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Local People, Nature-Based Tourism and Protected Areas in Nepal

PhD Thesis submitted by

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Dedication

I would like to dedicate this Thesis to my late Grandmother (YYYY - 2003), who always saw me only as a little child despite my adulthood.

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Research Ethics Statement

This research received human ethics approval from James Cook University (approval number H8229), and also obtained research permission from the Department of National Parks and Wildlife Conservation (permission number 077/78 Eco - 2084), Bardiya National Park (permission number 078/79 - 134) and Langtang National Park (078/79 - 111 and 159).

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2. **Thapa, K.**, King, D., and Diedrich, A (*under review, first revision submitted*). The influence of perceptions and demographic factors on local support for protected areas in Nepal. *Conservation Science and Practice*.
3. **Thapa, K** and Diedrich, A (2023). Beyond conservation: Assessing broader development outcomes of protected areas in Nepal. *Journal of Environmental Management*, Volume 339: 117890. <https://doi.org/10.1016/j.jenvman.2023.117890>
4. **Thapa, K.**, King, D., Banhalmi-Zakar, Z., Diedrich, A (2022). Nature-based tourism in protected areas: A systematic review of socio-economic benefits and costs to local people. *International Journal of Sustainable Development & World Ecology*, 29 (7): 625-640. <https://doi.org/10.1080/13504509.2022.2073616>

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1. **Thapa, K** (2020). COVID-19 & challenge of conservation funding. *The Rising Nepal*. Vol. LV, No. 205, 10 July 2020 (26 Asar 2077 B.S.). <https://old.risingnepaldaily.com/opinion/covid-19-challenge-of-conservation-funding>
2. **Thapa, K.** (2020). Leave the wetlands wet. *Republica*. 4 February 2020. <https://myrepublica.nagariknetwork.com/news/leave-the-wetlands-wet/>

Thesis Abstract

Protected areas and other effective area-based conservation measures are important strategies for achieving global conservation objectives. In addition to conservation, they are increasingly recognised as vehicles for human well-being and socio-economic development. As a new global target for area-based conservation has been set to 30% by 2030, Nepal currently manages more than 23% of its area as protected areas. However, an equally if not more important measure than area-based coverage of protected areas is their effectiveness in achieving conservation objectives, as well as delivering benefits and reducing costs to people living in and around protected areas. Nepal has adopted an Integrated Conservation and Development Project (ICDP) to protected area management as a mainstream policy, an approach that links conservation with rural socio-economic development.

This study aimed to characterise and understand the relationship between local people, nature-based tourism and protected areas in Nepal by evaluating the benefits and costs incurred by local people in two case study sites. This thesis is guided by four research objectives, each pertaining to one data chapter (Chapters 2 to 5): 1) identify current, global understanding of socio-economic impacts on local people of nature-based tourism in protected areas, 2) assess perceived benefits and costs from protected areas of local people in Nepal, 3) assess perceived social equity of protected area management in Nepal, and 4) evaluate perceptions of local people towards protected areas in Nepal. Data for this work came both from the published literature and a household-level survey. The first objective relied on published peer-reviewed literature via a systematic literature review. The remaining objectives were met through the data from a survey of 845 households. The survey was conducted from August to December 2021 in Bardiya and Langtang National Park, Nepal with the help of field assistants. These data were analysed through descriptive and inferential statistics in SPSS (version 26 and 27).

The systematic literature review (Chapter 2) assessed 89 papers, which mostly came from low and middle-income countries, and revealed that the benefits of nature-based tourism to local people exceeded the costs. However, the benefits were mostly economic whereas most costs were socio-cultural. Similarly, benefits were mostly experienced at the individual level, where costs were at the community level. The literature review results informed the case study research in Nepalese protected areas, which was a detailed assessment of the benefits and costs of protected areas and nature-based tourism. In Chapter 3, perceived benefits emerging from the survey were categorised based on ICDP criteria used to guide protected area management in Nepal. Costs, which are not considered in the ICDP framework were categorised inductively. The analysis revealed more perceived benefits than costs from both protected areas and nature-based tourism. Among the benefits, most respondents perceived extraction benefits from protected areas and economic benefits from nature-based tourism. Similarly, with respect to costs, the majority of local people perceived crop and livestock loss from protected areas but socio-cultural costs from nature-based tourism. The intended benefits of ICDPs related to participation, cost mitigation and conservation were perceived by very few respondents, questioning the efficacy of the ICDP framework in Nepal.

In the analysis for Chapter 4, the distribution of costs from protected areas and nature-based tourism were perceived to be fairer than for benefits. The perception of the fairness of the distribution of benefits was strongly influenced by perceptions of the costs and benefits of tourism, protected area costs and procedural equity. Likewise, procedural equity, as represented by participation and membership, was experienced by only 16% of the respondents. The analysis in Chapter 5 revealed that local people were aware of conservation and were generally supportive towards protected areas. The perceptions of benefits influenced the level of support for protected areas.

This thesis contributes to the latest understanding of human dimensions of protected area management. Furthermore, this has assessed the benefits and costs of the ICDP approach to protected area management and examined its intended outcomes that has been institutionalised through the national policy and legislation. ICDP in Nepal, as implemented through the buffer zone program, has been perceived differently by the people living near and far away from the protected area office. Engaging those distant communities in benefits and costs sharing mechanisms may help to enhance conservation and development outcomes from Nepalese protected areas leading to more local support for protected areas.

Key Words: buffer zone, ICDPs, local people, Nepal, nature-based tourism, participation, perception, protected areas, social equity, socio-economic benefit, socio-economic cost, systematic literature review.

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Chapter 1

General Introduction

1. General Introduction

1.1 Background

The importance of protected areas (PAs) to conserve biodiversity is widely accepted through international policies such as the Convention on Biological Diversity (CBD). Besides biodiversity conservation, protected areas also support the achievement of sustainable development goals by yielding economically valuable goods and services from natural, social and cultural capital (CBD, 2020b; Jones et al., 2020). As a result, global coverage of terrestrial protected areas to date has reached more than 17% of the global land and inland water areas (UNEP-WCMC & IUCN, 2023a). The 15th meeting of the Conference of the Parties (COP 15) to the CBD has agreed on new area-based targets to effectively conserve and manage terrestrial and inland water areas, as well as marine and coastal areas of importance for biodiversity, ecosystem services and functions through protected areas and other effective area-based conservation measures (OECMs) to 30% by 2030 (COP-CBD, 2022).

There are significant gaps in the ecological representativeness of protected areas at both the global and regional levels (Maxwell et al., 2020; Chaudhary et al., 2022; Cazzolla Gatti et al., 2023). While some countries, such as Nepal, have already reached more than the target of 17% as envisioned by 2011-2020 Aichi Biodiversity Targets, others are falling behind (CBD, 2020a). As such, achieving the area-based conservation target does not necessarily equate with the achievement of conservation objectives. For example, there are gaps in physiographic, biological and ecoregion representativeness of protected areas in Nepal (Shrestha et al., 2010).

The presence of protected areas provides both costs and benefits to human society. Environmental and socioeconomic benefits to local people in terms of livelihood

support and poverty eradication are two of the most sought after outcomes of PAs (Heinen, 1993; Baral & Heinen, 2007b; Andam et al., 2010; Ezebilo & Mattsson, 2010; Getzner & Shariful Islam, 2013; den Braber et al., 2018; Merriman et al., 2018), yet they have also been shown to result in environmental and social costs (Studsrød & Wegge, 1995; Ferraro, 2002; West et al., 2006; Vedeld et al., 2012; Hariohay & Røskaft, 2015; Eustace et al., 2018). Direct economic costs of protected area management are often borne by governments, but indirect costs are often incurred by local people. From an economic perspective, some studies have shown that the overall value of benefits arising from protected areas exceeded the costs, but these benefits transcend local boundaries while the costs tend to be more pronounced at the local level (Shrestha et al., 2006; Sharma et al., 2015; Ninan & Kontoleon, 2016).

The 2030 agenda for sustainable development adopted by the United Nations (UN) in 2015 set 17 sustainable development goals (SDGs) and 169 targets to achieve sustainable development. These goals are: no poverty (goal 1), zero hunger (goal 2), good health and wellbeing (goal 3), quality education (goal 4), gender equality (goal 5), clean water and sanitation (goal 6), affordable and clean energy (goal 7), decent work and economic growth (goal 8), industry, innovation and infrastructure (goal 9), reduced inequalities (goal 10), sustainable communities and cities (goal 11), responsible consumption and production (goal 12), climate action (goal 13), life below water (goal 14), life on land (goal 15), peace, justice and strong institutions (goal 16), and partnership for the goals (goal 17) (United Nations, 2024). These goals together aim to balance the three dimensions of sustainable development, namely economic, environmental and social (United Nations, 2015).

Apart from biodiversity conservation, protected areas also contribute to several targets of the SDGs. While protected areas contribute directly to SDGs 14 and 15, at least 10

out of 17 SDGs offer opportunities to PAs to support for human welfare and wellbeing (Dudley et al., 2017a; Dudley et al., 2017b). The contributions of protected areas to supporting human welfare and achieving socioeconomic development can also be linked to natural resources and tourism activities in protected areas. These contributions are however dependent on several factors such as context, location, and type of protected areas (Kandel et al., 2022; Pérez-Calderón et al., 2024). For example, protected areas in Africa are less likely to have positive welfare effects than in Asia and (South) America (Kandel et al., 2022) whereas perceptions of sustainable development among local people was higher in geoparks than in national parks (Pérez-Calderón et al., 2024). Tourism also contributes to achieving SDGs and as such tourism is recognised by the UN World Tourism Organisation (UNWTO) as a potential vehicle for sustainable development. In terms of the SDGs, tourism contributes to achieving several goals (Seraphin & Gowreesunkar, 2021), but has the strongest link with goals 8, 12 and 17 (World Tourism Organization & United Nations Development Programme, 2017). Further, nature-based tourism in protected areas can contribute to localising SDGs that support as many as 16 goals (Dube & Nhamo, 2021).

Protected areas do not only conserve biodiversity and provide natural resources to sustain livelihoods of local people but are also common destinations for nature-based tourism. They provide opportunities for nature recreation, enjoyment of scenery, wildlife viewing and cultural experiences. While nature-based tourism is any form of tourism that is based on nature and natural resources, some authors have equated it with ecotourism (Krüger, 2005; Wardle et al., 2021). Ecotourism is a type of nature-based tourism that is specific to fragile and pristine areas, often protected areas, that strives to be low impact and usually small scale (Honey, 1999, p. 25 cited in Sabuhoro et al., 2021). Boo (1992), cited in Page and Dowling (2002, p. 27), defined ecotourism as:

nature travel that contributes to conservation through the generation of funds for protected areas, the creation of employment opportunities for communities surrounding protected areas, and by providing environmental education for visitors.

In practice, there is doubt whether ecotourism businesses really benefit local people in terms of employment and revenue sharing (Xu et al., 2009; Karanth & DeFries, 2011; Sabuhoro et al., 2021).

Nature-based tourism can also bring environmental problems due to tourist visitation. A review by Krüger (2005) found that nature-based tourism did not necessarily contribute to ecological sustainability of destinations, as only about 63% of studies found nature-based tourism to be ecologically sustainable. The level of sustainability also varied by geography and habitat types (Krüger, 2005). Surprisingly, little more than 17% of the studies reported positive contributions to conservation (Krüger, 2005). The impacts of nature-based tourism on forest loss at the tourism destination have also shown mixed results in Asia (Brandt et al., 2019). These findings demonstrate that the environmental relationship between nature-based tourism and protected areas can also be detrimental because tourism and conservation do not always support each other (Whitelaw et al., 2014).

There is a growing trend in protected area visitation (Balmford et al., 2009; DNPWC, 2009; Karanth & DeFries, 2011; DNPWC, 2022) and nature-based tourism in protected areas has the potential to generate revenue for conservation and protected area management (Balmford et al., 2009; DNPWC, 2022). Nature-based tourism can be a good source of income for national and regional economies because it helps to earn foreign currency exchange and brings economic revenue from visitors' spending

(Dixon & Sherman, 1991; Baral & Dhungana, 2014; Lal et al., 2017). The collection of entry fees or user fees from visitors is one mechanism to directly finance protected area management, where governmental funding alone cannot meet financial needs. Entry and user fees are some of the key funding sources of protected areas which are recognised at the global level (WCPA & IUCN, 2000; Font et al., 2004; Emerton et al., 2006; Gutman & Davidson, 2007). The funds generated from such fees can then be invested in conservation and development of protected areas and local people (Peters, 1998a), eliminating the need to rely on donors for conservation and development activities.

The attitude of local people towards protected areas can be both positive and negative depending on the impacts¹ of protected areas on society (Mishra, 1982; Heinen, 1993; Kharel, 1997; Allendorf, 2007; Baral & Heinen, 2007b; Kideghesho et al., 2007; Tamang & Baral, 2010; Htun et al., 2012; Clements et al., 2014; Dewu & Røskaft, 2017; Chetri et al., 2019; Abukari & Mwalyosi, 2020). One of the direct benefits that local people obtain from protected areas is an opportunity to harvest natural resources, which supports their livelihoods (Mishra, 1982; Heinen, 1993; Baral & Heinen, 2007b). However, these benefits can come with associated costs such as crop raiding, livestock depredation, loss of access to natural resources, loss of human lives and injuries and displacement from wildlife and protected areas (Mishra, 1982; West et al., 2006; Acharya et al., 2016).

Positive socioeconomic outcomes to local people may also help achieve positive conservation outcomes (Oldekop et al., 2016). Similarly, compliance with protected area law and policy by local people tends to be influenced by their participation in

¹ Here, impacts mean both positive and negative impacts.

decision-making processes, in addition to their perceptions of positive socio-economic outcomes (Andrade & Rhodes, 2012). Therefore, protected area authorities need to encourage local participation and prioritise the reduction of costs and maximisation of benefits to local people. While compensation payments are practiced in some countries for losses such as crop damage, livestock depredation, human injuries and fatalities, the effectiveness of such actions has been questioned as well (Karanth & Nepal, 2012; Eustace et al., 2018; Shahi et al., 2023).

1.2 Justification and Research Gap

The area coverage of the earth's surface by protected areas and OECMs has become one of the most used indicators to measure the success of protected areas worldwide (CBD, 2020a; COP-CBD, 2022; Mitchell et al., 2022). However, global agreements such as the CBD as well as regional level congresses (e.g., Asian Park Congress 2022 and African Protected Areas Congress 2022) also recognise the importance of sustainable resource use and equitable governance of such protected and conserved areas (COP-CBD, 2022; Mitchell et al., 2022) to achieve conservation objectives. The International Union for Conservation of Nature (IUCN) defines protected area as:

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).

This definition, as well as international agreements, highlights the importance of people and their cultural values in protected area conservation.

Protected areas often occur in remote locations characterised by high poverty rates and less productive land (MEA, 2000 cited in Andam et al., 2010; Ferraro & Pressey, 2015).

Given the poverty of local people living near protected areas, this may result in higher dependency of people on protected area resources. Although the presence of protected areas does not necessarily exacerbate poverty (Clements et al., 2014; den Braber et al., 2018), the impacts of protected areas on local people are obvious (Coad et al., 2008). Therefore, it is important to consider the types and distribution of costs and benefits from protected areas and the factors that determine these costs and benefits. Most importantly, who gains and who loses from protected area is one of the challenging questions to answer.

Both the positive and negative impacts of nature-based tourism are likely to increase with increases in tourism development. If tourism development is unsustainable, it is also likely that people's perceptions of negative impacts will eventually outweigh perceptions of positive impacts (Diedrich & Garcia-Buades, 2009). Nature-based tourism may be seasonal, such as trekking in the Himalayas being mostly suitable in autumn and summer or the best time for wildlife safari in Africa being in dry season. Most of the tourism benefits often flow to wealthier families and outsiders, which can be at the cost of poor people living in the vicinity of protected areas (Mehta & Kellert, 1998; Ferraro, 2002; Udaya Sekhar, 2003; Karanth & DeFries, 2011). However, it is yet to be investigated whether it is a global trend or whether local people in Nepalese protected areas perceive any benefits and costs from nature-based tourism.

In Nepal, human-wildlife conflict, especially threats to human lives from wildlife, are major costs of protected area management to local people (Bhattarai & Fischer, 2014; Acharya et al., 2016; Lamichhane et al., 2018; Ruda et al., 2020), as are agricultural crop and livestock depredation (Mishra, 1982; Studsrød & Wegge, 1995; Kharel, 1997; Tamang & Baral, 2010; Chetri et al., 2019). At the same time, protected areas have provided benefits to local people living in and around protected areas via nature-based

tourism (Baral & Dhungana, 2014), through opportunities for harvesting protected area resources (Mishra, 1982; Heinen, 1993; Baral & Heinen, 2007b; Karki, 2013; Thapa, 2023) as well as through integrated conservation and development activities (Bajracharya et al., 2006; Karki, 2013). When people perceive these benefits to outweigh costs, then they tend to participate in protected area activities (i.e., conservation and management) (Almeida García et al., 2015).

The benefits and costs that arise from protected areas and nature-based tourism (Coad et al., 2008) as well as natural-resource benefits (e.g., ecosystem services) can be experienced at varying degrees in the community (Chaudhary et al., 2018; Lau et al., 2018). This is due to the reality that society is heterogeneous. However, the disaggregation of such outputs from demographic perspectives is rarely done for benefits and costs distribution. This also raises the concern of social equity.

There are numerous studies on how accrued costs and benefits impact local people's perceptions of protected areas and their support for protected areas. Costs and benefits from protected areas have direct implications to local people's lives and livelihoods. It is not known whether these costs and benefits always equate with perceptions, or how they influence support with regards to protected areas that are situated in different geographic regions and varying demographic characteristics. It is possible that both costs and benefits could influence people's perceptions of protected areas. However, studies that quantify costs and benefits in monetary and other terms (i.e., objective measures) tend not to link these to perceptions (Mackenzie, 2012; Mackenzie & Ahabyona, 2012; Hariohay & Røskaft, 2015; Sharma et al., 2015; Ninan & Kontoleon, 2016; Peh et al., 2016; Merriman et al., 2018). Therefore, it is important to gain a better understanding of the role that costs and benefits play in people's perceptions of protected areas in relation to other factors such as demographic characteristics

influencing their support for protected areas. Positive relationships between protected areas and people could be assessed through people's attitudes towards protected areas (Allendorf, 2020).

This study fills the research gap of whether the costs and benefits from protected areas and their distribution varies in Nepalese protected areas by spatial location of settlements from protected area headquarters (distance), level of tourism activities and demographic features. Most of the studies of nature-based tourism have reported benefits and costs based on spatial scales rather than on demographic characteristics (Thapa et al., 2022). Therefore, it is important also to disaggregate the benefits and costs by demographic characteristics. These are also important variables in determining perceived benefits and costs from nature-based tourism and protected areas (Almeida García et al., 2015; Bragagnolo et al., 2016).

Studies are often carried out in popular protected areas, such as those with high (international) tourist visitation (Thapa et al., 2022). This may not give a clear picture of overall impacts of protected areas to local people. Therefore, it is important to conduct studies in other protected areas that are not so popular from a touristic point of view but with high prospects for future nature-based tourism growth as well as those that are equally important for nature conservation.

Nature-based tourism, if promoted and managed appropriately, would also support protected areas for long-term sustainability through raising conservation awareness and generating money through entry fees which can be invested back into conservation. At the same time, local people can benefit economically from nature-based tourism by offering tourism services to visitors. The integrated conservation and development project (ICDP) approach to protected-area management has been implemented

throughout the developing world, including Nepal, to achieve both biodiversity conservation and local development objectives (Alpert, 1996; Hughes & Flintan, 2001). ICDPs were originally implemented through donor support linking conservation and development at the local level (Alpert, 1996) but this has been institutionalised by the government in Nepal (Budhathoki, 2004) to manage as its own program through appropriate legislative changes which previously adopted strict conservation measures. This has enabled the government to declare landscapes around protected areas as buffer zones and manage them through an ICDP approach. However, there were intermittent projects of conservation and development from donor agencies to support buffer-zone programs around protected areas in Nepal.

The policy changes and declaration of buffer zones around protected areas formally recognised local people as important conservation partners. The recognition of local people in conservation and protected areas may probably have been initiated due to two concerns: removal of people from protected areas led to unanticipated changes in protected areas' ecological systems; and difficulties for these people to access subsistence resources, traditional food and religious or spiritual sites (Zube & Busch, 1990). However, the effectiveness of such an ICDP approach in Nepal is understudied and has raised questions elsewhere (Peters, 1998b). Since (nature-based) tourism is also integral to ICDP and is one of the main sources of income for many protected areas, it is important to understand the relationship between protected areas, local people and nature-based tourism. This research helps build new knowledge in human dimensions of protected area management in Nepal, with broader applicability to other protected areas in the developing world that integrate conservation and development.

1.3 Thesis Aim and Objectives

This thesis aimed to characterise and understand the human dimensions of protected area management by exploring the relationship between local people², nature-based tourism and protected areas. I set four research objectives to achieve this aim to understand the societal implications of protected area management. The research objectives are to:

1. identify current understanding of socioeconomic impacts³ on local people of nature-based tourism in protected areas
2. assess perceived benefits and costs from protected areas to local people
3. assess social equity in protected area management, and
4. evaluate perceptions of local people towards protected areas.

To achieve the aim and objectives, I have conducted a global scale systematic review of nature-based tourism in protected areas to address the first objective (Chapter 2). Further, I have selected two representative protected areas in two different geographical regions of Nepal. The case study from the two Nepalese protected areas addresses the remaining (above-mentioned) objectives (Chapters 3, 4 and 5 respectively).

1.4 Study Areas

The primary data collection was conducted in two Nepalese protected areas, Bardiya National Park (BNP) in the Terai/lowland and Langtang National Park (LNP) in the Himalayas. These protected areas represent the two major habitats and landscape patterns of the protected area system of Nepal. From the community perspectives, they

²In this thesis, local people are defined as people residing in and around the protected areas who interact directly or indirectly in a daily basis with the protected area.

³ Here, I refer to both benefits and costs.

differ from each other in terms of socioeconomic conditions, demographic characteristics and level or type of nature-based tourism activities. Although the governance system of both protected areas is similar, LNP has settlements both inside and outside the national park boundary whereas BNP has settlements only outside the national park boundary.

Nepal has a history of more than five decades of establishing and managing a formal protected area system. The enactment of the National Parks and Wildlife Conservation Act (1973) (hereafter ‘Act’) followed by the establishment of the first protected area, Chitwan National Park, in the same year launched Nepal into the formal system of protected area management. During the early phase of protected area establishment and/or expansion, local people were removed or translocated out of the PAs, such as from Rara National Park (Heinen and Kattel, 1992 cited in Bhattarai et al., 2017), Bardiya National Park (Brown, 1997), Shukla Phanta National Park (McLean & Straede, 2003), Chitwan National Park (McLean & Straede, 2003; Dhakal et al., 2011) and Koshi Tappu Wildlife Reserve (The Rising Nepal, 1978 cited in Bjønness, 1980b). This has brought significant costs to local people and caused resentment. Nepal currently has 20 protected areas, including 12 national parks (and their buffer zones), six conservation areas, one wildlife reserve (and its buffer zone), and one hunting reserve (Figure 1). This altogether covers 23.39% of the total area of the country (DNPWC, 2022). Most of the protected areas in Nepal are either in the northern high mountains (hereafter, Himalayas) or in the southern lowland (hereafter, Terai).

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Figure 1: Location of protected areas in Nepal (study PAs are red underlined).

Source: DNPWC (2023c).

Protected areas are generally governed under four types of governance models: viz. governance by government; shared governance (e.g., co-management between communities and another institution); private governance; and governance by indigenous people and local communities (Borrini-Feyerabend & Hill, 2015). Protected areas in Nepal fall under the jurisdiction of the government Department of National Parks and Wildlife Conservation (DNPWC). However, three protected areas, Annapurna Conservation Area, Gaurishankar Conservation Area and Manaslu Conservation Area, are directly managed by a parastatal organisation, the National Trust for Nature Conservation (NTNC). Nepal originally adopted its protected area management model by adopting a “fortress and fine” (strict conservation) approach (Heinen & Shrestha, 2006). This had excluded local people from protected area

management as well as banned any resource use from protected areas. However, this approach has seen changes over time and various conservation models have been adopted lately through policy changes and amendments to the Act (Heinen & Shrestha, 2006; Bhattarai et al., 2017).

In line with this, particular interest is the establishment of conservation areas (CAs) as a different form of protected area (GoN, 1973, third amendment). This is later followed by the establishment of buffer zones around the national park and reserves through an amendment in the Act (GoN, 1973, fourth amendment). Conservation areas are a new category of protected area with a focus on human use of natural resources and promoting social wellbeing while mobilising local people in conservation. These are managed for integrated conservation and development activities, extractive uses are permitted, management structures are participatory and nature-based tourism is permitted as well as promoted (Heinen & Mehta, 1999; Heinen & Shrestha, 2006). Conservation areas may correspond to the IUCN category V and/or VI equivalent⁴ (Dudley, 2008).

On the other hand, buffer zones in Nepal are designated areas surrounding protected areas⁵ to enable local people to participate in conservation activities and receive benefits from protected areas. The aim is to reduce potential conflict between local people and protected areas. The buffer zone of a protected area is an impact zone (GoN, 1999), where both local people and protected areas are impacted and impact each other. The protected area core zone (e.g., national park and/or reserve itself) is the strict

⁴ IUCN categories of PAs may be subject to independent verification. However, assigning/examining IUCN category of protected area is beyond the scope of this thesis.

⁵To date buffer zones are officially declared only around national parks and wildlife reserves. Buffer zones are surrounding areas of national parks and wildlife reserves (core zone).

conservation zone of the protected area, and it is illegal to enter the core zone without permission. Communities inside the national park boundary, if present, are considered legal settlements and treated as buffer zones, with the same regulations as in a buffer zone. These settlements are like enclaves within the national park boundary.

The National Park and Wildlife Conservation Act allows protected areas to transfer 30-50% of protected area income to invest in conservation and development activities of buffer zones (GoN, 1973, fourth amendment). The funds received from the protected area authority for buffer zone development should be invested as envisioned by the buffer zone management guidelines (GoN, 1999). This should be invested by the buffer zone users' group with 30% of the received funds in conservation, 30% in community development, 20% in income generation and skill development, 10% in conservation/environment education and 10% in general administration (GoN, 1999).

Protected area management in Nepal is characterised by both top-down and participatory governance models. National parks and reserves follow the top-down approach, whereas conservation areas follow a participatory approach by integrating conservation and development through people's participation. However, the implementation of the buffer zone program in national parks and reserves has taken Nepal more towards participatory conservation (Bhattarai et al., 2017). Buffer zones are managed under shared (collaborative) governance, as an initiative to move towards a more decentralised model of protected area governance and management.

Mountain protected areas in the Nepal Himalayas provide flexibility for local people to use protected areas for grazing of domestic livestock, harvesting of grass or fodder, timber use for construction etc. (GoN, 1979; Bjønness, 1980a; Bjønness, 1980b). Use of such resources is highly visible as in the case of Langtang National Park and Sagarmatha National Park (Bjønness, 1980a; Bjønness, 1980b; Chapagain, 2017;

Thapa, 2023). One of the most important resources, firewood that is harvested from the protected area, is used not only for domestic consumption but also for tourism activities and sold to expeditions and mountain trekkers as well (Jefferies, 1982; Watanabe, 1997; Bjønness, 1980b; Chapagain, 2017). However, these activities are restricted in the Terai protected areas, other than opening for the public for a brief period during the winter months for grass harvest. Despite restrictions, research has reported that there is occasional harvesting of such resources illegally as the buffer zone residents have natural resource-based livelihoods (Thapa & Hubacek, 2011; Shahi et al., 2023).

Terai protected areas open their territory during grass-cutting season in the winter months for a few days as a form of compensation for loss of access to these resources (Mishra, 1982; Brown, 1997; Spiteri & Nepal, 2008a). The issuance of grass/reed harvest permits (for a nominal fee/charge) to local people enables them to harvest grasses, but the amount of the grass/reed harvest is significantly lower than the villagers' actual needs (Spiteri & Nepal, 2008a). Further, there is a trend of reduction by the protected area administration in the total number of days open for grass harvest. For instance, in Chitwan National Park, the total number of grass-cutting days was reduced from 15 days (Mishra, 1982) to 10 days in 1999 (Stræde & Helles, 2002). Similarly, in Bardiya National Park, this has been reduced from 15 days to 10 days in fiscal year (FY) 1994/95 (Brown, 1997). This is now even further reduced to three days in FY 2021/22 (FY 2078/79 B.S.) (BNP, 2022) and to two days in FY 2022/23 (FY 2079/80 B.S.) (BNP, 2023) in Bardiya National Park.

Protected areas in Nepal are also growing destinations for nature-based tourism with annual increases in tourist visits (DNPWC, 2009; DNPWC, 2015; DNPWC, 2022). The

number of visits⁶ in Nepalese protected areas was 172,290 in FY 2003/04 (FY 2060/61 B.S.) (DNPWC, 2009). That increased to 706,148 tourist visits in FY 2018/19 (FY 2075/76 B.S.), just prior to COVID-19. In FY 2021/22 (FY 2078/79 B.S.), there were 467,155 tourist visits in Nepalese protected areas (DNPWC, 2022). Similarly, the distribution of nature-based tourism is uneven, and tends to be concentrated in a few protected areas. This means that not all the protected areas in Nepal benefit from nature-based tourism and not all the people living adjacent to protected areas receive benefits from tourism activities. This can lead to particular groups of people getting benefits from nature-based tourism and in the worst-case scenario, benefits being captured by city-based tourism entrepreneurs (Wells & Brandon, 1993). The number of days spent in and around the protected areas also varies. Tourist overnight stays are higher in the Himalayas protected areas than in the Terai protected areas (Watanabe, 1997; Baral & Dhungana, 2014; Pandit et al., 2015; Thapa, 2016a), which may bring more economic benefits in the Himalayas.

This study was carried out in Bardiya National Park (BNP) in the Terai (Figure 2 and Figure 3) and Langtang National Park (LNP) in the Himalayas (Figure 4 and Figure 5). Both are the first-generation of protected areas in Nepal. The core zone as well as buffer zone were established in the early years when the law was enacted. Further, these represent the geographical distribution of protected areas, Himalayas and Terai (including Siwaliks/Churia hills in the northern part of BNP). Again, local people reside inside the LNP boundary, but settlements were removed from the BNP. In terms

⁶ Here, I mentioned number of visits instead of number of visitors because of the likelihood of more than one visit by a single visitor. For example, when one visitor visits two or say, three protected areas then this is a single visitor (person), but this is recorded as two or three visitors based on number of entries/permits they purchase.

of geographical location and tourist numbers, LNP ranks as the third highest visited protected area among the Himalayas protected areas and BNP ranks second as the most visited national park among the Terai protected areas in Nepal (DNPWC, 2009; DNPWC, 2022). Summary characteristics of the study sites of both protected area is provided below (Table 1). Details of each studied protected area and sampling zones as well as data collection methods are provided in each data chapter (Chapters 2-5). The fieldwork for data collection was carried out with the help of field assistants from August to December 2021.

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Figure 2: Location and landcover of Bardiya National Park⁷.

Source: DNPWC (2023a).

⁷ Although the national park name is spelled as Bardia and Lamtang in this and another map (figure) respectively, I have used “Bardiya” and “Langtang” throughout the thesis. Both spellings are used interchangeably in the government and other documents in Nepal.

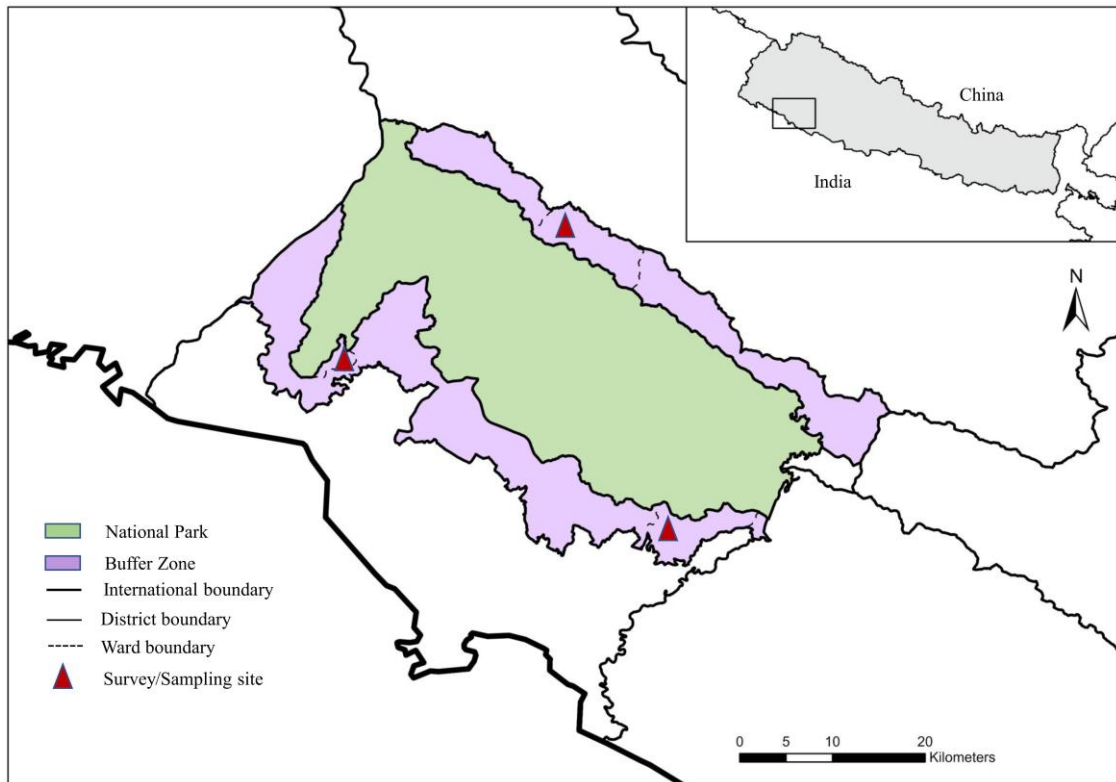


Figure 3: Study/Sampling site in Bardiya National Park.

Data source: Hermes Engineering Solution (2023) and UNEP-WCMC and IUCN (2023b).

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Figure 4: Location and landcover of Langtang National Park.

Source: DNPWC (2023b).

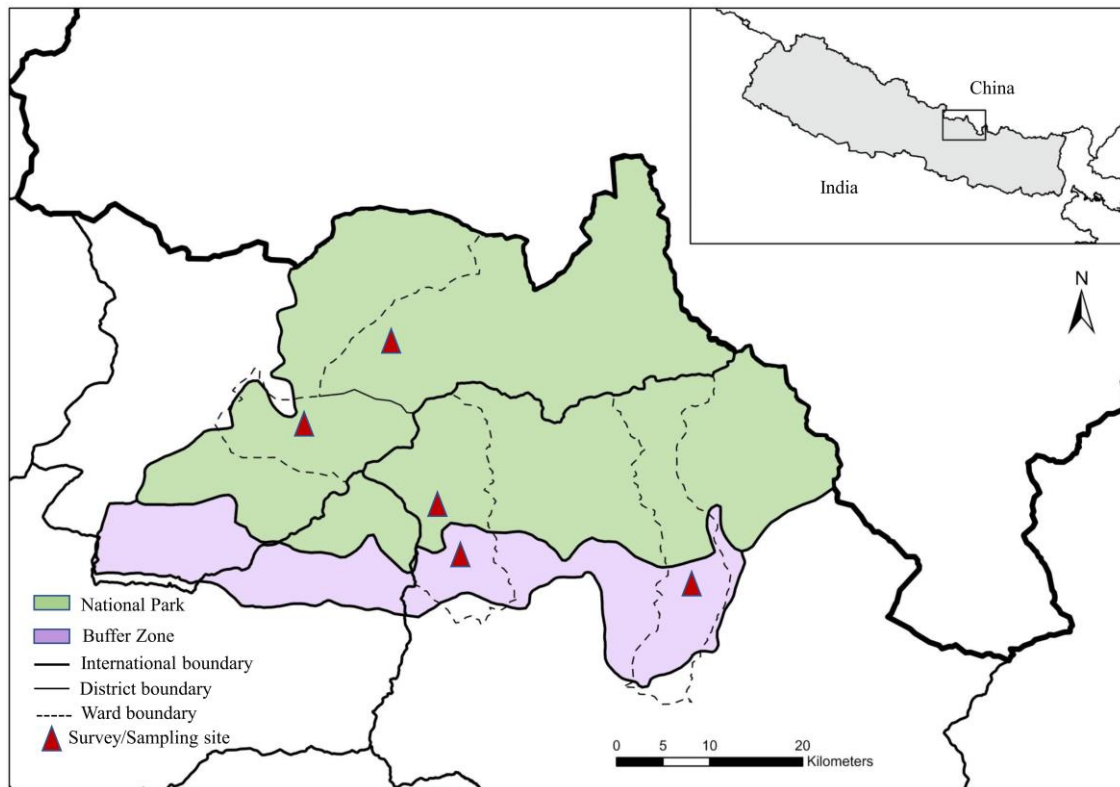


Figure 5: Study/Sampling site in Langtang National Park.

Data source: Hermes Engineering Solution (2023) and UNEP-WCMC and IUCN (2023b).

Table 1: Summary characteristics of BNP and LNP and three sampling zones of each protected area

Features	Zone: near (Cluster 1)	Zone: mid-distance (Cluster 2)	Zone: far (Cluster 3)
Bardiya National Park			
<i>International status</i>	Conservation Assured Tiger Standard (CA/TS) registered (Conservation Assured, 2022), received TX2 award for tiger conservation (Ojha, 2022)		
<i>Geographical situation</i>	Lowland (Terai)	Lowland (Terai)	Churia range / Siwalik
<i>Proximity from park HQ</i>	Near	Mid-distance	Farthest/Distant
<i>Tourism activities</i>	Present	Absent	Absent
<i>Community presence</i>	Outside park boundary	Outside park boundary	Outside park boundary
<i>Administrative district</i>	Bardiya	Banke	Surkhet
<i>Local government (and ward nr)</i>	Thakurbaba municipality (9)	Bansgadhi municipality (2)	Barahatal Rural Municipality (1)
Langtang National Park			
<i>International status</i>	High altitude Ramsar Site registered in 2007		
<i>Geographical situation</i>	High mountain (Himalayas)	High mountain (Himalayas)	High mountain (Himalayas)
<i>Proximity from park HQ</i>	Near	Mid-distance	Farthest/Distant
<i>Tourism activities</i>	Present	Present (low)	Absent
<i>Community presence</i>	Inside park boundary	Inside and outside park boundary	Inside and outside park boundary
<i>Administrative district</i>	Rasuwa	Nuwakot	Sindhupalchowk
<i>Local government (and ward nr)</i>	Gosainkunda Rural Municipality (4 and 5)	Helambu Rural Municipality (1)	Jugal Rural Municipality (2)

1.5 Thesis Structure (Thesis Outline)

I achieved the four objectives of my thesis through four research data-based chapters. These chapters are presented in the thesis as a compilation of the series of manuscripts that were prepared for publication in peer-reviewed journals. This thesis consists of six chapters, including the current Chapter 1 (general introduction). This is followed by four data chapters (Chapters 2-5) and general discussion (Chapter 6) (Figure 6).

Chapters 2-5 address my key objectives. Chapter 2 relates to my first objective and helps to understand the socio-economic impacts of nature-based tourism in protected areas at the global scale. This chapter also guides the case study in the two Nepalese protected areas to explore the benefits and costs from protected areas and nature-based tourism (Chapter 3), which addresses the second objective. Chapter 4 addresses the third objective which is built upon Chapter 3 to assess whether these benefits and costs from protected areas and nature-based tourism are distributed in an equitable way. Chapter 5 addresses the fourth objective. The data chapters (Chapters 2-5) have either been published, submitted or are under preparation for publications in peer-reviewed journals. Chapter 2 has been published in *International Journal of Sustainable Development & World Ecology*. Chapter 3 has been published in *Journal of Environmental Management*. An article from Chapter 4 is in preparation and Chapter 5 is currently under revision based on reviewers' comments in *Conservation Science and Practice*.

Chapter 1 provides background on protected areas and nature-based tourism. Moreover, this chapter provides a general overview of benefits and costs of protected areas and nature-based tourism, attitudes and perceptions towards protected areas and provides the overall framework for this study. This chapter also provides the thesis aim and

objectives, and a description of study areas with an overview of the protected area management system in Nepal. This chapter then ends with the thesis structure.

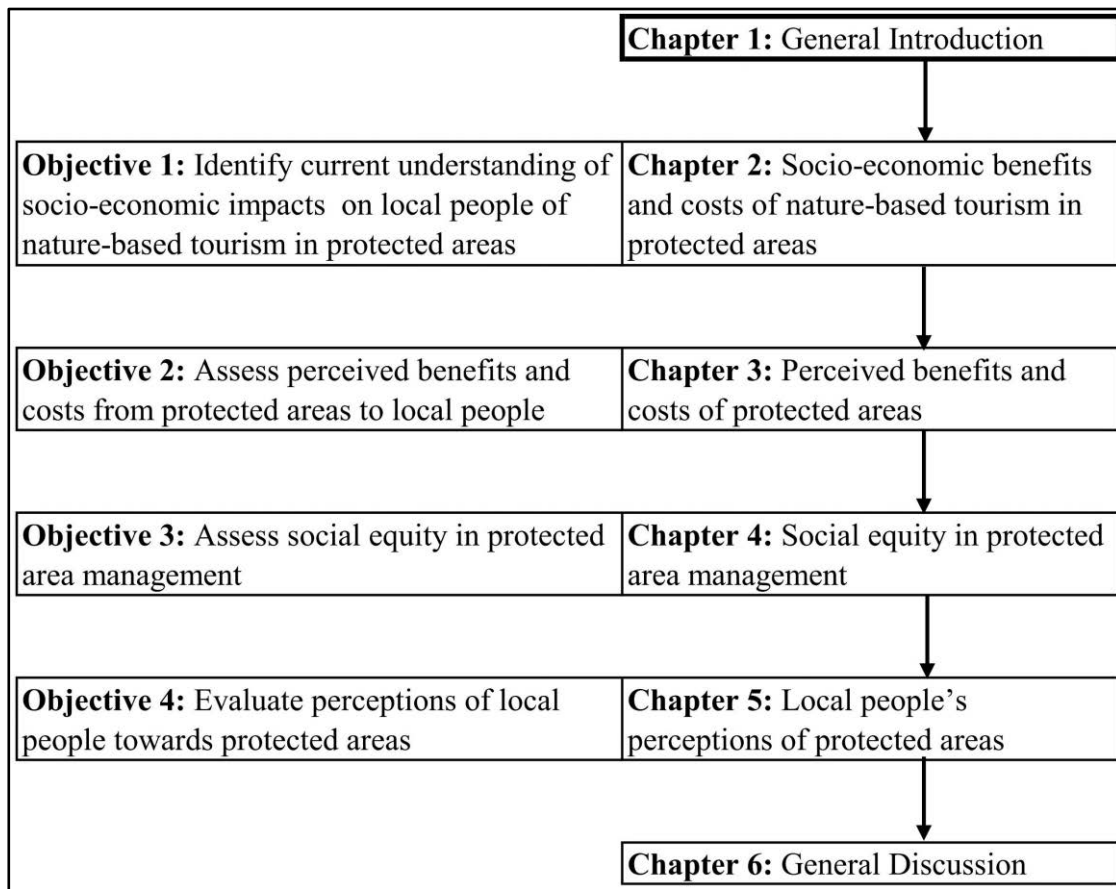


Figure 6: Thesis structure showing the research objectives and the corresponding data chapters in the thesis.

Chapter 2 addresses the first objective. This chapter is based on a systematic literature review which explores the socio-economic benefits and costs of nature-based tourism in protected areas to local people. I examine the socio-economic impacts of nature-based tourism in protected areas and categorise the impacts into four broad categories. I also characterise these impacts if they are experienced at the household/individual or collective levels. Chapter 2 provides the latest trends in nature-based tourism research in protected areas and documents its impacts on local people. With the growing tendency to advocate for nature-based tourism to benefit protected areas and local

people, this chapter contributes to the knowledge of socio-economic impacts of nature-based tourism in protected areas on local people.

Chapter 3 addresses the second research objective. In this chapter I ask, “what are the locally perceived benefits and costs from protected areas and nature-based tourism managed through an Integrated Conservation and Development Project (ICDP) approach?” I use a household level survey to address this question. The results of this chapter contribute to the understanding of the impacts of protected areas managed through the ICDP approach, given that conservation and development activities may vary across the protected area region.

Chapter 4 addresses the third objective. In this chapter, I explore the status of equitable management of protected areas, specifically procedural and distributive equity using data from the household survey. This chapter contributes to understanding that the distribution of benefits and costs does not necessarily bring equity in protected area management. Rather, several demographic and spatial factors, including procedural equity, determine distributional equity of benefits and costs from protected areas.

Chapter 5 addresses the fourth objective. In this chapter, I ask, “what is the level of local support for protected areas?” Levels of support and perceptions towards protected areas were measured through five-point ordinal scale statements. Previous chapters, especially Chapters 3 and 4, have explored the benefits and costs of protected areas and their distributional equity. These perceptions may influence the local support for protected areas. The results from this chapter contribute to the current understanding of the status of overall support for protected areas and highlight the key determinants of local support.

Chapter 6 concludes the thesis by highlighting how my thesis data chapters (Chapters 2-5) address the key aims and objectives of my research. This chapter also provides insights about contribution to the theory and policy/practice of protected area management. This chapter highlights some shortcomings of this study and avenues for future research that could enhance our understanding further.

Chapter 2

**Socioeconomic Benefits and Costs of
Nature-Based Tourism in Protected Areas**

Chapter 2: Socio-Economic Benefits and Costs of Nature-Based Tourism in Protected Areas

Chapter 2 is based on a systematic literature review to advance the current understanding of nature-based tourism. I focused on the reported impacts of nature-based tourism in protected areas on local people. I searched the literature database, collected and analysed the data, and wrote the chapter and manuscript. Amy Diedrich and Zsuzsa Banhalmi-Zakar assisted with the literature search strategy, especially for the selection of keywords. Amy Diedrich, Zsuzsa Banhalmi-Zakar and David King assisted with editing and reviewing of the original draft and structuring of the manuscript. An anonymous reviewer of the journal also helped to improve the manuscript and this chapter following the peer review process. Chapter 2 is published in *International Journal of Sustainable Development & World Ecology*⁸. The text in this chapter has been adapted to the formatting requirements of this thesis.

⁸ **Thapa, K.**, King, D., Banhalmi-Zakar, Z., Diedrich, A (2022). Nature-based tourism in protected areas: A systematic review of socio-economic benefits and costs to local people. *International Journal of Sustainable Development & World Ecology*, 29 (7): 625-640. <https://doi.org/10.1080/13504509.2022.2073616>

2. Socio-Economic Benefits and Costs of Nature-Based Tourism in Protected Areas

2.1 Abstract

Nature-based tourism, which includes visits to protected areas, is a growing trend. This may include consumptive and non-consumptive activities, with nature-based tourists being motivated to experience local culture and nature. Thus, tourism can contribute economically and socially to communities associated with protected areas, with the outcomes being both benefits and costs to local people. I carried out a systematic literature review to document and characterise the outcomes of nature-based tourism for people living in and around protected areas (terrestrial and inland waters). Here, I evaluated 89 papers published from 1996 to 2020, most of which were conducted in low and middle-income countries. The main benefits were employment, business opportunities and income, and the main costs were acculturation and abandonment of traditional lifestyle/practices, price inflation and conflict/crime. While most benefits were economic, most costs were socio-cultural. I found that benefits were most frequently experienced individually and costs experienced mostly at the collective or community levels. Inconsistencies in reporting of impacts suggests that future research should take a more consistent and systematic approach to evaluating benefits and costs of nature-based tourism from both the demographic and geographic perspectives, be more inclusive, and pay equal attention to objective and subjective measures of benefits and costs.

2.2 Introduction

Nature-based tourism, which also includes visits to protected areas, is a growing trend (Balmford et al., 2009; Karanth & DeFries, 2011; McGinlay et al., 2020), however the COVID-19 pandemic has had a mixed effect on the number of visits in protected areas across the world (Spenceley et al., 2021). Prior to COVID-19, visits to protected areas amounted to at least eight billion visits per year (Balmford et al., 2015); where the majority occurred on the European and North American continents (Balmford et al., 2015). Domestic visitation of protected areas is higher in developing countries (Karanth & DeFries, 2011). Increasing tourist visitations leads to increased economic activities and revenue generation (Sinha et al., 2012; Balmford et al., 2015), which provides the economic justification for the establishment of protected areas for biodiversity conservation and natural area protection (de Oliveira, 2005 cited in Mandić, 2019; World Bank, 2020).

In this thesis, I define nature-based tourism as any kind of recreational activity that takes place in natural areas (here, I focus solely on terrestrial protected areas). I view nature-based tourism as an umbrella term which may represent adventure tourism, ecotourism, wildlife tourism (including bird watching), sustainable tourism, protected area tourism, etc. (for detailed definition of ecotourism and nature-based tourism, see Valentine, 1992; Fennell, 2001; Page & Dowling, 2002; Donohoe & Needham, 2006; Bjork, 2007; Buckley & Coghlan, 2012; Fennell, 2012; McKercher, 2015). The concepts of ecotourism and nature-based tourism are related as both occur in natural areas; with ecotourism being a more prescriptive and often debated term (Page & Dowling, 2002). The international ecotourism society (TIES) defines ecotourism as:

responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education (TIES, 2015 cited in TIES, 2023).

However, there are about 85 definitions of ecotourism that generally emphasise a combination of factors including conservation, education, ethics, impacts, local benefits and sustainability, showing the changing concept of ecotourism over time (Fennell, 2001). There is no universal definition of nature-based tourism (Fredman & Tyrvaïnen, 2010), although Fredman and Margaryan (2021, p. 15) define it as:

activities by humans occurring when visiting natural areas outside the person's ordinary neighbourhood.

Thus, ecotourism definitions tend to focus more on benefits to local people and conservation with an education component, whereas nature-based tourism is based on nature irrespective of its contribution to conservation and/or benefits to local people. I define local people as people with local origin as well as migrants who now reside inside and/or around the protected areas and interacting with it.

Nature-based tourism can bring both positive and negative impacts (which in this chapter I refer to as benefits and costs respectively) to local communities (Jefferies, 1982; Valentine, 1992; Page & Dowling, 2002; Tisdell, 2003; Mbaiwa, 2005; Bjønness, 2008b; Badola et al., 2018). Specifically, where it can accrue benefits to local people in the form of employment and entrepreneurship, among others, it can also bring additional costs such as price inflation, environmental deterioration, and even lead to the displacement of local populations (Chambers, 2000).

One critical element of understanding the nature and extent of impacts is identifying who benefits from tourism activities, which includes how the benefits are shared among

local people (Tisdell, 2003; Xu et al., 2009; Afenyo & Amuquandoh, 2014). This raises questions around equity in the distribution of benefits (Chambers, 2000; He et al., 2008; Xu et al., 2009; Afenyo & Amuquandoh, 2014; Munanura et al., 2016; Wang et al., 2019) as well as barriers to the participation of local people in nature-based tourism businesses (Liu et al., 2012). In addition, nature-based tourism can give rise to conflict in cases where traditional uses of the natural environment become illegal (Dixon & Sherman, 1991; Archabald & Naughton-Treves, 2001; Ferraro, 2002; Shrestha & Alavalapati, 2006; Spiteri & Nepal, 2008b; Banerjee, 2012; Munanura et al., 2016; Oldekop et al., 2016). As such, it is important that an appropriate level of economic and other benefits are received by locals from tourism activities (Tisdell, 2003), which help to compensate for any costs incurred from the presence of nature-based tourism and the establishment of protected areas.

Understanding the nature and extent of costs and benefits is also important because local support for protected areas is more likely to be achieved if local people get economic benefits from nature-based tourism (Archabald & Naughton-Treves, 2001; Walpole & Goodwin, 2001; Udaya Sekhar, 2003; Mbaiwa, 2005; Xu et al., 2009; Spenceley et al., 2019; Ziegler et al., 2020; Holland et al., 2021). This is reflected in the fact that common justifications for promoting nature-based tourism in less developed countries include both biodiversity conservation and socioeconomic development opportunities (Boo, 1991; Puri et al., 2018). Most of the published literature reviewed by Wardle et al. (2021) found that nature-based tourism (specifically ecotourism) activities have focussed on economic development and alternative income to local people to support conservation. However, it is not guaranteed that local people will experience benefits from these activities (He et al., 2008; Karanth & DeFries, 2011; Sabuhoro et al., 2021) due to competition from other, more powerful stakeholders

(Adams & Infield, 2003). For example, in low and middle-income countries, foreign companies often dominate the tourism industry, and local people are excluded from decision making and lose access to natural resources (Mbaiwa, 2005).

Some scholars have evaluated the distribution of benefits and costs of nature-based tourism on the basis of demographic characteristics (Afenyo & Amuquandoh, 2014; Black & Cobbinah, 2017; Badola et al., 2018), but there has been less focus on whether these occur at individual (e.g., personal or household) or collective (community) levels. This is important because community-based ecotourism is commonly viewed as a way to achieve combined environmental and socioeconomic benefits (Weaver & Lawton, 2007), and the extent and distribution of these benefits (and costs) will vary depending on their characteristics. Benefits such as local infrastructure development, can be experienced collectively by the community, where employment and income from tourism related business provide benefits to individuals and households only. Likewise, tourism-related costs, such as inflation and acculturation are experienced collectively, yet may be more acute for those not benefiting directly from tourism activities.

The positive environmental impacts of nature-based tourism for protected areas have been well documented, including benefits to fauna and the environment (Steven et al., 2011; Wolf et al., 2019), environmental knowledge, attitudes and behaviour (Ardoin et al., 2015), tourism revenue sharing (Spenceley et al., 2019), and conservation (Krüger, 2005; Wardle et al., 2021). However, to the best of my knowledge, there is no current global review on the implications of nature-based tourism in protected areas to socioeconomic benefits and costs to local people. The literature calls for more research on the impacts of protected areas on local livelihoods from the community perspective (Dudley et al., 2018, p 41), including the socioeconomics of nature-based tourism (Fredman & Margaryan, 2021). However, a focus on monetary and economic measures

of benefits and costs has dominated the field (Chambers, 2000; World Bank, 2021a), demanding a more holistic approach that evaluates sociocultural benefits and costs of tourism along with economic benefits and costs.

The aim of this chapter is to investigate the current understanding of the benefits and costs of nature-based tourism in terrestrial protected areas to local communities through a systematic literature review. This chapter, focused on two key questions related to the socioeconomic impacts of nature-based tourism globally: (1) What are the temporal and spatial trends of nature-based tourism research in protected areas at the global scale? and (2) What are the major types and characteristics of socio-economic benefits and costs of nature-based tourism to local people living in and around protected areas? In the following subsections, I have presented the study methodology which shows how I searched literature from the databases, article selection and data extraction criteria, data coding and analysis. I then present the result of the review and discuss important findings. This chapter concludes the review with recommendations for improving the nature-based tourism research in protected areas.

2.3 Materials and Methods

A systematic review of the scientific literature was carried out to answer key questions regarding the benefits and costs of nature-based tourism to local people in protected areas (Pullin & Stewart, 2006; Steven et al., 2011; Wardle et al., 2021). I considered protected areas that are situated only in terrestrial and inland water locations such as river and lakes (for example Ramsar Sites) in this review.

2.3.1 Literature Search

Relevant scientific articles were identified by combining different search terms covering “local people”, “nature-based tourism”, “protected areas” and “socioeconomic

outcomes” using Boolean operator (Table 2) in Scopus and Web of Science databases (Science Citation Index Expanded (SCI-Expanded), Social Science Citation Index (SSCI), and Arts and Humanities Citation Index (A&HCI)).

Table 2: Boolean operation and search strings for literature identification (19 October 2020).

Topic	Search strings
<i>Local people (S1)</i>	communit* OR local* OR societ* OR village* OR human
<i>Nature-based tourism (S2)</i>	“adventure tourism” OR birding OR “bird watching tourism” OR ecotourism OR eco-tourism OR “natur* tourism” OR “natur* area tourism” OR “nature-based tourism” OR recreation OR “rural tourism” OR “sustainable tourism” OR tourism OR trekking OR hiking OR “park tourism” OR “protected area tourism” OR safari OR “wildlife safari” OR “safari tourism”
<i>Protected areas (S3)</i>	“protected area” OR “protected landscape” OR “conservation area” OR “national park” OR reserve OR “world heritage site” OR “biosphere reserve” OR “ramsar site”
<i>Socio-economic outcomes (S4)</i>	“socio* cost*” OR “socio* benefit*” OR “socio* impact*” OR “socio* development” OR “social impact*” OR “economic impact*” OR “cultur* impact*” OR “socio* outcome*” OR “socio* change*” OR livelihood* OR culture* OR socio* OR impact* OR cost* OR benefit*

The search combination (S1 and S2 and S3 and S4, Table 2) gave 2302 results in Scopus (title, abstract and keywords) and 4763 results in Web of Science (topic). The searches

were limited to journal articles that were published in the English language from 1 January 1978 to 29 October 2020 (search date). The year 1978 was used as a benchmark for the search because it marks the year that the term ‘ecotourism’ was popularised in the Parks Canada publication, ‘Ecotour of the Rideau Canal’ guidebook (McKercher, 2015, p. 15). The term was later further promoted by Ceballos-Lascurain in the 1980s (Donohoe & Needham, 2006), and gave rise to increased emphasis on nature-based tourism activities overall.

2.3.2 Article Selection and Data Extraction

Once the literature search was completed, it was imported to EndNote library and duplications were removed (n= 1142). Next, the title and abstract of the articles (n= 5923) were screened for relevancy using the inclusion and exclusion criteria (Appendix 1, Table A1.1). The first stage of data collection involved the exclusion of articles that did not contain one or multiple terrestrial protected areas as a research or study site, that focused only on ecological and/or environmental dimensions of nature-based tourism research, and that were not based on primary data or empirical findings. The final number of articles retained after screening and application of exclusion/inclusion criteria was 89 (Figure 7).

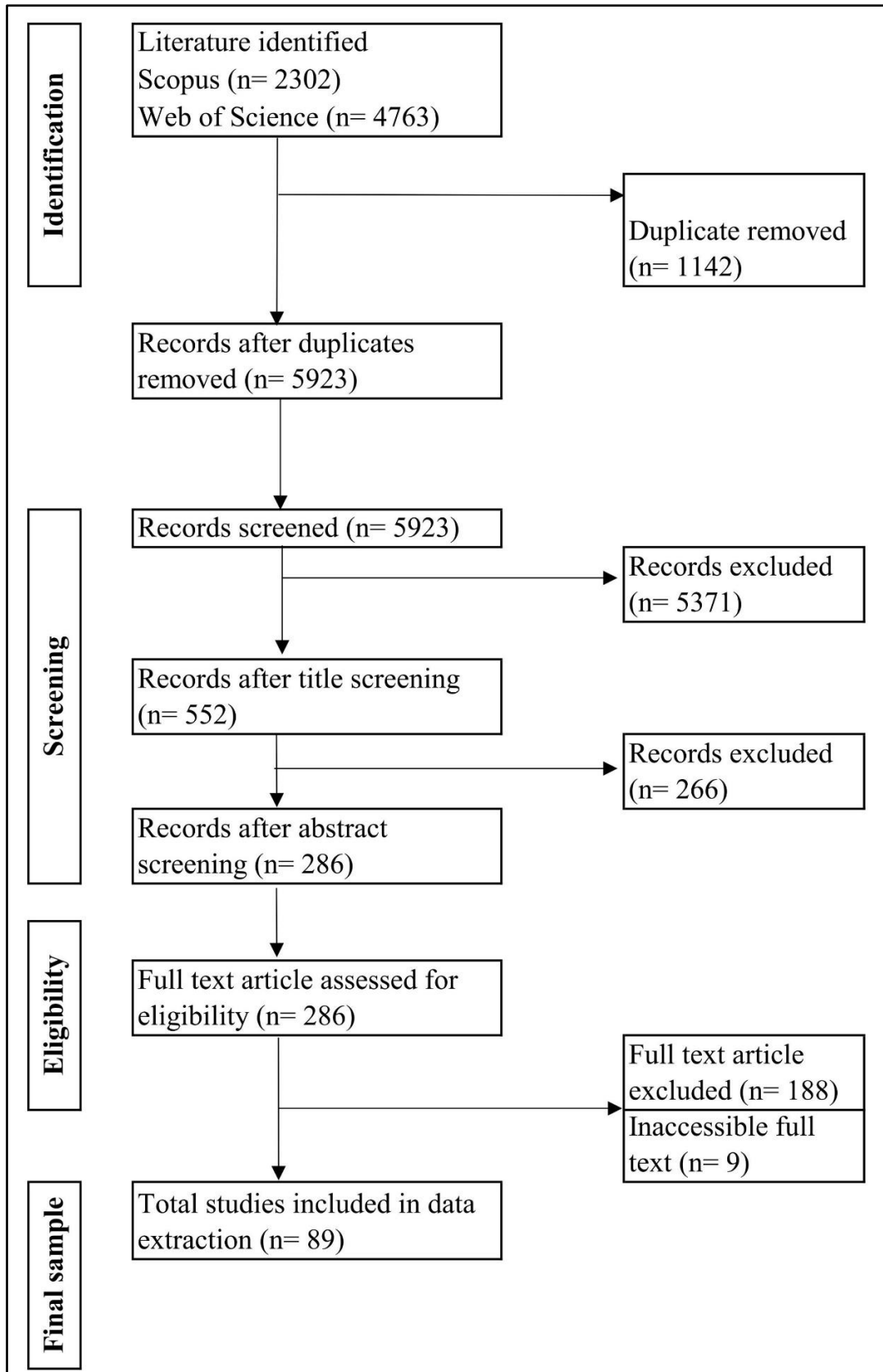


Figure 7: Preferred reporting items for systematic reviews and meta-analyses (PRISMA) flowchart for article selection (Moher et al., 2009).

2.3.3 Data Coding and Analysis

For each article (n = 89) (Appendix 1, Table A1.2), the following information (where available) was recorded in an Excel database: year of publication, journal name and subject classification⁹, first author's affiliation country, geographical location of the study (country, biomes/ecosystems, protected areas). Further, sample size (e.g., number of respondents surveyed), number of communities or geographical scope, data collection methods (e.g., survey or interview or focus group), and research approach (e.g., qualitative or quantitative or mixed methods) were recorded.

Qualitative descriptions of positive and negative impacts of nature-based tourism to local people were allocated to discrete categories of benefits and costs respectively. For the purpose of this analysis, people living locally inside and around the protected areas were categorized as “local” and people or stakeholders other than local residents were categorised as “outsiders”.

Nature-based tourism benefits and costs were coded and grouped into similar types (e.g., cultural preservation and heritage conservation, economic activity and foreign exchange, crime and conflict, drug abuse and alcoholism, loss of freedom and local disturbance), and placed into four broad categories: development, economic, sociocultural and “other” (other category e.g.: positive change, indirect benefit and other benefit).

The benefits and costs were further classified as either being experienced at the individual level or collective level. If the benefits/costs were experienced at the personal

⁹ Journal discipline (subject classification) was identified through the Ulrichs Web Global Serials Directory (<http://ulrichsweb.serialssolutions.com/>) and most of the journals were assigned to more than one discipline.

and/or household level, then they were classified as individual benefits/costs and if they were experienced at the community or village or settlement level then they were classified as collective benefits/costs. For example, opportunity for employment was classified as individual benefit and acculturation was classified as collective cost. Benefits/costs that could be measured empirically were classified as objective and those that were perceived were classified as subjective. For example, rise in income was classified as an objective benefit and strengthening traditional culture was classified as a subjective benefit.

The data were explored descriptively to determine the temporal and spatial trends in nature-based tourism research and frequency of types and categories of benefits and costs of nature-based tourism to people living in and around protected areas.

2.4 Results

2.4.1 Publication Patterns

There were 89 articles that addressed the local socioeconomic benefits and costs of nature-based tourism in protected areas, and an upward trend in publications over time (Figure 8). The first article produced by the review was published in 1996 with the highest number of publications in 2020 (n = 10, before 29 October). Most of the articles (90%) were published after 2006 and almost half (49%) of them were published after 2013. The publications appeared in 48 different journals with the highest number of publications in the *Journal of Sustainable Tourism* (n= 9) followed by the *Journal of Ecotourism and Environmental Management* journal (n= 5 each), and *Tourism Management* (n= 4). The journals covered 11 disciplines (though some journals covered more than one discipline) with the highest number in travel, tourism, leisure and recreation (n= 41), followed by environmental studies (n= 32), conservation (n= 12)

and social sciences, sociology and social work (n= 10). Disciplines such as biology (n= 9), business and economics (n= 9), earth science, energy and water resources (n= 9), and geography and urban planning (n= 9) covered 36 articles.

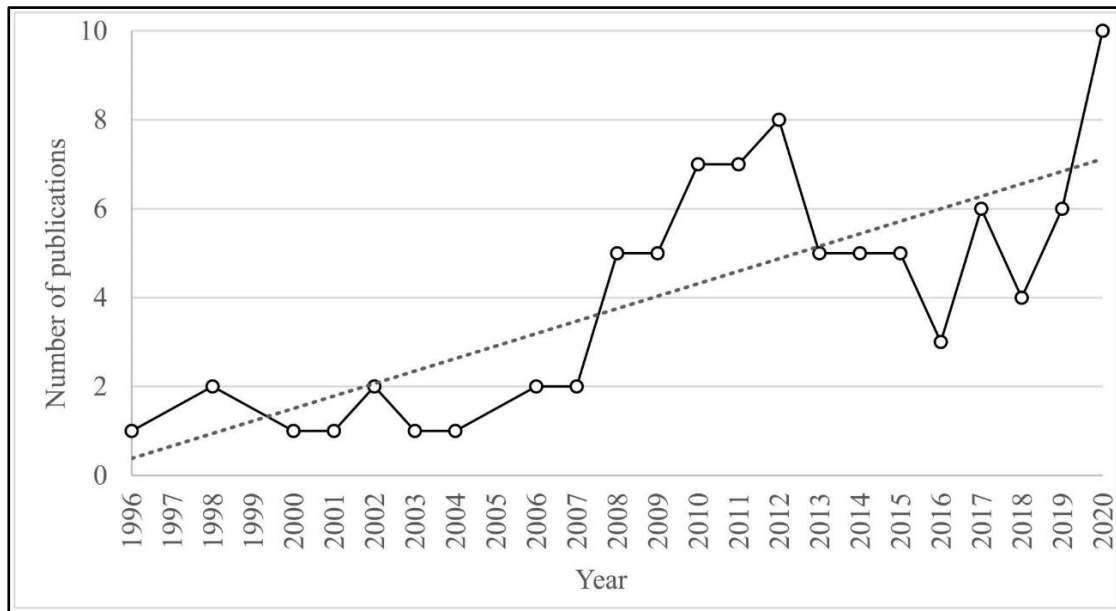


Figure 8: Number of articles published by year from 1996 to 2020 (n = 89).

2.4.2 Geographical Distribution and Study Sites

Studies were conducted in 33 countries, with the majority (95%) in the World Bank category of low and middle-income countries (World Bank, 2021b) and 5% in high-income countries (Figure 9). The studies covered 99 protected areas; 71 papers focused on a single protected area, 6 on two protected areas, and 12 papers dealt with three or more protected areas. African and Asian protected areas were among those that were studied most frequently; Annapurna Conservation Area (Nepal) and Kakum Conservation Area/ National Park (Ghana) were studied six times whereas Chitwan National Park (Nepal), Kruger National Park (South Africa), Liwonde National Park (Malawi) and Okavango Delta (Botswana) were studied five times.

The highest number of studies were conducted in India and Nepal (n= 11 each), followed by Botswana (n= 9), China, Ghana, and South Africa (n= 7 each) and Uganda (n= 6). Six biomes were represented in the studies, with the biggest percentage in forest and woodland (37%) followed by mountains (26%), grassland and savannah (24%), wetland (9%), island (3%) and desert (2%).

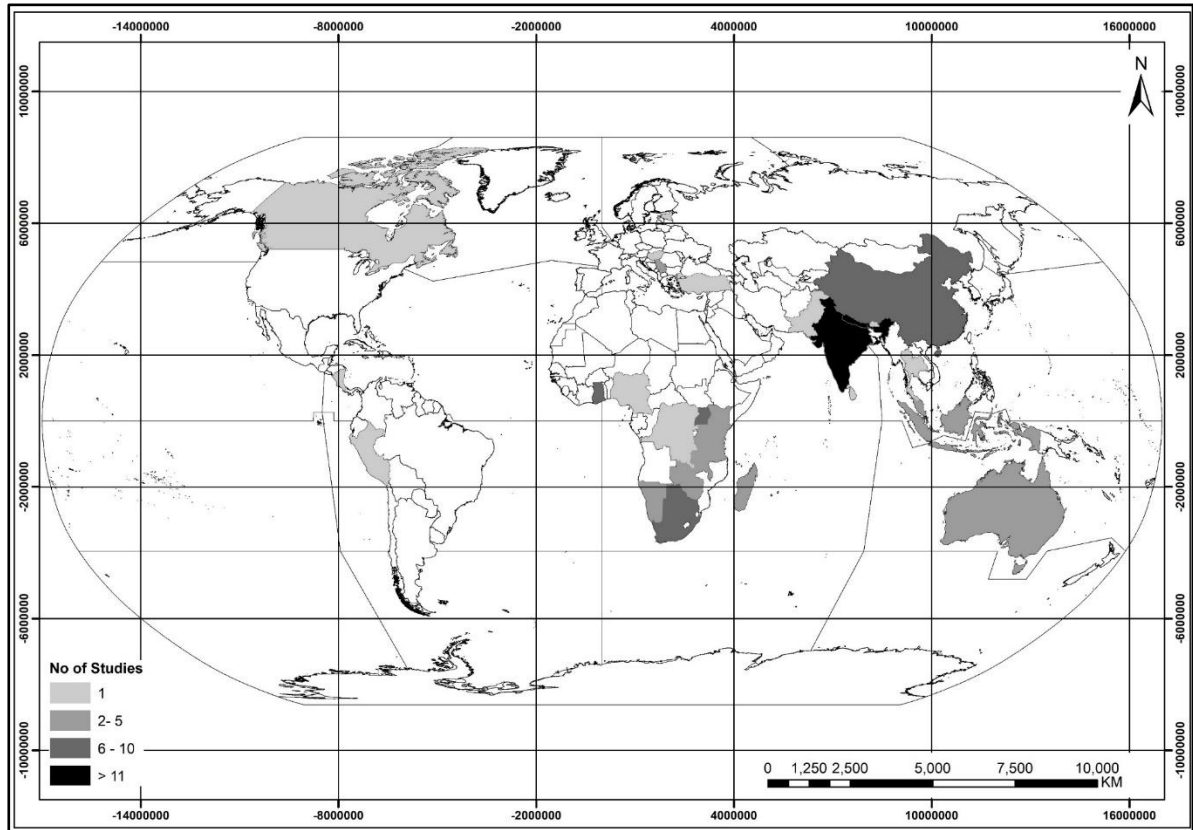


Figure 9: Focus of nature-based tourism studies by country in the reviewed paper.

The lead authors came from 28 countries with the highest number of authors from the USA (19%, n= 17) followed by South Africa (10%, n= 9), Canada, Ghana, India and the UK (7% each, n= 6), Botswana and China (6% each, n= 5), Australia (4%, n= 4) and Tanzania (3%, n= 3). These represented high-income countries (46%), upper middle-income countries (29%), lower middle-income countries (24%) and low-income countries (1%) (Figure 10).

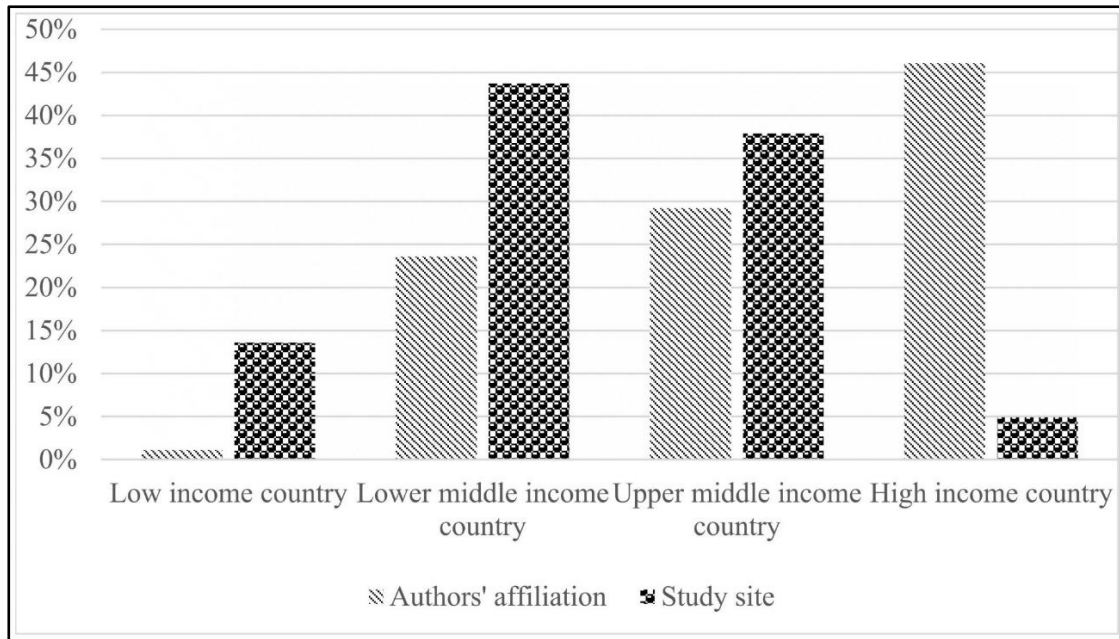


Figure 10: Comparison between the number of country of studies and country of lead author’s affiliation by economy status.

2.4.3 Research Approach and Sample Size of the Studies

The sample size in the studies ranged from 11-1785 respondents (including survey respondents, participants in focus group, meetings etc.). There was no information about the sample size in five papers. The number of study communities ranged from 1-57. Seventy-five percent of the studies were conducted in five or fewer communities. There was no information about the number of communities studied in eight papers. Several methods were used in the studies, with multi-method approaches being the most frequent and surveys as the main method of data collection (Table 3). Forty-seven per cent of the papers focused only on benefits and 53% on both benefits and costs. None focused solely on costs to local communities.

Table 3: Research method and sample size (n= 89).

Study sample				Research method			
<i>Respondents</i>	<i>N*</i>	<i>Communities</i>	<i>N</i>	<i>Data collection method **</i>	<i>N</i>	<i>Research approach</i>	<i>N</i>
1-30	10	1-5	61	Document review	4	Mixed methods	28
31-50	3	6-10	5	Focus group	19	Qualitative	28
51-150	26	11-20	7	Interview	49	Quantitative	33
151-250	15	>20	8	Observation	26		
251-500	18	Not given	8	Other***	7		
>500	12			Survey	54		
Not given	5			Local or community meeting and informal discussion	7		

* Here, N in every column refers to the number of papers reviewed. For example, in the study sample category there were 10 papers that had sample respondents in the range of 1-30. Similarly, there were 61 papers that had 1-5 communities surveyed in the sample. Likewise in the research method category, there were four papers that applied document review methods and 28 papers applied mixed method approach.

** Some papers employed more than one data collection method; therefore, the total adds more than 89.

*** Other methods included such as appreciative inquiry, remote sensing imagery, vegetation survey, participatory rural appraisal etc.

2.4.4 Types of Costs and Benefits of Nature-Based Tourism

This review found 21 unique categories of costs in the reviewed papers, which were coded from 101 reported items. The most frequently reported cost was acculturation

and abandonment of traditional lifestyle or practices (n= 21), followed by price inflation (n= 17), and conflict and crime (n= 13) (Figure 11).

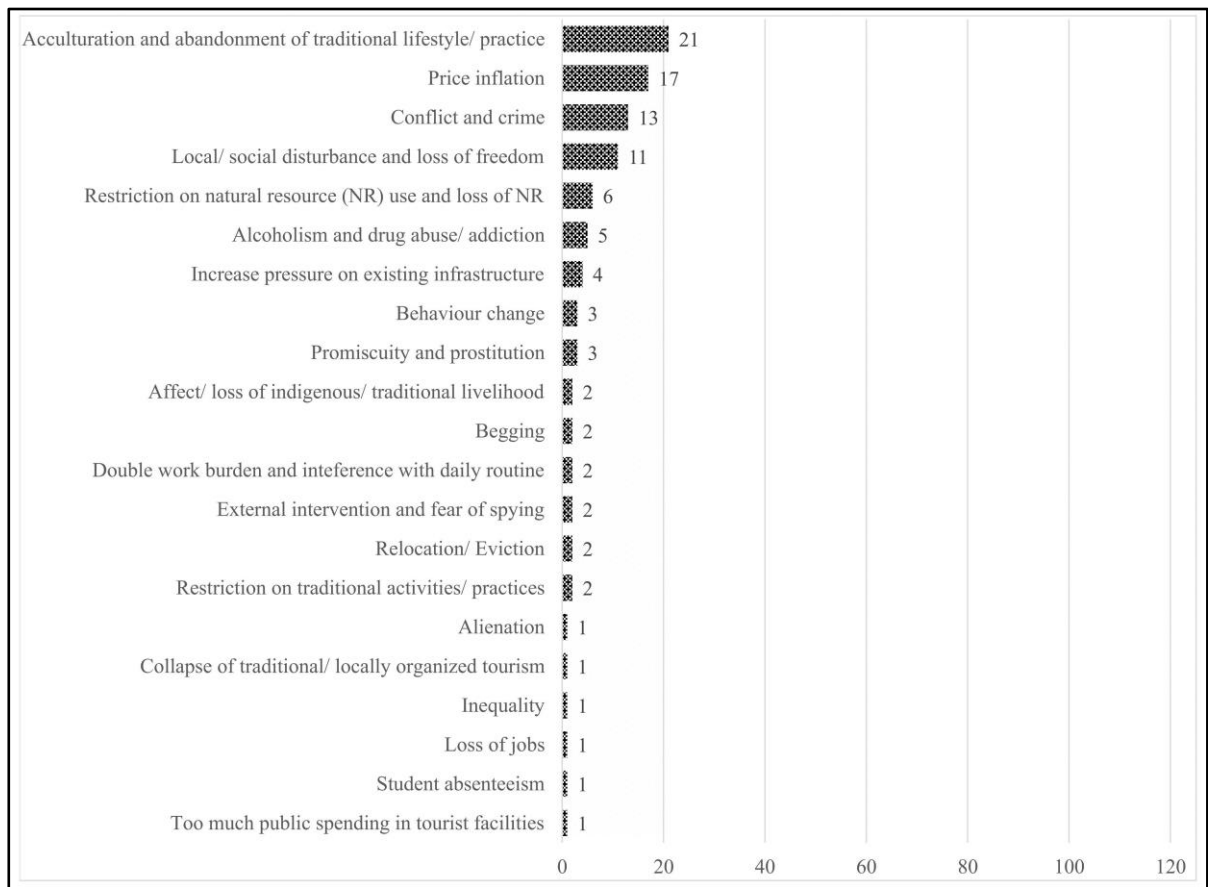


Figure 11: Types and frequency of nature-based tourism costs to local people as mentioned in the reviewed paper (n= 89).

Similarly, we found 32 different types of benefits, which were coded from 417 reported items. The most frequently reported benefits from nature-based tourism were employment (n= 104), followed by business opportunity (n= 57), and nature-based tourism as an income source (n= 42) (Figure 12).

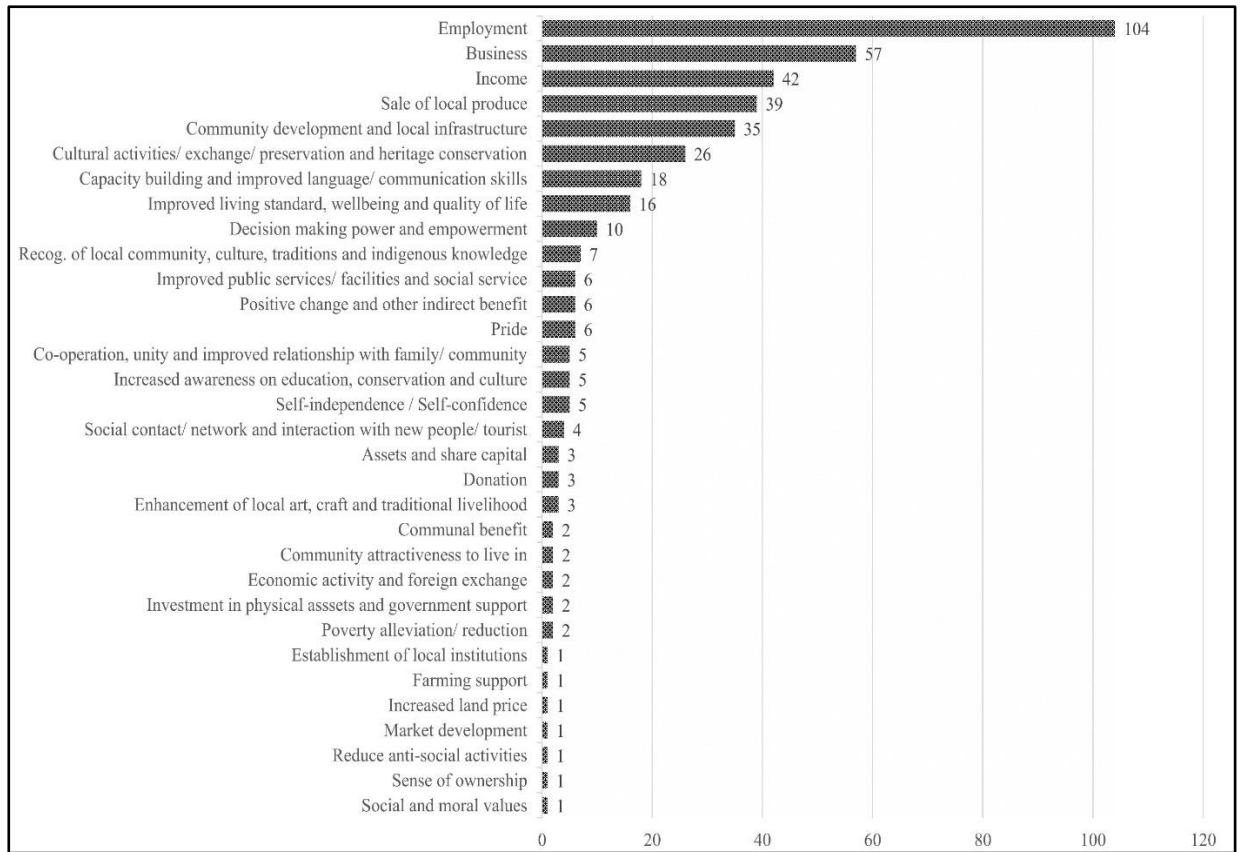


Figure 12: Types and frequency of nature-based tourism benefits to local people as mentioned in the reviewed paper (n= 89).

In order to get a clear picture of major trends, I classified the unique categories of benefits and costs cited above into four broad categories: development, economic, socio-cultural, and other. I found more economic benefits (69%) than sociocultural benefits (20%), developmental benefits (10%) and other benefits (1%). However, on the costs side, there were more sociocultural costs (68%) than economic costs (28%) and developmental costs (4%) (Table 4).

Table 4: Category of benefit and cost resulting from nature-based tourism in protected areas.

Category	Example of impacts	Benefit		Cost	
		N	%	N	%
Economic	Business, employment, income, price inflation, loss of natural resources	286	69	28	28
Sociocultural	Increased awareness, cultural preservation, empowerment, social networks, acculturation, conflict, crime, prostitution	82	20	69	68
Development	Community development and improved local infrastructure, improved public service, increasing pressure on infrastructure	43	10	4	4
Other	Indirect benefit, positive change	6	1	0	0
Total		417	100	101	100

2.4.5 Key Characteristics of Costs and Benefits

I looked at two key characteristics of costs and benefits. First was whether they were reported as being subjective or objective and second was whether they were reported as being experienced at the individual or collective level (Figure 13). There were more objective costs reported (n= 65) than subjective costs (n= 36) (Figure 13a). Fewer costs were experienced at the individual level (n= 31) than at the collective level (n= 70) (Figure 13b). The reported benefits were more objective in nature (n= 370) than subjective (n= 47) (Figure 13c), and the reported benefits were more frequently experienced at the individual level (n= 276) than the collective level (n= 141) (Figure 13d).

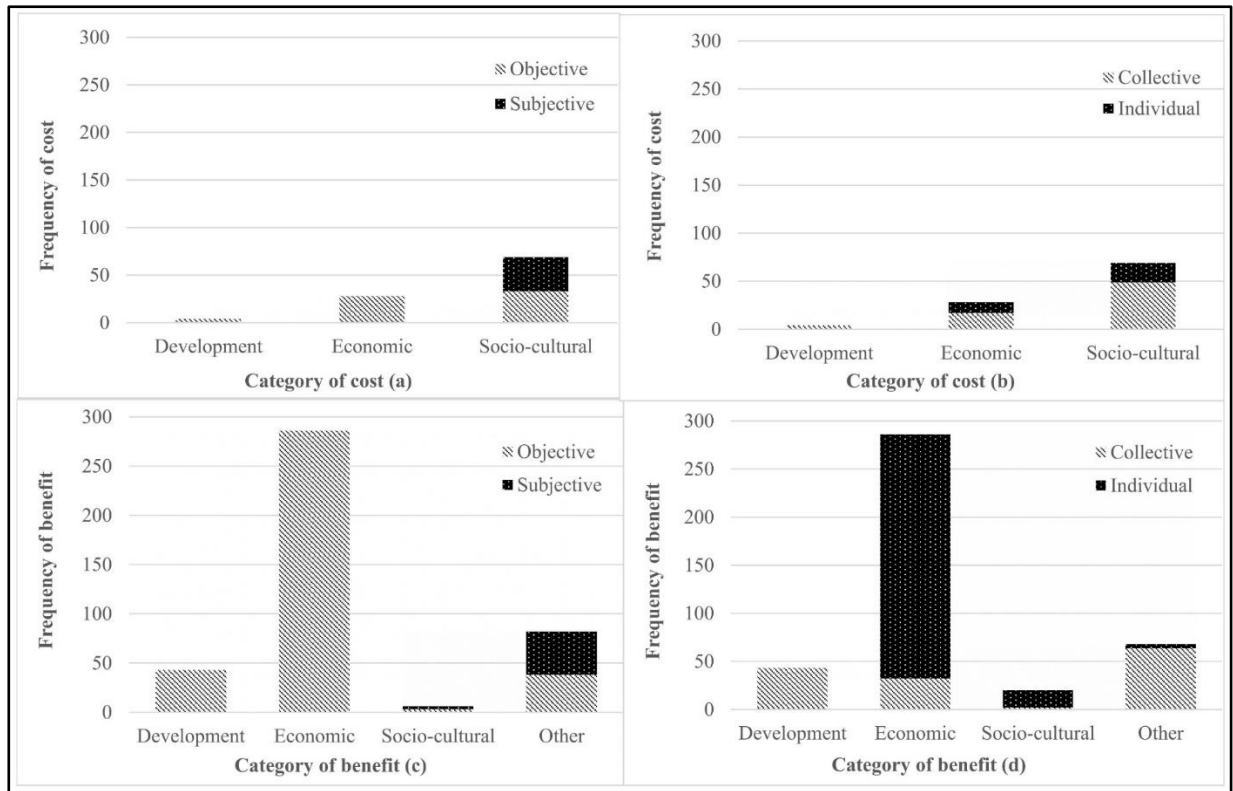


Figure 13: Key characteristics of costs and benefits across three categories – development, economic and socio-cultural – and according to (a) whether costs are objective or subjective, or (b) collective or individual, and (c) whether benefits are objective or subjective, or (d) collective or individual.

Next, I looked at whether costs and benefits were reported as accruing to local people or outsiders. All reported costs were accrued to local people only (n= 101), whereas the benefits were accrued to both local people (n= 378) and outsiders (n= 39) (Figure 14). Local people experienced more sociocultural costs (n= 69) than economic (n= 28) and developmental costs (n= 4) (Figure 14a). In contrast, local people benefitted most from economic opportunities (n= 248), followed by sociocultural changes (n= 82), development (n= 43) and other benefits (n= 5) (Figure 14b). Outsiders' reported benefits were only economic (Figure 14b). With respect to this result, it is important to note that reported benefits and costs have most likely been skewed towards local people

as the literature search strategy was in the domain of local people combined with other search terms.

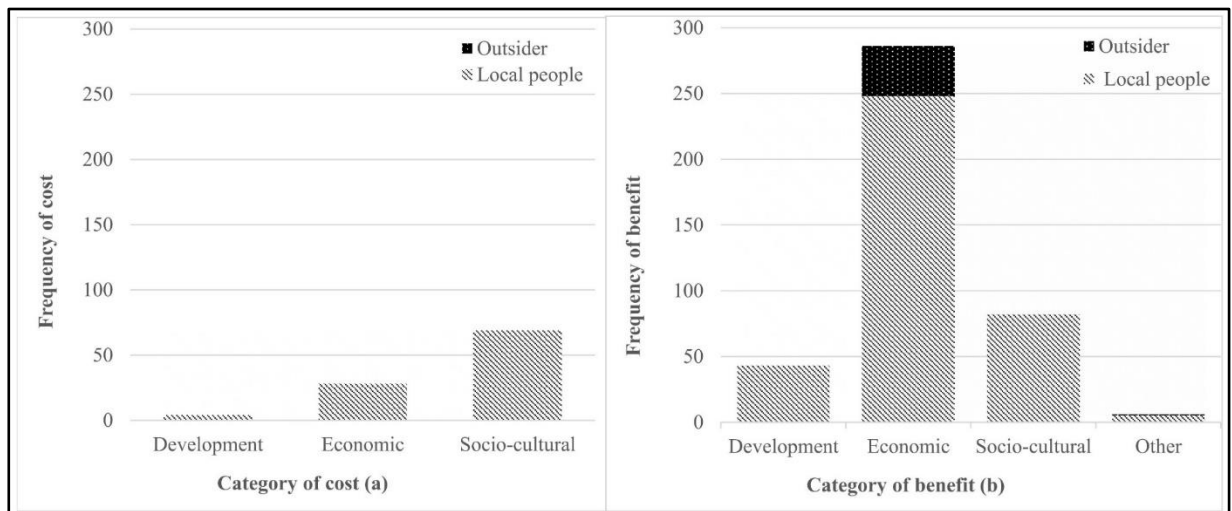


Figure 14: Different categories of costs (a) and benefits (b) and whether they were received by locals or outsiders.

2.5 Discussion

This systematic review of the scientific literature published between 1 January 1978 and 29 October 2020 analysed the current trends of nature-based tourism research in terrestrial protected areas, including the types and characteristics of socioeconomic benefits and costs experienced by local people. The review found that both socioeconomic benefits and costs are likely to occur from nature-based tourism in protected areas. Thirty-two types of benefits and 21 types of costs were identified from the total of 89 papers across 99 protected areas in 33 countries.

Although, nature-based tourism (in the form of ecotourism) has been popularized since 1978, the first article that evaluated the socioeconomic benefits and/ or costs of nature-based tourism in protected areas to local people was not published until 1996. The majority of the assessments of benefits and costs of nature-based tourism were carried out after 2006, with few studies carried out in the period of 1996-2006. This review

found a similar publication trend to that of Wardle et al. (2021) review on ecotourism's contribution to conservation. Theoretically, nature-based tourism in the form of ecotourism is widely viewed as a conservation tool in parks and protected areas, which means that more studies on ecological and environmental issues are inevitable (Krüger, 2005; Buckley, 2009; Steven et al., 2011; Wolf et al., 2019). This review found that there has been a growing trend in recent years to focus on socioeconomic issues of nature-based tourism in protected areas. Perhaps this could be because of a growing realisation that socioeconomic issues are equally as important as ecological and environmental issues in the successful management of protected areas (Worboys et al., 2005; Crawhall, 2015; Stolton et al., 2015). For example, when local people do not receive benefits from nature-based tourism and protected areas, and benefits are accrued to outsiders, or when they perceive costs such as restrictions on resource use, then they are likely to have a negative attitude towards conservation (Lindberg & Enriquez, 1994 cited in Ross & Wall, 1999b).

This review found that studies on the socioeconomic dimensions of nature-based tourism are more oriented towards low and middle-income countries with only 5% of the studies conducted in high income countries. Again, this is a similar pattern to that of Wardle et al. (2021), who also found that the studies on ecotourism as a conservation tool were mostly carried out in low and middle-income countries. The possible reason behind this could be that governments in these countries are using nature-based tourism as a financial mechanism to secure funding for conservation and development in protected areas and associated communities. On the other hand, studies on ecological and/ or environmental aspects of nature-based tourism (and recreation), such as impacts on birds, are more oriented towards high income countries (Steven et al., 2011; Sumanapala & Wolf, 2019). This could be because of the high tourist visitation in

protected areas of high-income countries compared to low and middle-income countries (Balmford et al., 2015), which is likely to bring negative environmental impacts.

There was also a disproportionate distribution of studies among individual countries and several protected areas were overrepresented in the literature. For example, in Nepal, 20 protected areas of different categories exist (DNPWC, 2022), but only three protected areas were studied 13 times. Most of these studies were carried out in Annapurna Conservation Area (ACA, six times) and Chitwan National Park (CNP, five times). The possible reason for this higher number of studies could be due to the high number of international visitors to these protected areas in Nepal, with ACA being the highest followed by CNP (DNPWC, 2019; DNPWC, 2022). This review did not reveal studies from other protected areas (e.g., Sagarmatha National Park) that are also important nature-based tourism destinations in Nepal. Focusing so heavily on a small number of protected areas is not giving the whole picture of what is happening across the country in terms of its impacts. Further, not all protected areas are equally attractive to visitors, which may limit the promotion of nature-based tourism (Holland et al., 2021).

Six terrestrial biomes were represented in this review, with the largest representation being forests and woodlands, followed by mountains. There were very few studies in wetland, island and desert biomes. Reviews undertaken by Krüger (2005) and Wardle et al. (2021) also found that the majority of the study sites were based in forest and/or woodland biomes. This could be due to a higher occurrence of nature-based tourism activities in protected areas covering forest and/or woodland, mountain and grassland/savannah ecosystems, and in those inhabited by local people. The growing popularity of nature-based tourism in forest protected areas and/or mountain protected areas brings additional pressure on the resources on which the local people depend.

Competition for the use of resources may lead to conflict and impact negatively on both the visitors and local people.

Increased tourism development brings both positive and negative impacts, and finding a balance between the two is critical to maintaining support of the community (Diedrich & Garcia-Buades, 2009). This systematic review identified a diversity of benefits and costs of nature-based tourism in protected areas to local people. The frequency of cited benefits (n= 417) was much higher than that of costs (n= 101). However, I cannot disregard the probability that costs (i.e., negative results) may not get reported as often as benefits (i.e., positive results) (Krüger, 2005). In this context, this review found that most of the studies were mainly focused on assessing benefits as opposed to costs. This could be another possible reason why the benefits of nature-based tourism were reported far more often than costs and could influence the view that outcomes of nature-based tourism are more beneficial than they really are and that costs are less prevalent.

It is important to recognise that, because of the seasonal nature of tourism, employment and other economic activities resulting from tourism are not stable sources of income (Boo, 1991; Chambers, 2000). The situation could be further aggravated if the tourism industry collapses, such as was the case in the COVID-19 pandemic, and loss of revenues from tourism would lead to adverse effects on communities living in and around the protected areas (Bhammar et al., 2021; Stone et al., 2021; Andrianambinina et al., 2023). Moreover, the livelihoods of local communities are often reliant on the same natural resources that attract tourists. If their involvement in nature-based tourism is limited or discontinued and benefits do not accrue, then local people will likely be driven to compete for the use of natural resources on which the tourism is dependent (Boo, 1991). As such, when tourism induced benefits are reduced or tourism fails to deliver the benefits then there is a risk that local people will adopt their original way of

living again (Kibria et al., 2021). In this way, livelihood insecurity can undermine conservation objectives and as a result, poverty, environmental degradation and conflict in protected areas arise (Pimbert & Pretty, 1997). Therefore, benefits from nature-based tourism to local people must be more than economic and financial in order to address multiple facets of livelihoods in order to support protected areas. These benefits could be collective benefits such as the provision of electricity or roads, social networking, education or cultural support, forest protection, among others. However, investments in capital assets that support livelihoods tend to be distributed in communities that are near protected areas that are most popular for research, education and recreation (Yu et al., 2020).

This review indicated that nature-based tourism provided benefits to both the local people and outsiders. While the benefits to local people were reported more often than for outsiders, only monetary and economic benefits were reported for outsiders. As mentioned previously, the occurrence of more benefits to local people could have been reported due to the focus of my literature search, which was within the domain of local people. It is also likely that tourism facilities might have been owned by outsiders, expatriates or even foreign companies (Ceballos-Lascurain, 1996; Mbaiwa, 2005), which would explain why monetary benefits were reported for outsiders. This review showed that costs were limited to local people only and outsiders were receiving benefits at the cost of local people. The results also showed that most costs were sociocultural (where most benefits were economic). Socioeconomic advantages to local people could be small when compared with disadvantages (Mbaiwa, 2005). Even if benefits are fairly distributed among local people, there may be a net loss when associated costs are taken into consideration (Ceballos-Lascurain, 1996). However, this

is hard to ascertain from the review as the literature I accessed focused predominantly on the benefits of nature-based tourism.

The costs and benefits of nature-based tourism in protected areas can be realized at different scales, and benefits at one scale could lead to costs at another scale (Eagles & McCool, 2004). For example, nature-based tourism brings foreign currency exchange which produces benefits at the national scale, whereas sociocultural impacts (both costs and benefits) brought by nature-based tourism are often experienced at the local level. This study suggested that costs are often accrued locally with monetary benefits flowing out of the community. This maldistribution of costs and benefits needs to be addressed for equitable costs/benefits distribution (Scherl & Edwards, 2007). Tourism income may not be distributed equally among local residents themselves for various reasons (Xu et al., 2009). I did not report the demographic distribution of nature-based tourism's costs and benefits as it was difficult to summarise due to the inconsistent way in which the results were reported across the reviewed papers. However, it is important to note that other studies have shown that the benefits received by local individuals can be small in size if divided among the larger groups of people in the communities and poor residents are often non-beneficiaries (Snyman & Bricker, 2019). Similarly, those people receiving the benefits would not be the same as those experiencing or receiving costs of nature-based tourism and/or nature conservation. As a result, some communities experience a net loss and some experience a net gain (Snyman & Bricker, 2019), thus creating a gap between benefit and cost receivers. However, it is difficult to identify the tourism stakeholders and to decide who should receive nature-based tourism benefit and who should not (Snyman & Bricker, 2019).

The articles in this review revealed several instances of distribution patterns of benefits and costs of nature-based tourism on the basis of age (Holden, 2010; Black & Cobbinah,

2017), gender (Yasuda, 2011; Sandbrook & Adams, 2012; Panta & Thapa, 2017; Badola et al., 2018; Rauf et al., 2019; KC, 2020), education (Snyman, 2014b), ethnicity (Strickland-Munro & Moore, 2013), location of communities in relation to protected areas entrance or tourist centre/ facility (Kaae, 2006; Xu et al., 2009; Cobbinah et al., 2017; Ghosh & Ghosh, 2018), and capacity in investing in tourism businesses (Walpole & Goodwin, 2000). For example, in Wolong Nature Reserve in China, economic benefits received from nature-based tourism accrued mostly to urban residents and outsiders. Among rural residents, those receiving benefits were situated near main roads whereas those rural residents close to panda habitats did not receive tourism benefits (He et al., 2008). In Masai Mara National Reserve in Kenya, communities farthest from the reserve received fewer tourism benefits and low involvement in tourism (Holland et al., 2021). In Ghana, non-indigenous people were left behind in the ecotourism benefit distribution plan (Afenyo & Amuquandoh, 2014), whereas in Kenya the non-participation of ethnic groups in international tourism led to marginalization (Isaac, 1996 cited in Chambers, 2000). This depicts the clear picture that tourism benefits are not shared equitably among various demographic groups.

Local people who are directly involved in tourism businesses often receive individual benefits such as increased income. In addition, activities that are designed to benefit the community collectively such as community development projects (e.g., drinking water supply) from tourism income also channel back to individuals. Thus, those individuals who are directly involved in tourism activities get more cumulative benefits (Thammajnda et al., 2013). This was confirmed from this review which showed a higher incidence of individual benefits as opposed to collective benefits. Residents benefitting from tourism, either individually or collectively, perceive tourism more positively than those who do not (Kayat et al., 2013). However individual benefits

contribute more towards positive perceptions overall (Kayat et al., 2013). Thus, individual benefits from tourism have a greater influence on support for tourism development (Su & Swanson, 2019). On the other hand, individual costs of tourism bring negative perceptions of residents towards tourism (Gu and Ryan, 2008 cited in Kayat et al., 2013). In this review, while more benefits were observed at the individual level, more costs were observed at the collective level. This raises a question of whether individuals are receiving benefits at the cost of the group and whether this could jeopardise local support for (and hence sustainability of) nature-based tourism in protected areas.

The results showed that objective (i.e., measurable) benefits within the economic category were most prevalent, while objective costs were most prevalent in the sociocultural category. Similarly, this review found no subjective costs and benefits in the development and economic category. This could be due to the trend that there were more studies conducted with objectively verifiable indicators in nature-based tourism assessment rather than with subjective indicators (e.g., perceptions). This is a potential deficiency in the approach to assessing impacts as subjective measures are important indicators of tourism sustainability (Diedrich & Garcia-Buades, 2009).

Finally, although this review found that economic benefits outweighed development and sociocultural benefits, it is also important to consider the proportion of the local population that receives direct economic benefits from the tourism industry and from the profit that stays within the country (Chambers, 2000). Leakage of tourism income from the tourism destination to purchase goods and services to satisfy tourist needs and acquisition of highly paid jobs by expatriates leaves local people receiving a very small portion of benefits from nature-based tourism. This may lead to a drain of the tourism benefit out of the community which may result in failure of tourism in poverty

alleviation (Walpole & Goodwin, 2000; Mbaiwa, 2005; Banskota and Sharma, 1997 cited in Baral & Dhungana, 2014; Kibria et al., 2021). This poses a clear question of whether nature-based tourism can really be used as an alternative source of income for local people living in or around protected areas.

2.5.1 Limitations and Future Research

This systematic review was limited to publications that were in the English language only and peer reviewed. As the nature-based tourism study sites were mostly in developing countries, there is a possibility that many publications on nature-based tourism could have been missed that are published in non-English languages and/or national journals in low and middle-income countries. Findings published in the grey literature (e.g., project reports from NGOs or development projects) were also not covered in this review and could contain important information on benefits and costs. Widening the search and review scope to include project reports, government reports and (un)successful case studies of nature-based tourism including those not in English language could address this issue. However, I chose to limit my search and review to peer reviewed publications to keep the emphasis on trends in the academic literature.

I mentioned that the studies I reviewed mostly focused on the benefits of nature-based tourism rather than costs, which may have biased results. Future research should be widened to focus on costs as well, since the balance between costs and benefits is critical to maintaining local support for both tourism and conservation. Nature-based tourism also occurs in areas other than protected areas, so this review could have missed important findings on benefits and costs of nature-based tourism in other locations. This review was further limited to terrestrial locations and inland waters, and this means marine protected areas were excluded. Extending the review to cover marine protected

areas would provide valuable information about benefits and costs to coastal communities.

Reporting of the distribution of benefits and costs of nature-based tourism to local people was not consistent in the reviewed papers. For example, most of the studies reported on the distribution of benefits and costs at different spatial scales (e.g., beneficiaries' distance from the protected area and/ or tourist facility) where very few studies reported benefits and costs based on a demographic characteristic (e.g., gender, age, ethnicity). A more consistent and systematic approach of evaluating benefits and costs of nature-based tourism across the studies will allow us to evaluate critical issues of equity from both the demographic and geographic perspectives.

Finally, the socioeconomic studies of nature-based tourism in protected areas mostly represented the low and middle-income countries. As such, results from this review cannot be generalized to high-income countries with different economic and social contexts. Expanding the research to cover high-income countries together with low and middle-income countries in the future will help to generalize the socioeconomic benefits and costs of nature-based tourism.

2.6 Conclusion

The research and publication trends showed that there has been an increasing interest in the study of socioeconomic aspects of nature-based tourism in protected areas but with clear geographical bias. Most of the studies were conducted in Asian and African protected areas in low and middle-income countries with lower representation from North America, Europe and high-income countries. This is in contrast to the visitation rates, as the majority of visitations take place in European and North American protected areas (Balmford et al., 2015). However, despite this geographical bias, the

majority of researchers were from the high-income countries. Research funding gaps and lack of research expertise in low and middle-income countries may have influenced this trend (Sumanapala & Wolf, 2019).

I observed many more benefits (32 types) than costs (21 types), with employment opportunities and acculturation/abandonment of traditional lifestyle/ practices being the most prevalent benefit and cost respectively. Reported benefits were mostly experienced by individuals, whereas costs tended to be collective. Similarly, benefits were mostly experienced as economic, whereas most costs were sociocultural. Although individual studies suggested the distribution of benefits were influenced by the demographic characteristic of the recipients, inconsistencies in the way results were reported meant it was not possible to detect clear patterns in this domain.

Protected areas are mandated with the conservation of nature and biodiversity, therefore linking socioeconomic benefits of nature-based tourism with conservation benefits helps to understand the relative contribution of nature-based tourism to conservation and development simultaneously. To the local people, there were more economic benefits with more sociocultural costs, which raises the important question as to whether local people are willing to accept economic benefits at the expense of sociocultural costs. Although this review indicated that the benefits of nature-based tourism exceeded the costs, I cannot conclude with evidence to say that socioeconomic benefits outweighed socioeconomic costs of nature-based tourism in protected areas. This is because most of the studies included in this review focussed on assessing benefits. In summary, nature-based tourism is a promising business with growing trend of visit to protected areas. It can provide benefit for both the local people and protected areas if promoted and implemented with the ecotourism principles in mind. This would then help maximize benefits to local people and protected areas and minimize costs.

Chapter 3

Perceived Benefits and Costs of Protected

Areas

Chapter 3: Perceived Benefits and Costs of Protected Areas

The ICDP approach has been implemented as a framework for managing Nepalese protected areas and this chapter sought to evaluate the effectiveness of this approach with an emphasis on benefits to local people. I implemented a household level survey in my case study areas to assess local people's perceived benefits and costs of protected areas at the household and community levels and whether these impacts differed according to demographic characteristics. I developed the research questions and methodology. I coordinated and managed the field work, and collected data through the support of field assistants. I analysed the data, wrote the original draft chapter and manuscript, reviewed, edited and finalised the manuscript. Amy Diedrich supervised the research methodology and writing, guided writing by reviewing and editing the original draft and manuscript. The feedback from an anonymous reviewer of the journal during the peer review process helped to improve this chapter and manuscript. Chapter 3 is published in the *Journal of Environmental Management*¹⁰. The text in this chapter has been adapted to the formatting requirements of this thesis.

¹⁰ **Thapa, K** and Diedrich, A (2023). Beyond conservation: Assessing broader development outcomes of protected areas in Nepal. *Journal of Environmental Management*, Volume 339: 117890. <https://doi.org/10.1016/j.jenvman.2023.117890>

3. Perceived Benefits and Costs of Protected Areas

3.1 Abstract

Protected Areas (PAs) are set aside for biodiversity conservation but at the same time they are recognized for their role in supporting development goals. However, the benefits provided by PAs also come with costs to local people. Integrated conservation and development projects (ICDPs) are a protected area management approach that aims to maximise local benefits through enhancing conservation and development outcomes, while also reducing costs. I implemented a household level survey in two PAs in Nepal which are managed using an ICDP approach, to assess local people's perceived benefits and costs and determine if this approach was achieving its intended outcomes. Since both PAs are popular nature-based tourism (NBT) destinations, respondents were asked questions specific to this activity and others more general to the PAs. The coded qualitative responses revealed ten categories of benefits and twelve categories of costs. Most respondents perceived extraction benefits from PAs, and when asked to reflect specifically on NBT, they mostly identified economic benefits. Crop and livestock loss was the main perceived cost from PAs, whereas sociocultural costs were the main costs from NBT. Chi square tests showed that proximity to the PA office and residency status had the most significant differences in perceptions of benefits and costs from both PAs and NBT. People perceived very few benefits related to participation, cost mitigation, and conservation, which does not match the intended outcomes of ICDPs. Although there may be practical implications for engaging distant communities in protected area management, this may help to enhance conservation and development outcomes from PAs.

3.2 Introduction

Protected areas (PAs) are the cornerstone of biodiversity conservation, helping to maintain key habitats, facilitate species migration and ensure natural ecosystem processes (Watson et al., 2014; CBD, 2021). PAs were originally conceived for the conservation of iconic landscapes, biodiversity and wildlife, but they are now expected to support conservation objectives along with socioeconomic development and improving human welfare (Naughton-Treves et al., 2005; Watson et al., 2014). PAs also contribute to achieving multiple United Nations' Sustainable Development Goals (SDGs) (Jones et al., 2020) such as good health and well-being (SDG 3), life below water (SDG 14), and life on land (SDG 15).

Protected areas and nature-based tourism (NBT) bring varied outcomes for local people and society (Coad et al., 2008; Jones et al., 2020; Thapa et al., 2022). One study that objectively measured the benefits and costs of PAs showed that benefits exceeded costs (Ninan & Kontoleon, 2016), but such benefits have been shown to be more likely to accrue to outsiders, while costs are mostly experienced by local people (Swemmer et al., 2017). In another case, costs and benefits within the PA community are inequitably distributed (Mackenzie, 2012). There are even asymmetries in the received benefits and costs among local people; with distribution variations related to the distance of households from PAs, whether people live within a tourism zone, and demographic factors (Sarker & Roskaft, 2011; Mackenzie, 2012; Mackenzie & Ahabyona, 2012; Bragagnolo et al., 2016; Tolbert et al., 2019; Holland et al., 2021). There are several gaps that limit our understanding of costs and benefits of PAs including the reality that more studies tend to focus on the benefits of PAs rather than the costs (Jones et al., 2020; Thapa et al., 2022). In addition, there tends to be a priority for more research on the impacts of protected areas on local people (Dudley et al., 2018). Such understanding

is needed and can contribute to the design of benefit-cost sharing strategies within PA management.

To address the PA management challenge of enhancing benefits and mitigating costs, it has been proposed that conservation activities should simultaneously deliver socioeconomic and development benefits to local people living in and around protected areas (Spiteri & Nepal, 2008a). Strategies linking conservation with development and poverty alleviation have been practised in various ways including establishment of buffer zones (BZ) in PAs (Budhathoki, 2004), community-based conservation (Brooks et al., 2013), community-based natural resource management (CBNRM) (Naidoo et al., 2011), co-management (Ward et al., 2018b), and integrated conservation and development projects (ICDPs) (Alpert, 1996; Naughton-Treves et al., 2005; Gurney et al., 2014). Further, alternatives to mainstream conservation have recently been proposed as convivial conservation¹¹ to integrate both human and non-human nature (Büscher & Fletcher, 2019; Massarella et al., 2022).

ICDPs are incentive-based programs that aim to sustain the conservation while meeting livelihood needs of local people living adjacent to PAs (Spiteri & Nepal, 2008a; Nepal & Spiteri, 2011). The application of such programmes in PA management helps to promote local ownership and support by offering benefits such as compensation payments linked to conservation to local people (Spiteri & Nepal, 2008b; Badola et al., 2021). The dual, and possibly equal, focus on objectives of biodiversity conservation and development opportunities is what makes ICDP approaches strategic with respect to PA management (Wells et al., 1992; Alpert, 1996; Gurney et al., 2014). The

¹¹ Newly introduced conservation concept that aims to integrate both the human and non-human nature (<https://convivialconservation.com/>). Accessed on 27 July 2023.

underlying mechanism of ICDPs is the establishment of “core” areas that are strictly protected and inhabited “buffer zones” in the peripheral areas aimed at promoting sustainable natural resource use and socioeconomic development (Wells et al., 1992; Naughton-Treves et al., 2005). Outcomes of ICDPs are contextual, meaning that factors that influence success in one PA may or may not resemble those of ICDPs at other PAs. Experiences from the relatively limited success of ICDPs and related approaches have been too readily adopted in some PAs as a panacea for win-win solutions for biodiversity conservation and development (Christensen, 2004 cited in Muradian et al., 2013).

The delineation of buffer zones, local participation and delivering benefits to local people are the key criteria for ICDPs (Wells & Brandon, 1993; Mackinnon, 2001; Brooks et al., 2013). Participation is necessary to facilitate cooperation between PAs and local people to make law enforcement acceptable (Wells & Brandon, 1993; Paudyal et al., 2018). The level of participation and receipt of several benefits such as utilisation of resources, economic benefits and social/ human capital investment often leads to the success of conservation projects such as ICDPs (Brooks et al., 2013). When local people receive benefits from PAs, then they also tend to participate in conservation activities (Paudyal et al., 2018). As such participation of local people helps to achieve biological and socioeconomic development goals (Oldekop et al., 2016).

Nature-based tourism is one of the most important economic activities in PAs implementing ICDPs (Stem et al., 2003). ICDPs also focus on improving local capacity so that local people are more able to experience the benefits of NBT (Brandon & Wells, 1992). In this way, NBT in PAs can help to address both the social development and conservation goals through capacity building for conservation and supporting livelihoods diversification with several other economic opportunities (Stronza et al.,

2019; Wardle et al., 2021; Thapa et al., 2022). Economic benefits from NBT can motivate local engagement in conservation friendly practices (Stem et al., 2003; Krüger, 2005). However, there are also costs associated with NBT such as acculturation, conflict, social disturbance, soil erosion, habitat destruction, solid waste problem etc (Krüger, 2005; Thapa et al., 2022).

The ICDP approach is intended to create a win-win scenario for biodiversity conservation and livelihoods. However, this is often a misguided assumption (McShane et al., 2011) which can be difficult, if not impossible, to achieve (Adams et al., 2004). ICDPs with external funding often terminate after their grant expires and positive impacts may not last long (Wells & Brandon, 1993; Gurney et al., 2014), thus raising the issue of impact sustainability of such projects. Protected areas with tourism have the potential to offer economic benefits to local people and generate participation in PA management (Wells & Brandon, 1993). However, ICDPs funded through internal sources such as tourism may be limited in their ability to deliver conservation and development benefits to local people (Wells & Brandon, 1993). This is because the funding from internal sources may be less than what is required to achieve conservation and development outcomes. In addition, whether local people receiving benefits from ICDPs also incur costs from protected areas is unclear since positive outcomes tend to be reported more often than the failures and costs related to community-based conservation interventions and protected area management (Brooks et al., 2013; Naidoo et al., 2019; Koot et al., 2020). This calls for a more balanced evaluation of protected areas that considers the balance among a multitude of outcomes, both positive and negative, for local communities.

Recent global reviews confirm that PAs and tourism therein bring both benefits and costs to local people (Allendorf, 2022; Thapa et al., 2022). Documented benefits from

PAs include opportunities for natural resource harvest, employment and income from nature-based tourism, and other local-level development projects that are linked to conservation (Bajracharya et al., 2006; Baral & Heinen, 2007b; Ezebilo & Mattsson, 2010; Mackenzie, 2012; Tolbert et al., 2019). On the other hand, costs such as evictions, crop and livestock depredation, loss of human lives from PA wildlife, conflicts, and restrictions on natural resource use, may also occur as a result of PAs (Bajracharya et al., 2006; West et al., 2006; Baral & Heinen, 2007b; Mackenzie, 2012; Tumusiime & Vedeld, 2015; Eustace et al., 2018; Badola et al., 2021).

Local people's perceptions of benefits depend on multiple factors. For example, in Costa Rica, people perceiving positive relationships between the community and the PA tended to perceive more socio-economic than environmental benefits (Molina-Murillo et al., 2016). Another study in Nepal, showed that more people (90%) perceived crop loss than extraction benefits (64%) or tourism benefits (62%) from PAs at the household level (Spiteri & Nepal, 2008a). Perceptions of costs and benefits can also be influenced by the question format and issues of interest raised by researchers, and whether people are being asked about household or community level impacts (Tolbert et al., 2019; Allendorf, 2022; Thapa et al., 2022). When asked specifically about tourism and PAs, perceptions of benefits and costs have been shown to be influenced by demographic factors such as age, income, education, gender, migration status and spatial location of villages from PAs (Mackenzie, 2012; Bragagnolo et al., 2016; Tolbert et al., 2019; Badola et al., 2021).

This research aimed to identify locally perceived benefits and costs from protected areas managed through an ICDP approach using two tourism focused PAs in Nepal. I asked three research questions: 1) What are the perceived benefits and costs of protected areas and tourism 2) Are there any differences in perceived benefits and costs from

protected areas and tourism with respect to demographic and spatial factors? and, 3) Is the ICDP approach to PA management meeting its intended objectives?

3.3 Background and Study Sites

Nepal's approach to protected area management tries to address the debate of conservation and human use with the designation of uninhabited core zones (for strict protection) and surrounding inhabited buffer zones (for development and sustainable resource use). In the context of the conservation-poverty relationship, this encompasses the idea of "poverty and conservation as separate policy realms" for the core zones as conservation is promoted independently of poverty reduction. This relationship is viewed as, "poverty as a critical constraint on conservation" in the buffer zones as ICDPs, revenue sharing and sustainable resource use is practised in buffer zones (Adams et al., 2004).

National Parks (NP) in Nepal are strictly protected, with no permanent human settlements inside the boundary, although tourism is allowed. However, there are exceptions to this in some national parks in the Himalayas, where local people are allowed to live and pursue their way of life or traditions. This applies if they owned private property such as land before the establishment of these national parks. Nepal's protected area management system moved from strict conservation to a participatory approach after the adoption of buffer zone management regulations (GoN, 1999). These policies institutionalized the benefits and costs sharing mechanism in protected area management by channelling back 30 to 50% of protected area income for investment in conservation and development activities into the buffer zone communities (GoN, 1973; Budhathoki, 2004; Bhattarai et al., 2017). These activities could be community development (e.g., irrigation, roads), conservation programme (e.g., plantation,

recruitment of forest guards), income generation and skill development (e.g., vegetable farming, handicraft), and conservation education (Allendorf & Gurung, 2016). This ensures financial availability and provides most of the income for conservation and development and has become integral to PA management. Nepal is among the top third of countries implementing ICDPs (Brooks et al., 2013).

Nepal has an extensive network of protected areas that are distributed all over the country with a current coverage of 23.39% of the total area (DNPWC, 2022). These are located mostly in the northern part (Himalayas) and southern lowland (Terai). While Nepal has five types of PAs, the majority are classified as national parks (Dudley, 2008). This study was conducted in two representative PAs in terms of geography and NBT, i.e., Bardiya National Park (BNP, in the Terai) and Langtang National Park (LNP, in Himalayas). BNP was established in 1976 and covers an area of 968 sq km with an additional outer (buffer) zone of 507 sq km. Although the buffer zone was established in 1996, the northern part was only included in 2011 (DNPWC, 2022). The Churia/Siwalik hill area is partially covered in the northern region, and the eastern boundary is shared with Banke National Park. BNP is part of the Terai Arc Landscape, connecting national and transboundary protected areas of Nepal and India. The Royal Bengal tiger (*Panthera tigris*) is the flagship species in BNP and also provides habitat for the Asian elephant (*Elephas maximus*), and the Greater one-horned rhinoceros (*Rhinoceros unicornis*), among other species. BNP is the second most visited national park among all the PAs in the Terai (lowlands). More than 24,000 tourists visited BNP in 2018/19 fiscal year, just before COVID-19, out of which there were more than 8,000 international tourists. This number reduced to 16,781 in the fiscal year 2021/22 (international tourists 3,395) (DNPWC, 2022). Nature-based tourism (e.g., wildlife

viewing, jungle walk, jeep safari) activities are limited to areas around the national park head office.

Langtang National Park was established in 1976 and covers an area of 1,710 sq. km. with an additional surrounding buffer zone of 420 sq. km (DNPWC, 2022). The eastern part of the park adjoins Gaurishankar Conservation Area. LNP is an important region of the Sacred Himalaya Landscape connecting protected areas and landscapes of eastern Himalayas. Snow leopard (*Panthera uncia*) and Red panda (*Ailurus fulgens*) are the flagship species of LNP. LNP is the third most visited PA in the mountains of Nepal. 17,691 tourists visited LNP in 2018/19, just before COVID-19, among which more than 12,000 tourists were international. This number reduced to 17,392 in the fiscal year 2021/22 (international tourists 2,498) (DNPWC, 2022). Nature-based tourism activities (e.g., trekking, hiking, mountaineering) are mainly confined in the Syafrubensi-Langtang-Kyangjin region with a small portion in the Helambu region.

In the next subsections, I present the study methodology with brief descriptions of the study site(s), field data collection methods, and data analysis. Then, I present the findings of the study and discuss the results of the ICDP approach to protected area management. This paper concludes with further recommendations for improving protected area management to achieve both conservation and development objectives.

3.4 Materials and Methods

3.4.1 Sampling Strategy

Communities in each PA case study sites were first clustered into three groups based on their proximity to the PA head office: 1) adjacent (near); (2) mid-distance; and (3) far. Proximity was based on average travel time taken to reach the PA head office as well as remoteness rather than Euclidean/ geographical distance. In LNP, sites within a

one-day travel (walk) or less than a day travel by bus/jeep ride were defined as near, site within a one and half (to two) days of travel (walk and/or bus/ jeep ride) was defined as mid-distance and minimum of two days of travel (including long walk and/or bus/jeep ride) was defined as far in LNP. In BNP, this was slightly different due to the relatively accessible and lowland area. Near was defined within half an hour of bicycle ride¹², mid-distance was within four hours of travel by bus/jeep/autorickshaw or motorcycle and far was at least a day travel (walk and/or bus/jeep ride). Sampling communities were then selected from within those clusters so that they represented different districts, different (rural) municipalities, and varying degrees of NBT. This led to a sampling of households in three wards¹³ in BNP and four wards in LNP.

I generated the total required sample size using the formulae $(n = \frac{N}{1+N(e)^2})$ ¹⁴(Israel, 1992). This gave a total sample size of 99 to 391 in BNP with the margin of error of 10% and 5% respectively. In LNP, this gives the total sample size of 99 to 390 with the margin of error of 10% and 5% respectively. Then, I applied a convenience sampling with quota assigned to each zone of both protected areas to survey the households. Given the relatively easy accessibility and higher number of households (17,172) and population in BNP (BNP, 2016), each cluster was sampled with a minimum assigned quota of 150 households. Due to rugged terrain, mountain/Himalayan landscape and lower number of households (14,963) and population in LNP (LNP, 2019), each cluster

¹² I use bicycle ride instead of walking to compare distance because in the Terai (Nepal's southern flat/low land), the bicycle is a common mode of transport to travel for short distance.

¹³ Ward is the smallest political and administrative unit in Nepal. Municipalities or Rural Municipalities (RM) are subdivided into several wards. My study sample represented three different municipalities or RM in each protected area.

¹⁴ n= Required sample size, N= Population size, e= Margin of error

was sampled with a minimum assigned quota of 110 households. This represented a minimum of 12% of the households at each sampling ward (this was 20% of the total households when combined for all sampling wards) (Table 5). Either the head of the household or his/her representative older than 18 years old was invited to participate in the survey. I spread the sample households within the ward to cover as diverse respondents as possible such as by visiting households off the main trail and different parts of villages, and surveying in different times of the day. This study aimed to alternate between male and female respondents as gender roles differ (Table 6). Females tend to be directly involved in resource harvesting and also face confrontation with park officials while males often take part in village meetings and decision making etc. Alternating male and female was not always possible due to absence of female (or male) participants at home during the survey time. In some cases, female participants were reluctant to participate in the survey when there were male family members present at their home as they underestimated their ability to talk about their experience and knowledge on the grounds of low literacy level. In this case, their male counterparts were surveyed. In total, 845 households were surveyed (Table 5).

Table 5: Summary characteristics of protected areas and sampling wards.

PA: Bardiya National Park and Buffer Zone				
<i>Proximity to PA office</i>	Adjacent (Cluster 1)	Mid-distance (Cluster 2)	Far (Cluster 3)	Total
<i>Tourism activities</i>	Present	Absent	Absent	
<i>Total households in the sampling wards</i>	1338	665	295	2348
<i>Household sample (n)</i>	167	150	159	476
PA: Langtang National Park and Buffer Zone				
<i>Proximity to PA office</i>	Adjacent (Cluster 1)	Mid-distance (Cluster 2)	Far (Cluster 3)	Total
<i>Tourism activities</i>	Present	Present (but low)	Absent	
<i>Total households in the sampling wards</i>	665	764	410	1839
<i>Household sample (n)</i>	147	112	110	369

Source: Fieldwork, BNP (2016), LNP (2019)

3.4.2 Data Collection

The survey was implemented from August to December 2021 at the household level. The questionnaire (Appendix 4) included a mixture of categorical, ranking, Likert scale (Oppenheim, 2006), socioeconomic and demographic questions. The questionnaire consisted of both open and closed ended questions and sought to identify the types of benefits and costs of both protected areas and tourism perceived by local people. Respondents were asked to distinguish between benefits and costs experienced at household and community levels (see questionnaire, Appendix 4). I chose an open-ended approach of asking about costs and benefits to allow respondents to respond freely rather than imposing preconceived ideas of benefits and costs from PAs and/or

ICDPs. Separate questions were asked about tourism benefits and costs so as not to confound the responses specific to the ICDPs (ICDP criteria do not explicitly address tourism).

The survey was conducted face-to-face in the Nepalese language by an interviewer and took about half an hour to a maximum of one hour to complete. This research obtained human ethics approval (H8229) from James Cook University and research permission was also granted by Nepal's Department of National Park and Wildlife Conservation and respective national park offices.

3.4.3 Data Analysis

The responses to the open-ended questions about benefits and costs from PAs and tourism were final coded into nominal categories such as development, extraction, economic, conservation, knowledge and awareness, loss (crop, livestock, human lives), property damage, resource use restrictions, sociocultural, behavioural etc. For the benefits, I developed categories based on ICDP criteria (Appendix 2, Table A2.1) and assigned responses from open ended questions to one of the ICDP categories for interpretation. ICDP categories were collated from the published literature on ICDPs. The costs, which are often not considered in the ICDP criteria did not fit in the predetermined categories and were coded separately. These were coded and grouped into similar types. For example, different types of loss to farm produce due to PA wildlife were categorized as 'crop loss' whereas different impacts of tourism such as loss of culture and import of foreign culture was categorized as 'sociocultural impacts' in the cost categories (Appendix 2, Table A2.2).

Both descriptive and inferential statistics were used to explore the survey data. Because of the categorical nature of each response variable, chi-square (χ^2) test of independence

was performed to test for associations in perceived benefits and costs of protected areas by demographic characteristics at the household and community level. I considered gender, age, ethnicity, education, residency status and proximity to the PA office (Table 6), because the PA impacts can vary depending on social groups (Gurney et al., 2015; Chaudhary et al., 2018) and proximity to PA office has a distance decay effect. These variables are also the key indicator of social structure of Nepalese society and different clusters of the sample wards are experiencing varying degrees of development (author's own knowledge). Further, these variables are also found to be statistically significant in earlier studies and under scrutiny (Bragagnolo et al., 2016).

Table 6: Respondents' sociodemographic characteristics across both protected areas (n = 845).

Variable	Per cent*
<i>Age:</i>	Younger: ≤ 40 years
Mean yr (SD): 43.57 (15.56)	Older: ≥ 41 years
<i>Gender</i>	Male
	Female
<i>Residency status</i>	Local origin
	Migrated
<i>Ethnicity</i> ¹⁵	High caste
	Other caste
<i>Education</i>	Did not attend school
	Attended school
<i>Proximity to PA office</i>	Near
	Mid-distance
	Far

¹⁵There are several castes in Nepalese society. High castes (e.g., Brahmin, Chhettri, Thakuri) are often characterized as being educated and well off in comparison with *other castes* (e.g., indigenous nationalities and occupational castes).

Chi-square (χ^2) tests was performed only on those categories of benefits and costs of protected areas and only benefit categories of tourism that were cited by at least 10% of the respondents (Appendix 2, Table A2.3). This is because I considered categories of benefits and costs cited by fewer respondents to be less representative of overall impacts from PAs and tourism. I conducted χ^2 tests on the tourism cost categories when cited by at least two percent of the respondents only (Appendix 2, Table A2.4). A two percent threshold was used to enable statistical analysis as the 10% threshold would not give any cost from tourism due to lower proportion of perceived costs from tourism. The data were combined from both PAs for this analysis as I was interested to know the overall perceived benefits and costs irrespective of the individual characteristics of these PAs. This is because the same national policy governs each PA and buffer zone. The data from the survey were analysed using IBM SPSS statistics version 26.

3.5 Results

3.5.1 Perceived Benefits from PAs at the Household and Community Level

A total of 1792 household level benefits and 2003 community benefits from PAs were reported (note that respondents gave more than one response). Similarly, 258 responses were reported as household benefit and 731 responses as community benefit from tourism in protected areas. 92% of respondents cited at least one household benefit and 90% cited at least one community benefit from PAs. Only 21% of respondents replied with at least one household benefit and 46% replied with at least one community benefit from tourism in PAs.

More non-tourism related community benefits (eight categories) were perceived than household benefits (six categories) from protected areas (Table 7). These categories

were clearly distinguished between extraction and non-extraction benefits. The largest category of perceived community benefits was extraction benefits followed by development activities/project. Similarly, the largest category of perceived household benefits were extraction benefits followed by development activities/project and economic.

On the other hand, seven categories of community benefits and five categories of household benefits were perceived from tourism (Table 7). There were more community level economic benefits, followed by development activities/project, and knowledge and awareness from tourism. Other community benefits perceived from tourism were skills development, cultural, conservation etc (Table 7). Household benefits from tourism followed the similar pattern to community benefits but with low responses. There were more household economic benefits followed by development activities/project. Other household benefits perceived from tourism were skills development, conservation, and knowledge and awareness. Few people acknowledged conservation as a benefit, either at the household or community level, from either protected areas or associated tourism.

Table 7: Categorised responses across both study sites related to perceived benefits of protected areas and tourism at household and community level.

ICDP categories	Household benefit from PAs		Comm. benefit from PAs		Household benefit from tourism		Comm. benefit from tourism	
	% responses (N= 1792)	No. of respondent ¹⁶	% responses (N= 2003)	No. of respondent	% responses (N= 258)	No. of respondent	% responses (N= 731)	No. of respondent
Community development	2.84	49	8.04	118	9.69	22	31.87	141
Extraction	96.20	772	88.42	682	0	0	0	0
Economic	0.50	9	0.75	15	88.76	160	62.93	339
Skill development	0.11	2	0.10	2	0.78	2	1.09	6
Knowledge and awareness	0	0	0.20	3	0.39	1	2.60	16
Mitigation	0.27	5	1.05	14	0	0	0	0
Conservation	0.05	1	1.40	28	0.39	1	0.27	1
Participation and membership	0	0	0.05	1	0	0	0	0
Cultural	0	0	0	0	0	0	0.82	6
Other	0	0	0	0	0	0	0.41	2

¹⁶ Number of respondents perceiving at least one benefit. Respondents were allowed to give more than one response.

3.5.2 Perceived Costs from PAs at the Household and Community Level

A total of 946 household costs and 1314 community costs were reported from protected areas. The reported costs from tourism were considerably smaller, with 34 responses related to household costs and 106 responses for community costs. Seventy-one percent of respondents perceived at least one household cost and 87% perceived at least one community cost from protected areas. Only 3% of respondents perceived at least one household cost and 8% perceived at least one community cost from tourism. Thirteen categories of costs associated with protected areas and tourism were identified, among which eight were experienced from protected areas and five from tourism (Table 8).

Attacks on humans, including deaths by wildlife, crop loss, and livestock loss were the main perceived costs from protected areas at the community level. The perceived costs at the household level were similar to community costs, however the number of respondents who perceived crop and livestock loss as a main household cost varied. Property damage was perceived as the third biggest cost at the household level from protected areas. Regarding tourism, five different costs were perceived at the community level but four different costs at the household level. No economic cost was perceived at the household level. Sociocultural and environmental costs were the two main costs perceived at both levels, however more respondents perceived these as a community cost.

Table 8: Categorised responses across both study sites related to perceived costs of protected areas and tourism at household and community level.

Cost categories	Household cost from PAs		Comm. cost from PAs		Household cost from tourism		Comm. cost from tourism	
	% responses (N= 946)	No. of respondent ¹⁷	% responses (N= 1314)	No. of respondent	% responses (N= 34)	No. of respondent	% responses (N= 106)	No. of respondent
Crop loss	78.75	590	61.42	709	0	0	0	0
Livestock loss	17.55	166	27.63	362	0	0	0	0
Human attack/loss	0.63	6	5.02	66	0	0	0	0
Property damage	1.37	13	4.19	54	0	0	0	0
Restriction on natural resource use	0.74	6	0.46	5	0	0	0	0
Unjustified penalty/ royalty	0.11	1	0.15	2	0	0	0	0
Poultry/ pet animal loss	0.74	7	0.30	4	0	0	0	0
Other (PAs related)	0.11	1	0.84	11	0	0	0	0
Behavioural	0	0	0	0	5.88	2	12.26	13
Economic	0	0	0	0	0	0	7.55	6
Environmental (solid waste)	0	0	0	0	26.47	9	31.13	33
Sociocultural	0	0	0	0	64.71	19	47.17	45
Other (Tourism related)	0	0	0	0	2.94	1	1.89	2

¹⁷Number of respondents perceiving at least one cost. Respondents were allowed to give more than one response.

3.5.3 Participation and Membership

Only one respondent mentioned a community benefit in the form of participation (in the decision-making process) and membership (with community-based organisations (CBOs) or non-governmental organisations (NGOs)) from protected areas and/or tourism in an open-ended question. However, I asked additional questions about whether respondents were participating in any village level development and conservation related decision-making and whether they were members of the executive committees of associated CBOs and/or NGOs. I found 13% of survey respondents were members of an executive committee of CBOs/NGOs and 14% were involved in decision making processes related to PAs.

3.5.4 Natural Resource Extraction

The open-ended responses showed that 91% of respondents perceived resource extraction from the protected area as a household benefit and 81% perceived this as a community benefit. Dependency of local people on a protected area's natural resources was also apparent from their responses related to questions about their intention to harvest natural resources. Most respondents stated that national parks should allow local people to harvest various natural resources. On a five-point Likert scale (5 = strongly agree), about 80% either agreed or strongly agreed (mean score 3.63 ± 1.04) that PA authorities should allow them to harvest natural resources such as firewood, timber, and grass. However, more people (98.6%) in LNP (mean score 3.99 ± 0.21) held this view compared to those in BNP (65.4%) (mean score 3.35 ± 1.31).

3.5.5 Differences in Perceived Benefits in Relation to Demographic Factors

The contingency analysis (χ^2 test) showed that proximity and residency status yielded the most significant differences in perceptions of benefits for both tourism and PA related benefits. There were significant differences in perceptions of extractive benefits from PA ($p < .001$) and economic benefits from tourism ($p = .001$) experiences at the household level. Similarly, there were significant differences in perceived extractive benefits ($p < .001$), and development benefits from PA ($p < .001$) and economic benefits from tourism ($p < .001$) experienced at the community level. Villagers closer to the PA head office perceived more benefits from tourism and development than distant villages, while people with local origin perceived more benefits than migrants from another district. Ethnicity and education status showed significant differences in the perceived benefits from tourism as an economic benefit (both at household and community levels) as well as extraction benefit from PA at the community level. Gender showed significant differences only with respect to perceived extraction benefit from PA as a community-level benefit (Appendix 2, Table A2.3).

3.5.6 Differences in Perceived Costs in Relation to Demographic Factors

The χ^2 test showed that proximity to the PA office and residency status also had the most significant differences in perceptions of costs from both tourism and non-tourism related costs of PAs. Villages far from the PA office perceived more crop loss and livestock loss as costs at both household and community levels, whereas villages near to the PA office perceived more costs from tourism. Respondents with local origin perceived more crop loss at both household ($p = .011$) and community levels ($p = .002$) whereas respondents with migration status cited more sociocultural costs from tourism

as both household costs ($p = .020$) and community costs ($p = .001$). I also found significant differences in the perceived crop loss from PA as a household cost by age group ($p = .007$) and education status ($p < .001$) and crop loss as community cost by gender and education status. Further, gender showed differences in perceived livestock loss as well. Ethnicity did not have any differences in the perceived costs from both tourism and PAs (Appendix 2, Table A2.4).

3.6 Discussion

I found ten categories of benefits and thirteen categories of costs emerging from the open-ended questions about local people's perceived costs and benefits from PAs and associated tourism. Most respondents perceived extraction benefits as the main household and community non-tourism benefits from PAs, whereas economic benefits were the main perceived outcomes of tourism at both household and community levels. With respect to costs, most respondents perceived greater costs at the community level than within households for both tourism and non-tourism related costs of PAs. Crop and livestock loss were the main perceived community and household costs from PAs, whereas sociocultural costs were the main perceived community and household cost from tourism. Proximity to the PA office and residency status had significantly explained differences in the perceptions of benefits and costs from both tourism and PAs. Age group did not have any differences in the perceived benefits while ethnicity did not have any differences in the perceived costs from both tourism and PAs.

I aligned relevant categories of perceived benefits emanating from the coded open-ended responses with the ICDP criteria (Appendix 2, Table A2.1) to help evaluate if the current PA management in Nepal is delivering intended benefits from the ICDP approach. A very high proportion of the responses related to PAs benefits were

categorised as extraction benefits followed by social and economic development outcomes. Likewise, perceived benefits from tourism were mostly related to economic development and social development. Other categories of ICDP criteria were perceived in very small numbers, suggesting that PAs in Nepal may not be delivering as many benefits as intended from the implementation of the ICDP approach. For example, there were few perceived benefits attributed to conservation and participation. On the other hand, extraction benefits from PAs were perceived by an overwhelmingly large number of respondents. This may contradict with protected area management objectives related to conservation. The study protected areas are IUCN category II (national park) whose primary aim of protection is to protect biodiversity along with its underlying ecological structure and supporting environmental process and to promote education and recreation (Dudley, 2008, p. 16). Although the categories of reported benefits and costs were similar for both tourism and non-tourism related outcomes, I found that benefits tended to be perceived more often at the community level than at the household level for both types of outcomes. This, however, aligns with what one would expect as an outcome of ICDPs because ICDPs aim to provide benefits at the community scale so that everyone in the community can receive benefits (Tolbert et al., 2019). In the following sub-sections, I discuss the results in the context of the conservation and development debate (e.g., the effectiveness of the ICDP concept), conservation costs to local people, participation, and demographic differences of perceived benefits and costs within the broad scope of PA management.

3.6.1 The Balance of Conservation and Development Benefits

High extraction of natural resources from PAs may not be sustainable in the long run as resource depletion may occur. In this context, there is a chance that the ICDP approach being applied in Nepal could increase threats to PAs due to its focus on

meeting community needs. This may be the result of increasing levels of resource harvesting and utilisation, as people try new alternatives in addition to their previous activities (Mackinnon, 2001). It is suggested that, if PAs are to make real conservation impact, then minimizing opportunity costs (or forgone benefits to local people) should be avoided (Smallhorn-West & Pressey, 2022). From the Nepalese experience, preventing the use of resources has been shown to be detrimental to conservation and the failure of strict conservation measures to achieve conservation objectives in the past led to the adoption of ICDPs and the buffer zone programme. There is also a risk that local people may perceive ICDPs as a development project rather than conservation project. For example, in a study of Virunga National Park in Congo, none of the local respondents perceived conservation of wildlife (e.g., mountain gorillas) as a benefit. Rather, half of the respondents reported infrastructure and development projects as the second most important community benefits after ecosystem services from the conservation project (Tolbert et al., 2019). In some cases, conservation activities such as environmental education, forest protection and protected area management were least prioritized (Larson et al., 2016; Nepal et al., 2021). In line with this, my findings showed that local perceptions did not necessarily align with documented conservation outcomes as no one in BNP perceived tiger conservation as a benefit, despite the fact that tiger populations have been shown to double in recent years (DNPWC & DFSC, 2022).

In PAs that have been labelled as successful ICDPs (Brandon & Wells, 1992; Baral et al., 2007), the relative status of development and conservation activities tends to vary in relation to the age of the conservation units associated with Conservation Area Management Committees (CAMCs). For example, development exceeded conservation activities in younger CAMCs in Annapurna Conservation Area, whereas

institutional strengthening (such as capacity building and organizational development) was the main activity in mid-term CAMCs, and conservation activities exceeded development in older CAMCs (Baral et al., 2007). ICDPs and buffer zones projects may need at least a decade to contribute to conservation, whereas development benefits might be more immediate (Sayer, 1991; Baral et al., 2007). Owing to this experience, I did not find local people perceiving conservation as a benefit in either PA, although the buffer zone declaration and hence the buffer zone programme was implemented more than two decades ago in both PAs. This raises the question about providing legal authority for PA management agencies to manage buffer zones (Wells & Brandon, 1993), if they do not lead to local people recognising conservation as a benefit. On the other hand, studies have shown that PA staff implementing ICDPs perceived conservation as a benefit (Michael et al., 2016), demonstrating that there can be a difference between how local people and managers perceive ICDPs. This could be due to the lack of linkage of ICDPs activities to conservation objectives, or people not being aware that ICDPs are able to contribute to conservation. Rather people may perceive it as only a rural development project. This could be addressed through the connection of various activities with conservation which may then lead to more understanding of associated conservation benefits.

Buffer zone policy in Nepal aims to balance and integrate conservation and development through investment of PA income in the buffer zone communities. Even in the older and well-established PAs and buffer zones, there are flaws in the implementation of the buffer zone policy/ guidelines, such as investment of budget in different categories did not follow the guidelines in a strict sense and varied by PAs (Allendorf & Gurung, 2016). For example, Sagarmatha National Park invested heavily in development activities (70%) rather than conservation activities (18%) in the buffer

zone (Silwal et al., 2022). This emphasis on development over conservation undermines the objectives of national parks and needs timely intervention.

I found that fewer people perceived a smaller number of benefits from tourism in relation to protected area related benefits. This is possibly because tourism is limited to certain areas of PAs whereas the sample is spread throughout the PAs. ICDPs also focus on improving local capacity to benefit from NBT (Brandon & Wells, 1992), because NBT is beneficial both to the local people and PA to meet conservation objectives. While local people may benefit economically from NBT, this also contributes to conservation and development (Wardle et al., 2021; Thapa et al., 2022). Nature-based tourism generates funds through protected area entrance fees as well as visitors are willing to pay more for conservation (Baral & Dhungana, 2014; Pandit et al., 2015; Thapa, 2016a; Bhattarai et al., 2021). Most of the Nepalese PAs rely on entrance fees charged to visitors to fund their activities. However, over reliance on NBT for conservation and development could be counterproductive. This is because not all PAs are equally important to tourism and unforeseen incidents such as natural disasters and the COVID-19 pandemic means their income may plummet in an uncertain future. Reliance on entrance fees could be a problem for Nepalese PAs that lack tourism potential in achieving PA management success from ICDPs as they are not able to generate sufficient funds required to implement ICDPs. Studies also have shown that although people may perceive benefits from tourism, livelihood benefits to local communities may be limited (Gubbi et al., 2008) and merely contribute to meeting basic needs rather than wealth creation (Upadhaya et al., 2022). Monetary benefits from conservation may also be limited to tourism entrepreneurs (Bajracharya et al., 2006) thus leaving non-entrepreneurs behind. If tourism benefits from PAs are not distributed

widely in the community, then tourism may not create a strong linkage with conservation.

3.6.2 Conservation Costs to Local People

Conservation and management of PAs comes at a significant cost to local people. Although a financial compensation is available in Nepal for wildlife induced damage such as crop/ livestock loss and property damage, this was not perceived as a benefit. Cost mitigation activities were perceived as a community level benefit by only 14 respondents, while only five respondents perceived cost mitigation as a household benefit. This could be due to the fact that compensation is only paid to local people when the damage is done by certain wildlife species, and because obtaining compensation from PA authorities is cumbersome, lengthy and often insufficient to cover the loss (Thapa, 2016b; Karanth et al., 2019; Shahi et al., 2021). For example, one study showed that although the benefits such as community forest in the buffer zone and tourism related employment were recognized by local people, their perception of costs such as penalties imposed by PA authorities were higher and the compensation received for the wildlife damage costs were lower than their actual costs (LeClerq et al., 2019). In addition, the absence of alternative sources of natural resources may often compel local people to enter PAs to harvest resources even if this is illegal (Thapa & Hubacek, 2011; Karki, 2013; LeClerq et al., 2019; Shahi et al., 2023).

I found crop loss and livestock loss as the top two costs from PAs at both household and community levels, whereas human attack/loss and property damage were additional community costs from PAs. These findings corroborate with other studies about the costs of PAs (Bajracharya et al., 2006; Gubbi et al., 2008; Karanth et al., 2019; Shahi et al., 2021; Htay et al., 2022). This pattern of loss also matched with the official record

and there were court charges for locals too. In the fiscal year (FY) 2021/2022, a total of 2097 cases of loss (including human injuries and death) were registered in BNP and 493 cases in LNP. As a compensation of losses for local people, the PA authority paid¹⁸ USD 160,016 in BNP and USD 28,051 in LNP in the same FY (DNPWC, 2022).

Numerous studies in Asian PAs have documented costs related to crop loss. In one study in Myanmar, more than half of the respondents perceived costs from PAs whereas in Indian PAs, more than three-quarters of the respondents reported crop loss in four PAs (Karanth et al., 2019; Htay et al., 2022). Similarly, a study in BNP in Nepal showed that an annual average monetary loss to households due to livestock depredation was USD 32, while the value of crop loss in Kibale NP was USD 74 per farmer over half a year (Mackenzie & Ahabyona, 2012; Shahi et al., 2021). Another study in Sagarmatha National Park in Nepal showed that few funds were made available for conservation related cost reduction such as addressing crop loss and livestock depredation (Silwal et al., 2022). This contradicts the idea that loss mitigation activities could be more beneficial to local people, as this is favoured over benefit promotion activities through development projects (Mackenzie, 2012). When people experience more livestock loss from wildlife, they tend to perceive fewer benefits from PAs (Parker et al., 2022), therefore it is important to focus on costs/losses reduction from PAs to maximize the overall benefits.

¹⁸1 USD= 130.139 NPR as of 06 March 2023. <https://www.oanda.com/currency-converter/en/?from=USD&to=NPR&amount=1>. This equates to Nepalese Rupees (NPR) 20,824,260 in BNP and NPR 3,650,550 in LNP.

3.6.3 Participation

Participation is important to garner local support for conservation and this can help reduce illegal activities such as poaching (Wells & Brandon, 1993; Krüger, 2005). Participation and integration of local people in management planning and activities can also help achieve biological and socioeconomic development goals (Oldekop et al., 2016). This can create a positive feedback loop in that people are more likely to participate in conservation if they perceive benefits from PAs (Paudyal et al., 2018).

Involvement of local communities in decision-making processes of PA management and empowerment contribute to PA sustainability (Gatiso et al., 2022). Conservation participation such as plantation, waste management and community forest in a national park in Myanmar was only about 44% (Htay et al., 2022). Moreover, participation tends to be higher with local people living near the PAs and those receiving PA benefits (Gatiso et al., 2022; Htay et al., 2022). My results do not necessarily demonstrate this trend, as participation in the decision-making process was recognised by few respondents (14%). This did not align with a key criterion for ICDPs (Wells & Brandon, 1993), although most perceived some sort of benefits. Similar to my study, Gaurishankar Conservation Area in Nepal had even fewer respondents (12%) who participated in either decision-making or discussion (Paudyal et al., 2018). Another study by Silwal et al. (2022) also found that active support and participation of local people in the buffer zone program was negligible and decisions were often made by local elites without listening to those who suffer from wildlife damage (Silwal et al., 2022). This is in contrast to the aim of PA authorities of Nepal that have facilitated the establishment of buffer zone user committees at the *ilaka* (sector or ward) level and buffer zone management councils at the PA level to increase local participation (DNPWC, 2022).

Increased participation of local people in the planning and decision-making process contributes to the acceptability of PAs or conservation strategies and enhances compliance of rules and regulations (Andrade & Rhodes, 2012; Gatiso et al., 2022). However, even if greater numbers of local people become members of community associations, actual membership in conservation related associations might be small (Tolbert et al., 2019). It is documented that empowerment of local people leads to positive socioeconomic outcomes which then contribute to positive conservation outcomes of PAs (Oldekop et al., 2016). Low participation in decision making may also mean that PA authorities may not want to delegate the decision-making power, preferring to treat local people as passive beneficiaries only. In this context, strengthening participation in PA management and decision-making would help tackle the problem of poaching as well as provide support for conservation. For example, in the northern region of BNP, local people hunt several wildlife species due to the absence of PA staff and remoteness as well as lack of development opportunities (Bhattarai et al., 2016). Their meaningful participation could help curb this problem and turn local people from poachers into guards. Local institutions, such as buffer zone user committees in Nepal, that are involved in protected area management are demanding more autonomy in decision making, planning, budgeting and programme implementation but protected area authorities seem reluctant to devolve the power (Paudel et al., 2010).

3.6.4 Demographic and Spatial Differences in Perceived Benefits and Costs

Benefits from PAs often arise from tourism activities and development support from NGOs working in and around PAs (Karki, 2013; Tumusiime & Vedeld, 2015; Sabuhoro et al., 2021). ICDP benefits have been observed to be more prevalent in the villages

adjoining park administrative offices and park boundaries than those distant from it (Ezebilo & Mattsson, 2010; Mackenzie, 2012). I found similar results as households situated near the PA office and the tourism destinations perceived more benefits from PAs and tourism than distant households. This also conforms with findings from the Sariska Tiger Reserve in India in which people living within the tourism zone benefitted more than those living outside the tourism zone (Udaya Sekhar, 2003). My findings also conform with a study in Chitwan National Park, where tourism related economic benefits were perceived by higher numbers of residents in tourism villages (Spiteri & Nepal, 2008a). Moreover, it is also important to note that some studies have shown that the farther the villages are from the PA boundary, the less problems are reported from PAs (Sarker & Roskaft, 2011; MacKenzie et al., 2017; Karanth et al., 2019). This could be due to less interaction of villagers with the PA and/or fewer problems with park wildlife. I found that more residents perceived loss in the distant zone from the PA office than nearby residents (not necessarily PA core zone boundary).

In ICDPs, it may be challenging to be fair and effective in targeting all communities and households for development activities. For example, whether the poachers should get priority to prevent them from engaging in poaching activities or benefits should be rewarded to forest protectors is complex. Similarly, should poor people be targeted for poverty alleviation and social equity? ICDPs are often designed on the assumptions that poverty is the main threat to biodiversity conservation, and that providing development opportunities to local people will reduce pressure on PA resources (Mackinnon, 2001). This may not hold true in practice as studies have shown that villagers experiencing the high cost of conservation received fewer benefits whereas individuals receiving more benefits tended to be employed directly in tourism, PA-based employment and communities with resource use agreements with PAs (Spiteri & Nepal, 2008a;

Mackenzie, 2012; MacKenzie et al., 2017). This problem of unfairness of benefit distribution could be solved by adopting social equity principles in protected area management as well as considering livelihood needs (Zafra-Calvo et al., 2017).

Studies on the perceptions of benefits and costs from PAs have had varied results for different demographic groups. For example, personal benefits decreased, and more losses were perceived from PAs by older age groups (Htun et al., 2012; Tolbert et al., 2019). Contrary to this, my study did not find any differences in the perceived benefits and costs from PAs among age groups. Regarding gender, females reported more extraction benefits (timber and firewood) whereas males reported more problems from PAs (Sarker & Roskaft, 2011). Other studies have shown that women were less likely to report community benefits from PAs in Virunga-Bwindi massif (Tolbert et al., 2019) while men collected more medicinal plants than women with the increase in distance to forest (Mushi et al., 2020). Men have also been shown to be more likely to report costs (Ward et al., 2018a), which support my findings. This trend could have been observed because of the gendered role in livelihood activities. For example, women in Nepal participate more in natural resource-based livelihood activities and their positive perceptions of PAs could be linked to resource harvest opportunities. Because of this, subjective evaluation of benefits may outweigh costs for women more than men.

Research has also shown differences in perceived benefits and costs with respect to indigeneity. For example, indigenous people perceived fewer costs, and more likely to acknowledge conservation benefits in locations such as Bangladesh and Sierra Leone (Sarker & Roskaft, 2011; Larson et al., 2016). In Ghana, more than two-thirds of the non-indigenous community were dissatisfied with the distribution of tourism benefits (Afenyo & Amuquandoh, 2014). I found no significant differences in costs among caste groups but found large numbers of 'other caste' respondents benefiting from tourism.

In LNP, communities are more homogenous and almost all of the respondents who have benefited from tourism are of *Tamang* ethnicity. In BNP, residents adjacent to PA office are of *Tharu* ethnicity who have benefited from tourism from becoming nature guides and from homestay operations.

I found that a greater number of people with school education perceived economic benefits from tourism and people who did not attend school perceived more cost from PAs. This mirrors the results of other studies showing that people with higher education perceive more benefits and illiterate people report more problems from PAs (Sarker & Roskaf, 2011; Htun et al., 2012). As with school attendance or with higher level of education, conservation awareness increases which may lead to more perceived benefit from PAs. Finally, I found that people who originated from the PA villages were more likely to perceive costs, which is supported by other research showing long-term residents are more likely to be negatively affected by PAs (Newmark et al., 1993). The possible reason could be due to more sustained negative experiences of PAs among long-term residents.

3.6.5 Implications of the ICDP Approach for Conservation

ICDP approaches tend to focus on reducing natural resource dependency while promoting development projects that also contribute to conservation. However, the higher dependency of local people on protected area's natural resources is a common phenomenon in developing countries (Baral & Heinen, 2007b; Tolbert et al., 2019). This may be challenging for higher level IUCN categories of PAs, such as national parks, as the need to accommodate this may undermine conservation objectives. Therefore, while implementing ICDPs, resource dependent people should be engaged in the identification of alternative income generating activities that can reduce

dependency on PA resources. Through ICDPs, benefit sharing activities are initiated which could potentially reduce resource utilisation to encourage conservation and promotion of development projects. ICDP approaches also tend to emphasise community scale benefits over households in order to achieve wider impacts and encourage greater participation in conservation (Tolbert et al., 2019).

Although ICDPs are implemented at the local (PA) level, if they meet their goals of promoting better local support and hence positive outcomes of PAs, they have global implications for conservation and environmental management. For example, local engagement with activities such as forest restoration or improved ecosystem conditions in a national park in one part of the world would help curb carbon emission in other parts of the world. Therefore, where relevant to the PA context, the ICDP approach should be made a part of global environmental governance to enhance conservation and development simultaneously. In this way, funding from the developed nations also helps address financial shortfalls in implementing ICDPs or PA management while the benefits can be enjoyed at the global scale as well.

Tourism in PAs can also support ICDPs in achieving conservation objectives such as through providing alternative income to people and financial resources for PA management. However, sustainability of PAs and tourism is largely influenced by the participation of local people and effective planning and management in tourism destinations (Krüger, 2005; Afenyo & Amuquandoh, 2014). Tourism's revenue contribution to local people can support a transition towards non-destructive land use, and promote positive attitudes towards protected areas, thus reducing poaching and other illegal activities in the long run (Tisdell, 2003; Krüger, 2005; Xu et al., 2009). Moreover, local people in the communities where the tourism is flourishing tend to be less dependent on the natural environment (Holland et al., 2021) which may support

ecosystem restoration. Thus, promotion of benefits and mitigating costs for people from PA management is important to attain conservation success worldwide. For example, local people expect sociocultural and economic benefits such as community development, local cultural inheritance and household income in exchange for conservation (Lee, 2013 cited in Zhang et al., 2019) which ultimately contributes to achieving the global target of effective and area-based conservation.

3.7 Conclusion

In this chapter, I assessed local perceptions of the costs and benefits of PAs in Nepal, managed through the ICDP approach. Overall, I found more perceived benefits than costs accruing both within individual households and at the community level. Extraction and economic benefits were among the most frequently perceived, with some differences among demographic groups. For example, extraction benefits were perceived more by the residents living far away from the PA office and the zone of tourism activity, whereas development and economic benefits were perceived more by nearby residents. At the policy level, Nepal has followed the core concept of ICDPs that include buffer zone zonation in PAs, and compensation or substitution for losses and promoting socioeconomic development. However, this study showed that local people are yet to perceive conservation, participation and cost mitigation as benefits from ICDPs. As some costs are inevitable with protected area management regardless of the conservation strategies adopted, I contend that management should focus on reducing costs rather than maximizing benefits alone. This is because there were very few respondents citing cost mitigation as a benefit, implying that there is absence of cost mitigation activities. Although the buffer zone policy has been viewed as an important tool for protected area management in Nepal, positive impacts of this approach were not confirmed in my study.

This study also has some limitations which could bias the findings on ICDPs as I relied on only two PAs that are also popular NBT destinations. There are many more PAs in Nepal where tourist visitation rates are very low or non-existent but that are also managed through the ICDP approach. Further, in-depth qualitative interviews would have added more context to the results of my survey questionnaire. I surveyed people within the PA jurisdiction based on the distance (travel time) from the PA office rather than the actual (geographical) distance from the PA or forest boundary. This could also bias the findings on the benefits or costs perceived from the existence of the PAs. However, the survey strategy did allow exploration of the development benefits in different PA regions since the buffer zone budget disbursement may depend on the level of interaction with PA staff and may have a distance decay effect. Future research in PAs that are not tourism destinations, those that have been established for a longer as well as shorter periods of time, and those within different ecological and cultural contexts could add depth to the evaluation of the ICDP approach. My research provides an approach to evaluate the effectiveness of the ICDP approach and contributed to a practical and theoretical understanding of its application to PAs. The findings would be useful for improving conservation and development outcomes of PAs in Nepal.

Chapter 4

Social Equity in Protected Area

Management

Chapter 4: Social Equity in Protected Area Management

This chapter builds on the previous chapter that explored the categories of perceived benefits and costs of protected areas. Here, I expand this work by examining the equity dimension of these benefits and costs as perceived by local people. I developed the research questions, research design and coordinated the data collection. Field assistants supported the data collection. I analysed the data and wrote the chapter. Amy Diedrich supported in the development of research questions and survey design. Amy Diedrich and David King supported with editing and structuring of the chapter. Rhondda Jones provided statistical support. This chapter is currently being formatted¹⁹ for publication in *Society and Natural Resources*.

¹⁹ **Thapa, K., King, D., and Diedrich, A** (*in preparation*). Equitable management of protected areas in Nepal. *Society and Natural Resources*.

4. Social Equity in Protected Area Management

4.1 Abstract

Equitable management of protected areas is as important as area-based targets for protected area conservation. However, social equity is rarely considered in protected area management. Social equity in protected areas context has three dimensions: distributional, procedural and recognition equity. There are often cases of inequitable distribution of benefits and burdens from protected areas. Similarly, there are concerns of participatory decision-making and recognition of rights, traditional knowledge and customs in protected areas. I conducted household surveys in two Nepalese protected areas to assess distributional and procedural equity. Distribution of costs from protected areas and tourism were perceived as more equitable than benefits distribution. A best-fit logistic regression model was developed with variables consisting of benefits, costs and procedural equity. The regression model showed that the perception of fairness of a protected area's benefits distribution was strongly influenced by tourism benefits and costs, protected area costs and procedural equity. Procedural equity, as represented by participation and membership, was experienced by only 16% of the respondents. Chi-square (χ^2) analysis showed that respondents who attended school and those residing near to the protected area office tended to perceive more procedural equity.

4.2 Introduction

Protected areas (PAs) and other effective area-based conservation measures (OECMs) are the foundations of meeting conservation goals. The Convention on Biological Diversity's (CBD) Aichi biodiversity target (target 11) as well as the recently adopted post-2020 Global Biodiversity Framework (Kunming-Montreal Biodiversity Framework, target 3) of the CBD stated that equitable governance and management

should be central to protected areas. This framework also aims to conserve at least 30% of terrestrial (including inland water) and coastal and marine areas through a well-connected system of PAs and OECMs by 2030 (COP-CBD, 2022; CBD, 2023). While the latest statistics showed that terrestrial coverage of protected and conserved areas has reached more than 17% (UNEP-WCMC & IUCN, 2023a), our understanding of whether these areas are being equitably managed is still limited, due to a scarcity of global or national level assessments (Zafra-Calvo et al., 2019). Protected areas and nature-based tourism in protected areas provide multiple benefits at multiple spatial scales but these can come at a significant cost to local people (Coad et al., 2008; Jones et al., 2020; Gurney et al., 2021a; Thapa et al., 2022; Thapa & Diedrich, 2023). While looking into the benefits and costs²⁰ of protected area management to local people, there is often unbalanced and inequitable distribution of benefits and costs or burdens among communities (Mackenzie, 2012; Bragagnolo et al., 2016; Swemmer et al., 2017; Chaudhary et al., 2018).

In the context of protected area management, equity is often related to the distribution of benefits and costs. However, social equity in protected area management is broad and categorised into three interlinked dimensions: distributional, procedural and recognition equity (Schreckenberg et al., 2016; Zafra-Calvo et al., 2017). Distributional equity refers to receiving benefits and relief from costs; procedural equity refers to participation in decision-making, transparency etc.; and recognition equity refers to whether people are recognised for their cultural identity, customary rights, values etc. in protected area management (Schreckenberg et al., 2016; Zafra-Calvo et al., 2017).

²⁰ While some literature on equity research (e.g., Zafra-Calvo et al., 2017; Zafra-Calvo et al., 2019) use the term “burden”, I use cost to maintain consistency throughout the thesis. Cost is also preferably used in economic terms. In this chapter, “cost” and “burden” denote the same meaning.

However, distributional equity may be more important as studies have shown perceptions of distributional equity to be lower than procedural or recognition equity (Abebe & Jones, 2022; Mollick et al., 2023). This could be due to the direct impact that distributional equity has on rural livelihoods.

Although the use of the terms equality, equity, fairness and justice differ by discipline²¹, these are sometimes used interchangeably in conservation science, policy and practice (Friedman et al., 2018). In distributive justice, principles of equality, equity, and need may be adopted based on the social character of people who are seeking to achieve justice. For example, economically oriented groups tend to use the equity principle, solidarity-oriented groups use the equality principle and caring oriented groups use the need principle as the basic value to realise distributive justice (Deutsch, 2010). On the other hand, Wagstaff (1994) provides empirical work to support the idea that proportionality and equality may be represented in the form of a single compound equity principle. This is known as “equity as a desert” principle rather than having three different principles of equality, equity and needs to achieve distributive justice. Gross-Camp et al. (2012) explored payment for ecosystem services (PES) project’s fairness in terms of compensation payments received by local people that are worth an equivalent in exchange to the cost of what has been foregone (e.g., access to natural resources in PA). In this chapter, I treat fairness and equity as synonymous to denote the same meaning. Further, I also argue that socially just conservation implies a character of both fairness and equity as defined above with respect to benefit distribution. For instance, local people residing in and around PAs may deserve to

²¹ Discussion of definition is beyond the scope of this chapter. In this chapter, I use equity to follow the CBD’s terminology of equitable management of protected areas.

receive a fair share of benefits based on the proportion of what burdens they experience from PAs (such as crop loss from wildlife). At the same time, some people may be better able to cope with the problems than their neighbours, although the crop loss from wildlife could be equal, because these people may have other livelihood options. Therefore, these group of people may need little or more compensation.

There are cases of inequitable distribution of benefits from development projects in different regions of protected areas (Mehta & Kellert, 1998) as well as from nature-based tourism (Afenyo & Amuquandoh, 2014). Benefits, such as those that are nature-based in PAs, may come at a disadvantage or costs for farmers, because they often suffer losses from wildlife in PAs. Tourism in protected areas may also provide inequitable distribution of jobs and other economic opportunities across different demographic groups (Massarella et al., 2022). Similarly, the benefits from PAs and nature-based tourism may be limited in tourism areas that tend to be close to the protected area headquarters (Thapa & Diedrich, 2023) and inequitable benefit distribution may also occur across different spatial scales. For example, benefits generated from PAs may spread out quite far from the PA boundary, while the costs may be more acute near the protected area boundary (Mackenzie, 2012).

Benefits from PAs can be distributed in different forms such as equally among recipients (irrespective of the stakeholders' status), based on needs (addressing the most vulnerable), conservation cost incurred (e.g., opportunity cost or foregone benefits), contribution to conservation, to promote benefits to the maximum number of people, based on customary rights to the place or PAs and through culturally accepted distributive principles (Wagstaff, 1994; Deutsch, 2010; Zafra-Calvo et al., 2017; Gurney et al., 2021b). However, the most appropriate form of benefit distribution for a particular protected area depends on the sociocultural context of the given protected

area or region where the people reside (Zafra-Calvo et al., 2017). Therefore, equity should be evaluated in terms of local people's perceptions rather than a theoretical understanding of principles of equity.

As such, for rural people living adjacent to PAs with limited development and economic opportunities, distributional equity may be more important and demanding than other forms of equity. They may be less concerned about how the decisions are made (i.e., procedural equity) although there is a risk that procedural equity may be used to legitimise the protected area decision and manipulate local people. For example, in Laos, false promises of livelihood support were made to villagers to agree to demarcate a protected area boundary (Dawson et al., 2018). On the other hand, recognition equity, in terms of values and spiritual activities, may also not be of much importance to local people (Dawson et al., 2018) in the broader context of conservation equity. Another reason for the emphasis on distributional equity may be the fact that local people living around PAs may be more likely to perceive (in)equity in absolute terms (objectivity) (e.g., lack of ownership of land or inability to harvest resources) rather than relative terms (subjectivity) (e.g., how good or bad they were treated by the PA authority or law enforcement officers relative to their fellow villagers) (Dawson et al., 2018).

A global review of equity research confirmed that most studies (67%) were focused on distributional equity (Friedman et al., 2018). Distributional equity may be an important consideration during the early phases of conservation interventions as a foundation for achieving overall equity in protected area management. Procedural and recognition equity may be more important during the planning and implementation phases of conservation intervention, with distribution equity being of greater importance as an outcome of conservation interventions. Positive correlation between indicators of social equity in PAs means increase in one equity indicator may lead to an increase in another

indicator, albeit not necessarily causative (Zafra-Calvo et al., 2019). Because of this, distributional equity is an important aspect of research on equitable management of PAs and is the foundation of equity (Dobson 2007 and Vincent 1998 cited in Martin et al., 2014). Distributional equity may be used as a proxy indicator to measure overall equity status in protected area management. The issue of equity can also be explored by asking about the distribution of benefits and costs (Berkes, 2004).

Earlier work that explored all three dimensions of equity (Chaudhary et al., 2018; Dawson et al., 2018) and that disaggregated the equity dimension by socioeconomic factors (Chaudhary et al., 2018) failed to address the equity issues of costs. This is also lacking in the studies that investigated the distribution justice principles which only examined benefits (Gurney et al., 2021b) or looked only into distributional and procedural equity but missed costs (Gustavsson et al., 2014). However, protected area cost is equally important, and this is an important indicator to assess distributional equity.

This research gap warrants the examination of the distribution of costs to better understand equity dimensions of protected area management. Although some amount of costs to local people resulting from protected area management is unavoidable, how people perceive the fairness of the distribution of these is an important topic to explore to promote equitable protected area management. Nepal has achieved the area-based conservation target (Aichi target) (DNPWC, 2022) and is also likely to meet the new area-based conservation target as envisioned in the post-2020 Global Biodiversity Framework if conservation tools such as community forest, protected forest, Ramsar site outside PAs are recognised as OECMs. Despite success in meeting these targets of overall area coverage, research on equitable management of PAs is lacking in the Nepalese case. The third chapter (also cf. Thapa and Diedrich (2023)) explored the

benefits and costs of protected areas and nature-based tourism at the household and community level in Nepalese PAs. Here, I expand on this work by examining the equity dimension of these benefits and costs as perceived by local people from protected area management in Nepalese PAs.

Based on the data from two protected areas, this research examines local people's perception of equitable management of protected areas. In particular, this chapter address three research questions: 1) What are the perceptions of procedural equity? 2) What are local stakeholders' perceptions of distributional equity of benefits and costs from protected areas and nature-based tourism? and 3) What factors (sociodemographic, costs, benefits etc.) influence those equity perceptions of benefits and costs from protected areas and nature-based tourism?

In the next subsections, I present the methodology with a description of the study sites followed by data collection and data analysis methods. Then, this follows the result of the study and discuss the findings in the context of equitable management of protected areas.

4.3 Materials and Methods

4.3.1 Study Sites

My study sites were two protected areas of Nepal: Bardiya National Park (BNP) in the Terai (southern plain / lowland) and Langtang National Park (LNP) in the Himalayas. These national parks encompass the main defining characteristics of the Nepalese protected area system from the perspectives of governance and management, geographical location and tourism activities. Most Nepalese protected areas are located either in the mountains or Terai. BNP is the second most visited protected area in the Terai and LNP is the third most visited protected area in the mountains / Himalayas by

international visitors. The establishment of a buffer zone around the national parks took place as early as 1996 in BNP and 1998 in LNP (DNPWC, 2022). Buffer zones are established in Nepalese protected areas with the aim to mitigate conservation costs to local people while also engaging people in benefit sharing programs (Budhathoki, 2004; Paudel et al., 2007).

Local people in LNP are allowed to live inside the boundary of the national park, in addition to the outer buffer zone. Unlike lowlands / Terai national park and/or protected areas, the private property and land inside the national park in the Himalayan region of Nepal is considered a buffer zone and people are allowed to practise their traditional way of living. In contrast, residents in BNP live only within the buffer zone (i.e., outside the national park boundary) and people in many protected areas of the Terai, if present, were translocated out of the boundary in the past. Owing to the presence of local people inside the LNP boundary, albeit a buffer zone, grazing of livestock and rights to use other basic natural resources to support rural livelihoods are considered legal in LNP. On the other hand, these activities are considered illegal inside the boundary of BNP. However, for a brief period of three days in winter (exact opening date varies), harvesting of grass and reeds is permitted for the BNP buffer zone residents with a modest fee. The total number of households residing in the buffer zone of BNP is 17,172 (BNP, 2016) and 14,963 households in LNP buffer zone (LNP, 2019). Local communities in the buffer zone are organised into users' groups and users' committees at the settlement level and ward level respectively, whereas the buffer zone management council is organised at the park level. Local people participate in and are mobilised for conservation and development activities in the protected areas through these institutions.

4.3.2 Sampling and Data Collection

I divided both protected areas into three zones based on the proximity to the PA head office. I assigned proximity as adjacent, mid-distance and far from the PA office based on travel time required to reach to the national park headquarter as well as remoteness. In BNP, adjacent was defined as within half-an-hour by bicycle, mid-distance as within half day of travel by bus / jeep / autorickshaw or motorbike and far was defined as at least a day travel (by foot and/or bus / jeep ride). Likewise, in LNP, adjacent was defined as either one day of travel by foot or less than a day travel by bus/jeep, mid-distance was defined as within a one-and-a-half days of travel (hike and/or bus/jeep ride) and far was defined as minimum of two days of travel (hike and/or bus/jeep ride). The use of different travel modes varied greatly in terms of total distance travelled and thus affected how far people could travel in a given time. For example, travelling a full day by bus meant travelling longer distances than walking a full day. I have considered the actual travel time required to reach the headquarters, although use of bus or other vehicles incurs additional costs. For example, I consider a whole day of travel on foot and a day of travel by combination of bus and on foot as equivalent because local people have to spend an entire day traveling in either case. I had to assign proximity in such a way because not all the regions and sampling sites are connected to roads and in some regions walking is the only option.

I also gave attention to the tourism activities while assigning zones such that the adjacent zone had the majority of tourism activities, mid-distance had small-scale tourism, if any, and the far zone had no tourism (Table 9). This also ensured that the sample wards covered different districts and municipalities (local governments).

Table 9: Overview of the protected area study site characteristics.

Protected area		Adjacent	Mid-distance	Far
<i>Tourism</i>	Bardiya NP	Present	Absent	Absent
<i>activities</i>	Langtang NP	Present	Present (but low)	Absent
<i>Topography</i>	Bardiya NP	Terai (lowland)	Terai (lowland)	Churia hills
	Langtang NP	Himalayas	Himalayas	Himalayas
<i>Human</i>	Bardiya NP	Outside NP only	Outside NP only	Outside NP only
<i>settlement</i>	Langtang NP	Inside and	Inside and outside	Inside and
		outside NP	NP	outside NP

I generate the total required sample size using the formulae²² ($n = \frac{N}{1+N(e)^2}$) (Israel, 1992). This gives a total sample size of 99 to 391 in BNP with the margin of error of 10% and 5% respectively. In LNP, this gives the total sample size of 99 to 390 with the margin of error of 10% and 5% respectively. Then, I applied a quota sampling method to survey the households in each zone. In BNP, each zone was sampled with a minimum quota of 150 households owing to easy accessibility and a higher number of households. In LNP, the sample target was a minimum of 110 households in each zone owing to remote and difficult mountain terrain as well as lower numbers of households compared with BNP. Either the head of the household or his/her representative older than 18 years was invited to participate in the survey. Further, this study aimed to balance the respondents by gender. Therefore, alternating between male and female respondents was carried out during the survey. However, this was not always possible due to the absence of target respondents and in this case, the survey was conducted with the

²² n= Required sample size, N= Population size, e= Margin of error

available and consenting respondents. The sample was varied within the ward as much as possible such as by visiting households at different times of the day and different part of villages. The survey team also visited households that were not in the main centre of the village or main trail. This study applied convenience sampling to select the households and respondents. The questionnaire captured demographic data including age, gender, ethnicity, education status, residency status etc. The open-ended questions were asked to the respondents about the types of benefits and costs perceived from protected areas and tourism. Participation in protected area related the decision-making process and membership in the executive committees of community-based organisations (CBOs) were asked in a yes/no format. Furthermore, I asked four Likert scale type statements about the perceptions of fairness of benefits and costs distribution from PA and tourism (1=strongly disagree; 5= strongly agree). These fairness perception statements were presented as, 1) non-tourism related benefits of PA are shared fairly in the community, 2) non-tourism related costs of PA are experienced at the same level in the community, 3) tourism related benefits are shared fairly in the community, and 4) tourism related costs of PA are experienced at the same level in the community. In total, I completed 845 household surveys (Table 10).

Table 10: Demographic characteristics of survey respondents.

Demographic variables	Protected area (%) *		Proximity to PA (zone) (%) *			Sample (n)
	Bardiya NP	Langtang NP	Adjacent	Mid-distance	Far	
<i>Age</i>						
Older (≥ 41 yrs)	27	24	18	19	15	432
Younger (≤ 40 yrs)	30	19	19	12	17	413
<i>Gender</i>						
Female	28	19	17	14	15	390
Male	29	25	20	17	17	455
<i>Ethnicity</i>						
Other caste ²³	28	42	29	21	20	596
High caste	28	1	8	10	12	247
<i>Education</i>						
Attended school	25	27	16	18	19	442
Did not attend school	31	17	22	13	13	400
<i>Residency status</i>						
Migrated	30	1	11	11	9	261
Local	26	43	26	20	23	584

* Some count more than 100% due to rounding

4.3.3 Data Analysis

As proposed by Sikor et al. (2014), empirical analysis of equity in ecosystem governance can be performed through characterising justice notions. The three factors to understand justice are dimensions, criteria and subjects. To enable empirical analysis of distributional equity, here, I measured equity through dimension (distribution of benefits and costs), criteria (perceived equality of costs distribution and perceived

²³ Here, *Other caste* is jointly referred to indigenous nationalities and occupational castes.

fairness and equity of benefits distribution) and subject (benefits and/or costs perceived at the household level).

For the categorical data on participation and membership (recognitional equity) that had a yes or no response, I combined and coded into three categories. These were respondents with both participation and membership, either participation or membership and neither participation nor membership. I conducted a chi-square (χ^2) test to analyse whether the participation and membership significantly differed with respect to six sociodemographic variables (Table 11). Age was categorised into younger (≤ 40 years) or older (≥ 41 years) for χ^2 analyses, although this was a continuous variable in the logistic regression. I categorised this age range as younger or older based on the classification of youth age in Nepal (Government of Nepal, 2015). Alpha (level of significance) was set to 0.05.

Perceived fairness of distribution (i.e., distributional equity) was analysed using logistic regression as the data did not meet the assumptions to run ordinal regression analysis. The data were transformed to run logistic regression. I treated the neutral score as a missing value and merged strongly disagree and disagree as one variable (i.e., disagree) and agree and strongly agree as another variable (i.e., agree) for two possible (binary) outcomes only to enable (to run) logistic regression. Agree and disagree (new variables obtained from merging as above) were re-coded as dummy variables, i.e., 1 and 0 respectively. The data were checked for the assumption of multicollinearity to run logistic regression and there was no problem of multicollinearity (Appendix 3, Table A3.13)

I conducted logistic regression to understand how the sociodemographic variables as well as the perceived benefits and costs from PAs and tourism, and procedural equity, influenced the perceptions of fairness of benefits and costs distribution. To test the

factors influencing perceived fairness, I analysed three logistic regression models for both benefits and costs of PAs and tourism. The first model consisted of sociodemographic variables only (six variables), the second model consisted of perceived benefits and costs, and procedural equity (six variables) only and the third model consisted of all the variables from the first and second model (12 variables) (Table 11). To compare logistic regression models, I used Akaike Information Criterion (AIC) with the lowest AIC value as the best model. All analyses were conducted in IBM SPSS statistics version 27.

Table 11: Variables and their description used in the χ^2 test and logistic regression model.

Variable	Description
<i>Socio-demographics</i>	
Age	Age in years (continuous)
Gender	Male or Female (male= 1, female= 0)
Ethnicity	Caste group (high caste= 1, other caste= 0)
Education status	If respondents attended any school (yes= 1, no= 0)
Resident status	Whether respondent is local or migrated from other districts (local= 1, migrated= 0)
Proximity	Spatial location of respondents' village to PA office (adjacent/near= 1, other= 0)
<i>Perceived benefit and cost</i>	
Extractive benefits from PA	Whether the respondent harvested at least one natural resource product (yes= 1, no= 0)
Other (non-extractive) benefits from PA	Whether the respondent perceived at least one other benefit (other than extraction) at the HH level (yes= 1, no= 0)
Tourism benefit	Whether the respondent perceived at least one tourism related benefit at the HH level (yes= 1, no= 0)
PA cost	Whether respondent perceived at least one cost from PA (yes= 1, no=0)
Tourism cost	Whether respondent perceived at least one cost from tourism (yes= 1, no= 0)
<i>Procedural equity</i>	
Procedural equity (1)	Whether respondent was either a member of executive committee of CBOs or participate in conservation decision-making (yes= 1, no= 0)
Procedural equity (2)	Whether respondent was both a member of executive committee of CBOs and participate in conservation decision-making (yes= 2, no= 0)

4.4 Results

4.4.1 Procedural Equity

Participation in decision-making processes and membership of executive committees of community-based organisations, including buffer zone users committee, was used as a proxy indicator to measure procedural equity. About 16% of the respondents (n=845) were involved in decision-making processes and/or had membership of executive committees. However, 12% had both (participation and membership) whereas only 4% of respondents either participated or had membership of executive committees. The chi-square (χ^2) test showed that respondents who attended school tended to have more procedural equity than those who did not attend school, but higher numbers of respondents who did not attend school had no membership or participation (procedural equity) ($\chi^2_{v=3} = 33.53, p < 0.001$) (Table 12). Similarly, respondents residing near or adjacent to the protected area office tended to have more procedural equity than distant residents, but distant residents tended to have no procedural equity ($\chi^2 = 18.61, p < 0.001$). Although nonsignificant, male and younger age groups perceived more procedural equity (Table 12).

Table 12: Participation in decision-making processes and membership of executive committees by socio-demographics.

	Variables	No procedural equity (n) #	Procedural equity (1) (n) ##	Procedural equity (2) (n) ###	χ^2 test*
<i>Age</i>	Older (≥ 41 years)	374	13	45	$\chi^2 = 3.82,$
	Younger (≤ 40 years)	339	21	53	$p = 0.147$
<i>Gender</i>	Female	337	14	39	$\chi^2 = 2.28,$
	Male	376	20	59	$p = 0.319$
<i>Ethnicity</i>	Other caste ²⁴	502	24	70	$\chi^2 = 0.028,$
	High caste	209	10	28	$p = 0.986$
<i>Education</i>	Did not attend school	401	16	25	$\chi^2 = 33.53,$ $p < 0.001$
	Attended school	309	18	73	
<i>Proximity to</i>	Other (mid to far)	470	15	46	$\chi^2 = 18.61,$
<i>PA office</i>	Near/Adjacent	243	19	52	$p < 0.001$
<i>Resident</i> <i>status</i>	Local	491	28	65	$\chi^2 = 3.16,$
	Migrant	222	6	33	$p = .205$

*Values in **bold** are significant

Neither membership nor participation, ## Either membership or participation (N), ### Both membership and participation (N)

²⁴ Other caste refers to indigenous and/or occupational caste.

4.4.2 Distributional Equity: Perceived Fairness of Benefits and Costs

Distribution

Local people in BNP and LNP perceived several types of benefits and costs from PAs and tourism at the household level (Table 13). An overwhelmingly large number of respondents perceived extraction benefits (e.g., firewood, fodder/grass etc.) followed by community development projects from the protected area. With respect to tourism, economic benefits were perceived by majority of the respondents. Crop and livestock loss were the main costs from the protected area while sociocultural cost was mostly perceived from tourism (Table 13).

Table 13: Perceived benefits and costs from protected area and tourism at the household level.

Benefits category**	No. of respondents*	
	Benefit from PA	Benefit from tourism
Extraction benefit	772	0
Community development	49	22
Economic	9	160
Mitigation	5	0
Skill development	2	2
Conservation	1	1
Knowledge and awareness	0	1
Costs category	Cost from PA	Cost from tourism
Crop loss	590	0
Livestock loss	166	0
Property damage	13	0
Poultry/pet animal loss	7	0
Attack on humans/loss of lives	6	0
Restriction on natural resource use	6	0
Unjustified penalty/ royalty	1	0
Sociocultural	0	19
Environmental (solid waste)	0	9
Behavioural	0	2
Other costs	1	1

*Number of respondents perceiving at least one benefit or cost at the household level. Respondents were allowed to give more than one response.

** For the benefits and costs type at the community level, see Chapter 3 (also cf. Thapa and Diedrich (2023). Detail categorisation of benefits and costs type is provided in Appendix 2, Table A2.1 and Table A2.2.

Most of the respondents perceived that benefits from protected areas were distributed fairly in the community where 68% of the respondents either agreed or strongly agreed.

In terms of costs distribution, more respondents (77%) either agreed or strongly agreed that the cost was equally experienced in the community (Figure 15).

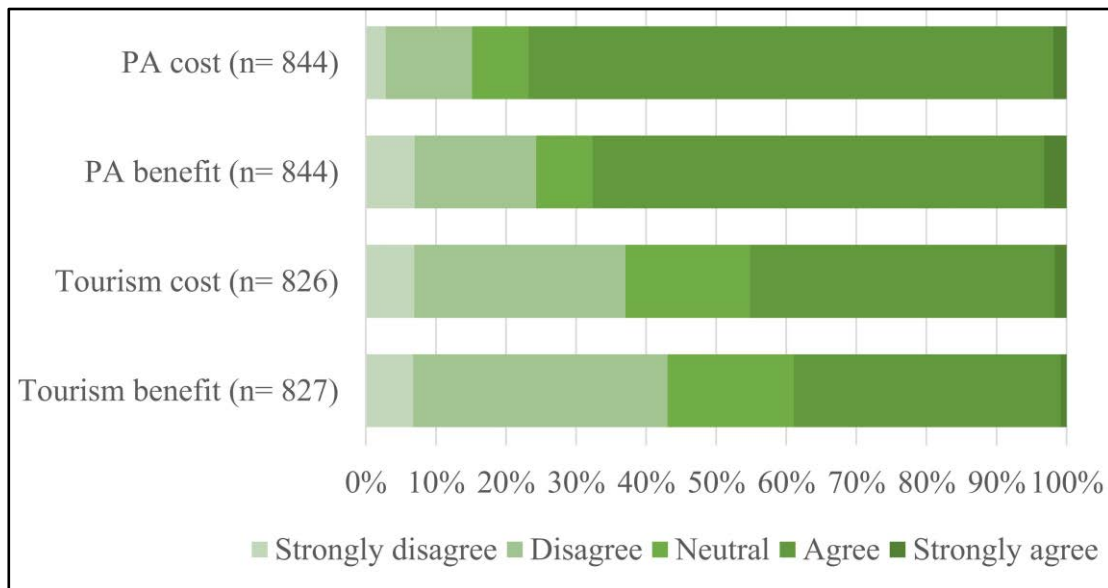


Figure 15: Frequency (and percentage) of the perceived fairness of benefit and cost distribution from PA and tourism.

With regards to tourism, only 39% of the respondents either agreed or strongly agreed with the fairness of benefits distribution. On the contrary, largest proportion of respondents (45%) perceived that tourism costs distribution is experienced at the same level. The equity of benefit and cost distribution from the PA was more positive than the equity of tourism (Figure 15).

4.4.3 Factors Influencing Perceptions of Distributional Equity

The best-fit regression model was the model that included six variables consisting of benefits, costs and procedural equity (membership and participation) (Table 14, model 2a). This model showed that the perception of fairness of PA benefits distribution was strongly influenced by tourism benefits and costs, PA costs and procedural equity. The odds that respondents perceived fairness in PA benefits distribution was 2.47 times higher when they perceive tourism benefits. However, those who perceived tourism

costs and participated in decision-making were less likely to perceive fairness in PA benefits distribution (Table 14, model 2a).

With respect to fairness perceptions of PA costs distribution, the best-fit model was also the model that included six variables including benefits, costs and procedural equity. Those respondents perceiving non-extractive benefits from PAs perceived fairness in costs distribution whereas respondents perceiving tourism-related benefits were less likely to perceive fairness in PA costs distribution. Those who participated either in decision-making processes or membership in executive committees of CBOs were also less likely to perceive equity in costs distribution (Table 14, model 2b).

Table 14: Odds ratios for predictors of perceived fairness/equity of PAs benefit and cost distribution.

Variable	PA benefit (a) ²⁵			PA cost (b) ²⁶		
	Model 1a	Model 2a	Model 3a	Model 1b	Model 2b	Model 3b
<i>Socio-demographics</i>						
Age	1.005		1.005	0.98**		0.97***
Gender	1.07		1.1	1.15		1.18
Ethnicity	0.60**		0.7	1.06		1.07
Schooling status	1.01		1.06	0.56**		0.55**
Residency status	0.99		0.91	1.72**		1.90***
Proximity to PA office	0.80		0.76	0.46***		0.53**
<i>Perceived benefit and cost</i>						
Extraction benefit		1.71*	1.68*		0.95	0.76
Other benefit		1.69	1.56		3.03**	2.88
Tourism benefit		2.47***	2.63***		0.59**	0.77
PA cost		1.46**	1.39*		1.05	0.87
Tourism cost		0.18***	0.21***		0.41**	0.61
Procedural equity (1) [#]		0.33***	0.36***		0.29***	0.26***
Procedural equity (2) ^{##}		0.55**	0.56**		0.76	0.99
Model χ^2	10.26	49.40***	55.21***	35.89***	25.10***	52.42***
-2 Log likelihood	878.66	846.68	833.71	657.62	669.85	641.09
AIC	743.39	124.90	821.37	552.04	123.37	639.06

Significant: *p < 0.10, **p < 0.05, ***p < 0.01.

Either membership or participation, ## Both membership and participation

With regards to perceived fairness of tourism benefits distribution, the best-fit model was also the model that included benefits, costs and procedural equity variables (Table 15, model 2c). Tourism benefits and costs, and non-extractive benefits from the PA

²⁵ Full logistic regression model is presented in the Appendix 3, Table A3.1, Table A3.2 and Table A3.3.

²⁶ Full logistic regression model is presented in the Appendix 3, Table A3.4, Table A3.5 and Table A3.6.

were the strongest predictors of fairness perceptions of tourism benefits distribution. Those who perceived tourism benefits were likely to perceive equity by 6.68 times greater whereas those perceiving tourism costs were less likely to report equity in tourism benefits distribution. Similarly, those perceiving non-extractive benefits were also less likely to perceive equity in tourism benefits distribution (Table 15, model 2c).

Tourism benefits was the strongest predictor of equity in tourism costs distribution. The best-fit regression model showed that those perceiving tourism benefits were likely to perceive equity in costs distribution by 2.58 times higher. Either membership in CBOs or participation in decision-making processes, and those who perceived extraction and non-extraction benefits from the PA, were less likely to perceive equity in tourism costs distribution (Table 15, model 2d).

Table 15: Odds ratios for predictors of perceived fairness/ equity of nature-based tourism (NBT) benefit and cost distribution.

Variables	NBT benefit (c) ²⁷			NBT cost (d) ²⁸		
	Model 1c	Model 2c	Model 3c	Model 1d	Model 2d	Model 3d
<i>Socio-demographics</i>						
Age	0.99		0.99	0.99*		0.98**
Gender	1.06		1.08	1.02		1.04
Ethnicity	0.73		0.81	3.05***		3.18***
Schooling status	1.52**		1.42	1.04		1.13
Residency status	0.72		0.60**	0.81		0.81
Proximity to PA office	4.39***		3.66***	6.25***		7.22***
<i>Perceived benefit and cost</i>						
Extraction benefit		1.01	1.30		0.47**	0.58
Other benefit		0.38***	0.43**		0.52**	0.73
Tourism benefit		6.68***	3.45***		2.58***	1.12
PA cost		0.89	1.22		0.82	1.17
Tourism cost		0.22***	0.13***		1.06	0.38**
Procedural equity (1) #		0.89	0.61		0.37**	0.17***
Procedural equity (2) ##		1.37	1.02		0.80	0.50**
Model χ^2	105.77***	104.96***	161.14***	146.00***	46.01***	172.97***
-2 Log likelihood	825.57	833.23	770.21	783.85	888.66	756.88
AIC	707.76	123.08	763.99	664.83	130.91	742.92

Significant: *p < 0.10, **p < 0.05, ***p < 0.01.

Either membership or participation, ## Both membership and participation

²⁷ Full logistic regression model is presented in the Appendix 3, Table A3.7, Table A3.8 and Table A3.9.

²⁸ Full logistic regression model is presented in the Appendix 3, Table A3.10, Table A3.11 and Table A3.12.

4.5 Discussion

I evaluated social equity dimensions of protected area management and found the following key results. The distribution of costs from PAs and tourism were perceived as more equitable than equity of benefits distribution from PAs and tourism. Similarly, distribution of costs and benefits of protected areas (non-tourism) was perceived as more equitable than distribution of costs and benefits of tourism. Among the variables tested in the statistical model (logistic regression), procedural equity (either membership or participation), tourism benefits and costs and non-extractive benefits were important variables influencing perceptions of distributional equity. In the follow subsections, I elaborate on the equitable management of protected areas and the underlying factors in perceiving distributional equity.

4.5.1 Social Equity in Protected Area Management

Equitable management of protected areas not only helps to meet the global target of conservation objectives but also recognises the rights and culture of local people and fair treatment to them. To realise procedural equity requires local participation (Gustavsson et al., 2014; Chaudhary et al., 2018), therefore participation may be used as a proxy to measure procedural equity. However, using participation as an indicator of procedural equity should be applied with caution because there could be various forms of participation such as active, passive and forced participation. I did not find strong participation of local people in the study sites. Further, among those who participated in a protected area-related decision-making process, there was a clear bias by demographic characteristics. Those who are educated and living near the PA office tend to participate more, and males also participated more than females. This finding is also supported by the record from the LNP office report that showed more males being

members of executive committees of buffer zone users committee and very few females occupied vital posts such as chairperson, treasurer or secretary of the committee (LNP, 2019). Another study in Chitwan NP and Parsa NP found that socioeconomically weaker groups are left behind in the higher-level structure of the committee that often influences decision-making in planning and implementation of the buffer zone program (Gurung et al., 2008). Procedural and distributional equity was observed in Bhutanese community forestry that was linked to a more homogeneous society, women's participation and supportive policy (Buffum et al., 2010).

While it comes to the types of participation, active participation (voluntary and high engagement) was higher for high-income groups while forced participation (e.g., participating in a meeting to avoid fines) was higher for low-income and lower caste groups in a community forest benefits access (Chaudhary et al., 2018). Forced participation may be to the disadvantage of poor and marginalised people due to low incomes or time pressures as they may need time for productive work to earn livelihoods (Chaudhary et al., 2018). Most of the excluded groups in Chitwan NP and Parsa NP participated passively, with the high-caste group dominating the decision-making (Gurung et al., 2008). While government initiates participatory approaches to be functional participation, this often ended with passive or manipulative participation (Gustavsson et al., 2014) which may have little impact on equity.

Co-management approaches in protected area management, which are designed to enhance local participation, may in fact increase costs of conservation to local people. This is because a co-management policy may restrict the customary rights, for example prohibition in collection of natural resources or restricting natural resource-based livelihoods (Ward et al., 2018b; Mollick et al., 2023). Indicators of social equity evaluation showed that satisfaction with the decision-making process (e.g.,

participation as a key indicator of procedural equity) was the worst performer among all the indicators (Zafra-Calvo et al., 2019). Top-down management of protected areas may grant more power to the protected area authority which may risk excluding local stakeholders (Zafra-Calvo & Geldmann, 2020) and is likely to create non-participation. Devolving power to local communities have been proved to enhance equity in Ethiopia (Abebe & Jones, 2022)

Recognition of different stakeholders in protected-area management helps achieve active participation that may influence decision-making process to improve equity. Low membership of local people in executive committees of CBOs, including a buffer zone users' committee, may provide evidence of lack of recognition. Of 13% of the respondents who were on executive committees, local people with some sort of formal education and those living nearby to the PA office tended to have more membership. Those people living distant from the PA office are often left behind in realising equity. Households that are members of executive committees of CBOs, such as community forest user groups, tend to benefit more (Karki & Poudyal, 2021).

I found that more people perceived equity in distribution of costs from both tourism and non-tourism. More than two-thirds of the respondents perceived equity in benefits distribution from protected area (non-tourism). However, slightly larger numbers of respondents perceived equity in distribution of costs (non-tourism). When it came to tourism, fewer than half of the respondents perceived equity in costs distribution. Relief from the costs of protected areas to local people through appropriate mitigation actions are key indicators of distribution equity (Zafra-Calvo et al., 2017). However, mitigation actions to reduce costs, such as comprehensive compensation, in the study communities were negligible (Thapa & Diedrich, 2023).

Distribution-oriented justice may be favoured by local people over procedural justice as the distribution of benefits is realised quicker such as in payment for ecosystem services (PES) mechanisms (Martin et al., 2014). To ensure fairness in benefits distribution, justice principles may be applied that are based on effort, need and equality (Deutsch, 2010). Martin et al. (2014) found that egalitarian (equal to all) ways of benefit (incentive) distribution was the preferred way of benefit distribution among majority (38%) of the respondents than based on effort, such as an individual's contribution to achieve outcomes, need or opportunity cost. On the other hand, Gurney et al. (2021b) found that (monetary) benefit distribution that arises from co-management of marine PAs was perceived as fair for rights-based distribution justice principles (>79%) rather than merit-based (effort) or equality (both >67%). Needs-based principles were considered fair by only 59% while the opportunity-cost principle was considered least fair (27%). This suggests that treating all people as equal or treating people in a particular way may not bring a positive equity outcome. However, equity depends on the socioeconomic conditions of an individual as well as societies where s/he lives. Egalitarian ways of benefit distribution may be unjust as the richer may already be rich and have less need. Benefit distribution plans (i.e., distributional equity) may be driven from different motives of the project. For example, PES type projects in Ecuador neither addressed poverty reduction nor considered the number of beneficiaries, but rather focused on incentive payments based on the total (private) land area conserved (Krause & Loft, 2013). The importance of different benefits may be differential to users based on their needs. For example, among the community forest user groups in Nepal, firewood, fodder and monetary loans were very important to poor and low-caste groups but irrigation was important to landholders owning irrigable land (Karki & Poudyal, 2021). In this case, poor people may not perceive equity if there was only an irrigation

project, or the landholder may not perceive equity if there was an absence of an irrigation project.

Justice principles can be inferred into the conservation field such as in selection of appropriate conservation strategies (e.g., strict conservation versus integrated conservation and development). This can also be applied on the design of specific interventions, for example compensation to people for the loss/damage from wildlife or reward for services provided (for example, contribution to conservation). However, local concepts of justice or what constitutes fairness may be different depending on the specific context. For instance, it may be more just to local people to mitigate the risk of harm (preventive measures) rather than to help them live with that risk (reactive measures such as financial compensation).

Assurance of distribution equity through policy may not be realised into practice. For example, a very high number of local respondents perceived low benefits distribution in the Sundarbans mangroves, despite these people participating in joint patrols with government staff to protect the mangroves (Mollick et al., 2023). Accountability and transparency in benefit distribution would help increase distribution equity rather than only improving the benefit sharing mechanism (Abebe & Jones, 2022). A review of power sharing mechanisms such as from top-down to a bottom-up approach to PA management and increasing trust of local people with conservation organisations also helps facilitate the achievement of positive equity perceptions (Abebe & Jones, 2022).

People often get protected area related benefits when they are situated near a protected area or protected area office, and often supported by tourism activities (Mackenzie, 2012; Thapa & Diedrich, 2023) showing a distance-decay effect. Tangible benefits could be an important indicator to measure fairness in benefit distribution. In addition, the type of benefits received may matter in the perceived fairness of benefits

distribution and whether this benefit was experienced at the household or community level. For example, more households perceived distributional fairness among the households receiving cash payments as a benefit than the households receiving other benefits, such as through community development projects (Hayes & Murtinho, 2018). In an Ecuadorian PES scheme, recipients of PES benefits perceived fair benefit distribution if the participating household received benefits and resided in a more organised community, as reflected through self-organisation of community assemblies, involvement in communal work, imposing a penalty for members while failing to attend assemblies (Hayes & Murtinho, 2018). However, distributional fairness perception could be different with respect to the fairness of how the (PES) program is designed and its conditions. Although there were several types of benefits perceived by local people from PA in my study sites, I cannot rule out that people may also have different levels of fairness perception based on the benefit types perceived. However, I did not analyse the fairness perception based on the types of benefits perceived but was interested more in the overall fairness of costs and benefits distribution.

A global review of equity research suggests that conservation interventions brought both the mixed and negative impacts of social equity (Friedman et al., 2018). Approaches to address equity may sometimes undermine conservation objectives. For example, in Laos, distribution inequity (scarcity of land) to the PA border residents was addressed by the authority by degazetting part of the PA to transform it into farmland (Dawson et al., 2018). This is against what the PAs were originally established for and PA de-gazettement is seen as one of the threats in PA management (Qin et al., 2019).

4.5.2 Factors Influencing Perceptions of Distributional Equity

Among demographic variables, ethnicity was a significant predictor of perceived fairness of benefits distribution from protected area. Respondents belonging to the high-caste category were less likely to perceive fairness. Regarding access to benefits from community forest, high-caste and high-income groups benefited more (Chaudhary et al., 2018), and the occupational caste group benefited little from community forest funded development projects (e.g., irrigation infrastructure). This tells us that provision of social equity in a policy paper does not guarantee equity in real practice. Elite capture²⁹ has been observed in community forest in Nepal which is often labelled as a successful community-based natural resource management practice (Sunam & McCarthy, 2010).

Proximity, school attendance and age had negative influences on the perceived equity of PA costs distribution. The likelihood to perceive equity of costs decreased among people living close to the PA office, those with school attendance and with increase in age. Restrictions on forest resource collection with the motives of sustaining forest services and improving resource quality created more problems for low-income groups (Chaudhary et al., 2018). I have also experienced similar issues in many remote villages of Nepal about hardship to local people, especially women and the poor, when such restrictions are imposed without providing alternatives. Mollick et al. (2023) found no demographic variables to be significant with distributional equity.

Education was a significant predictor in equity of tourism benefits only. People who had attended school were more likely to perceive equity in tourism-related benefit distribution by 4.4 times than respondents who did not attend school. I found proximity

²⁹ Individuals with high social status in the community taking more benefits.

to be a significant predictor of distributional equity of tourism benefits and costs. People living close to the PA office perceived a distribution equity from tourism. This is likely because the tourism zone in my study sites is in nearby/ adjacent zones to the PA office. Study from Giant Panda National Park (China) showed that the location of villages determined recognition equity of PAs rather than distributional equity. Villages inside the national park had the lowest fairness perception while the gateway villages (outside the national park) had the highest fairness perceptions (Chen et al., 2022). This could partly be explained due to the benefits and costs experienced by local people depending on the location. Villages inside the national park or near the national park boundary could face several costs such as human-wildlife conflict, land use restrictions etc. whereas gateway villages or those distant from the national park boundary may have enjoyed more benefits such as technical and financial support for ecotourism development, benefiting from tourism as well as less damage from wildlife (Mackenzie, 2012; Chen et al., 2022). In some cases, education had a significant impact on overall equity perceptions but not on distributional equity (Chen et al., 2022).

The statistical model showed that procedural equity is one of the strongest factors in influencing distributional equity perceptions. Logistic regression analysis showed that respondents with either membership in executive committees of CBOs or participation in decision-making process are likely to perceive distributional inequity. This negative relationship between the participation (for example in meetings and decision-making) and equity perception could be due to the higher level of awareness among local people about how the decisions are made. This often arises from participation leading to increased capacity to critique (Hayes & Murtinho, 2018).

In line with this study, Chen et al. (2022) also found that participation in protected area co-management activities, especially cooperation (delegation of power to local people

or enforcement of conservation affairs) had a significant influence on the perception of distributional equity. Similarly, Mollick et al. (2023) found distribution equity to be positively correlated with procedural and recognition equity. On the other hand, households that actively participate in assembly meetings are also equally unlikely to consider the distribution, for example PES program, as fair (Hayes & Murtinho, 2018). This may happen because the meeting attendees may be aware of how the decisions are made and as a result, they may not be happy or satisfied on how the PES program was designed as this may not be fair. Power-sharing mechanisms with local people may enhance equity. Although participation is important to promote a fair share of benefits, this should be active participation (Chaudhary et al., 2018), not just sitting-in (passive participation). These findings of negative relationships between procedural equity and distributional equity contradicts that of Mollick et al. (2023) who found a positive correlation between these two forms of equity. This could be because those who participate in decision-making processes are aware of how the decisions are made with respect to the distribution of benefits. This may reflect that the decision-making process could have been biased and as a result their perceptions are negative.

4.6 Conclusion

This chapter has explored the procedural and distributional equity of protected areas and tourism. It was hard to justify the success of achieving procedural as well as distributional equity in PA management. The best statistical model that described the factors influencing perceived distributional equity was the model that consisted of benefits, costs and procedural equity variables only. Despite exploring the equity issues, this study has limitations too. Although I explored distributional equity in detail, this study lacks distributional justice principles in assessing equity perception. This is because I was more interested in the applied aspects of equity perceptions of local

people based on the current practice of protected area management and benefit distribution rather than in the theoretical aspects of distributional equity. Nevertheless, distributional equity can be researched in-depth through the application of a distribution justice principle (Wagstaff, 1994; Deutsch, 2010; Gurney et al., 2021b). Further, extending this research to explore another dimension of equity (i.e., recognition), would provide a strong evidence base on the overall social equity of protected area management in Nepal. This research can be taken to the next level of equity evaluation in a comprehensive way, through indicator-based equity research. For instance, Zafra-Calvo et al. (2017) developed the indicator to assess equitable management of protected areas and this has been tested globally (Zafra-Calvo et al., 2019) as well as locally in other protected areas (Mollick et al., 2023). Indicator-based studies on equitable management of protected area may also help assess and track changes in equitable management of protected areas over time. Nevertheless, the findings from this chapter would be useful to the protected area authority to enhance equity and get local people's support in protected area management. The fair treatment to local people in terms of benefit distributions, participation, and recognition of their culture and norms may help eliminate the burden of protected area management to garner local support, both locally and internationally.

Chapter 5

Local People's Perceptions of Protected Areas

Chapter 5: Local People's Perceptions of Protected Areas

Positive perceptions of local people are important to gain local support for protected areas. However, these perceptions may be influenced by several factors such as demographic characteristics and experience of benefits or costs from protected areas. I assess the local perceptions and level of support for protected areas in this chapter. I coordinated the field work, collected data through field assistants, analysed the data and wrote the chapter as well as a manuscript submitted for publication. Amy Diedrich provided support for survey design and statistical analysis. Amy Diedrich and David King supported with structuring and reviewing the chapter and manuscript. This chapter is under review and first revision has been recently submitted to the journal *Conservation Science and Practice*³⁰. The text in this chapter has been adapted to the formatting requirements of this thesis.

³⁰ **Thapa, K.,** King, D., and Diedrich, A (*under review , first revision submitted*). The influence of perceptions and demographic factors on local support for protected areas in Nepal. *Conservation Science and Practice*.

5. Local People's Perceptions of Protected Areas

5.1 Abstract

Local support for protected areas (PAs) is necessary for their long-term success and is important for participatory conservation and sustainable management of PAs. However, the support for PAs depends on several factors such as perceived benefits and costs from PAs, and demographic factors. This chapter reports findings from 845 household surveys conducted in two PAs of Nepal, in the Himalayas and in a lowland area (Terai). Overall, local people were supportive of the PAs and had high conservation awareness. Decision-tree analyses revealed that perceptions of benefits strongly influenced the support for PAs. Among sociodemographic variables, spatial location, ethnicity and education status influenced the support for PAs. I recommend focusing on mitigating or reducing costs that arise from the existence of PAs while also providing benefits to local people. This should be prioritised for distant communities who provided the least support for PAs.

5.2 Introduction

Protected areas are set aside for biodiversity conservation and maintaining ecosystem processes (Watson et al., 2014). At the same time, they are recognised as contributing to development goals and improved standards of living (Naughton-Treves et al., 2005; Jones et al., 2020). Along with biodiversity conservation, management of PAs provides benefits to both the global community and local people such as carbon sequestration, nature-based recreation, wild goods, natural resources and other forms of livelihood-support activities (Mackenzie, 2012; Ninan & Kontoleon, 2016; Tolbert et al., 2019; Allendorf, 2022; Thapa et al., 2022). In the worst-case scenario, PA establishment and management also leads to displacement of people from PAs along with human-wildlife

conflict, prosecution from PA staff, crop and livestock loss, and restriction on resource use (McLean & Straede, 2003; Bajracharya et al., 2006; West et al., 2006; Mackenzie & Ahabyona, 2012; Acharya et al., 2016; Allendorf, 2022).

Local people's positive attitudes towards protected areas depends on their opportunity to receive extractive and other benefits (Allendorf, 2007; Dewu & Røskaft, 2017; Htay et al., 2022). Expectations of economic benefits from protected areas may lead to positive attitudes and support for conservation (Arjunan et al., 2006; Wang et al., 2006). While some benefits, such as carbon sequestration, that are derived from PAs extend to international and national levels, costs are often local. Similarly, costs³¹ such as crop damage, livestock loss, property damage, restrictions on natural resource use and human displacement from PAs bring hardship to local people residing adjacent to PAs (Bajracharya et al., 2006; Mackenzie, 2012). These costs to local people can lead to negative attitudes towards conservation and PAs (Wang et al., 2006; Htay et al., 2022).

Attitudes of local people towards conservation and PAs can be both positive and negative (Allendorf, 2020). A global review of local people's attitudes towards PAs revealed that majority of the respondents had positive attitudes in 84% of the PAs reviewed (Allendorf, 2020). People form attitudes from their experiences, for example, because of interactions with the PAs and cooperation or conflicts with management authorities (Shrestha & Alavalapati, 2006). Local people may have varied perceptions and/or attitudes towards PAs, protected area policy, and protected area staff (Allendorf, 2010; Karanth & Nepal, 2012). Therefore, even if local people hold favourable attitudes towards PAs, they may have negative attitudes towards protected area staff (Newmark

³¹ Costs and/or burden in this paper have the same meaning and refer to negative impacts to local people due to PAs. However, cost is more often used in economic terms.

et al., 1993; Fiallo & Jacobson, 1995; Karanth & Nepal, 2012). For example, in Myanmar, 89% of the respondents were positive towards the presence of PAs, whereas this was only 53.5% in the case of PA staff (Htay et al., 2022).

Perception can be defined as “the way an individual observes, understands, interprets and evaluates a referent object, action, experience, individual, policy, or outcome” (Bennett, 2016, p. 585). The level of support for conservation at the local level is associated with the perception of ecological effectiveness, good governance and socioeconomic impacts of PAs (Bennett et al., 2019). The factors that predict positive or negative attitudes towards PAs can vary. When local communities have positive attitudes towards PAs then it may also relate to the achievement of conservation objectives and PA success (Struhsaker et al. 2005 cited in Holmes, 2013; Bennett, 2016). Similarly, local opposition and negative attitudes can threaten conservation objectives and weaken the odds of PAs achieving management outcomes (Mascia and Pailler, 2011 cited in Holmes, 2013). However, there are critics of the principle of local support of protected areas (Brockington, 2004) on the grounds of political and administrative power that lies with protected area authority that can rule over marginalised local people if the conservation policy is backed by international supporters. Brockington (2004) described the conservation success of Mkomazi Game Reserve despite the resistance of pastoralists and their eviction from the reserve. Another study from a small-size protected area in the Dominican Republic reported conservation success despite local opposition (Holmes, 2013). This is possibly due to deprivation from development activities in one of the villages which compelled villagers to leave their place (Holmes, 2013). In another village, despite local opposition, villagers were unable to challenge the reserve and its policies (Holmes, 2013, p. 78). This can be attributed to the administrative and political power that is in

the hands of protected area authorities, where the local people were powerless and often ignored with their conservation and development concerns. As people perceive both the benefits and costs of PAs, this may influence local support for PAs. Respondents who hold favourable attitudes towards conservation are likely to participate in different activities, including conservation, than those who held less favourable attitudes (Baral & Heinen, 2007a).

People may engage in an exchange process if they perceive that benefits surpass costs from the given activity. Social exchange theory (SET) posits that local people are willing to engage in a social exchange or activity if they anticipate benefits without incurring unacceptable costs (Almeida García et al., 2015). SET has been popular in the (social) psychology and sociology literature and is one of the oldest theories of social behaviour (Homans, 1958 cited in Nunkoo, 2016). SET has been applied in the context of tourism attitudes and local people's support of tourism development (Almeida García et al., 2015; Eslami et al., 2019; Eyisi et al., 2023; Han et al., 2023; Munanura & Kline, 2023) and is also relevant to protected areas given that both benefits and costs arise from them. Nature-based tourism may influence perceptions towards conservation positively as resource protection and conservation success form the basis for nature-based tourism (Nyaupane & Poudel, 2011). In this context, studies have shown that at the early stage of tourism development, there can be a shift towards positive attitudes of protected areas (Rastegar et al., 2022). Similarly, more positive attitudes have been documented for people living in a village with nature-based tourism projects than within non-tourism villages (Sirivongs & Tsuchiya, 2012).

When the exchange of resources between two parties, local people and protected areas in this case, is perceived as balanced and higher benefits for local people, the impacts of protected areas are viewed positively. Conversely, when the exchange of resources

for local people results in lower benefits, either in a balanced or imbalanced way, then the impacts are viewed negatively (Ap, 1992). This underscores the importance of benefits outweighing costs to garner support for a given activity. When the perceived benefits outweigh perceived costs, for example from protected areas, then local people are more likely to support protected areas (Han et al., 2023). SET allows differing views of respondents based on experiential results (Prayag et al., 2013) and provides a conceptual base for evaluating impacts, particularly weighing the associated costs and benefits of supporting the given activities (Qin et al., 2021).

Although benefits and costs are important variables in determining conservation attitudes, socioeconomic and demographic characteristics are also important (Shrestha & Alavalapati, 2006; Bragagnolo et al., 2016; Dewu & Røskaft, 2017). Variables such as the age of local people (Arjunan et al., 2006; Gubbi et al., 2008; Badola et al., 2021), education (Mehta & Kellert, 1998; Mehta & Heinen, 2001; Dewu & Røskaft, 2017), gender (Mehta & Kellert, 1998; Mehta & Heinen, 2001; Arjunan et al., 2006; Badola et al., 2021), household size (Shrestha & Alavalapati, 2006; Dewu & Røskaft, 2017), income and livelihood support activities (Mehta & Heinen, 2001; Gubbi et al., 2008; Dewu & Røskaft, 2017), and spatial location of villages or settlements (Shrestha & Alavalapati, 2006; Sarker & Roskaft, 2011; Bragagnolo et al., 2016; Badola et al., 2021; Htay et al., 2022) may influence people's attitudes towards PAs.

Nepal has implemented a participatory approach to protected area management through the buffer zone program (Paudel et al., 2007; Bhattarai et al., 2017). Buffer zones in Nepalese PAs which are declared in and around PAs allow communities to reside within them and hence include both the natural and built environment. This program aims to increase the potential benefit sharing of PA income with local people. The long-term objectives of the buffer zone program are to encourage local participation in

biodiversity conservation as well as to support socioeconomic development (Paudel et al., 2007). However, local participation in conservation has been questioned as there is little opportunity for people to interact with their environment and to influence management (Paudel et al., 2010). Nepal currently has 20 PAs, of which 13 have buffer zones around them (DNPWC, 2022).

It is important to understand local perceptions of PAs and local level of support for conservation. The perception of PAs, including legitimacy and social acceptability of conservation governance, help evaluate impacts of conservation initiatives in addition to objectively based scientific evidence (Bennett, 2016). Effective management of protected areas and compliance with conservation strategies depends on local support which can lead to participation and community involvement in protected area management (Leverington et al., 2010; Andrade & Rhodes, 2012; Hoffmann, 2021). Lack of support for PAs may bring resistance from local people towards conservation which may be detrimental to PAs (Holmes, 2007). The aim of this chapter was to 1) identify local people's perceptions of protected areas, 2) identify the level of support for protected areas, and 3) assess the factors (perceptions as well as sociodemographic) determining support for protected areas.

5.3 Materials and Methods

5.3.1 Study Sites

I selected two PAs: Bardiya National Park (BNP) in the southern lowland (hereafter, Terai) and Langtang National Park (LNP) in the northern region (hereafter, Himalayas). These PAs are representative of the Nepalese protected area system as most PAs are distributed in the Himalayas region and Terai. In terms of international tourist

visitation, BNP stands out as the second most visited PA in the Terai region whereas LNP stands out as the third most visited PA in the Himalayas (DNPWC, 2022).

Bardiya National Park (estd. 1976) covers 968 km² with an additional buffer zone of 507 km². This national park shares a border with Banke National Park in the east and forms a part of Terai Arc Landscape connecting protected areas of south-western Nepal and northern India. The buffer zone in the northern region of BNP was added in 2011, while the rest of the buffer zone was declared as early as 1996 (DNPWC, 2022). The Bengal tiger (*Panthera tigris*) is the flagship species of BNP. Other important wildlife includes the Asian elephant (*Elephas maximus*), and the greater one-horned rhinoceros (*Rhinoceros unicornis*), among other species. BNP is a Conservation Assured Tiger Standard (CA/TS) registered park and one of the 27 Important Bird Areas (IBAs) of Nepal (BCN, 2020). The total number of households residing in BNP buffer zone is 17,172 (BNP, 2016).

Langtang National Park (estd. 1976) is the nearest Himalayan national park from the capital city, Kathmandu. The park has an area of 1710 km² with an additional buffer zone of 420 km². The eastern part of the park adjoins Gaurishankar Conservation Area. LNP is an important region of the Sacred Himalaya Landscape connecting protected areas and landscapes of eastern Himalayas of Nepal, Tibet (China), India and Bhutan. The Snow leopard (*Panthera uncia*) and Red panda (*Ailurus fulgens*) are the flagship species of LNP. The total number of households residing in the buffer zone is 14,963 (LNP, 2019).

5.3.2 Data Collection

I conducted household-level surveys in three different regions of both national parks. Communities were first clustered into three groups based on their proximity to the

national park headquarters: 1) adjacent (near); (2) mid-distance; and (3) distant. Proximity was based on travel time needed to reach to the national park headquarters as well as remoteness rather than linear distance. In LNP, sites within one-day walking distance or less than a day of travel by bus / jeep ride were defined as adjacent. Sites within a one and a half to two days walking and / or bus/ jeep ride were defined as mid-distance. Those that took longer to reach were defined as far. In BNP, this was slightly different due to the park being in a relatively accessible lowland area. Adjacent areas were defined as being within half an hour by bicycle³², mid-distance were about four hours of travel by bus/jeep/autorickshaw or motorcycle and far was at least a day's travel (walk and/or bus/jeep ride). Although the availability of different travel modes varies greatly and thus affects how far people can travel in a given time, we have considered the actual travel time required to reach the headquarters. For instance, travelling a full day by bus means travelling longer distance than walking a full day. However, not all the regions and sampling sites are connected to roads and in some regions walking is the only option.

Then, villages/communities from each cluster were selected representing different districts and local government. This ensured that survey villages from the three groups did not overlap within the same local government and wards, as the local development status of each local government and/or district also varied. I also considered different levels of tourism while selecting the survey villages from the group (Table 16). This led to a sampling of households in four wards in LNP and three wards in BNP. The household sampling approach within the ward was aimed to cover as many diverse

³² I use bicycle ride instead of walking to compare distance because in the Terai (Nepal's southern flat/low land), the bicycle is a common mode of transport to travel for short distance.

respondents as possible by visiting households off the main trail and different part of villages, and surveying at different times of the day.

Table 16: Summary characteristics of protected areas and study sample.

Bardiya National Park and Buffer Zone				
<i>Proximity to PA office</i>	Adjacent	Mid-distance	Far	Total (n)
<i>Tourism activities</i>	Present	Absent	Absent	
<i>Topography</i>	Terai (lowland)	Terai (lowland)	Churia hills	
<i>Sample size (n)</i>	167	150	159	476
Langtang National Park and Buffer Zone				
<i>Proximity to PA office</i>	Adjacent	Mid-distance	Far	Total (n)
<i>Tourism activities</i>	Present	Present (but low)	Absent	
<i>Topography</i>	Himalayas (High mountain)	Himalayas (High mountain)	Himalayas (High mountain)	
<i>Sample size (n)</i>	147	112	110	369

I applied the sample size calculation formulae to calculate the required number of sample (Israel, 1992). This gave a total sample size range of 99 to 391 households, with 10% and 5% margin of error respectively in BNP. The total sample size in LNP was in the range of 99 to 390 households, with 10% and 5% margin of error respectively. I then applied a quota sampling method to survey the households in each group with a minimum sampling quota of 150 households in BNP and 110 households in LNP. This represented more than 10% of the households at each sampling ward.

Respondents older than 18 were invited to participate in the survey. The survey aimed to achieve equal gender proportions by alternating male and female respondents. This was, however, not possible as not all respondents were in equal proportions of male and

female and due to the absence of target respondents during the household visit. Female respondents were sometimes reluctant to engage in the survey when there were male household members present during the survey. Instead, these female respondents preferred and requested that their male household member participate in the survey. This may be because they underestimated their own knowledge and experience.

The survey was conducted from August to December 2021. The questionnaire included a mix of socio-economic and demographic questions, perceived benefits and costs from the protected area as well as perception statements towards the PA and the level of support for the PA. Demographic questions such as age, gender, education, family size, ethnicity and residency status were included in the questionnaire. Eight perception statements were asked to local people on a Likert scale format (1=strongly disagree; 5=strongly agree) (

Table 17). The survey was conducted by a team of Nepalese field assistants in the Nepalese language. They were trained by me in data collection before the fieldwork. The objective of the survey was made clear to the respondents that this work was part of an academic research project. Respondents were also assured that none of the field assistants were park employees or associated with the park in any way. This has reduced the possible bias in responding answers. The survey was later translated to English for analysis. Verbal informed consent was obtained from the participants before starting the survey. This research obtained human ethics approval (H8229) from James Cook University. Further, research permission was obtained from the Department of National Park and Wildlife Conservation as well as BNP and LNP offices.

Table 17: Variables used in the Chi-squared Automatic Interaction Detection (CHAID) decision tree to model the influence of sociodemographic and PA perception variables.

Variable	Description	Scale
<i>Socio-demographic</i>		
Age	Age in years	continuous
Gender	Male or female	binary
Ethnicity	Caste group; whether high caste (e.g., Brahmin, Chhetri, Thakuri), indigenous nationalities or occupational caste	nominal
Residency status	Whether respondent is of local origin or migrated from another district	binary
Education	Whether respondent attended any school	binary
Proximity to PA office	Location of respondent village with respect to PA office (near, mid-distance or far)	nominal
<i>Perception (statements on a 1 to 5-point scale; 5= strongly agree)</i>		
Benefit	Perception of PA benefits to respondent household	ordinal
	Perception of PA benefits to community	ordinal
Cost	Perception of PA negative impacts to respondent household	ordinal
	Perception of PA negative impacts to community	ordinal
Conservation effectiveness	Perception of PA management effectiveness in biodiversity conservation	ordinal
Conservation importance	Perception of importance to conserve nature and wildlife	ordinal
Support for PA	Perception of community support for PA in the village	ordinal
	Respondents' stated support for PA in the village*	ordinal

* Dependent variable

5.3.3 Data Analysis

For the demographic comparisons, I categorised caste/ethnicity into three main groups: high caste, indigenous nationalities and occupational caste. There are several castes in Nepalese society and high caste is often characterised as being educated and well off in comparison with other castes. For education level, this was categorised as people who attended school or did not attend school because there were very high proportions of local people who never attended school. Spearman Rank Order correlation analysis was performed to explore the relationship between local support for PA and perception variables.

A CHAID decision tree was used to explore the influence of independent variables (socio-demographic and perception variables) on local support for PAs (

Table 17). Socio-demographic variables and perceptions of protected areas were chosen in the CHAID model because these variables are most widely tested and significant in other studies (Bragagnolo et al., 2016; Bennett et al., 2019). I used the decision tree model because it does not rely on assumptions of normality and homogeneity and is robust in dealing with categorical data (Feldsman, 2002; Önder & Uyar, 2017). CHAID analysis also gives higher classification accuracy than other models (e.g., logistic regression) (Ye et al., 2016). Data were analysed using IBM SPSS statistics (version 26).

5.4 Results

5.4.1 Sample Characteristics

The total number of respondents (n) were 845 from two protected areas. The mean age of respondents was 44 years with a slightly higher percentage (51%) in the older age

group (≥ 41 years). Similarly, respondents in BNP were younger than respondents from LNP. The proportion of higher caste was less than one-third of the respondents. However, higher-caste respondents were equal to other caste groups in BNP but higher caste were less than 3% in LNP (Table 18). This is because LNP is more homogeneous. Most of the local people did not attend school or have very low levels of education, if they attended any school. Only 5% of respondents had a bachelor's degree or above.

Table 18: Respondents' demographic characteristics in two protected areas ($n= 845$).

Variable		Per cent
<i>Age:</i>	Mean age in yrs. (SD): 43.57 (15.56)	N/A
<i>Gender:</i>	Male	54
	Female	46
<i>Ethnicity:</i>	High caste	29
	Indigenous (nationalities)	60
	Occupational caste	11
<i>Residency status:</i>	Local	69
	Migrant (other region of Nepal)	31
<i>Education:</i>	Attended school	52
	Did not attend school	48
<i>Proximity to PA office:</i>	Near	37
	Mid-distance	31
	Far	32

5.4.2 Level of Support and Perceptions of Protected Area

Overall, local people were supportive (*I support the presence of national park in our community*; mean score $3.67 \pm .86$) of the presence of PAs in their community. I found that only 4% of the respondents strongly disagreed with providing support to the presence of a national park ($n=34$), 9% disagreed with supporting the national park ($n=77$), and 7% were neutral towards the national park ($n=61$). A large number (74%) of the respondents agreed to support the presence of the national park ($n=629$), while 5% strongly agreed to support the national park ($n=44$).

Among the other seven perception statements, the highest mean score was on the conservation importance (*importance to conserve nature and wildlife*; 3.96 ± 0.56). This was followed by the perception of *community support for the presence of national park* (3.66 ± 0.78) and perception of *national park benefits to the community* (3.5 ± 0.91). Correlation analysis showed that the level of local support for the PA and the perception of community support for the national park was strong and positively correlated. Similarly, the level of local support for the PA was moderate and positively correlated with the perception of national park benefits to household and community. Local support for the PA was negatively correlated with the perception of negative impacts from the national park (Table 19).

Table 19: Spearman rank order correlation coefficient between the level of support for the PA and perception variables.

<i>Local support: I support the presence of national park in our community</i>	<i>rho *</i>
<i>Perception</i>	
The people in my community support the presence of the national park	.615
The presence of the national park brings (non-tourism) benefits to my household	.429
The presence of national park brings (non-tourism) benefits to our community	.409
It is important to conserve nature and wildlife	.293
The national park management is effective in biodiversity conservation	.244
The national park brings negative impacts in our community	-.228
The national park brings negative impacts to my household	-.217

*All p -value < .001.

5.4.3 Factors Influencing Support Towards Protected Area

The decision tree analysis (CHAID method) showed that local support for the presence of the PA was most strongly influenced by the perception of benefits of the national park for their household ($\chi^2 = 165.296$, $df = 2$, $p < .001$) (Figure 16). Those who strongly disagreed or were neutral on the perception of benefits from the national park were further split by the perception of negative impacts from the national park on their household ($\chi^2 = 34.048$, $df = 1$, $p < .001$). Those who did not perceive negative impacts from the national park were further split by the perception of benefits of the national park on their community ($\chi^2 = 11.741$, $df = 1$, $p = .002$).

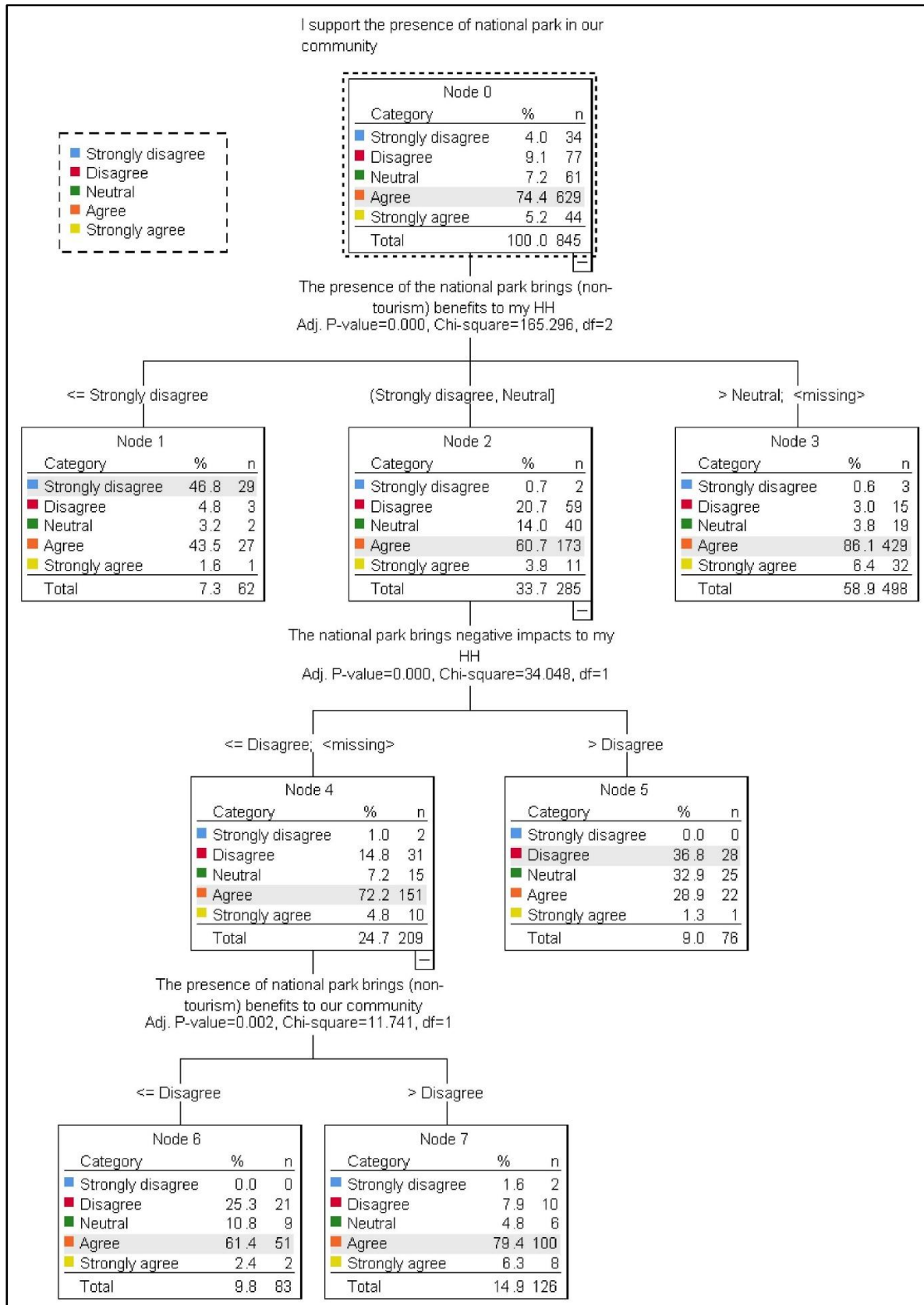


Figure 16: Decision tree (CHAID method) to identify the perception variables influencing the level of support for protected area (Risk 0.246, SE 0.015).

The decision tree (CHAID method) of the influence of sociodemographic variables on local support for protected area showed that proximity of the household to the PA office was the strongest predictor ($\chi^2 = 69.226$, $df = 2$, $p < .001$) (Figure 17). Those people living close to the protected area office supported the presence of the national park more than their fellow villagers living a mid-distance or far away from the protected area office. People living near the protected area office were further split by ethnicity ($\chi^2 = 7.456$, $df = 1$, $p = .044$) suggesting that people belonging to the high-caste category were less likely to support the presence of the national park than indigenous or occupational caste groups. Those living mid-distance from the PA office were split by education status ($\chi^2 = 7.892$, $df = 1$, $p = .015$) suggesting that people who attended school are more likely to support the national park than people who did not attend school.

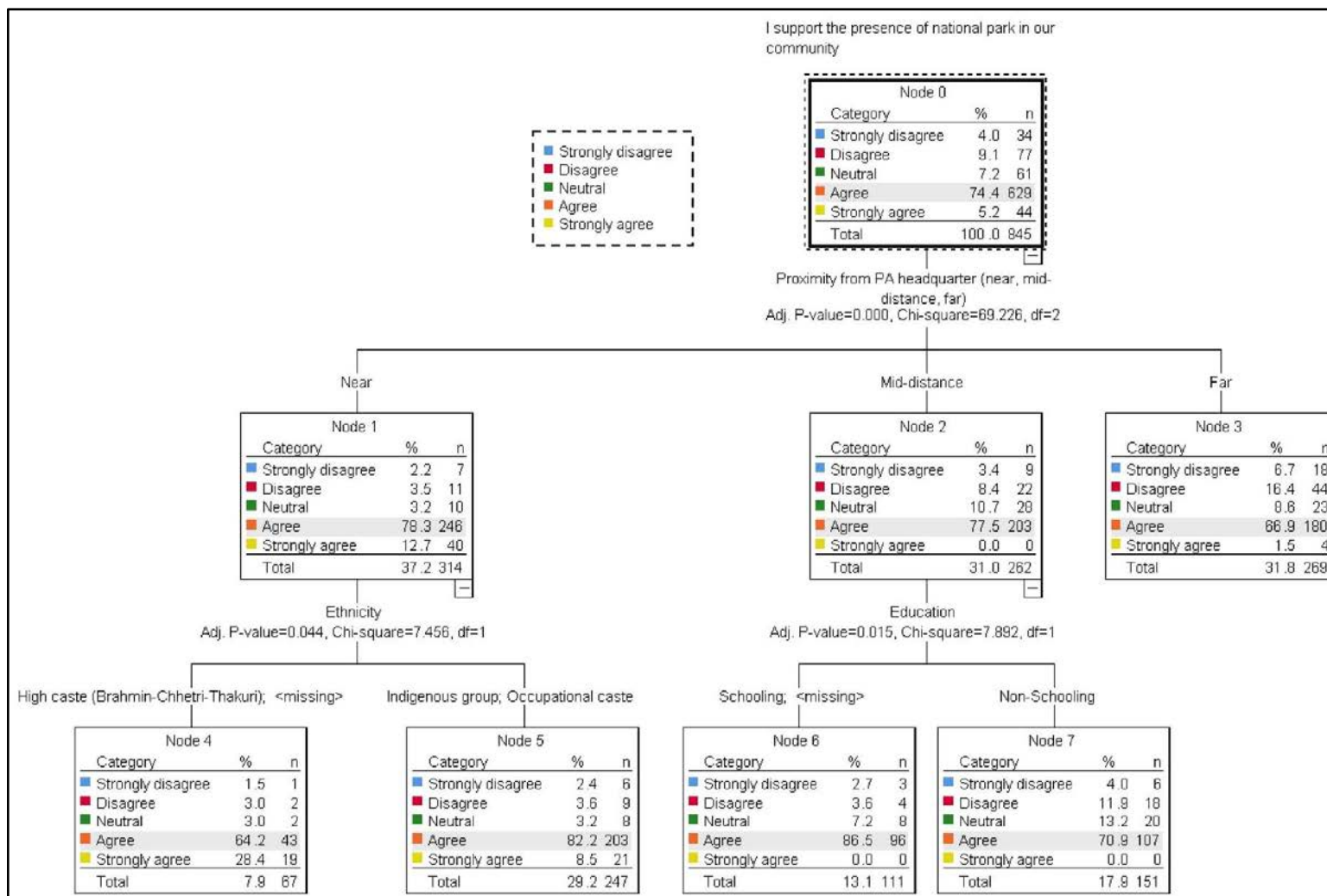


Figure 17: Decision tree (CHAID method) to identify the sociodemographic variables influencing the level of support for protected area (Risk 0.256, SE 0.015).

5.5 Discussion

Local people's support is critical in attaining successful protected area management. I evaluated local people's support of, and their perceptions towards, PAs. Overall, local people were supportive towards the presence of the national park in their community. Regarding perceptions, I found the highest score on the importance to conserve nature and wildlife. This result suggests that local people are aware of and supportive of nature conservation. However, correlation analysis showed a weak relationship between conservation awareness and local support for PAs. On the contrary, perception about the national park benefits for households had the lowest score but showed a moderate positive relationship with local support for PAs. Among the perception variables, local support for PAs was strongly influenced by the perception of benefits for the household from PAs. When people perceived more household benefits flowed from the PA, then they tended to support PAs. Similarly, regarding sociodemographic variables, the spatial location of households with respect to the PA head office was the strongest influencer. This means people living near the PA head office (located within the PA or PA buffer zone) tended to support PAs more than their fellow villagers living far away from the PA head office.

Social exchange theory offered a theoretical framework for interpreting the foundations of local support for protected areas, in addition to support for tourism. My study provides evidence to support SET to explain support for protected areas and its association with perceived benefits and/or costs by local people. Critics of SET stress that this theory gives too much emphasis on personal priorities but less on collective priorities such as community level benefits and costs (Qin et al., 2021). I addressed this deficiency by asking both the positive and negative perceptions of protected areas at

the personal (household) and community level and linking this to level of support of local people for protected areas.

A global review of attitudes towards protected areas revealed that most of the respondents had a positive attitude towards PAs. These positive relationships between protected areas and people tended to be, however, associated more with larger, less strictly protected, older PAs, and those managed at the subnational level (Allendorf, 2020). Further, positive attitudes towards PAs does not mean the absence of negative attitudes among local populations. For example, in Ghana, attitudes of local people towards PAs were positive overall but still about one-quarter of local people also had negative views towards PAs (Dewu & Røskaft, 2017). As mentioned before, to some extent, these positive attitudes may be linked to the perceived benefits from PAs (Allendorf, 2022). When people have positive perceptions of ecological effectiveness, good governance and socioeconomic impacts related to PAs then they also tend to support PAs (Bennett, 2016; Bennett et al., 2019). However, positive perceptions of the impacts of social conditions and good governance may be more important as these are directly associated with the daily life of local people rather than ecological and/or conservation success from PAs (Bennett et al., 2019). This study found a similar trend as the perception of the effectiveness of PA in biodiversity conservation did not influence the local support for PA, but the perception of household benefits and costs that arises from PA did. Tourism-related benefits led to favourable attitudes among local people towards conservation in BNP (Shahi et al., 2023) as well as other PAs of Nepal (Mehta & Heinen, 2001). In Belize, the level of tourism development, which may also determine benefits for the local community, was also positively associated with conservation awareness and support towards coral reefs (Diedrich, 2007). Local people may prioritise less for conservation attributes that could bring them negative impacts

than those that could bring positive impacts. For example, local people prioritised community development and forest protection over wildlife protection in Nepalese PAs (Mehta & Kellert, 1998). Similarly, attitudes towards forest conservation were more positive than those towards wildlife species conservation in Indian PAs (Arjunan et al., 2006).

When people perceive negative impacts, they may develop negative attitudes (Anthony & Moldovan, 2010; Shahi et al., 2023). Like the findings of this research, a study in Sri Lanka found that when people experienced loss (e.g., livestock depredation) from leopards, then they had more negative attitudes towards leopards (Uduman et al., 2021). Another study of marine protected areas (MPAs) found that support for MPAs was predicted by the perception of ecological benefits and costs. When people perceived benefits, they tended to support MPAs while the cost perception was negatively associated with the support for MPAs (Hoelting et al., 2013). These results support my findings as perceived benefits and costs were the strongest predictors of support for PA. In Namibia, local support for wildlife conservation was found to decrease when people did not get tangible benefits, such as income from trophy hunting (Angula et al., 2018). Like this finding, a study from Ghana also found that households receiving benefits and those encountering fewer problems showed positive attitudes towards PAs (Dewu & Røskaft, 2017).

In the PAs of Nepal, local people experience several negative impacts such as crop loss, livestock depredation, wildlife attack on humans leading to death and severe injury, among others (Regmi et al., 2013; Acharya et al., 2016; Lamichhane et al., 2018; Shahi et al., 2023; Thapa & Diedrich, 2023). These impacts bring economic loss to the households that rely on agriculture and livestock for subsistence (Tamang & Baral, 2010; Shahi et al., 2021; Prins et al., 2022). These types of negative impacts can

diminish support for PAs. Wildlife damage compensation policy exists in Nepal for the purpose of addressing economic losses from PAs and wildlife. However, the compensation paid for the losses is often inadequate and people experienced administrative hurdles when seeking compensation (Thapa, 2016b; Shahi et al., 2021). Although PAs are established with good motives for biodiversity conservation, they may cause local community concern. In Thailand, people were concerned that MPAs may lead to poverty, food insecurity, decrease wellbeing, and may increase conflict. At the same time, they also perceived that MPAs would not negatively impact on incomes if the rules and regulations are not enforced (Bennett & Dearden, 2014). However, non-enforcement of protected area rules and regulations may threaten the conservation objectives. This may result in PAs being turned into paper parks, i.e., PAs lacking actual protection on the ground (Relano & Pauly, 2023).

Local people's support towards the PA also depends upon the spatial location of households with respect to the PA. People living further from the PA or from the forest corridor generated positive attitudes (Shrestha & Alavalapati, 2006; Badola et al., 2021) while those situated near the PA border exhibited negative attitudes towards wildlife and/or PAs (Ochieng et al., 2021). This could be because the further the villages are from the PA or forest boundary, the less local people receive negative impacts from PAs or vice versa (Mackenzie, 2012; Prins et al., 2022). Although I did not consider the spatial location of households with respect to the forest boundary of the PA, local people living close to the PA head office were more supportive than those living mid-distance or far away. This may have occurred because the villages situated near the PA office get a higher chance of visiting the PA office and experiencing direct interaction with PA staff than villages far away. This may also have provided opportunities for nearby people to receive buffer-zone funding for local development activities. Access

to the PA office and interaction with field staff led to higher participation in users group in other PAs in Nepal (Agrawal & Gupta, 2005). When interactions only occur with the people living near the PA office, and others living in distant and remote regions are ignored, this may be counter-productive to successful conservation of PAs. This can be because a large section of the society is likely to be missed in the mainstream of conservation and they may lack support for PAs. For instance, there is a tendency of higher rates of poaching and illegal wildlife hunting in the remote region of Bardiya National Park, one of our study parks (Bhattarai et al., 2016). This may have occurred in the absence of a law enforcement officer and lack of direct interaction with the people when PA staff are not able to reach distant villages for monitoring and engagement.

Among demographic variables, local people who did not attend school (among those living mid-distance from PA head office) were more likely to support the PA than people who attended school. Those who did not attend school are likely to be involved in harvesting various natural resources. This may have led to support for PAs owing to natural resource extraction benefits from the existence of the PA. Other studies have also found that resource harvest benefits or income from PA influenced people towards a positive attitude to the PA (Anthony & Moldovan, 2010; Dewu & Røskaft, 2017; Ochieng et al., 2021). However, benefits from PAs (such as revenue sharing) do not facilitate the achievement of positive attitudes only, but the lack of transparency and accountability in benefit sharing could bring negative attitudes (Ochieng et al., 2021). Some studies found that higher levels of education lead to support for PA as this may increase the overall conservation awareness of local people (Arjunan et al., 2006; Dewu & Røskaft, 2017). People with lower levels of education were also found to be less likely to support conservation (e.g., tigers) (Carter et al., 2014). With regards to ethnicity, local people belonging to high-caste groups are less likely to support a PA

than other caste groups (among those living near to a PA head office). Another study in Nepal's Chitwan National Park showed that lower-caste Hindus were more likely to have negative attitudes towards conservation (tiger) (Carter et al., 2014). This may happen because of the benefits from the PAs received by the low caste groups were little or none. The majority of the respondents in my study belonged to indigenous communities, especially in LNP. The indigenous groups of *Tamang* and *Hyolmo* in LNP and *Tharus* in BNP are also the ones who benefit from the national park, especially tourism, in addition to other park related benefits. This may be the obvious reason why lower numbers of the high caste groups perceived tourism related benefits than other caste groups. I didn't find any influence of other demographic features towards the support for PA.

5.6 Conclusion

Overall, local people in BNP and LNP were supportive of the PA, and this was correlated with the perception of benefits to the household and community. Further, people living close to the PA head office were also likely to be more supportive than distant villagers. People who attended school, and indigenous and occupational caste groups, exhibited more support than high-caste groups. Given the supportive nature of local people towards PA, they have the potential to be strong conservation partners. As such, mobilisation of local people towards different conservation actions such as monitoring and patrolling for illegal activities could fill the gap of inadequate human resources in the field. However, equal attention is needed to address the negative impacts on local people to further strengthen PA support. This chapter was based on a perception survey, therefore, even if the local people were supportive towards a PA, their actual behaviour towards the PA is unknown. Exploration of conservation behaviour through participant observation would strengthen the results and demonstrate

tangible outcomes of perceived support or lack of support for a PA. This chapter provides practical findings on the current status of local support for PAs in Nepal and may be useful for building positive relationships between local people and PAs or conservation in the future.

Chapter 6

General Discussion

Chapter 6: General Discussion

In Chapter 6, I describe how the data-based chapters (Chapters 2-5) addressed the four objectives of my thesis. This chapter also highlights the contribution of the thesis to theory, policy and practice. Further, I have presented the shortcomings and limitations of my study and provide future directions for research. This discussion chapter ends with the final conclusion.

6. General Discussion

6.1 Introduction

The global conservation community advocate for increasing coverage of protected areas because they are an important strategy for biodiversity conservation (UNEP-WCMC & IUCN, 2023a). The global new area-based conservation target has been set at 30% of terrestrial and coastal/marine areas to be protected through connectivity conservation by 2030 (COP-CBD, 2022). However, an increase in area-based conservation only, albeit a key indicator of conservation achievement, may not be sufficient in addressing biodiversity loss. Instead, ecological representation, improvement in management effectiveness, collaboration with indigenous and local people and community groups are equally important in achieving conservation success (Maxwell et al., 2020). To address conservation challenges from a social perspective, different conservation strategies evolved such as integrated conservation and development projects (ICDPs), especially in developing countries (Naughton-Treves et al., 2005). Some countries, such as Nepal, adopted this as a national strategy in managing protected areas through policy changes and implemented action on the ground. This is, however, subject to evaluation of whether it has achieved what it was originally intended for.

The aim of my thesis was to understand the relationship between local people and protected areas as well as nature-based tourism, to better understand the social dimensions that can promote success in protected area management. Success is often contingent on whether the local people are supportive of (and hence compliant with) protected area management measures, and this is often influenced by the balance between benefits and costs of protected areas. To accomplish the aim, I developed four

research objectives based on current understanding and key knowledge gaps. Here, I summarise and discuss the key findings related to my four objectives reported in the four data-based chapters presented previously. I then discuss the contributions to theory, policy and practice as well as limitations of my research, and this is followed by a final concluding section.

6.2 Summary of Findings/Achievement of Thesis Objectives

Objective 1: *Identify Current Understanding of Socioeconomic Impacts of Nature-Based Tourism in Protected Areas to Local People*

This objective was addressed through a systematic literature review. I analysed peer-reviewed studies on nature-based tourism in protected areas globally that were published over the past 25 years (Chapter 2). The analysis found that the literature reported more benefits than costs to local people from nature-based tourism in protected areas. The largest proportion of reported benefits were monetary, whereas the largest number of costs were sociocultural. Documented benefits and costs were also categorised as objective (i.e., quantifiable such as income) or perception-based indicators (e.g., loss of freedom). Most benefits and costs were objective: they could be measured in some way. Accruing benefits to locals or outsiders is important as the benefits from protected area and nature-based tourism may determine local support towards protected areas as well as tourism. Within the community itself, there were also reports of inequity in benefit distribution (Xu et al., 2009; Afenyo & Amuquandoh, 2014). The analysis found that all the costs were accrued by locals and outsiders received economic benefits only. Further, among different types of costs, more sociocultural costs were experienced by local people. In terms of benefit types, more economic benefits prevailed for local people. Regarding individual-collective benefits

and costs distribution of nature-based tourism, more collective costs were experienced by local people, but the benefits were experienced more at the individual level.

With respect to the temporal scale of publications on nature-based tourism, there was a lack of uniformity in publications. It took about two decades to publish in the domain of local people, nature-based tourism and protected areas despite the concept of “ecotourism” being first introduced as early as 1978 (McKercher, 2015, p.15). The publication trends peaked only after 2006. This could be due to celebration of the year 2002 as the United Nations International Year of Ecotourism that linked ecotourism activities with sustainable development (Butcher, 2016). The review also found a geographical bias in nature-based tourism studies, with most studies conducted in low and middle-income countries. These studies were further limited to particular protected areas. Thus, some protected areas were overrepresented, and others are under or nonrepresented.

Nature-based tourism that link and/or interact with local people and protected areas may be the typical tourism characteristics of low and middle-income countries. This was also documented in the ecotourism review by Wardle et al. (2021) where most of the studies were carried out in developing countries with conservation actions linked to generating alternative sources of income for local people and economic development. This is in contrast with nature-based tourism and ecotourism studies based in the developed world. For instance, environmental impacts of nature-based tourism such as studies on human-wildlife interaction for tourism (Dou & Day, 2020) and recreation impacts on birds (Steven et al., 2011) were mostly conducted in developed countries. This chapter concluded that nature-based tourism research has two distinct foci. Developing countries are prioritised for research on economic and sociocultural impacts and developed countries for environmental impacts of nature-based tourism.

Another important finding is that the individuals benefit from nature-based tourism at the expense (cost) of community. Observing the methods suggested there was also a potential bias in nature-based tourism studies towards reporting benefits over costs, where most of the reviewed papers focused primarily on benefits. This means my review result may have under-reported costs. The reviewed papers also reported benefits and costs distribution more frequently at different spatial scales, with less emphasis on demographic features. This justifies the need to undertake a study focusing on both the benefits and costs, with focus on distributional equity. Chapter 2 provided the background and foundation to test the findings from the global review of nature-based tourism at the individual protected area level in Nepal. For example, costs were not prioritized in nature-based tourism studies and the demographic distribution of these benefits and costs was lacking. I addressed these issues in the subsequent objectives/chapters.

Objective 2: *Assess Perceived Benefits and Costs from Protected Areas to Local People*

This research objective was addressed in Chapter 3 by assessing the perceived costs and benefits of protected areas and nature-based tourism using data from a household level survey conducted in my two case study sites. I collated and applied the ICDP criteria (Appendix 2, Table A2.1) to categorise the perceived benefits, both within the household and those that were perceived to be collective (i.e., shared across the community). The ICDP framework does not address costs, therefore costs were categorised inductively from the open-ended responses (Appendix 2, Table A2.2). Although the ICDP framework has its own criteria, these have not been examined holistically in a Nepalese case despite protected areas, especially buffer zones and conservation areas, being managed through this framework. However, several studies

on different facets of conservation and management issues have been conducted, such as on issues of human-wildlife conflict (Regmi et al., 2013; Acharya et al., 2016; Lamichhane et al., 2018; Shahi et al., 2021; Dahal et al., 2022), participation in decision-making and conservation/management (Paudyal et al., 2018), nature-based tourism revenue and economic impact (Bookbinder et al., 1998; Baral & Dhungana, 2014; Pandit et al., 2015; Thapa, 2016a; Gupta et al., 2023), protected area benefits and problems etc. (Allendorf, 2007).

To the best of my knowledge, my study is the first that has applied the ICDP criteria to assess protected area management in Nepal. As envisioned by ICDP, people perceived more communal level benefits than household level benefits. However, there were also perceived costs associated with ICDP approach in protected area management. Proximity (spatial location of a household from the protected area office) and residency status accounted for the most statistically significant differences in perceived benefits and costs of both protected areas and nature-based tourism. Participation in the decision-making process, a key indicator of ICDP, was found to be very low.

The findings from this study have several implications for Nepal with a view to attaining conservation objectives. There were very few respondents perceiving cost mitigation as a benefit. This suggests that cost mitigation activities are either implemented in small numbers or had not been able to reduce local cost of conservation. This could be improved by implementing strategies to reduce costs to local people which may lead to more support for protected areas because reducing costs is equally important as promoting benefits. Similarly, participation of local people as promoted in Nepalese policy has not been realised in practice. Passive participation or nonparticipation of local people in protected area related decision-making may restrict local support for protected areas. This study was conducted in protected areas that were

also the destination of nature-based tourism. Therefore, the result may be different in other protected areas with low or no tourism where the benefit would be further limited due to resource access constraints within the protected area. Objective 3 below expands on this analysis by addressing the underexamined topic of perceived equity of benefits and costs distribution. Participation in decision-making was also examined from the procedural equity dimension.

Objective 3: *Assess Social Equity in Protected Area Management*

This objective was addressed in Chapter 4 of the thesis. Equitable management of protected areas was assessed through the lens of the procedural and distributional equity concepts, which are two of the main dimensions of equity. Distributional equity is most important in promoting equitable management of protected areas (Abebe & Jones, 2022; Mollick et al., 2023) and the positive linkage of distributional equity with other indicators of equity may also reflect its importance (Zafra-Calvo et al., 2019). Similarly, procedural equity was assessed because participation is one of the important indicators of the ICDP approach. As mentioned, this chapter builds on the analysis of the household level survey data in the previous chapter by exploring whether perceived benefits and costs from protected areas and nature-based tourism were distributed equitably. Procedural equity was assessed through the status of local participation in the decision-making process and membership in community-based organisations (CBOs). Similarly, distributional equity was assessed through local people's perceptions about the fairness of benefits and cost distributions from protected areas and nature-based tourism.

Participation in the decision-making process and/or membership with CBOs, which I considered a proxy for procedural equity, was very low at only 16% of the respondents. While I did not ask explicitly if the participation was passive or forced, the open-ended

question in my survey allowed respondents to reply as either participation or non-participation in decision-making process from their own experience. Therefore, the participation as explored in this thesis contributed to an understanding of procedural equity. Procedural equity was mostly experienced by those having school education and those respondents living near or adjacent to the protected area office. There was also a tendency for active participation in the decision-making process from the high-income group and high-caste people (Chaudhary et al., 2018). Regarding distributional equity, this study found that people perceived that costs were distributed in a more equitable manner than benefits. However, there was more distributional equity perceived with respect to protected areas than for nature-based tourism. This trend is also reflected in a study in a German national park, where the distribution of benefits and costs were perceived as equally distributed by about half of the respondents. However, locals working in the tourism industry benefited more whereas costs were limited to the locals residing near the national park (McGinlay et al., 2023). Income status and gender may also influence distributional equity as evident from Nepal's community forest. Despite the adoption of equality principles in the distribution of community forest benefits with priority for disadvantage groups (Ojha et al., 2009 cited in Chaudhary et al., 2018), high-income groups and male-headed families benefited more, such as from firewood and fodder (Chaudhary et al., 2018).

My study is one of very few that contribute to the knowledge and literature on equitable management of protected areas in Nepal. Equity studies in Nepal have tended to focus more on community forest (Gautam, 2009; Luintel et al., 2017), possibly due to the success of community forest programs in forest restoration and delivering forest product benefits. However, these equity studies in community forest focused more on the distribution aspects of the forest products and related activities (e.g., access to

community forest funds and other local development activities) (Karki & Poudyal, 2021). The achievement of the above two objectives related to benefits and costs of protected areas implemented using an ICDP approach, and the associated equity dimensions, provided the foundation to achieve the last objective of my thesis. When people perceive that benefits outweigh costs, then they may participate in a social exchange or demonstrate support for a given activity (Almeida García et al., 2015). As such my next objective examined whether the perceptions of benefits and costs influenced support for protected areas.

Objective 4: *Evaluate Perceptions of Local People Towards Protected Areas*

Chapter 5 explored local people's perceptions of protected areas and how these related to their level of support, again, using data from the household-level survey. This chapter was extended from the findings about the perceived benefits and costs from protected areas (Chapter 3) and its distributional equity of benefits and costs (Chapter 4). For example, when people perceive more benefits than costs from protected areas, then they may view protected areas as positive and thus support them. In this chapter, the level of support for protected areas was modelled in the decision-tree analysis with several perception variables of benefits and costs. This chapter found that, overall, local people were supportive of the protected areas. They were also highly aware of the importance of nature and wildlife conservation. Correlation analysis revealed a strong positive relationship between the level of an individual's support for protected areas and the perception that other people in the community support protected areas. This may have been due to the influence of subjective norms. This corroborates the findings by Gurney et al. (2016) on participation in community-based marine protected area management where the individual participation was more extensive when local people perceived societal pressure to participate in co-management of marine protected areas. Further,

my research found that local support for protected areas was most strongly influenced by the perception that protected areas bring benefits to an individual's household and the spatial location of households.

This research has contributed to the knowledge on local support and participation in protected area management. It has highlighted how local support for protected areas can be influenced by factors pertaining to an individual protected area. Therefore, the policy and practice adopted at the national level to share protected area related benefits with local people aiming to garner local support may not be enough to work at the individual protected area level. For example, buffer zones in Nepalese protected areas have been established through policy amendments, which guarantees the flow of 30-50% of the protected area income back to the community (GoN, 1973). In Nepal, however, not all protected areas are successful in making an income through nature-based tourism (DNPWC, 2022) thus limiting its activities depending on the budget made available by the central treasury. This budget is merely enough to meet recurrent costs and lacks enough funds for capital expenditure and/or compensation payment to locals. Again, most of the PA benefits were realised by the households that were situated relatively near the protected area office. This may preclude a large section of society from participating in protected area management. The distant households and those not receiving benefits were unsupportive of the protected areas. This may threaten the protected areas such as from poaching and other illegal activities.

6.3 Contributions to Theory, Policy and Practice

These research findings contribute to a broader understanding of the relationship between local people, nature-based tourism and protected areas in the context of a developing country. They make unique and important advancements to support

protected area management in Nepal, one of the most popular nature-based tourism destinations. Furthermore, this research also contributes to the framework of the relationship between protected areas and people (Allendorf, 2010). In doing so, I have used individuals (as well as households) as the unit of analysis and applied open-ended questions to explore perceived benefits and costs. In addition, local support for protected area was modelled with several perception statements of protected areas covering benefits, costs and overall conservation awareness.

Nature-based tourism is a type of tourism activity associated with nature and protected areas. Ecotourism, on the other side, is more desirable in protected areas due to its potential positive contributions to conservation, support for local livelihoods and promotion of environmental education, among other factors (Ross & Wall, 1999b; Ross & Wall, 1999a; Stronza et al., 2019). Although I did not explicitly assess nature-based tourism in protected areas from the ecotourism viewpoint, this project has contributed to the broader understanding of NBT and its linkage with socioeconomic development. I found that the benefits of protected areas related to tourism had limited contribution to environmental knowledge or awareness, conservation, culture and participation from the perspective of local people.

This research found that nature-based tourism and protected areas provide both benefits and costs (Chapters 2 and 3), with benefits surpassing costs. Additionally, I found that local support for protected areas correlated with the perception of benefits (Chapter 5), thus reinforcing the principle of social exchange theory. This theory posits that local people are willing to engage in a social exchange if they anticipate benefits without incurring an unacceptable level of costs (Almeida García et al., 2015). Although widely applied in the tourism context, this theory is equally applicable in protected area context too. My research has contributed to the limited understanding of the support for

protected areas given the possibility of accruing both benefits and costs to local people from protected areas and tourism. In doing so, I explored both the positive and negative perceptions of protected areas at the household and community level and linked this to support of local people for protected areas.

From an applied perspective, this study contributes to the widely adopted practice of integrated conservation and development projects (ICDPs) in protected area and/or conservation management. Although a concrete model of ICDPs at the field level is lacking, there are some commonalities and differences among individual ICDPs (Alpert, 1996; Hughes & Flintan, 2001). However, the primary objective of ICDPs is to achieve conservation goals while also promoting social development. ICDPs have been implemented in Nepal through policy changes and the establishment of buffer zones and conservation areas (Heinen & Shrestha, 2006). This thesis has evaluated protected area management through the lens of ICDP criteria to determine whether protected areas implemented via the ICDP framework in Nepal achieved their intended objectives. Although the ICDP framework and its criteria is suitable for protected area management, especially in developing countries, this should be adapted to address the local context of protected areas. For example, not all protected areas have the potential to host nature-based tourism and generate funds from this activity, and the development status of local communities surrounding the protected areas may differ creating the potential for inequitable outcomes.

The buffer zone policy and program in Nepal represents an outcome of the ICDP approach that officially acknowledges the role of local people in achieving conservation success. This initiation marked the end of a fortress-and-fine approach to conservation and/or protected area management. The participation of local people in managing and using forest resources, as well as the allocation of protected area income for local

development and conservation activities in buffer zones, are two key components of this policy. While this policy takes a comprehensive view of buffer zones, my findings emphasise the need to evaluate it within the context of each individual protected area, considering their own features. For instance, tourism plays a significant role in income generation for ICDPs. Therefore, protected areas and buffer zones with limited tourism potential may lack the necessary funds for buffer zone development. Similarly, my work has revealed that benefits and costs for local people varied based on the level of tourism activities and geographical location, echoing findings elsewhere (Dhakal & Thapa, 2015; Lamichhane et al., 2018). The supportive nature of local people for protected areas could be further enhanced if the cost mitigation activities are implemented with priority. For example, this can be done through the allocation of buffer zone funds to invest in cost-mitigation activities. This has been overlooked in other protected areas and buffer zones too (Lamichhane et al., 2019; Silwal et al., 2022). Social equity research in protected area management has been receiving attention lately. Social equity has been prioritised by the international community in the management of protected areas. For instance, the CBD global biodiversity framework highlights the importance of equitable governance and management of protected areas in addition to area-based conservation target (COP-CBD, 2022). This study of social equity in Nepalese protected areas helps raise understanding of the status of equitable management of its protected area and may provide baseline indicators for future reference.

6.4 Future Research

While the findings of this thesis enhance the understanding of the human and/or social dimensions of protected area management, they do come with limitations that open

avenues for future research. Chapter 2 examined the contributions of nature-based tourism in protected areas to local people but missed exploring the crucial aspect of conservation contributions by nature-based tourism. It remains unclear whether the nature-based tourism promoted in protected areas was also ecotourism or merely nature-based tourism. Nature-based tourism, if practiced appropriately and adhering to theoretical principles of ecotourism, could be an ideal form of tourism to benefit both nature conservation (e.g., protected areas) and local communities.

Assessing (nature-based) tourism in protected areas through the lens of an ecotourism framework (Ross & Wall, 1999a; Buckley, 2009; Stronza et al., 2019) could clarify whether this is a genuine case of ecotourism or a form of greenwashing. Evaluating through an ecotourism framework could reveal whether the contribution of ecotourism (nature-based) is truly advantageous for conservation, local communities and the tourism sector itself. Chapter 2 could have benefited from disaggregating benefits and costs based on demographic characteristics. This is because different societal groups hold varying values, and they may experience benefits, costs, and resource access differently (Chaudhary et al., 2018; Lau et al., 2018). Unfortunately, disaggregation was not feasible due to inconsistencies in the reported studies included in the systematic review. Most studies did not provide demographic perspectives on benefits and costs.

Chapter 3 examined the conservation outcomes for local people against the ICDP criteria. Nepal's mainstream policy to guide protected area management and participatory conservation has adopted the ICDP principles, through amendment in the act. This is evident in the establishment of conservation areas and declaration of buffer zones with dedicated management units (Heinen & Mehta, 1999; Heinen & Shrestha, 2006). However, my research focused solely on buffer zones of two national parks that are also nature-based tourism destinations. Extending this research to other protected

areas without tourism activities as well as varying age of protected areas, different protected area categories and diverse geographical and cultural features, would enrich these findings. Perhaps closer look into the different types of participation and its relation to community support for PAs, influence on decision-making and linkage to distribution equity might be a useful venue for further research.

Legislation changes and establishing new types of protected areas to enhance nature conservation, and to improve human wellbeing is just one approach of conservation. This does not necessarily guarantee that positive (end-) outcomes would happen. To evaluate the impacts of such policies in improving both the protected area management and human wellbeing, impact evaluation should be conducted to address the end outcomes, with counter-factual scenarios (Ferraro & Pressey, 2015).

Lastly, a more thorough understanding of local support for protected areas could be achieved through more focused research. My study was confined to local perceptions of protected areas and their support based on perception surveys. Therefore, I could not verify actual behaviour related to lack of support for protected areas. There could be differences between attitudes and intentions or behaviour towards conservation and tourism (Lai & Nepal, 2006). Actual behaviour towards conservation and protected areas is more important for successful management than stated attitudes. Incorporating participant observation could have aided the findings and investigated their conservation-related behaviour to strengthen the current findings.

The fieldwork for this research was conducted during the COVID-19 pandemic and had to cope with travel restrictions and other health order directives. To accommodate these circumstances, I relied solely on household surveys based on questionnaires. Qualitative studies such as focus groups as well as interviews with local farmers, village leaders and other stakeholders, would have supplemented the findings. Bringing

municipal officials (both government staff as well as elected members), buffer zone committee members, and national park officials as research participants would also have strengthened the results obtained from the questionnaire survey.

6.5 Conclusion

Protected areas and other effective area-based conservation measures are increasingly recognised as vital to secure biodiversity. As a result, countries around the world, including Nepal, have designated protected areas to safeguard biodiversity. However, establishing protected areas is only one of many factors in achieving conservation objectives. Linking protected areas to development goals and improving human wellbeing are seen as an additional role of protected areas to contribute towards human development. Integrated conservation and development project approaches have been adopted in managing Nepalese protected areas to address these conservation and development objectives.

My thesis evaluated the contributions of nature-based tourism in protected areas to local people at the global scale. Notably, I observed a potential bias in the studies of nature-based tourism, as most of the reviewed papers focused on benefits and not so much on costs. This may have led to reporting more benefits than costs, which may not reflect the actual picture. This was later translated into the individual protected area level in Nepal to gauge the contributions of protected areas and nature-based tourism to local people. As seen from the Nepalese case study, local people are yet to perceive conservation as a benefit of ICDP. The perceived benefits and costs were disaggregated based on sociodemographic characteristics and analysed to see whether these were distributed in an equitable manner. Local people living farther away from the protected area office reported fewer benefits but more costs than their fellow villagers living near

the protected area office with statistically significant differences. Similarly, cost mitigation activities implemented through ICDP were negligible. Local participation in conservation and development was also poor suggesting that participation may be passive. This suggests that an ICDP approach as implemented in Nepalese protected area management system may not have achieved the intended result as envisioned by the policy.

The perceived benefits from tourism and procedural equity (e.g., participation) determined the distributional equity in Nepalese protected areas. However, various perceived benefits and costs were an important determinant of distributional equity than sociodemographic variables. This thesis found that benefits from protected areas to local people, a key indicator of wellbeing, are important to garner local support for protected areas. People residing near the protected area office are found to be more supportive than those residing mid-distance or far away from the protected area office. In this case, it is required to focus on distant villagers to involve them in protected area management and benefits-costs sharing mechanism so that distant villagers also become involved in conservation management activities in Nepalese protected areas. In conclusion, it is imperative to consider the local socioeconomic factors in protected area planning and management to achieve conservation success and prevent protected areas from turning into paper parks.

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Appendices

Appendix 1: Supplementary materials for chapter two

Table A1.1: Inclusion and/or exclusion criteria for systematic literature review.

Inclusion criteria	Exclusion criteria
Date: 1 January 1978 till 29 October 2020	Date: before 1 January 1978
Socioeconomic dimension of Nature-Based Tourism (NBT) (if the study included both socioeconomic and environmental dimension then it was included)	Ecological and/or environmental dimension of NBT
Peer reviewed journal article based on primary data and empirical findings	Systematic reviews, theoretical or conceptual articles, methodological frameworks, book chapters, conference proceedings and predictive studies (e.g. willingness to pay studies)
NBT studies in PAs only (terrestrial and inland waters, PAs that is spread both in terrestrial and costal/marine as single protected area, natural world heritage site (included if it is a joint cultural/natural WHS), Ramsar site in inland wetlands)	NBT studies in marine protected areas, cultural world heritage site, Ramsar site in coastal/marine wetlands, other non-protected sites and private protected areas (e.g. Serenari et al., 2017)
Articles that dealt with economic impact (monetary impact) in addition to other socio-economic impacts were included in the analysis (e.g. Saayman et al., 2009)	Articles that dealt with economic impact (monetary impact) only and revenue generation (e.g. Mcdonald & Wilks, 1986; Fredman & Yuan, 2011; Loomis et al., 2019)

Articles that dealt with both private and public protected areas (in a single paper) were included and/or if the private protected area shared a border with the public protected areas (e.g. Spenceley & Goodwin, 2008)

Articles that dealt with tourism revenue sharing perception of local people (e.g. Archabald & Naughton-Treves, 2001; Munanura et al., 2016)

Published in English language

Not published in English language

Table A1.2: Author(s), year and journal publications included in the systematic review.

Sn.	Author (year)	Journal	PA Country	PA name as reported in the study
1	Acquah et al. (2017)	African Journal of Hospitality, Tourism and Leisure	Ghana	Kakum Conservation Area/ National Park Mole National Park Shai Hills Resource Reserve
2	Adiyia et al. (2014)	Tourism and Hospitality Research	Uganda	Kibale National Park
3	Agyeman et al. (2019)	Community Development	Ghana	Kakum Conservation Area/ National Park
4	(Akyol, 2017)	Applied Ecology and Environmental Research	Turkey	Kaz Mountain National Park
5	Appiah-Opoku (2011)	Society and Natural Resources	Ghana	Kakum Conservation Area/ National Park
6	Badola et al. (2018)	Tourism Management	India	Hemis National Park Valley of Flower National Park/ Bhyundar valley Nanda Devi National Park Corbett National Park
7	(Black & Cobbinah, 2017)	Journal of Sustainable Tourism	Botswana Rwanda	Chobe National Park Volcanoes National Park
8	Bookbinder et al. (1998)	Conservation Biology	Nepal	Chitwan National Park

9	Brankov et al. (2019)	European Countryside	Serbia	Derdap National Park Tara National Park
10	Bruyere et al. (2009)	Environmental Management	Kenya	Samburu National Reserve Buffalo Springs National Reserve
11	Buyinza and Acobo (2009)	Research Journal of Applied Sciences	Uganda	Budongo Central Forest Reserve
12	Cobbinah et al. (2017)	Journal of Outdoor Recreation and Tourism	Ghana	Kakum Conservation Area/ National Park
13	Das and Hussain (2016)	Journal of Ecotourism	India	Kaziranga National Park
14	Eshun and Tichaawa (2020)	Tourism	Ghana	Bobiri Forest Reserve and Butterfly Sanctuary
15	Ezebilo and Mattsson (2010)	Forest Policy and Economics	Nigeria	Cross River National Park
16	Fezeka and Stella (2020)	African Journal of Hospitality, Tourism and Leisure	South Africa	Addo Elephant National Park
17	Gezon (2013)	Journal of Sustainable Tourism	Madagascar	Ankarana Special Reserve
18	Ghosh and Ghosh (2018)	GeoJournal	India	Sundarbans Biosphere Reserve
19			Bhutan	Jigme Dorji National Park

	Gurung and Seeland (2011)	Sustainable Development		Jigme Singye Wangchuk National Park Thrumshingla National Park
20	He et al. (2008)	Environmental Management	China	Wolong Nature Reserve
21	Holden (2010)	Tourism and Hospitality Planning & Development	Nepal	Annapurna Conservation Area
22	Hussain et al. (2012)	PARKS	India	Kaziranga National Park
23	Innes and Heintzman (2012)	Leisure/Loisir	Canada	Gros Morne National Park
24	Jaafar et al. (2015)	Theoretical and Empirical Researches in Urban Mgmt.	Malaysia	Kinabalu Park
25	Jaafar et al. (2013)	WorldWide Hospitality and Tourism Themes	Malaysia	Kinabalu Park
26	Kaae (2006)	Tourism and Hospitality Planning & Development	Thailand	Doi Inthanon National Park
27	Karanth and DeFries (2011)	Conservation Letters	India	Sariska National Park/ Tiger Reserve Ranthambore National Park

				Bhadra National Park
				Kanha National Park
				Pench National Park/ Tiger Reserve
				Dandeli-Anshi National Park
				Nagarhole National Park
				Bandipur National Park
				Mudumalai National Park
				Periyar National Park
				Kanha National Park
				Nagarhole National Park
				Ranthambore National Park
				Chitwan National Park
				Annapurna Conservation Area
28	Karanth and Nepal (2012)	Environmental Management	India	Kanha National Park
				Nagarhole National Park
				Ranthambore National Park
			Nepal	Chitwan National Park
				Annapurna Conservation Area
29	Kariyawasam et al. (2020)	Environmental Development	Srilanka	Udawalawe National Park
30	KC et al. (2020)	GeoJournal	Nepal	Annapurna Conservation Area
				Chitwan National Park
31	KC et al. (2015)	Intl. Journal of Sust. Dev. & World Ecology	Nepal	Annapurna Conservation Area
32	KC (2020)	Current Issues in Tourism	Nepal	Bardia National Park
33	Kinnaird and O'Brien (2009)	Oryx	Indonesia	Tangkoko DuaSudara Nature Reserve

34	Kodir et al. (2019)	GeoJournal of Tourism and Geosites	Indonesia	Komodo National Park
35	Liu et al. (2012)	PLOS ONE	China	Wolong Nature Reserve
36	Ma et al. (2019)	Journal of Environmental Management	China	Giant Panda National Park
37	MacKenzie et al. (2017)	Journal of Environmental Management	Uganda	Kibale National Park
38	(Matiza & Oni, 2014)	Mediterranean Journal of Social Sciences	South Africa	Kruger National Park
39	Mbaiwa (2011)	Tourism Management	Botswana	Okavango Delta
40	Mbaiwa and Stronza (2010)	Journal of Sustainable Tourism	Botswana	Okavango Delta
41	Mensah (2017)	Tourism Review International	Ghana	Kakum Conservation Area/ National Park
42	Muresherwa et al. (2020)	African Journal of Hospitality, Tourism and Leisure	Uganda	Bwindi Impenetrable National Park
43	Mutanga et al. (2015)	Tropical Conservation Science	Zimbabwe	Umfurudzi National Park Gonarezhou National Park Matusadona National Park

44	Novelli and Scarth (2007)	Tourism and Hospitality Planning & Development	Malawi	Liwonde National Park
45	Nutsugbodo and Mensah (2020)	Community Development	Ghana	Kakum Conservation Area/ National Park
46	Nyaupane and Poudel (2011)	Annals of Tourism Research	Nepal	Chitwan National Park
47	Nyaupane and Thapa (2004)	Journal of Ecotourism	Nepal	Annapurna Conservation Area
48	(Obradović et al., 2020)	Tourism and Hospitality Research	Serbia	Uvac Special Nature Reserve
49	Ogutu (2002)	Land Degradation & Development	Kenya	Esenlenkei Community Conservancy / Amboseli Biosphere Reserve
50	Ohl-Schacherer et al. (2008)	Environmental Conservation	Peru	Manu National Park
51	Ormsby and Mannle (2006)	Journal of Sustainable Tourism	Madagascar	Masoala National Park
52	Panta and Thapa (2017)	Journal of Ecotourism	Nepal	Bardia National Park
53	Place (1988)	Journal of Cultural Geography	Costa Rica	Tortuguero National Park

54	Rastogi et al. (2015)	Forest Policy and Economics	India	Corbett National Park
55	Rauf et al. (2019)	GeoJournal	Pakistan	Saiful Malook National Park
56	Reimann et al. (2011)	Scandinavian Journal of Hospitality and Tourism	Estonia	Lahemaa National Park
				Vilsandi National Park
				Matsalu National Park
				Sooma National Park
				Karula National Park
57	Roy et al. (2019)	International Journal of Sustainable Society	India	Pench National Park/ Tiger Reserve
				Taddoba-Andhari Tiger Reserve
				Navegaon Nagzira Tiger Reserve
				Bor Tiger Reserve
				Umred-Karhandla Wildlife Sanctuary
58	Saayman et al. (2009)	Koedoe	South Africa	Karoo National Park
59	Salum (2009)	African Journal of Ecology	Tanzania	Jozani-Chwaka Bay National Park
60	Sandbrook and Adams (2012)	Society and Natural Resources	Uganda	Bwindi Impenetrable National Park
61	Schelhas et al. (2002)	Natural Resources Forum	Dominican Republic	Armando Bermudez National Park
62	Sebele (2010)	Tourism Management	Botswana	Khama Rhino Sanctuary

63	Udaya Sekhar (2003)	Journal of Environmental Management	India	Sariska National Park/ Tiger Reserve
64	Sharma et al. (2019)	Ecological Questions	India	Satpura National Park
65	Shoo and Songorwa (2013)	Journal of Ecotourism	Tanzania	Amani Nature Reserve
66	Sinha et al. (2012)	Journal of Ecotourism	India	Kanha National Park
67	Sirima and Backman (2013)	Current Issues in Tourism	Tanzania	Ruaha National Park
68	Snyman (2013)	Development Southern Africa	Malawi	Liwonde National Park
69	Snyman (2012)	Journal of Sustainable Tourism	Malawi	Liwonde National Park
			Botswana	Okavango Delta
			Namibia	Skeleton Coast National Park
70	Snyman (2014a)	Koedoe	Botswana	Okavango Delta
			Malawi	Liwonde National Park
			Namibia	Skeleton Coast National Park
				Palmwag concession area
			South Africa	iSimangaliso Wetland Park
				Kruger National Park
			Zambia	South Luangwa National Park
Zimbabwe	Hwange National Park			

			Botswana	Okavango Delta
			Malawi	Liwonde National Park
71	Snyman (2014b)	Tourism and Hospitality Research	Namibia	Skeleton Coast National Park Palmwag concession area
			South Africa	iSimangaliso Wetland Park Kruger National Park
			Zambia	South Luangwa National Park
			Zimbabwe	Hwange National Park
72	Somarrriba-Chang and Gunnarsdotter (2012)	Journal of Sustainable Tourism	Nicaragua	Nature Reserve Mombacho Volcano Nature Reserve Datanli-El Diablo
73	Spenceley and Goodwin (2008)	Current Issues in Tourism	South Africa	Kruger National Park
74	Spiteri and Nepal (2008b)	Environmental Management	Nepal	Annapurna Conservation Area
75	Spiteri and Nepal (2008a)	Environmental Conservation	Nepal	Chitwan National Park
76	Stone and Nyaupane (2016)	Journal of Sustainable Tourism	Botswana	Chobe National Park
77	Stone and Nyaupane (2018)	Journal of Sustainable Tourism	Botswana	Chobe National Park
78	Strickland-Munro and Moore (2013)	Journal of Sustainable Tourism	Australia	Purnululu National Park

79	Strickland-Munro et al. (2010)	Development Southern Africa	South Africa	Kruger National Park
80	Su et al. (2016)	Environmental Management	China	Mount Sanqingshan National Park
81	Telbisz et al. (2020)	Geoheritage	Hungary	Aggtelek National Park
				Rocky Cape National Park
				Savage River National Park
				Cradle Mountain-Lake St. Clair National Park
82	Tovar and Lockwood (2008)	International Journal of Tourism Research	Australia	Gunns Plains Cave State Reserve
				Table Cape State Reserve
				The Nut State Reserve
				Dismal Swamp Nature Reserve
				Arthur Pieman Conservation Area
				Black Bluff Nature Recreation Area
83	Tumusiime and Vedeld (2015)	Journal of Sustainable Forestry	Uganda	Bwindi Impenetrable National Park
84	Walpole and Goodwin (2000)	Annals of Tourism Research	Indonesia	Komodo National Park
85	Walpole and Goodwin (2001)	Environmental Conservation	Indonesia	Komodo National Park
86	Wang et al. (2010)	Tourism Management	China	Kanas Nature Reserve


87	Wang et al. (2018)	Sustainability	China	Shennongjia National Nature Reserve Jiuzhaigou Biosphere Reserve
88	Xu et al. (2009)	Intl. Journal of Sust. Dev. & World Ecology	China	Wolong Nature Reserve
89	Yasuda (2011)	Society and Natural Resources	Cameroon	Benoue National Park

Figure A1.1: Journal publication of chapter two in International Journal of Sustainable Development & World Ecology.

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Nature-based tourism in protected areas: a systematic review of socio-economic benefits and costs to local people

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ABSTRACT

Nature-based tourism, which includes visits to protected areas, is a growing trend. This may include consumptive and non-consumptive activities, with nature-based tourists being motivated to experience local culture and nature. Thus, tourism can contribute economically and socially to communities associated with protected areas, with the outcomes being both benefits and costs to local people. We carried out a systematic literature review to document and characterise the outcomes of nature-based tourism for people living in and around protected areas (terrestrial and inland waters). We evaluated 89 papers published from 1996 to 2020, most of which were conducted in low- and middle-income countries. The main benefits were employment, business opportunities and income, and the main costs were acculturation and abandonment of traditional lifestyle/practices, price inflation and conflict/crime. While most benefits were economic, most costs were socio-cultural. We found that benefits were most frequently experienced individually and costs experienced mostly at the collective or community levels. Inconsistencies in reporting of impacts suggests that future research should take a more consistent and systematic approach to evaluating benefits and costs of nature-based tourism from both the demographic and geographic perspectives, be more inclusive, and pay equal attention to objective and subjective measures of costs and benefits.

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Local people; nature-based tourism; protected areas; socio-economic benefit; socio-economic cost; systematic literature review

1. Introduction

Nature-based tourism, which also includes visits to protected areas, is a growing trend (Balmford et al. 2009; Karanth and DeFries 2011; McGinlay et al. 2020); however, the COVID-19 pandemic has had a mixed effect on the number of visits in protected areas across the world (Spenceley et al. 2021). Prior to

which may represent adventure tourism, ecotourism, wildlife tourism, bird watching, sustainable tourism, protected area tourism, etc. (for detailed definition of ecotourism and nature-based tourism, see Valentine 1992; Fennell 2001, 2012; Page and Dowling 2002; Donohoe and Needham 2006; Björk 2007; McKercher 2010; Buckley and Coghlan 2012). The concepts of ecotourism and nature-based tourism are related as both occur in natural

Appendix 2: Supplementary materials for chapter three

Table A2.1: Coded ICDP categories of open responses (from respondents) of benefits from PAs and tourism.

ICDPs categories	Description	Example of open responses of benefits from ...	
		PAs	Tourism
Community development	Infrastructure development, social development activities	Road, trail and bridge construction, tourism promotion, sanitation, drinking water supply etc	Health and sanitation, monastery support, livelihood improvement support, public work support
Economic	Economic development and financial activities	Savings and co-operatives, loan and grant support, investment fund support, hotel business, employment	Employment, increase in income, hotel and restaurant business, financial support by tourist
Extraction	Natural resource benefit to support rural livelihoods	Raw materials for handicrafts, pole for vegetable farming/ prayer flags, <i>nigaloo</i> , fodder and grass harvest	n/a
Skill development (and capacity building)	Capacity building to support income and livelihood diversification	Skill development training	Handicraft development, learning new skills

Knowledge (and awareness)	Conservation education and awareness among local people	Awareness raising	Sanitation awareness, new knowledge
Mitigation	Mitigation activities to reduce conservation cost to local people	Compensation for wildlife damage and wildlife victims, fencing work	No response
Conservation (programme)	Activities to enhance nature conservation and biodiversity conservation objectives	Plantation, embankment construction	Conservation support, plantation
Participation and membership	Participation in decision making on conservation and development, empowerment of women and marginalized people	Social group formation, membership of NGOs/CBOs, participation in decision making	No response
Cultural	Strengthening of arts and culture	n/a	Exhibition of arts and culture, cultural conservation/ interaction
Other	Not classified elsewhere	n/a	Recognition, opportunity to travel abroad

Table A2.2: Coded categories of open responses (from respondents) of costs from PAs and tourism.

Cost categories	Example of open responses of costs from PAs
Crop loss	Vegetable destruction, cultivated land destruction, food crop destruction
Livestock loss	Attack on livestock, loss of livestock to predators
Human attack/loss	Attack on human by wildlife, loss of human lives
Property damage	Property damage by wildlife
Restriction on natural resource use	Restrictions on livestock grazing, fodder collection, timber harvesting
Unjustified penalty/ royalty	Unnecessary or unjustified royalty payment for forest resources, unjustified penalty
Poultry/ pet animal loss	Loss of poultry, loss/ attack on pet animal
Other	Fear of wildlife, problem due to (forest) act
Cost categories	Example of open responses of costs from tourism
Behavioural	Adoption of bad habit, addiction
Economic	Competition in business, conflict among business owner, illegal work for making money
Environmental (solid waste)	Solid waste problem
Socio-cultural	Loss of culture and tradition, import of foreign culture, cultural change, prostitution, social evil
Other	Increase in negative activity (not explicitly mentioned)

Table A2.3: Number of respondents citing at least one household and community level benefits from PA and tourism in different benefit categories according to age group, gender, ethnicity, education, spatial location/ distance of villages from PA head office and residency status. *Note: Benefit types perceived by only 10% or more respondents are reported for statistical analysis. Values in **bold** are significant.*

Categories	HH benefit from PA		HH benefit from tourism		Community benefit from PA			Community benefit from tourism				
	Extraction	χ^2 test	Economic	χ^2 test	Extraction	χ^2 test	Development	χ^2 test	Economic	χ^2 test	Development	χ^2 test
Age: Older (≥ 41 yrs)	390	$\chi^2 = 1.048$, P= .306	76	$\chi^2 = .866$ P= .352	348	$\chi^2 = .001$ P= .977	63	$\chi^2 = .186$ P= .666	186	$\chi^2 = 2.929$ P= .087	81	$\chi^2 = 2.412$ P= .12
Younger (≤ 40 yrs)	382		84		334		55		153		60	
Gender: Female	357	$\chi^2 = .002$ P= .962	67	$\chi^2 = 1.249$ P= .264	303	$\chi^2 = 3.884$ P= .049	54	$\chi^2 = .000$ P= 1	151	$\chi^2 = .488$ P= .485	55	$\chi^2 = 3.142$ P= .076
Male	415		93		379		64		188		86	
Ethnicity: Other caste	551	$\chi^2 = 2.704$, P= .1	136	$\chi^2 = 19.945$ P= .000	496	$\chi^2 = 7.265$ P= .007	88	$\chi^2 = 1.095$ P= .295	273	$\chi^2 = 27.981$ P= .000	125	$\chi^2 = 26.929$ P= .000
High caste	219		23		185		29		64		15	
Education: Non-schooling	404	$\chi^2 = .000$ P= 1	58	$\chi^2 = 20.105$ P= .000	369	$\chi^2 = 4.441$ P= .035	58	$\chi^2 = .468$ P= .494	158	$\chi^2 = 7.495$ P= .006	68	$\chi^2 = 1.040$ P= .308
Schooling	365		102		310		60		181		73	
Distance to PA HQ: Near	276	$\chi^2 = 7.643$ P= .022	139	$\chi^2 = 211.772$ P= .000	197	$\chi^2 = 105.015$ P= .000	60	$\chi^2 = 12.341$ P= .002	240	$\chi^2 = 306.719$ P= .000	100	$\chi^2 = 105.994$ P= .000
Mid-distance	244		18		234		24		81		41	
Far	252		3		251		34		18		0	
Residency: Local	548	$\chi^2 = 13.673$ P= .000	129	$\chi^2 = 11.598$ P= .001	500	$\chi^2 = 28.223$ P= .000	78	$\chi^2 = .430$ P= .512	264	$\chi^2 = 19.688$ P= .000	118	$\chi^2 = 16.033$ P= .000
Migrant	224		31		182		40		75		23	

Table A2.4: Number of respondents citing at least one household and community level costs from PA and tourism in different cost categories according to age group, gender, ethnicity, education, spatial location/ distance of villages from PA head office and residency status. *Note:* Cost types perceived by only 10% or more respondents are reported for PA and cost types perceived by only 2% or more respondents are reported for tourism for statistical analysis. Values in **bold** are significant.

Categories	HH cost from PA				HH cost from tourism		Community cost from PA				Community cost from tourism			
	Crop loss	χ^2 test	Livestock loss	χ^2 test	Socio-cultural	χ^2 test	Crop loss	χ^2 test	Livestock loss	χ^2 test	Env.	χ^2 test	Socio-cultural	χ^2 test
Age: Older (≥ 41 yrs)	320	$\chi^2 = 7.175$, $P = .007$	87	$\chi^2 = .080$, $P = .777$	9	$\chi^2 = .010$, $P = .921$	369	$\chi^2 = 1.275$, $P = .259$	174	$\chi^2 = 2.161$, $P = .142$	20	$\chi^2 = .872$, $P = .35$	24	$\chi^2 = .023$, $P = .88$
Younger (≤ 40 yrs)	270		79		10		340		188		13		21	
Gender: Female	263	$\chi^2 = 1.753$, $P = .185$	59	$\chi^2 = 8.837$, $P = .003$	8	$\chi^2 = .016$, $P = .9$	315	$\chi^2 = 4.852$, $P = .028$	153	$\chi^2 = 3.585$, $P = .058$	15	$\chi^2 = .000$, $P = 1$	20	$\chi^2 = .007$, $P = .934$
Male	327		107		11		394		209		18		25	
Ethnicity: Other caste	428	$\chi^2 = 2.932$, $P = .087$	108	$\chi^2 = 2.844$, $P = .092$	11	$\chi^2 = .971$, $P = .324$	501	$\chi^2 = .018$, $P = .893$	244	$\chi^2 = 3.055$, $P = .08$	23	$\chi^2 = .000$, $P = 1$	26	$\chi^2 = 3.201$, $P = .074$
High caste	162		58		8		206		118		10		19	
Education: Non-schooling	335	$\chi^2 = 15.673$, $P = .000$	91	$\chi^2 = .456$, $P = .499$	7	$\chi^2 = 1.321$, $P = .25$	387	$\chi^2 = 8.881$, $P = .003$	186	$\chi^2 = .120$, $P = .73$	17	$\chi^2 = .000$, $P = 1$	22	$\chi^2 = .119$, $P = .731$
Schooling	252		74		12		319		174		16		23	
Distance to PA HQ: Near	193	$\chi^2 = 44.364$, $P = .000$	25	$\chi^2 = 133.814$, $P = .000$	19	$\chi^2 = 32.870$, $P = .000$	229	$\chi^2 = 60.386$, $P = .000$	69	$\chi^2 = 161.421$, $P = .000$	26	$\chi^2 = 26.786$, $P = .000$	39	$\chi^2 = 51.269$, $P = .000$
Mid-distance	168		26		0		220		96		6		6	
Far	229		115		0		260		197		1		0	
Residency: Local	424	$\chi^2 = 6.516$, $P = .011$	106	$\chi^2 = 2.377$, $P = .123$	8	$\chi^2 = 5.41$, $P = .02$	506	$\chi^2 = 9.854$, $P = .002$	251	$\chi^2 = .002$, $P = .962$	23	$\chi^2 = .000$, $P = 1$	21	$\chi^2 = 10.135$, $P = .001$
Migrant	166		60		11		203		111		10		24	

Figure A2.1: Journal publication of chapter three in Journal of Environmental Management.

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Research article

Beyond conservation: Assessing broader development outcomes of protected areas in Nepal

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ABSTRACT

Protected Areas (PAs) are set aside for biodiversity conservation but at the same time they are recognized for their role in supporting development goals. However, the benefits provided by PAs also come with costs to local people. Integrated Conservation and Development Projects (ICDPs) are a PA management approach that aim to maximize local benefits through enhancing conservation and development outcomes, while also reducing costs. We implemented a household level survey in two PAs in Nepal managed using an ICDP approach to assess local people's perceived benefits and costs and determine if this approach was achieving its intended outcomes. Since both PAs are popular nature-based tourism (NBT) destinations, respondents were asked questions specific to this activity and others more general to the PA. The coded qualitative responses revealed ten categories of benefits and twelve categories of costs. Most respondents perceived extraction benefits from PAs, and when asked to reflect specifically on NBT, they mostly identified economic benefits. Crop and livestock loss was the main perceived costs from PAs, whereas sociocultural costs were the main costs from NBT. Chi square tests showed that proximity to the PA office and residency status had the most significant differences in perceptions of benefits and costs from both PAs and NBT. People perceived very few benefits related to participation, cost mitigation, and conservation, which does not match the intended outcomes of ICDPs. Although there may be practical implications for engaging distant communities in management, this may help to enhance conservation and development outcomes from PAs.

1. Introduction

Protected areas (PAs) are the corner stone of biodiversity conservation, helping to maintain key habitats, facilitate species migration and

[Kontoleon, 2016](#)), but such benefits have been shown to be more likely to accrue to outsiders, while costs are mostly experienced by local people ([Swemmer et al., 2017](#)). In another case, costs and benefits within the PA community are inequitably distributed ([Mackenzie,](#)

Appendix 3: Supplementary materials for chapter four

Table A3.1: Logistic regression predicting likelihood of perceiving equity in PA (non-tourism) benefit distribution (with socio-demographic variables) – Model 1.

	B	SE	Wald	df	p	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Age	.005	.007	.555	1	.456	1.005	.992	1.018
Gender	.071	.174	.166	1	.684	1.073	.763	1.510
Ethnicity type	-.508	.212	5.725	1	.017	.601	.397	.912
School attendance	.012	.203	.003	1	.953	1.012	.680	1.506
Original residency	-.009	.207	.002	1	.966	.991	.661	1.487
Proximity to PA office	-.224	.173	1.671	1	.196	.799	.569	1.123
Constant	1.026	.394	6.790		.009	2.790		

Table A3.2: Logistic regression predicting likelihood of perceiving equity in PA (non-tourism) benefit distribution (with benefits, costs and procedural equity variables) – Model 2.

	B	SE	Wald	df	p	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Extraction benefit*	.536	.288	3.464	1	.063	1.710	.972	3.007
Other benefit	.528	.367	2.074	1	.150	1.696	.826	3.482
Tourism benefit	.908	.241	14.184	1	.000	2.479	1.546	3.977
PA cost	.378	.187	4.087	1	.043	1.460	1.012	2.106
Tourism cost	-1.671	.452	13.658	1	.000	.188	.078	.456
Procedural Equity			12.915	2	.002			
Procedural equity (1) #	-1.088	.381	8.134	1	.004	.337	.160	.712
Procedural equity (2) ###	-.600	.246	5.934	1	.015	.549	.339	.889
Constant	.262	.283	.852		.356	1.299		

*Benefit and/or cost are at the household level.

Either membership or participation, ## Both membership and participation.

Table A3.3: Logistic regression predicting likelihood of perceiving equity in PA (non-tourism) benefit distribution (with **combination of all variables**) – **Model 3.**

	B	SE	Wald	df	p	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Age	.005	.007	.619	1	.432	1.005	.992	1.019
Gender	.091	.180	.257	1	.612	1.096	.770	1.559
Ethnicity	-.356	.218	2.675	1	.102	.700	.457	1.073
Schooling attendance	.066	.214	.094	1	.759	1.068	.702	1.625
Original residency	-.090	.212	.180	1	.671	.914	.603	1.385
Proximity to PA office	-.272	.208	1.709	1	.191	.762	.507	1.145
Extraction benefit*	.521	.294	3.138	1	.076	1.684	.946	2.998
Other benefit	.445	.372	1.435	1	.231	1.561	.753	3.234
Tourism benefit	.969	.268	13.103	1	.000	2.636	1.559	4.454
PA cost	.330	.194	2.883	1	.090	1.391	.950	2.036
Tourism cost	-1.547	.467	10.974	1	.001	.213	.085	.532
Procedural Equity			10.915	2	.004			
Procedural equity (1) #	-1.012	.389	6.767	1	.009	.363	.170	.779
Procedural equity (2) ##	-.584	.255	5.268	1	.022	.557	.338	.918
Constant	.264	.497	.281		.596	1.302		

*Benefit and/or cost are at the household level.

Either membership or participation, ## Both membership and participation.

Table A3.4: Logistic regression predicting likelihood of perceiving equity in PA (non-tourism) cost distribution (**with socio-demographic variables**) – **Model 1.**

	B	SE	Wald	df	p	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Age	-.023	.008	8.652	1	.003	.978	.963	.993
Gender	.144	.211	.463	1	.496	1.155	.763	1.746
Ethnicity type	.055	.259	.044	1	.833	1.056	.635	1.756
School attendance	-.585	.250	5.494	1	.019	.557	.341	.909
Original residency	.545	.239	5.199	1	.023	1.725	1.080	2.757
Proximity to PA office	-.775	.205	14.328	1	.000	.461	.308	.688
Constant	2.817	.478	34.728	1	.000	16.727		

Table A3.5: Logistic regression predicting likelihood of perceiving equity in PA (non-tourism) cost distribution (**with benefits, costs and procedural equity variables**) – **Model 2.**

	B	SE	Wald	df	p	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Extraction benefit*	-.050	.356	.020	1	.889	.951	.473	1.912
Other benefit	1.111	.539	4.249	1	.039	3.037	1.056	8.733
Tourism benefit	-.523	.224	5.454	1	.020	.593	.382	.919
PA cost	.048	.224	.045	1	.832	1.049	.675	1.628
Tourism cost	-.890	.450	3.911	1	.048	.411	.170	.992
Procedural Equity			10.423	2	.005			
Procedural equity (1) #	-1.234	.389	10.043	1	.002	.291	.136	.625
Procedural equity (2) ##	-.268	.290	.852	1	.356	.765	.433	1.351
Constant	1.850	.356	26.992	1	.000	6.360		

*Benefit and/or cost are at the household level.

Either membership or participation, ## Both membership and participation.

Table A3.6: Logistic regression predicting likelihood of perceiving equity in PA (non-tourism) cost distribution (with **combination of all variables**) – **Model 3.**

	B	SE	Wald	df	p	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Age	-.024	.008	9.794	1	.002	.976	.961	.991
Gender	.170	.213	.633	1	.426	1.185	.780	1.800
Ethnicity	.073	.264	.076	1	.783	1.076	.641	1.806
Schooling attendance	-.589	.258	5.217	1	.022	.555	.335	.920
Original residency	.645	.245	6.909	1	.009	1.906	1.178	3.083
Proximity to PA office	-.620	.248	6.256	1	.012	.538	.331	.874
Extraction benefit*	-.274	.364	.570	1	.450	.760	.373	1.550
Other benefit	1.058	.555	3.639	1	.056	2.882	.971	8.548
Tourism benefit	-.252	.268	.886	1	.347	.777	.459	1.314
PA cost	-.133	.235	.321	1	.571	.875	.552	1.388
Tourism cost	-.495	.462	1.145	1	.285	.610	.246	1.509
Procedural Equity			10.848	2	.004			
Procedural equity (1) #	-1.328	.405	10.736	1	.001	.265	.120	.587
Procedural equity (2) ##	-.006	.310	.000	1	.984	.994	.542	1.824
Constant	3.203	.617	26.936		.000	24.611		

*Benefit and/or cost are at the household level.

Either membership or participation, ## Both membership and participation.

Table A3.7: Logistic regression predicting likelihood of perceiving equity in nature-based tourism benefit distribution (with **socio-demographic variables**) – **Model 1.**

	B	SE	Wald	df	p	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Age	-.003	.006	.192	1	.661	.997	.985	1.010
Gender	.059	.177	.109	1	.741	1.060	.749	1.501
Ethnicity type	-.314	.232	1.834	1	.176	.731	.464	1.151
School attendance	.420	.204	4.245	1	.039	1.522	1.021	2.271
Original residency	-.330	.221	2.222	1	.136	.719	.466	1.110
Proximity to PA office	1.480	.171	74.467	1	.000	4.392	3.138	6.147
Constant	-.538	.407	1.750		.186	.584		

Table A3.8: Logistic regression predicting likelihood of perceiving equity in nature-based tourism benefit distribution (with **benefits, costs and procedural equity variables**) **Model 2.**

	B	SE	Wald	df	p	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Extraction benefit*	.017	.327	.003	1	.960	1.017	.535	1.931
Other benefit	-.967	.351	7.581	1	.006	.380	.191	.757
Tourism benefit	1.899	.223	72.734	1	.000	6.683	4.319	10.340
PA cost	-.114	.191	.356	1	.551	.892	.614	1.297
Tourism cost	-1.481	.493	9.034	1	.003	.227	.087	.597
Procedural Equity			1.647	2	.439			
Procedural equity (1) #	-.115	.409	.080	1	.778	.891	.400	1.985
Procedural equity (2) ##	.320	.261	1.507	1	.220	1.377	.826	2.294
Constant	-.377	.324	1.351	1	.245	.686		

*Benefit and/or cost are at the household level.

Either membership or participation, ## Both membership and participation.

Table A3.9: Logistic regression predicting likelihood of perceiving equity in nature-based tourism benefit distribution (**with combination of all variables**) – **Model 3.**

	B	SE	Wald	df	p	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Age	-.005	.007	.506	1	.477	.995	.982	1.009
Gender	.077	.185	.171	1	.680	1.080	.751	1.552
Ethnicity	-.207	.236	.764	1	.382	.813	.512	1.292
Schooling attendance	.351	.220	2.559	1	.110	1.421	.924	2.185
Original residency	-.501	.228	4.833	1	.028	.606	.387	.947
Proximity to PA office	1.297	.204	40.607	1	.000	3.660	2.455	5.454
Extraction benefit*	.269	.343	.613	1	.434	1.308	.667	2.565
Other benefit	-.842	.373	5.077	1	.024	.431	.207	.896
Tourism benefit	1.238	.249	24.692	1	.000	3.450	2.117	5.622
PA cost	.207	.205	1.013	1	.314	1.229	.822	1.838
Tourism cost	-1.997	.484	16.994	1	.000	.136	.053	.351
Procedural Equity			1.264	2	.532			
Procedural equity (1) #	-.487	.439	1.231	1	.267	.615	.260	1.452
Procedural equity (2) ##	.024	.284	.007	1	.933	1.024	.587	1.786
Constant	-.757	.551	1.887		.170	.469		

*Benefit and/or cost are at the household level.

Either membership or participation, ## Both membership and participation.

Table A3.10: Logistic regression predicting likelihood of perceiving equity in nature-based tourism cost distribution (with socio-demographic variables) – Model 1.

	B	SE	Wald	df	p	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Age	-.012	.007	3.114	1	.078	.988	.975	1.001
Gender	.022	.182	.015	1	.904	1.022	.715	1.462
Ethnicity type	1.116	.239	21.850	1	.000	3.052	1.912	4.873
School attendance	.038	.209	.034	1	.855	1.039	.690	1.565
Original residency	-.215	.227	.900	1	.343	.806	.517	1.258
Proximity to PA office	1.832	.187	95.866	1	.000	6.248	4.330	9.016
Constant	-.184	.415	.196	1	.658	.832		

Table A3.11: Logistic regression predicting likelihood of perceiving equity in nature-based tourism cost distribution (with benefits, costs and procedural equity variables) – Model 2.

	B	SE	Wald	df	p	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Extraction benefit*	-.749	.349	4.604	1	.032	.473	.239	.937
Other benefit	-.652	.311	4.405	1	.036	.521	.283	.958
Tourism benefit	.950	.199	22.881	1	.000	2.586	1.752	3.817
PA cost	-.189	.186	1.035	1	.309	.828	.575	1.192
Tourism cost	.066	.459	.021	1	.885	1.068	.434	2.628
Procedural Equity			6.053	2	.048			
Procedural equity (1) #	-.980	.419	5.469	1	.019	.375	.165	.853
Procedural equity (2) ##	-.223	.240	.861	1	.353	.800	.500	1.281
Constant	.934	.345	7.317	1	.007	2.545		

*Benefit and/or cost are at the household level.

Either membership or participation, ## Both membership and participation.

Table A3.12: Logistic regression predicting likelihood of perceiving equity in nature-based tourism cost distribution (with combination of all variables) – Model 3.

	B	SE	Wald	df	p	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Age	-.014	.007	4.158	1	.041	.986	.973	.999
Gender	.046	.187	.060	1	.807	1.047	.726	1.508
Ethnicity	1.158	.245	22.323	1	.000	3.182	1.969	5.144
Schooling attendance	.129	.219	.344	1	.558	1.137	.740	1.749
Original residency	-.203	.233	.759	1	.384	.817	.518	1.288
Proximity to PA office	1.977	.231	73.150	1	.000	7.222	4.591	11.362
Extraction benefit*	-.544	.389	1.961	1	.161	.580	.271	1.243
Other benefit	-.303	.353	.738	1	.390	.738	.370	1.475
Tourism benefit	.118	.252	.218	1	.640	1.125	.686	1.845
PA cost	.164	.212	.596	1	.440	1.178	.777	1.786
Tourism cost	-.955	.475	4.036	1	.045	.385	.152	.977
Procedural Equity			18.295	2	.000			
Procedural equity (1) #	-1.767	.468	14.249	1	.000	.171	.068	.428
Procedural equity (2) ##	-.680	.282	5.817	1	.016	.507	.292	.880
Constant	.360	.578	.387		.534	1.433		

*Benefit and/or cost are at the household level.

Either membership or participation, ## Both membership and participation.

Table A3.13: Summary result of multicollinearity statistics.

	Coefficients ^a						
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.594	.092		6.493	.000		
Gender	.009	.033	.010	.281	.779	.899	1.112
Ethnicity type	-.080	.040	-.082	-1.990	.047	.715	1.399
Schooling status	.014	.039	.016	.368	.713	.621	1.609
Original residency	-.027	.039	-.028	-.701	.484	.753	1.328
Proximity to PA office	-.066	.040	-.072	-1.659	.097	.649	1.540
Age of respondent	.001	.001	.038	.875	.382	.666	1.502
Procedural Equity	-.066	.024	-.099	-2.730	.006	.935	1.070
HH extraction benefit (at least one)	.106	.057	.068	1.865	.063	.932	1.073
HH (other) ICDP benefit (at least one)	.079	.062	.046	1.277	.202	.961	1.041
HH Tourism benefit (at least one)	.184	.046	.169	4.028	.000	.696	1.437
HH PA cost (at least one)	.052	.036	.053	1.462	.144	.918	1.089
HH Tourism cost (at least one)	-.306	.092	-.122	-3.339	.001	.918	1.089

a. *Dependent Variable:* Non-tourism related benefits are shared fairly.

Appendix 4: Household survey questionnaire

Date survey: PA name

District/Municipality/ Ward: / /

HH ID number: Village name:

A. Occupation

1. Nr of HH members(including under 18) ----- and occupation (18 and over)

Sn.	Activity/ Occupation	Is this respondent?	HH member (gender)	Age (yrs)	Rank of imp (for HH)
1	Job (govt)				
2	Job (tourism)				
3	Job (private sector, other than tourism)				
4	Remittance (job abroad)				
5	Farming (including livestock)				
6	Daily wages/labour				
7	Tourism business				
8	Other business				
9	Unemployed				
10	Other				

2. For **tourism HH only**: Please mention what work you OR your HH members do in tourism industry.

B. Residency Status:

3. Is this your place of origin?

YES: ----- 1 (go to Q. 7)

NO: ----- 2 (go to Q. 4)

4. If NO, from where have you migrated to this place?

A district in mountain A district in the Terai (Please name)

Other villages of the same district Others

5. When did you migrate here? ----- years ago

6. What was the reason to migrate here?

C. Landholding (Size) and Tenure Status:

7. Do you have land for farming?

Yes/size ----- 1 (**Ropani** in mountain OR **Kattha** in Terai/Plains) (go to Q. 8)

No ----- 2 (go to Q. 9)

8. What is the ownership of land?

Own registered land (Khet/Bari) ----- 1

Public land without title ----- 2

Lease land or Adhia cultivation----- 3

Others (pls mention) ----- 4

D. Livestock Holding:

9. Do you own any livestock?

Yes ----- 1 (go to Q. 10)

No ----- 2 (go to Q. 11)

10. What kind of livestock and how many of them do you have?

Sn.	Livestock	Number
1	Cattle	
2	Buffalo	
3	Calves	
4	Goat/Sheep	
5	Chicken/Ducks	
6	Pigs	

7	Others (pls specify)	
---	----------------------	--

E. Perception towards Protected Area:

11. Could you please tell your overall attitude/ perception to the following statement. (**NOTE:** COVID19 situation might have change the way of life and activities you perform, you are requested to tell your perception regardless of COVID19 situation).

Sn.	Statements	SD (1)	D	N	A	SA(5)
1	I support the presence of national park in our community (Dewu & Røskaft, 2017)					
2	The presence of the national park brings (non-tourism) benefits to my HH					
3	National Park should allow local people for harvesting of various natural resources					
4	National Park management is effective in biodiversity conservation					
5	The people in my community support the presence of the national park					
6	National Park brings negative impacts in our community					
7	It is important to conserve nature and wildlife					
8	The presence of national park brings (non-tourism) benefits to our community					
9	The national park brings negative impacts to my HH					

F. Perception towards Tourism:

12. Could you please tell your overall attitude/perception to the following statement. (**NOTE:** COVID19 situation might have change the way of life and activities you perform, you are requested to tell your perception regardless of COVID19 situation).

Sn.	Statements	SD (1)	D	N	A	SA (5)
1	I support tourism activities in the national park					
2	Tourism is benefitting my HH					
3	Tourism bring conservation awareness in our community					
4	I would like to see more tourist visiting national park (Walpole & Goodwin, 2001)					
5	Tourism brings negative impacts to my HH					
6	The community support tourism activities in the national park					
7	My overall quality of life has improved because of tourism (Diedrich, 2007)					
8	Tourism is benefitting our community in various ways					
9	I would like to see more engagement in the tourism industry for myself and people in my HH					
10	Tourism brings negative impacts in our community					

G. Equity and Participation (in decision making)

13. Could you please tell your attitude/perception to the following statement.
 (NOTE: COVID19 situation might have change the way of life and activities you perform, you are requested to tell your perception regardless of COVID19 situation).

Sn.	Statements	SD (1)	D	N	A	SA (1)
1	The non-tourism related benefits of protected area are shared fairly in the community					
2	The non-tourism related costs of protected area are experienced at the same level in the community					
3	The benefits of tourism are shared fairly in the community					

4	The negative impacts of tourism are experienced at the same level in the community				
---	--	--	--	--	--

14. Who in your community receives the most non-tourism related benefits from protected area?

.....

15. Who in your community experience the most non-tourism related negative impact from protected area?

.....

16. Who in your community benefit most from tourism?

.....

17. Who in your community experience the most negative impact from tourism?

.....

18. Are you or any of your HH members elected or selected in executive committee of community-based organizations (eg. youth clubs, mothers/fathers group, BZ users group/ BZ users committee etc)?

Yes 1 (Mention the name -----)

No 2

19. Are you involved in decisions that are made in your community?

Yes 1 (If yes, decision about -----)

No 2

H. Benefit from National Park and Buffer Zone:

20. What are the major benefits received by **your HH** from protected area (not from Tourism)?

Sn.	Types of benefits ³³	Rank	Who is benefitting in the HH	
			Age (yrs)	Gender OR HH level ³⁴

³³If the benefits at the HH level are identified as Natural Resource harvest (say, timber, fuelwood, fodder/grass, thatch, leaf litter, medicinal herbs etc then ask this in detail. See Question 22.

³⁴If the benefits are collective (eg. Fodder harvest from forest) then write HH.

1				
2				
3				
4				
5				

21. What are the major benefits received by **your COMMUNITY** from protected area (not from Tourism)?

Sn.	Types of benefits	Rank	Who is benefitting in the community ³⁵
1			
2			
3			
4			
5			

22. If **your HH collect any natural resources** from protected area (NP or BZ), please give an estimate harvest per unit of time. (This needs to **answer in connection with question 20**).

Sn.	Types of Resources	Quantity/Month	Monetary value ³⁶	% of total requirement
1	Timber			
2	Fuel wood			
3	Fodder			
4	Thatch grass			
5	Leaf litter			
6	Medicinal herbs			

³⁵Example could be as local leader, people in the local CBOs, teacher etc.

³⁶Assign economic value for each resources harvested in NRs. Equvt., if it was to be purchased from the local market. We can assign this value at later stage in discussion with local leaders/ informants.

7	Edible plants			
8	Others (pls specify)			

I. Cost from protected area (negative impact):

23. What are the major costs (negative impact) experienced by **your HH** from protected area (not from Tourism)?³⁷

Sn.	Cost type ³⁸	Rank	Who is experiencing in the HH	
			Age (yrs)	Gender OR HH level
1				
2				
3				
4				
5				

24. What are the major costs (negative impact) experienced by **your COMMUNITY** from protected area (not from Tourism)?

Sn.	Cost type	Rank	Who is experiencing in the community
1			
2			
3			
4			
5			

25. Do you ever experience **conflict** (restrictions in accessing natural resources, prosecution, persecution) in protected areas? (This need to **answer in connection with question 23**).

³⁷Also think/ ask about the negative impact such as **restrictions on park resource usage, prosecution and persecution. See Question 25.**

³⁸If the costs at the HH level are identified as loss or damage of crops, livestock and human injuries/ death, then, ask this in detail. **See Question 26.**

Yes 1 (answer below)

If YES, by whom? -----

Pls describe -----

No 2 (go to Q. 26)

26. If your HH experience any direct cost (loss and damage), please give an estimated loss and damage to **Crops, Livestock and Human per unit of time** due to national park. (This need to **answer in connection with question 23**).

Sn.	Crop loss (pls name)	Quantity of loss <i>in the last one year</i>	Monetary value	% loss of total possible harvest	Which month of the year	Wildlife liable to damage
1						
2						
3						
4						
5						

Sn.	Livestock loss (pls name)	Number of loss (killing) <i>in the last three year</i>	Monetary value	Nr. of injured /attack <i>in last three year</i>	Which month and year	Wildlife liable to damage
1						
2						
3						
4						
5						

Sn.	Human injury/attack <i>in the last five year</i>	Human death <i>in the last five year</i>	Which month and year	Wildlife liable to attack/ death

1				
2				

J. Benefit from Tourism

27. What are the major benefits received by **your HH** from tourism?

Sn.	Types of benefits	Rank	Who is benefitting in HH	
			Age (yrs)	Gender OR HH level
1				
2				
3				
4				
5				

28. What are the major benefits received by **your COMMUNITY** from tourism?

Sn.	Types of benefits	Rank	Who is benefitting in the community
1			
2			
3			
4			
5			

29. Have you or your HH member(s) been able to sell local produce in the last one year? (This need to **answer in connection with question 27**).

Sn.	Local Produce	Quantity (per month)	Monetary value ³⁹	Where (<u>local market</u> OR <u>tourism industry</u>)
1	Dairy products (milk, butter etc)			
2	Animal products (meat, egg, etc. other than dairy)			

³⁹Assign economic value for each resources harvested in NRs. Equvt., if it was to be purchased from the local market. We can assign this value at later stage in discussion with local leaders/ informants.

3	Ag products (vegetables, crops etc.)			
4	Handicrafts			
5	Other (pls mention)			

K. Cost (negative impact) from Tourism

30. What are the major costs (negative impact) experienced by your HH from Tourism?

Sn.	Cost type	Rank	Who is experiencing in HH	
			Age (yrs)	Gender OR HH level
1				
2				
3				
4				
5				

31. What are the major costs (negative impact) experienced by **COMMUNITY** from Tourism?

Sn.	Cost type	Rank	Who is experiencing in the community
1			
2			
3			
4			
5			

L. Respondent's Demographic and HH Data:

32. Age and Sex

Sex:	Male 1	Female 2
Age:	Age (yrs):	Ethnicity (Caste):

33. Education:

Illiterate 1	Literate 2	Primary 3	Lwr. Secondary 4
Secondary 5	Hghr. Secondary 6	Bachelor 7	Masters & above 8

34. **HH income** per month in NPR(before tax) in NRS:

<20,000 1	20,001 - 30,000 2	30,001 – 40,000 ... 3	40,001 - 50,000 4
50001 - 75,000.... 5	75,001 - 100,000 6	>100,000 7	

35. **HH characteristics (LIVING STANDARD)**

a. What **cooking fuel** does your HH use?

Dung: Yes 1 No 2	Ag. Residue: Yes 1 No 2	Shrubs: Yes 1 No 2	Wood/ firewood: Yes ...1 No 2	Charcoal: Yes 1 No 2	Coal: Yes 1 No 2
Kerosene: Yes 1 No 2	LPG gas: Yes 1 No 2	Electricity: Yes 1 No 2	Biogas: Yes 1 No 2	Other	

b. Does your HH have **electricity**?

Yes..... 1	No..... 2
------------	-----------

c. **Housing**

FLOOR

<i>Natural Floor</i>	Earth/ sand1	<i>Rudimentary Floor</i>	Bamboo/ Palm 3
	Dung 2		Wood plank 4
<i>Finished Floor</i>	Parquet or polished wood 5	Ceramic tiles 7	Other (pls specify) 9
	Vinyl or Asphalt Strips 6	Cement 8	

WALLS

<i>Natural Wall</i>	Cane/ Palm/ Trunk 1	<i>Finished walls</i>	Bricks 5
<i>Rudimentary walls</i>	Bamboo with mud 2		Stone with cement 6
	Stone with mud 3		Cement 7
	Plywood 4		Other 9

ROOF

<i>Natural Roofing</i>	Thatch/ Palm/Leaf 1	<i>Rudimentary Roofing</i>	Wood Planks 2
<i>Finished Roofing</i>	Metal 3		Fibre 4
	Ceramic tiles 6	Cement 7	Other 8

d. Sanitation: What kind of toilet facility do members of your household usually use?

<i>Flush/ Pour Flush</i>	Flush to piped sewer system 1	Flush to septic tank 2
	Flushed to pit (latrine) 3	Flush to somewhere else 4
<i>Pit Latrine</i>	Pit latrine without slab / open pit 5	Pit latrine with slab 6
	Ventilated Improved Pit Latrine (PIT) 7	
Composting toilet 8	No toilet or Bush or Field 9	Other (pls specify) 10

Sanitation sharing facility: Do you share this toilet facility with other HH?

Yes 1	No 2
-------------	------------

e. Water Source

What is the **main source of drinking water** for the household members?

<i>Piped Water</i>	Piped into dwelling, yard or plot 1	Public tap/standpipe 2
<i>Dug well</i>	Protected well 3	Unprotected well 4
<i>Water from spring</i>	Protected spring 5	Unprotected spring 6
Tube well / Borehole.....7	Rainwater 8	Tanker-truck 9

Cart with small tank or drum 10	Surface water (river, stream, dam, lake, pond, canal, irrig channel) 11	Other (specify) 12
---------------------------------------	---	--------------------------

Primary source of non-drinking water: What is the main source of water used by your HH for other purposes such as cooking and handwashing?

<i>Piped Water</i>	Piped into dwelling, yard or plot 1	Public tap/standpipe 2
<i>Dug well</i>	Protected well 3	Unprotected well 4
<i>Water from spring</i>	Protected spring 5	Unprotected spring 6
Tube well / Borehole7	Rainwater 8	Tanker-truck 9
Cart with small tank or drum 10	Surface water (river, stream, dam, lake, pond, canal, irrig channel) 11	Other (specify) 12

Primary source of water: distance to water source

How long does it take to get to the water source, get water and come back?

Minutes 1	Water on Premises 2	Don't Know 3
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f. Assets: Does your HH have?

HH items:	Radio:	Television:	Mobile/Telephone:	Computer:	Refrigerator:
	Yes 1 No 2	Yes 1 No 2	Yes 1 No 2	Yes 1 No 2	Yes 1 No 2

Transportation:	Animal cart:	Bicycle :	M.Bike/Scooter:	Autorickshaw:	Car/Jeep/Van:	Bus or Truck:
	Yes ... 1 No 2	Yes 1 No 2	Yes 1 No 2	Yes 1 No 1	Yes 1 No 1	Yes 1 No 1