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BALANCING CONSERVATION AND DEVELOPMENT IN NEPAL'S PROTECTED AREA BUFFER ZONES

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ABSTRACT

The question of how to balance conservation and development for communities living adjacent to protected areas is difficult. Win-win solutions that meet the needs of people and the needs of conservation seem difficult to find. Nepal is one of the poorest countries in the world and yet it is also a model for successful biodiversity conservation. A large percentage of its land is protected and populations of endangered species such as tiger and rhinoceros have been increasing for the past five decades. It has achieved this conservation success to some extent because of its globally renowned community forestry and protected area buffer zone policies. The objective of this paper is to explore how Nepal's national protected area policies address conservation and development issues and how those policies translate into conservation and development activities in protected area buffer zones. We find that one of the strengths of Nepal's approach, in policy and practice, is that it allows for a mix of activities to address both conservation and development without defining outcomes or framing conservation and development as polarized goals. Comparison of four protected areas highlights the need to balance conservation and development in terms of the larger context and opportunities and constraints on people's livelihoods and opportunities.

Key words: protected areas; budget; Bardia National Park; Chitwan National Park; Rara National Park; Shey Phoksundo National Park

INTRODUCTION

The question of how to balance conservation and development for communities living adjacent to protected areas is difficult. Win-win solutions appear difficult to find and many critiques have been made concerning the various approaches, such as integrated conservation and development projects (ICDPs). Numerous studies have concluded that there are very few examples of protected area projects that meet the needs of people and the needs of conservation (Tallis et al., 2009; Wells & McShane, 2004).

Nepal is a country with success in balancing conservation and development on a national scale. Forty years ago, Nepal was used as an example of the environmental crisis that people believed was caused by poverty, increasing population, and resource degradation (Guthman, 1997). Worst case scenarios predicted that Nepal would lose all of its forests and topsoil by 2000 (Ives, 1987). Large mammal populations such as tiger, elephants and rhinoceros were declining. Rhinoceros populations had plummeted from 800 in the 1950s to 120 by the early 1970s and it was predicted they would disappear in only a few years (Blower, 1973).

Although Nepal remains one of the poorest countries in the world (Malik, 2013), it is now a model for successful biodiversity conservation (Heinen & Kattel, 1992; Heinen & Shrestha, 2006; Heinen & Yonzon, 1994). Over 20 per cent of its land is protected and some endangered species, such as tigers and rhinos, have increased since conservation programmes began in the 1970s (Seidensticker et al., 2010). These species have increased despite the fact that the protected areas they live in are surrounded by areas with high human population densities.

Nepal's success is attributed to an approach that combines community support with strong government policies (Dinerstein et al., 1999). Since the 1970s, Nepal has experimented with policies and practices to provide

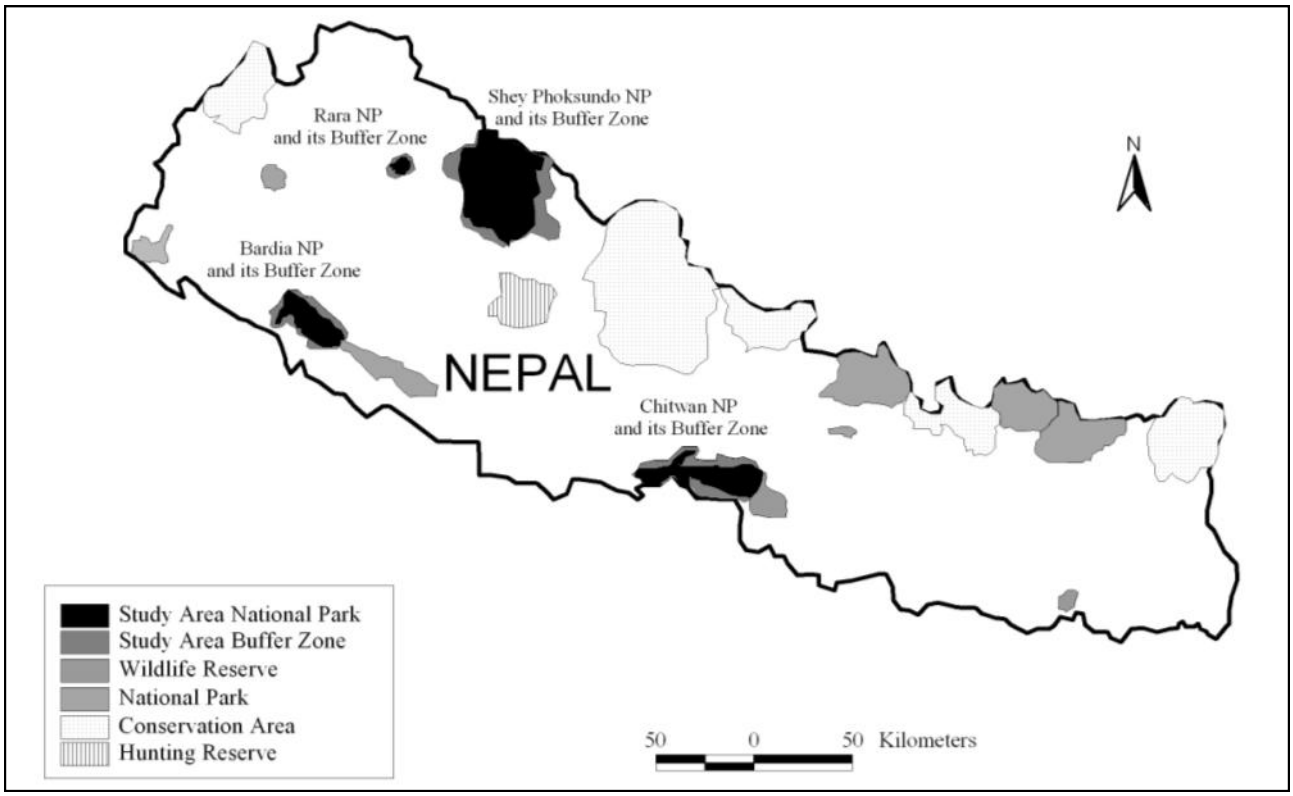


Figure 1. Protected areas in Nepal with four study areas.

benefits to communities, such as allowing limited resource extraction from protected areas in the lowlands and co-management in the mountain areas. While Nepal's policies have had their limitations and are not without flaws, they have provided a vision for the way that communities can participate in and benefit from protected areas (Budhathoki, 2004; Heinen & Kattel, 1992; Heinen & Mehta, 2000). One indicator of Nepal's success is that while there continue to be conflict issues around protected areas in Nepal, people are generally supportive of conservation and of neighbouring protected areas (Allendorf, 2007; Allendorf & Allendorf, 2012; Mehta & Heinen, 2001; Nepal & Spiteri, 2011; Nepal & Weber, 1995; Sah & Heinen, 2001).

One of Nepal's key conservation policies is its buffer zone legislation, which was created in 1994 (Paudel et al., 2007; Wells & Sharma, 1998). This legislation was based on Nepal's experience developing ways to link conservation and community development (Keiter, 1993). The legislation's key components are community forests within buffer zones and the re-distribution of funds back to communities in the buffer zones through a participatory process for deciding how to allocate the funds within set guidelines. Under these policies, large investments have been made in buffer zone communities. Since 1998, more than US$4.6 million has been distributed to buffer zones of protected areas in Nepal, benefiting more than 700,000 people (Khatri, 2010).

Given Nepal's relatively successful protected area policies, the objective of this paper is to understand how Nepal has balanced development and conservation. In order to do this, we address the following questions: 1) How do Nepal's protected area policies address and balance conservation and development?; and 2) How do these policies translate into activities in protected area buffer zones?

METHODS

Within the past few years, management plans have been developed for some of Nepal's protected areas with others in the process of being developed (Paudel et al., 2007). These plans are based on the requirements outlined in the Buffer Zone Management Regulations (1996) and the Guidelines (1999) and they include detailed budgets that delineate the buffer zone plans, including the specific activities and budget assigned to them. These plans provide a window to understand how conservation and development are being taken into consideration and balanced in protected areas. This study has taken the most current available management plans for four protected areas: Chitwan National Park (2006-11), Bardia National Park (2007-11), Rara National Park (2010-14) and Shey Phoksundo National Park (2006-11).

These four protected areas were chosen because they are located in districts that cover the spectrum of development, from some of the most developed to the

Table 1. Description of protected areas

	Terai		Mountain	
	Chitwan	**Bardia**	**Shey**	**Rara**
Year protected area established	1973	1989	1984	1976
Year buffer zone established	1996	1996	1998	2006
Protected area size (sq. km)	932	968	3,555	106
Buffer zone size (sq. km)	766	327	1,349	198
Population in buffer zone[1]	223,260	103,806	11,598	11,685
No. of households[1]	36,193	15,290	2,263	1,898
No. of buffer zone user committees	22	15	17	10
Development rank of surrounding districts[2]	Chitwan 2 Makawanpur 26 Nawalparasi 37 Parsa 52	Surkhet 28 Banke 30 Bardia 34 Kailali 40 Salyan 45	Dolpa 67 Mugu 75	Jumla 69 Mugu 75

[1]Department of National Parks and Wildlife Annual Report 2009/10.
[2]CBS and ICIMOD (2003): Ranks for the 75 districts of Nepal are based on 29 indicators divided into three groups: poverty and deprivation; socio-economic and infrastructural development; and women's empowerment.

least (see development rankings in Table 1). Two of the national parks are in the lowlands, Chitwan National Park (NP) and Bardia NP, and two are in the mountains, Rara NP and Shey Phoksundo NP (Figure 1). Rara and Chitwan are two of the oldest national parks in Nepal, having been established in the 1970s. Shey Phoksundo NP and Bardia NP were established in the 1980s.

Chitwan NP and Bardia NP are two of the premier parks in Nepal and they are the largest parks in the terai lowlands. They protect some of the most charismatic megafauna, such as rhinoceros, tigers, crocodiles and sloth bears. Rara National Park is in northwestern Nepal in the districts of Mugu and Jumla. It is the smallest park in Nepal. It contains the country's biggest lake, Rara Lake, which is 10.8 square kilometres. The lake is an important staging point for migratory birds and has endemic species of snowtrout (*Schizothorax hodgsoni* and *S. progastus*). Shey Phoksundo NP is the largest national park in Nepal and the second largest protected area (after Annapurna Conservation Area) in Nepal. It is in Dolpa district in the mid-western development region of Nepal. Its habitat protects snow leopard, Tibetan wolf, musk deer, blue sheep and several other endangered wildlife species. It also contains Nepal's deepest and the second largest Phoksundo Lake. It is a very remote area and has one of the lowest population densities in Nepal (Ministry of Health and Population, 2011).

To answer the first question about how protected area policies address and balance conservation and development, there follows a review of the Buffer Zone Management Regulations (1996) and the Guidelines (1999). We describe the policy guidelines that are specific to the types of activities that the buffer zone funds are intended to support and how local communities participate in making decisions concerning the activities.

For the second question, concerning how these policies translate into activities in protected area buffer zones, the five-year management plans and budgets of the four protected areas are reviewed to answer three questions: 1) For each protected area, how much money is budgeted to communities through buffer zone projects relative to the overall protected area budget?; 2) Within the buffer zones of each area, do the budgets follow the policy guidelines for buffer zone projects? If not, how are they different?; and 3) What activities are planned with buffer zone funds?

To answer the first question, it is necessary to determine how much money is budgeted to communities within a protected area through buffer zone projects, relative to the overall protected area budget, and to compare the total budgets for the protected areas and the buffer zones. We then compare the size of the budget relative to protected area size and buffer zone population size. For

Chitwan National Park grassland maintenance © Bhim Gurung

the second question, to determine if the budgets follow the policy guidelines for buffer zone projects, the budgets in the plans are compared to the provisions in the legislation. For Rara NP and Shey Phoksundo NP, the budget summaries provided in the management plans for each activity category are used. For Bardia NP and Chitwan NP, the management plans did not provide summaries by budget categories, so we estimated total budgets for each activity category by compiling activity lists from the detailed budgets for each buffer zone. To answer the third question, we describe the activities in each management plan.

RESULTS

How does policy address and balance conservation and development?

The Buffer Zone Management Regulation of 1996 established buffer zones around protected areas. The Buffer Zone Management Guidelines of 1999 provided further clarification on the 1996 regulations. For a summary of these pieces of legislation, please see Heinen and Mehta (2000). This study focuses specifically on parts of the legislation that address conservation and development activities within the buffer zones.

In these two pieces of legislation, buffer zone activities are described four different times: once in the regulations and three times in the guidelines (Table 2). However, the descriptions are different each time. The 1996 regulations state that the activities should meet the needs of local people and conserve natural resources and they list three types of activities: community development, environmental conservation and forest resource use (Table 2, column 1).

the 1999 guidelines, three sections of text provide additional categories of activities that should be supported. The first section outlines the percentage of funding that should be given to each of five categories of activities: conservation, conservation education, development, income generation and skill development, and administration (Table 2, column 2). In terms of budget priorities, development appears to be emphasized, but only slightly, relative to conservation as the guidelines recommend a total of 50 per cent of the budget should be apportioned to development and income generation and skill development and 40 per cent is recommended for conservation and conservation education activities. It is not clear where forest use from the 1996 regulations is placed in these guidelines.

The second section that mentions activities in the 1999 guidelines outlines five categories of activities that should be prioritized and also provides specific examples within each category (Table 2, column 2). While these five types have some overlap with the previous five categories, they also include one entirely new category,

Table 2. Summary of conservation and development activity categories mentioned in regulations and guidelines.

1996 Regulations	1999 Guidelines	1999 Guidelines Appendix*:
Preparation of Management Work Plan: (1) The warden shall prepare and submit buffer zone management work plan to the Department for community development, environmental conservation and the balance [sic] utilization of forest resources of the buffer zones. (From Part 3 Management of Buffer Zones, point 5) While selecting projects, the users' committee shall have to give priority to those projects that meet the requirement of local people and conserve natural resources. (From Part 7 Community Development, point/rule 29)	While preparing the work plan by the user group for their respective area on conservation of natural resources, community development and utilization of forest products, the Work Plan should be prepared to have separate programs and budget as follows: • Conservation Program 30 per cent • Community Development Program 30 per cent • Income generating and Skill Development Program 20 per cent • Conservation Education Program 10 per cent • Administrative Expenses 10 per cent "in accordance [with] Rule 29, the following should be given a priority: (a) Conservation and management of forest, wildlife and cultural heritage. (b) Conservation of other natural resources and cultural heritage. (c) Alternate energy development. (d) Community development (1) Small-scale and productive development programs at village level (2) Income generating programs (3) Others (e) Conservation Education (1) Audio-visual (2) Poster, pamphlets and newspapers (3) Training, Symposium and study tours (4) Non-formal education (5) Programs on promotion for local culture conservation	Activities designed for institutional development - Training for capacity growth and development - Community saving and its mobilization - Group's record keeping and report - Registration of the group - Co-ordination between group/committees - Relationship with other government and non-governmental organizations - Auditing Natural resource conservation and management activities - Wildlife conservation - Natural forestry management - Buffer zone community forest program - Community and privately undertaken afforestation - Agriculture, agro-crop/ diversification of crops - Multipurpose nursery - Water and soil conservation - Pasture management - Alternative energy program - Others Management of forest products collection and its sale Community and Economic Development Program - Physical infrastructures that are productive which promote conservation -Programs that mitigate crop damage by wildlife - Skill development training and appropriate technologies - Women development programs - Enterprising oriented programs Conservation Education Programs - Community Conservation Education Program - School Conservation Education Program - Development and distribution of awareness oriented conservation education materials - Study tours - Cultural and conservation activities - Non-formal education

***From Appendix 1 relating to section 5(7) of the Buffer Zone Management Guidelines 1999: template for user group/ committee work plan, sections 8-12.**

alternative energy development. The first two categories are conservation-related but, surprisingly, include not only natural resources but also cultural heritage conservation. The appearance of cultural heritage is surprising because it is not referenced elsewhere and it is not clear why it is linked with natural resource conservation. It is also not clear how the two conservation categories are different from each other except that the second, "(b) Conservation of other natural resources and cultural heritage," appears to be a catch-all category. Development is one category that includes development programmes, income generating programmes and also the catch-all "other". Conservation education lists a broad range of educational activities, including promotion of cultural conservation.

The third section occurs in the appendix to the guidelines, which provides a format for detailed work plans (Table 2, column 3). The activity categories do not exactly correspond to the previously mentioned categories of activities and add yet one more type of activity, institutional development. In this section, the development category is called "Community and Economic Development Program" and conservation is called "Natural resource conservation and management activities". Forest use from the 1996 Regulations reappears here as a category called "Management of forest products collection and their sale". It is interesting that listed as examples within the conservation category are activities that might seem more appropriate in the development category and vice versa. For example,

Homestay in buffer zone of Chitwan National Park © Teri Allendorf.

agriculture and alternative energy are in the conservation category while wildlife damage mitigation is listed in development.

In terms of the process to choose activities, the guidelines include a description of the roles of the user committee and groups and requirements for the work plans that they develop. These guidelines are important because it is from these groups and their work plans that the overall buffer zone management plan is developed. Budgets are created in a bottom-up process whereby community committees representing separate men's and women's buffer zone user groups (BZUGs) at the ward level propose projects to their buffer zone user committee (BZUC). The BZUCs choose projects from those suggested to forward to the buffer zone management council (BZMC). The BZMC, chaired by the warden of the park, then allocates the budget accordingly. A detailed description of this process can be found in Budhathoki (2004).

The guidelines describe this process in terms of collecting "opinions and suggestions" from the user groups and selecting activities to the extent possible based on unanimous decisions within the group (p.3): "5. Users' Group Work Plan: (2) While preparing the work plan by the users' group in accordance with sub-section (1), the group should prepare the work plan by calling a meeting of the members of the groups on matters relating to community development and conservation oriented programmes to be conducted in their area, and collecting opinions and suggestions so as the programs and projects be selected and prepared on the basis of unanimous decision as far as possible."

The guidelines describe the role of the user committee, which is to mediate between the user groups and the management council, in terms of the three areas laid out initially in the 1996 regulations: conservation, development, forest use (p. 5): "8. Arrangement Related to the Users' Committee. (1) The users' committee will function as a mediator between the users' group and the council to conduct programs through the users' groups formed in their respective areas for natural resources conservation, community development along with utilization of forest products in accordance with the Regulation and this Guideline."

The next piece of text emphasizes that development and conservation should be included in the BZUC work plans and that the work plans should reflect the work plans developed by the community forest user groups (CFUGs) (p. 6): "9. Users' Committee Work Plan. (1) While developing the work plan, it should clearly reflect community development and conservation programs of the respective area with a five-year plan. They should be prepared with separate programs for each fiscal year to be implemented on an annual basis. The work plan of the committee shall be integrated with the work plan of the groups."

Table 3. Summary of budget information from five-year management plans for protected area management and buffer zone management in four protected areas in Nepal (in US$ using approximate exchange rate from that time period of 75 Nepali rupees per dollar)

Region	Terai				Mountain			
Protected area	Chitwan (2006-11)		Bardia (2007-11)		Shey (2010-14)		Rara (2006-11)	
	US$	%	US$	%	US$	%	US$	%
Total budget	7,610,887	96[1]	5,640,360	100	931,893	100	3,876,293	98[2]
PA budget	5,697,667	75	2,780,640	49	537,533	58	863,866	22
BZ budget	1,631,780	21	2,859,720	51	394,360	42	2,954,427	76
PA budget/PA size (US$/sq. km)	6,113		2,873		151		8,150	
Total budget/PA size (US$/sq. km)	8,166		5,827		262		36,569	
BZ budget/population (US$/person)	7.31		27.55		34.00		252.84	

[1]Does not equal 100% because 4% of the budget was committed to the Barandabhar Forest Corridor Management Plan, a forest corridor connected to Chitwan National Park that is managed by the park authorities; [2]Does not equal 100% because a small amount (0.01%) was in a separate tourism fund. The rest is unexplained as numbers provided in management plan do not equal 100%.

How much money is going to communities through buffer zone projects relative to the overall protected area budget?

The budgets were quite different for these four protected areas. Chitwan NP and Bardia NP, two of Nepal's premier parks, had budgets that were substantially larger than the other two areas (Table 3). Shey Phoksundo NP, although it is the largest protected area, had by far the smallest budget. In contrast, Rara NP, the smallest protected area of the four, had a relatively large budget.

To understand the relative amounts budgeted for management of the protected area versus buffer zone programmes, we compared the size of the protected area budgets to the buffer zone budgets (Table 3). Chitwan NP had the smallest percentage of its total budget designated for the buffer zone at 21 per cent. The other PAs designated between two and four times as much of their budget, as a percentage of the total, to buffer zone management. Rara NP allocated almost four times as much for buffer zone activities as for park management. Shey Phoksundo NP and Bardia NP allocated almost an equal amount for both park management and the buffer zone.

Next, a comparison was made of the budgets per unit for each area by comparing the amount allocated for protected area management per square kilometre and the amount allocated for the buffer zone per person (Table 3). These units were adopted because the protected area budget is intended to manage a landscape (the unit of which is sq. km), while the buffer zone budget is intended to benefit people (the unit of which is individual people).

For the amount spent per square kilometre for protected area management, Rara NP, which is relatively small in size but had a relatively large budget, allocated more per square kilometre on protected area management than the other areas. At the other extreme, Shey Phoksundo NP, which is quite large, allocated relatively little. Chitwan NP and Bardia NP lie in the middle.

For the amount spent per person in the buffer zones, Rara NP's budget was disproportionately large, spending nine times as much as Shey Phoksundo NP and Bardia NP. Chitwan NP allocated the least, about one quarter as much as Shey NP and Bardia NP.

Do the buffer zone budgets follow the policy guidelines for BZ projects? If not, how are they different?

We compared the budgets in the plans to the guidance provided in the legislation for each category of activity: community development, conservation, income generation and skill development, conservation education, and administration (Table 4). For Rara NP and Shey NP, we used the budget summaries provided in the management plans for each activity category. For Bardia NP and Chitwan NP, the management plans did not provide summaries by budget categories, so it was necessary to estimate total budgets for each activity category by compiling activity lists from the detailed budgets given for each buffer zone user committee in the protected areas.

Bardia NP followed the guidelines most closely while Rara NP was most different. Rara NP spent nearly twice as much as recommended on community development

Table 4. Comparison of percentage of buffer zone budget allotted for each category of activity.

	Terai		Mountain	
	Chitwan	Bardia	Shey	Rara
	%	%	%	%
Community development programme (30%)	37	30	37	56
Conservation programme (30%)	36	30	34	17
Income generation and skill development (20%)	15	21	10	21
Conservation education (10%)	7	10	9	5
Administration (10%)	4	9	10	2

programmes and half as much on conservation and conservation education programmes. Shey Phoksundo NP and Chitwan NP were slightly over on community development and conservation programmes, and were under on both income generation and conservation education. Rara NP and Chitwan NP allocated much less than the suggested 10 per cent on administration.

What activities are planned with buffer zone funds?

Looking across all four protected areas, the categories of conservation and development included relatively diverse sets of activities, while the categories of conservation education and income generation and skill development included more limited sets of activities.

Conservation activities

For Rara NP, conservation activities included only community forestry activities, such as building nurseries, hiring forest guards, making plantations and fire lines, putting up fencing, demarcating forest boundaries, and buying non-timber forest product (NTFP) seeds. All the other areas had a mix of types of activities in the conservation category, including community forestry, mitigation of wildlife conflict, alternative energy and capacity-building. Shey Phoksundo NP was the only area to include information and research activities in its conservation activities, including identification of biodiversity hotspots and land use classification. It also included what might be considered a development activity: low-cost latrines. Bardia NP, unlike the other areas, included activities called "conservation of indigenous cultures" in this category, but did not describe specific activities.

Community development

The vast majority of community development activities in the buffer zone areas were infrastructure. They included the construction of buildings, roads, communication (telephone installation), irrigation and water infrastructure, and toilets. Buildings included schools, health posts, temples, community meeting places, birthing houses and some tourism infrastructure. Roads included roads, foot trails and bridges. In Bardia NP and Chitwan NP, all activities were infrastructure except for one "river training" in Chitwan NP. In Shey Phoksundo NP and Rara NP, in addition to infrastructure activities, community development activities included energy, health and capacity-building activities. Rara NP also included trainings in sewing and literacy in this category, which we might expect to be in the income generation category.

Income generation and skill development

Most activities in this category were trainings that develop skills, such as vegetable farming or motorcycle repair, which might generate income. Shey Phoksundo's activities in this category also included pasture identification and rotational grazing plan preparation and agricultural nursery establishment as well as some capacity-building of the user groups. Two areas, Rara NP and Chitwan NP, also had water-related infrastructure activities.

Conservation education

Conservation education activities were very general awareness-raising activities, such as study tours, school programmes and educational materials. Some activities were literacy classes. Shey Phoksundo NP had two specific activities focused on conservation: an agroforestry demonstration plot and preparation of a wildlife checklist. Bardia NP included an anti-poaching programme.

Primary activities in Shey Phoksundo NP and Rara NP

In Shey Phoksundo NP and Rara NP, it was possible to figure out specific activities across all BZUCs and how the budget is distributed across specific activities, rather than just broad categories. The Shey Phoksundo NP management plan included a summary across all of the buffer zone user committee activities that listed the amounts allocated to each activity. For Rara NP, activities were listed by buffer user committees and used

Community forest guards near Chitwan National Park © Teri Allendorf.

Shey Phoksundo National Park © Laurie Vasily

similar activity titles, which made it possible to sum the amount spent on specific activities across all of the committees to find total amounts allocated to each type of activity.

Shey Phoksundo NP's activities focused primarily on energy issues. Out of its total buffer zone budget, 45 per cent was allocated for alternative energy activities. Of the 45 per cent, 20 per cent was allocated for micro hydropower systems, which was categorized as conservation, and 13 per cent was allocated for solar set distribution and 12 per cent was for improved cook stoves, both of which were categorized as development. These percentages were relatively large amounts of the buffer zone budget overall, as the next largest specific activity in the budget was nursery/plantation work at 4 per cent.

Rara NP's activities were more evenly distributed across different types of activities. Drinking water activities received the largest amount at 14 per cent. The next largest amount of the budget was for solar energy at 6 per cent. Both of these activities were categorized as community development. They were followed closely by goat and vegetable farming in the income generation category, each at a little more than 5 per cent.

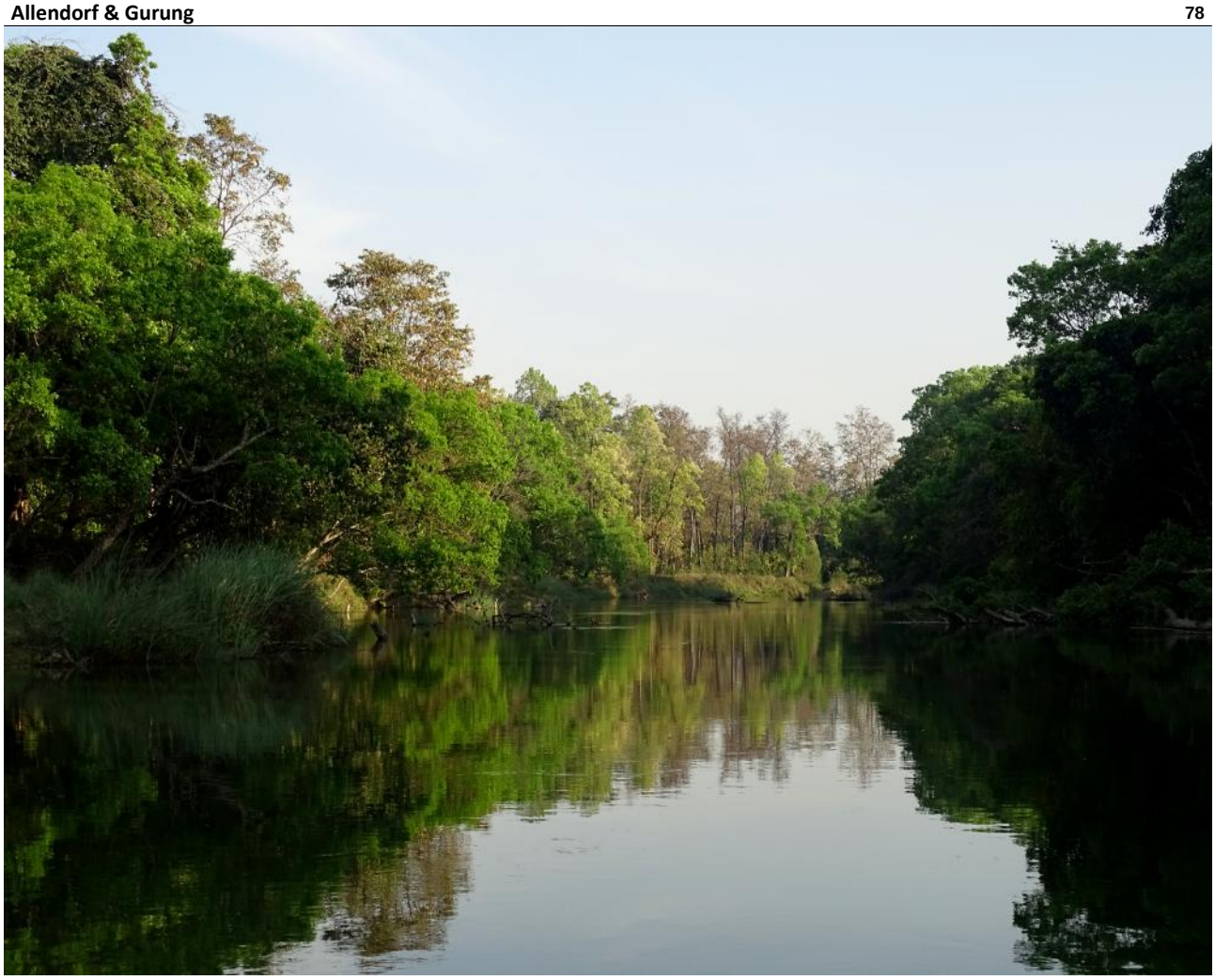
It was not possible to summarize activities for Bardia NP and Chitwan NP because the management plans did not include activity descriptions that were similar enough across the user committees to understand what the activity entailed. A more detailed understanding of each activity would be needed in order to summarize into broader categories of activities.

DISCUSSION

How do protected area policies of Nepal address and balance conservation and development?

Nepal's policies emphasize the importance of implementing a process that allows communities to choose activities according to their priorities rather than defining outcomes. While the policy recognizes different types of activities and allocates a certain percentage of the budget to them, the more important aspect of the policy is probably its participatory nature (Paudel et al., 2007), which is a critical component of positive park-people relationships (Andrade & Rhodes, 2012) and also builds trust between protected area management and local communities (Stern, 2010). For example, in Chitwan NP, people's attitudes toward park management are generally positive, with the majority feeling that park management treats them as partners and supports their participation in conservation and development programmes (Nepal & Spiteri, 2011).

Another advantage to Nepal's approach is that the buffer zone policies are clearly the government's, rather than sponsored by non-governmental organizations (NGOs). People know that buffer zone programmes are part of government policy and they link the benefits of the programme to the protected areas (Nepal & Spiteri, 2011). When programmes are not government-sponsored and implemented, and instead are implemented by NGOs, then people can be less likely to see the link between the programme and the protected area (Allendorf et al., 2007). Nepal's policies also allow for a mix of activities to address both conservation and development without framing conservation and



Bardia National Park © Sue Stolton

development as polarized goals. They have avoided the difficult, if not impossible, task of categorizing activities into discrete categories that reflect some set of perceived conceptual relationships between conservation and development (Kepe et al., 2004; Walpole & Wilder, 2008). These relationships are often conceptualized as categories that reflect some permutation of conservation as helping or hindering development and development as helping or hindering conservation (Salafsky, 2011; Adams et al., 2004). At the national level, the inconsistency of categories and activities in the regulations and guidelines reflects, at least to some extent, the difficulty of clearly differentiating distinct categories. At the protected area level, the inconsistency of activities within the different categories is also probably an indication of the difficulty in practice of defining activities in terms of conservation versus development.

Three very different examples demonstrate the difficulty of categorizing activities: community forestry, alternative energy and latrines. All of these activities can contribute to conservation and development. Community forests contribute to both in many ways. For example, community forests buffer protected areas against human activities, provide more habitat for wildlife and provide communities with forest resources. Alternative energy decreases extraction from protected areas and community forests, which helps to conserve forest, and also decreases the odds that people come into contact with wildlife because they enter the protected areas and forests less frequently to extract. Latrine construction, which is clearly a development activity, can also contribute to conservation by decreasing the odds that people come into contact with wildlife when they go to the forest or fields to urinate and defecate.

A more complicated example is infrastructure. In Nepal, buffer zone management has been criticized for investing too much in infrastructure and not contributing enough to conservation or livelihoods (Paudel et al., 2007). However, while there are many issues associated with infrastructure that can have negative impacts on protected areas, infrastructure projects can bring benefits to both people and protected areas. Many livelihood activities depend on infrastructure for success: roads facilitate the sale of local products and increasing tourism in protected areas. Water infrastructure can help

people and protected areas and wildlife. For drinking or irrigation, it can help provide water for wildlife (pond-building for wildlife is increasingly common in Nepal) and, for flood control, it can help protect people's agricultural fields and maintain boundaries between protected areas and settlements. Building schools increases people's access to education, which has direct impacts on livelihoods and can increase support for conservation. The impacts of infrastructure can also be indirect and quite subtle. For example, if a woman lives near a school as a child, even if she does not attend it, she is more likely to send her own children to school, which, in turn, is correlated to her having fewer children (Axinn & Barber, 2001).

How do these policies translate into activities in protected area buffer zones?

These four protected areas highlight the importance for conservation and development of the larger context and the opportunities and constraints on people's livelihoods and opportunities in that context (Naughton-Treves et al., 2005). When we compare across the four protected areas in this study, we see that different proportions of protected area funding are being allocated to protected area management versus the communities and that, within the buffer zones, communities are emphasizing different types of activities. These differences seem to be linked to the different socio-economic contexts of the protected areas.

In Nepal, most residents living adjacent to protected areas in the terai have much greater access to a range of livelihood, health and educational opportunities, such as markets, roads, hospitals and schools. Protected areas in the hill and mountain regions have much less access to infrastructure and government support. These broader socio-economic contexts are reflected in each protected area's management plan. For example, Chitwan NP is located in one of the most developed districts in Nepal, so people are not as poor and a range of economic opportunities, as well as health and educational facilities, are more available than in the other areas. Chitwan NP also generates more tourism revenue than any other national park in Nepal, but spends much less relative to the other areas on the buffer zone. It makes sense that Chitwan NP would spend less on buffer zone development activities because they are already more developed relative to other areas. In line with this hypothesis is the fact that Rara NP, which is located in one of the poorest areas in Nepal, spends disproportionally more on development in its buffer zone. This finding suggests that the appropriate balance of conservation and development activities for a protected area will differ for different protected areas, highlighting that the socio-economic context surrounding protected areas matters.

An important, and related, aspect to the idea that different activities are appropriate in different places is that they can also be appropriate at different points in time. The appropriate balance of conservation and development activities may change over time as community needs change and as their understanding of and experience with conservation and development increases. One important aspect of balancing conservation and development may be to recognize the need to give people time to meet their immediate needs and grow into the process of balancing conservation and development. For example, in the Annapurna Conservation Area in the mountain region of Nepal, over the period of a decade, communities decreased the development activities they chose to do and increased conservation activities (Baral et al., 2007).

Next generation issues: prioritize and evaluate activities

While innovative and progressive, Nepal's buffer zone programme also has plenty of room for improvement. It has been criticized for being too top-down because the protected area warden holds ultimate authority over all activities in the buffer zone (Budhathoki, 2004; Heinen & Mehta, 2000). It is also criticized for failing to adequately address empowerment and equity in benefit sharing and gender issues (Budhathoki, 2004). Often these shortcomings are referred to as second generation issues that have arisen as policies have become established on the ground and initial obstacles have been resolved (Kanel & Dahal, 2008).

Our review of the management plans of these four protected areas highlights an additional second generation issue: how can activities be prioritized to best meet the needs of people and the protected areas? While the flexibility of the categories allows communities and protected areas managers to have flexibility in developing buffer zone management plans, it also means there is no clear process for prioritizing activities that "meet the requirement of local people and conserve natural resources" as described in the original 1996 regulations. Thus, while Nepal has avoided talking about trade-offs, their approach is also not necessarily maximizing the benefits to either protected areas or people. Explicit strategizing with communities about how to maximize benefits is the next step in improving park-people relationships.

In the course of our own work with communities in Nepal, we have had people articulate that they would like

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better prioritization and support of certain activities, especially those that directly mitigate conflicts with wildlife. For example, in Chitwan NP, people felt mitigation of these problems was one of the most urgent community needs (Spiteri & Nepal, 2008). People wonder why, for example, the construction and maintenance of electric fences and other mitigation measures are not prioritized. While the construction of electric and non-electric fences has been funded over the past few decades, through both buffer zone funds and NGO projects, construction has been piecemeal with no plan for funding of renovation or maintenance.

In addition to prioritizing activities that better integrate and address the needs of the people and protected areas, there is also a need to reflect on what works and what does not. At this point in Nepal, there is no evaluation component for the buffer zone activities. Evaluation of activities would help communities to improve the quality of activities and provide a basis for sharing activity ideas and outcomes with each other within and among protected areas. For example, the specific activities as they are listed in the budget are very broad and generic and fairly consistent across protected areas. This lack of specificity might be a reflection of the need to simplify for the budgeting process, but based on our experiences in the field, we think it also indicates a limited set of interventions that are being considered as options. For example, livelihood and income generation are limited mainly to skills training and livestock rearing, and the impacts of these activities have not been evaluated. For example, in one village in Chitwan, people questioned the usefulness of noodle-making training in which some residents had participated. Conservation education activities are also very broad and appear to have the goal of creating the conditions for conservation rather than targeting any particular behaviour changes. A more systematic approach to choosing and evaluating across protected areas would be a logical next step to the development of positive park-people relationships in Nepal.

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RESUMEN

La búsqueda del equilibrio entre la conservación y el desarrollo de las comunidades adyacentes a las áreas protegidas no es tarea fácil. La posibilidad de encontrar soluciones que satisfagan las necesidades de las personas y de la conservación parece difícil. Nepal es uno de los países más pobres del mundo y, sin embargo, también es un modelo de éxito en términos de conservación de la biodiversidad. Un gran porcentaje de su territorio está protegido y las poblaciones de especies en peligro de extinción como el tigre y el rinoceronte han ido en aumento durante las últimas cinco décadas. Este éxito de conservación se debe en buena medida a sus políticas mundialmente reconocidas en materia de manejo forestal comunitario y zonas de amortiguamiento de áreas protegidas. El objetivo del artículo es explorar cómo abordan las políticas nacionales sobre áreas protegidas de Nepal lo relativo a la conservación y el desarrollo, y cómo se traducen dichas políticas en actividades de conservación y desarrollo en las zonas de amortiguamiento de las áreas protegidas. Descubrimos que uno de los puntos fuertes del enfoque de Nepal, tanto en lo que respecta a la política como a la práctica, es que permite una amalgama de actividades que apoyan la conservación y el desarrollo sin definir resultados ni enmarcar la conservación y el desarrollo como metas polarizadas. La comparación de cuatro áreas protegidas pone de relieve la necesidad de equilibrar la conservación y el desarrollo en función de un contexto más amplio, incluyendo las oportunidades y restricciones impuestas a los medios de vida y las oportunidades de las personas.

RÉSUMÉ

La question de comment concilier conservation environnementale et développement économique pour les communautés vivant à proximité des zones protégées s`avère compliquée. Des solutions répondant simultanément aux deux objectifs semblent difficiles à trouver. Le Népal est l`un des pays les plus pauvres du monde et pourtant il est aussi un modèle de réussite pour la conservation de la biodiversité. Une large proportion du territoire est protégée et des populations d'espèces menacées comme le tigre et le rhinocéros ont augmenté au cours des cinq dernières décennies. Ce bilan positif a été atteint en partie grâce à son programme mondialement réputé de foresterie communautaire et à sa politique de zones tampon entourant les aires protégées. L'objectif de cet article est d'explorer comment les politiques de gestion des aires protégées au Népal abordent les enjeux de la conservation et du développement, et la façon dont ces politiques se traduisent par des activités de conservation et de développement dans les zones tampons. Nous constatons que l'un des points forts de l'approche du Népal, tant dans les directives que dans leur application, est la présence d'activités adressant tant la conservation que le développement sans tenter de les mettre en opposition. La comparaison de quatre aires protégées met en évidence la nécessité d'une approche équilibrée entre la conservation et le développement, prenant en compte les opportunités et impacts sur les moyens de subsistance des populations.