

ISSN: 2990-7993(P)

Dhaulagiri Journal of Contemporary Issues

Vol 3, Issues 1

June, 2025

DOI: <https://doi.org/10.3126/djci.v3i1.79666>**Published by:** Research Management Committee,
Dhawalagiri Multiple Campus, Baglung**Home Page:** <https://dmcjournal.edu.np/index.php/DWJCI>

Opportunities and Challenges for Ecotourism Development at Pyara Lake in Kanchanpur District of Western Nepal

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Abstract

Tourism at Pyara Lake, located in the Kanchanpur District of Western Nepal, holds significant potential for sustainable development, as revealed by a comprehensive SWOT analysis. This study assesses the opportunities and challenges of ecotourism development in the Pyara Lake area. Primary data were collected through semi-structured questionnaires and interviews with residents involved in lake conservation activities, supplemented by field observations. A mixed-methods research design, incorporating both qualitative and quantitative approaches, was employed to analyze the data. The lake's natural beauty, biodiversity, and cultural significance make it an attractive destination for diverse tourists. Most visitors are students, who prefer affordable transportation like bikes and auto-rickshaws. Sightseeing and boating are the primary activities, highlighting the water-based nature tourism. The tourism contributes notably to local livelihoods, with major employment in hospitality. Despite the limited infrastructure investment, significant increase in local income levels from post-tourism demonstrates the sector's economic impact. Challenges such as poor accessibility, inadequate facilities and environmental degradation must be addressed through strategic community involvement. Opportunities for promoting eco-tourism, cultural heritage, and sustainable practices present pathways to attract ecotourism and ensure equitable economic benefits. By investing in infrastructure, enhancing local engagement, and leveraging its natural and cultural assets, Pyara Lake can emerge as a model for sustainable tourism. Strategic collaboration among stakeholders will be essential to overcoming challenges and ensuring tourism sustainability.

Keyword: community participation, ecotourism sustainable tourism, livelihood, socio-economic impact

Article Information

Received: 17 February, 2025 **Reviewed:** 20 February, 2025 - 14 March, 2025 **Revised:** 15 March, 2025- 4 May, 2025

Accepted: 7 May, 2025

Published: 2 June, 2025

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Introduction

Tourism is an emerging multidimensional business activity interconnected with hospitality, services, and facilities from a global perspective. It generates assorted business connectivity with transportation, accommodation, food and beverage, entertainment, nature, culture, and adventure activities related to business and facilities that have contributed significantly to the generation of income and employment for the host community (Khatriwada et al., 2024). Tourism has significant implications for the local economy. Ecotourism, a form of sustainable tourism that focuses on preserving natural resources, cultural heritage, and the involvement of local communities, has become a key area of growth within global tourism. Ecotourism is a sustainable approach to tourism development that aims to positively impact socio-economic conditions and the environment (Pageni et al., 2024), which is also vital in promoting environmental conservation while contributing to local economic development in Nepal (Acharya, 2019; Sthapit, 2020). It contributed 3.9% to total employment and 4% to the national GDP, with 790,000 visitors generating approximately USD 472 million in revenue in 2018 in Nepal (Aryal et al., 2019; MOCTACA, 2019). Known for its stunning landscapes, diverse ecosystems, and rich cultural heritage, Nepal offers considerable potential for ecotourism, especially in areas that remain underexplored. As the demand for nature-based tourism grows, the development of sustainable ecotourism initiatives in Nepal presents significant opportunities for local communities to benefit from tourism while maintaining the integrity of their natural and cultural resources (Pokharel et al., 2018).

Figure 1

Scenic view of Pyara Lake. Photo by (Samrat Ghimire)



Nestled in the Punarbas Municipality of Kanchanpur District, Pyara Lake and surrounding biodiversity is one such underdeveloped attractive site with great potential for ecotourism (Figure 1). It is renowned for its rich biodiversity, including 42 recorded bird species, aquatic animals and lush vegetation, making it an ideal location for eco-tourists. It is not only a significant ecological site but also holds cultural importance for the local community. However, despite its natural and cultural assets, Pyara Lake's tourism potential remains constrained by challenges such as poor accessibility, inadequate infrastructure, and environmental degradation. These factors limit the region's capacity to fully capitalize on its tourism potential.

Kanchanpur District, like many rural areas in Nepal, faces socio-economic challenges, including limited employment opportunities and underdeveloped infrastructure (Sthapit, 2020). However, tourism presents a viable solution to these challenges by providing new sources of income and fostering community engagement (Acharya, 2019). The wetland and surrounding of the Lake have the potential for 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). Developing the wetland and the surrounding of the Lake into a sustainable tourism destination makes it possible to enhance local livelihoods while promoting environmental conservation. This study aims to evaluate the tourism potential of the Pyara Lake, focusing on its socio-economic impacts, the challenges faced by the local community, and the opportunities for promoting sustainable ecotourism. So, the paper has duly discussed the socio-economic benefits of wetland-based ecotourism for sustainable development while preserving its natural and cultural resources. This study also tried to provide insights into how the Lake can be developed into a sustainable tourism destination that benefits both the local community and the broader tourism industry in Nepal.

Literature Review

Ecotourism has gained global recognition as a form of tourism that emphasizes sustainability, environmental protection, and local community involvement. It is 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). In Nepal, ecotourism is increasingly seen as a critical component of sustainable development, particularly in rural and ecologically sensitive areas. Nepal's diverse ecosystems, ranging from the lowland Terai to the towering Himalayas, offer immense opportunities for nature-based tourism. The country is home to several protected areas, national parks, and wildlife reserves that attract tourists seeking to explore its natural beauty while contributing to conservation efforts (Acharya, 2019).

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). Previous studies on ecotourism in Nepal have highlighted the dual potential of tourism to generate income and promote environmental conservation. Pokharel et al. (2018) emphasized the role of community-based tourism in rural Nepal, where local communities are actively involved in decision-making processes and benefit directly from tourism revenue. At the same time some challenges such as insufficient infrastructure, poor management, and environmental degradation are also caused by unregulated tourist activities. The local community is actively involved in preserving the natural environment in their locality of the homestay and promoting ecotourism for their livelihoods. The development of nature- and culture-based ecotourism aims to promote homestay tourism while protecting natural sites that contribute to the socio-economic activities of residents (Khatriwada, 2022). The number of visitors is crucial in motivating stakeholders to develop ecotourism (Sherpa & Shuklabaidya, 2021). The conservation role of local community participation is vital in the lake and wetlands as their primary stewards of the regions and their involvement (Ghimire & Regmi, 2024). At the same time, the previous research also identified that 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).

Most of the studies primarily emphasize the economic benefits of tourism without adequately addressing the environmental and socio-cultural consequences (Sthapit, 2020). There is a need for research that takes a holistic approach, considering both the positive and negative impacts of tourism on local communities and ecosystems. Despite the growing interest in ecotourism, several gaps in the existing literature need to be addressed. A common limitation across studies is the lack of focus on specific, underexplored regions in Nepal (Nepal, 2022; Dahal et al., 2024). While much of the research focuses on well-known destinations like the Annapurna and Sagarmatha regions, little attention has been given to lesser-known sites such as Karnali region and Pyara Lake in Kanchanpur District.

Another gap is the lack of research on the practical application of strategic planning tools like SWOT analysis in the rural sites for the ecotourism development in Nepal. While SWOT analysis is widely used in tourism management, its application in rural and underdeveloped ecotourism destinations remains limited in Nepalese context. Hence the findings tried to contribute to the broader discourse on ecotourism in the rural site of Nepal and provide a model for other regions with untapped tourism potential.

Methodology

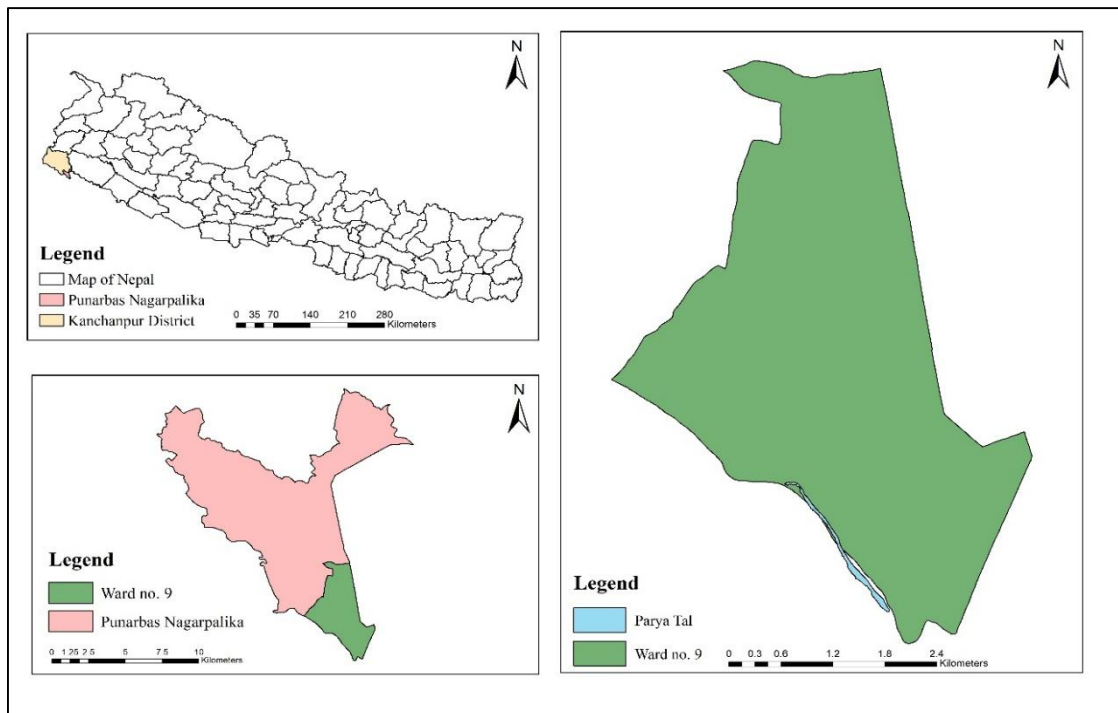
Study Area

The research was conducted at Pyara Lake, located near the Bichphanta region in Punarbas Municipality, Kanchanpur District of far western Nepal (Figure 2). The lake covers an area of approximately 0.07 km² and is situated at an elevation of 250 meters above sea level, with geographical coordinates of 28°33'57" N latitude and 80°30'33" E longitude. The distance from local Dokebajar to Pyara Lake through Town Bajar is approximately 18 km. During the journey to Pyara Lake, travelers encounter Bichphanta, where a gate facilitates easy access to the destination. However, for the international tourists must enter through either the Banbasa or the Gaurifanta border. Some Indian tourists prefer visiting from their adjacent border, adding to the convenience of access.

Para Lake is rich biodiversity positions with a valuable ecological and tourist attraction. The site was selected for this study due to its untapped tourism potential, limited prior research, and the recognition of its tourism value by the local community.

Figure 2

Study area



Data Collection

Primary data for this study were collected using structured and semi-structured methods to gather qualitative and quantitative information. A total of 203 respondents participated, including 42 tourists, 139 local residents, and 25 hotel owners. The sample was selected using purposive sampling to ensure representativeness. Interviews were conducted with local leaders, intellectuals, and community members who could provide insights into tourism challenges and opportunities.

Field observations were conducted to document key aspects of tourism in and around Pyara Lake. This included an assessment of tourist zones, infrastructure, sustainability, and natural beauty, as well as environmental challenges. A preliminary survey was conducted to gather an overview of the tourism conditions in the area. This involved interviews with local stakeholders and tourism-related focal persons to assess the current state of infrastructure, accessibility, and visitor management. Key Informant Interviews with semi-structured questionnaires were conducted with community leaders, members of the lake management committee, government officials, and other relevant stakeholders. These interviews provided, more profound insights into tourism challenges, environmental concerns, and the local community's perspectives on tourism development. Finally, a participatory focus group discussion (FGD) was conducted with 10 participants, including residents and community leaders.

Secondary data were gathered from various reliable sources to contextualize the findings and supplement the primary data. These sources included the reports from the Punarbas Municipality Office published and unpublished reports, research papers, newsletters, and journal articles, documents released by Nepal Tourism Board, annual reports and policy guidelines of the different tiers of Government, information from government institutions (e.g., tourism, industry, forest and agriculture offices), private organizations and online databases from the official websites. This secondary data was crucial for understanding the broader socio-economic, environmental, and policy context of tourism in the area and helped to provide a foundation for analyzing the primary data. Data collected from the reconnaissance survey were cross-checked with primary and secondary data sources to validate the findings and refine the study's recommendations.

Data Analysis

The collected data were analyzed using quantitative and qualitative techniques to address the research objectives comprehensively. Descriptive statistics such as frequencies, percentages, means, and standard deviations were calculated to summarize the socio-economic characteristics of respondents and identify patterns in tourism-related factors with IBM SPSS Statistics 25. Cross-tabulation and chi-square tests were conducted to examine differences in perceptions and experiences across various respondent groups (tourists, local residents, hotel owners) and Microsoft Excel was used to create charts and graphs, which visually depicted visitor demographics, satisfaction levels, and engagement in tourism development.

Narrative data from interviews and focus group discussions were transcribed, coded, and analyzed thematically in qualitative aspects. This process identified recurring themes related to tourism challenges, opportunities, and sustainability in the Pyara Lake region. Field notes from direct observations were analyzed to identify environmental and infrastructural issues, which were then cross-referenced with survey data. The combination of qualitative and quantitative methods was essential to achieve a comprehensive understanding of Pyara Lake's tourism potential. The multi-method approach allowed for data triangulation, ensuring both breadth and depth in addressing the study's research questions. The quantitative data provided measurable insights into socio-economic factors, visitor satisfaction, and community involvement (Pallant, 2020), while qualitative methods captured the local perspectives, challenges, and opportunities for sustainable tourism development in the area (Kawulich, 2005).

SWOT Analysis

A SWOT analysis was employed to assess the tourism potential of Pyara Lake, identifying its Strengths,

Weaknesses, Opportunities, and Threats by field observation, FGD, and key informants as the stakeholders. This framework provided a strategic tool for formulating actionable recommendations to promote sustainable tourism development in the area. Hence the study utilized SWOT analysis as the primary theoretical framework with the aim to offer actionable insights that would guide the sustainable development of tourism in the Pyara Lake area.

Results and Discussion

This study provides an in-depth analysis of ecotourism at Pyara Lake, focusing on tourist characteristics, satisfaction levels, economic contributions, and a SWOT analysis to explore its potential for sustainable ecotourism development. The findings are contextualized within the existing literature, identifying challenges and opportunities for the development of ecotourism in the study area.

Tourist Characteristics

The demographic profile of tourists visiting Pyara Lake reveals several key trends. Most visitors (56.4%) fall within the 21-40 age group, showing youths dominance in outdoor travel and adventure tourism. The gender distribution shows that 59% of visitors are male, which aligns with research indicating that men are slightly more inclined toward leisure travel (Kozak & Baloglu, 2010). The primary purpose of visiting is sightseeing (74%), like a pleasure seeker, which tallies the trend of national context, with a smaller proportion (26%) visiting for picnics. Most tourists (44%) use bikes, while autorickshaws (23%) and cycles (20%) are also popular modes of transportation, reflecting the area's semi-urban and rural infrastructure (Table 1).

Table 1

General Characteristics of Tourists

Category	Details	Percentage/Count
Age Groups	Below 20 years	28.2%
	21-40 years	56.4%
	41-60 years	15.4%
Gender	Male	59%
	Female	41%
Transportation Modes	Bikes	44%
	Autorickshaws	23%
	Cycles	20%
	Car	13%
Visit Purpose	Sightseeing	74%
	Picnics	26%
Agencies Involvement	Private Agencies	70%
	Government Agencies	19%
	Both	11%
Education Levels	SEE/SLC (Secondary Education)	43%
	Basic Education	21%
	Intermediate Education	19%
	Illiterate	9%
	Bachelor’s Degree	5%
	Master’s Degree	3%

Source: Field Survey on May and June in 2024

Tourist Arrival Patterns

Tourist arrivals at Pyara Lake show seasonal fluctuations, with most tourists visiting during the peak season.

The number of visitors is crucial in motivating stakeholders to develop ecotourism (Sherpa & Shuklabaidya, 2021). A similar study carried in Rupa Lake identified that due to the seasonal flow of the visitors, most of the tourism service provider hotels and restaurants which operate for six to nine months annually (Pageni et al., 2024). In the regular season, 64% of tourist groups consist of 100-200 visitors, whereas the peak season sees 40% of groups ranging from 400-500 visitors in Pyara Lake. In contrast, 76% of groups range between 100-150 visitors during the off-season. These trends suggest a strong appeal for the lake but highlight the potential for growth during off-peak times.

Visitor Satisfaction Levels

Tourists express varying satisfaction levels with different aspects of their visit to Pyara Lake. As shown in Figure 3, most visitors (54%) report high satisfaction with boating, followed by sightseeing and the peaceful environment (23% each). This finding emphasizes the importance of water-based activities in enhancing the tourist experience, aligning with the global rise in nature-based tourism.

Figure 3

Satisfaction Levels Among Tourists

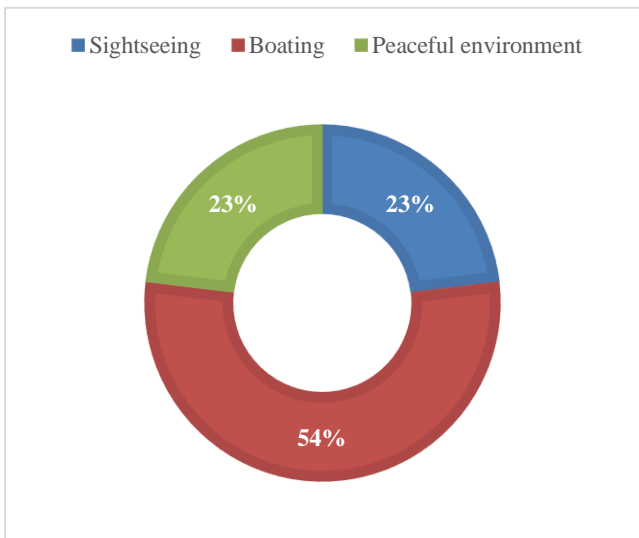
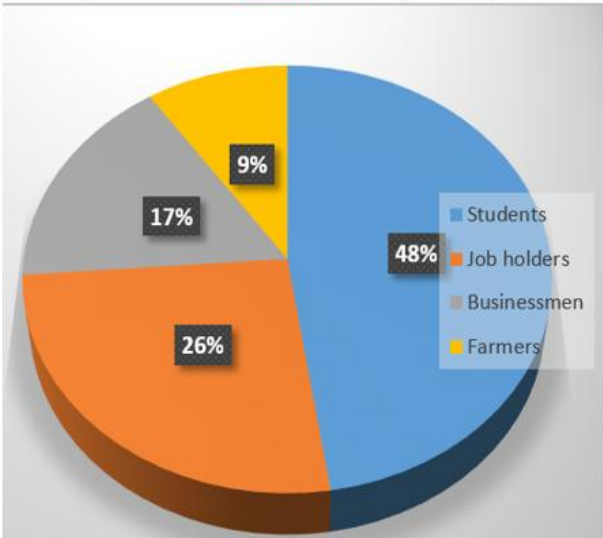


Figure 4

Mode of Visitors in Pyara Lake by Occupation



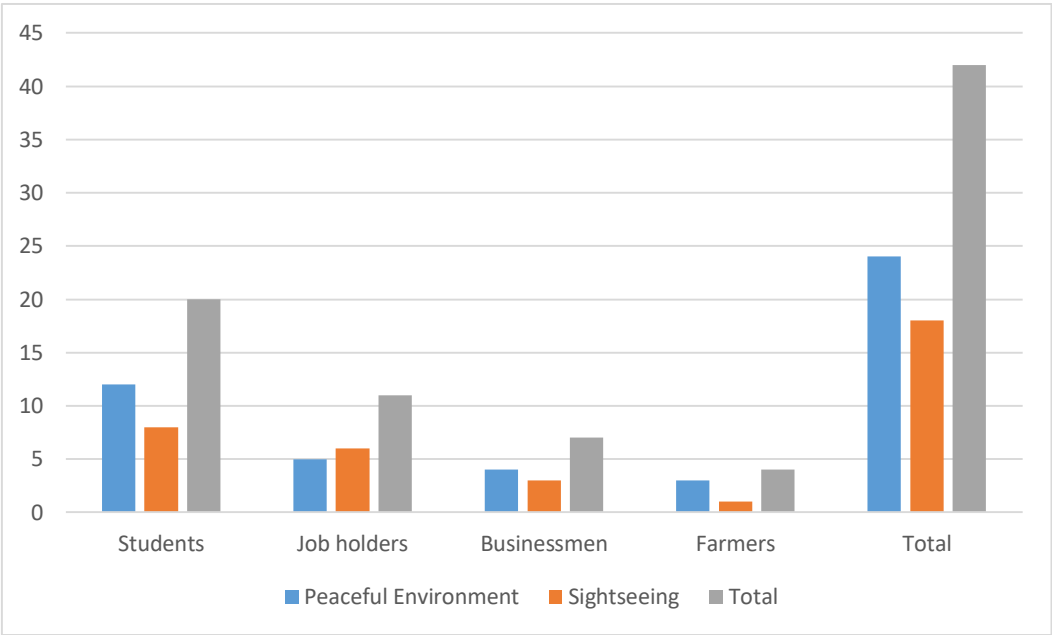
On the observation day at Pyara Lake, a total of 42 visitors were recorded, with students comprising the largest group (48%), followed by job holders (26%), businessmen (17%), and farmers (9%), as shown in **Error! Reference source not found.** This distribution suggests that Pyara Lake attracts diverse visitors, with students forming the predominant category.

Two primary aspects were considered to assess visitor satisfaction: preference for a peaceful environment and sightseeing opportunities. As shown in Figure 4, most visitors (57%) preferred the peaceful environment, while 43% visited for sightseeing. Among students, 60% prioritized the tranquil setting over sightseeing (40%), while job holders showed a relatively balanced preference (45% for peace and 55% for sightseeing). Similarly, businessmen and farmers also leaned towards a peaceful environment, suggesting that visitors primarily seek relaxation and serenity at Pyara Lake rather than purely visual appeal.

These findings align with studies on ecotourism and visitor behavior, which indicate that natural attractions providing tranquility and relaxation enhance visitor satisfaction (Trinanda & Sari, 2020). Pyara Lake's appeal as a peaceful retreat reflects broader trends in sustainable tourism, where visitors value high environmental quality and undisturbed natural settings, contributing to overall satisfaction (Cheng et al., 2022). While the lake's scenic beauty

remains an important attraction, the findings imply that enhancing visitor facilities for relaxation, such as shaded seating areas, eco-friendly resting spots, and meditation zones, could further improve visitor experiences. Future studies could explore how infrastructure improvements and ecotourism strategies influence long-term visitor satisfaction and retention.

Figure 4
Visitors Satisfaction Level in Pyara Lake



Economic Contributions of Tourism

Tourism at Pyara Lake plays a vital role in boosting the local economy. A paired sample t-test revealed a statistically significant increase in income after the arrival of tourists ($t = 17.558$, $df = 24$, $p < 0.05$), confirming the positive economic impact of tourism on local livelihoods (However, the investment in the local hospitality sector remains modest, with most hotel owners investing less than 10 lakhs in their businesses. This suggests that while the economic impact is positive, tourism is still in its nascent stages, facing financial constraints that hinder further development.

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Table 2

Comparison of Income Levels before and after Tourist Arrivals

Comparison	t-value	Df	Sig. (2-tailed)
Income Level After vs. Before Tourism	17.558	24	< 0.05

Tourism sometimes leads to empowerment through extra household income, strengthened self-esteem, improved social status, a stronger sense of community, and increased voice in decision-making (Scheyvens & van der

Watt, 2021). Similar findings revealed research on Rupa lake wetland where a significant increase in food and accommodation services, including Khaja-Ghar, lodges, restaurants, and hotels, rapid establishment of tourism businesses over the past decade has boosted self-employment and income-generating activities (Pagani et al., 2024).

SWOT Analysis of Pyara Lake

SWOT analysis is a strategic planning tool used to evaluate the internal and external factors that can influence the development and success of a project or initiative. In ecotourism, SWOT analysis helps identify key strengths, such as natural resources and community engagement, while highlighting weaknesses like poor infrastructure and environmental concerns. One of the previous studies concluded the weakness of tourism as inequities in income distribution, reinforced social divisions and entrenched patriarchal systems, and power imbalances in political processes (Scheyvens & van der Watt, 2021). SWOT analysis also identifies growth opportunities, such as the rising demand for eco-friendly travel, and threats, including environmental degradation and competition from other tourist destinations.

A SWOT analysis evaluated the strengths, weaknesses, opportunities, and threats associated with tourism development at Pyara Lake (Table 3). There are various opportunities noted in wetlands, particularly lakes, which hold significant importance for local communities who depend on them for their livelihoods, including those engaged in tourism, fishing, irrigation, electricity production, and water supply. However, lack of knowledge about effective management mechanisms, unclear policies, weak wetland governance, inadequate technical capacity, and unstable political situations are the challenges for ecotourism development (Khatiwada et al., 2022).

Table 3

SWOT Analysis of the tourism development in Pyara Taal

<p>Strengths</p> <p>Natural Beauty: Pyara Lake is renowned for its pristine environment and scenic beauty, attracting nature lovers and adventure tourists.</p> <p>Biodiversity: The area hosts a rich variety of flora and fauna, including diverse wildlife such as birds, fish, reptiles, and amphibians, offering opportunities for ecological research.</p> <p>Cultural Significance: The lake holds cultural and historical importance, which could be leveraged to attract culturally curious visitors.</p> <p>Tourism Potential: The area's potential for outdoor activities like hiking, birdwatching, boating, and fishing strengthens its profile as a tourist destination.</p> <p>Peaceful Environment: The lake's remoteness offers a serene, less crowded alternative to more popular tourist spots.</p> <p>Unique Attractions: Structures of fauna such as fish, tortoises, and otters, along with flora like lotus, enhance the appeal for visitors.</p>	<p>Opportunities</p> <p>Eco-tourism: Developing eco-tourism presents economic benefits and environmental conservation opportunities.</p> <p>Community Involvement: Engaging local communities in tourism activities can enhance sustainable development.</p> <p>Promotion and Exposure: Increasing marketing efforts through media and signage can attract more visitors.</p> <p>Infrastructure Development: Improved roads and accommodations would increase accessibility and tourism appeal.</p> <p>Research Hub: Pyara Taal serves as a valuable site for ecological and biodiversity research, aiding in conservation efforts.</p>
<p>Weaknesses</p> <p>Accessibility: Poor infrastructure in the Far West region of</p>	<p>Threats</p> <p>Environmental Degradation: Uncontrolled tourism could</p>

Nepal makes it difficult for tourists to access the lake. Limited Facilities: Basic amenities like accommodation and medical services are lacking. Awareness: Limited marketing and low visibility reduce the number of potential visitors. Environmental Concerns: Improper waste management and habitat degradation pose significant risks to the lake’s ecosystem.	damage the natural environment and biodiversity. Cultural Impact: Tourism may negatively affect local culture and traditions. Natural Disasters: The region's vulnerability to natural disasters like floods and landslides poses risks to infrastructure and safety. Political Instability: Unrest in the region may deter tourists and impact the local economy.
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Source: Field Survey & Stakeholders discussion on 2024

Strategic Implications for Sustainable Development

Pyara Lake is home to diverse wildlife, including 42 bird species such as ducks, geese, and swans aquatic species like fish, tortoises, otters, monitor lizards, and mugger crocodiles. To capitalize on Pyara Lake’s ecotourism potential while ensuring sustainability, strategic planning is essential. Developing tourism & environmentally friendly infrastructure like better transportation routes and facilities like accommodations and restaurants to enhance the visitor experience. Local government and concerned stakeholders must promote eco-tourism focusing on conservation efforts and sustainable tourism practices that benefit both the environment and local communities. The key informants of this research also highlighted marketing and awareness to increase the visibility of Pyara Lake through targeted campaigns and local promotion. Empowering local residents is due necessary by community involvement through training and equitable distribution of tourism revenues and environmental protection by implementing waste management systems and bioengineering solutions to preserve the lake’s ecological integrity.

Conclusion

The findings and SWOT analysis highlight Pyara Lake’s considerable potential as a sustainable and attractive tourist destination. Its natural beauty, rich biodiversity, and cultural significance are key assets, providing opportunities to attract diverse visitor groups. However, realizing this potential requires addressing critical weaknesses, such as limited accessibility, inadequate facilities, and resource constraints, while proactively managing threats like environmental degradation, cultural impacts, and competition from other destinations. Investments in infrastructure, promoting eco-tourism, and active community involvement are essential for enhancing the tourism experience and ensuring that local communities benefit equitably. Strategic planning, collaboration among stakeholders, and adopting sustainable practices will be crucial in transforming Pyara Lake into a thriving, long-term tourism hub. By balancing development with conservation, the lake can achieve enduring success while contributing positively to the local economy and the environment.

Effective policy and planning are crucial for ensuring the sustainable development of tourism at Pyara Lake. Governments should develop comprehensive policies prioritizing sustainability, community involvement, and cultural preservation. Community-based tourism initiatives should be promoted, as they help manage tourism growth and ensure the benefits reach local populations while minimizing environmental impacts. Promoting sustainable practices within the tourism industry is also vital for its long-term viability. This includes encouraging eco-friendly accommodations, promoting responsible wildlife tourism, and implementing waste management and conservation practices. Furthermore, leveraging digital platforms for booking, virtual tours, and mobile applications can attract a broader audience and promote lesser-known destinations. Targeted marketing campaigns that highlight the cultural, natural, and historical assets of Pyara Lake can help differentiate it from competitors. Collaborations with international travel agencies and the use of social media platforms will further enhance the visibility of the destination.

Ethics Approval and Consent to Participate: I declare that this research has been conducted ethically.

Consent for Publication: Not applicable.

Availability of Data and Materials: The data will be available upon request.

Competing Interests: There are no competing interests with any individual or agency.

Funding: No funding was available for this research.

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