



Research Article

Socio-Economic Impacts of Ecotourism Activities Around the Rupa Lake of Kaski, Nepal

Bikram Pageni¹, *Shreekanta S. Khatiwada², Nirjala Raut³

Ramesh Raj Pant⁴, Sandesh Dhakal⁵

^{1,2,3,5}Institute of Forestry (IOF), Pokhara Campus, Tribhuvan University, Nepal

*⁴Central Department of Environment Science, Institute of Science and Technology,
Tribhuvan University, Nepal*

*Corresponding Email : skkhatiwada@iofpc.edu.np

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ABSTRACT

Ecotourism is a sustainable approach to tourism development that aims to positively impact socio-economic conditions and the environment. This study assesses the socio-economic impact of ecotourism activities around the Rupa Lake area. Primary data were collected through semi-structured questionnaires and interviews with residents involved in lake conservation activities, supplemented by field observations. Additionally, key information was obtained from interviews with officials of the Rupa Lake Fishery and Restoration Cooperative Limited (RLFARCL). A mixed-methods research design, incorporating both qualitative and quantitative approaches, was employed to analyze the data using statistical tools in MS Excel and SPSS. The findings reveal a significant increase in food and accommodation services, including Khaja-Ghar, lodges, restaurants, and hotels, most of which operate for six to nine months annually. The rapid establishment of tourism businesses over the past decade has boosted self-employment but has provided limited employment opportunities for non-family members. The study indicates a gradual increase in ecotourism activities and improvements in tourism infrastructure in the Rupa Lake area. Local people exhibit a positive attitude

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towards conservation and ecotourism development. Therefore, skill-development training for ecotourism promotion, sustaining livelihoods, and encouraging local participation is recommended.

Keywords: Conservation, Community participation, economic leakage, inclusiveness, local economy, wetland

INTRODUCTION

Ecotourism has emerged as a promising approach to sustainable development, particularly in regions rich in natural beauty and socio-cultural diversity. 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). For developing nations like Nepal, ecotourism has long been viewed as a pathway to sustainable development due to its multiplier effect (Scheyvens & Laeis, 2022). Ecotourism, a prevalent term in tourism literature, offers diverse experiences to various people. According to The International Ecotourism Society, ecotourism is “responsible travel to natural areas that conserves the environment and improves the welfare of local people” (TIES, 2015). It allows everyone to experience the natural, intellectual, and cultural heritage of local communities. Ecotourism is recognized for its potential to enhance the socio-economic conditions of local populations, serving as both an economic development tool and a conservation mechanism (Wood, 2002). Buckley (2009) highlights its capacity to generate economic returns from pristine natural environments. The number of visitors is crucial in motivating stakeholders to develop ecotourism (Sherpa and Shuklabaidya, 2021). Local communities are the primary stewards of wetlands in their regions and their involvement in conservation is vital (ICIMOD, 2006). Understanding the relationship between local people and wetlands, including their socio-cultural and economic status, conservation attitudes, community participation, and resource utilization patterns, is essential for wetland preservation (Zebardast et al., 2021).

Rupa Lake attracts many tourists annually, contributing to the socio-economic activities of residents. The local community is actively involved in preserving the natural environment around Rupa Lake and promoting ecotourism for their livelihoods. The development of ecotourism aims to promote tourism while protecting natural sites from damage (Kiper, 2013). Without proper management, tourism activities can lead to environmental degradation due to mass tourism. Community-based conservation is a sustainable approach to managing wetlands near settlements (Shrestha, 2011). Inland freshwater shallow lakes provide various

ecosystem services, including provisioning, regulating, supporting, cultural, and aesthetic services (Makwinja et al., 2022; Thapa et al., 2020). Assessing the ecotourism status and local community participation is crucial for developing ecotourism around Rupa Lake. The Rupa Lake area, where many residents rely on forests and agriculture, could benefit from alternative income sources through ecotourism. Rupa Lake, one of the wetlands of Pokhara Valley, has the potential for wetland-based eco-tourism activities, which could be the backbone of the livelihood services for the local people around the lake (Khatiwada et al., 2022). Therefore, this study aims to investigate the socio-economic impacts of ecotourism around Rupa Lake, focusing on the perception, benefits, and challenges local communities face. The proper understanding of socio-economic impact can help resource managers, governmental bodies and policymakers ensure conservation and improve livelihoods, with local people being central to all aspects of ecotourism development.

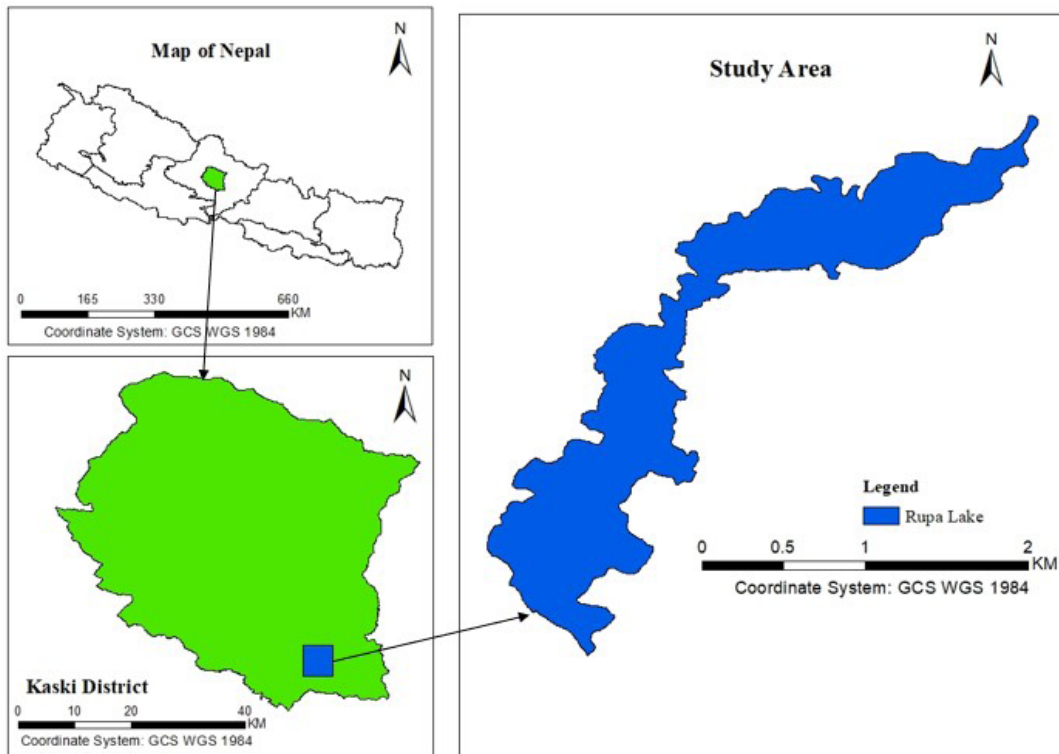
DATA AND METHODS

Rupa Lake, an important wetland in the Pokhara Valley, has been listed as a Ramsar site since 2016. It is part of the Lake Cluster of the Pokhara Valley Ramsar Site, which includes nine lakes, with Rupa being the third largest. It is located in the northeastern part of Pokhara Metro city, Kaski district of Gandaki Province, Nepal, and lies approximately 200 kilometers west of Kathmandu (Figure 1). Positioned at an elevation of 600 meters above sea level, it is situated about 12 kilometers east of Pokhara's city center. The Rupa watershed area spans Ward No. 32 of Pokhara Metropolitan City, Wards No. 6 and 7 of Rupakot Rural Municipality, and Ward No. 4 of Madi Rural Municipality. This area covers a total of 2,707 hectares, with altitudes ranging from 580 to 1,420 meters above sea level. The lake stretches from north to south, with its main water inflow coming from the Talbesi stream. The Dhovan Khola acts as a feeder stream, while the Tal Khola serves as the outlet at Sistani Ghat, eventually joining the Seti Gandaki River. Rupa Lake itself covers an area of 115 hectares, and its total watershed area is 30 square kilometers. Around 15,000 people from diverse ethnic backgrounds, including the Majhi and Jalahari communities, live in closely-knit villages around the lake's basin. Many of these residents depend on the wetland resources for their livelihoods. Rupa Lake is also a potential region for community-based homestay programs (CBHP) ecotourism promotion. The research on Gandaki province identified that CBHP is one of the appropriate ecotourism models that create employment opportunities for local people (Khatiwada et al., 2022). Therefore, this region is one of the potential hubs for ecotourism development, and understanding the socio-

economic context of local people toward ecotourism was crucial for sustainable tourism.

Figure 1

Showing Study Area in Map



The research incorporated both random sampling and purposive sampling to gather tourism data from service providers. Residents around the lake area who were members of the Rupa Lake Restoration and Fishery Cooperative Limited (RLRFCL) were sampled, as they are responsible for the sustainable development tourism of the area. Out of the 967 RLRFCL members, 10% (i.e., 97 individuals) were sampled, along with an additional 10 respondents who were not members, making a total of 107 respondents. The household survey was conducted in January 2022, using semi-structured questionnaires for data collection. Additionally, a Key Informant Survey was carried out with the Manager and Chairperson of the Rupa Lake management committee.

Qualitative and quantitative data were coded, organized, and arranged in MS Word and MS Excel and analysed with the help of SPSS. All the data received from the questionnaire

survey were carefully analysed before coding. Qualitative answers and open-ended answers were coded first and together with quantitative data, they were entered into SPSS for analysis and graphical representation. The results were interpreted using statistical tools such as weighed mean, rank, and standard deviation.

RESULTS AND DISCUSSION

Characteristics of Respondent

The study on ecotourism in the Rupa Lake area reveals significant insights into visitor facilities and the socio-economic impacts on the local community. Most of the respondents (60.4%) were female, with the highest percentage (56.3%) falling within the 15-50 years age category. This demographic data indicates a youthful and predominantly female participant base in the ecotourism activities around Rupa Lake. Most respondents were engaged in farming (54.2%), followed by business activities (37.5%), reflecting the primary economic activities in the region. Education levels were predominantly up to the secondary level, and a significant portion of the respondents (54.4%) identified as Indigenous, highlighting the area's rich cultural diversity. In terms of economic impact, agriculture remains the main income source for 42.4 percent of respondents, while tourism services contribute to 22.9 percent of the local income. This underscores the importance of agriculture in the local economy, even as tourism begins to play a more significant role. Additionally, the proximity of the lake to the respondents' homes is notable, with 40.8 percent living within a five-minute walking distance. This proximity suggests that the local population is highly integrated with the lake's ecosystem, relying on it for both livelihood and daily activities. These findings emphasize the need for sustainable ecotourism practices that support both the economic well-being of the local community and the preservation of the natural environment.

Local Perceptions of Eco-Tourism Impacts

The study on the impacts of eco-tourism as perceived by local people around the lake area provides valuable insights into how eco-tourism influences their lives. The data is presented in a bar graph, highlighting various aspects such as biodiversity conservation, infrastructure development, increased income, and cultural change. This data highlights the stage for understanding the local community's perspective on eco-tourism.

Figure 2

Impacts of Ecotourism on local community

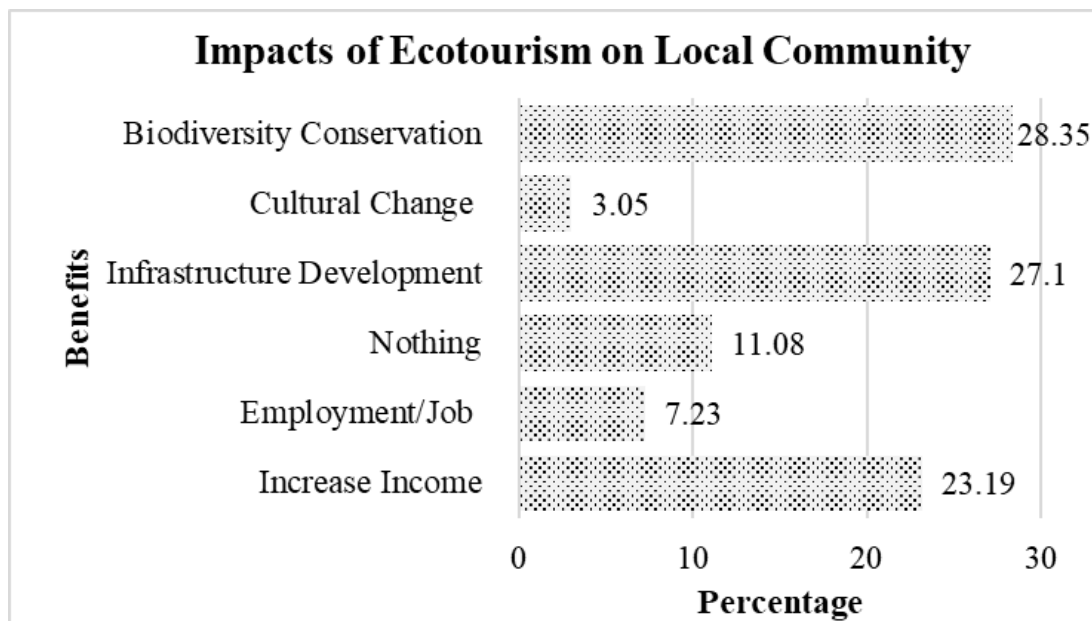


Figure 2 highlights that biodiversity conservation is perceived as the most significant positive impact of eco-tourism, with 28.35 percent of respondents acknowledging its benefits. This is followed closely by infrastructure development, which 27.10 percent of respondents see as a positive outcome. Increased income is also a notable benefit, recognized by 23.19 percent of the respondents. Employment opportunities are also mentioned, with 7.23 percent of respondents seeing it as a benefit. However, cultural change is perceived as the least beneficial impact, with only 3.05 percent of respondents noting it as a positive effect. Interestingly, 11.08 percent of respondents felt that eco-tourism had no impact at all.

Comparing these impacts, it is evident that eco-tourism is highly valued for its contributions to biodiversity conservation and infrastructure development. The relatively high percentages for these categories indicate that local people see tangible benefits in these areas. In contrast, the low percentage for cultural change suggests that this aspect is either less impactful or less appreciated by the community. The notable percentage of respondents who felt there was no impact highlights a segment of the population that may not perceive the benefits of eco-tourism as strongly. This comparison underscores the multifaceted nature of eco-tourism’s impacts, highlighting areas of success and those needing further attention.

Distribution of Tourism Facilities and Services

The annual revenue generated from tourism businesses in the study area amounted to \$52,498. Out of 23 tourism service providers, 13 offered accommodation services with bed capacities ranging from a minimum of two to a maximum of 20 visitors. When fully occupied, these accommodations can host a total of 105 people per night, translating to 38,325 people annually. However, in 2021, only 927 visitors stayed for at least one night, indicating underutilization of available accommodation. The mean accommodation capacity per service provider was 8.15 beds. Additionally, the bar diagram in the study showed that approximately half of the respondents identified most visitors as local tourists (55%), followed by domestic tourists (30%) and international tourists (15%) annually. This data underscores the need for strategies to increase the length of stay and attract more overnight visitors to boost the local economy.

Figure 3

Types of Services Provided

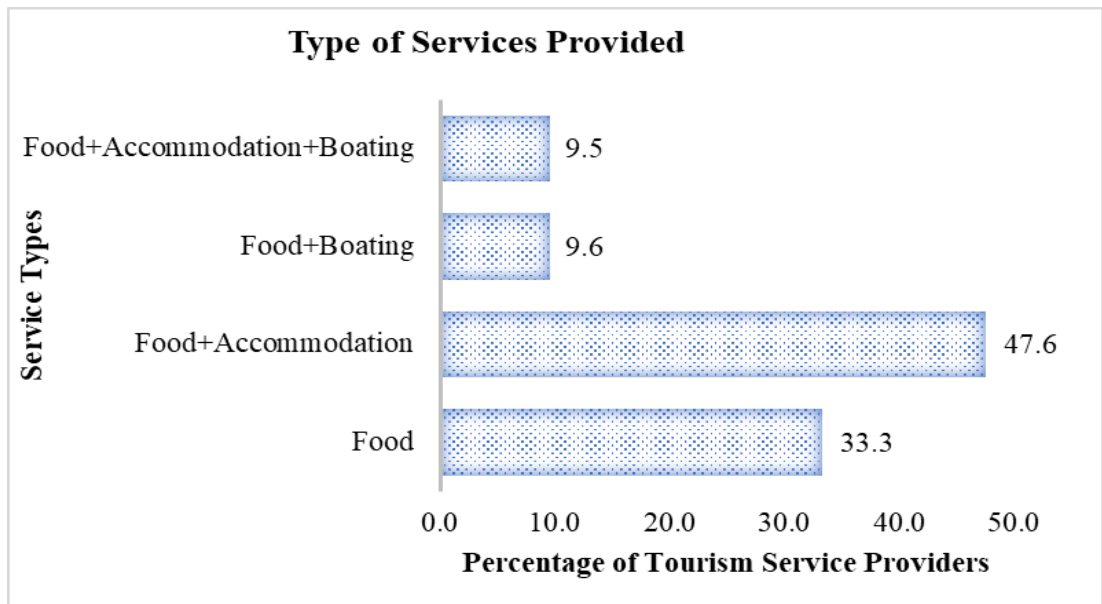


Figure 3 illustrates the distribution of services offered by tourism service providers around Rupa Lake. The data reveals that most providers (47.6%) offer a combination of food and accommodation, indicating a strong focus on meeting the basic needs of tourists. This is followed by 33.3 percent of providers who offer only food services, suggesting that food is a critical component of the tourism experience in the area. Less common are the combinations of food and boating (9.6%) and food, accommodation, and boating (9.5%). These lower

percentages indicate that while there is some interest in recreational activities like boating, the primary demand remains for food and lodging. From the bar graph shown aside, it is evident that out of the 22 percent of primary tourism service providers, almost half provide food and accommodation services through lodges or hotels. About one-third offer food services only through Khaja-Ghar, while approximately 9 percent provide a combination of Khaja-Ghar and boating services or lodge and boating services. Additionally, there are 15 boats in Rupa Lake used by the Rupa Lake Restoration and Fishery Cooperative Limited (RLRFCL) for fishing purposes. This distribution of services highlights the current economic focus of tourism providers and suggests potential areas for development to enhance visitor facilities and economic impact. The underutilization of available accommodation and the limited provision of boating services indicate opportunities for expanding and diversifying the tourism offerings in the Rupa Lake area.

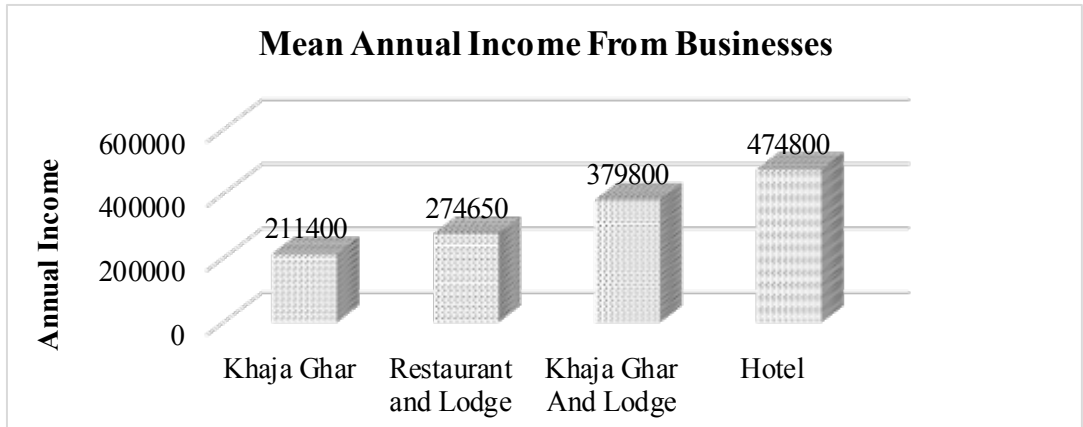
Earnings from Tourism Business

Figure 4 is a comparative analysis of the annual income generated by different types of hospitality businesses in the Rupa Lake area. The data reveals that Hotels have the highest mean annual income at 474,800, followed by *Khaja Ghar* and Lodge with 379,800, Restaurant and Lodge with 274,650, and *Khaja Ghar* with 211,400. This indicates that Hotels are the most lucrative business type in the region, likely due to their ability to attract more visitors and provide a wider range of services. The significant income disparity among these businesses highlights the varying levels of economic impact they have on the local community.

Understanding the income levels of these businesses is crucial for assessing the socio-economic impacts of ecotourism in the Rupa Lake area. Higher income from hotels suggests greater potential for job creation, improved infrastructure, and enhanced local services, contributing positively to the community's overall economic development. Conversely, the lower income of *Khaja Ghars* indicates that smaller, perhaps more traditional establishments may struggle to compete, potentially affecting their sustainability. These insights are essential for policymakers and stakeholders aiming to balance visitor satisfaction with sustainable economic growth in the region.

Figure 4

Earnings from Tourism Services



Status of Tourism Infrastructure

The study found the overall condition of infrastructure around Rupa Lake to be moderate (Table 1). None of the infrastructure elements were perceived as sufficient by the host community. Infrastructures like drinking water, resting places (Chautari), telecommunication, information services, and restaurants and lodges were perceived as moderate by most respondents. However, infrastructure such as roads and hotels were perceived to be in poor condition by most visitors. Specifically, physical infrastructure like roads, picnic spots, and hotels were rated poorly.

Table 1 highlights the perceptions of the local community based on ranking score. The drinking water was perceived as moderate with a weighted mean of 2.30. Similarly, resting places (Chautari) were also perceived as moderate with a weighted mean of 1.73. Roads, on the other hand, were rated poorly with a weighted mean of 1.48. Telecommunication services were perceived as moderate with a weighted mean of 2.12, while information services were rated moderate with a weighted mean of 1.93. Picnic spots were rated poorly with a weighted mean of 1.32, and hotels were rated poorly with a weighted mean of 1.12. Restaurants and lodges were perceived as moderate with a weighted mean of 2.30. The standard deviation result shows maximum variation in drinking water facilities and the least in hotel and picnic spots. This indicates that tourism and recreational services are more compatible among the local people.

The poor condition of roads, picnic spots, and hotels indicates a need for significant improvements in these areas to enhance visitor satisfaction and safety. The moderate rating for

essential services like drinking water, telecommunication, and information services suggests that while these are functional, there is room for improvement to fully meet the community’s needs. Deciding where to allocate resources effectively to improve infrastructure can be challenging. Prioritizing upgrades in poorly rated areas while maintaining moderate services is crucial. Engaging with the host community to understand their specific needs and preferences can help in planning and implementing infrastructure improvements more effectively. Addressing these challenges can lead to better infrastructure development, improved visitor experiences, and enhanced community livelihood opportunities around Rupa Lake.

Table 1
Condition of Infrastructure in and Around Rupa Lake

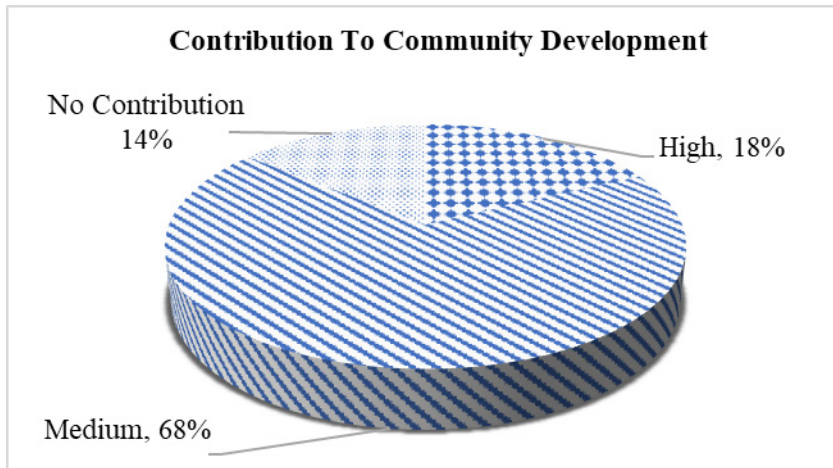
Infrastructure	Sufficient (3)	Moderate (2)	Poor (1)	Weighted Mean	Standard Deviation (SD)	Remarks
Drinking water	51	37	19	2.30	1.69	Moderate
Resting place (Chautari)	23	32	52	1.73	1.13	Moderate
Road	8	35	64	1.48	0.66	Poor
Telecommunication	31	58	18	2.12	1.32	Moderate
Information	20	59	28	1.93	1.06	Moderate
Picnic Spots	0	34	73	1.32	0.05	Poor
Hotels	0	13	94	1.12	0.04	Poor
Restaurant & Lodge	49	41	17	2.30	1.66	Moderate

Perception of Contribution of Eco-tourism in Community Development

The study on the contribution of ecotourism to community development around the Lake Area reveals varied perceptions among the local respondents (Figure 5). According to the survey, a significant majority, 68 percent, believe that ecotourism has medium contributed to community development. This suggests that while ecotourism has noticeable benefits, it may not be substantial or evenly distributed among the community members. On a more positive note, 18 percent of respondents feel that ecotourism has highly contributed to their community’s development, indicating a strong impact where it is felt. However, there remains a skeptical minority of 14 percent who perceive that tourism has not contributed at all to community development around the Lake Area.

Figure 5

Contribution to Community Development



These findings underscore the need for a more appropriate approach to ecotourism development. While the majority acknowledges some benefits, the relatively low percentage of respondents who see significant contributions suggests that there is room for improvement. Enhancing the positive impacts of ecotourism could involve better resource allocation, community engagement, and targeted initiatives that address the specific needs and concerns of the local population. Additionally, understanding the reasons behind the perceptions of those who see no contribution at all could provide valuable insights for making ecotourism more inclusive and beneficial for the entire community.

Table 2

Eco-Tourism Contribution to Different Sectors

Sectors	Yes			No		Weighted Mean	Rank
	Good (3)	Moderate (2)	Low (1)				
Education	0	19	35	53	1.35	3	
Agriculture	0	13	21	73	0.14	4	
Livestock	0	33	57	17	1.37	2	
Business	16	47	33	11	1.82	1	

Table 2 provides a detailed analysis of how ecotourism impacts various sectors within the community. The sectors evaluated include Education, Agriculture, Livestock, and Business. It categorizes the contributions as Good, Moderate, or Low, and calculates a weighted mean to rank the sectors based on the perceived impact of ecotourism. In the Education sector, none of the respondents rated the contribution of ecotourism as Good. Instead, 19 respondents

perceived it as Moderate, while 35 rated it as Low, resulting in a weighted mean of 1.35. This places Education third in the ranking, indicating a relatively low perceived impact of ecotourism on educational development. Agriculture shows an even lower impact, with no respondents rating the contribution as Good. Only 13 respondents perceived it as Moderate, and 21 rated it as Low. The majority, 73 respondents, indicated that ecotourism has not contributed to Agriculture at all, resulting in a very low weighted mean of 0.14. This ranks Agriculture fourth, highlighting it as the sector least benefited by ecotourism. The Livestock sector fares slightly better, with 33 respondents rating the contribution of ecotourism as Moderate and 57 as Low. Only 17 respondents indicated no contribution. The weighted mean for Livestock is 1.37, placing it second in the ranking. This suggests that while the impact is not substantial, it is more noticeable compared to Education and Agriculture. Business emerges as the sector most positively impacted by ecotourism. Sixteen respondents rated the contribution as Good, 47 as Moderate, and 33 as Low, with only 11 indicating no contribution. The weighted mean for Business is 1.82, ranking it first. This indicates that ecotourism has a relatively higher positive impact on business activities within the community.

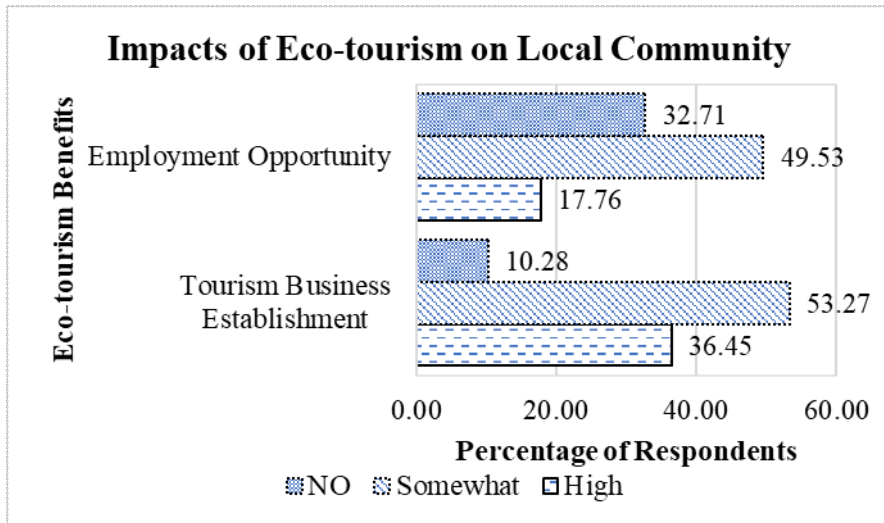
Overall, the results reveal that while ecotourism does contribute to various sectors, the extent of its impact varies significantly. Business benefits the most, followed by Livestock, Education, and Agriculture. These findings suggest that targeted efforts to enhance the benefits of ecotourism in less impacted sectors could lead to more balanced and inclusive community development. Addressing the specific needs and challenges of each sector can help maximize the positive impacts of ecotourism and ensure that its benefits are more evenly distributed across the community.

Economic Diversification and Public Perceptions

The study on the impacts of eco-tourism reveals varied perceptions among the local respondents regarding tourism business establishment and employment opportunities (Figure 6). According to the survey, 53.27 percent of respondents stated that there has been a somewhat increase in tourism business establishment in the area. This indicates a moderate level of growth in tourism-related businesses, suggesting that while there are noticeable developments, they may not be substantial or widespread. Additionally, 36.45 percent of respondents reported a high increase in tourism business establishment, highlighting significant growth in certain areas. However, 10.28 percent of respondents felt that there has been no contribution from eco-tourism to business establishment, indicating that some areas or sectors may not have experienced the benefits of eco-tourism.

Figure 6

Perception of Respondents Relating to the Impact of Tourism



In terms of employment opportunities, 49.53 percent of respondents observed a somewhat increase, suggesting that eco-tourism has moderately contributed to job creation in the area. This moderate increase indicates that while new employment opportunities have emerged, they may not be sufficient to meet the community’s needs fully. Meanwhile, 17.76 percent of respondents reported a high increase in employment opportunities, reflecting significant job growth in certain sectors or regions. Conversely, 32.71 percent of respondents stated that there has been no increase in employment opportunities, pointing to areas where eco-tourism has not yet made a noticeable impact on job creation.

These findings underscore the need for targeted efforts to enhance the positive impacts of eco-tourism. While there are noticeable benefits, they are not universally felt, pointing to the need for strategic improvements and more inclusive practices. Addressing the specific needs and challenges of the local population can help maximize the positive impacts of eco-tourism, ensuring that its benefits are more evenly distributed across the community. This approach can lead to more sustainable and inclusive community development, leveraging eco-tourism as a catalyst for economic growth and job creation.

Economic Leakage and Benefit to Community

Economic leakage refers to the loss of income from an economy when money is spent on imports rather than locally produced goods and services. This phenomenon can significantly

reduce the overall economic benefit to the local community, as the money spent on imports does not circulate within the local economy. Conversely, the benefit to the community involves the positive impacts on the local economy when goods and services are produced and consumed locally, such as job creation, increased local spending, and overall economic growth.

Table 3 provides a breakdown of the percentage of local, imported, and mixed sources for various products and services around Rupa Lake. For instance, human resources show a high local employment rate of 87 percent, indicating low economic leakage and significant benefits to the community through job creation and income retention. In contrast, vegetables have a high import percentage of 78 percent, suggesting significant economic leakage and reduced potential local economic benefits. Other products like fish and milk products have a substantial local component, minimizing economic leakage and supporting local businesses, whereas items like salt, sugar, and noodles are entirely imported, resulting in total economic leakage.

Comparing the data, it is evident that products and services with higher local sourcing, such as human resources, fish, and milk products, contribute more positively to the local economy by retaining income within the community. On the other hand, products with high import reliance, such as vegetables, meat products, alcohol, ghee/oil, salt/sugar, and noodles/biscuits, exhibit significant economic leakage, thereby limiting the economic benefits to the local community. Promoting local production and reducing import reliance could enhance the economic benefits to the community, fostering greater economic resilience and growth.

Table 3

Economic Leakage and Benefit to Community

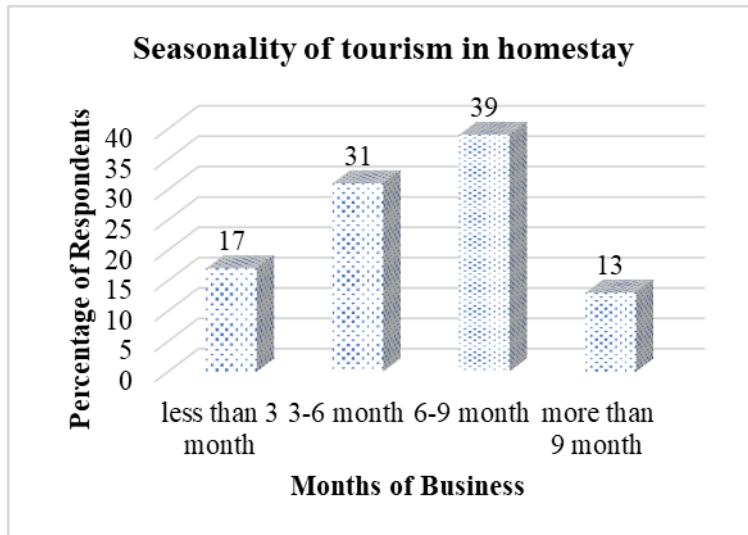
Product and Services	Market (%)		
	Local	Import	Both
Human Resources	87	0	13
Vegetables	13	78	9
Fish	85	0	15
Fruits	17	47	36
Meat Products	19	66	15
Milk Products	42	35	23
Alcohol	19	65	16
Ghee, Oil	13	70	17
Salt, Sugar	0	100	0
Noodles, Biscuits	0	100	0

Seasonality of Homestay Tourism Around the Lake

The study on the seasonality of tourism in homestays provides a detailed look into how long tourism service providers operate throughout the year. This context is crucial for understanding the operational dynamics and economic stability of homestay businesses. The data, presented in Figure 7, categorizes the duration of business operations into four segments: less than three months, three to six months, six to nine months, and more than nine months.

Figure 7

Seasonality of Tourism in Homestay



The data reveals that the majority of tourism service providers (39%) operate their businesses for six to nine months. This is followed by 31 percent of providers who operate for three to six months. A smaller portion, 17 percent, operates for less than three months, while only 13 percent of providers manage to keep their businesses running for more than nine months. This distribution highlights the significant impact of seasonality on the tourism industry, with most businesses experiencing a limited operational period.

Comparing these results, it is evident that a substantial number of homestay providers are affected by seasonal fluctuations, with the majority operating for less than nine months. The high percentage of businesses operating for six to nine months suggests a peak season that sustains them for a significant part of the year. In contrast, the smaller percentages for less than three months and more than nine months indicate that only a few businesses either struggle with very short operational periods or have managed to extend their operations beyond the

typical peak seasons. This comparison underscores the challenges and opportunities within the homestay sector, driven by the seasonality of tourism.

CONCLUSIONS

The study underscores the increasing significance of ecotourism in the Rupa Lake area, driven by its natural attractions such as the lake, mountains, lush green forests, and fresh fish. Despite local perceptions of inadequate infrastructure like roads, hotels, and telecommunications, the potential for ecotourism remains high. This is demonstrated by the growing number of tourism service providers and the discovery of new tourism products. Ecotourism has contributed to community development, although economic leakage is a concern due to the prevalence of subsistence farming and competition from imported goods. Ecotourism has directly benefited primary tourism businesses by generating income, though its indirect contributions to non-tourism service providers are minimal. The shift towards using LPG gas for cooking, with occasional use of firewood, supports environmental sustainability. Local residents perceive the overall environmental condition as positive, reflecting a favorable attitude towards conservation and ecotourism development. The study also reveals that the rapid establishment of tourism businesses has boosted self-employment but has not significantly increased employment opportunities for non-family members. For policymakers, these findings suggest that while ecotourism is fostering economic and environmental benefits, targeted interventions are needed to maximize its potential. Providing skill-development training in ecotourism can sustain livelihoods and encourage local participation. Additionally, addressing economic leakage and improving infrastructure will be crucial for the sustainable development of the Rupa Lake area.

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