the eyes of tourism stakeholders. More precisely, this study compared the responses of residents with residents, and tourists with tourists, in two protected areas.

Empirical data came from the surveys conducted in the Annapurna Conservation Area and Chitwan National Park in Nepal. Literature suggests that the main shortcoming of cross group comparison studies in the past is that there has been little effort to examine the equivalence of the measurement instrument across the groups (Sass, 2011; Vandenberg & Lance, 2000). Nonequivalence of measurement instrument may produce biased results and threaten the validity of the research (Budruk, 2010; Sass, 2011). Thus, before comparing stakeholder perspectives of sustainable tourism across the two protected areas, this research first established measurement invariance across comparison groups using the multigroup confirmatory factor analysis (CFA) approach.

Literature Review

Tourism in Protected Areas

The link between tourism and protected areas can be traced back to the origin of the protected area paradigm with the establishment of Yellowstone National Park (Nash, 2014). The creation of the park was justified on the ground of its recreational and conservation values (Eagles et al., 2002; Jamal & Stronza, 2009; Reinius & Fredman, 2007; Walpole et al., 2001). Since then, understanding tourism within protected areas has been a major area of interest for researchers, planners, and managers. As such, the interrelationship between tourism and protected areas has been extensively investigated in the last three decades (Ahebwa & Duim, 2013; Eagles, 2013; Hassanali, 2013; Moore & Weiler, 2009; Nepal, 2000; Ostrowski, 1984; Thapa, 2013; Zube & Busch, 1990). Discourses are primarily concentrated on tourism and recreational opportunities provided by protected areas (Reinius & Fredman, 2007; Ruschkowski et al., 2013; Weiler et al., 2013), tourism as a source of funding for protected areas (Baral et al., 2008; Buckley, 2003; Eagles, Romagosa, Buteau-Duitschaeffer, Havitz, Glover, & McCutcheon, 2013; Thur, 2010; Walpole et al., 2001), tourism and community livelihoods (Ahebwa & Duim, 2013; Imran et al., 2014; Nyaupane & Poudel, 2011; Strickland-Munro & Moore, 2013), and impacts of tourism development (Deng et al., 2003; Moyle, Weiler, & Croy, 2013; Nepal, 2000).

Several scholars have examined the impacts of tourism development in protected areas (Imran et al., 2014; Lai & Nepal, 2006; Nepal, 2000; Puhakka et al., 2009; Ruschkowski et al., 2013; Thapa, 2013; White, 1993; Zube & Busch, 1990). These studies typically assessed the perspectives (opinions, perceptions, attitude, preferences, or

experiences) of tourism stakeholders regarding sociocultural, economic, and ecological impacts. Much of the impact research has been concentrated on comparison of stakeholder responses at a single destination. For example, Puhakka and colleagues (2009) examined local stakeholders' perspectives of sociocultural sustainability of tourism in the Oulanka National Park, Finland. Thapa (2013) surveyed visitor attitudes toward sustainable tourism in protected areas of Zambia. Imran and colleagues (2014) assessed the differences in environmental orientations of stakeholder groups in the Central Karakoram National Park, Pakistan. This research is undoubtedly invaluable to uncover the preferences and identify the trade-off positions of tourism stakeholders at a particular destination.

A survey of extant literature shows that the significance of research comparing the perspectives (or perceptions) of individual stakeholder groups among multiple destinations has been overlooked. Very recently, Ruschkowski and colleagues (2013) examined the differences and similarities in values among parks and protected area managers in Austria, Germany, and the United States. The research revealed that the management priorities and practices in parks and protected areas in Austria and Germany are oriented towards conservation. On the contrary, the policies and actions in the United States are focused on social issues, such as carrying capacity, visitor satisfaction, and crowding (Ruschkowski et al., 2013). Similarly, Gorner and Cihar (2013) found many differences in attitudes of local residents on conservation and tourism related issues between two categories of protected areas (i.e., national park and protected landscape) in the Czech Republic. For instance, local people were more supportive of the notion that tourism raises the cost of living of local residents. While the studies have begun to

provide an insight into how stakeholder perspectives might vary across protected areas, additional studies are necessary.

The knowledge produced by multisite comparative studies is worthwhile to discern how different stakeholder groups evaluate the state of conservation and tourism development. In addition, it is crucial to ensure that all stakeholders are heard because the decisions made by one party, such as tourism experts, may not reflect the interests and opinions of other stakeholders. The exclusion of stakeholder groups may pose obstacles towards realizing sustainable tourism development goals. Further, protected area managers and other stakeholders can use this type of information to enhance visitor experience and optimize social, economic, and environmental impacts. Management of such impacts is particularly important when tourism is being criticized for killing the goose that lays the golden eggs. Thus, comparing the perspectives of these two major primary stakeholder groups in different protected area-based tourism systems merits academic attention.

Theoretical Background

This research utilizes the protected area management framework and the stakeholder theory as conceptual lenses to study sustainable tourism outcomes in protected areas. With the evolution of the protected area movement, the relationship between conservation and tourism has been elusive and mixed, from adversarial to symbiotic (Nyaupane & Poudel, 2011). Major factors shaping the relationship are the management objectives set for protected areas and the nature of tourism development (Ruschkowski et al., 2013). The focus of protected area management has gradually expanded from species protection to biodiversity conservation at species, genetic, and

ecosystem levels, ecosystem services, recreation, and community livelihoods (Eagles et al., 2002). According to Dudley (2008, p. 3), “protected areas exist in an astonishing variety—in size, location, management approaches, and objectives.” This indicates that protected areas are not uniform entities and the one-size fits all management approach does not work. The IUCN developed a global framework categorizing the variety of protected areas into six management categories (Dudley, 2008). The framework outlines the major priorities in each category. For example, “biodiversity conservation” is a universal goal (i.e., it is mandatory in all categories of protected areas). On the other hand, “tourism and recreation” is one of the primary objectives in category II “national park” and category V “protected landscape/seascape” (Eagles et al., 2002). It can be surmised that the category assigned to protected areas and the management approach prescribed accordingly shape the form of tourism development.

Over the past two decades, sustainability has become a major concept guiding the process of tourism planning and development (Bramwell & Lane, 2012; Butler, 1999; Hunter, 1997; Ko, 2005; Lu & Nepal, 2009; Stoddard et al., 2012). Sustainable tourism is defined as "tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities" (UNEP & UNWTO, 2005, p. 12). This definition suggests that sustainable tourism development requires an informed participation of all relevant stakeholders (Hawkins & Cunningham, 1996).

A stakeholder is defined as “any group or individual who can affect or is affected by the achievement of an organization’s objectives” (Freeman, 1984, p., 46). Since Freeman’s seminal work on the stakeholder theory (Freeman, 1984), the theory has been

extensively applied in various fields to study the complex relationships among stakeholder groups with different objectives, interests, expectations, rights, and responsibilities. The discussion on the stakeholder theory has primarily centered around two related streams: defining the concept, and classifying stakeholders and understanding their relationships (Rowley, 1997). The theory postulates that all voices should be heard while making a decision, regardless of the power or interest held by stakeholder groups (Byrd, 2007). Clarkson (1995) classified the stakeholder as primary and secondary stakeholders. Primary stakeholders are ones without whose participation the corporation cannot survive, which include investors, employees, customers and suppliers, whereas secondary stakeholders are those who influence or affect, or are influenced or affected by, the corporation, but are not engaged in transactions with the corporation and not essential for its survival (Clarkson, 1995).

In the context of tourism, the main tenet of the stakeholder theory is that all parties interested in or affected by tourism development should have an opportunity to influence its management (Sautter & Leisen, 1999; UNEP & UNWTO, 2005). This means sustainable tourism entails support and involvement of stakeholders in the entire destination planning process (Byrd, Bosley, & Dronberger, 2009; Currie, Seaton, & Wesley, 2009; Jamal & Stronza, 2009; Timothy, 1999; Waligo et al., 2013). The stakeholder theory has been extensively employed to identify the primary stakeholders who are important for a tourism destination and discover their interests. Research shows that tourism systems consist of diverse stakeholders including residents, entrepreneurs, government officials, and tourists (Byrd, 2007; Murphy, 1983; Nyaupane & Poudel, 2011). The relationship among these stakeholders is complex and dynamic, as the roles of

stakeholders are site-specific, varying in type and extent with time, resources, and leadership (Byrd, 2007; Sautter & Leisen, 1999). There exist trade-offs among the stakeholders regarding the nature of tourism development (Byrd et al., 2009; Hawkins & Cunningham, 1996; Murphy, 1983; Sautter & Leisen, 1999). This indicates that it is imperative to identify the stakeholders and examine their values, perceptions, and interests, given that their roles shape the nature of tourism development in a destination (Imran et al., 2014).

Measuring Tourism Sustainability

The triple bottom line, also referred to as TBL, 3P (People, Planet, and Profit), or 3E (Economy, Environment, and Equity), framework is one of the most widely used approaches to measure sustainable development (Elkington, 1997). Sustainability, according to this framework, requires balanced development of social, economic, and ecological domains (UNEP & UNWTO, 2005). Accordingly, the notion of sustainable tourism suggests that there must be a suitable balance between ecological, sociocultural, and economic dimensions of tourism development (Stoddard et al., 2012). Several scholars have adapted the triple bottom line framework to assess sustainable tourism development (Cottrell, Duim, Ankersmid, & Kelder, 2004; Cottrell, Vaske, Shen, & Ritter, 2007; Deng et al., 2003; Ko, 2005; Puhakka et al., 2009; Stoddard et al., 2012; Thapa, 2013; UNEP & UNWTO, 2005; Yu, Chancellor, & Cole, 2009).

There exist many flaws pertaining to quantitative measurement of sustainable tourism. First, there have been several attempts to develop a global measure of sustainable tourism (Choi & Sirakaya, 2005; Yu et al., 2009). The development of such a widely applicable measurement instrument is virtually impossible because tourism

destinations vary greatly in terms of biophysical attributes, community characteristics, and institutional arrangements to manage tourism. This suggests that the indicators for sustainable tourism should be developed in consultation with destination-level tourism stakeholders so that they are relevant in the local context.

Second, there seems to be indifference in the literature concerning the distinction between positive and negative impacts of tourism. It would be an erroneous practice just to record positive (or negative) impacts, measure both positive and negative impacts but reverse code the items related to negative impact during data analysis, or subtract negative scores from positive scores to get net impacts. No form of tourism exclusively produces positive (or negative) impacts. For example, in rural destinations, increased income is frequently accompanied by inflation. Given that positive and negative impacts are like two faces of a coin, it is crucial to measure them separately. The reverse coding of items incorrectly assumes that positive and negative impacts are mutually exclusive. In many circumstances, reverse coding is not possible (e.g., tourism increases prostitution). Moreover, the presence of equal score for positive and negative impact items does not mean zero impact. Further, the concept of cumulative impact is invalid unless there exists an opposite approach to weight the items.

Third, in comparative studies, there is a tendency to examine the difference between group means on an individual item or a set of items forming a scale (the group means are obtained by averaging the item averages). This approach blatantly ignores the likelihood of error in measurement of variables, and researchers rarely examine statistical assumptions, such as equality of variances across groups. Methodologists maintain that while comparing the responses of diverse populations, it is imperative to ascertain that

the comparison groups interpret individual questions as well as underlying latent construct similarly (Vandenberg & Lance, 2000). This can be done with the test of measurement invariance, which examines “whether an instrument has the same psychometric properties across heterogeneous groups” (Chen, 2007, p. 465). A measurement instrument is called invariant “when members of different populations who have the same standing on the construct being measured received the same observed score on the test” (Schmitt & Kuljanin, 2008, p. 211).

The multigroup CFA approach has been used to test measurement invariance across groups in structural equation modeling literature in the last two decades (Vandenberg & Lance, 2000; Sass, 2011) and more recently in the tourism literature (Chi, 2011; Kyle, Graefe, & Manning, 2005; Skibins, Powell, & Hallo, 2013; Taff, Newman, Pettebone, White, Lawson, Monz, & Vagias, 2013). In this approach, the comparison of latent factor means requires that the measurement instrument is invariant across groups (Millsap & Meredith, 2007). More precisely, the testing of latent mean difference requires strong factorial invariance, meaning equal unstandardized factor loadings and intercepts/thresholds (Sass, 2011; Cheung & Rensvold, 2002). It is because the latent factor mean is jointly created but differently influenced by factor loadings and intercepts (Muthén & Muthén, 1998-2012). Measurement invariance in the multigroup CFA is established by running a series of increasingly constrained CFA models, and testing whether differences between the nested models are statistically significant (Schmitt & Kuljanin, 2008).

Study Purpose and Research Questions

The purpose of this study was to compare the perspectives of stakeholder groups regarding sustainable tourism development in protected areas. The research questions specifically examined were:

1. Are there significant latent factor mean differences in perceptions of sustainable tourism development between the residents of Annapurna and Chitwan?
2. Are there significant latent factor mean differences in perceptions of sustainable tourism development between the tourists visiting Annapurna and Chitwan?

Methods

Study Areas

Data for this study came from two protected areas in Nepal: the Annapurna Conservation Area and Chitwan National Park. The rationale to choose these protected areas was their differences in terms of the nature of tourism development, which is primarily influenced by biophysical attributes, socioeconomic characteristics, and protected area governance. Further, these are two most visited protected areas in Nepal and represent two different categories of protected areas. Annapurna Conservation Area is the largest protected area of Nepal, covering 7,629 km². It is an IUCN category VI protected area (i.e., protected area with sustainable use of natural resources) managed by the National Trust for Nature Conservation, an autonomous and not-for-profit organization established by a legislative act. The Annapurna Conservation Area adopts the ICDP approach and the programs are targeted towards biodiversity conservation, community livelihoods, and integrated tourism management.

The conservation area encloses forests, pastures, barren lands, settlements, and agriculture lands. Accordingly, the area is divided into four management zones: wilderness zone, protected forest/seasonal grazing zone, intensive use zone, and special management zone. While the wilderness zone is strictly protected, the protected forest/seasonal grazing zone allows seasonal and limited use of resources. The intensive use zone is inhabited by more than 90,000 people and allows traditional livelihood activities such as farming, animal husbandry, and forest products collection. The special management zones are popular tourist areas where the programs are oriented towards sustainable tourism development. The number of tourist visiting the Annapurna area is increasing every year— approximately 105,000 tourists visited the area in 2012. Trekking—multiday hiking along the foot trails passing through mountains, valleys, and settlements for purpose of enjoying the Himalayan landscape and the culture of indigenous people—is the major tourism product (Poudel & Nyaupane, 2013). Tourism establishments in Annapurna are small-scale, locally owned, and family managed. Tourism, emigration, foreign employment, and infrastructure development are major agents of change in the area, producing many positive and negative sociocultural, economic, and environmental impacts.

Chitwan National Park, the first protected area in Nepal, consists of the core area (category II “national park”) extended over 932 km² and the buffer zone (category VI “protected area with sustainable use of natural resources”) that covers 750 km². The national park is an example of the nested protected area, where a highly protected core area is surrounded by a less strictly protected buffer zone. The core area in Chitwan National Park is strictly secured by the national park authority, with the help of Nepalese

Army, to safeguard rare and endangered species of flora and fauna, including the one-horned rhinoceros and royal Bengal tiger. Use of the core area is limited to nature-oriented tourism activities, including bird watching, wildlife viewing, elephant safari, canoeing, and jungle walks. Local residents manage the buffer zone with the help of park management. The programs conducted in the buffer zone are oriented towards biodiversity conservation, sustainable use of natural resources, and community development.

The buffer zone area includes forested areas, cultivated lands, and settlements. The forested areas act as extended habitats for wildlife and supply forest products for local people. The buffer zone is densely populated with a population of 260,000 individuals that includes indigenous peoples (e.g., Tharu, Majhi, and Musahar) and people who migrated from northern hilly areas. Tourism is a mainstay of local economy—more than 150,000 tourists visited the area in 2012. Tourism in Chitwan could be characterized as nature-based mass tourism (or wildlife-based mass tourism), which is predominantly controlled by outside entrepreneurs. However, it has a good multiplier effect, as the tourism establishments employ local residents and buy local produce. Tourism, along with immigration, modernization of agriculture, and industrial development, has resulted in significant sociocultural, economic, and environment changes in the area.

Measurement Instrument

The author developed three scales paralleling social, ecological, and economic dimensions of sustainable development. Each scale consists of two subscales for negative and positive impacts. The subscales are latent constructs consisting of multiple (i.e., three

or more) items related to destination level tourism impacts. The scale development process roughly paralleled the process used by Choi and Sirakaya (2005) to develop a scale to measure residents' attitudes toward sustainable tourism development. At first, the author created a pool of items related to each subscale from a review of previously used scales to measure tourism impacts and sustainable tourism (e.g., Andereck & Nyaupane, 2011; Andereck et al., 2005; Andereck & Vogt, 2000; Byrd et al., 2009; Choi & Sirakaya, 2005, 2006; Nyaupane & Thapa, 2004; Yu et al., 2009). Secondly, the author revised the scales through a series of discussions with local-level tourism stakeholders including national park staff members, tourism entrepreneurs, tourists, and residents, in order to ensure that the scale items are locally relevant. This was an iterative process entailing feedback from tourism stakeholders at both sites.

Thirdly, a pilot survey of the subscales was done with a sample of 100 participants. The participants were tourists, tourism entrepreneurs, and local residents from Sauraha in Chitwan and Ghandruk in Annapurna. Based on statistical criteria (i.e., exploratory factor analysis and reliability test) and respondents' feedback, the author decided to use a total of 45 items. There were six items in negative ecological, five items in positive ecological, five items in negative economic, 12 items in positive economic, 12 items in negative social, and five items in positive social subscales (Table 6). Each item was rated on a 5-point Likert scale with response categories ranging from *strongly disagree* (1) to *strongly agree* (5). The instrument also included sociodemographic questions, including gender, age, income, and education.

Table 6

Tourism Impact Subscales

<p><i>Negative ecological impact subscale</i> ECL1: Tourism destroys the natural environment ECL2: Tourism increases air, water, and noise pollution ECL3: Tourism increases environmental problems such as littering and wastewater discharge ECL4: Tourism produces long-term negative effects on the environment ECL5: Construction of hotels and other tourist facilities destroy the natural environment ECL6: Tourism development encourages deforestation</p> <p><i>Positive ecological impact subscale</i> ECL7: Tourism development strengthens local environmental conservation efforts ECL8: Tourism promotes greater protection of the natural environment ECL9: Tourism development promotes positive environmental ethics among all parties that have a stake in tourism ECL10: Tourism development promotes protection of wildlife and their natural habitat ECL11: Tourism provides incentive for conservation of natural areas</p> <p><i>Negative social impact subscale</i> SOC1: Tourism development increases crime SOC2: Tourism development increases traffic problems such as congestion and accidents SOC3: Tourism development results crowded public places SOC4: Tourism development creates conflict (friction) between visitors and residents SOC5: Tourism development encourages gambling and other illegal games SOC6: Tourism development results in a decline in traditions of native people SOC7: Tourism development results in more thefts and vandalism SOC8: Tourism promotes drug and alcohol abuse SOC9: Tourism promotes prostitution and sex openness SOC10: Tourism results loss of tranquility (peacefulness) in the local community SOC11: Tourism deteriorates the quality of life of local people SOC12: Tourism development erodes social cohesion and disrupts traditional family values</p>	<p><i>Positive social impact subscale</i> SOC13: Tourism enhances knowledge of other cultures (communities) SOC14: Tourism development facilitates intercultural communication and understanding SOC15: Tourism provides incentives for preservation of the local culture SOC16: Tourism provides opportunities to participate in local cultural activities</p> <p><i>Negative economic impact subscale</i> ECO1: Tourism development increases property taxes ECO2: Tourism increases the price of goods and services. ECO3: Tourism development results in increased cost of living ECO4: Tourism increases the value of land and house ECO5: Tourism puts more pressure on local services such as police, fire, utilities, and roads</p> <p><i>Positive economic impact subscale</i> ECO6: Tourism contributes to community development funds ECO7: Tourism increases income and improves living standards of community people ECO8: Tourism improves the quality of service in shops, restaurants, and hotels in an area ECO9: Tourism benefits other businesses and industries in local community ECO10: Tourism brings new income to local community ECO11: Tourism attracts additional investment in local businesses ECO12: Tourism creates new market for local products ECO13: Tourism businesses purchase goods and services from local community ECO14: Tourism is needed for development of the local economy ECO15: Roads, bridges, and other public facilities are kept at a high standard because of tourism ECO16: Tourism provides entrepreneurial (investment) opportunity to the community residents ECO17: Tourism development makes local businesses, such as retail stores and restaurants, more profitable</p>
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Participants and Data Collection

The participants were primary tourism stakeholders (i.e., tourists and residents) in the study areas. The tourist sample consisted of the visitors who had some familiarity with the study areas. This was achieved in Annapurna by selecting the visitors returning from trekking. In Chitwan, the visitors who spent less than 24 hours in the area were deliberately excluded. Given that virtually all tourists spend at least two days in both study areas, the author believes that the sample would still be unbiased. Tourists were approached while they were resting, mostly after lunch and before dinner in Chitwan, and after dinner in Annapurna. It was up to the tourists whether to return the questionnaire directly to the researcher on the same day or drop it off at their hotel front desk the next day. Since tourists are mobile, it was not possible to compile a sampling frame. Instead, the author compiled a sampling frame of hotels and restaurants and randomly selected the establishments to be sampled on a particular day at specific time slots at both sites.

The resident sample was composed of tourism entrepreneurs, employees of tourism businesses, members of NGOs and CBOs, and community members. It was realized that several people belong to more than one stakeholder group. For example, person X runs a hotel and he is on the board of an NGO as well. Thus, the author sought help from local level tourism stakeholders to classify the residents into different subgroups. Adopting the stratified sampling method, the author assigned a quota commensurate with the estimated population size for each subgroup. A systematic sampling procedure was applied within each group (stratum), which involved choosing every k^{th} participant after a random start. The k value was determined on the basis of the

size of the strata. The residents were contacted at their place of work or residence depending on their availability.

The survey method was adopted to administer the questionnaires. This method is considered as the most efficient and effective method to solicit the perceptions of large number of people in a limited time (Babbie, 2013). Additionally, this method is more appropriate than other popular methods, such as personal interview and focus group discussion, to collect quantitative data from a large sample. The questionnaires were designed in Nepali (for residents) and English (for tourists), and were self-administered by the respondents. A total of 500 questionnaires were distributed at each site, and 435 surveys were returned in Annapurna (response rate 87%) and 430 surveys were returned in Chitwan (response rate 86%). The main reason individuals declined to participate was lack of time.

Data Analysis

The data were analyzed in Mplus 7.1 (Muthén & Muthén, 1998-2012) structural equation modeling software using the maximum likelihood estimation approach with robust standard errors. The robust standard errors account for nonnormality, if present, in data. As discussed earlier, the valid comparison of latent factor means across groups requires strong factorial invariance. The author followed the sequential process suggested for multigroup CFA to test measurement invariance (Cheung & Rensvold, 2002; Muthén & Muthén, 1998-2012; Sass, 2011; Vandenberg & Lance, 2000). The process includes testing of (a) invariance of measures across comparison groups separately, (b) configural invariance, (c) metric invariance, and (d) scalar invariance. At first, the author conducted the CFA on all subscales for each group to see whether both groups (i.e., Annapurna and

Chitwan) had the same factor structure. Second, the author tested for configural invariance, which examined whether the number of factors and the pattern of indicator factor loading are identical across groups. Strictly speaking, it involved the estimation of the same model for both groups simultaneously, while allowing all model parameters to vary freely across groups. Therefore, the model with configural invariance is considered as baseline model against which more restrictive invariance models are compared (Vandenberg & Lance, 2000). Third, the author tested for metric invariance by constraining unstandardized factor loadings for the same item to be equal across groups. Fourth, the author tested for scalar invariance by adding equality constraints on item intercepts.

The overall fit of the CFA models was evaluated with the chi-square (χ^2) goodness-of-fit test (Brown, 2006; Sass, 2011). In contrast to traditional significance testing procedure, a nonsignificant χ^2 value indicates satisfactory model fit (Byrne, Shavelson, & Muthén, 1989). Scholars have noted problems related to the use of the χ^2 statistic as sole criterion to assess model fit because several factors including sample size, departure from multivariate normality, model complexity, and size of the correlations in the model affect the test result (Byrne et al., 1989; Vandenberg & Lance, 2000). The author additionally relied on four practical model fit indices: comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) to evaluate the model fit. Researchers suggest that the model with CFI and TLI values greater than .95, RMSEA less than .06, and SRMR less than .08 could be considered as a good fit (Hu & Bentler, 1999; Vandenberg & Lance, 2000).

In measurement invariance testing procedures, successive models are nested within the preceding models (Milfont & Fischer, 2010). This indicates that the level of measurement equivalency could be evaluated by comparing the fit of more restrictive models to a baseline model. As suggested in the literature, the author used three types of incremental goodness-of-fit statistics to assess measurement invariance: (a) likelihood ratio test, commonly referred as chi-square difference ($\Delta\chi^2$) statistic, (b) change in model fit indices (i.e., ΔCFI , ΔTLLI , ΔRMSEA , and ΔSRMR), and (c) modification indices (Byrne et al., 1989; Cheung & Rensvold, 2002; Sass, 2011). A nonsignificant $\Delta\chi^2$ value between two nested models for a given degree of freedom signifies that the measures of compared models are invariant. The $\Delta\chi^2$ test used in the analysis is a rescaled likelihood ratio test, as it used scaling factor produced by robust maximum likelihood estimate to adjust for nonnormality in the data. Given that the $\Delta\chi^2$ has same limitations as the χ^2 test, the author additionally considered changes in practical goodness of fit indices (i.e., ΔCFI , ΔTLLI , ΔRMSEA , and ΔSRMR) to compare whether the metric and scalar invariance models were better than configural model. The nested models with $\Delta\text{CFI} < .010$, $\Delta\text{TLLI} < .020$, $\Delta\text{RMSEA} < .015$, and $\Delta\text{SRMR} < .030$ suggest that all specified equality constraints are tenable and the models could be considered equivalent (Chen, 2007; Cheung & Rensvold, 2002; Sharma, Durvasula, & Ployhart, 2011).

When full measurement invariance was untenable, the author proceeded with the evaluation of partial measurement invariance (Byrne et al., 1989; Schmitt & Kuljanin, 2008; Vandenberg & Lance, 2000). Assessment of partial invariance involves identifying and then freeing the parameter constraints contributing to model misfit (Byrne et al.,

1989). The author inspected modification indices to detect the constraints causing the model to fit poorly. Specifically, the author freed the parameter constraints that significantly reduce the $\Delta\chi^2$ value (i.e., parameter constraint producing modification index larger than 3.84) and improve practical model fit indices (i.e., CFI, TLI, RMSEA, and SRMR). The modification indices are one degree of freedom tests, so the constraints are released one at a time starting with the largest χ^2 (Byrne et al., 1989). Finding noninvariant parameters was an exploratory, iterative, and post hoc practice. Besides producing a nonsignificant $\Delta\chi^2$, this procedure informed which factor loadings and intercepts are noninvariant across comparison groups.

Results

Respondents Characteristics

The demographic characteristics of the study participants are given in Table 7. The sample consisted of 450 residents (230 in Annapurna and 220 in Chitwan) and 415 tourists (205 in Annapurna and 210 in Chitwan). In the resident sample, a majority of the respondents were male (64%). The proportion varied between Annapurna and Chitwan, $\chi^2(1, N = 450) = 8.38, p = .004$, with Annapurna having a lower proportion of males (58%) than Chitwan (71%). Average age and average income of the residents were 31.44 years and US\$ 2,189.11, respectively. No significant difference was found between the respondents in Annapurna and Chitwan by age, $t(448) = 1.17, p = .244$, and income, $t(303) = 1.74, p = .084$. Nearly two-thirds (64%) of the residents reported that their education is below high school. The respondents with education below high school were lower in Chitwan (59%) compared to Annapurna (70%), but the difference was nonsignificant, $\chi^2(4, N = 450) = 7.37, p = .118$.

Table 7

Respondents' Characteristics

Characteristics	Resident data				Tourist data				χ^2 - value
	Combined Mean (SD)	Annapurma Mean (SD)	Chitwan Mean (SD)	χ^2 - value	Combined Mean (SD)	Annapurma Mean (SD)	Chitwan Mean (SD)	χ^2 - value	
Sample size	(N = 450)	(N = 230)	(N = 220)		(N = 415)	(N = 205)	(N = 210)		
Gender				8.38**					2.94
Male	.64 (.48)	.58 (.50)	.71 (.46)		.50 (.50)	.52 (.50)	.49 (.50)		
Female	.36 (.48)	.42 (.50)	.29 (.46)		.50 (.50)	.48 (.50)	.51 (.50)		
Age (years)	31.44 (11.47)	30.83 (12.55)	32.08 (10.21)	1.17	36.25 (13.47)	37.93 (13.24)	34.62 (13.53)		2.52*
Income (US\$)	2189.11 (2556.01)	1788.45 (1711.89)	2349.00 (2810.98)	1.74	62644.72 (129828.76)	91188.38 (195510.42)	44029.30 (47035.23)		2.25*
Education				7.37					3.23
Below HS	.64 (.48)	.70 (.46)	.59 (.49)		.03 (.17)	.03 (.18)	.02 (.15)		
High school	.17 (.38)	.13 (.34)	.22 (.41)		.14 (.35)	.11 (.32)	.17 (.37)		
Associate	.06 (.23)	.06 (.23)	.06 (.24)		.11 (.31)	.12 (.32)	.10 (.30)		
Undergraduate	.11 (.31)	.10 (.30)	.12 (.32)		.34 (.48)	.36 (.48)	.33 (.47)		
Master	.02 (.12)	.02 (.13)	.02 (.12)		.31 (.46)	.30 (.46)	.31 (.46)		
PhD	.00 (.00)	.00 (.00)	.00 (.00)		.07 (.26)	.08 (.27)	.07 (.25)		

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

In the tourist sample, the respondents were equally split in terms of gender, $\chi^2 (1, N = 415) = 2.94, p = .624$. Average age and average household income of the tourists were 36.25 years and US\$ 62,644.72, respectively. There was a significant difference in age, $t(413) = 2.52, p = .012$, and income, $t(226) = 2.25, p = .02$ between Annapurna and Chitwan tourists. On average, the tourists visiting Annapurna were older and richer than the tourists visiting Chitwan. Overall, the tourists were well educated, with nearly three quarters (72%) having a bachelor's or higher degree. No significant difference was found between the tourists visiting Annapurna and Chitwan regarding education, $\chi^2 (4, N = 415) = 3.22, p = .666$.

Testing of Measurement Invariance

The multigroup CFA approach was used to compare the perceptions of tourism stakeholders between the Annapurna and Chitwan samples. The author created separate data files to record the responses of residents and tourists. In each data set, the author conducted six measurement invariance tests, as there were six subscales or constructs (i.e., positive and negative ecological, economic, and social impact subscales) to measure tourism sustainability. The author went through the steps outlined in the data analysis section to ascertain that the constructs are invariant among groups. The CFA results in the present samples reproduced the factor structure suggested by the exploratory factor analyses conducted with the data obtained from the pilot survey (Table 8-13). This validated that the selected items are appropriate for cross-group comparisons. Measurement invariance (full or partial) was obtained for all subscales (Table 14-19), which indicates that both groups perceived the measurement instrument in a similar fashion and the degree of bias of the scales is equal among groups.

Table 8

CFA on the Negative Ecological Impact Subscale for Residents and Tourists

Item	Factor loadings					
	Resident			Tourist		
	Annapurna	Chitwan	Combined	Annapurna	Chitwan	Combined
ECL1	.65 ^a	.41	.56	.74	.72	.67
ECL2	.74 ^a	.88 ^a	.60 ^a	.71	.68 ^{a,b}	.84 ^a
ECL3	.66	.61	.59 ^a	.59	.58 ^a	.60
ECL4	.55	.60 ^a	.57	.72	.78	.80 ^a
ECL5	.50	.43	.50	-	-	-
ECL6	-	-	-	.56	.58 ^b	.58
χ^2 (df)	6.33 (4)	4.36 (4)	5.69 (4)	5.71 (5)	.80 (3)	2.99 (4)
p-value	.18	.36	.22	.34	.85	.56
CFI	.986	.997	.994	.996	1.00	1.00
TLI	.965	.993	.986	.993	1.00	1.00
RMSEA	.050	.020	.031	.026	.000	.000
SRMR	.028	.026	.017	.022	.008	.013

Note: ^{a,b} Items allowed to correlate.

Table 9

CFA on the Positive Ecological Impact Subscale for Residents and Tourists

Item	Factor loadings					
	Resident			Tourist		
	Annapurna	Chitwan	Combined	Annapurna	Chitwan	Combined
ECL7	.56	.44	.44	.47	.39	.46
ECL8	.66	.72	.74 ^a	.61	.66	.66
ECL9	.58	.56	.53	.69	.73 ^a	.70
ECL10	.63	.61 ^a	.64	.79	.70	.78
ECL11	.63	.45 ^a	.67 ^a	.55	.49 ^a	.48
χ^2 (df)	7.42 (5)	6.67 (4)	3.15 (4)	3.48 (5)	1.41 (4)	6.76 (5)
p-value	.19	.15	.53	.62	.84	.24
CFI	.984	.975	1.00	1.00	1.00	.995
TLI	.969	.937	1.00	1.00	1.00	.990
RMSEA	.046	.055	.000	.000	.000	.029
SRMR	.027	.032	.015	.021	.012	.019

Note: ^a Items allowed to correlate.

Table 10

CFA on the Negative Economic Impact Subscale for Residents and Tourists

Item	Factor loadings					
	Resident			Tourist		
	Annapurna	Chitwan	Combined	Annapurna	Chitwan	Combined
ECO1	-	-	-	.48	.58	.55
ECO2	.71	.71	.69	.57	.38	.47
ECO3	.81	.79	.77	.66	.73	.70
ECO4	.60 ^a	.62	.53 ^a	.65	.65	.67
ECO5	.52 ^a	.54	.42 ^a	-	-	-
χ^2 (df)	1.12 (1)	1.76 (2)	1.09 (1)	.38 (2)	1.90 (2)	.57 (2)
p-value	.29	.42	.30	.83	.39	.75
CFI	.999	1.00	1.00	1.00	1.00	1.00
TLI	.995	1.00	1.00	1.00	1.00	1.00
RMSEA	.023	.000	.014	.000	.000	.000
SRMR	.010	.015	.009	.009	.018	.008

Note: ^aItems allowed to correlate

Table 11

CFA on the Positive Economic Impact Subscale for Residents and Tourists

Item	Factor loadings					
	Resident			Tourist		
	Annapurna	Chitwan	Combined	Annapurna	Chitwan	Combined
ECO6	.59	.60	.59	.70	.64	.66 ^a
ECO7	.58	.55 ^a	.55 ^a	.55	.54	.52 ^a
ECO8	.52	.71	.60	.56	.61	.59
ECO9	.64	.54	.60	.57	.55	.57
ECO10	.52	.65	.56	.70	.45	.57
ECO11	.60	.42	.52	.56	.57 ^a	.57 ^b
ECO12	.70	.62	.67	.52	.46	.50
ECO13	.41 ^a	.43	.43	.52 ^a	.57 ^{a,b}	.56 ^{b,c}
ECO14	.51 ^a	.40 ^a	.45 ^a	-	-	-
ECO15	.49	.45	.48	-	-	-
ECO16	-	-	-	.57 ^a	.52 ^b	.55 ^c
ECO17	-	-	-	.47	.46	.49
χ^2 (df)	39.23 (34)	44.75 (34)	34.98 (34)	45.36 (34)	50.31 (33)	53.78 (32)
p-value	.25	.10	.42	.09	.03	.009
CFI	.983	.957	.998	.970	.954	.971
TLI	.977	.944	.997	.961	.937	.959
RMSEA	.026	.038	.008	.040	.050	.040
SRMR	.041	.049	.031	.046	.047	.036

Note: ^{a,b,c} Items allowed to correlate.

Table 12

CFA on the Negative Social Impact Subscale for Residents and Tourists

Item	Factor loadings					
	Resident			Tourist		
	Annapurna	Chitwan	Combined	Annapurna	Chitwan	Combined
SOC1	.74	.64	.70	.65	.77 ^a	.74 ^a
SOC2	.56	.72	.64	.53 ^a	.69 ^{a,b}	.64 ^{a,b}
SOC3	.57	.62	.60	.43 ^a	.51 ^b	.49 ^b
SOC4	.43	.51 ^a	.45	.50	.63	.58
SOC5	.62 ^a	.63 ^b	.61 ^a	.60	.71	.65
SOC6	.50 ^a	.51 ^b	.51 ^a	-	-	-
SOC7	.71	.68	.70	.81	.83	.83
SOC8	.60 ^b	.66 ^{a,c}	.62 ^b	.70 ^b	.84 ^c	.79 ^c
SOC9	.48 ^b	.68 ^c	.58 ^b	.67 ^b	.77 ^c	.73 ^c
SOC10	.56	.44 ^d	.49 ^c	.45	.64	.59
SOC11	.42	.44 ^d	.42 ^c	-	-	-
SOC12	.42	.45	.43	-	-	-
χ^2 (df)	68.87 (52)	76.79 (50)	81.52 (51)	46.87 (25)	57.38 (24)	72.01 (24)
p-value	.06	.008	.004	.005	< .001	< .001
CFI	.966	.949	.969	.955	.956	.962
TLI	.957	.932	.960	.936	.933	.943
RMSEA	.038	.049	.036	.065	.081	.069
SRMR	.047	.052	.040	.049	.042	.039

Note: ^{a,b,c,d} Items allowed to correlate.

Table 13

CFA on the Positive Social Impact Subscale for Residents and Tourists

Item	Factor loadings					
	Resident			Tourist		
	Annapurna	Chitwan	Combined	Annapurna	Chitwan	Combined
SOC13	.68	.51	.64	.46 ^a	.50 ^a	.47 ^a
SOC14	.69	.65	.67	.48 ^a	.57 ^a	.53 ^a
SOC15	.50	.58	.54	.60	.81	.71
SOC16	.43	.42 ^a	.41 ^a	.42	.80	.61
SOC17	.56	.45 ^a	.49 ^a	.47	.45	.46
χ^2 (df)	4.17 (5)	.24 (4)	.76 (4)	.33 (4)	1.57 (4)	.59 (4)
p-value	.52	.99	.94	.99	.81	.96
CFI	1.00	1.00	1.00	1.00	1.00	1.00
TLI	1.00	1.00	1.00	1.00	1.00	1.00
RMSEA	.000	.000	.000	.000	.000	.000
SRMR	.027	.007	.009	.006	.014	.007

Note: ^a Items allowed to correlate.

Table 14

*Measurement Invariance Across Annapurna and Chitwan on the Negative Ecological**Impact Subscale for Residents and Tourists*

Model	χ^2 (df)	p-value	$\Delta \chi^2$ (df)	p-value	CFI	TLI	RMSEA	SRMR
<i>Resident data:</i>								
Configural invariance	10.70 (8)	.22	-	-	.991	.978	.039	.027
Metric invariance	15.26 (12)	.23	4.58 (4)	.33	.989	.982	.035	.042
Scalar invariance	24.56 (16)	.08	13.96 (8)	.08	.972	.965	.049	.047
Scalar (partial) invariance ^a	16.88 (15)	.33	6.11 (7)	.53	.994	.992	.024	.041
<i>Tourist data:</i>								
Configural invariance	6.34 (8)	.61	-	-	1.00	1.00	.000	.017
Metric invariance	7.94 (12)	.79	1.18 (4)	.88	1.00	1.00	.000	.026
Scalar invariance	18.36 (16)	.30	12.96 (8)	.11	.995	.993	.027	.036
Scalar (partial) invariance ^b	11.27 (15)	.73	4.83 (7)	.68	1.00	1.00	.000	.034

Note: ^aIntercept of the item ECL5 freely estimated across groups. Intercepts of the item ECL5 for Annapurna and Chitwan are 3.13 and 2.98, respectively.

^bIntercept of the item ECL6 freely estimated across groups. Intercepts of the item ECL6 for Annapurna and Chitwan are 2.92 and 3.16, respectively.

Table 15

*Measurement Invariance Across Annapurna and Chitwan on the Positive Ecological**Impact Subscale for Residents and Tourists*

Model	χ^2 (df)	p-value	$\Delta \chi^2$ (df)	p-value	CFI	TLI	RMSEA	SRMR
<i>Resident data:</i>								
Configural invariance	14.05 (9)	.12	-	-	.980	.956	.050	.029
Metric invariance	15.50 (13)	.28	2.31 (4)	.68	.990	.985	.029	.049
Scalar invariance	27.34 (17)	.05	13.26 (8)	.10	.959	.952	.052	.061
Scalar (partial) invariance ^a	21.47 (16)	.16	7.69 (7)	.36	.978	.973	.039	.049
<i>Tourist data:</i>								
Configural invariance	4.97 (9)	.84	-	-	1.00	1.00	.000	.017
Metric invariance	7.66 (13)	.87	2.63 (4)	.62	1.00	1.00	0.00	.047
Scalar invariance	21.10 (17)	.22	15.76 (8)	.05	.987	.985	.034	.052
Scalar (partial) invariance ^b	13.25 (16)	.65	8.02 (7)	.33	1.00	1.00	.000	.052

Note: ^aIntercept of the item ECL9 freely estimated across groups. Intercepts of the item ECL9 for Annapurna and Chitwan are 4.05 and 3.84, respectively.

^bIntercept of the item ECL11 freely estimated across groups. Intercepts of the item ECL11 for Annapurna and Chitwan are 3.76 and 3.55, respectively.

Table 16

*Measurement Invariance Across Annapurna and Chitwan on the Negative Economic**Impact Subscale for Residents and Tourists*

Model	χ^2 (df)	p-value	$\Delta \chi^2$ (df)	p-value	CFI	TLI	RMSEA	SRMR
<i>Resident data:</i>								
Configural invariance	2.15 (3)	.54	-	-	1.00	1.00	.000	.013
Metric invariance	5.46 (6)	.49	3.44 (3)	.33	1.00	1.00	.000	.040
Scalar invariance	39.12 (9)	< .001	40.59 (6)	< .001	.868	.824	.122	.072
Scalar (partial) invariance ^a	11.32 (8)	.18	9.80 (5)	.08	.986	.978	.043	.037
<i>Tourist data:</i>								
Configural invariance	2.20 (4)	.70	-	-	1.00	1.00	.000	.014
Metric invariance	11.36 (7)	.12	9.59 (3)	.02	.975	.957	.055	.091
Metric (partial) invariance ^b	5.06 (6)	.54	2.92 (2)	.23	1.00	1.00	.000	.052
Scalar (partial) invariance ^c	7.93 (8)	.44	5.94 (4)	.20	1.00	1.00	.000	.059

Note: ^aIntercept of the item ECO4 freely estimated across groups. Intercepts of the item ECO4 for Annapurna and Chitwan are 3.22 and 3.78, respectively.

^bUnstandardized factor loading of the item ECO2 freely estimated across groups.

^cUnstandardized factor loading and intercept of the item ECO2 freely estimated across groups.

^{b,c}Unstandardized factor loadings of the item ECO2 for Annapurna and Chitwan are .57 and .38, respectively.

^cIntercepts of the item ECO2 for Annapurna and Chitwan are 4.06 and 3.99, respectively.

Table 17

*Measurement Invariance Across Annapurna and Chitwan on the Positive Economic**Impact Subscale for Residents and Tourists*

Model	χ^2 (df)	p-value	$\Delta \chi^2$ (df)	p-value	CFI	TLI	RMSEA	SRMR
<i>Resident data:</i>								
Configural invariance	84.52 (68)	.09	-	-	.970	.961	.033	.045
Metric invariance	90.23 (77)	.14	6.65 (9)	.67	.976	.972	.028	.066
Scalar invariance	109.74 (86)	.04	25.35 (18)	.12	.957	.955	.035	.076
Scalar (partial) invariance ^a	98.71 (85)	.15	14.00 (17)	.67	.975	.974	.027	.070
<i>Tourist data:</i>								
Configural invariance	95.14 (67)	.01	-	-	.963	.950	.045	.047
Metric invariance	102.24 (76)	.02	7.32 (9)	.60	.965	.959	.041	.073
Metric (partial) invariance ^b	97.13 (75)	.04	2.30 (8)	.97	.971	.965	.038	.055
Scalar (partial) invariance ^c	112.27 (83)	.02	16.92 (16)	.39	.961	.958	.041	.060

Note: ^aIntercept of the item ECO6 freely estimated across groups. Intercepts of the item ECO6 for Annapurna and Chitwan are 4.08 and 3.79, respectively.

^bUnstandardized factor loading of the item ECO10 freely estimated across groups.

^cUnstandardized factor loading and intercept of the item ECO10 freely estimated across groups.

^{b,c}Unstandardized factor loadings of the item ECO10 for Annapurna and Chitwan are .70 and .46, respectively.

^cIntercepts of the item ECO10 for Annapurna and Chitwan are 4.11 and 4.02, respectively.

Table 18

*Measurement Invariance Across Annapurna and Chitwan on the Negative Social Impact**Subscale for Residents and Tourists*

Model	χ^2 (df)	p-value	$\Delta \chi^2$ (df)	p-value	CFI	TLI	RMSEA	SRMR
<i>Resident data:</i>								
Configural invariance	146.42 (102)	.003	-	-	.957	.944	.044	.049
Metric invariance	162.32 (113)	.002	15.92 (11)	.14	.952	.944	.044	.061
Scalar invariance	180.91 (124)	< .001	35.34 (22)	.04	.945	.941	.045	.063
Scalar (partial) invariance ^a	172.42 (123)	.002	24.77 (21)	.06	.952	.948	.042	.063
<i>Tourist data:</i>								
Configural invariance	104.67 (49)	< .001	-	-	.956	.935	.074	.046
Metric invariance	113.40 (57)	< .001	7.91 (8)	.44	.955	.943	.069	.059
Scalar invariance	127.39 (65)	< .001	21.30 (16)	.17	.950	.945	.068	.067

Note: ^aIntercept of the item SOC7 freely estimated across groups. Intercepts of the item SOC7 for Annapurna and Chitwan are 2.72 and 2.42, respectively.

Table 19

*Measurement Invariance Across Annapurna and Chitwan on the Positive Social Impact**Subscale for Residents and Tourists*

Model	χ^2 (df)	p-value	$\Delta \chi^2$ (df)	p-value	CFI	TLI	RMSEA	SRMR
<i>Resident data:</i>								
Configural invariance	4.01 (9)	.91	-	-	1.00	1.00	.000	.020
Metric invariance	7.20 (13)	.89	3.16 (4)	.53	1.00	1.00	.000	.054
Scalar invariance	19.93 (17)	.28	17.90 (8)	.02	.982	.978	.028	.063
Scalar (partial) invariance ^a	12.08 (16)	.74	8.77 (7)	.27	1.00	1.00	.000	.065
<i>Tourist data:</i>								
Configural invariance	1.94 (8)	.98	-	-	1.00	1.00	.000	.011
Metric invariance	5.48 (12)	.94	3.50 (4)	.48	1.00	1.00	.000	.043
Scalar invariance	7.21 (14)	.93	5.32 (6)	.50	1.00	1.00	.000	.042

Note: ^aIntercept of the item SOC15 freely estimated across groups. Intercept of the item SOC15 for Annapurna and Chitwan are 3.66 and 3.94, respectively.

Comparison of Latent Means

Confirmation of strong factorial (full or partial) invariance between two groups (i.e., Annapurna and Chitwan) for all six subscales in both resident and tourist data with the help of likelihood ratio test ($\Delta \chi^2$) and the change in practical model fit indices (i.e., Δ CFI, Δ TLI, Δ RMSEA, and Δ SRMR) allowed to make substantive comparisons between latent means. While comparing latent means, Mplus fixes the mean of one group at zero for model identification purpose and other group means are freely estimated (Muthén & Muthén, 1998-2012). As such, the first group becomes the reference group and the mean for the other groups are the deviation from the reference group's mean. In our analysis, the mean for Annapurna group was fixed to zero, whereas the mean of Chitwan group was freely estimated as deviation from the Annapurna mean.

Table 20 shows that two out of the six mean pairs examined in the resident data are significantly different. On average, residents in Chitwan perceived significantly

higher positive ecological impact compared to Annapurna, mean difference = .213, $z = 2.78$, $p = .005$. Similarly, Chitwan residents perceived significantly higher positive social impact compared to Annapurna residents, mean difference = .157, $z = 2.25$, $p = .005$. In the tourist data, all six mean pairs compared were significantly different. When compared to Annapurna tourists, the tourists in Chitwan scored significantly lower on the negative ecological impact subscale, mean difference = $-.279$, $z = -3.28$, $p = .001$, and higher on the positive ecological impact subscale, mean difference = .433, $z = 5.55$, $p < .001$. Chitwan tourists scored significantly higher on both the positive economic impact subscale, mean difference = .302, $z = 5.42$, $p < .001$, and the negative economic impact subscale, mean difference = .175, $z = 3.40$, $p = .001$, than Annapurna tourists. The mean difference between Chitwan and Annapurna was significant for both the negative social impact subscale, mean difference = $-.393$, $z = -4.51$, $p < .001$, and the positive social impact subscale, mean difference = .144, $z = 2.02$, $p < .04$.

Table 20

Results of Mean Comparison Across Annapurna and Chitwan on Tourism Impact

Subscales

Subscale	Resident data			Tourist data		
	Mean difference (SE)	Z - value	p - value	Mean difference (SE)	Z - value	p - value
Negative ecological	.165 (.105)	1.57	.12	$-.279$ (.085)	-3.28	.001
Positive ecological	.213 (.077)	2.78	.005	.433 (.078)	5.55	< .001
Negative economic	$-.158$ (.107)	-1.48	.14	.302 (.056)	5.42	< .001
Positive economic	.064 (.067)	.96	.34	.175 (.052)	3.40	.001
Negative social	$-.072$ (.075)	-.96	.34	$-.393$ (.087)	-4.51	< .001
Positive social	.157 (.070)	2.25	.005	.144 (.071)	2.02	.04

Discussion

This study compared the latent means on tourism impact scales between Annapurna and

Chitwan for residents and tourists. The results were mixed, which is consistent with previous findings (e.g., Gorner & Cihar, 2013; Ruschkowski et al., 2013). The author found that the latent mean of Chitwan residents on the positive ecological subscale was significantly higher than Annapurna residents. Similarly, the latent mean of Chitwan tourists on the positive ecological subscale was significantly higher than Annapurna tourists. In addition, the average score of Chitwan tourists was significantly lower on the negative ecological impact subscale compared to Annapurna tourists. These findings mirror the goals and achievements of conservation programs in Chitwan National Park. Recently, the national park successfully achieved the zero poaching target, meaning no rhinos were killed for a year. Similarly, the population of royal Bengal tiger in Chitwan increased from 60 breeding individuals in 2000 to 125 in 2012.

The results further revealed that both residents and tourists in Chitwan perceived higher positive social impacts and the tourists in Chitwan perceived lower negative social impacts compared to their Annapurna counterparts. There have been substantial efforts to manage social impacts in both areas including, establishment of museums, promotion of local arts and crafts, support for events and festivals, and performance for tourists. The author speculates that the differences in perceptions could be linked to (a) community characteristics—the communities in Annapurna are homogenous whereas those in Chitwan are mixed and (b) juxtaposition of tourism establishments and communities—tourism establishments are concentrated in a single place named Sauraha in Chitwan, while they are located within the communities in Annapurna. With regards to economic impacts, the residents in both areas responded similarly. However, the tourists perceived that both positive and negative economic impacts are higher in Chitwan than in

Annapurna. The contradictory findings regarding economic impact seem appropriate given that the tourism businesses in Annapurna are small scale, locally owned, and widely spread along the trekking route, whereas in Chitwan, tourism businesses are large scale and concentrated within a limited area. Overall, both residents and tourists favored the ecological and social impacts of tourism development in Chitwan compared to Annapurna. The study has several managerial, theoretical, and methodological implications.

The findings are useful in management of protected area-based tourism locally, as well as governance of protected area systems worldwide. The results could not provide a definitive answer to the question “which is the best management approach to achieve the goals of biodiversity conservation, community livelihoods, and sustainable tourism development?” Yet, the study results can help planners evaluate their strategies and priorities, and help managers improve their actions and practices in the respective protected areas. For example, the national park authority, with the help of Nepalese Army and local residents in Chitwan, has achieved tremendous success in conservation of rare and endangered species of wildlife and their habitat. The charismatic, mega animals, such as one-horned rhinoceros and royal Bengal tiger, and birds are the major tourism attractions in Chitwan. The symbiotic relationship between conservation and tourism has produced several biodiversity, recreational, and economic benefits.

In Annapurna, despite the fact that the conservation area harbors some rare and endangered wildlife species, including the snow leopard, musk deer, and pheasant, marketing of wildlife as tourist attractions has yet to materialize. As a category VI protected area, a greater focus has been placed on sustainable use of natural resources and

community development than on biodiversity conservation. The results support that there are always trade-offs between conservation and community development goals among various types of protected areas. Hence, it would be a mistake to search for a one-size-fits-all approach for optimal economic, social, and ecological benefits.

The study findings help address the complex challenge of developing sustainable tourism in protected areas. As such, the destination-level comparative studies inform which interventions are required to achieve the conservation, sustainable tourism, and community livelihoods goals at the macro level. Overall, both residents and tourists better perceived the nature-based mass tourism in Chitwan compared to alternative tourism in Annapurna. The results suggest that it would be naïve to conclude that alternative tourism is always a better option. Further, the results confirm the assertions that the outcomes of recreation and tourism partnerships in protected areas depend on the management model (Eagles, 2009; Ruschkowski et al., 2013), the benefits derived by local residents are contingent upon the management approach employed in protected areas (Gorner & Cihar, 2013), and the protection status (i.e., category) of protected areas influence sustainable tourism outcomes (Reinius & Fredman, 2007). This indicates that site-specific biophysical, social, and economic situations should be taken into account while deciding the priorities and approaches to managing protected area-based tourism systems.

This research provides empirical support to the tenet of stakeholder theory, that all stakeholder groups that have a stake or legitimate interest should collectively manage the protected area-based tourism systems. It was observed that the perceptions of local people and tourists partially match regarding sustainable tourism development outcomes across Annapurna and Chitwan. The results support that achievement of sustainable

tourism outcomes requires an active participation of all relevant stakeholders (Byrd, 2007). Stakeholder participation is even more crucial when the interests of the stakeholders are in conflict (Hawkins & Cunningham, 1996). Given that stakeholder participation is not a one-shot procedure, various stakeholder groups should be involved throughout the entire planning, management, and decision-making process. Similarly, the comparison of views and opinions of visitors and residents echoes the similarities and differences in their expectations, preferences, and experiences at the destination. Overall, this body of literature is useful in managing conflicts among stakeholders through communication, cooperation, and collaboration for successful sustainable tourism development (Yu et al., 2009).

This research contributes to the theory and measurement of sustainable tourism and the broader sustainable development literature. This study supports the notion that the triple bottom line is a useful framework to measure sustainability. However, unlike previous research, the author postulated that both negative and positive social, economic, and ecological impacts emerge simultaneously and coexist. Therefore, separate scales to measure each of these positive and negative impacts were devised. As expected, the results provided empirical support for this hypothesis. For example, tourists appreciated tourism-induced positive economic impacts, such as employment generation, entrepreneurial opportunities, increased economic activities, and infrastructure development in Chitwan, but at the same time they were concerned about economic externalities, including price hikes, increased cost of living, and higher taxes. The findings, therefore, reject the view that positive and negative impacts are mutually exclusive and subtractable with each other. Recognizing the co-existence of negative and

positive impacts, the triple bottom line framework should be revised to include six spheres (i.e., positive and negative social, economic, and ecological domains). Thus, the study results challenge the current sustainable tourism paradigm and suggest that it is necessary to reevaluate relevant tourism-related theories and models, such as the tourist area life cycle model (Butler, 1980), which assumes that the negative impacts of tourism increase over time.

Methodologically, this paper established measurement invariance prior to comparison of latent factor means in the multigroup CFA framework. It is argued that the testing of measurement invariance should precede latent mean comparison, as this process allows researchers to identify and retain invariant items in a measurement scale (Budruk, 2010; Sass, 2011; Vandenberg & Lance, 2000). This process is particularly important in tourism research, which frequently involves comparison of groups from diverse backgrounds (Byrd et al., 2009; Murphy, 1983). In addition, it is a common practice in tourism research to use the same measurement instrument with different populations (Thapa, 2013). Researchers are required to ascertain that the construct has the same meaning (Budruk, 2010) and that it is measured in the same manner regardless of sample characteristics (Sass, 2010). The partial invariance of some subscales in the present study indicates that it would be naïve to compare the latent means or summed score without establishing cross-group equivalence of measurement instruments. The author believes that this paper helps improve the traditional research approach that is analogous to comparing apples and oranges. More specifically, this study helps improve the methodological quality of tourism research by presenting a data analysis procedure that produces less biased results and, consequently, more reliable conclusions.

The author acknowledges some limitations related to study methods. First, the respondents were grossly grouped into residents and tourists because the sample size was insufficient to break the residents into different groups. Although the tourism literature indicates that residents directly involved in tourism business may have more positive attitude towards tourism development than those who are completely devoid of tourism benefits (Andereck & Nyaupane, 2011; Imran et al., 2014), further research with a larger sample size would be helpful to analyze the differences between various resident groups. Similarly, the tourists in the study areas come from different countries and cultures, making the group diverse. It is possible that the tourists may have different perceptions of tourism impacts depending on their cultural background. Further, it would be worthwhile to explore and compare the responses of secondary tourism stakeholders, which were not included in this study. Moreover, the surveys the author used for data collections were prepared in English; the author accepts that the responses might have been affected by tourists' level of English fluency.

Conclusions

This study confirms the existence of a reciprocal relationship between protected areas and tourism. The research revealed that the protected area management strategy affects tourism development and sustainable development of tourism helps achieve biodiversity conservation goals in protected areas. In addition, the symbiotic relationship between tourism and protected areas is beneficial to local people living in and around protected areas. Further, this synergetic relationship generates abundant economic benefits at local, regional, and national levels.

The results support that it is imperative to identify stakeholders and examine their values, perceptions, and interests, given that their roles shape the nature of tourism development in protected areas. The study found that there exist trade-offs among the stakeholders regarding nature of tourism development. The residents and tourists concurred regarding positive ecological and positive social impacts. However, residents' responses contradicted the tourists' regarding negative ecological, negative social, positive economic, and negative economic impacts. The stakeholder theory is useful in examining how various stakeholder groups perceive impacts differently with regards to sustainable tourism. Destination management organizations and marketers tend to focus on satisfying tourists, whereas local residents focus on their livelihood and quality of life improvements, so having both tourists and local residents' perspectives is crucial in tourism planning and management.

The author concludes that sustainable tourism could be a vehicle to achieve the seemingly contradictory goals of biodiversity conservation and community livelihoods, and in so doing it is imperative to seek meaningful participation of both tourists and local residents while designing and implementing management interventions. Further, the methodological approach used in this study contributes to the measurement of impacts and outcomes of sustainable tourism development.

CHAPTER 6

DISCUSSION AND CONCLUSIONS

This research addressed the issue of sustainability in protected area-based tourism systems. Particularly, this study attempted to answer three interrelated research questions:

- (a) what would be the most appropriate protected area governance approach to achieve the goals of biodiversity conservation, community livelihoods, and sustainable tourism;
- (b) how to develop and measure sustainable tourism in the communities situated within protected area-based tourism systems; and
- (c) do the perspectives of tourism stakeholders regarding sustainable tourism outcomes vary across protected areas?

To evaluate the governance approaches, this study assessed the biophysical attributes, community characteristics, and institutional arrangements, and evaluated the interactions and outcomes in three protected areas of Nepal: the Annapurna Conservation Area, Chitwan National Park, and the Kanchenjunga Conservation Area. The findings revealed that these protected areas are diverse in terms of geography, biodiversity, socioeconomic characteristics, and governance and management approach. The outcomes pertaining to biodiversity, livelihood, and tourism are not identical across the protected areas. The achievements in Chitwan National Park are good with respect to biodiversity conservation and average regarding community livelihoods and sustainable tourism. The national park needs to continue its wildlife protection efforts, empower and monitor CBOs, and disperse tourism activities outside Sauraha.

The Annapurna Conservation Area has achieved encouraging success in implementing biodiversity conservation, community livelihoods, and sustainable tourism programs. The conservation area needs to establish a strong mechanism to deal with

wildlife poaching, introduce the community forestry program, and regulate tourism businesses, especially those located in public lands. The outcomes related to biodiversity conservation and community livelihoods are promising in the Kanchenjunga Conservation Area. The area needs to establish a strong mechanism to control wildlife poaching, search for alternative financing mechanisms besides WWF Nepal, and learn from the tourism development experience in Annapurna.

Overall, the results indicated that there is no institutional panacea to manage protected areas. Compared to the NGO- and CBO- led approaches, the government-led approach appears to be more effective for biodiversity conservation. To illustrate, Chitwan National Park has established a strong mechanism to control wildlife-related crimes. The national park office—in coordination with the Nepalese Army, other security forces, and CBOs—regularly patrols sensitive areas in and around the park. Tourism could be another reason for the success of conservation programs, as the main attractions in Chitwan are wildlife, including the one-horned rhinoceros, royal Bengal tiger, and birds. The author speculates that domestic and international tourism markets have provided impetus for the conservation of wildlife. With respect to community livelihoods, this research did not find a discernable difference across protected area governance approaches. Whatever the governance approach, participation of local residents was found to be crucial in the success of biodiversity conservation and community development programs.

The author also observed that effective communication and collaboration between stakeholders is a prerequisite for effective management of protected areas. Thus, regardless of the protected area management approach, the roles and responsibilities of

stakeholders should be either mutually agreed on or clearly defined by laws and regulations in advance. Further, the governance approach should be adapted to changes in the internal and external environment of protected areas. The author concluded that a polycentric adaptive co-management model may be the best approach in managing protected areas.

This research used the SES framework—a systemic and holistic approach capable of capturing the complexity and dynamism of linked social and ecological systems—to diagnose the sustainability of two tourism communities in Nepal: Ghandruk and Sauraha. The communities are situated within the Annapurna Conservation Area and Chitwan National Park, respectively. This research analyzed the combined effect of governance systems, actors, resources systems, and resource units on the action situation, comprised of interactions and outcomes within given social, political, economic, and ecological contexts.

Results revealed that there are several positive and a few negative sociocultural, economic, and ecological impacts of tourism. This suggests that sustainable tourism could be a means and end towards sustainable development of protected area-based tourism systems. The results further showed that none of the observed outcomes were caused by a single factor; instead, the outcomes were associated with combinations of several factors. This finding supports the argument for a holistic and systems approach to assess the sustainability of tourist destinations. The study results also support the propositions made by several social science theories, including the stakeholder theory, collaboration theory, and common-pool resource theory. This study concluded that Ghandruk and Sauraha are making satisfactory progress towards sustainability, and the

SES framework can be an overarching framework to diagnose the sustainability of protected area-based tourism systems.

To assess the perspectives of stakeholder groups regarding sustainable tourism across protected areas, this study compared the responses of residents with residents, as well as tourists with tourists, in two protected areas of Nepal: the Annapurna Conservation Area and Chitwan National Park. The results were mixed. Chitwan residents perceived higher positive ecological and social impacts than Annapurna residents. Chitwan tourists perceived higher positive ecological and social impacts of tourism, and lower negative ecological and social impacts compared to Annapurna tourists. The results were contradictory regarding economic impacts; Chitwan tourists perceived higher positive economic impacts and negative economic impacts compared to Annapurna tourists. This suggests that the protected area governance approach and the nature of tourism development affect social, economic, and ecological outcomes.

The results also revealed that the responses of the residents are identical with the responses of tourists regarding positive ecological and positive social impacts only. This indicates that stakeholders evaluate tourism development outcomes in different ways; thus, it is important to consider stakeholders' perspectives for sustainable management of tourism in protected areas. Overall, this research concluded that protected areas and tourism are intricately related, and sustainable management of protected area-based tourism systems requires an adaptive polycentric approach that warrants broad participation of relevant stakeholders.

While interpreting, comparing, and generalizing the research results, the author advises to take into account the study limitations. First, this research is a cross-sectional

study conducted over a four-month period in 2012. This research utilized numerous unpublished and published documents, such as journal articles, annual reports, periodic plans, and databases. In addition, the interviewees provided copious information about the phenomena that occurred in the past. Although this study did not specifically collect data to examine the changes over time, by virtue of its design, this research partially captured the temporal changes that occurred in the study areas.

Second, protected areas in Nepal have encountered various social, political, and economic forces over the past 40 years. Some of these forces events were omnipresent, such as Nepal's decade-long civil war fought between the Government of Nepal and the Communist Party of Nepal (Maoist), while other forces were unique to a specific protected area, including the change in leadership of the National Trust for Nature Conservation and the closing of hotels inside Chitwan National Park. The Maoist group, directly or indirectly, obstructed the conservation and development programs in all protected areas. For example, the group demolished field offices in the Annapurna Conservation Area and displaced park and army posts in Chitwan National Park (Baral, Stern, & Heinen, 2010). The National Trust for Nature Conservation, an NGO responsible in managing the Annapurna Conservation Area, lost patronage of the royal palace after the abolition of the monarchy in Nepal, which diminished its influence domestically and internationally. The hotels inside Chitwan National Park, including the Tiger Tops Lodge that pioneered wildlife-based tourism in Chitwan, were closed without assessing their roles on conservation and international tourism. Though very few studies (e.g., Baral & Heinen, 2006) have examined the influences of social, political, and economic forces in protected areas, this research is not intended to chronicle the effects

of such phenomena. Ethnographic studies are recommended to capture the dynamics of change, and phenomenological studies need to be carried out for a more nuanced understanding of impacts of individual factors.

The tourism industry has rapidly changed in both Annapurna and Chitwan in the last 10 years. The areas have experienced influx of non-Western tourists, especially Korean tourists in Annapurna, Chinese tourists in Chitwan, and domestic tourists in both areas. Little is known about the expectations and experiences of these segments of tourists. In Sauraha, small-scale and locally owned tourism enterprises have been gradually replaced by upscale and corporate businesses. In Ghandruk, there is controversy over whether tourism should stay at a small-scale, even in the face of increasing arrivals. Further, the policies regarding banning of outside investment in tourism businesses and uniform price for food and accommodation have met some resistance. Future research needs to evaluate the merits and demerits of existing tourism business models in Annapurna and Chitwan.

Many interesting phenomena have occurred in the protected areas after collection of data for this research. With the expiration of the Annapurna Conservation Area management authority in 2012, the Government of Nepal refused to grant another permission to the National Trust for Nature Conservation despite the recommendations of the Department of National Parks and Wildlife Conservation and CBOs (Annapurna Conservation Area Project Monitoring and Evaluation Team, 2012). A power struggle among the government, the Trust, and local communities has been ongoing for more than two years, jeopardizing the achievements made in the last 25 years. Thus, the Annapurna Conservation Area requires an in-depth study scrutinizing the sociocultural, economic,

and ecological significances under different monocentric and polycentric management regimes before a decision regarding the assignment of management authority is made.

Two projects of national pride, the East-West Electric Railroad and the Terai Postal Highway, have been proposed through Chitwan National Park. Environmentalists warn that the current design of these projects threaten the conservation successes achieved in the last 40 years. If so, Chitwan National Park is likely to be removed from the UNESCO list of World Heritage Sites and would no longer be the most visited protected area of Nepal. Thus, Chitwan National Park warrants a scientific investigation evaluating environmental costs and economic benefits of proposed construction projects.

The WWF Nepal has provided financial, legal, and technical support to the Kanchenjunga Conservation Area Project for more than 15 years. The Kanchenjunga Conservation Area Management Council has neither skilled human resources, nor is it capable of raising adequate revenue to fund management cost. With the termination of donor support, the conservation successes may be in peril and the Kanchenjunga Conservation Area could become a paper park. Thus, it is necessary to assess whether the community-led model works in the Kanchenjunga Conservation Area or whether management of the area by the management council is possible on practical grounds.

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APPENDIX A

ASU INSTITUTIONAL REVIEW BOARD EXEMPTION LETTER

To:	Gyan Nyaupane UCENT
From:	Mark Roosa, Chair  Soc Beh IRB
Date:	08/28/2012
Committee Action:	Exemption Granted
IRB Action Date:	08/28/2012
IRB Protocol #:	1208008165
Study Title:	Sustainability of Social Ecological Tourism Systems

The above-referenced protocol is considered exempt after review by the Institutional Review Board pursuant to Federal regulations, 45 CFR Part 46.101(b)(2) .

This part of the federal regulations requires that the information be recorded by investigators in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. It is necessary that the information obtained not be such that if disclosed outside the research, it could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.

You should retain a copy of this letter for your records.

APPENDIX B

DEPARTMENT OF NATIONAL PARKS AND WILDLIFE CONSERVATION

RESEARCH PERMISSION LETTER



नेपाल सरकार
वन तथा भू-संरक्षण मन्त्रालय
राष्ट्रिय निकुञ्ज तथा वन्यजन्तु संरक्षण विभाग
(.....इकोलोजि.....शाखा)

फोन नं.: ४२२०८४०
४२२०९१२
४२२७९२६
फ्याक्स नं.: ४२२७६७४



संकेत नं.:
पत्र संख्या :- २०६९/०७० ईको नं. ८
चलानी नं. :- २३५

पो. ब. नं. - ८६०
बबरमहल, काठमाडौं
Email: info@dnppwc.gov.np
http://www.dnppwc.gov.np
मिति :- २०६९/४/३०

विषय :- अध्ययन अनुसन्धान अनुमति दिइएको सम्बन्धमा ।

श्री चितवन राष्ट्रिय निकुञ्ज कार्यालय
कसरा, चितवन ।
श्री अन्नपूर्ण संरक्षण क्षेत्र आयोजना कार्यालय
हरियोखर्क, पोखरा ।
श्री कञ्चनजंघा संरक्षण क्षेत्र आयोजना कार्यालय
लेलेप, ताप्लेजुङ्ग ।

प्रस्तुत विषयमा एरिजोना स्टेट युनिभर्सिटी, संयुक्त राज्य अमेरिकामा Ph.D तह अध्ययनरत विद्यार्थी श्री सुर्य पौडेलले "Diagnosis of Structures, Processes and Outcomes of Protected area-based tourism systems : The Socia-ecological approach" विषयमा त्यस कार्यालय क्षेत्रमा अध्ययन अनुसन्धान गर्न मिति २०६९/४/१९ गते देखि २०७१/४/३२ गते सम्मका लागि अनुमति पाउँ भनि यस विभागमा दिनु भएको निवेदन माथि कार्यवाहि हुदा तपशिलमा उल्लेख गरीएका शर्तहरूको आधारमा रही अध्ययन अनुसन्धान गर्न अनुमति दिइएको व्यहोरा जानकारीको लागि अनुरोध छ ।

शर्तहरू :-

१. अध्ययन अनुसन्धान कार्य गर्दा रा.नि. तथा व.ज.सं. ऐन, २०२९ र अर्न्तगतका नियमावली र अन्य प्रचलित ऐन नियमहरू अनुसार गर्नु पर्ने ।
२. अध्ययनको लागि पेश भएको प्रस्तावको १ प्रति सम्बन्धित कार्यालयमा पेश गर्नु पर्ने ।
३. अध्ययन पश्चात १/१ प्रति Report यस विभाग र सम्बन्धित कार्यालयमा अनिवार्य रूपमा बुझाउनु पर्ने ।
४. कार्यालयले तोकेको प्रतिनिधीको रोहवरमा अध्ययन अनुसन्धान कार्य गर्नु पर्ने ।

डा. महेश्वर ढकाल
ईकोलोजिष्ट

बोधार्थ :-

श्री सुर्य पौडेल
एरिजोना स्टेट युनिभर्सिटी,
संयुक्त राज्य अमेरिकामा :- सम्बन्धित कार्यालयहरूसँग समन्वय गरी अध्ययन अनुसन्धान गर्नुहुन ।

APPENDIX C

CHITWAN NATIONAL PARK RESEARCH PERMISSION LETTER



नेपाल सरकार
वन तथा संरक्षण मन्त्रालय
राष्ट्रिय निकुञ्ज तथा वन्यजन्तु संरक्षण विभाग

चितवन राष्ट्रिय निकुञ्ज कार्यालय

(..... शाखा)

पत्र संख्या : ०५५/०८०
चलानी नं. : २५३
प्राप्त पत्र संख्या र मिति :

कसरा, चितवन
फोन नं. ०५६-६२१०६९
मिति: २०६९/०५/१३

बिषय: अध्ययन अनुमति सम्बन्धमा ।

श्री सुर्य पौडेल
Arizona State University
School of Community Resources and Development
Phoenix, AZ
85004, USA.

प्रस्तुत विषयमा राष्ट्रिय निकुञ्ज तथा वन्यजन्तु संरक्षण विभागको पत्र संख्या ०६९/०७० ईको नं २८ च.नं. २३५ मिति २०६९/०४/३० गतेको पत्रानुसार तपाईंलाई "Diagnosis of Structures, Processes and Outcomes of Protected Area- based Tourism Systems: The Social-Ecological Approach" विषयमा अध्ययन अनुसन्धान गर्नको लागी मिति २०६९/०५/१३ गते देखि २०७१/०४/३२ गते सम्मको लागी अनुमति दिईएको छ । उक्त कार्य गर्दा तपशिल बमोजिमका शर्तहरू पालना गर्न गराउन हुन समेत जानकारी गराईन्छ ।

तपशिल

- १) अध्ययन अनुसन्धान कार्य गर्दा रा.नि तथा ब.ज.सं ऐन २०२९ र अन्तर्गतका नियमावली साथै रा.नि तथा ब.ज.सं विभागको अनुमति पत्रमा उल्लेख भए बमोजिमका शर्तहरू पूर्ण रुपमा पालन गर्नुपर्ने ।
- २) अध्ययन पश्चात १ प्रति रिपोर्ट अनिवार्य रुपमा यस कार्यालयमा पेश गर्नुपर्ने ।
- ३) अध्ययन अनुसन्धान प्रस्ताव पत्र बमोजिम हुनुपर्ने । **वार्षिक प्रतिवेदन उपस्थापना गर्नुपर्ने**

(समक बहादुर कार्की)

प्रमुख संरक्षण अधिकृत
चितवन राष्ट्रिय निकुञ्ज

बोधार्थ:

- १) श्री नन्दाबक्स गण
कसरा ब्यारेक, कसरा: सम्बन्धित गुल्म । पोष्टहरुलाई जानकारी गराईदिन हुन ।
- २) श्री मध्यवर्ती क्षेत्र ब्यबस्थापन समिति
चितवन: सम्बन्धित उपभोक्ता समिति तथा मध्यवर्ती सा.ब. हरुलाई जानकारी गराईदिन हुन ।
- ३) श्री मृगकुञ्ज उपभोक्ता समिति
सौराहा, चितवन: आवश्यक सहयोगका लागी ।
- ४) श्री जैविक विविधता संरक्षण केन्द्र
सौराहा, चितवन: आवश्यक सहयोगका लागी ।
- ५) श्री पुर्वी सेक्टर, सौराहा
चि.रा.नि.का., कसरा: आवश्यक सहयोगका लागी ।
- ६) रे. रितेश भुषण बस्नेत
चि.रा.नि.का., कसरा: उपरोक्त कार्यको निरीक्षण तथा अनुगमन गर्न हुन ।

APPENDIX D

ANNAPURNA CONSERVATION AREA PROJECT RESEARCH PERMISSION

LETTER



NATIONAL TRUST FOR NATURE CONSERVATION
ANNAPURNA CONSERVATION AREA PROJECT

Head Quarters, Pokhara



Ref: 54 /069/070

Date: 19 August, 2012

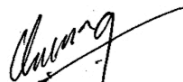
Mr. Surya Poudel
Arizona State University
School of Community Research & Development
Phoenix, AZ85004, USA

Re: Permission to conduct research in ACA.

We received your request letter regarding permission to conduct research on " **Diagnosis of Structures, Processes and Outcomes of Protected Area based Tourism Systems : The Social Ecological Approach** ". You have been given permission for carrying out your field research in the ACA with the following terms and conditions:

1. The scope of the study will be based on the proposal.
2. The research must be for scientific and academic purpose with the aim of making contribution in conservation and development of the area.
3. This permission will be valid from August 2012 to August, 2014 only.
4. The research permit is valid for ACA only.
5. You have to follow the ACAP Minimum Impact Code and the Conservation Area Management Regulation 2053 during your entire stay in the Annapurna Conservation Area.
6. You will have access to the NTNC-ACAP Resource Library in Pokhara.
7. Upon the completion of the research, you must submit a copy of your report to the NTNC-ACAP/HQ.
8. You will maintain communication with the nearest ACAP field office.
9. Any dispute arose during the execution period will be solved by mutual understanding.
10. Any unsolved disputes will be handled as per the existing law of Nepalese government.

Thank you and wish you all the best.


Lal Prasad Gurung
Project Director

Central Office : P.O. Box 3712
Khumaltar, Lalitpur, Nepal
Tel. No. : 00977-1-5526571, 5526573
Fax : 00977-1-5526570
Website: www.ntnc.org.np

Headquarters : P.O. Box 183
Pokhara, Kaski, Nepal
Tel. No. : 00977-61-431102, 430802, 432288
Fax No. : 00977-61-431203
E-mail : info@acap.org.np

APPENDIX E
SURVEY QUESTIONNAIRE FOR TOURISTS

**Sustainability of Social-Ecological Tourism Systems
A Case of Protected Area-based Tourism in Nepal**

**INVITATION LETTER
TO PARTICIPATE IN THE SURVEY OF TOURISM STAKEHOLDERS**

Date:

Dear Participant:

I am a Ph.D. candidate under the direction of Dr. Gyan Nyaupane, Associate Professor, in the School of Community Resources and Development at Arizona State University. I am conducting a research to study the sustainability of social-ecological tourism systems in three protected areas of Nepal: the Annapurna Conservation Area, the Kanchenjunga Conservation Area, and Chitwan National Park.

I would like to invite you for participation, which will involve about 20-30 minutes of your time. Your participation in this study is voluntary. You can skip questions if you wish. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. You must be 18 or older to participate in the study. Your response will be helpful in management of tourism in the protected areas in Nepal and around the globe. There are no foreseeable risks or discomforts to your participation.

Your responses will be anonymous, and to ensure this, you will not be asked to include any personal identification. Your answers will be used with many others in aggregated form. The results of this study may be used in reports, presentations, or publications but your name will not be revealed.

If you have any questions concerning this study, please contact the research team at spoudel@asu.edu or gyan@asu.edu. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at 1-480-965-6788.

Return of the questionnaire will be considered as your consent to participate.

Thank you very much for helping with this study.

Sincerely,
Surya Poudel
Arizona State University
School of Community Resources & Development
411 N. Central Ave., Ste. 550, Phoenix
AZ 85004-0690, USA
Phone: +1-480-241-8160 (US), +977-9819186122 (Nepal)
Fax: 1 (602) 496-0853

Sustainability of Tourism in the Protected Areas of Nepal

Visitor Survey

The following statements are about tourism growth and its relationship with community development and environmental conservation. Please express your opinion by **circling** (O) the number that closely represents your agreement with these statements.

Section A

Environmental Impacts of Tourism

S. N.	Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1	A community's economic stability is more important than its environmental concerns	1	2	3	4	5
2	Tourism development strengthens local environmental conservation efforts	1	2	3	4	5
3	Economic gains are less important than the natural environment	1	2	3	4	5
4	Tourism destroys the beauty of pristine communities	1	2	3	4	5
5	Tourism destroys the natural environment	1	2	3	4	5
6	Tourism development helps to improve a community's appearance	1	2	3	4	5
7	Tourism instigates unrestrained urban sprawl.	1	2	3	4	5
8	Tourism increases environmental problems such as littering and wastewater discharge	1	2	3	4	5
9	Tourism needs to be developed in harmony with the natural environment	1	2	3	4	5
10	Tourism produces long-term negative effects on the environment	1	2	3	4	5
11	Tourism promotes greater protection of the natural environment	1	2	3	4	5
12	Tourism development promotes positive environmental ethics among all parties that have a stake in tourism	1	2	3	4	5
13	Tourism development promotes protection of wildlife and their natural habitats	1	2	3	4	5
14	Tourism provides incentive for conservation of natural areas	1	2	3	4	5
15	Appropriate regulatory environmental standards are needed to reduce the negative impacts of tourism	1	2	3	4	5
16	Tourism increases air, water, and noise pollution	1	2	3	4	5
17	Tourism development encourages deforestation	1	2	3	4	5
18	Tourism development increases conflict over land use such as protected forest, production forest, and grazing land	1	2	3	4	5
19	Construction of hotels and other tourist facilities destroy the natural environment	1	2	3	4	5
20	Tourism development should not deteriorate the natural resources	1	2	3	4	5

Section B

Economic Impacts of Tourism

S. N.	Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1	Local residents receive a fair share of benefits from tourism	1	2	3	4	5
2	The benefits generated by tourism activity end up with companies and people from outside locality	1	2	3	4	5
3	Roads, bridges, and other public facilities are kept at a high standard because of tourism	1	2	3	4	5
4	Tourism attracts additional investment in local businesses	1	2	3	4	5
5	Tourism benefits are trapped by a small number of residents	1	2	3	4	5
6	Tourism benefits other businesses and industries in local community	1	2	3	4	5
7	Tourism brings new income to local communities	1	2	3	4	5
8	Tourism contributes to community development funds	1	2	3	4	5
9	Tourism development creates new employment opportunities.	1	2	3	4	5
10	Tourism creates new markets for the local products	1	2	3	4	5
11	Tourism development increases property (e.g., land and house) taxes	1	2	3	4	5
12	Tourism diversifies the local economy	1	2	3	4	5
13	Tourism businesses hire their employees from local communities	1	2	3	4	5
14	Tourism generates substantial tax revenues for local governments	1	2	3	4	5
15	Tourism helps in construction of infrastructure such as water supply, electricity, and telephone	1	2	3	4	5
16	Tourism improves the quality of service in restaurants, shops and hotels of an area	1	2	3	4	5
17	Tourism increases the price of goods and services.	1	2	3	4	5
18	Tourism increases income and improves living standards of community people	1	2	3	4	5
19	Tourism development results in increased cost of living	1	2	3	4	5
20	Tourism increases the value of land and house	1	2	3	4	5
21	Tourism puts more pressure on local services such as police, fire protection, utilities, and roads	1	2	3	4	5
22	Tourism is needed for development of the local economy	1	2	3	4	5
23	Tourism is one of the principal sources of income in the local economy	1	2	3	4	5
24	Tourism development makes local businesses, such as retail stores and restaurants, more profitable	1	2	3	4	5
25	Tourism provides entrepreneurial (investment) opportunity to the community residents	1	2	3	4	5
26	Tourism businesses purchase goods and services from local community	1	2	3	4	5
27	Most of the income derived from tourism leaks out of local community	1	2	3	4	5

Section C

Social and Cultural Impacts of Tourism

S. N.	Statements	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1	Tourism enhances pride in cultural identity of the local community	1	2	3	4	5
2	Tourism development increases crime	1	2	3	4	5
3	Tourism development increases traffic problems such as congestion and accidents	1	2	3	4	5
4	Tourism development results crowded public places	1	2	3	4	5
5	Tourism encourages continuance of cultural activities by local residents	1	2	3	4	5
6	Tourism enhances knowledge of other cultures/communities	1	2	3	4	5
7	Tourism development facilitates intercultural communication and understanding	1	2	3	4	5
8	Tourism development creates friction/conflict between visitors and residents	1	2	3	4	5
9	Tourism development encourages gambling and other illegal games	1	2	3	4	5
10	Tourism development results in a decline in traditions of native people	1	2	3	4	5
11	Tourism development results in more thefts and vandalism	1	2	3	4	5
12	Tourism promotes drug and alcohol abuse	1	2	3	4	5
13	Tourism promotes prostitution and sex openness	1	2	3	4	5
14	Tourism provides incentives for preservation of the local culture	1	2	3	4	5
15	Tourism provides opportunities to participate in local cultural activities	1	2	3	4	5
16	Tourism results in change/loss of precious traditional cultures	1	2	3	4	5
17	Tourism results loss of tranquility (peacefulness) in the local community	1	2	3	4	5
18	Tourism supports for restoration and maintenance of cultural and historic sites	1	2	3	4	5
19	Tourism deteriorates the quality of life of local people	1	2	3	4	5
20	Tourism development increases population as a result of new residents relocating from outside areas	1	2	3	4	5
21	Tourism development erodes social cohesion and disrupts traditional family values	1	2	3	4	5
22	Tourism development encourages cultural commercialization or commodification	1	2	3	4	5
23	Resident hospitality decreases with tourism development	1	2	3	4	5
24	Tourism development encourages uncontrolled population growth.	1	2	3	4	5

Section D

Sociodemographic Information (Annapurna)

1. How many times have you been to the Annapurna region before this visit? Times
2. How many days are you planning to spend in the Annapurna region? Days
3. How many people are there in your group (including you)? People
4. Please list the type/s of guide you hired for this trip?
 - a.
 - b.
5. Please list the activities you participated during your stay in the Annapurna region?
 - a.
 - b.
 - c.
6. Gender Male Female
7. Age Years
8. What is your nationality?
9. What is the highest level of education you have completed?
 Some high school (less than 12yrs) Undergraduate/Bachelor (15 or 16 yrs)
 High school (12 yrs) Master/Post graduate (18 yrs)
 Associate degree/Diploma (14 yrs) PhD/DSc (More than 18 yrs)
10. What is your annual household income in the year 2011?
Amount: Currency:
11. In what kind of community do you live?
 Big City Small City Rural Area
 If Other: Please Specify:
12. Do you belong to any environmental organizations?
 No Yes

If Yes, please provide the following information:

	<u>Position</u>	<u>Period</u>	<u>Group Name</u>
1.
2.

THAT COMPLETES OUR SURVEY. THANK YOU VERY MUCH FOR YOUR COOPERATION.

If there are any additional comments that you would like to add please do so below:

Section D

Sociodemographic Information (Sauraha)

- 5. How many times have you been to Chitwan before this visit? Times
- 6. How many days are you planning to spend in Chitwan? Days
- 7. How many people are there in your group (including you)? People
- 8. Please list the type/s of guide you hired for this trip?

- a.
- b.

- 5. Please list the activities you participated during your stay in Chitwan?

- a.
- b.
- c.

- 13. Gender Male Female

- 14. Age (Years)

- 15. What is your nationality?

- 16. What is the highest level of education you have completed?

- Some high school (less than 12yrs) Undergraduate/Bachelor (15 or 16 yrs)
- High school (12 yrs) Master/Post graduate (18 yrs)
- Associate degree/Diploma (14 yrs) PhD/DSc (More than 18 yrs)

- 17. What is your annual household income in the year 2011?

Amount: Currency:

- 18. In what kind of community do you live?

- Big City Small City Rural Area
- If Other: Please Specify:

- 19. Do you belong to any environmental organizations?

- No Yes

If Yes, please provide the following information:

Position Period Group Name

- 1.
- 2.
- 3.

THAT COMPLETES OUR SURVEY. THANK YOU VERY MUCH FOR YOUR COOPERATION.

If there are any additional comments that you would like to add please do so below:

APPENDIX F
SURVEY QUESTIONNAIRE FOR RESIDENTS

सामाजिक-पर्यावरणीय (Social-Ecological) पर्यटन प्रणालीको दीगोपन
नेपालका संरक्षित क्षेत्रहरूमा आधारित पर्यटनको एक अध्ययन

पर्यटनसंग सरोकारवालाहरूको सर्वेमा सहभागीहुन अनुरोध पत्र

मिति :

आदरणीय सहभागी ज्यूहरू,

म एरिजोना स्टेट युनिभर्सिटी (Arizona State University) अर्न्तगत स्कूल अफ कम्युनिटी रिसोर्सेज एण्ड डेभलपमेन्ट (School of Community Resources and Development) का सहप्राध्यापक (Associate Professor) डा. ज्ञान न्यौपानेको निर्देशनमा विधावारिधी गरिरहेको छु। मैले नेपालका तीनवटा संरक्षित क्षेत्रहरू (अन्तर्पूर्ण संरक्षण क्षेत्र, कञ्चनजंघा संरक्षण क्षेत्र र चितवन राष्ट्रिय निकुञ्ज) मा सामाजिक-पर्यावरणीय पर्यटन प्रणालीको दीगोपनको बारेमा अनुसन्धान गरिरहेको छु।

म तपाईंलाई यस अनुसन्धानमा सहयोग गर्न अनुरोध गर्दछु जसको लागि तपाईंले २० देखि ३० मिनेट समय प्रदान गर्नुपर्ने छ। यो अनुसन्धानमा तपाईंको सहभागिता स्वेच्छिक हुने छ र तपाईंले कुनै पनि प्रश्नको जवाफ नदिन पनि सक्नुहुने छ। यदि कुनै कारणले तपाईं सहभागी हुन नचाहनु भएमा खाली वा आंशिक रूपमा भरिएको प्रश्नावली फिर्ता गर्न सक्नु हुनेछ। यस बापत तपाईंलाई कुनै किसिमको सजाय वा जरिवाना हुने छैन। यस अनुसन्धान सहभागिताको लागि तपाईंको उमेर १८ वर्ष भन्दा बढि हुनु पर्नेछ। तपाईंले दिनुभएको जवाफ नेपालका साथसाथै विश्वभरीका संरक्षित क्षेत्रहरूको व्यवस्थापन गर्न उपयोगी हुने छ। यस अनुसन्धान सहभागी भएबापत तपाईंलाई कुनै किसिमको जोखिम वा अप्ठयारो हुने छैन।

यस सर्वेक्षणमा तपाईंले व्यक्त गरेका विचारहरू गोप्य रहने छन् र तपाईंको व्यक्तिगत परिचय खुल्ने कुनै किसिमको प्रश्न सोधिने छैन। यो सर्वेक्षणबाट प्राप्त नतिजा रिपोर्ट, प्रस्तुति, वा प्रकाशन (report, presentation, or publication) मा समग्ररूपमा (in aggregated form) प्रयोग गरिने छ र तपाईंको व्यक्तिगत जानकारी देखाईने छैन। यदि तपाईंको यस अनुसन्धान सम्बन्धमा कुनै जिज्ञासा भएमा रिसर्च टिमका इमेलहरू spoudel@asu.edu and gyan@asu.edu, वा फोन नं १ (४८०) २४१ ८१६० मा सम्पर्क गर्नुहुन अनुरोध छ। यदि तपाईंको यस अनुसन्धानमा सहभागी भए बापत कुनै अधिकारको बारेमा जिज्ञासा भएमा वा तपाईंलाई कुनै जोखिमको महशुस भएमा एरिजोना स्टेट युनिभर्सिटी, अफिस अफ रिसर्च ईन्टिग्रिटी एण्ड एसुरेन्स (Arizona State University, Office of Research Integrity and Assurance) को फोन नं १ (४८०) ९६५ ६७८८ मार्फत ह्युमन सबजेक्ट ईन्सचुसनल रिभ्यु बोर्ड (Human Subject Institutional Review Board) प्रमुख (Chair) संग सम्पर्क गर्नुहोला।

तपाईंले यो सर्वेक्षण प्रश्नावली फिर्ता गर्नु भएमा तपाईं यस सर्वेक्षणमा सहभागी हुन ईच्छुक रहेको मानिने छ।

यो अनुसन्धानमा सहयोग गर्न भएकोमा धेरै धेरै धन्यवाद।

भवदीय,

सूर्य पौडेल

स्कूल अफ कम्युनिटी रिसोर्सेज एण्ड डेभलपमेन्ट

एरिजोना स्टेट युनिभर्सिटी

फोन नं +१ ४८०२४१८१६० (अमेरिका), +९७७ ९८१९९८६९२२ (नेपाल)

नेपालका संरक्षित क्षेत्रहरूमा पर्यटनको दिगोपन

पर्यटनसंग सरोकारवालाहरूको सर्वेक्षण

तलका भनाईहरू पर्यटन विकाश तथा यसबाट स्थानीय समुदाय र वातावरण संरक्षणमा पर्ने प्रभाव संग सम्बन्धीत छन । यी भनाईहरूसँग तपाईं जुन हदसम्म सहमत हुनुहुन्छ सोही अनुसार तल दिइएका मध्ये कुनै एक अंक (Number) मा गोलो लगाउनुहोस् ।

समुह क

पर्यटनका वातावरणीय प्रभावहरू

क्र. स.	भनाईहरू	एकदम असहमत	असहमत	तटस्थ	सहमत	एकदम सहमत
१	समुदायको आर्थिक स्थिरता स्थानीय वातावरणीय समस्या भन्दा बढी महत्वपूर्ण हुन्छ ।	१	२	३	४	५
२	पर्यटन विकाशले स्थानियस्तर वाट सञ्चालित वातावरण संरक्षण प्रयासहरूलाई सहयोग गर्छ ।	१	२	३	४	५
३	प्राकृतिक वातावरण भन्दा आर्थिक लाभ कम महत्वपूर्ण हुन्छ ।	१	२	३	४	५
४	पर्यटनले स्थानिय समुदायको सुन्दरता विनास गर्छ ।	१	२	३	४	५
५	पर्यटनले प्राकृतिक वातावरणलाई विनास गर्छ ।	१	२	३	४	५
६	पर्यटन विकाशले समुदायको मुहार फेर्न सहयोग गर्छ ।	१	२	३	४	५
७	पर्यटनको कारणले अनियन्त्रित शहरीकरणमा वृद्धि हुन्छ ।	१	२	३	४	५
८	पर्यटनले वातावरणीय समस्याहरू (जस्तै: फोहर तथा प्रदुषित पानी) वृद्धि गर्छ ।	१	२	३	४	५
९	प्राकृतिक वातावरणलाई नोक्सानी नहुने किसीमले मात्र पर्यटन विकास गर्नु पर्छ ।	१	२	३	४	५
१०	पर्यटनले वातावरणमा दिर्घकालिन नकारात्मक असर पुऱ्याउछ ।	१	२	३	४	५
११	पर्यटनले स्थानिय वातावरण संरक्षणमा सहयोग पुऱ्याउछ ।	१	२	३	४	५
१२	पर्यटन विकासले यस क्षेत्र सँग सम्बन्धीत व्यक्ति तथा संस्थाहरूको वातावरण प्रति सकारात्मक भावना बढाउछ ।	१	२	३	४	५
१३	पर्यटनले वन्यजन्तु तथा तिनको बासस्थानको संरक्षणमा सहयोग पुऱ्याउछ ।	१	२	३	४	५
१४	पर्यटन विकासले स्थानिय प्राकृतिक स्रोतहरूको संरक्षण गर्न उत्प्रेरित गर्दछ ।	१	२	३	४	५
१५	पर्यटनका नकारात्मक प्रभावहरू लाई न्युनिकरण गर्न उचित वातावरणीय मापदण्डहरू आवश्यकता पर्दछ ।	१	२	३	४	५
१६	पर्यटनले वायु, पानी तथा ध्वनि प्रदुशन वृद्धि गर्छ ।	१	२	३	४	५
१७	पर्यटन विकाशले वन विनाशलाई प्रोत्साहित गर्छ ।	१	२	३	४	५
१८	पर्यटन विकाशले भूमिको प्रयोग माथि विवाद बढाउछ ।	१	२	३	४	५
१९	होटेल तथा अन्य पर्यटकिय सुविधाहरूको निर्माणले प्राकृतिक वातावरण विनाश गर्छ ।	१	२	३	४	५
२०	पर्यटन विकाश गर्दा प्राकृतिक सम्पदाको विनाश हुनु हुदैन ।	१	२	३	४	५

समुह ख
पर्यटनका आर्थिक प्रभावहरु

क्र.स.	भनाईहरु	एकदम असहमत	असहमत	तटस्थ	सहमत	एकदम सहमत
१	स्थानिय बासिन्दाले पर्यटनबाट उचित फाईदा प्राप्त गर्न सक्दछन ।	१	२	३	४	५
२	पर्यटनबाट प्राप्त आमदानी स्थानिय समुदाय बाहिरका व्यक्ति तथा उद्योगहरुले मात्र प्राप्त गर्दछन ।	१	२	३	४	५
३	पर्यटनको कारणले सडक, पुल तथा अन्य सुविधाहरुको गुणस्तर उच्च रहन्छ ।	१	२	३	४	५
४	पर्यटनले स्थानिय व्यापार व्यवसायमा अतिरिक्त लगानीलाई आर्कषित गर्छ ।	१	२	३	४	५
५	पर्यटनबाट सिमित स्थानिय बासिन्दाहरुलाई मात्र फाईदा पुग्छ ।	१	२	३	४	५
६	पर्यटन विकासबाट स्थानिय स्तरका अन्य व्यवसाय तथा उद्योगहरुलाई समेत फाईदा पुग्छ ।	१	२	३	४	५
७	पर्यटनले स्थानिय समुदायमा आमदानीका नयाँ स्रोतहरु सृजना गर्छ ।	१	२	३	४	५
८	पर्यटनले समुदाय विकास कोषमा योगदान गर्छ ।	१	२	३	४	५
९	पर्यटनले रोजगारीका नयाँ अवसरहरु सिर्जना गर्छ ।	१	२	३	४	५
१०	पर्यटनले स्थानिय उत्पादनहरुको लागि नयाँ बजारको सृजना गर्छ ।	१	२	३	४	५
११	पर्यटन विकास सँगै सम्पत्ति करमा वृद्धि हुन्छ ।	१	२	३	४	५
१२	पर्यटनले स्थानिय अर्थतन्त्रमा विविधता ल्याउछ ।	१	२	३	४	५
१३	पर्यटन व्यवसायहरुले स्थानिय समुदायका व्यक्तिलाई कर्मचारी कामदारको रुपमा प्रयोग गर्छन ।	१	२	३	४	५
१४	पर्यटनले स्थानिय सरकारलाई प्रशस्त राजस्व प्रदान गर्छ ।	१	२	३	४	५
१५	पर्यटनले स्थानिय पूर्वाधारहरु जस्तै: खानेपानी, विजुली तथा टेलिफोनको विस्तारमा सहयोग गर्छ ।	१	२	३	४	५
१६	पर्यटनले स्थानिय पसल, रेष्टुरेन्ट र होटेलको सेवास्तरमा सुधार ल्याउछ ।	१	२	३	४	५
१७	पर्यटनको कारणले सामान तथा सेवाको मुल्यमा वृद्धि हुन्छ ।	१	२	३	४	५
१८	पर्यटनले स्थानिय जनताको आयमा वृद्धि गरी जिवनस्तरमा सुधार गर्छ ।	१	२	३	४	५
१९	पर्यटन विकासले दैनिक उपभोग्य सामानमा महंगी बढाउछ ।	१	२	३	४	५
२०	पर्यटनले जमिन तथा घरको मुल्यमा वृद्धि गराउछ ।	१	२	३	४	५
२१	पर्यटनको कारणले स्थानिय सेवाहरु जस्तै: प्रहरी, दमकल तथा सडकलाई बढी व्यस्त बनाउछ ।	१	२	३	४	५
२२	स्थानिय अर्थतन्त्रको विकासको लागि पर्यटन जरुरी छ ।	१	२	३	४	५
२३	पर्यटन स्थानिय अर्थतन्त्रको एक महत्वपूर्ण आयस्रोत हो ।	१	२	३	४	५
२४	पर्यटनले साना व्यापार जस्तै: किराना पसल, चिया पसललाई बढि फाईदाजनक बनाउछ ।	१	२	३	४	५
२५	पर्यटनले स्थानिय बासिन्दाहरुलाई लगानीका अवसरहरु प्रदान गर्छ ।	१	२	३	४	५
२६	पर्यटन व्यवसायहरुले स्थानिय समुदायबाट सामान तथा सेवाहरु खरीद गर्छन ।	१	२	३	४	५
२७	पर्यटनबाट प्राप्त धेरै जसो आमदानी समुदाय बाहिर चुहावट हुन्छ ।	१	२	३	४	५

समुह ग

पर्यटनका सामाजिक तथा साँस्कृतिक प्रभावहरु

क्र. स.	भनाईहरु	एकदम असहमत	असहमत	तटस्थ	सहमत	एकदम सहमत
१	पर्यटन विकासले स्थानिय समुदायको साँस्कृतिक पहिचानको गरीमालाई बढाउछ ।	१	२	३	४	५
२	पर्यटन विकासले अपराधमा बृद्धि गर्छ ।	१	२	३	४	५
३	पर्यटन विकासले ट्राफिक जाम तथा सवारी दुर्घटना बढाउछ ।	१	२	३	४	५
४	पर्यटन विकासले सार्वजनिक स्थलहरुमा भिडभाड बढाउछ ।	१	२	३	४	५
५	पर्यटनले स्थानिय जनताहरुलाई विभिन्न किसीमका साँस्कृतिक कृयाकलापहरु संचालन गर्न अभिप्रेरित गर्छ ।	१	२	३	४	५
६	पर्यटनले अन्य समुदाय तथा साँस्कृतिक सम्बन्धी ज्ञान बढाउछ ।	१	२	३	४	५
७	पर्यटनले स्थानिय समुदाय तथा पर्यटकबिच अन्तर साँस्कृतिक सम्वाद र समझदारी लाई सहजिकरण गर्छ ।	१	२	३	४	५
८	पर्यटनको कारणले स्थानिय जनता तथा पर्यटकको बिचमा द्वन्द्व बढ्छ ।	१	२	३	४	५
९	पर्यटनले जुवा तास तथा अन्य गैर कानूनी खेलहरु प्रोत्साहित गर्छ ।	१	२	३	४	५
१०	पर्यटन विकासले आदीवासी तथा रैथाने जातिहरुको परम्पराको विनाश गर्छ ।	१	२	३	४	५
११	पर्यटनको कारणले चोरी लगायतका अपराधमा बृद्धि हुन्छ ।	१	२	३	४	५
१२	पर्यटनले लागूऔषध तथा रक्सीको प्रयोगमा बृद्धि गराउछ ।	१	२	३	४	५
१३	पर्यटनले यौन व्यवहारमा छाडापन ल्याउनुको साथै वेश्यावृत्ति बढाउछ ।	१	२	३	४	५
१४	पर्यटनले स्थानिय साँस्कृतिको जगेर्ना गर्न उत्प्रेरणा प्रदान गर्दछ ।	१	२	३	४	५
१५	पर्यटन विकासले स्थानिय साँस्कृतिक कार्यक्रमहरुमा सहभागी हुने अवसर प्रदान गर्छ ।	१	२	३	४	५
१६	पर्यटनले स्थानिय कला तथा साँस्कृतिलाई विनाश गर्दछ ।	१	२	३	४	५
१७	पर्यटनले समाजको शान्ति सु-व्यवस्थामा खलल पुऱ्याउछ ।	१	२	३	४	५
१८	पर्यटनले ऐतिहासीक सम्पदाहरुको पुर्ननिर्माण तथा मर्मतमा सहयोग पुऱ्याउछ ।	१	२	३	४	५
१९	पर्यटनको कारणले स्थानिय जनताको जिवनस्तरमा गिरावट ल्याउछ ।	१	२	३	४	५
२०	पर्यटन विकाशसँगै वाह्य व्यक्तिहरु वसाई सरी आउनाले जनसंख्या बृद्धि हुन्छ ।	१	२	३	४	५
२१	पर्यटनले सामाजिक सद्भाव तथा परम्परागत पारिवारीक मान्यताहरुको क्षयिकरण गर्छ ।	१	२	३	४	५
२२	पर्यटन विकाशले साँस्कृतिक व्यापारिकरणमा बृद्धि गर्छ ।	१	२	३	४	५
२३	पर्यटन विकाशसँगै स्थानिय जनताको सेवा भावनमा हास आउछ ।	१	२	३	४	५
२४	पर्यटन विकाशले अनियन्त्रित जनसंख्या बृद्धिलाई प्रोत्साहित गर्छ ।	१	२	३	४	५

समुह घ
सामाजिक जानकारी (सौराहा)

१. लिङ्ग () महिला () पुरुष
२. उमेर (..... वर्ष)
३. तपाईंको शैक्षिक योग्यता कति छ ?
४. तपाईंको परिवारको गत वर्षको आमदानी कति हो ?
५. तपाईंको समुदायको नाम के हो ? (.....)
६. तपाईंको यो समुदायमा वस्नु भएको कति वर्ष भयो ? (.....)
७. के तपाईं तलका मध्ये कुनै एक समुदायको सदस्य हुनुहुन्छ ?
 () बोटे () थारु () माझी () मुसहर
 () दलित () छैन
 ()
८. के तपाईं कुनै पर्यटन व्यवसाय (जस्तै होटेल, रेष्टुरेन्ट, टुर कम्पनी) संग आवद्ध हुनुहुन्छ ?
 () छैन ।
 () मेरो निजी होटेल, रेष्टुरेन्ट, टुर कम्पनी, वा अन्य व्यवसाय (.....) छ ।
 () म होटेल, रेष्टुरेन्ट, टुर कम्पनी, वा अन्य व्यवसायमा (.....) काम गर्छु ।
९. के तपाईं कुनै चितवन राष्ट्रिय निकुन्ज अन्तर्गतको मध्यवर्ती क्षेत्र व्यवस्थापन समिति वा यस सँग सम्बन्धित कुनै संस्था (जस्तै वन समुह, ईकाइ समुह, तथा CBAPO) संग सम्बन्धित आवद्ध हुनुहुन्छ ?
 () छैन () छु
 यदि हुनुहुन्छ भने कृपया तलको विवरण भर्नुहोस ।

	पद	अवधि	संस्थाको नाम
क)
ख)
१०. के तपाईं कुनै पेशागत संगठन वा व्यवसायिक समुह (जस्तै HAN, REBAN, हात्ति समुह, साना पर्यटन व्यवसायी समुह) संग आवद्ध आवद्ध हुनुहुन्छ ?
 () छु () छैन
 यदि हुनुहुन्छ भने कृपया तलको विवरण भर्नुहोस ।

	पद	अवधि	संस्थाको नाम
क)
ख)
११. के तपाईं अन्य कुनै वातावरण सँग सम्बन्धीत संस्थाको सदस्य हुनुहुन्छ ?
 () छैन () छु
 यदि हुनुहुन्छ भने कृपया तलको विवरण भर्नुहोस ।

	पद	अवधि	संस्थाको नाम
क)
ख)

यो सर्भे यहि पुरा हुन्छ । सहभागिताको लागि धेरै धेरै धन्यवाद !

यदि तपाईं संग कुनै सल्लाह सुझाव भएमा कृपया तल लेख्नुहोस् ।

समूह घ
सामाजिक जानकारी (अन्नपूर्ण)

१. लिङ्ग () महिला () पुरुष
२. उमेर वर्ष
३. तपाईंको शैक्षिक योग्यता कति छ ?
४. तपाईंको परिवारको गत वर्षको आमदानी कति हो ?
५. तपाईंको गाउँ (टोल) को नाम के हो ? (.....)
६. तपाईंको यो गाउँ (टोल) मा वस्नु भएको कति वर्ष भयो ? (.....)
७. के तपाईं तलका मध्ये कुनै एक समुदायको सदस्य हुनुहुन्छ ?
() गुरुङ्ग () मगर () बाहुन () क्षेत्री
() दलित () अन्य
८. तपाईंको पेशा के हो ?
() कृषि
() नोकरी/जागिर/पेन्सन
किसिम : सरकारी, होटेल, रेष्टुरेन्ट, वा अन्य (.....)
पद :
अवधि :
स्थान :
- () व्यापार/व्यवसाय
किसिम : होटेल, रेष्टुरेन्ट, वा अन्य (.....)
अवधि :
स्थान :

९. के तपाईं कुनै अन्नपूर्ण संरक्षण क्षेत्र अर्न्तगतको संरक्षण क्षेत्र व्यवस्थापन समिति वा यसको उपसमितिहरुमा आवद्ध हुनुहुन्छ ?

- () छैन () छु
यदि हुनुहुन्छ भने कृपया तलको विवरण भर्नुहोस ।
पद अवधि संस्थाको नाम
- क)
ख)
ग)

११. के तपाईं अन्य कुनै सामाजिक वा वातावरणसँग सम्बन्धीत संस्थाको सदस्य हुनुहुन्छ ?

- () छैन () छु
यदि हुनुहुन्छ भने कृपया तलको विवरण भर्नुहोस ।
पद अवधि संस्थाको नाम
- क)
ख)

यो सर्भे यहि पुरा हुन्छ । सहभागिताको लागि धेरै धेरै धन्यवाद !

यदि तपाईं संग कुनै सल्लाह सुझाव भएमा कृपया तल लेख्नुहोस् ।

APPENDIX G
INFORMATION LETTER FOR INDIVIDUAL INTERVIEWS
(ENGLISH AND NEPALI)

**Sustainability of Social-Ecological Tourism Systems
A Case of Protected Area-based Tourism in Nepal**

INFORMATION LETTER FOR INDIVIDUAL INTERVIEW

Date

Dear _____:

I am a Ph.D. candidate under the direction of Dr. Gyan Nyaupane, Associate Professor, in the School of Community Resources and Development at Arizona State University. I am conducting a research to assess the sustainability of social-ecological tourism systems in three protected areas of Nepal: the Annapurna Conservation Area, the Kanchenjunga Conservation Area, and Chitwan National Park.

I am inviting your participation, which will involve 30-60 minutes (10-20 minutes for short interviews) of time. We will talk about tourism and its relationship to your community and the environment. You have the right not to answer any question, and to stop the interview at any time. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. You must be 18 or older to participate in the study.

There will be no personal benefits to you from this study. Your response will be helpful in management of tourism in the protected areas in Nepal as well as around the globe. There are no foreseeable risks or discomforts to your participation. Your responses will be anonymous, and to ensure this, you will not be asked to include any personal identification. Your answers will be used with many others in an aggregated form. The results of this study may be used in reports, presentations, or publications but your name will not be known.

I would like to audiotape this interview. The interview will not be recorded without your permission. Please let me know if you do not want the interview be taped; you also can change your mind after the interview starts, just let me know. The audiotape will be stored on computer of the researchers and no other people will have an access to this file. The audiotapes will be transcribed by persons associated with this research team and there will be no identifiable feature in the transcription as well. Both the audio file and transcriptions will be destroyed after five years.

If you have any questions concerning the research study, please contact the research team at spoudel@asu.edu or gyan@asu.edu. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788. Please let me know if you wish to be part of the study.

Sincerely,
Surya Poudel
Arizona State University
School of Community Resources & Development
411 N. Central Ave., Ste. 550, Phoenix
AZ 85004-0690, USA
Phone (480) 241-8160, Fax (602) 496-0853

सामाजिक-पर्यावरणिय (Social-Ecological) पर्यटन प्रणालीको दीगो विकास

नेपालका संरक्षित क्षेत्रहरूमा आधारित पर्यटनको एक अध्ययन

व्यक्तिगत अन्तरवाताको लागि अनुरोध पत्र

मिति :

आदरणीयज्यू

म एरिजोना स्टेट युनिभर्सिटी (Arizona State University) अर्न्तगत स्कूल अफ कम्युनिटी रिसोर्सेज एण्ड डेभलपमेन्ट (School of Community Resources and Development) मा सहप्रध्यापक (Associate Professor) डा. ज्ञान न्यौपानेको निर्देशनमा विद्यावारिधी गरिरहेको छु। मैले नेपालका तीनवटा संरक्षित क्षेत्रहरू (अन्नपूर्ण संरक्षण क्षेत्र, कंचनजंघा संरक्षण क्षेत्र, र चितवन राष्ट्रिय निकुञ्ज) मा सामाजिक-पर्यावरणिय पर्यटन प्रणालीको दीगो विकासको बारेमा अध्ययन गरिरहेको छु।

यस अध्ययनमा म तपाईंको सहयोगको अपेक्षा गर्दछु जसको लागि तपाईंले ३० देखि ६० मिनेट (१० देखि २० मिनेट संक्षिप्त अन्तरवाताको लागि) समय प्रदान गर्नुपर्ने छ। म तपाईंसंग पर्यटन र यसको स्थानिय समुदाय तथा वातावरण संगको सम्बन्धका बारेका कुराकानी गर्न चाहन्छु। यो अध्ययनमा तपाईंको सहभागिता स्वेच्छिक हुने छ र तपाईंले कुनै पनि प्रश्नको जवाफ नदिन पनि सक्नुहुने छ वा कुनै पनि समयमा यो कुराकानी रोक्न आग्रह गर्न सक्नु हुनेछ। यदि कुनै कारणले तपाईं सहभागी हुन नचाहनु भएमा त्यस बापत तपाईंलाई कुनै किसिमको सजाय वा जरिवाना हुने छैन। यस अध्ययनमा सहभागिताको लागि तपाईंको उमेर १८ वर्ष भन्दा बढि हुनु पर्नेछ।

यस अध्ययनमा सहभागी भएबापत तपाईंलाई कुनै किसिको व्यक्तिगत फाईदा हुने छैन। तपाईंले दिनुभएको जवाफ नेपालका साथसाथै विश्वभरीका संरक्षित क्षेत्रहरूको व्यवस्थापन गर्न उपयोगी हुने छ। यस अध्ययनमा सहभागी भएबापत तपाईंलाई कुनै किसिमको जोखिम वा अप्ठ्यारो हुने छैन। तपाईंका विचारहरू गोप्य रहने छन् र तपाईंको व्यक्तिगत परिचय खुल्ने कुनै किसिमको प्रश्न सोधिने छैन। यो सर्वेक्षणबाट प्राप्त नतिजा रिपोर्ट, प्रस्तुति, वा प्रकाशन (report, presentation, or publication) मा समग्ररूपमा (in aggregated form) प्रयोग गरिने छ र तपाईंको व्यक्तिगत जानकारी देखाइने छैन।

म यो कुराकानी रेकर्ड गर्न चाहन्छु। यो कुराकानी तपाईंको अनुमती बिना रेकर्ड गरिने छैन। यदि तपाईं यो कुराकानी रेकर्ड गर्न चाहनुहुदैन भने कृपया मलाई जानकारी दिनुहोस। हाम्रो कुराकानी चलिरहदा पनि तपाईं रेकर्ड बन्द गर्न आग्रह गर्न सक्नुहुनेछ। यो रेकर्डिङ अनुसन्धानकर्ताको कम्प्युटरमा राखिने छ जसमा अनाधिकृत व्यक्तिको पहुच हुने छैन। रेकर्डिङहरूलाई रिसर्च संग सम्बन्धित व्यक्तिले ट्रान्सक्राइब (transcribe) गर्ने छन् जसमा तपाईंको कुनै पनि पहिचान रहने छैन। रेकर्डिङको अडियो फाईल र ट्रान्सक्रिप्सन दुवै ५ वर्ष पछि कम्प्युटरबाट हटाईने छ।

यदि तपाईंको यस अनुसन्धान सम्बन्धमा कुनै जिज्ञासा भएमा रिसर्च टिमका इमेलहरू spoudel@asu.edu वा gyan@asu.edu वा फोन नं १ (४४८) २४१ ८१६० मा सम्पर्क गर्नुहुन अनुरोध छ। यदि तपाईंको यस अनुसन्धानमा सहभागी भए बापत कुनै अधिकारको बारेमा जिज्ञासा भएमा वा तपाईंलाई कुनै जोखिमको महशुस भएमा एरिजोना स्टेट युनिभर्सिटी, अफिस अफ रिसर्च ईन्टिग्रिटी एण्ड एसुरेन्स (Arizona State University, Office of Research Integrity and Assurance) को फोन नं १ (४८०) ९६५ ६७८८ मार्फत ह्युमन सबजेक्ट ईन्सचुसनल रिभ्यु बोर्ड (Human Subject Institutional Review Board) प्रमुख (Chair) संग सम्पर्क गर्नुहोला।

यदि तपाईं कुराकानीको लागि तयार हुनुहुन्छ भने कृपया मलाई वताउनुहोस।

भवदीय,
सूर्य पौडेल
स्कूल अफ कम्युनिटी रिसोर्सेज एण्ड डेभलपमेन्ट
एरिजोना स्टेट युनिभर्सिटी

APPENDIX H
INTERVIEW GUIDE

Sustainability of Social-Ecological Tourism Systems
A Case of Protected Area-based Tourism in Nepal

Interview Guide (Checklist for Interviews)

We are going to talk about the linkages among protected areas, conservation, tourism, and local livelihoods.

Tell me about the social, economic, and political contexts of this area.

Probe about economic development, demographic trends, political stability, market incentives, and media organization.

Let's talk about the ecosystem of this area. What is the condition of ecosystems?

Probe about climate patterns, pollution patterns, flow into and out of focal SES.

What are the resources found in this area?

Probe about resource sector (e.g., tourism, landscape, scenery), clarity of system boundaries, size of resource systems, human-constructed facilities, productivity of system, equilibrium properties, predictability of system dynamics, and storage characteristics.

How is the governance system of the resources?

Probe about government organizations, non-government organizations, network structure, property-right system, operational rules, collective-choice rules, constitutional rules, and monitoring and sanctioning process.

What are the properties of the resource units within the resource systems?

Probe about resource unit mobility, growth or replacement rate, interaction among resource units, economic value, size, distinctive markings, and spatial and temporal distribution.

Who are the users of the resources?

Probe about number of users, socioeconomic attributes of users, history of use, location, leadership/entrepreneurship, norms/social capital, dependence on resource, and technology.

How do the resource users interact with each other and resources system?

Probe about harvesting levels of diverse users, information sharing among users, deliberation processes, conflicts among users, investment activities, and lobbying activities.

What are the outcomes of the interactions among resource users and resource system?

Discuss about social, ecological, and economic performance measures