

People's Perception on the Establishment of Buffer Zone and Ecotourism Development in Dhorpatan Hunting Reserve, Nepal

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ABSTRACT

The National Parks and Wildlife Conservation Act of Nepal introduced the buffer zone (BZ) concept to ensure people's participation in conservation. BZ plays a significant role in ecotourism development, particularly in areas rich in biodiversity, natural beauty, and indigenous cultures. Delays in declaring BZ might create challenges in benefit sharing and sustainable management, especially in developing countries like Nepal. This study aims to understand the perception of local people towards the establishment of BZ and ecotourism development in Dhorpatan Hunting Reserve of western Nepal. A household survey (n=152), key informants interview (n=6), focus group discussion (n=6), and an intensive literature review were used for the data collection. Statistical methods such as frequency, percentage, and chi-square tests were employed to interpret the collected field data. The study revealed that local communities lack awareness about the benefits of BZ establishment. The area offers facilities and services with warm hospitality, caring for health & sanitation in homestays, seminar halls, hiking, and nature walks for the tourists. A significant association between education level and perception towards ecotourism prospects, as well as its role in environmental conservation, culture preservation, and the development of cottage-based industries, was determined. The results suggest that the successful implementation of ecotourism initiatives is possible with the collaboration of the local community, government, and non-governmental organizations.

Keywords: Biodiversity, Conservation, Local Economy, Protected area, Sustainable Tourism

Introduction

Ecotourism has emerged as a promising approach to sustainable development, particularly in regions rich in natural beauty and socio-cultural diversity (Phil, T.

M., 2022). Nepal, renowned for its diverse landscapes and unique cultural traditions, has embraced ecotourism as a strategy to promote environmental conservation and socio-economic development (Bhatta, 2019). The geographical location of the country provides diverse natural and cultural attractions, making tourism a foremost contributor to revenue generation in Nepal (WTTC, 2017). Nepal's tourism started with a focus on mountain tourism, which can be seen as an important period for the growth of the tourism industry (Shrestha & Shrestha, 2012). About 70% of tourists visit Nepal for holiday pleasure or entertainment (MOCTACA, 2017). Among the several forms of tourism, ecotourism is a sustainable approach to tourism development that aims to positively impact socio-economic conditions and the environment. It is also noted that ecotourism as a component of the green economy is one of the fastest growing segments of the tourism industry, and focuses on environmental conservation, socioeconomic and capital development (K.C. et al., 2015). It is also considered a driving factor to support the local livelihood and enhance the cultural integrity by community participation (Sigdel, 2014).

The buffer zone (BZ) is a strategic area between the protected area and human settlement that provides an area of controlled land use, which separates the protected area from direct human pressures (Ebregt, A., & Greve, P. D., 2000). Within the BZ areas, agroforestry practices combine crop production with the planting of trees and shrubs to help increase the long-term productivity of the agricultural plots and provide fuelwood and other forest-related products to the local farmer (Orsdol, 1988). Similarly, a BZ surrounds a protected area where specific activities are implemented to reduce the negative impacts of conservation on neighboring communities (Wild & Mutebi, 1996). From the conservation perspective, BZ areas are designed to protect national parks and reserves (Wight, 1995). The fourth amendment of the National Parks and Wildlife Conservation Act of 1993 formalized provisions for BZ area communities, allowing them to benefit from parking revenues (GoN, 2010). This environment adopted an integrated conservation and development approach with an emphasis on the participation of local communities (Dhakal & Thapa, 2015). Hence, the concept of BZ was to safeguard biodiversity in parks and reserves by providing alternative economic opportunities to local communities and minimizing conflicts between communities and protected areas (Sherpa, 2000).

The Ministry of Culture, Tourism and Civil Aviation recently identified 100 tourist destinations for tourism development, including both established and newly planned destinations (GoN, 2018). Dhorpatan Hunting Reserve (DHR) is one of the planned destinations on the list. The local community-based organizations with the government offices, have taken the initiative to preserve the cultural and natural environment around Dhorpatan and promote ecotourism

for their livelihoods. Ecotourism is one such approach that is often highlighted as one of the most effective tools to reconcile the conservation and development aspirations (Aryal et al., 2018). The study carried out in Gandaki Province also identified that community-based homestay tourism is one of the appropriate ecotourism models that create the market for local products with income and employment opportunities for local people (Khatriwada, 2022). Although having great potential for ecotourism development, DHR primary focus remains on hunting rather than ecotourism, as it is the only hunting reserve in Nepal. It has the prospects of developing as a nationally and internationally recognized ecotourism destination. The Uttar Ganga River, which passes through the middle of the meadows of Dhorpatan Valley, so that the nearby settlement area could be developed as wetland-based ecotourism, is another potentiality of this area. As one of the studies about the wetland area of the Rupa Lake in Pokhara Valley identified that many residents rely on forests and agriculture could benefit from alternative income sources through wetland-based eco-tourism activities, which could be the backbone of the livelihood services for the local people around the lake (Khatriwada et al., 2022). Similarly, study on socio economic impacts on ecotourism highlighted that there was significance increase in the quality life and well beings of local people with the incensement of food and accommodation services (Pageni et al., 2024). So, Dhorpatan attracts visitors with several products and services annually, and that has been contributing to the socio-economic activities of residents. The local community is actively involved in ecotourism activities by operating community-based homestay tourism and marketing their local agro-products for the visitors. Therefore, this study aims to investigate the social perception towards the establishment of the buffer zone and ecotourism development around DHR, focusing on the perception, benefits, and challenges of local communities. The understanding of socio-economic impact can help resource managers, governmental entities, and policymakers ensure conservation and improve livelihoods, with local people being central to all aspects of ecotourism development. This study will provide baseline data for ecotourism development in and around DHR, ultimately benefiting the conservation of biodiversity as well as improving the economic status of local people involved in ecotourism activities.

Materials and Methods

Study area

Dhorpatan Hunting Reserve was established in 1983 and was gazette in 1987, which covers an area of 1325 sq. km in Rukum, Myagdi, and Baglung districts and the southern part of the Dhaulagiri Himal of western Nepal, with the elevation ranging from 2,850 to 5,500 m (Khatriwada, 2010). These areas have potential for

ecotourism development; some homestays have been running for a few years. Visitors come mostly for holiday purposes, and the area is suitable for the development of a nationally and internationally recognized ecotourism destination. Stakeholders of Dhorpatan Municipality have started to assess the possibility of ecotourism activities like producing local products and enterprise development, running a homestay business, sports-based tourism, and adventure-based tourism like canyoning, paragliding. Similarly, the protection of forests and wildlife makes the area a center of attraction for biodiversity research and other purposes. Various infrastructures that are being developed around the hunting reserve make this area one of the important tourist destinations. A significant portion (59%) of the reserve lies in the Rukum District, and the remaining parts, 26% and 14%, lie in the Baglung and Myagdi districts of western Nepal, respectively (Singh et al., 2011). It consists of various habitats such as alpine, subalpine, and high temperate vegetation and thirty-two mammal species, including leopard, red panda, blue sheep, Himalayan goral, snow leopard, grey wolf, Himalayan serow, and Himalayan black bear (Sharma et al., 2023). The study area contains major ethnic groups comprising Chhetri, Magar, Thakali, Gurung, Kami, and the people belonging to Tibetan culture. The data was collected from two wards (Ward No. 6 and Ward No. 9) of Dhorpatan municipality for this study.

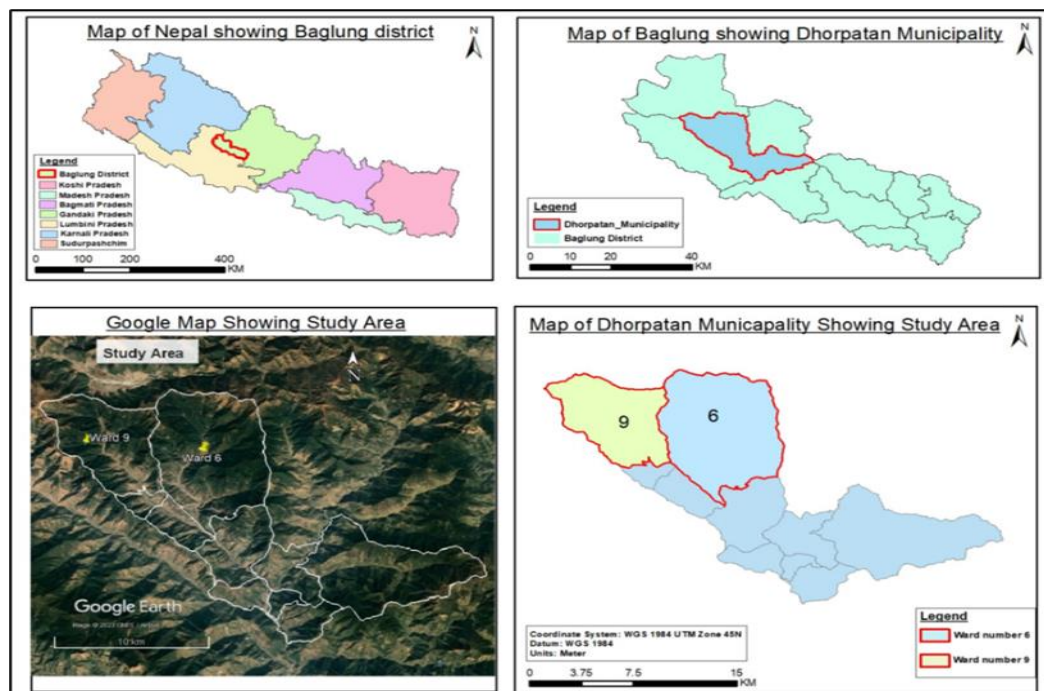


Figure 1: Map showing the region of study.

Data collection

Data were collected by field surveys, questionnaires, and semi-structured interviews. Simple random sampling techniques were performed for data collection. A total of 152 households were interviewed, using questionnaires to assess socio-economic conditions, the motivation level of local people towards BZ and ecotourism development. Respondents from diverse backgrounds participated in a focus group discussion (n=6) to give their opinion on the establishment of BZ, ecotourism attractions, and willingness to be involved in local enterprises. The key informants (n=6), such as assistant conservation officers, forest rangers, teachers, homestay owners, and local leaders, were interviewed both formally and informally to obtain information about facts and figures of the place along with broader insights into ecotourism development. Site observation was conducted to collect more information on existing natural and manmade facilities and services in the area. Similarly, secondary data were derived from journals, newspapers, Dhorpatan Municipality and ward office records, plans of action, operational plans, annual assembly minutes and published articles, booklets, and reports of concerned authorities.

Data analysis

The data collected from the field was first coded and entered into Excel. Data were analyzed using descriptive statistics, such as frequency, percentage, and mean, using the statistical package IBM SPSS Statistics 21. People's perceptions were assessed with the use of the three-point Likert Scale (i.e., Agree, Disagree, and Neutral). The variables such as age, education, occupation, and caste were used to analyze people's perceptions towards buffer-zone establishment and ecotourism promotion. Chi-square test was employed for analyzing the significant differences in the statements with the variables at a five percent ($\alpha = 0.05$) significance level.

Results and Discussion

Of the total 152 households, most of the respondents depend on agriculture, i.e., 67%, followed by 8% employed, and 25% engaged in other occupations like business, beekeeping, and poultry farming. The respondent's age class category was between 18-98, with 45% being middle-aged, followed by 30% older aged, and 25% young aged. The study revealed that 55% of respondents are illiterate, followed by 27% with primary education, 10% had secondary education, and 8% had a college degree, highlighting the need for education in the area. Most respondents were Tibetan refugees, followed by Dalits like Bishwokarma and Pariyar, with a minority of Brahmins and a small population of other castes.

People's attitude towards the establishment of buffer Zone

The respondents were agreed in general in the focus group discussion to establish the buffer zone for the management of natural resources, infrastructure development, reduce the human wildlife conflicts and promote the local products and handicrafts by promoting ecotourism. However, the results of the three-point Likert scale showed that half of the respondents (50%) disagreed with buffer zone establishment, followed by 28% who agreed, and 22% in neutral (Figure 2).

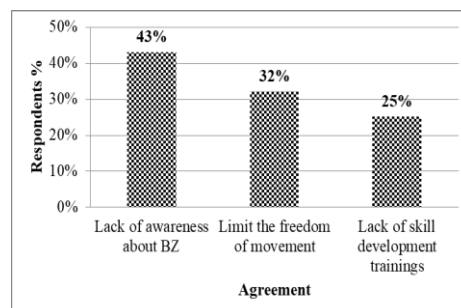
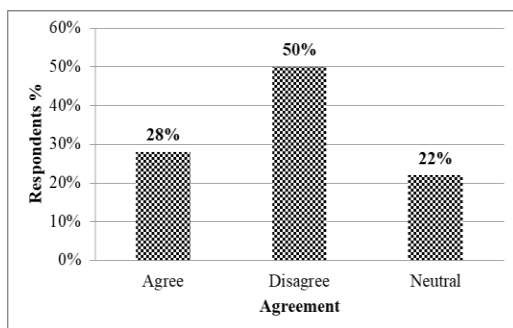


Figure 2: Perception of respondents toward BZ establishment

Figure 3: People's response to the challenges of the BZ establishment

Similarly, Figure 3 shows the people's response to the challenges of the BZ establishment. The results show that lack of awareness about BZ was the major challenge for the buffer zone establishment which was followed by limitation of freedom of movement, and lack of skill development trainings.

Major tourism products and services

DHR is the land of diversity. Table 1 lists the major tourist attractions in the DHR. The meadows, known as Patan's, are crucial habitats for animals like Blue Sheep and other herbivores. The reserve is home to 137 bird species and is the sole hunting reserve in Nepal (Panthi, S., & Thagunna, S. S., 2013). The reserve attracts international hunters for trophy hunting of blue sheep and Himalayan thar. Dhorbaraha, a holy Hindu place in Dhorpatan, hosts a religious fair in August every year.

Table 1: Products and services for the promotion of tourism in Dhorpatan Hunting Reserve

Natural features	Religious/ Ethnic	Manmade	Adventurous
Mountains			
High hills		Homestays	
Sunrise View	Tibetan culture	Electricity	Horse riding
Sunset view	Uttarganga temple	Drinking water	Trekking
Meadows	Chhentung Gumba	Health care centre	Hiking
River & springs	Dhorbaraha temple	Shopping	Nature walk
floral & faunal diversity		View tower	Fishing

People's perception of ecotourism development

The study shows that 47.36% of respondents agreed that the area has the potential for the development of ecotourism, 32.23% remained neutral, and 20.39% disagreed. The Chi-square test between the education level of the respondent with the response towards establishment of the buffer zone and promotion of ecotourism shows that there is Table 2 shows the result of the chi-square test which indicates a high level of significance between the education level of respondents and requirement for ecotourism development.

Table 2: Education level with ecotourism development

Variable	Category	Response category in No.			Weighted mean	Df	Chi-square value	P-value
		Agree	Neutral	Disagree				
Education	Illiterate	6	18	10	2.11	6	24.199	0.000
	Primary	21	13	9	1.72			
	Secondary	37	10	6	1.41			
	College	8	8	6	1.90			
Total		72	49	31	1.73			

The study found that 61.18% of respondents agreed that ecotourism will promote environmental conservation, while 18.42% remained neutral and 20.39% disagreed. The results of the chi-square test indicated an association between educational level and the role of ecotourism towards environmental conservation, with a calculated p-value of 0.044.

The surveyed respondents on ecotourism's role in the preservation of culture and tradition in an area showed a majority (66.44%) agreed, while 17.76% remained neutral. The result revealed that 57.23% of respondents agreed that there is an

opportunity to develop cottage industries, while 26.97% remained neutral, and 15.78% disagreed. The p-value of 0.021 suggests that there is a significant association between variables and the opportunity to develop the cottage industries. Respondents in agriculture, service, and other occupations strongly agree with the statement, while those in business disagree.

Table 3: There is an opportunity to develop the cottage industries from the Ecotourism Development

Variable	Category	Response category in No.			Weighted mean	df	Chi-square value	P-value
		Agree	Neutral	Disagree				
Education	Illiterate	14	15	5	1.75	6	14.906	S 0.021
	Primary	29	9	5	1.44			
	Secondary	36	8	9	1.49			
	College	8	9	5	1.86			
Total		87	41	24	1.58			

The surveyed respondents on the statement "Income from Ecotourism will be used in community development." 77% agreed, 28.94% remained neutral, and 19.07% disagreed. A statistically significant association was found, with a calculated p-value of 0.019 less than the tabulated value.

The survey revealed that 58.55% of respondents agree with the statement that ecotourism development will empower women, Dalits, poor, and marginalized groups, while 25% remain neutral and 16.44% disagree. Similarly, the result of the chi-square test showed that there was an association between ecotourism promotion towards empowering women, Dalits, poor, and marginalized groups.

Table 4: Women, Dalits, poor, and marginalized groups will be empowered by ecotourism development

Variable	Category	Response category in No.			Weighted mean	df	Chi-square value	P-value
		Agree	Neutral	Disagree				
Education	Illiterate	24	5	5	1.35	6	12.576	S 0.005
	Primary	17	18	8	1.25			
	Secondary	36	10	7	1.41			
	College	12	5	5	1.45			
Total		89	38	25	1.36			

Similarly, the surveyed respondents on the statement "There is a sound political atmosphere in the area" using a Three-point Likert scale shows the insignificant result. The majority (47.36%) agreed with the given statement, while 34.86%

remained neutral and 17.76% disagreed. Hence, no significant difference was found between educational level of the respondents and the given statement.

Roles and responsibilities of the organizations for the development of ecotourism

Focus group discussion and the key informants' interview showed that the organizations including Gandaki Province Tourism Ministry, Dhorpatan Municipality, Ward Offices, and Rotary Club are actively working for the development of ecotourism in DHR. Their efforts provide attention to infrastructure development, raising awareness, providing training, research opportunities, and organizing tours. Dhorpatan has been listed as one of the 100 destinations to be developed by the Gandaki Province Tourism Ministry. Dhorpatan Municipality supports ecotourism development through financial backing and coordination with involved stakeholders. It focuses on programs including resource protection, environmental conservation, planning, and coordination of tourism activities. The municipality also raises awareness about ecotourism, conducts excursions, and promotes inclusive tourism by incorporating disadvantaged groups into local enterprises. The province and municipality contribute to these efforts as reported by the key informants. Similarly, the Rotaract Club, a non-government organization, is actively involved in ecotourism development in DHR, promoting training programs, excursion campaigns, infrastructure development, and coordinating with other government organizations, was the conclusion of focus group discussion.

Discussion

The major challenge identified towards the establishment of the buffer zone around the DHR was a lack of awareness about the concept of BZ and its establishment, hindering the formation of these zones, which are crucial for ecotourism development. As Bhattarai et al. (2017) suggested a holistic conflict resolution approach which recognizes and resolves the different needs of all stakeholders in protected area to tackle challenges such as land use conflict, poaching and smuggling of wildlife parts and illegal harvesting of highly valued medicinal herbs through regulation. Similarly, Budhathoki (2004) argued that an increase in awareness results in a higher level of acceptance of BZ by the local communities. The area highlights the tourism opportunities with multiple natural features, religious sites, and various manmade structures to target visitors, resulting the different infrastructure development for enhancing tourism in the area, which additionally promotes infrastructure investment. This is consistent with the results of Baral and Neupane (2020), which suggested that tourism infrastructure, boosts tourism as they are interconnected with each other while

driving the other. Most of the respondents agreed with the statement that the Dhorpatan region has the potential for ecotourism development, which was also shown by Aryal et al., (2019), highlighting Nepal's protected areas have huge opportunities for developing ecotourism. The study found that those people who gained awareness and knowledge about the BZ program valued the program (Poudyal et al., 2024). Similarly, the establishment of BZ and the implementation of the BZ program have changed the perceptions of people towards protected areas and improved their relationships (Dixit et al, 2024). The BZ program also helped in reducing the issues on biodiversity conservation, including human-wildlife conflict (Lamichhane et al, 2019). However, considerable planning and sustainable management practices are required to balance visitors' growth and environmental conservation.

Similarly, the study shows that ecotourism promotes the conservation of the environment (Kiper, T., 2013). The finding corresponds with the study by K.C. (2016), which suggested that ecotourism acts as an effective tool for conservation and focuses on bringing benefits to local communities by promoting ecotourism and protecting natural areas. In addition, most of the people in the study area agreed that ecotourism assists in preserving local culture and tradition. But the finding contradicts a study carried out by Bhatta (2019), which indicated local culture, traditions, and architectural heritage have been threatened by the development of tourism. Therefore, it is necessary to consider and develop tourism within the frame of ecotourism to support the local economy in such a way that respects the unique traditional culture of the local community and preserves the natural resources as an attraction for the visitors. Additionally, one of the key findings is similar with a previous research about the community based ecotourism management practice in homestay by Khatiwada (2022), that ecotourism could contribute to community development, particularly through the development of small business and cottage-based industries, promoting local agro products & handicrafts and there should be robust coordination between government and non-government organizations for ecotourism development in the area. Respondents appreciated that government authorities allocate a budget to the programs related to ecotourism development. Bhuiyan et. al., (2011) suggested the significant roles of governmental authorities for creating strategies, improving ecotourism products, and accessibility for ecotourism development. Zhuang et al., (2011) found the role of NGOs in serving unique coordination across various institutional sectors and mobilizing critical resources for conservation and development.

Conclusion

Dhorpatan holds a remarkable significance for ecotourism opportunities. Hiking, homestays, seminar halls, communication services, and proper sanitation are the available tourism facilities in the area. However, the main constraints hindering ecotourism development are the absence of well managed and sufficient visitor information centers and poor road infrastructure. Stakeholders are working collaboratively to improve infrastructure and facilities, such as view towers and canoeing, to foster sustainable ecotourism. Most of the people were in favor of ecotourism development in the area, although they had some concerns about the BZ establishment. Particularly, local communities' support for ecotourism is strong among the literate residents compared to the illiterate ones. Organizations such as the Ministry of Culture, Tourism and Civil Aviation, Gandaki Province, Dhorpatan Municipality, and Rotary Club are interested in ecotourism development in the area. Moreover, they are interested in developing ecotourism in the area with local people's participation. Dhorpatan could be one of the major ecotourism destinations in Nepal, benefiting both local communities and nature with the proper emphasis on infrastructure development and inclusion of communities in decision-making.

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