Perceived Contribution of Park Revenue Sharing in Promoting Conservation and Development: Evidence from Buffer Zone Program in Nepal

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I am submitting herewith a thesis written by Sweta Dixit entitled "Perceived Contribution of Park Revenue Sharing in Promoting Conservation and Development: Evidence from Buffer Zone Program in Nepal." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Wildlife and Fisheries Science.

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We have read this thesis and recommend its acceptance:

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Contribution of Park Revenue Sharing in Promoting Conservation and Development:
Evidence from the Buffer Zone Program in Nepal

A Thesis Presented for the
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Sweta Dixit
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Abstract

Sharing the financial benefit of protected areas with local communities can be crucial in helping local communities realize the benefit of conservation, improving the park-people relationship, and, more importantly, reducing human-wildlife conflict through enhanced public tolerance of wildlife. Many protected areas in some parts of the world have developed formal mechanisms to share a portion of park revenue with locals, but the effectiveness of such policy approaches is still unclear. With the case of the Buffer Zone Program in Nepal, which shares up to half of the park revenue with local communities for conservation and development, this study evaluated its contribution in promoting conservation, development, and improving the park-people relationship. Qualitative interview data from 41 key informants representing various stakeholder groups of the protected area system in Nepal and quantitative data from 2,122 households from the buffer zone of six protected areas were analyzed to meet the research objectives. Results showed a general consensus among stakeholders regarding the positive contribution of the buffer zone program despite acknowledging that the funds received from this project are too low to have substantial developmental impact in rural communities. The perceived impact of the program was realized more in terms of improving the park-people relationship, promoting conservation education, helping local people realize the benefit of the park, and developing a platform to encourage partnership with local people than fueling infrastructure development or reducing incidences of human-wildlife conflicts. Findings suggest that the effectiveness of park revenue-sharing programs could be increased by allocating funds towards compensating wildlife victims and prompting conservation education than development projects and by adopting a fair distribution of funds among user groups within the buffer zones.
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Chapter 1
Introduction
Park people conflict is a global issue of concern in conservation. This is a major challenge in protected area management, especially in the rural regions (Thinley et al., 2018), where the human population is growing and, in some cases, moving towards the fringe of wilderness or protected areas (PAs) (Skogen et al., 2008). Since many communities living around PAs still depend on park resources for their livelihood and wild animals often roam outside the PAs, the number of conflicts continues to rise. Over the past several decades, PA managers have taken a myriad of locally applicable initiatives to prevent conflicts in the fringe areas (Nair & Jayson, 2020). Those vary from traditional methods of playing loud sounds, chasing wild animals with fire, using natural barriers for protection, using scarecrows to frighten wild animals, using fences to prevent crop raiding, and installing improved, low-tech protection by electric fencing (Shanko et al., 2021). Some other measures taken more recently include providing awareness to local communities about wildlife conservation, starting early warning systems, shifting to crop types that are less palatable for wild animals, and constructing corrals that are predator-resistant (Lamichhane et. al, 2019). While some of these recent measures have been partly effective in mitigating damage, fences, and fines have failed in securing long-term public support for conservation because of their top-down system and lack of involvement of local communities in planning and decision-making (Hummel et al., 2019). Shifting away from such tools towards long-term solutions to improve the park people relationship, various government programs such as the Buffer Zone (BZ) and Park Revenue Sharing (PRS) have been adopted to allow local communities to participate in PA governance and to receive benefits from PA.

Through the BZ and PRS program, a certain portion of revenue from the PA is provided to the local communities for conservation and development with the hopes that the local
communities living around the PAs would agree to compromise their land use and resource rights in return for the revenues. Although the BZ and PRS approaches are increasingly being adopted in different countries around the world to reduce park/people conflict, it is important to understand the stakeholders’ changing perceptions of ‘benefits’ over time to identify effective benefit-sharing strategies (Swemmer et al., 2015). There is a need to understand whether these approaches effectively promote conservation and sustainable development and reduce park/people conflicts in the long run (Lamichhane et al., 2019). Therefore, this thesis aims to assess the impacts of BZ and PRS policies through a mixed-method social science inquiry to provide a clear idea of whether and to what extent such programs contribute to improved park/people relationships. The thesis addresses the following two objectives: evaluate the BZ program’s effectiveness in reducing park/people conflict and contributing to conservation and community development; (2) identify the issues and areas of improvement needed for PRS and the BZ program to increase their effectiveness. The remainder of this thesis is organized into four different chapters. Chapter 2 presents a summary of the literature regarding protected area governance and a synthesis of findings from previous studies on park revenue sharing. Chapters 3 and 4 respectively, present two case studies involving qualitative key informant interviews (KII) of stakeholders and quantitative modeling of the structured survey of BZ households. Finally, Chapter 5 concludes. The study contributes to protected area management literature and helps PA managers worldwide searching for innovative solutions to improve park/people relationships.
Chapter 2
Literature Review
2.1 Protected Area Management

Addressing Human-Wildlife Conflict (HWC) and park-people conflict around protected areas is a great challenge because available management strategies are often complex to implement, costly, and financially unsustainable (Distefano, 2005). The evolution of managing HWC using physical barriers such as barbed fences, electric fences, mesh wire fences, or concrete walls has decreased the interactions between humans and wildlife (Nyhus, 2016), to a certain level. However, regular maintenance of such structures is key to their continuous operation and involves substantial funding (Banikoi et al., 2017; Lamichhane et al., 2019).

The Man and Biosphere (MAB) program of UNESCO was established in the 1960s to address the pressing challenges in the interaction between humans and their environment. This program focused on socio-economic development, proper use of natural resources, and prioritizing biodiversity conservation through biosphere reserves (UNESCO, 2017). Designating buffer zones, which is believed to be adopted from the concept of MAB (Vaso, 2013), is another strategy used in several countries around the world. Buffer zones are areas surrounding the core area of the protected areas where the local communities reside, use the land for agriculture, and participate in co-management activities (Budathoki, 2004; Spiteri & Nepal, 2008). The buffer zones are designated around the protected areas with the aim to facilitate coexistence between humans and wildlife by establishing environmental buffers for wildlife and socioeconomic buffers for humans living around the protected areas (Budathoki, 2004; Heinen & Mehta, 2000; Nepal & Weber, 1994). While the conflict management practice of using barriers and fences might reduce the conflict in the short term, the collaborative management between protected area managers and local people with some economic incentives can enhance the management of HWC in the long term (Soliku & Schraml, 2018). The participatory approach of collaborating
with local people for biodiversity conservation is a win-win situation because it builds a relationship of mutual benefit and trust (Butler, 2011; Ho et al., 2016; Young et al., 2016), creates a sense of community empowerment (Plummer et al., 2012), inclusive decision making (Berkes, 2009; Borrini-Feyerabend et al., 2013; Jentoft, 2000; Sandström et al., 2014) and results in the improvement of livelihood (Chen et al., 2012; Ming’ate et al., 2014).

2.2 Park-Revenue Sharing (PRS)

PRS is considered an essential component in strengthening the coexistence of local communities with wildlife (Archabald & Naughton-Treves, 2001; Nyaupane & Poudel, 2011). The community projects around the protected areas are funded annually by income generated by the protected area, and the revenue is utilized in social infrastructure projects such as schools, healthcare centers, infrastructure development and maintenance, and community-based farming enterprises (Bush et al., 2010). Since most of the revenue generated is from tourists, Durbin & Ratrimoarisaona (1995) concluded that local people greatly benefit primarily in protected areas with a substantial number of tourists. Furthermore, a study in Volcanoes National Park showed that former poachers could be strong advocates for wildlife conservation if they are provided some benefits, such as employment and infrastructural development through revenue-sharing schemes (Uwayo et al., 2020).

A study in Kibale National Park revealed that the benefits of PRS were 5.6 times higher in 2012 compared to 2006 (MacKenzie et al., 2017). However, the equitable sharing of park revenue should be deemed necessary to ensure the efficient use of the PRS strategy in reducing human-induced threats to wildlife. For instance, the poorest communities, most often live closer to the park boundary, are dependent on park resources, and are impacted the most by the damage
caused by wildlife, therefore, they are prone to be involved in illegal activities to meet their needs (Blomley & International Institute for Environment and Development., 2010; Bush et al., 2010; Munanura et al., 2016). Hence, the community or developmental activities around the protected areas must be focused on the economic upliftment of the poorest communities (Munanura et al., 2016; Spiteri & Nepal, 2008).

A number of Asian and African countries have implemented revenue-sharing policies in their respective protected areas. Different models of revenue sharing vary greatly in terms of the percentage of the revenue shared with the locals (Table 2.1). For instance, some national parks of Uganda and Tanzania share 20% of their gate revenues, Madagascar shares 50% of their gate revenues, whereas Nepal shares up to 50% of their total revenue with their local communities. Regardless of the proportion shared, all of these programs are focused on the upliftment of the marginalized communities that live very close to the protected areas. However, PRS programs implemented in some countries have faced a number of challenges, such as low levels of awareness, inadequate active community participation, and a lack of sustainable funds (Aseres & Sira, 2021). Studies from various countries emphasized that local people believe they have not received an equitable share of jobs or facilities, taking into account the amount of cost that they suffer (Aseres & Sira, 2021; Munanura et al., 2016; Mwakaje et al., 2013; Schnegg & Kiaka, 2018; Twinamatsiko et al., 2019). The studies also stress the need to readjust the benefit-sharing policy to benefit the community's poorest residents who are impacted by wildlife (Munanura et al., 2016; Nyaupane & Poudel, 2011). Local people are often unclear about how the park authorities or the government mandates the revenue-sharing program (MacKenzie, 2012; McCool et al., 2012; Mosimane et al., 2012; Swemmer et al., 2015). A study suggested discontinuing the tourism revenue sharing through socially and economically advantaged people
in community associations (Munanura et al., 2016), partly because the significant benefits from the protected areas are usually taken by the rich from cities who own hotels and transportation in the core touristic areas, and therefore, tourism doesn’t benefit the local communities (Sinha et al., 2012). MacKenzie et al. (2017) found that local communities tend to report increased perceived problems from wild animals and decreased perceived benefits from ecosystem services over time. Therefore, it is important to review the effectiveness of existing strategies in order to understand present challenges in implementation and formulate new strategies for the future (Lamichhane et al., 2019).
<table>
<thead>
<tr>
<th>Revenue sharing program</th>
<th>Name of Protected Area</th>
<th>Country</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>20% of gate revenue are shared with the local government for community projects</td>
<td>Rwenzori Mountains National Park, Semuliki National Park, Queen Elizabeth National Park</td>
<td>Uganda</td>
<td>International Institute for Environment and Development, 2020</td>
</tr>
<tr>
<td></td>
<td>Murchison Falls National Park, Mount Elgon National Park, Mgahinga Gorilla National Park</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Lake Mburo National Park, Kibale National Park</td>
<td></td>
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</tr>
<tr>
<td>$10 per gorilla permit sold and 20% of the $40 entry fees.</td>
<td>Bwindi Impenetrable National Park</td>
<td>Uganda</td>
<td></td>
</tr>
<tr>
<td>20% of the entry fee to locals and 10% to Mafia District Council.</td>
<td>Mafia Island Marine Park</td>
<td>Tanzania</td>
<td></td>
</tr>
<tr>
<td>50% to retention fund to meet management costs, 10% to wildlife protection fund to meet administrative costs, 15% goes to district council as an opportunity cost for game reserves, 25% to the treasury, and 15% intended to go to villages; goes to the district, that allocates funds according to their priority</td>
<td>Loliondo Game Reserve (a part of Serengeti Ecosystem)</td>
<td>Tanzania</td>
<td>Mwakaje et. al., 2013</td>
</tr>
<tr>
<td>50% of entrance revenues to local people for use on their developmental projects.</td>
<td>All of the Protected Areas</td>
<td>Madagascar</td>
<td>Durbin &amp; Ratrimoarisaona, 1996</td>
</tr>
<tr>
<td>5% tourism revenues for community development projects in education, water, environmental protection, food security, 10% tourism revenue sharing (At least 5% tourism revenue)</td>
<td>All of the Protected Areas</td>
<td>Rwanda</td>
<td>Munanura et al., 2016</td>
</tr>
<tr>
<td>Revenue sharing program</td>
<td>Name of Protected Area</td>
<td>Country</td>
<td>Source</td>
</tr>
<tr>
<td>----------------------------------------------------------------</td>
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<td>---------------------------------------------</td>
</tr>
<tr>
<td>20% of tourism revenue</td>
<td>Amani Nature Reserve</td>
<td>Tanzania</td>
<td>Borrini-Feyerabend et. al., 2013</td>
</tr>
<tr>
<td>Provided 37 school scholarships, solar cookers, boreholes from tourism</td>
<td>Liuwa National Park</td>
<td>Zambia</td>
<td>Borrini-Feyerabend et. al., 2013</td>
</tr>
<tr>
<td>50% of revenue sharing with local communities</td>
<td>Jozani-Chwaka Bay National Park and Biosphere Reserve</td>
<td>Tanzania</td>
<td>Carius &amp; Job, 2019</td>
</tr>
<tr>
<td>Provides jobs to some; 6.4% revenue is spent on community benefits; 1.3% on income-generating projects</td>
<td>Hôas Conservancy-Kunene region</td>
<td>Namibia</td>
<td>Schnegg &amp; Kiaka, 2018</td>
</tr>
<tr>
<td>Annual forestry fee - &gt; 50% for the State, &gt; 20% for councils, &gt; 20% for subsidies, &gt; 10% for surrounding villages, Council Forest revenue &gt; 30% for surrounding villages, &gt; 70% for councils</td>
<td>All of the Protected Areas</td>
<td>Cameroun</td>
<td>Assembe-Mvondo, Wong, Loft, &amp; Tjajadi, 2015</td>
</tr>
<tr>
<td>Community Forest revenue - &gt; 100% for village communities, Wildlife royalty &gt; 50% for the State, &gt; 40% for local councils concerned, &gt; 10% for surrounding villages, Annual land revenue &gt; 40% for the State, &gt; 40% for local councils, and &gt; 20% for surrounding villages</td>
<td>All of the Protected Areas</td>
<td>Mozambique</td>
<td>Moye &amp; Nazerali, 2010</td>
</tr>
<tr>
<td>Locals say that the private institution are monopolizing, and communities do not receive revenue.</td>
<td>Bale Mountains National Park</td>
<td>Ethiopia</td>
<td>Aseres &amp; Sira, 2021</td>
</tr>
<tr>
<td>Revenue isn’t shared with the locals</td>
<td>Kakum National Park</td>
<td>Ghana</td>
<td>(Sarkodie et al., 2015)</td>
</tr>
<tr>
<td>20% should go to the general state budget, 16% to communities, 64% to Parks and Reserves that generates the revenue.</td>
<td>All of the Protected Areas</td>
<td>Mozambique</td>
<td>Moye &amp; Nazerali, 2010</td>
</tr>
<tr>
<td>From 2000/01 to 2009/10, 12.37% was provided to the eco-development committees towards a support fund</td>
<td>Kanha Tiger Reserve</td>
<td>India</td>
<td>Sinha et al., 2012</td>
</tr>
<tr>
<td>Revenue sharing of 15% of income accruing to reserve</td>
<td>Mkhambathi Nature Reserve</td>
<td>South Africa</td>
<td>Queiros &amp; Mearns, 2019</td>
</tr>
<tr>
<td>Revenue sharing of 30-50% of the total protected areas’ income for community development</td>
<td>All National Parks and Koshi Tappu Wildlife Reserve</td>
<td>Nepal</td>
<td>Lamichhane et al., 2019; BZMR, 1996</td>
</tr>
</tbody>
</table>
References


Chapter 3
Stakeholders’ Perspectives on Protected Area Benefit-Sharing Program: Lessons from Nepal’s Buffer Zone Program
3.1 Abstract

Securing local support for conservation is a major challenge because of the global benefits and local costs associated with protected area (PA) management. Current approaches to PA governance emphasize integrating locals in decision-making and benefit sharing. But how to operationalize this approach in practice remains a critical public policy question in PA governance. The Buffer Zone (BZ) program, practiced in several countries, involves placing partial restrictions on land use in peripheral areas to provide additional protection to the PA itself while sharing a portion of PA revenue with the communities therein. Yet BZ program adoption in part because its effectiveness is not widely known. Evidence from key informant interviews of stakeholders associated with Nepal’s 26-year-old BZ program, which shares up to 50% of park revenue with local communities, sheds light on the viability of such programs for other countries. The study’s findings imply that the institutional platform the BZ program provides to relevant stakeholders, rather than revenue sharing with the communities themselves, creates a bigger impact on conservation and sustainable development. Continued success may rely on adapting the program by accommodating some autonomy for local BZ institutions using BZ funds to meet their local needs; shifting the focus from community development to conservation education, wildlife damage mitigation, and relief to those impacted by wildlife; and leveraging BZ funds with other sources to create a bigger impact.

3.2 Introduction

Local communities living near forested areas were traditionally highly dependent on forest resources (firewood, wood, grass, and land for grazing) for their livelihood. When protected areas (PAs) were established to conserve the biodiversity of these forested areas, many
local communities were displaced from their native land because traditional models of PA management relied on the “fences and fines” approach (Hummel et al., 2019), as local communities were traditionally considered an obstacle to effective PA management (Petrova, 2014) and were strictly prohibited from entering the PAs. Local communities that were highly dependent on forest resources were agitated by this management approach, which started a conflict between local communities and park authorities (Anthony, 2007). Gradually, there was an increasing realization that PA management is ineffective in reducing park-people conflict if they exclude local involvement in PA governance and from receiving PA benefits (Hummel et al., 2019). Policy discourse at the national and international levels, starting with the World Park Congress’ “Parks for Life” in 1993, has since emphasized the need for sharing benefits beyond the PA boundary to sustain the park-people relationship (IUCN, 1993). Accordingly, modern models of PA governance now emphasize integrating locals into decision-making and benefit-sharing to maintain the park-people relationship (Ervin et al., 2010).

One of the modern models of PA governance is the Buffer Zone (BZ) Management Program. Several countries have developed and implemented the program to increase community participation in governance and benefit sharing (Ebregt & De Greve, 2000). Through this strategy, inhabited areas in the periphery of PA are designated as BZ to provide additional protection to its core (Vaso, 2013) while spending a certain portion of the PA revenue to meet rural development needs of the communities within the BZ (Ebregt & De Greve, 2000). Moreover, park revenue sharing (PRS) is a major component of BZ programs in many countries (Borrini-Feyerabend et al., 2013; Munanura et al., 2016; Mwakaje et al., 2013; Queiros & Mearns, 2019; Schnegg & Kiaka, 2018; Sharma, 2001). The benefit-sharing process through the
revenue can be tangible and non-tangible (Snyman & Bricker, 2019). Tangible benefits may include employment, income, and infrastructure, and intangible may include capacity building and skills training (Spenceley et al., 2019). In return for PRS, local communities are expected to cooperate in conservation, accept partial restrictions on land use, and allow greater law enforcement authority in park administration. PRS maintains that when communities receive tangible benefits from a PA, they will likely develop a higher appreciation for conservation, show a higher tolerance for wildlife damage, and improve the park-people relationship.

However, there is one complicating factor in protected area (PA) management which is the “global benefits and local costs” nature of PA resources (Allendorf, 2022).

Revenue sharing at various magnitudes has been practiced in many countries (Adams & Infield, 2003; Ahebwa et al., 2012; Munanura et al., 2016; Schroeder et al., 2008; Spenceley et al., 2019). For instance, Rwanda’s PAs share only 5% of their tourism revenue for community development projects (Munanura et al., 2016), many PAs of Uganda share 20% of their gate revenue with local government for community projects (International Institute for Environment and Development, 2020), whereas the Buffer Zone Management Regulation of Nepal shares up to 50% of the total PA revenue with the local communities. Despite various amounts of revenues shared in different PAs, the program continues to have difficulties in terms of achieving its goals (Munanura et al., 2016; Spenceley et al., 2019).

Like all the countries around the world, Nepal is also facing the challenge of engaging locals in PA governance, and park authorities, and to promote wildlife conservation, the Government of Nepal, in their fourth amendment of the National Park and Wildlife Conservation (NPWC) Act 1996, added the BZ program. The BZs in Nepal are managed through the BZ
Management Regulations (1996), which provide a framework by three-tier BZ institutions: the BZ User Groups (BZUGs), the BZ User Committees (BZUCs), and the BZ Management Committee (BZMC). The BZUGs work at the local/settlement level and are composed of local community members who are elected to represent their respective settlements. These groups are responsible for managing the BZs in their respective areas. The BZUCs are composed of representatives from the BZUGs within the sector and are responsible for following the approved work plan, implementing projects, managing project operations, mobilizing community participation, etc. The BZMCs oversee the BZ surrounding PAs and are composed of representatives from the BZUCs within the PA, the government, and PA management authorities. This three-tier organizational structure of the BZ institution is designed to ensure that the BZs are managed in a participatory, inclusive, and sustainable manner with the active involvement of local communities and other stakeholders.

The BZ program in Nepal is a crucial component of the country’s conservation efforts, aimed at managing and protecting the BZs surrounding PAs and promoting the sustainable use of natural resources in these areas. In particular, the BZ program made a provision of revenue sharing, which provides 30-50% of the PA’s revenues (i.e., BZ fund) to local communities living in the BZ (Sharma, 2001). The BZ guideline established as per the Act requires the BZ funds be allocated to five separate areas of conservation and development within the BZ: namely conservation (30%), community development (30%), income generation and skill development (20%), conservation education (10%), and administration (10%).

Even though the revenue-sharing program has created incentives to encourage local people in conservation activities, the conflict between humans, park managers, and wildlife has
remained an ongoing issue in many PAs around the world (Lamichhane et al., 2019; MacKenzie, 2012; Munanura et al., 2016). These studies, in general, mentioned the limited benefits of the revenue-sharing strategy and the need to restructure the decision-making process. Wider policy adoption will require new knowledge on whether and how revenue-sharing programs have fared in PAs that currently implement them (Snyman & Bricker, 2019; Tumusiime & Vedeld, 2012). Understanding the relationship between parks and people in PA management involves various factors, such as the park's history, the local community's characteristics, conflicts between humans and wildlife, interactions with park staff, knowledge about the park, and people's attitude and behaviors toward the park (Bragagnolo et al., 2016). No study, to the best of our knowledge, has evaluated the impact of Nepal's landmark policy on PA governance. Therefore, this study aims to fill the gap in knowledge about whether and how PRS policies can help reduce the conflicts around PAs. Therefore, this study assessed stakeholders’ attitudes and perceptions regarding PRS policy contributions and the BZ program in the broader context of PA management. The study’s objectives were (a) to evaluate the BZ program’s effectiveness in reducing park-people conflict and contributing to conservation and community development and (b) to identify the issues and areas of improvement needed for PRS and the BZ program to increase their effectiveness.

3.3 Methodology

3.3.1 Study area

This study was conducted in Nepal, where PAs cover about 23.23% of the country’s total area (Government of Nepal, 2014). The country is divided into three horizontal geographical regions: the Himalayas in the North, Hills in the middle, and Terai in the South. There are twelve
National Parks, one Wildlife Reserve, six Conservation Areas, and one hunting reserve. These PAs cover a wide landscape and preserve the rich flora and fauna of Nepal. Currently, the BZ program is implemented in 12 national parks and one wildlife reserve, which is our study area (Figure 3.1).

3.3.2 Data Collection and Analysis

Since the general population is unlikely to have an in-depth knowledge of government policies and programs, a study like this involves collecting and analyzing data from key informants who have a considerable depth and breadth of knowledge regarding the purpose, process, and progress. Hence, qualitative data was collected by conducting face-to-face or phone key informant interviews (KII) in 13 PAs of Nepal. The type of interviews was selected based on the availability, preferred choice, resources, and logistic feasibility of the key informants and interviewer. The in-person interviews were generally conducted in the informants’ office or quiet places to avoid external disturbances. KII is an effective social science technique to collect data from a diverse group of people who have proper knowledge and understanding of the issue of interest and, therefore, can provide informed insights regarding the problem and solution (Bernard, 2006). The number of interviewees selected to conduct KII depends on the purpose of the research, required credibility, usefulness, and available time and resources (Patton, 1990).

The goal of using this qualitative approach was to gain insights from the informed individuals to identify the strengths and limitations of the PRS and receive recommendations for areas of improvement in the existing framework of PRS.
For KII, a checklist (Appendix 1) was first developed covering a range of topics, including their familiarity and experience with the BZ program in general and PRS scheme in particular, their perception of trends in HWC since the BZ program started, perceived strengths, limitations, and future challenges of PRS in addressing HWC, and possible revisions that may be necessary to improve its effectiveness. The checklist and the interview protocol were reviewed and approved by the University of Tennessee’s Institutional Review Board for human subject research (Approval # UTK IRB-22-06922-XP). The Department of National Park and Wildlife Conservation (DNPWC) in Nepal also permitted this research study.

To reduce selection bias, a two-step process was adopted. First, a list of 92 individuals with direct experience working with the BZ Program or first-hand knowledge of the program’s history was developed, ensuring representation from various groups of stakeholders in PA management in Nepal. Those groups included: 1- BZ leaders (elected people who served in BZ institutions including BZMC and BZUC), 2- Local government leaders (elected politicians to lead local and provincial government (e.g., Rural Municipality, Metropolitan, and Province government), 3- Conservation partners (professionals affiliated with non-government sector and Academic institutions with experience in BZ program (e.g., National Trust for Nature Conservation [NTNC], World Wildlife Fund for Nature [WWF] Nepal, IUCN [International Union for Conservation of Nature]- Nepal, Zoological Society of London [ZSL]- Nepal, Institute of Forestry [IOF]), and 4- Government officials (individuals currently work or until very recently worked as PA managers overseeing the BZ program). To minimize any bias due to the researcher’s familiarity or convenience, a total of 41 individuals with knowledge and experience
Figure 3.1 The map of study area
of the BZ program were randomly selected from each stakeholder group for the interview. The key informants were recruited to ensure representation from PAs of various sizes, tourism revenue, and physiographic regions. While those serving on BZ institutions and local government units are locally elected and specific to the PA, government officials and conservation partners had served at multiple PAs over the years and therefore had familiarity with BZ programs in different places.

With the informed consent secured from the informants, interviews were recorded and transcribed. Transcripts were then analyzed in Nvivo\textsuperscript{R} (Release 1.7.1), a computer-assisted qualitative data analysis program (QSR International, 2020). This allowed organizing text into similar responses according to conceptual linkages of answers that came from interviews. Emerging themes were developed based on the linkages in answers provided and the recurrence of topics (Ryan & Bernard, 2003). By using Nvivo\textsuperscript{R}, multiple stages of restrictive coding allowed for standardizing and refining the understanding of the pattern in response, thereby generating larger themes and representative quotations. Data obtained from KII were tabulated to compare and contrast different stakeholders (e.g., government workers, political leaders, conservation organizations, etc.) in terms of their perception and attitudes towards PRS and its impact on conflict mitigation. The qualitative responses from KII were used to summarize the strengths and weaknesses of the PRS approach and identify the areas of improvement for its success.
3.4 Results

3.4.1 Key Informant Demographics

Among the 41 key informants, 11 were the BZ leaders, eight were LG leaders, nine were from the conservation partner groups, and the remaining 13 were government officials. Since government officials and those working for conservation partner organizations are transferred periodically to work at different PAs, informants in these groups had knowledge and experience of BZ programs from multiple PAs. Most (90%) informants were male, which reflects the proportionately higher male representation in Nepal’s bureaucratic population and BZ institutions. Among the eight LG leaders, five were from lowland PAs, three were from mountain PAs, and among the 11 BZ leaders, seven were from lowland, four were from mountain PAs.

3.4.2 Perception of HWC Trends Since BZ Implementation

Most informants mentioned that HWC incidences have increased over the years resulting in increased human injury/causality, loss of livestock and crops, and property damage. The main reasons mentioned are population growth in humans and wild animals, expansion of communities, and degradation of forest conditions, lack of adequate food and habitat availability inside the PAs for the increasing wildlife population. Yet, several informants from the conservation partners group indicated that the perceived increase in HWC over time may be attributable to better data recording and documentation on the PA side, increased media coverage and discussion of particularly negative interactions between wildlife-human in social media. A conservation professional shared their argument for the increase in HWC:
The reason for this [HWC] is the increase in the population of wild animals. For instance, in the 1990s, there were only two or three elephants in Bardia National Park, but now, we have 80 resident elephants. If we talk about tigers, there were 18 tigers during 2008–2009, and now there are almost 87 tigers.

Informants also warned against generalizing the overall HWC trend because it is species-specific, suggesting that HWC related to some species may have increased, but for other species may have decreased.

3.4.3 Perception of Park-People Conflict Trends Since BZ Implementation

Key informants admitted that some conflict is unavoidable. They recalled their own past when park personnel and local people acted like enemies with no communication, locals cut trees illegally, and lit fires because of the bad relationship with PA staff. But conflicts have decreased since the BZ program was implemented. Notably, most conflicts in recent years were related to natural resources (e.g., river and stream resources such as sand) governance in BZ and land ownership disputes along PA borders rather than whether wildlife should be conserved. LG leader group informants also complained that the park-people conflict stems partly from PA authorities’ emphasis on increasing the wildlife population without due care and attention to consequent damage caused by wildlife in the community. Nonetheless, most informants agreed that the park-people relationship has improved in the recent decades and the residents’ appreciation for and tolerance of wildlife. An LG leader summarized BZ programming’s impact on an increased sense of public ownership of wildlife:

Local residents now realize that parks and wild animals are their own property too.
Informants credited improved communication, partnership in decision-making, and PRS with local communities under the BZ program for improving park-people relations. A key informant, with decades of experience working with a conservation NGO and a long-term BZ resident, noted that since BZ started:

_The local people’s attitude has changed from ‘take away your Rhinos’ to ‘don’t take our Rhinos away.’_

Another BZ leader informant said:

_Local people no more think that the park is their enemy but is made of local people too and they no longer fear the park authority ... their understanding of park has gone from ‘obstacle to development’ to ‘endowment for development.’_

Yet another informant with significant experience as a park manager and now working as a conservation professional for an NGO pointed out contrasting public tolerance of wildlife damage between BZ and other areas:

_Local people in other non-BZ places that have damage from elephants do not want elephants there, but the people in BZ areas never say they do not want elephants. The difference in tolerance for wildlife is partly attributable to the improved relationship between park and local people in areas with the BZ program._

### 3.4.4 PRS and BZ Program Contributions

**Cooperation in Conservation:** Informants held that growing community awareness for the conservation and value of wildlife and engagement in conservation efforts such as community forestry has engendered wildlife populations’ conservation and restoration in and around PAs. In
response to a question about how BZ programs have contributed to securing local cooperation in wildlife conservation, an BZ leaders’ group informant offered:

Locals’ attitude [toward wildlife] has tremendously improved. Previously, when a wild animal roamed their village, people kept traps and harassed to chase them away, but now they inform officials and help return animal to the park.

Multiple informants argued that the BZ program’s impact on conservation could be better. But one conservation partner noted:

... think about the opportunity cost of not having a BZ program over the past 25 years, a period of development pressure, politician unrest, etc. Lack of community engagement and communication could have had a dramatic effect on the park resources.

**Community Development:** Informants agreed that BZ funds have contributed to financing small-scale projects. They appreciated developmental activities that focused on income generating training and skill development (e.g., nature guides, hotel worker), promoting small business enterprises (e.g., homestay, farming), and alternative energy to reduce dependency on forests (e.g., biogas plants). Informants also praised the BZ program and BZ funds for other benefits, including relief for victims of wildlife damage, cooking stoves, support for school and healthcare activities, and capacity building through training, tours, and networking opportunities. A professor with research experience in many PAs attributed the economic development of a gateway community in Chitwan National Park (CNP) to BZ activities to:

PAs are local assets that have a lot of economic benefits. For example, the development of Sauraha is a result of BZ activities of CNP.
A former government official currently working as a conservation partner added:

*From the development aspect, the local government collapsed during the civil war [1996-2003] and the BZ fund was the only functional institution that provided sustainable funds for development at that time. Although it is dependent on revenue and the national parks with good revenue have good development, it has helped in fulfilling the basic needs of people, such as schools, taps, water, agriculture, and road. Therefore, the BZ program has been a good program for rural development.*

*Conservation awareness and engagement:* All informants agreed that broader public conversation and dialogue about the importance of wildlife at the local level, promoted by BZ institutions, and other conservation partners active within BZ, have contributed significantly to promoting conservation education and helping local people realize the value of PAs. Informants noted that the legal requirement that a portion of BZ funds be spent on conservation education made it possible to launch a variety of awareness programs and education at the community level and mobilize youth at the school level (e.g., eco-clubs). These activities have helped increase conservation awareness and pro-conservation behavior among the local people. For example, when asked whether reducing the population of problematic wild animals would be a viable strategy for reducing HWC, a BZ institution leader advised against it:

*Instead of thinking about reducing population, there should be efforts to increase their population when needed and come up with structures/standards that separate them from village ... manage their population based on science, carrying capacity ...*
Government officials and BZ institutions informants also emphasized that since the BZ program was implemented, local people serving in BZ institutions (e.g., BZMC) have been instrumental in managing conflicts immediately and preventing a bigger crisis. An informant with decades of experience as a park manager said:

... because of the BZ program, BZUC members are serving as the first responders to the wildlife-related crisis now and have managed crises before we get on-site.

Another BZ leader informant shared similar feelings about their evolving role in conservation:

Local people consider us the advocates/spokespersons for wildlife and national park. The way they complain about animals involved in conflict is like ‘your animals did this and that.’

*Forum for partners and external resources*: All informants noted that by delineating the BZ boundary, the program has provided a clear platform for conservation organizations to collaborate with local communities in implementing conservation and development activities. For instance, the Park and People project (a UNDP-funded project from 1995-2001) initially helped organize local communities to form BZ institutions. NTNC has worked with PAs to help build solar fence pole installation, barbed wires, and strong walls, establish anti-poaching units, and provide livestock, training, and scholarships to BZ residents in multiple PAs. Some conservation partners and BZ representatives mentioned that conservation organizations and projects (e.g., NTNC, WWF, Bardia Integrated Conservation Project (BICP), ZSL, and Western Terai Landscape Complex Project) have secured external funds to implement conservation and community development programs in BZ communities. The ZSL has conducted programs
targeted at park-dependent communities to help them find alternative livelihood options. A former park staff now a conservation partner said:

*Although ... managing PAs is a milestone in people’s participation and has given a positive message about community-based conservation and sharing benefits with local communities, the PRS fund is not the sole contributor to this, and there are a lot of other funds and investments in the BZ for conflict management, BZ conservation, and PA system management.*

Another informant summarized PRS policy’s and BZ program’s contributions:

*It is not the BZ funds itself but the mechanism this program has attracted stakeholders to bring in projects for conservation, education, income generation, alternative energy development, which collectedly have had a huge impact on conservation and rural development.*

### 3.4.5 Challenges Associated with PRS and BZ Programs

**Insufficiency and uncertainty of BZ funds:** A consensus among key informants was that BZ funds are too low to contribute substantially to community development. An informant from a government official group said:

*BZ funds in most cases are not big enough to support significant development projects anyway... so, development should not be the primary focus of this fund.*

Informants associated with high-income PAs (e.g., Chitwan National Park) noted that the higher amount of BZ funds they receive is offset by larger expenses. Informants from PAs with low tourism income (e.g., Koshi Tappu Wildlife Reserve) argued that most BZ institutions do not receive enough BZ funds to cover their administrative expenses. For example:
Unlike other PAs with high tourism, we receive very little in BZ funds. Even though the fund distraction and allocation have been fine, there is simply not enough funds to make a difference on the ground. We do not even have enough to cover the administrative expenses or have people travel many kilometers to show up for meetings.

Dependence on BZ funds for tourism income, which fluctuates annually, is another concern. During the years of political unrest and the global pandemic, BZ institutions struggled to fund ongoing projects and failed to provide relief to wildlife victims. This funding fluctuation creates uncertainty about investing in multi-year projects of development or conservation.

**Low community control over fund use:** Key informants also indicated that BZ funds’ current spending guideline takes a “blanket approach” for BZ communities across the country, whereas communities even within a single PA face different needs and priorities. As some informants perceive this approach to be structured and rather prescriptive, their perception of access and power in BZ governance is not positive. An informant from the conservation partners shared:

*The blanket approach to allocating a percentage of BZ funds among different budget items is not practical. This [BZ fund] is a relief, and [rather than thinly spreading among suggested titles] it will be helpful to utilize it in a more focused theme or priority of local interest.*

Another informant from the LG leader group criticized BZUCs this way:

*The BZUCs are not really autonomous, they are more like a rubber stamp to the park manager.*
**Perceived burden of BZ regulations:** Some informants noted that local residents can question the rationale to continue the program because few benefits reach the impacted communities while HWC continues to increase. Furthermore, most LG leader group informants argued that the absence of BZ areas would be more accessible and beneficial because the program’s regulations currently limit development activities, resulting in BZ areas’ residents’ negative attitudes. A conservation partner group informant said:

*The attitude of people depends on their occupation, source of livelihood, and if they have been impacted by conflict or not. The tourist guides are happy about the increase in the number of wild animals, whereas people in agriculture might not be.*

Another informant held that the perceived burden of BZ regulations is partly attributable to the lack of awareness among residents about the BZ program:

*Local people do not understand that the revenue being shared through the BZ program comes with a limitation and expectation.*

**Inclusion and representation issues:** Multiple informants expressed concerns about the exclusion of indigenous and marginalized communities (e.g., Bote, Musahar, Tharu) that depend primarily on forests to maintain their traditional lifestyle (e.g., fishing, collecting forest products). Women have yet to be elected to leadership positions at higher level institutions (e.g., BZMC) nor is their representation or formal liaison roles in LG units (e.g., metropolitan or rural municipalities), which have similar mandates of promoting sustainable development and conservation in the same areas where BZUCs operate.
**Impact of success:** Most informants believed that even though the program was expected to alleviate HWC, the program’s success has, in some cases, caused new problems. They argued that the restoration of wildlife habitats in BZ with the community-based conservation efforts (e.g., Baghmara, Kumarose community forests in Chitwan) increased the overall wildlife population or attracted wildlife from PAs to newly restored habitats in BZ forests. This situation is partly to blame for increasing HWC in some areas. A BZ representative from a PA in the Terai region discussed the irony between conflict and conservation:

> The improvement in the park-people relationship has led to people loving and not harming wild animals, which has increased their [wildlife] population and their interaction with humans. As a result, there is an increase in human and wildlife problems.

An LG leader from a PA of the Himalayan region added:

> A contrasting effort of the BZ program is that it addresses local people’s issues while simultaneously focusing on conservation, which improves wild animals’ population and in turn, negatively impacts local communities.

**Federalism:** Nepal’s federalism seems to have added two challenges for the BZ program. First, key informants noted increasing conflict between BZ institutions and LG units due to differences in responsibility for natural resources’ governance within BZ. LG leader informants pointed out that BZ funds and resource governance within BZs violate the Local Government Operation Act of 2017, which they believe has given them the fresh mandate of governing natural resources (e.g., issuing permits and collecting and mobilizing revenue) within the BZ. Notably, the dispute
over responsibilities for natural resource governance within BZ is currently before the Supreme Court.

Second, some informants indicated that under federalism, LG units are authorized to raise taxes and invest in development projects. Thus, the perceived value of BZ funds is no longer as high as it once was. When the LG had a limited budget, even a few BZ funds was considered significant. But in recent years, the LGs are guaranteed to receive a substantial budget from provincial and federal governments, such that BZ funds are now small in comparison. As a result, public appreciation for this benefit is gradually declining, as is their interest in competing for positions in BZ institutions. A park staff from a low-income PA said:

*After the federalism, the budget structure in the BZ is low, and we have not been able to contribute as much as we should. The local government, on the other hand, started receiving a huge amount of budget. Now, our investment is not considered an important contribution, especially for community development such as road, electricity, drinking water, only because another entity started to invest more in these programs.*

**Political influence:** The informants from the conservation partners group listed local politics and elected officials’ rent-seeking behavior in BZ institutions as significant threats to PRS effectiveness in reducing the park/people conflict. Informants noted that the election of local representatives in BZ institutions, while democratic, is not free of partisan politics, which has negatively impacted prioritizing BZ funds among villages and projects. A park staff with many decades of experience said:
Local representatives serving in BZ institutions are affiliated with political parties and many of them often tend to favor implementing programs that generate personal or political benefit to themselves in their community. They are not interested in conservation like we are.

3.4.6 Areas for Improvement in the PRS and BZ Program

*Flexibility and autonomy in BZ funds use:* Informants emphasized that the “blanket approach” under current guidelines is too prescriptive and inconsistent with local reality. They demanded flexibility in spending BZ funds on community needs’ titles and projects rather than following suggested spending models. For example, informants mentioned that their BZ institution uses its own funds to help compensate wildlife victims to manage HWC incidences.

> We made a management team to discuss the solutions and gather resources to compensate for wildlife-related problems in the BZ area. For this, we established an endowment fund, and the interest obtained from that fund was used for compensation. Some organizations such as WWF ... also helped to add funds to it.

*Transition from development to HWC mitigation:* Informants agreed that BZ funds should be invested in non-development-related activities in BZ communities. Informants argued that LG units (e.g., metropolitan, rural municipalities) are empowered and more capable of raising funds and conducting development work. An LG leader said:

> Now, in the new governance system, local government entities have formal responsibility, more flexibility, and power to invest their own funds in construction and development. Hence, the use of BZ funds should be focused on relief to wildlife victims.
Informants argued that HWC and the park-people relationship will not improve until the core issue of wildlife damage to locals is addressed, emphasizing this could be the wisest use of BZ funds. That is, BZ funds should be invested more in conflict mitigation (e.g., education, capacity building, physical barriers construction) and providing relief to those who bear the cost in terms of damage to crops and livestock. A BZ leader group informant noted:

_BZ funds should be used for compensating for the loss [caused by wildlife] than development, which is what other institutions are capable of doing … HWC will continue to rise unless the loss compensation mechanism is efficient and satisfactory to the local people, no matter how well you do other things such as development, education, etc._

And a political leader currently serving at the provincial government with previous experience in BZMC argued:

_The task of development should be left to local governments, and BZ funds should be used to raise awareness and compensate for loss._

**Targeted programs to engage and benefit marginalized communities:** Several key informants, particularly among conservation partners and government officials, highlighted the need to spend BZ funds to launch targeted programs to help socio-economically marginalized indigenous communities (e.g., Chepang, Tharu) affected by conservation projects. A conservation partner group informant suggested:

_A major obstacle in the effectiveness of PRS has been the failure of forest or park dependent, marginalized people receiving park benefit. As they still depend on park resources, they continue to interact with wildlife and have bad outcomes/conflicts._
Informants noted that since indigenous communities’ traditional lifestyle is mostly based on forest and wildlife resources, reducing their dependence on PA resources will involve finding alternative livelihood systems or maintaining their traditional lifestyle in harmony with nature.

**Innovation for co-existence:** The informants rejected the idea of adopting population reduction techniques to improve HWC but supported the increasing wildlife population. They also suggested adopting timely and tactful actions to address the HWC with a science-based approach by understanding PA carrying capacity, managing animals involved in conflict, and building structures for damage prevention so people do not kill wild animals. A BZ institution leader informant said:

*Instead of reducing population, there should be efforts to separate them from village, manage their population based on the science, carrying capacity etc.*

**Spatial and temporal stability in BZ funds:** BZ leaders’ informants argued that revenue sharing with BZ communities should be fixed (e.g., 50%) instead of a range (30-50%) to avoid uncertainty. Furthermore, the heavy reliance of BZ funds for tourism required a “national basket” approach to deal with discrepancies in BZ funds among PAs and provide options to seek supplemental funds/loans during crises and low tourist arrivals.

**Inclusion:** Informants stressed ensuring minority and marginalized communities’ representation in BZ institutions. A conservation partner informant said:
The existing guidelines need revision to include women and marginalized communities, mandate their rights and participation in different levels of the BZ, according to the relevance of time.

Coordination/liaison with LG units: Most informants agreed on clarifying the jurisdictional responsibilities among government institutions at various levels regarding the governance of natural resources and benefits sharing (i.e., revenue) from resources within BZ. Some informants, especially those from the LG, argued that BZ management should be given to the LG or to a separate institution able to take legal actions against illegal activities; others suggested ensuring representation/liaison officials to communicate and coordinate between LG and BZMC. Some informants also highlighted focusing on making the BZ program a standalone and independent of PA or LG.

Transforming the conservation education curriculum: Informants suggested that funded conservation education efforts should be more comprehensive. The traditional models focused on wild animals’ importance and value as part of the natural ecosystem. However, locals in BZ’s high-impact areas should be educated in the behaviors of wild animals (e.g., movement, aggressiveness) involved in conflicts and in developing skills to avoid confrontation and other matters of survival and rescue.
3.5 Discussion

Our findings indicate mixed perception of stakeholders nationwide on the trend of HWC incidences in PAs since the BZ program was implemented, which is in line with several recent studies on the region (Lamichhane et al. 2018, 2019; Pant et al. 2016). While some BZ programs and conversation partner-funded efforts to mitigate conflict helped decrease HWC in some cases, successful forest restoration and habitat conditions in some areas with BZ funds likely contributed to wildlife population growth and HWC. Benefit-sharing programs such as BZs or PRS are designed to help reduce park-people conflict, which adds a new dilemma to the dynamics of the human-wildlife system. In a related study, McKenzie et al. (2017) found that increased crop raiding around a park in Africa was driven by the growing wild animal population resulting from recent conservation efforts. This evidence and the coupled nature of the human system (i.e., interactions between human and wildlife communities) show the need for a better understanding of the tele-coupling feedback, which helps to understand, design, and manage these interactions (Hull & Liu, 2018; Yang et al., 2018) so that long-term effects of tele-coupling can be estimated and unpredicted results can be avoided (Hull & Liu, 2018). In this case, tele-coupling feedback is associated with benefit-sharing policy in PAs and designing transformative policies that sustain park-people relations.

Our findings also show that since the BZ program’s implementation, resident attitudes towards PAs and park-people relationships have improved significantly from increased conservation awareness among locals, better communication between parks and people, and the BZ-funded projects in local communities. Studies show that when locals receive direct benefits from parks or tourism, it contributes to positive attitudes toward wildlife and PAs (MacKenzie,
2012; Shahi et al., 2023; Wiratno et al., 2022). And our findings support the notion that promoting conservation education and institutionalizing effective communication with local people can also improve the park–people relationship. Education about the value of biodiversity and conservation ethics is important and thus a historical focus of conservation education curricula. However, with contested landscape BZs around PAs under increasing competition between wildlife and humans, transformative changes may be needed in conservation education curricula. For example, the BZ residents should be taught skills to coexist with wildlife through a focus on understanding the behavior of animals involved in conflicts, developing rescue and survival skills, and avoiding encounters that lead to negative interactions.

Stakeholders commended Nepal’s BZ program for its contributions thus far. Perceived program benefits include fostering communication and the relationship between the park and local people, giving local people representation in BZ’s shared governance, raising conservation awareness, helping locals appreciate the benefit of parks, and facilitating development activities. These findings corroborate studies about how communities perceive PA’s benefits, particularly through benefit-sharing programs (Munanura et al., 2016; Thapa Karki, 2013).

Still, informants perceived BZ funds given to local communities as insufficient to create major developmental impacts and suffer from temporal and spatial variation/fluctuation issues. PAs in Nepal experienced a decline in international tourists due to periods of political turmoil and the pandemic, causing a reduction in BZ funds given to local communities (DNPWC, 2020; Wiratno et al., 2022). Therefore, BZ funds are vulnerable to internal and external shocks, which demonstrates that BZ funds are unreliable as an investment in multi-year projects. Even though benefit-sharing programs such as PRS need “adaptive and flexible approaches that embraces
learning by doing and teamwork” (Swemmer et al., 2015), current guidelines for using BZ funds are too prescriptive and, therefore, too inflexible to allow local BZ institutions manage such crises.

Stakeholders argued that BZ funds would be better invested in conservation education and conflict mitigation than in development projects. Studies from Asian and African PAs have also recommended that park revenue shared with local communities be allocated to initiatives that compensate for loss/damage or contribute in towards preventing HWC (Lamichhane et al., 2019; MacKenzie, 2012). But some BZ institutions in Nepal have prioritized infrastructure development due to the influence of political parties and the interests of BZ leaders (Lamichhane et al., 2019; Munanura et al., 2016). BZ benefits have yet to reach marginalized people most impacted by conservation, which raises questions about equity and fairness and implies that how the benefit distribution is being decided among BZ institutions is still an issue (Spiteri & Nepal, 2008). While the election of BZ institutions’ leaders is democratic, elected officials’ partisan politics and rent-seeking behavior have impacted the proper use of funds at the community level. Revising guidelines may address this finding because similar PRS programs derailed due to corruption and flaws in the process adopted for the distribution of benefits (Schroeder et al., 2008).

Our findings imply that the BZ program’s main contribution stems from its institutional development to facilitate conservation and development in local communities. The BZ program has carved out a region of priority for conservation organizations, including WWF, ZSL, and NTNC, to launch a myriad of programs, for example, to increase conservation awareness, develop local capacity in conservation, build HWC mitigation structures, and promote activities
to reduce local dependence on park resources (Banikoi et al., 2017; Bhusal, 2012). The resources for external funds, expertise, and services these organizations have poured into the BZ communities to promote integrated conservation and development are considerably larger than the BZ funds themselves. Hence, improved park-people relationships since the BZ program implementation may be attributable to the cumulative contribution of these efforts rather than the shared annual BZ funds alone.

Stakeholders’ emphasis on allocating BZ funds for relief to wildlife victims is consistent with several studies that argued that efficient and responsive relief and compensation programs should be a critical part of any PRS policy (Munanura et al., 2016) or economic tool designed to alleviate HWC (Ravenelle & Nyhus, 2017). As stakeholders consider current guidelines for wildlife damage relief in Nepal incomplete (i.e., only applies to damage by certain wildlife) and inefficient (i.e., slow and high transaction cost), it remains a source of dissatisfaction in many PAs (Lamichhane et al., 2019; Silwal et al., 2013). Since the goal of any public policy increasing public tolerance of wildlife cannot be fulfilled until the victims do not perceive fair relief for their losses (Nyhus et al., 2005), PRS programs may benefit from allocating sufficient funds to provide relief. Ironically, Nepal’s current BZ fund guideline has no provision for relief. Our findings suggest that stakeholder support is high for targeting BZ funds towards relief to wildlife victims. Indeed, some LG leaders welcomed the idea of LG providing matching funds to BZ institutions to help address wildlife damage. Given that BZ funds given to local communities are usually low and will never compensate the loss, this fund may be leveraged with other funds (e.g., LG or other sources such as donations) to create a bigger impact or subsidize premiums for damage insurance policies so that more local people/farmers will be ensured against wildlife
damage. Newly adopted LG unites’ compensation and insurance initiatives, for example in Thakurdwara in Bardiya national park and Madi Municipality in CNP, may serve as pilot cases for agencies to review and adopt across the PA system nationwide.

The BZ program is yet to secure women’s participation, an observation consistent with earlier studies (Shrestha, 2020). Nor has BZ funds benefited the livelihood of socially disadvantaged people who depend mostly on park resources, although improving their economic well-being is not a primary goal for BZ programs. Still, BZ program success and PA sustainability is linked to reducing their dependency on park resources and their vulnerability to wildlife-related damage. Women in Nepal are connected to forest resources and are impacted most by wildlife around PAs. In addition, several indigenous groups (e.g., Dalits) that are historically marginalized and deprived of social and economic opportunities lack equal participation at the decision-making level of BZ institutions and benefits to decrease their dependence on the parks. Indigenous groups’ lifestyles involved park resources, but a growing concern was that the BZ program, introduced to improve the park-people relationship, lacked proper accommodation for their traditional way of life (Rai et al., 2023). Addressing the needs of local communities in planning, implementation, and management decisions is important for the long-term success of public programs like BZ (Wells & Mcshane, 2004; Wiratno et al., 2022).

Our findings also suggest that the recent adoption of federalism has complicated the BZ program. First, conflicting legislative mandates for BZ institutions under the 1993 amendment to the National Park and Wildlife Conservation Act and the authority for the governance of natural resources given to local municipalities under the Local Government Operation Act of 2017 have compromised the park-people relationship. BZ institutions and LGs are public institutions with
similar legislative mandates to facilitate sustainable rural development. Clarification on jurisdictional responsibility will be critical to ensure coordination in programming, avoid duplications, and create synergy in conservation and development through leveraging funds and other resources. Second, new funding streams through local government have led to the declining perceived value of BZ funds. This study suggested that local people do not rely as much on PA shared revenue to fund development projects as they did before federalism was adopted. Local municipal government’s ability to collect and allocate tax and, in some cases, to lobby for earmark funding from provincial or central governments has changed the availability of public funds in BZ communities. This development indicates that the scope of BZ funds or PRS strategy as an economic tool to incentivize local communities will continue to decline in the future.

3.6 Conclusion

Several conclusions were drawn to evaluate the BZ program in Nepal’s success and to help inform the viability of such programs in PA management around the world. First, stakeholders, regardless of their background, view the BZ program favorably and believe that it made positive strides in conservation and sustainable development. Second, the BZ program’s contribution is more evident in increasing conservation awareness, improving park–people relationships, and developing positive attitudes of local people toward wildlife and the park than in carrying out development projects. The collective impact of programs implemented by BZ institutions and conservation partners has not only transformed the attitudes of local people towards parks but also made local people serving in BZ institutions the local ambassadors of conservation and PAs. Third, the institutional forum the BZ program provided in fostering
partnership, community engagement, and communication, and not shared revenue itself, has had a more significant impact on conservation and sustainable development. The BZ program has accommodated local people in PAs shared governance through their participation in BZ institutions and established a geographic space for conservation stakeholders to bring in external capital and mobilize local resources to promote conservation and sustainable development.

Finally, the BZ program’s success in promoting conservation and improving park-people relationships will hinge on adapting this program to meet local needs and priorities. This adaptation may require revising current guidelines to accommodate autonomy for local BZ institutions in how they use BZ funds to meet their local needs, shifting the focus of BZ funds from development to conservation education, mitigating HWC, and providing relief to those impacted by HWC, and leveraging BZ fund with other sources (e.g., local government, conservation partners) to create a bigger “bang for the buck.” Fifth, conservation education curricula should be transformed to build locals’ capacity and skills to coexist with wildlife. Finally, future revisions to the BZ and PRS policies may benefit from prioritizing targeted programs to ensure the participation and benefit to park-dependent social groups to reduce their dependence on park resources, vulnerability to wildlife-related incidences, ensure functional partnership with LG units to avoid duplication in effort and conflicts, and increase synergy in the governance of natural resources within and around PA.
References


Appendix

Appendix 1: A Checklist used to conduct KII interview.

- Please tell me in what capacity and to what extent you are familiar with the BZ program in general and the park revenue sharing (PRS) in particular.
- How would you describe the trend of the HWC before and after the BZ program (e.g., increasing or decreasing) was implemented?
- What might be the main reason for this trend (e.g., habitat quality, # of conflicting animals, cropping patterns, livelihood patterns of the forest resource-based communities, land use, land cover change)
- To what extent do you think the BZ program and PRS policy have been effective in addressing the following aspects of its policy goals?
  - Reducing local dependence on the park resources
  - Improving public attitude towards the wildlife and national park
- Thinking about the BZ areas, do you think the investment from BZ funds has made a significant contribution to promoting conservation and development in BZ?
- What specific aspects of PRS policy have led to its relative success or worked favorably in effectively reducing conflicts?
- What are some of the limiting or challenging factors in the success of the PRS program in addressing the core issue of reducing HWC?
- Since the initial enactment in 2052 BS (1996 AD), how do you think evolving changes (e.g., political reform, development pressure) impacted the implementation and effectiveness of PRS policy in particular and the BZ program in general?
- Where exactly are the legal/procedural hurdles?
- What roles should be played by the park authority/ BZMC/BZUC/local government in conservation and BZ management?
- Do you see any threats or factors that may impact the effective implementation of the PRS program in the future? Please explain.
- Which specific areas of the BZ implementation part need modification to enhance the effectiveness of PRS in reducing HWC?
• Do you think controlling the population of conflicting animals should be considered as a viable option for minimizing HWC?
• Do you think the annual budget of local government (e.g., ward/ municipality) should be allocated for minimizing HWC activities (e.g., fencing, wildlife habitat management, relief for wildlife damages, etc.)?
• Is there anything else that you would like to add about any of the topics that we’ve discussed or other areas that we didn’t discuss but you think are important?
Chapter 4
The Perceived Benefits, Burdens, and Effectiveness of the Buffer Zone Program in Improving Park-People Relationship
4.1 Abstract

The modern approach to protected area (PA) management recognizes that a good relationship between the park and local people is critical for success in PA governance. While the benefits of PA are enjoyed globally, the cost falls largely on local communities that suffer damage from wildlife and regulatory obstacles to development. Programs like Buffer Zone (BZ) and Park-Revenue Sharing (PRS) are aimed at sharing PA benefits with local communities to meet their development needs and, in turn, improve the park-people relationship, but whether and how these programs impact public attitude toward PA is little understood. With the case of Nepal’s BZ program, which shares up to 50% of PA revenue with local communities, this study assessed how residents perceive the benefit and burdens associated with the BZ program and how that relates to their perception of change in the park-people relationship since the BZ program is implemented. Results from a survey of 2,122 households residing in BZ of six PAs showed that residents’ perception of park-people relationships improved over the years of BZ program implementation. Furthermore, the perceived trend in the park-people relationship was positively related to the perception of benefits and satisfaction with coordination between the park and local government and negatively with perceived burdens of BZ-related laws in development, history of damage/loss from wildlife, and misunderstanding about the purpose of BZ funds given to local communities.

4.2 Introduction

Protected areas (PA) are established for in-situ conservation of biodiversity, including wild animals. PAs such as national parks and wildlife reserves are typically located in rural landscapes, where the emphasis on conservation complicates the park-people relationship. Despite PAs' economic (e.g., tourism, jobs) and ecological (e.g., ecosystem services) benefits,
local villagers can view its presence negatively for several reasons. First, an increase in wildlife population can result in increased human-wildlife conflict around PAs (e.g., crop damage, attacks on livestock, and humans). Second, the rural communities facing developmental and other needs (e.g., roads, bridges, query, etc.) consider the PA as an obstacle to rural development and their communities’ progress. In most developing countries, communities living around PAs depend on forest resources (e.g., firewood, farming) for their livelihood. However, the establishment of a PA excludes rural communities from enjoying the traditional benefits and threatens their livelihood (Xu et al., 2006).

PA management's “global benefits and local cost” nature means that sustaining local support for PA management is crucial in biodiversity conservation (Allendorf, 2022; MacKenzie, 2012). Local people perceive the burden of conservation disproportionately falling on them relative to those who enjoy PA benefits, so PA managers struggle to secure local support for conservation (Zhang et al., 2020). Traditional models of PA management relied on the belief that wildlife protection can only be achieved by separating people from wildlife. Such models deployed military forces to guard PA boundaries and adopted a “fences and fines” approach to keeping local people out. This approach led to increased park/people conflicts and reduced local support for conservation.

Since PA’s persistence is highly dependent on local residents’ support (Wells & McShane, 2004), effective PA management requires a good relationship with local communities and their active involvement in decision-making (Hummel et al., 2019). The participatory approach of collaborating with local people for biodiversity conservation is a win-win situation because it builds a relationship of mutual benefit and trust (Butler, 2011; Ho et al., 2016; Young
et al., 2016), creates a sense of community empowerment (Plummer et al., 2012), inclusive decision making (Berkes, 2009; Borrini-Feyerabend et al., 2013; Jentoft, 2000; Sandström et al., 2014), and improves the well-being of local people who impact and are impacted by wildlife (Chen et al., 2012; Ming’ate et al., 2014). Therefore, many modern PA management models, like the Buffer Zone (BZ) program, focus on benefit-sharing and involving locals in decision-making to improve park-people relationships (Ervin et al., 2010).

In the BZ program, inhabited areas, either inside or outside a PA, are designated BZs to provide additional protection to the PA’s core area (Vaso, 2013). And a portion of the income from PA (i.e., park revenue) to help improve the livelihood and meet the developmental needs of communities impacted by PA within the BZ (Ebrecht & De Greve, 2000). In particular, park revenue-sharing (PRS) is a major feature of BZ programs implemented in several nations (Borrini-Feyerabend et al., 2013; Munanura et al., 2016; Mwakaje et al., 2013; Queiros & Mearns, 2019; Schnegg & Kiaka, 2018). So, when communities receive a portion of park revenue, they realize the PA’s tangible benefits and also develop a higher appreciation for conservation (Ahebwa et al., 2012; Alexander, 2000; Bauer, 2003; Chandralal, 2010). In addition, access to decision-making regarding conservation and development in and around a PA empowers local communities and makes them feel like a part of PA governance. The communities within BZ, however, allow increased authority and oversight of PA managers in their communities, especially on matters related to natural resources (e.g., stone, sand query) use and land use activities with potential impact on PA.

Furthermore, local communities’ perception is highly influenced by the costs/burdens and benefits they experience from introduced programs such as BZ (Htun et al., 2012; Xu et al.,
Whether and how locals perceive the benefits and associated regulatory restrictions such programs introduce may influence their feelings and attitude toward PA. For instance, several studies show that when residents perceive benefits in improved awareness, infrastructure, income-generating training, and tourism, their attitudes towards PA staff were positive; but when they suffered burdens (e.g. wildlife damage), their attitudes towards PA staff were negative (MacKenzie et al., 2017; Shahi et al., 2023). MacKenzie et al. (2017) also highlighted that to understand the local residents’ perception of benefits and burdens over time we must study their attitude and behavior changes.

In addition, local residents’ perception of the park-people relationship since the BZ program’s implementation may also be influenced by knowledge, trust, and satisfaction with the implemented programs as well as involved stakeholders. Although many PAs around the world have adopted the BZ or PRS approaches, the effectiveness of such programs in reducing park-people conflict or improving park-people relationships is still unclear (Dhakal & Thapa, 2015; Lamichhane et al., 2019; Silwal et al., 2022). Understanding whether and how local people perceive the benefits and burdens of such programs and how that relates to their perception of change in the park-people relationship is important in identifying effective benefit-sharing strategies (Swemmer et al., 2015). Wider adoption of park benefit sharing policies like the BZ program will require evaluating how local residents from PAs that currently implement such programs perceive the value (S. Snyman & Bricker, 2019; Tumusiime & Vedeld, 2012).

Therefore, this study aims to assess local residents’ perception of the benefits and burdens of the BZ program and to evaluate whether and how benefits and burdens relate to the perceived change in the park-people relationship.
4.3 Methodology

4.3.1 Study area

Nepal is a biodiversity-rich country, with PAs covering about 23.23% of the country’s total area (Government of Nepal, 2014). The country is divided into three horizontal geographical regions: the Himalayas in the North, Hills in the middle, and Terai in the South. There are twelve national parks, one wildlife reserve, six conservation areas, and one hunting reserve. Currently, the BZ program is implemented in twelve national parks and one wildlife reserve. These PAs cover a broad landscape and preserve Nepal’s rich flora and fauna. For this study, six PAs (five national parks including Bardia, Chitwan, Langtang, Rara, and Sagarmatha and one wildlife reserve (Koshi Tappu) were chosen to ensure representation from various physiographic locations, the size of their BZs, the annual flow of tourism revenue, and years since the BZs were established (Figure 4.1).

Like any other biodiverse country in the world, Nepal is also facing the issue of severe human-wildlife conflict. To mitigate the conflicts between humans and wildlife and promote wildlife conservation, the Government of Nepal added the BZ program in their fourth amendment of the National Park and Wildlife Conservation (NPWC) Act 1996. The BZs in Nepal are managed through the BZ Management Regulations (1996), which provide a framework with three-tier BZ institutions: BZ User Groups (BZUG), BZ User Committees (BZUC), and BZ Management Committee (BZMC) (Figure 4.2). The BZUGs work at the local/settlement level and comprise local community members who are elected to represent their respective settlements. These groups are responsible for managing the BZs in their respective areas. The BZUCs comprise representatives from the BZUGs within the sector and are
Nepal’s BZ program is a crucial component of their conservation efforts, aimed at managing and protecting the BZs surrounding PAs and promoting the areas’ sustainable use of natural resources. In particular, the BZ program includes revenue sharing, which provides 30%-50% of the PA’s revenues (i.e., BZ fund) to local communities living in the BZ (Sharma, 2001). The BZ guideline, per the NPWC Act, requires the BZ funds be allocated to five separate areas of conservation and development within the BZ: conservation (30%), community development (30%), income generation and skill development (20%), conservation education (10%), and administration (10%). As part of the BZ program, park managers are given regulatory oversight within BZ communities for conducting anti-poaching activities, governing natural resources (e.g., river sediment, sand) extraction, partially restricting land use (particularly those adversely impacting the PA), and regulating businesses related to forest products (e.g., sawmills). Even though the revenue-sharing program has created incentives to encourage local people in conservation activities, the human-wildlife conflict and park-people conflict remain an ongoing issue across the PA system. This contrasting evidence suggests that more investigation is necessary to understand the contribution of revenue-sharing policy governance of PA.
Figure 4.1 Location of Nepal's 13 PAs, with six PAs selected for this study, highlighted in dotted circles

Table 4.1 Number of Households (HHs) in our study areas

<table>
<thead>
<tr>
<th>PAs</th>
<th>Number of HHs</th>
<th>Physiographic Region</th>
<th>Annual Tourism Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sagarmatha National Park</td>
<td>1,619 (2016)</td>
<td>Mountain</td>
<td>High</td>
</tr>
<tr>
<td>Langtang National Park</td>
<td>14,963 (2018)</td>
<td>Mountain</td>
<td>Moderate</td>
</tr>
<tr>
<td>Rara National Park</td>
<td>2,548 (2021)</td>
<td>Mountain</td>
<td>Low</td>
</tr>
<tr>
<td>Chitwan National Park</td>
<td>54,155 (2022)</td>
<td>Lowland</td>
<td>High</td>
</tr>
<tr>
<td>Bardiya National Park</td>
<td>26,117 (2022)</td>
<td>Lowland</td>
<td>Moderate</td>
</tr>
<tr>
<td>Koshi Tappu Wildlife Reserve</td>
<td>14,865 (2018)</td>
<td>Lowland</td>
<td>Low</td>
</tr>
</tbody>
</table>

Data source: Individual reports and management plan of each PA
Figure 4.2 The three-tier organizational structure of BZ institutions
4.3.2 Data collection

Since this study involved assessing local resident perceptions of the BZ program’s benefits, burdens, and contributions, a survey of households (HH) within the BZ was conducted in HHs living within the BZ of six PAs to assess local residents’ perception of temporal change in human-wildlife conflict incidences and park-people relationship. A ten-page questionnaire was developed to measure residents’ perception of change in human-wildlife conflict and the park-people relationship by asking how they perceived changes in various conflict indicators. Their beliefs and attitudes regarding BZ funds’ use were measured by asking them to indicate their level of agreement with a series of statements that characterize their experience and satisfaction with the PRS and BZ program. The initial survey was developed in English and then translated into the local language (Nepali) to make it convenient for the field enumerators to read or interpret to the local residents. Three bilingual research team members confirmed the accuracy of the translation. The survey pretest was done in 29 HHs of three PAs in late April 2022. After the pretest, the enumerators’ feedback was collected and incorporated during the revision. Considering the literacy rate among the rural residents in Nepal and the difficulty of accurately and precisely measuring for the survey, a 3-point scale was deemed more appropriate than higher point scale questions. The HH survey conducted in the summer and fall of 2022 collected data from 2,122 HHs selected with a stratified random sampling approach, with 75% of the respondents from within 1km of the PA boundary and the remaining 25% from beyond 1km from the PA boundary. Studies have shown that 75% of human-wildlife conflict incidences occur within 1km from the PA (Silwal et al., 2017).
4.3.3 Multivariate regression model

Since the study’s objective was to evaluate whether and how benefits and burdens relate to the perceived change in the park-people relationship, a multivariate regression model was estimated with the data collected from the survey. Measures of the park-people relationship were regressed against perceived benefits and burdens in different regression models. A conceptual model explaining the perceived change in the park-people relationship was specified as:

\[
\text{Perceived change in park-people relation} = f(\text{benefits, burdens, knowledge of BZ fund purpose, institutional coordination, damage history, geographic region, education})
\]

Eq. (1)

**Dependent variable**

The perceived change in the park-people relationship was characterized in terms of how the resident feel about recent trends in- (a) the positive attitude of residents towards park authority and (b) the number of neighbors upset with the park staff. The respondents were asked to indicate how they believe “*The positive attitude of local people towards the park staff*” and “*The number of neighbors upset with the park authority*” have changed over the past ten years using a 5-point Likert scale (1- decreased greatly, 5- increased greatly). Job et al. (2021) pointed out the variation in literature in terms of how the park-people relationship is conceptualized and argued that it remains a complex construct representing local people’s perception of acceptance/rejection as well as attitudes towards the park. As such, these statements measure the attitude of local people towards PA and characterize the park-people relationship. These two statements capture two related but different aspects of the park-people relationships. The first statement captures the perceived change in attitude, whereas the second one characterizes the perceived feeling of local people towards the park staff.
These ordinal response variables were the dependent variables in the generalized bivariate ordinal logit regression model and independent ordered logit model. It should be noted that even though the BZ program was initiated more than two decades ago in many PAs, the ten-year period was specified to ensure that the respondents are given a reasonable time frame for accurately recalling incidences and perception of trends. In addition, capturing data with the most recent period will be more important for analysis as this may reflect what is happening currently. Finally, impacts may not have been experienced in the early years of PAs with a longer history of BZ program implementation.

**Independent variables**

The following subsections describe the independent variables mentioned in equation (1).

1. **Benefit**: Respondents' perception of the benefits of BZ was measured using two variables: Personal and Community. For Personal benefits, the respondents indicated their level of agreement with statement, “My family members have benefitted from the BZ program” and for Community benefits, they indicated with the statement, “BZ funds have benefitted my community.” The response categories included 1(Disagree), 2(Neutral), 3(Agree), 4(Don’t know). Responses with ‘Don’t know’ were excluded from the analysis because including information from people who are unaware would not contribute to our objective of analyzing how the perception of benefits and burdens related to a perceived change in park-people relationships. For both variables, a positive relationship was predicted with the positive attitude of local people towards the park staff (Shahi et al., 2023) and a negative relationship with the increase in the number of neighbors upset with the park authority.
2. **Burden**: Respondents’ perception of the burden associated with the BZ program and laws were explored with the statements, “The perceived extent to which BZ laws have added complication to the utilization of natural resources” and “BZ laws have been an obstacle to the development and growth of my village.” The former statement was measured with a four-point scale ranging from 1- Not at all, 2- A little, 3- A lot, 4- Don’t know; the latter was measured by 1- Disagree, 2- Neutral, 3- Agree, 4- Don’t know. The data with ‘Don’t know’ responses were removed from the analysis for the reason described previously. Each item was added as a separate variable as Complication and Obstacles. A positive relationship was expected for the increase in the number of neighbors upset with the park authority and a negative relationship for the positive attitude of local people towards the park staff (Shahi et al., 2023).

3. **Knowledge of BZ fund purpose**: Knowledge of fund purpose was examined with the statement, “Based on your understanding of BZ funds, do you believe this fund is provided for compensation to the HHs agented by wildlife?” A dummy variable was created as Knowledge=1 if the respondents believed that the BZ funds were to be used to compensate HHs for wildlife-related damage and 0 otherwise. This variable was added to the model because misbeliefs and misunderstanding about the fund’s purpose for being shared with the communities can impact how they perceive the benefit. Since the current guidelines of BZ funds do not have a provision of using this fund to pay for wildlife damage loss, this variable is expected to have a negative relation with the perceived increase in the positive attitude of local people towards the park staff.
and a positive relation with the perceived increase in the number of neighbors upset with the park authority.

4. **Institutional coordination**: Respondents were asked to indicate their level of agreement with the statement, “Satisfactory coordination between the park and local government about BZ law enforcement.” Responses ranged from “1- Disagree” to “3-Agree” and “4- Don’t know”, and it was represented by institutional coordination. Similar to the benefits and burden variables response, observations with ‘Don’t know’ responses were excluded. Respondents who expressed satisfaction with park-government coordination are more likely to have a positive attitude towards the park authority. Therefore, a positive relationship was expected. In addition, it may have a negative relationship with the increase in the number of neighbors upset with the park staff.

5. **Damage history**: Respondents were asked about their experiences of loss due to wildlife damage in the recent past (i.e., the past two years). Based on their response, a dummy variable was created: Damage = 1 if they experienced damage, and 0 otherwise. Since a recent damage history could have an impact on their attitude towards the park and perception of the park-people relationship, this variable was included as a control variable in the model. It was hypothesized that this variable would be negatively related to a perceived increase in the positive attitude of people toward park authority and positively related to a perceived increase in the number of upset neighbors.
6. **Geographic region**: Since the park-people relationship can vary among geographic regions due to variations in many aspects, including the size of BZ funds shared with local communities, activities conducted by external conservation partners, the extent of human-wildlife conflict involved, a dummy variable (Terai) was created to control for those differences. This variable was coded 1 if the respondent was from one of the three PAs in the terai (lowland) region and 0 if they were from one of the three PAs in the mountains. PAs in terai and the mountains are different because of differences in accessibility, the population of wild animals involved in conflicts, urban development pressure, etc. While human-wildlife conflicts are relatively less in mountain PAs, revenues are generally higher in the lowland Terai parks due to tourism activity. Consequently, residents receive a higher share of buffer zone allocations from the park. Therefore, we could not predict the sign of this variable.

7. **Education**: The level of respondent education was used as a control variable because education may play a role in people's knowledge of park-people relationship trends and impact how people perceive the value of PAs and the extent of park-people relationship trends. This variable was measured using six levels of education ranging from 1- No education at all, 2- Literate, 3- Some schooling, 4- High School, 5- Some college-level education, and 6- A college degree. The residents who have higher levels of education may be more likely to have a positive attitude towards park staff (Karanth & Nepal, 2012; Shahi et al., 2023), so a positive relationship was expected, and they would be less likely to be upset towards the park staff, so a negative relationship was expected with the increase in the number of upset neighbors.
4.3.4 Model estimation

The regression model was estimated in two ways. First, two individual models were separately estimated using ordered logit regression (ologit command in Stata 16.1). The ordered logit is an appropriate estimator because the dependent variable includes ordinal data measured on a 5-point Likert scale (Vaske, 2019). Second, in order to examine the sensitivity of results to assumptions made about the independence of two equations, a generalized bivariate ordinal logit regression analysis was performed. Two strongly related items (e.g., attitudes and feelings of local people toward park staff) with implications in understanding the underlying theoretical concept (e.g., park-people relationship) can be jointly studied (Hernández-Alava & Pudney, 2016). The “bicop” package written by Hernandez-Alva and Pudney (2016) allows for nonnormality in residual distribution and accounts for complex forms of dependence in a generalized model as:

\[ Y_{i1}^* = X_{i1}\beta_1 + U_i \]  \hspace{1cm} (2)

\[ Y_{i2}^* = X_{i2}\beta_2 + V_i \]  \hspace{1cm} (3)

Where \( Y_{i1}^* \) and \( Y_{i2}^* \) are dependent variables, \( X_{i1} \) and \( X_{i2} \) are the same or different independent variables, \( \beta_1 \) and \( \beta_2 \) are conformable column vectors of coefficients, and \( U_i \) and \( V_i \) are unobserved residuals that may be stochastically dependent and non-normal. A list of variables, their description, and summary statistics are presented in Table 4.2.
Table 4.2 Description of variables used in regression model explaining the perceived change in park–people relationship

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Expected relationship with dependent variables</th>
<th>Summary statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Increase in upset neighbors</td>
<td>Positive attitude toward park</td>
<td>Mean (standard deviation)</td>
</tr>
<tr>
<td>Personal benefits</td>
<td>Reported agreement with “I or my family members have benefitted from the BZ funds/program”</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Community burdens</td>
<td>Reported agreement with “BZ funds have benefitted my community”</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Obstacles</td>
<td>Reported agreement with “BZ laws have been an obstacle to the development and growth of my village”</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Complication</td>
<td>Perceived impact of BZ programs in “Adding complication to the utilization of natural resources in BZ”</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Respondents understanding of the purpose of BZ fund (1- if they believe it is given for providing compensation to wildlife victims, 0 otherwise)</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Institutional coordination</td>
<td>Perceived satisfaction of coordination among BZ and other local institutions about BZ law enforcement</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Damage</td>
<td>A dummy variable indicating whether they experienced a loss due to wildlife damage or attack in the past two years</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Geographic region (Terai)</td>
<td>A dummy variable indicating whether the respondents was from a PA in Terai (lowland) region</td>
<td>+/-</td>
<td>+/-</td>
</tr>
<tr>
<td>Education</td>
<td>An ordinal variable representing the level of education (1- no education at all, 6-college degree)</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>
4.4 Results

4.4.1 Respondents characteristics

Of the 2,122 respondents, 57% were from the PAs in Terai (i.e., lowland) region (419 from BNP, 395 from CNP, 399 from KTWR), and the other 43% were from the PAs in the mountain region (308 from LNP, 297 from RNP, 303 from SNP). In terms of demographics, slightly more than half (54%) were male, and nearly all (90%) were native to the region (i.e., born). The average age was 44 years. About 72% indicated they had damage from wildlife within the past two years. In terms of ethnicity, 32% self-identified as from the minority community or socially marginalized groups, including Dalits (i.e., so-called untouchables) and indigenous groups (Bote, Mushaahar, Tharu). The remaining 68% included Brahmins, Chhetri, and Janajati, which are often considered in the majority in Nepal’s society. In terms of the most important source of HH income, 44% mentioned farming. Other income sources included daily wage employment (22%), jobs in private agencies (20%), foreign employment (7%), jobs in government offices (4%), and pensions and allowances (4%). Nearly half (47%) of respondents had some formal educational training (i.e., some years of school, high school, some college, college degree), 36% were illiterate (i.e., no education at all), and the remaining 17% were literate (i.e., able to read and write).

4.4.2 Perception of change in park-people relationship

The results from the 5-point Likert scale that was used to understand the perception of change in the park-people relationship showed that most respondents (80%) indicated a slight or great decrease, and very few (5%) indicated a slight or great increase in the number of neighbors upset with the park staff. However, 75% of the respondents perceived a slight or great increase
and 6% perceived a slight or great decrease in the positive attitudes of local communities towards park staff over the period of ten years, indicating an improved park/people relationship in the PAs.

4.4.3 Perception of BZ benefits and burdens

In terms of benefits, 66% of respondents disagreed with personally benefitting from the BZ funds, whereas 26% agreed. For community benefits, an almost equal percentage of respondents agreed (40.2%) and disagreed (39.8%) with their communities receiving benefits from the BZ funds. In terms of burdens, 49.5% of the respondents disagreed with BZ laws being an obstacle to the growth and development of their villages, and 67% of the respondents believed that the BZ programs had added complication to natural resources use.

4.4.4 Regression Models

Estimates of the regression model from an independent ordered logit model and a generalized bivariate logistic regression model are presented in Tables 4.3 and 4.4, respectively. It should be noted that the sample size used in the regression model was 1038 because the “Don’t know” response in some questions removed many observations. Removal of these observations is justified because analyzing whether and how perceived benefits and burdens relate with their perception of changing the park/people relationship needed using responses from only those who were knowledgeable of the program. Wald test of equality of coefficients $\chi^2(9) = 200.208$ ($p = 0.00$) and Wald test of independence $\chi^2(1) = 148.074$ ($p = 0.00$) rejected the null that these equations should not be jointly estimated and therefore justified using the results from generalized bivariate logit model. The results and discussion presented in this manuscript are based on the estimates from this model. The mean value of the variance inflation factor (VIF)
was 1.20, which is well below the critical threshold of 5.0 (Vaske, 2019) and indicates that multicollinearity is not an issue in the model.

Among the perceived benefits variables, the first one representing personal benefits to the respondent, or their family was positively and significantly (p<0.05) related to the perception of an increased positive attitude towards park staff but insignificantly related to the perception of an increase in the number of neighbors upset with the park authority. The second benefit variable representing the perception of community benefits was negatively and significantly (p<0.05) related to a perceived increase in the number of neighbors upset with the park authority. In contrast, this was positively and significantly (p<0.05) related to the perceived increase in the positive attitude of local people towards the park staff.

Among the variables capturing burdens, the first variable representing obstacles of the BZ program to the development and growth of their village was positively and significantly (p<0.01) related to the perceived increase in the number of neighbors upset with the park authority. On the other hand, this variable was negatively and significantly (p <0.05) related to the respondents’ perception of an increase in the positive attitude of local people towards park staff. However, the second indicator of perceived burden, which represented restriction on resource use within BZ, had a positive and significant (p<0.01) sign on the model, explaining an increase in the positive attitude toward park staff.

A few variables other than benefits and burdens were significant, as expected. The knowledge of fund purpose was insignificant in the first model, explaining the perceived increase in the number of neighbors upset with the park authority but negatively and significantly
related to the increase in positive attitudes of local people towards park staff. In other words, the respondents who believed that the BZ funds were provided for compensation to victims indicated a decline in the positive attitude of local people towards the park staff.

As expected, the coefficient on the variable institutional coordination, which characterizes respondents’ satisfaction with the coordination among the BZ institutions, was significant (p<0.01) in both models. It was negatively related to a perceived increase in the number of neighbors associated with the park authority and positively related to an increase in the positive attitude of local people toward park staff. Not surprisingly, the damage history variable was significant (p<0.01), and positively and negatively related to the perceived increase in the number of neighbors upset with the park authority and the positive attitude of local people toward park staff, respectively.

Moreover, the dummy variable denoting whether the respondent belonged to one of the PAs in Terai (lowland) region was positively and significantly (p<0.10) related with their perception of increase in number of neighbors upset with the park authority. The same variable was negatively and significantly (p<0.01) related with perceived increase in positive attitude of local people toward park staff. Finally, the education variable was positively and significantly (p<0.10) related with only the perceived increase in positive attitude of local people towards park staff.
Table 4.3 Results from ordered logistic regression explaining the perceived change in indicators of park-person relationship

<table>
<thead>
<tr>
<th>Variables</th>
<th>Dep. Variable: Perceived increase in number of neighbors upset with the park authority</th>
<th>Dep. Variable: Perceived increase in positive attitude of local people toward park staff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient (Standard error)</td>
<td>Coefficient (Standard Error)</td>
</tr>
<tr>
<td>Benefits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal</td>
<td>0.148* (0.082)</td>
<td>0.224** (0.097)</td>
</tr>
<tr>
<td>Community</td>
<td>-0.178** (0.082)</td>
<td>0.210** (0.089)</td>
</tr>
<tr>
<td>Burdens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstacles</td>
<td>0.477*** (0.074)</td>
<td>-0.509*** (0.080)</td>
</tr>
<tr>
<td>Complication</td>
<td>-0.134 (0.113)</td>
<td>0.369*** (0.123)</td>
</tr>
<tr>
<td>Knowledge</td>
<td>0.052 (0.130)</td>
<td>-1.063*** (0.135)</td>
</tr>
<tr>
<td>Institutional coordination</td>
<td>-0.221** (0.091)</td>
<td>0.458*** (0.085)</td>
</tr>
<tr>
<td>Damage</td>
<td>0.645*** (0.149)</td>
<td>-0.739*** (0.159)</td>
</tr>
<tr>
<td>Geographic region (Terai)</td>
<td>0.248* (0.142)</td>
<td>-0.426*** (0.149)</td>
</tr>
<tr>
<td>Education</td>
<td>-0.053 (0.044)</td>
<td>0.091** (0.045)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>1038</td>
<td>1038</td>
</tr>
<tr>
<td>Wald chi²(9)</td>
<td>96.26</td>
<td>201.45</td>
</tr>
<tr>
<td>Pseudo R2</td>
<td>0.047</td>
<td>0.112</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>1.20</td>
<td>1.20</td>
</tr>
</tbody>
</table>

Note:*** indicates significant at p<0.01; ** indicates significant at p<0.05; * indicates significant at p<0.10
Table 4.4 Results from generalized bivariate ordered logit regression explaining the perceived change in indicators of park–people relationship

<table>
<thead>
<tr>
<th>Variables</th>
<th>Dep. Variable: Perceived increase in number of neighbors upset with the park authority</th>
<th>Coefficient (Standard Error)</th>
<th>Dep. Variable: Perceived increase in positive attitude of local people toward park staff</th>
<th>Coefficient (Standard Error)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal</td>
<td>0.072 (0.047)</td>
<td></td>
<td>0.129** (0.054)</td>
<td></td>
</tr>
<tr>
<td>Community</td>
<td>-0.088* (0.047)</td>
<td></td>
<td>0.106** (0.051)</td>
<td></td>
</tr>
<tr>
<td>Burdens</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstacles</td>
<td>0.265*** (0.043)</td>
<td>-0.247*** (0.044)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complication</td>
<td>-0.095 (0.061)</td>
<td>0.171*** (0.064)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>0.007 (0.075)</td>
<td>-0.604*** (0.079)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutional coordination</td>
<td>-0.1344*** (0.049)</td>
<td>0.259*** (0.047)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damage</td>
<td>0.375*** (0.087)</td>
<td>-0.404*** (0.092)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geographic region (Terai)</td>
<td>0.131* (0.078)</td>
<td>-0.238*** (0.084)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>-0.0236 (0.025)</td>
<td>0.0481* (0.026)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of observations</td>
<td></td>
<td></td>
<td></td>
<td>1038</td>
</tr>
<tr>
<td>Wald chi² (9)</td>
<td></td>
<td></td>
<td></td>
<td>244.31</td>
</tr>
<tr>
<td>VIF</td>
<td></td>
<td></td>
<td></td>
<td>1.20</td>
</tr>
</tbody>
</table>

Note: ***indicates significant at p<0.01; **indicates significant at p<0.05; *indicates significant at p<0.10
4.5 Discussion

The results of the study showed that the perceived personal or community benefits received from the BZ programs by the residents led to their positive attitude towards the park authority and a decrease in the number of residents being upset with the park, both of which are the indicators of the improved relationship of the local people with the park. This unpredicted relationship might be because receiving personal benefits does not directly impact the number of other community members being upset with the park authority. Even though not exactly in the context of BZ or PRS programs, this evidence corroborates the findings related to many other studies that analyzed the benefits and costs of living near PAs with the attitude toward PA (Abukari & Mwalyosi, 2020; Allendorf, 2020; Bennett, 2016; Shahi et al., 2023; S. (Sue) Snyman et al., 2023; Spiteri & Nepal, 2008). In the context of Nepal’s BZ program, it is possible to connect these perceived benefits and improved attitudes of local people with the programs implemented by not only the BZ institutions that receive BZ funds for community development but also the external funds brought into BZ by various conservation organizations such as the National Trust for Nature Conservation, WWF Nepal, CARE Nepal, and Zoological Society of London. As Onyango and Ipara (2015) point out a positive attitude toward park authority implies strong local cooperation in PA management, and therefore prioritization of fund allocation and designing of BZ activities should focus on benefiting the locals (Lamichhane et al., 2019). In addition, results from our study suggest that it is not only the personal benefit, but the benefit realized by the community can also significantly and positively contribute to improving the park–people relationship. Since BZ funds are usually too small to produce meaningful, substantial benefits for every resident HH, funding projects of the community’s interest (i.e., projects that
generate benefit to the entire community) may still be impactful in helping locals realize the benefit of PA and improving park–people relationship (Lamichhane et al., 2019; MacKenzie, 2012; S. Snyman & Bricker, 2019; Tumusiime & Vedeld, 2012). It is important to note that 83% of the respondents in our survey indicated that BZ funds are too little to generate meaningful benefits for the locals, and 44% agreed that regardless of the benefits to their HHs, BZ funds positively contribute to conservation. Taken together, this evidence suggests that despite acknowledging the rather small amount of BZ funds given to their community, local people do perceive the benefits of BZ funds and programs, and that perception contributes positively to shaping their positive relationship with the park.

The results also indicated that certain aspects of BZ programs are perceived by local people as burdens, which had a negative impact on the park–people relationship. This perceived burden, specifically in terms of BZ-related regulations limiting the development and growth of their communities, can be detrimental to receiving support from the local communities for PA management. In many cases, local people do not have an accurate understanding of government policy and programs, which creates misunderstanding about the scope of regulatory impacts. A barrier in perception is considered a major issue in community acceptance of PA (Job et al., 2021). For example, in this study, we found that many local residents misunderstood the primary purpose of BZ funds given to their community. Therefore, outreach and education programs should be conducted to inform local communities of the benefits provided by the BZ and PRS programs and demonstrate how the benefits outweigh the potential burdens in the long term. Results from a comparative study between Ghana and Tanzania presented that when local residents have an accurate understanding of the rules and regulations of the PAs, they tend to
realize the benefits to their livelihood (Abukari & Mwalyosi, 2020). Nonetheless, since BZ programs do have restrictions on major development projects, transportation of wood and wood-based productions, and operation of the forest-based industry within the BZ area, programs like this may see higher public acceptance if those restrictions were relaxed where practical. Counter to our expectation, the other measure of perceived burden (i.e., restriction on resource use) was positively related to the perceived increase in the positive attitude of local people towards the park staff. A possible explanation for this observation is that the resources of reference, in this case, are mainly debris wood, sand, and gravel collected from rivers and streams within BZ, which are often illegally collected by smugglers or over-extracted by licensed contractors. As a result, locals believe the BZ program has allowed park authority to protect this (Joshi et al., 2021; Shova & Hubacek, 2011). Protection of rivers and streams from the haphazard and uncontrolled query may be seen as a benefit (rather than a burden) by many people because this can keep their community from the danger of floods, landslides, etc. In this sense, it is possible that our characterization of this variable as a burden of the BZ program may not be totally accurate.

Results also indicated that the respondents who had an incorrect understanding of the purpose of BZ funds tended to express a decreased positive attitude of local people towards the park. This evidence implies that more education and outreach programs may be necessary to educate the public on the purpose of the BZ funds. If local people continue to believe the legal provision of the BZ funds is to provide relief for the damage, and they do not see that happening, the park–people relationship may be jeopardized. When the local residents have clarity on the objectives of the PA, they tend to form more positive attitudes toward park staff and show
support for PA management (Htun et al., 2012; MacKenzie, 2012). It should be noted that the public outrage over misconception and an unclear message about the extent of regulatory oversight on private land use within BZ has been a major hurdle in securing local support for establishing the BZ program in Dhorpatan Hunting Reserve in Nepal (Chalise, 2023).

Respondents' perception of the coordination between the park and local government in enforcing BZ laws seems to significantly impact their perception of the improved park-people relationship. Those who were satisfied with the coordination between these institutions perceived an improved relationship between the park and people over the years. PAs and local government units (e.g., rural municipality, metropolitan) are two institutions with contrasting mandates (conservation vs. development), level of government (federal vs. local), and leadership structure (elected leaders vs. bureaucrats) (Pokharel, 2022). Because of this difference, inter-institutional coordination is essential for effective law enforcement and utilization of BZ funds. The perceived importance of coordination between these institutions is also evident in the fact that recently adopted federalism has created confusion and conflicts in the jurisdiction of governance of natural resources within BZ. This development has led to lawsuits and has been a hurdle in program implementation in some PAs (Thakali et al., 2018). The Local Government Operation Act of 2017 has authorized local government units to regulate the extraction of natural resources within BZ and the collection of revenue from contracting and permitting, which was already given to PA authority under the existing regulation regarding BZ management (Thakali et al., 2018). Since maintaining effective coordination among different stakeholders at the local level is key to successful conservation (Mannigel, 2008), resolving the discrepancy between old and
recently enacted laws and clarifying the jurisdictional differences between these institutions becomes a necessary step.

Also, experiencing damage from wildlife in the recent past was related to a perceived increase in the number of neighbors upset with the park authority and a decrease in the positive attitude of local people toward the park staff. While a loss or damage alone could be sufficient for their negative perception, lack of fair compensation for the loss being claimed or the slow and inefficient process of receiving compensation may also contribute to their negative perception towards the park (Mir et al., 2015). In a related question, more than two-thirds of the respondents who had damage indicated dissatisfaction with the compensation or relief. Several other studies in Nepal and elsewhere have reported that slow, inefficient, and complicated compensation processes have negatively impacted local attitudes toward PAs (Anthony, 2007; Lamichhane et al., 2019; Spiteri & Nepal, 2008; Xu et al., 2006). If improving the park-people relationship is one of the primary goals of sharing BZ funds, adopting a straightforward and efficient process and allocating some funds from BZ funds for compensation, which is not the case under current guidelines, may be necessary (Lamichhane et al., 2019). This is because damage from wildlife remains the central issue causing bad park-people relationships, and unless this issue is addressed, the relationship may not be improved regardless of how much BZ funds are given to communities for development projects.

The results showed a regional difference in residents’ perception of park-people relations over the years. Compared with their counterparts in mountain PAs, respondents in the PAs of the Terai region were more likely to report that number of neighbors upset with the park authority has increased and positive attitude toward the park staff has decreased over the years of BZ
program implementation. This can be attributed to the fact that most of the PAs in the Terai region happen to be the home of wild animals such as tigers, elephants, and one-horned rhinoceros. These animals are highly involved in significant conflicts with humans, such as killing humans, damaging houses/sheds, and destroying crops, and are thus more threatening to humans than smaller wild animals such as porcupines, monkeys, and red pandas commonly present in the Himalayan region.

Finally, as expected, the respondents with higher education reported perceiving an increase in positive attitudes of local people toward the park staff. Various studies show that the respondents with higher levels of education perceived more benefits of PA than their less educated counterparts (Htun et al., 2012; Xu et al., 2006). And people with higher education are more aware of the value added by BZ funds and other programs conducted within their community and better able to recognize the improved communication between park and people since the BZ program was implemented. In addition, some with appropriate skills may even have received job opportunities (Xu et al., 2006).

4.6 Management Implications and Conclusion

This study assessed how residents living around PAs perceive the benefits and burdens of BZ and PRS programs, which are designed to share the benefit of PA with local people and improve park/people relationships. The findings have several implications for understanding the value of such programs in enhancing PA governance and improving park/people relationships. First, while not all residents are fully aware of the benefits and burdens, those who are knowledgeable appreciate its benefits to their community and recognize the burdens associated
with it. Second, local residents around PAs recognize the improvement in park-people relationships over the years since the BZ program is implemented. Third, the perception of benefits from BZ funds at the personal and community level contributes to improving the park-people relationship, whereas the perceived burden (in terms of limit in growth and development) and misbeliefs about the purpose of the BZ funds negatively impact their relationship. Taken together, these findings suggest that managers may see benefits in educating the local people on the purpose of BZ funds, highlighting the benefits of BZ programs, and, to the extent practical, relaxing laws/regulations that limit development. Fourth, since damage experience negatively impact their attitude towards the park and providing relief is not the focus of current BZ fund guidelines, improving park-people relation may require revising the PRS approach to allocate funds for providing relief to wildlife victims. Finally, considering the importance of coordination between the park and other institutions, it appears that the effectiveness of programs like BZ can be increased by fostering local-level coordination between PA staff and other institutions (BZ institutions and local government) in enforcing laws and implementing programs funded through BZ funds. Doing so will help garner local community support for effective PA management in Nepal and develop similar strategies to improve the park-people relationship in PAs worldwide.
References


Appendix

Appendix 2: Questionnaire used for household survey

Buffer Zone Household Survey on Park Revenue Sharing and Human-Wildlife Conflict 2022

Section A: HH Profile and Personal Background

Interview #: _______  Date: __MM/DD _______  PA: ________________

Village: ________________  Strata: <1 km.  >1 km.  Gender: __M/F__

Ethnicity: _Brahmin/Chhetri  _Janajati  _Bote/Musahar /Tharu  _Dalit  _Other minorities

Age: ________ years  Roof type:  _Concrete  _Zink  _Wood  _Thatch/straw

Age: ________ years  Roof type:  _Soil  _Stone  _Others

A1. Are you native to this region?  Yes  No

1.1 If not, in which year you started living in this village? __________(YYYY)

A2. Which of the following best describes your education level

☐ No education at all  ☐ Literate  ☐ Some school  ☐ High school  ☐ Some college

☐ College degree

A3. How many people are in your family: Total______, Children (under 16): ______

A4. What is the household’s most important source of income? (Check One)

☐ Farming  ☐ Jobs in government offices  ☐ Pensions, allowances

☐ Jobs in private agencies  ☐ Daily wage employment  ☐ Foreign Employment

A5. How much land does your family currently own in this area?

Terai:  ______Bigha  ______Kathha

Hills:  ______Ropani  ______Aana

A6. Does your farm grow enough to feed your family for the year? ___Yes, ___ No Only for ____ Months

A7. Do you own livestock? ____ Yes  ____ No

A8. If yes, how many livestock do you own? ______Cattle  ______Goat/sheep

A9. Does your farm/pasture produce enough forage for your cattle? __Yes, __No: only for ____ Months

A10. Is your household a member of the BZ community forestry user group? __ Yes, __ No
### Section B: Perceived Benefits and Costs of Living Near the Park

#### B1. To what extent do you think your household benefits from the following resources of the national park?

<table>
<thead>
<tr>
<th>Resource</th>
<th>Not at all</th>
<th>A little</th>
<th>A lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of resources (e.g., firewood, food, fodder) for extraction</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Ecosystem services (e.g., environment, no pollution, no noise, aesthetic)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Recreation (e.g., visiting the park, safari)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Community development through park-funded activities (e.g., road development, school, community building)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Business opportunity (e.g., selling produce, handicrafts, poultry, vegetable farming)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Preservation of endangered species (e.g., tiger, elephant)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Employment opportunities directly or indirectly supported by the park (e.g., Park, hotel, tourism)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

#### B2. To what extent do you believe your household has been impacted by the following for living near the national park.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Not at all</th>
<th>A little</th>
<th>A lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prohibition of extracting resources (e.g., firewood, food, fodder)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Damage to crops or livestock by wildlife</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Attacks on humans by wildlife</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Dispute with park officials (e.g., staff, law enforcement)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Park-related laws impacting everyday life (e.g., traveling, moving goods)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Park-related laws impacting private business (e.g., mining, fishing)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Park-related laws impacting land use activities (e.g., cutting trees, small saw-mill, hauling furniture, land development)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

#### B3. Please indicate your agreement with the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>The presence of a national park makes this place very special to me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>□</td>
</tr>
<tr>
<td>Living near the park always involves some level of risk of damage/attack from wild animals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>□</td>
</tr>
<tr>
<td>Despite the occasional attack on humans and damage to property, wild animals are worth protecting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>□</td>
</tr>
</tbody>
</table>
National Park contributes significantly to the development of my community  

1  2  3  □

I am willing to tolerate the fear of attack by wild animals  

1  2  3  □

My family is capable of absorbing the occasional damage/loss caused by wild animals  

1  2  3  □

B4. Which of the following statements best describes your view regarding how national park management should take wildlife and human concerns into management consideration? (CHECK ONE)

_1_ The highest priority should be given to the local people, even if it hurts the wildlife

_2_ Both the people and the wildlife are important but the people should come first

_3_ Both the people and the wildlife are important but the wildlife should come first

_4_ The highest priority should be given to protecting the wildlife, even if it hurts local people

Section C: Perceived Change in Wildlife Populations and Human-Wildlife Conflicts

C1. Over the past 10 years, how do you think the following has changed?

<table>
<thead>
<tr>
<th></th>
<th>Decreased greatly</th>
<th>Decreased slightly</th>
<th>No change</th>
<th>Increased slightly</th>
<th>Increased greatly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local people enter the park to extract resources</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sighting of wild animals inside the park</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sighting of wild animals outside the park</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Attacks on livestock by wildlife</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Damage to crops by wildlife</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Attacks on humans by wildlife</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Use of poisons/traps in farms</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Poaching activities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Arrests by park authority/ law enforcement</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Number of neighbors upset with the park authority</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Perceived importance of the park among local people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
The positive attitude of local people towards the park staff | 1 | 2 | 3 | 4 | 5

C2. Over the past ten years, how do you think the wild animal’s activities (attack, damage) changed in your village (i.e. outside the park boundary)?

☐ Decreasing, go to C4  ☐ No change, go to C5  ☐ Increasing, go to C3

C3. Which of the following are the reasons for the increase in wildlife sightings in yours?

<table>
<thead>
<tr>
<th>Reason</th>
<th>Not a reason</th>
<th>Minor reason</th>
<th>Major reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>The overall increase in wildlife population over the years</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Declining habitat conditions inside the park</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Expanded habitat in new forests (e.g., community forests, plantations) outside the park</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Increase in abandoned farmlands outside the park</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Other………………………</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Go to C5

C4. Which of the following are the reasons for the decrease in wildlife sightings in your village)?

<table>
<thead>
<tr>
<th>Reason</th>
<th>Not a reason</th>
<th>Minor reason</th>
<th>Major reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>The overall decline in wildlife population over the years</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>The decline in forest and habitat outside the park</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Improved habitat conditions inside the park</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Other………………………</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Go to C5.

C5. Over the past 5 years, how frequently have you or anyone in your family had the following experience incidences caused by either the wild animals or the park staff?

<table>
<thead>
<tr>
<th>Incidence</th>
<th>Never (0 times)</th>
<th>Rarely (Once in a few years)</th>
<th>Occasionally (once each year)</th>
<th>Frequently (&gt; 1 time each year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal attack on humans/livestock</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Damage to crops, property by wildlife</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Dispute with park staff/administration</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

C6. If you experienced a loss due to wildlife damage or attack in the past two years, are you satisfied with the compensation provided?
Section D: Buffer Zone Program and Buffer Zone Fund

Many years ago, the government designated the villages surrounding the NP as the Buffer Zone (BZ). Under this program, villages designated as BZ observe some restrictions on land use (e.g. tree harvesting, query, mining, gravel/stone extraction, etc.), and a certain portion of park income (BZ funds) is provided to those villages to help promote conservation and development activities, including income generation, conservation, community development, etc.

D1. Before hearing this, how familiar were you with the following?

<table>
<thead>
<tr>
<th>Did not know anything</th>
<th>Heard of it but did not know the specifics</th>
<th>Somewhat familiar</th>
<th>Mostly familiar</th>
</tr>
</thead>
<tbody>
<tr>
<td>BZ as a government program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provision of BZ funds shared with local communities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allocation of BZ funds among the headings (e.g., community development, conservation, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The operational process of BZ funds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory control of development/land use activities inside the BZ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People that represent residents in BZ institutions (UG, UC, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge of people or projects benefitted from BZ funds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D2. Based on your understanding of BZ funds, do you believe this fund is provided for compensation to the households agented by wildlife?

- Yes
- No
- Not sure

D3. Please indicate your agreement with the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most people in my village are aware of BZ funds</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>BZ fund is too little to generate meaningful benefit for the locals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Not at all</td>
<td>A little</td>
<td>A lot</td>
<td>Don’t know</td>
</tr>
<tr>
<td>-----------------------------------------------------------------</td>
<td>------------</td>
<td>---------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>I (or my family member) have benefitted from the buffer zone funds/programs (e.g., training, IGA, soft loan)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Buffer zone funds have benefitted my community</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BZ funds have been allocated to benefit those who are impacted the most by wild animals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BZ funds have been utilized wisely among activities (e.g., conservation, development)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Sharing of BZ funds among user groups is unfair</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BZ funds have benefitted worthy projects and people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Regardless of the amount of BZ funds given to local communities, the BZ program positively contributes to conservation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Local people have reasonable control in decisions over how to prioritize spending of BZ funds</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BZ funds should be used to compensate for wildlife damage than for funding development projects</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

D4. To what extent do you think the BZ program has contributed in the following areas:

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>A little</th>
<th>A lot</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raising conservation awareness among the local people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mobilizing local community organizations in conservation programs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Conserving forests and other natural resources (e.g., river bank) in BZ</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Fulfilling household needs of forests (e.g., firewood, fodder)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Fulfilling household needs of other natural resources (e.g., gravel, stone, etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Reducing local dependence on park resources</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Promoting community development</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Compensating victims of wildlife attack/damage</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Compensating victims of river cutting/landslide victims</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Enhancing livelihood options for BZ residents</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Helping locals realize the importance of the national park</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Improving the relationship between the park and local people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Adding legal hassles to private landowners</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Adding complication to the utilization of natural resources (e.g., debris wood, stream sediment query, etc.) in BZ</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
D5. Please indicate your agreement with the following statements about BZ institutions (Council, UC, UG) and the BZ funds allocations.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>I trust the people in the BZ institutions to make decisions that are best for the people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>I have confidence in the people in BZ institutions to prioritize BZ funds for the people needing the most</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>I trust park staff and the BZ council to work together in reducing human-wildlife conflict</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>I am satisfied with the way BZ funds are utilized</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Most people in my village believe the BZ funds are used wisely</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Most people in my village appreciate the community development projects funded by the BZ funds</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Most people in my village appreciate the human-wildlife conflict mitigation measures (e.g., fences, machan, alternative crops,) funded by the BZ funds</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Most people in my village appreciate the wildlife habitat improvement activities (e.g., water holes, grassland) funded by the BZ funds</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Most of the people in my village appreciate the training/ awareness program about wildlife behavior, law enforcement, etc. funded by the BZ funds</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Knowing that my community receives part of park income has helped me realize the benefit of the park to local people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Regulatory control of development/land use activities on my property due to BZ laws is not a problem for me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Regardless of its direct benefit to me, the BZ program has contributed positively to conservation and sustainable development in my region</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>In reducing human-wildlife conflict, providing BZ funds to compensate the victims of wildlife will be more effective than funding community development projects</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

D6. Please indicate to what extent you agree or disagree with the following statements regarding current regulations related to BZ and national parks.
There is satisfactory coordination between the park and the local government regarding the enforcement of BZ laws | 1 | 2 | 3 | □
---|---|---|---|---
BZ laws have been obstacles to the development and growth of my village | 1 | 2 | 3 | □
---|---|---|---|---
Since the BZ program started, new conservation activities (community forests, plantation, etc.) in the BZ has expanded habitat for wildlife | 1 | 2 | 3 | □
---|---|---|---|---
BZ laws controlling land development are not enough for the long-term protection of the park | 1 | 2 | 3 | □
---|---|---|---|---
The population growth and urban development in the BZ area will negatively impact the wildlife inside the national park | 1 | 2 | 3 | □
---|---|---|---|---
BZ residents should not do anything that will harm the wild animals in the park | 1 | 2 | 3 | □
---|---|---|---|---
I will support laws prohibiting land-use practices in BZ that directly or indirectly threaten the existence of wild animals in the park | 1 | 2 | 3 | □
---|---|---|---|---
D7. How useful do you think the following will be in improving human-wildlife coexistence in your village.

<table>
<thead>
<tr>
<th>Not useful at all</th>
<th>Somewhat useful</th>
<th>Extremely useful</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing awareness training on staying safe from problematic animals</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Developing alarm system to regulating human movements against wildlife movement season/time</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Developing alarm system to pre-notify people of wildlife movement/activity season/time</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Building physical structures (fences, trenches, etc.) along the park boundary</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Providing farming knowledge/skills for alternative/unpalatable crops</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Providing alternative energy equipment (e.g., solar, biogas, electricity)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Keeping a limit on the population of problematic animals</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Improving habitat for wildlife inside the park</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Not interfering with what landowners want to do on their farm</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Regular incentives for disabled wildlife victims (like senior citizen)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Scholarships for wildlife victims’ children</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Concerns</td>
<td>Areas for improvement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teach livestock herders about specific wildlife behavior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing support for predator proof corals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing low cost insurance schemes (e.g., crop, livestock)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing supporting for alternative livelihood options/ IGA for forest resource-based households</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishing a well-equipped (e.g., vehicle, first aid, technician) rescue team for immediate action</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide relief provision for additional animals (not included in the guideline)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D8. Please list three areas of concern and three areas of the BZ program and BZ fund investment to help reduce human-wildlife conflicts in general.

Thank you very much for your information and time with us!
Chapter 5
Conclusions
As protected area governance faces a challenge of securing local support for conservation and providing park benefit to locals, whether and how stakeholders perceive the effectiveness of benefit sharing programs like buffer zone is not well known. In this context, the evaluation of Nepal’s BZ and PRS programs revealed several key conclusions. The stakeholders from different backgrounds viewed the programs favorably and believed the programs to have made a positive stride in conservation, community development, and improving park-people relationships. The program’s success lies in increasing conservation awareness, improving park-people relationships, and fostering positive attitudes among the local community towards wildlife and PAs. The institutional platform provided by the program has been instrumental in promoting partnership, community engagement, and communication, transforming local people into conservation ambassadors. Despite the low amount of shared revenue, the collective impact of programing in terms of conservation awareness, education, relationship building, and to some extent development has had significant contribution in conservation and community development.

To continue promoting conservation and enhancing park-people relationships in future, the BZ and PRS program must adapt to meet local needs and priorities. This might include revising guidelines to grant more autonomy to local BZ institutions in utilizing funds, shifting the focus towards comprehensive conservation education, addressing human-wildlife conflict, educating the residents about the purpose and benefits of BZ funds, empowering locals to build skills and capacity to coexist with wildlife, providing relief to wildlife victims, and leveraging funds with other sources to maximize the impacts. Additionally, fostering coordination between park staff, BZ institutions, and local government can further improve the effectiveness of the BZ
and PRS program and strengthen community support for PA management in Nepal and worldwide.
Sweta Dixit is from Kathmandu, Nepal. She graduated with a BS in Environmental Science from Tribhuvan University in 2018. Sweta pursued her MS degree in Wildlife and Fisheries Science from the School of Natural Resources at the University of Tennessee in 2023. She has accepted a doctoral position at North Carolina State University in the Department of Parks, Recreation, and Tourism Management, where she will continue her research journey in protected area management.