

Publication status: This preprint has not been published elsewhere.

Ecotourism Development in Buffer Zones of Protected Areas: A Systematic Review and Adaptive Governance Framework

Walter Patricio Gaibor Sotomayor, Mariamparo Moreno Navarrete, Christian Alfredo Mera Mera

<https://doi.org/10.1590/SciELOPreprints.16382>

Submitted on: 2026-06-03

Posted on: 2026-08-24 (version 1)
(YYYY-MM-DD)

The moderation of this preprint received the endorsement of:

- Enrique Cabanilla (ORCID: <https://orcid.org/0000-0002-2853-291X>)

Ecotourism Development in Buffer Zones of Protected Areas: A Systematic Review and Adaptive Governance Framework

Desenvolvimento do ecoturismo em zonas de amortecimento de áreas protegidas: uma revisão sistemática e um marco de governança adaptativa

Desarrollo del ecoturismo en las zonas de amortiguamiento de áreas protegidas: una revisión sistemática y un marco de gobernanza adaptativa

Walter Patricio Gaibor Sotomayor

wpgaibor@espe.edu.ec

ORCID: <https://orcid.org/0009-0004-3800-7328>

Universidad de las Fuerzas Armadas (ESPE)

Sangolquí-Ecuador

Mariamparo Moreno Navarrete

mamoreno25@espe.edu.ec

ORCID: <https://orcid.org/0009-0004-0478-6511>

Universidad de las Fuerzas Armadas (ESPE)

Sangolquí-Ecuador

Christian Alfredo Mera Mera

camera4@espe.edu.ec

ORCID: <https://orcid.org/0009-0001-0909-095X>

Universidad de las Fuerzas Armadas (ESPE)

Sangolquí-Ecuador

Abstract

The development of ecotourism in buffer zones of protected areas has not been sufficiently examined, despite these areas being considered a key opportunity to balance the trade-offs of biodiversity loss and economic development. This article presents a systematic literature review on ecotourism in buffer zones and develops an evidence-based strategic governance framework. In accordance with the PRISMA 2020 guidelines, a search was conducted for peer-reviewed articles from 2021 to 2025, published in English, and indexed in Scopus and WoS Core Collection. Of the 204 records, twenty-five studies were selected for qualitative synthesis. The review indicates that buffer zones are a unique socio-ecological space characterized by shifting conservation objectives and subsistence needs, institutional capacity, and tourism demand. The main obstacles to sustainable tourism governance are siloed governance, weak inter-institutional cooperation, unequal community participation, insufficient monitoring, and poor integration of tourism and land-use planning. This article proposes a resource-sensitive adaptive governance framework to better integrate ecological zoning with governance (i.e., institutional capacity, participation, user regulation, and monitoring) in the context of tourism planning and development.

Keywords: Ecotourism; Tourism; Governance; Biodiversity; Community participation.

Resumo

O desenvolvimento do ecoturismo em zonas de amortecimento de áreas protegidas não tem sido suficientemente examinado, apesar de essas áreas serem consideradas uma oportunidade fundamental para equilibrar os conflitos entre a perda de biodiversidade e o desenvolvimento econômico. Este artigo apresenta uma revisão sistemática da literatura sobre ecoturismo em zonas de amortecimento e desenvolve uma estrutura de governança estratégica baseada em evidências. Seguindo as diretrizes PRISMA 2020, foi realizada uma busca por artigos revisados por pares, publicados em inglês entre 2021 e 2025 e indexados no Scopus e na Coleção Principal da Web of Science (WoS). Dos 204 registros, 25 estudos foram selecionados para síntese qualitativa. A revisão indica que as zonas de amortecimento são um espaço socioecológico único, caracterizado por objetivos de conservação e necessidades de subsistência variáveis, capacidade institucional e demanda turística. Os principais obstáculos à governança sustentável do turismo são a governança fragmentada, a fraca cooperação interinstitucional, a participação desigual da comunidade, o monitoramento insuficiente e a má integração entre turismo e planejamento do uso da terra. Este artigo propõe uma estrutura de governança adaptativa sensível aos recursos para melhor integrar o zoneamento ecológico com a governança (ou seja, capacidade institucional, participação, regulação do usuário e monitoramento) no contexto do planejamento e desenvolvimento do turismo.

Palavras-chave: Ecoturismo; Turismo; Governança; Biodiversidade; Participação comunitária.

Resumen

El desarrollo del ecoturismo en las zonas de amortiguamiento de áreas protegidas no ha sido suficientemente examinado, a pesar de que estas áreas se consideran una oportunidad clave para equilibrar las compensaciones de la pérdida de biodiversidad y el desarrollo económico. Este artículo realiza una revisión sistemática de la literatura sobre ecoturismo en zonas de amortiguamiento y desarrolla un marco de gobernanza estratégica basado en evidencia. De acuerdo con las pautas de PRISMA 2020, se realizó una búsqueda de artículos con revisión por pares de 2021 a 2025, publicados en inglés e indexados en Scopus y WoS Core Collection. De los 204 registros, se seleccionaron 25 estudios para una síntesis cualitativa. La revisión indica que las zonas de amortiguamiento son un espacio socio-ecológico único con la modificación de los objetivos de conservación y las necesidades de subsistencia, la capacidad institucional y la demanda de turismo. Los principales obstáculos para la gobernanza del turismo sostenible son la gobernanza aislada, la escasa cooperación interinstitucional, la participación desigual de la comunidad, la monitorización insuficiente y la mala integración de la planificación turística y de uso del suelo. Este artículo propone un marco de gobernanza adaptativa sensible a los recursos para integrar mejor la zonificación ecológica con la gobernanza (es decir, capacidad institucional, participación, regulación de usuarios y monitorización) en el contexto de la planificación y el desarrollo turístico.

Palabras clave: Ecoturismo; Turismo; Gobernabilidad; Biodiversidad, Participación comunitaria.

INTRODUCTION

Ecotourism has emerged as a key strategy for promoting sustainable development and the conservation of natural resources in various regions of the world. This approach seeks to balance the economic needs of local communities with the preservation of ecosystems and biodiversity (Tilavova et al., 2024)

However, their effective implementation in areas near protected zones faces multiple challenges. Buffer zones, defined as transition areas between protected areas and human communities, play a crucial role in this process, as they not only allow for the conservation of ecosystems, but also offer a space for communities to participate in tourism activities in a sustainable way (Zeng et al., 2025).

Despite their relevance, studies on ecotourism have overlooked buffer zones. Most research on ecotourism has focused on protected areas, neglecting the intermediate spaces that can be decisive in the success of conservation policies. According to Gidebo (2022), these areas “allow tourism activities to be compatible with conservation, and their management can help buffer the negative impacts of mass tourism on protected areas” (p. 365). The absence of specific and clear management frameworks for these areas prevents them from being used as instruments of sustainable development.

On the one hand, tourism activities can generate income for local communities, reduce pressure on protected areas, and promote the development of sustainable infrastructure. On the other hand, inadequate management can result in the overexploitation of natural resources, social conflicts, and the deterioration of cultural heritage (Navarro, 2019).

Furthermore, the limited carrying capacity of these areas and the growing pressure of mass tourism can affect the sustainability of these spaces if they are not managed properly (Hafezi et al., 2023). That is why management is needed not only to consider environmental conservation but also to integrate the active participation of local communities in the decision-making process.

Although ecotourism in protected areas has been studied, its practice in buffer zones has been little addressed. Therefore, this article aims to conduct a systematic review of ecotourism in buffer zones of protected areas and evaluate the strengths, weaknesses, opportunities, and threats (SWOT) related to tourism activity in these areas. In addition, it aims to identify the main challenges and opportunities in buffer zones, as well as good practices for sustainable management (Matovi' et al., 2025).

In addition, a strategic management framework is proposed for the implementation of tourism activities in these areas, with the aim of maximizing socioeconomic benefits for local communities and ensuring environmental sustainability. This framework not only seeks to optimize available resources, but also to facilitate the integration of communities in decision-making, which is essential for the success of any sustainable tourism strategy (Poudyal et al., 2024).

Therefore, this article aims to fill this gap by providing a comprehensive and critical perspective that will enable protected area managers, tour operators, and policymakers to implement more effective and sustainable ecotourism practices in these key areas. Similarly, practical recommendations are addressed for improving tourism management in buffer zones, with particular emphasis on the use of innovative technologies for planning and managing tourist flows.

Finally, this study identifies areas for future research that could contribute to a better understanding of the dynamics of ecotourism in these areas, such as the study of adaptive management models, the assessment of carrying capacity, and the evaluation of the long-term impacts of tourism activities on the natural and social environment. With increasing pressure on natural resources and the urgent need to implement effective conservation practices, buffer zones represent a promising space for developing sustainable tourism that benefits both local communities and the preservation of natural ecosystems.

METHODOLOGY

Review design

This study adopted a systematic literature review (SLR) design to synthesize the fragmented body of knowledge on ecotourism development in buffer zones of protected areas and to derive a strategic framework grounded in the available evidence. The review was designed following the PRISMA 2020 reporting principles and the evidence-informed review logic commonly recommended in management and interdisciplinary research. Given the conceptual and methodological heterogeneity of the field, the review combined a transparent selection procedure with qualitative thematic synthesis and strategic interpretation (El Archi et al., 2023).

Data sources and search strategy

The literature search was conducted in Scopus and Web of Science Core Collection in January 2026. These databases were selected because of their wide coverage of peer-reviewed research in tourism, environmental studies, conservation, geography, and social sciences, and because their combined use helps reduce the risk of omitting relevant studies indexed in only one source.

To capture terminological variation across disciplines, the search strategy combined three conceptual blocks: (i) ecotourism and related tourism modalities, (ii) buffer zones and adjacent transition areas, and (iii) protected areas. After several pilot searches and iterative refinements, the final search strings were defined as follows:

Scopus (TITLE-ABS-KEY):

("ecotouris*" OR "nature-based tourism" OR "community-based tourism" OR "sustainable tourism")
AND ("buffer zone*" OR "zone* of influence" OR "transition zone*" OR "multiple-use zone*" OR

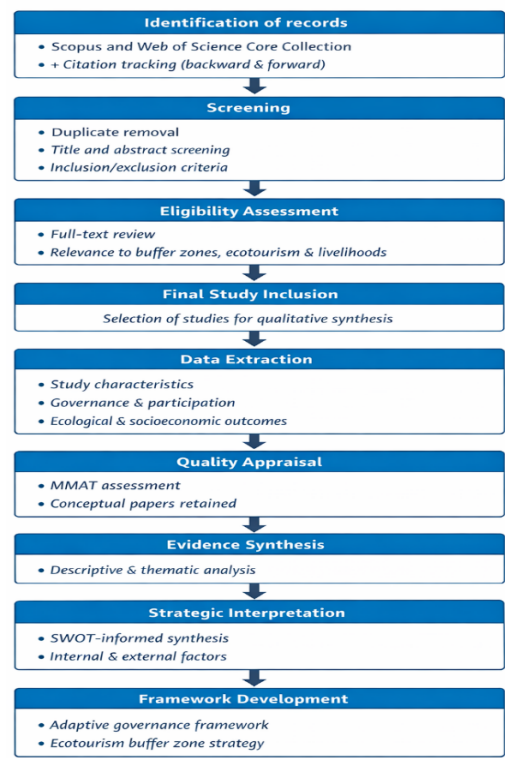
"adjacent community*" OR "peripheral area*") AND ("protected area*" OR "national park*" OR "biosphere reserve*" OR "conservation area*" OR "natural reserve*")

Web of Science (Topic Search):

TS=("ecotourism*" OR "nature-based tourism" OR "community-based tourism" OR "sustainable tourism") AND ("buffer zone*" OR "zone* of influence" OR "transition zone*" OR "multiple-use zone*" OR "adjacent community*" OR "peripheral area*") AND ("protected area*" OR "national park*" OR "biosphere reserve*" OR "conservation area*" OR "natural reserve*"))

To improve completeness, the database search was complemented by backward and forward citation tracking of highly relevant papers, particularly because buffer-zone research often uses inconsistent terminology across disciplines.

Figure 1. *Methodological workflow of the systematic review and framework development*



Eligibility criteria

The inclusion criteria were: (a) peer-reviewed publications; (b) publications written in English; (c) publications from the years 2021 to 2025; (d) publications on ecotourism, sustainable tourism, nature tourism, or related tourism practices in buffer, transition, and zone areas, or community areas adjacent to protected areas; (e) publications containing substantial evidence, either conceptual or empirical, related to one or more of the following areas: governance, local participation, livelihood outcomes, conservation outcomes, visitor management, institutional capacity, planning, or monitoring.

Studies were excluded if they:

- only analyzed tourism within the primary protected area and did not critically relate to the buffer zone.
- referred to buffer zones only incidentally.
- were conference proceedings, editorials, notes, dissertations, book chapters, or other forms of grey literature; or
- lacked sufficient conceptual or empirical relevance to the objectives of the review.

Study selection

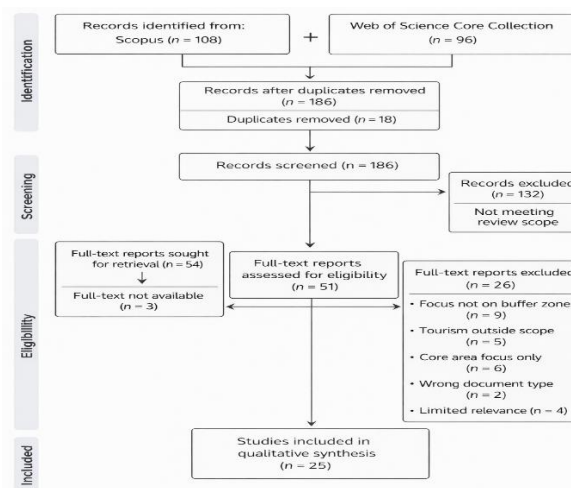
All retrieved records were exported to [insert software, e.g., Zotero, Mendeley, Rayyan, and duplicate records were removed prior to screening. The selection process consisted of two consecutive stages. In the first stage, titles and abstracts were reviewed according to the eligibility criteria. The second stage consisted of a thorough evaluation of the full texts of studies considered potentially relevant for the final inclusion decision.

To improve methodological transparency, inclusion and exclusion decisions were documented throughout the process, and reasons for exclusion at the full-text stage were recorded systematically. The overall selection process will be presented through a PRISMA 2020 flow diagram indicating the number of records identified, screened, excluded, and retained for synthesis.

Table 3. *Reasons for exclusion at the full-text stage*

Reason for exclusion	Number of reports
No substantive focus on buffer zones	9
Tourism outside ecotourism / nature-based tourism scope	5
Exclusive focus on core protected areas	6
Non-eligible document type	2
Insufficient conceptual or empirical relevance	4
Total	26

Figure 2. *PRISMA 2020 flow diagram of study selection*



Data extraction

A structured data extraction matrix was developed to ensure consistency in the analysis of the selected studies. For each article, the following information was recorded: author(s), publication year, journal, geographical setting, type of protected area, treatment or definition of the buffer zone, tourism modality, methodological design, principal stakeholders, governance arrangements, degree of community participation, reported environmental effects, socioeconomic outcomes, management instruments, enabling conditions, constraints, and policy or managerial recommendations.

Quality appraisal

Because the final corpus included studies with diverse methodological designs, the methodological quality of empirical studies was assessed using the Mixed Methods Appraisal Tool (MMAT, version 2018). MMAT was selected because it is specifically designed for systematic reviews that include qualitative, quantitative, and mixed-methods evidence within the same review architecture.

Conceptual papers and non-empirical review articles were retained for theoretical contextualization and interpretive synthesis; however, they were not appraised using the same criteria applied to empirical studies. The purpose of the quality assessment was not to exclude studies mechanically, but to inform the interpretation of findings and to assign greater analytical weight to evidence supported by stronger methodological designs.

Data synthesis

Due to the vast differences in research frameworks, analyses, and conclusions, a statistical meta-analysis would be both impossible and inappropriate for the current synthesis. Therefore, the analysis was conducted through a combination of descriptive mapping, narrative synthesis, and thematic synthesis. The evidence for this study was organized using descriptive methods encompassing publication trends, geographic distribution, methods, and dominant themes for each study. Subsequently, a thematic analysis was performed to identify variability, tensions, and causal explanations within the studies (Silwal et al., 2022).

The coding process followed a hybrid logic. A deductive coding frame was initially informed by concepts recurrent in the literature, including carrying capacity, limits of acceptable change, visitor impact management, adaptive management, participatory governance, local benefit-sharing, and conservation effectiveness. Inductive coding was also used to identify emerging themes related to ecotourism development in buffer zones that may not be fully captured by existing frameworks. This framework, developed through successive comparisons and refinements, culminated in a collection of superordinate themes related to ecological sensitivity, governance capacity, community agency, visitor use regulation, and adaptive regulation.

Table 4. *Review of protocol and analytical procedures*

Phase	Objective	Procedure	Analytical output
Review design	To establish a transparent and replicable review protocol	Systematic literature review reported according to PRISMA 2020 principles	Structured review architecture
Information sources	To identify relevant peer-reviewed literature	Search conducted in Scopus and Web of Science Core Collection, complemented by citation tracking	Initial corpus of potentially relevant studies
Search strategy	To capture multidisciplinary terminology associated with the topic	Combination of search terms related to ecotourism, buffer zones, transition areas, and protected areas	Search strings adapted to each database
Eligibility criteria	To ensure conceptual and empirical relevance	Inclusion of peer-reviewed English-language studies addressing ecotourism or related tourism practices in buffer zones of protected areas	Defined inclusion and exclusion parameters
Study selection	To refine the corpus for final analysis	Duplicate removal, title and abstract screening, followed by full-text assessment	Final sample of studies included in the review
Data extraction	To standardize the analysis of selected studies	Use of a structured matrix including study context, tourism modality, governance arrangements, community participation, impacts, management tools, and recommendations	Comparable dataset across studies
Quality appraisal	To assess the methodological robustness of empirical evidence	Application of MMAT to empirical studies; conceptual studies retained for interpretive contextualization	Quality-informed interpretation of findings
Data synthesis	To identify patterns and divergences in the literature	Descriptive mapping, narrative synthesis, and hybrid deductive–inductive thematic analysis	Core analytical themes and explanatory patterns
Strategic synthesis	To translate findings into an applied managerial perspective	SWOT-informed classification of internal and external factors shaping ecotourism development in buffer zones	Strategic synthesis of strengths, weaknesses, opportunities, and threats
Framework development	To propose an evidence-informed conceptual contribution	Integration of thematic findings into a resource-sensitive adaptive governance framework	Operational framework for future empirical testing and management application

Strategic synthesis and framework development

To move beyond descriptive aggregation and produce a more operational contribution, the thematic findings were subsequently reorganized into a strategic synthesis. At this stage, a SWOT-informed interpretive matrix was used as a secondary analytical device to classify the evidence into internal factors—namely strengths and weaknesses—and external conditions, namely opportunities and

threats, affecting ecotourism development in buffer zones. In this study, SWOT was therefore not treated as the primary review method, but as a strategy-oriented mechanism for integrating the results of the systematic review.

This integrative synthesis of consulting provides a basis for a resource-sensitive adaptive governance framework. It connects five interdependent components: (a) ecological sensitivity and spatial zoning (b) governance and institutional capacity (c) community participation and benefit sharing (d) visitor use and impact mitigation and (e) monitoring, feedback and adaptive change. The variety of these components allows us to connect three domains of expected results: conservation effectiveness, local socio-economic benefits, and tourism sustainability. In this way, the offered framework optimally organizes the literature into a structure that is coherent and conceptually and empirically verifiable in future research.

RESULTS AND DISCUSSION

Table 5. *PRISMA-aligned matrix of studies included in the systematic review.*

No.	Reviewed article	Year	Journal	DOI	Study context	Main analytical relevance to this review
1	Bernhard et al., “Effects of integrated conservation–development projects on unauthorized resource use in Volcanoes National Park, Rwanda: a mixed-methods spatio-temporal approach”	2021	Oryx	10.1017/S0030605319000735	Volcanoes National Park, Rwanda	Shows how conservation-development interventions influence resource use in protected landscapes adjacent to local communities
2	Min & Serenari, “Segmenting Wildlife Value Orientations to Mitigate Human–Wildlife Conflict for Ecotourism Development in Protected Areas”	2021	Tourism Planning & Development	10.1080/21568316.2021.1947889	Buffer zone communities around Bardia National Park, Nepal	Connects ecotourism development with local value orientations, conflict, and conservation support in buffer-zone settings.
3	Wiratno et al., “Ecotourism as a Resource Sharing Strategy: Case Study of Community-Based Ecotourism at the Tangkahan Buffer Zone of Leuser National Park, Langkat District, North Sumatra, Indonesia”	2022	Sustainability	10.3390/su14063399	Tangkahan buffer zone, Leuser National Park, Indonesia	Direct empirical evidence on community-based ecotourism in a protected-area buffer zone.

4	Silwal et al., “Do Buffer Zone Programs Improve Local Livelihoods and Support Biodiversity Conservation? The Case of Sagarmatha National Park, Nepal”	2022	Tropical Conservation Science	10.1177/19400829221106670	Sagarmatha National Park buffer zone, Nepal	Evaluates whether buffer-zone interventions improve livelihoods and biodiversity outcomes.
5	Nyaupane et al., “Governance of Protected Areas: An Institutional Analysis of Conservation, Community, and Tourism Outcomes”	2022	Journal of Sustainable Tourism	10.1080/09669582.2020.1858089	Comparative protected-area governance	Provides a governance lens linking conservation, livelihoods, and tourism outcomes.
6	Blanco et al., “Protected Areas and Tourism Resources: Toward Sustainable Management”	2022	Land	10.3390/land11112059	Protected tourism destinations in Spain	Supports the analysis of sustainable management resources in protected tourism contexts.
7	Shahi et al., “What drives local communities’ attitudes toward the protected area? Insights from Bardia National Park, Nepal”	2023	Conservation Science and Practice	10.1111/csp2.12883	Bardia National Park buffer zone, Nepal	Examines how perceived costs and benefits shape local attitudes toward protected areas.
8	Hafezi et al., “Towards sustainable community-based ecotourism: A qualitative content analysis”	2023	Science of the Total Environment	10.1016/j.scitotenv.2023.164411	Conceptual/review-based	Provides theoretical support for community-based ecotourism as a sustainability pathway.
9	Trišić et al., “Protected Areas in the Function of Sustainable Tourism Development—A Case of Deliblato Sands Special Nature Reserve, Vojvodina Province”	2023	Land	10.3390/land12020487	Deliblato Sands Special Nature Reserve, Serbia	Shows how protected areas can be positioned within sustainable tourism development strategies.
10	Gidebo, “Linking livelihood and biodiversity conservation in protected areas: Community based tourism development perspective from developing country”	2022	Tourism and Hospitality Research	10.1177/14673584221102699	Developing-country protected areas	Links community-based tourism directly to conservation–livelihood trade-offs.
11	Samal & Dash, “Ecotourism, biodiversity conservation and livelihoods: ”	2023	International Journal of Geoheritage and Parks	10.1016/j.ijgeop.2022.11.001	Conceptual synthesis	It is useful for framing convergence and tension among

	Understanding the convergence and divergence”						ecotourism, conservation, and livelihoods.
12	Paudyal et al., “A Perception-Based Assessment of Buffer Zone Programs’ Contribution to Integrated Conservation and Development: Evidence from Protected Areas in Nepal”	2024	Society & Natural Resources	10.1080/08941920.2024.2349889	Protected areas in Nepal		Directly addresses buffer-zone programmes and integrated conservation-development outcomes.
13	Dixit et al., “Perceived benefits, burdens and effectiveness of a buffer zone programme in improving protected area–people relationships”	2024	Environmental Conservation	10.1017/S0376892924000018	Buffer zone programme, Nepal		Strong evidence on social legitimacy, perceived fairness, and programme effectiveness.
14	Kandel et al., “Impacts of buffer zone policy on household income: Evidence from Chitwan National Park, Nepal”	2024	Land Use Policy	10.1016/j.landusepol.2024.107249	Chitwan National Park, Nepal		Shows how buffer-zone policy affects income and tourism-linked livelihood outcomes.
15	Li et al., “Tourism-induced land acquisition in protected areas: Land rent dynamics and state monopoly rent around the Wulingyuan World Heritage Site in China”	2024	Annals of Tourism Research	10.1016/j.annals.2024.103823	Wulingyuan World Heritage Site, China		Demonstrate how tourism transforms land governance around protected areas.
16	KC et al., “Tourism and national collaboration in protected areas”	2024	Annals of Tourism Research Empirical Insights	10.1016/j.annale.2024.100151	Nepalese protected areas		Highlights multi-level collaboration and tourism governance in protected-area systems.
17	Guerrero & Oliveira, “Approaches, Trends, and Gaps in Community-Based Ecotourism Research: A Bibliometric Analysis of Publications between 2002 and 2022”	2024	Sustainability	10.3390/su16072639	Global bibliometric review		Supports identification of research gaps relevant to community-based ecotourism in buffer contexts.
18	Gale et al., “Expert Consensus on Buffer Zone Governance: Interface Concepts, Ecosystem Service Priorities, and Territorial Strategies Around Cerro	2025	Land	10.3390/land14091763	Cerro Castillo National Park, Chile		One of the clearest recent studies focused directly on buffer-zone governance.

	Castillo National Park, Chile”						
19	Zhang et al., “Social impacts from tourism development in protected areas: Comparing communities in different conservation zones of Wulingyuan World Heritage Site, China”	2025	Land Policy	Use	10.1016/j.la ndusepol.2 025.107753	Wulingyu an World Heritage Site, China	Demonstrates uneven tourism impacts across conservation zones, including buffer communities.
20	Jakiel, “The effectiveness of spatial planning in preventing the expansion of built-up areas in the buffer zones of Polish national parks”	2025	Land Policy	Use	10.1016/j.la ndusepol.2 025.107795	Buffer zones of Polish national parks	Shows the critical role of land-use planning in buffer-zone protection.
21	Guerra et al., “Land cover changes in buffer zones and the effectiveness of this conservation strategy: Case study of Southeastern Brazil”	2025	Land Policy	Use	10.1016/j.la ndusepol.2 025.107665	Southeaste rn Brazil	Provides evidence on ecological transformation and planning weaknesses in buffer zones.
22	Wang et al., “The Impact of Geographical Location of Households’ Residences on the Livelihoods of Households Surrounding Protected Areas: An Empirical Analysis of Seven Nature Reserves Across Three Provinces in China”	2025	Land		10.3390/lan d14061231	Seven nature reserves, China	Supports the livelihood and spatial-access dimension of communities surrounding protected areas.
23	Lun et al., “The livelihood-resource nexus in UNESCO biosphere reserves: A case study from Chebaling Biosphere Reserve in China”	2025	Journal for Nature Conservation		10.1016/j.j nc.2024.12 6802	Chebaling Biosphere Reserve, China	Relevant for understanding differentiated livelihoods across core, buffer, and transition zones.
24	Petersen et al., “Local businesses as boundary actors shaping sustainable tourism futures in Biosphere Reserves”	2025	Tourism Geographies		10.1080/14 616688.202 5.2515090	Biosphere reserves, United Kingdom	Adds a boundary-actor perspective to tourism governance in protected landscapes.
25	Amore et al., “Planning for sustainable development and tourism in biosphere reserves: a metagovernance appraisal”	2025	Tourism Geographies		10.1080/14 616688.202 5.2590180	Biosphere reserves	Strengthens the meta governance and strategic-planning dimension of the proposed framework.

Study selection

The database search identified 204 records, including 108 from Scopus and 96 from Web of Science Core Collection. After the removal of 18 duplicate records, 186 records remained for title and abstract screening. At this stage, 132 records were excluded because they did not meet the review scope. A total of 54 full-text reports were sought for retrieval, of which 3 could not be accessed. Consequently, 51 reports were assessed for eligibility. Of these, 26 were excluded for the following reasons: insufficient substantive focus on buffer zones (n = 9), tourism outside the ecotourism or nature-based tourism scope (n = 5), exclusive focus on core protected areas (n = 6), non-eligible document type (n = 2), and insufficient conceptual or empirical relevance (n = 4). The final qualitative synthesis included 25 studies. The study selection process is presented in table 1.

Table 6. *Annual distribution of included studies (2021–2025)*

Year	Number of studies	Percentage
2021	3	12.0%
2022	4	16.0%
2023	4	16.0%
2024	6	24.0%
2025	8	32.0%
Total	25	100.0

General profile of the included studies

The final corpus consists of 25 studies from 2021 to 2025, confirming that ecotourism research within buffer zones is recent, growing, and diversifying into new disciplines. While the corpus shows considerable research on tourism in protected areas, it also shows how buffer zones are comparatively ignored as unique areas of research in socio-ecology and governance. Unlike other studies that viewed buffer zones as the peripheral boundaries of protected areas, reviewed studies begin to see these zones as integrated areas of conflict and convergence among conservation, livelihoods, tourism, and regulatory land use.

When considering the chronology of publication activity, a steady increase can be observed throughout the years of the review, most pronounced for the years 2024 and 2025. This indicates a greater academic interest in tourism governance issues within the changing challenges of the conservation landscape. Geographically, the literature focused on Asia and Africa, followed by Latin America, Europe, and Oceania. This asymmetrical distribution suggests that the literature is largely a response to conditions in protected areas adjacent to rural communities where natural resources and their use are subject to fluctuating/established tourism.

Table 7. *Regional distribution of the included studies*

Region	Number of studies	Percentage
Asia	12	48.0
Africa	1	4.0
Latin America	2	8.0
Europe	4	16.0
Oceania	0	0.0
Global / conceptual / comparative	6	24.0
Total	25	100.0

Methodologically, the corpus was dominated by qualitative and mixed methods designs, while purely quantitative studies were less common. This profile reveals that the field has evolved mainly through context-sensitive case studies capable of capturing institutional complexity, local participation, and conservation-development trade-offs, although at the cost of reduced cross-case comparability.

Table 8. *Methodological profile of the included studies*

Methodological design	Number of studies	Percentage
Qualitative	6	24.0
Mixed methods	9	36.0
Quantitative	10	40.0
Total	25	100.0

Quality appraisal of empirical evidence

The MMAT-informed assessment of the empirical corpus suggests that overall methodological robustness is moderate. Major studies that achieve robust research tend to have precisely articulated research questions, fully coherent methodological designs, and empirical evidence that is interpreted and articulated. However, there has been persistent longitudinal design and poor associative integration of ecological and socioeconomic variables within the same analytical framework.

Table 8. *MMAT-informed summary of methodological quality*

Quality level	Number of studies	Main characteristics
High	14	Clear and explicit design, transparent data sources or samples, defined analytical procedures, and strong alignment between evidence and interpretation
Moderate	9	Methodologically coherent and relevant, but with more limited analytical depth, narrower case transferability, or less explicit operationalization of variables/criteria
Low	2	Comparatively weaker transparency in method execution or indicator construction within this corpus, with more descriptive than inferential robustness
Total	25	—

Several studies provided rich contextual accounts of governance arrangements, livelihood impacts, or participation dynamics, yet offered limited information on sampling logic, analytical transparency, or the criteria used to assess long-term sustainability outcomes. These patterns suggest that, although the literature provides valuable case-based insight, greater methodological consistency is still needed to strengthen comparative inference across buffer-zone settings.

Thematic synthesis

Buffer zones as socio-ecological interface spaces

The main finding of the review is that buffer zones are not understood only as belts surrounding protected areas. Instead, they are developing areas of the socio-ecological interface where the intersection of tourism development, biodiversity conservation, livelihood strategies, and land use pressures are multi-layered. Buffer zones are represented as interface zones, where tourist pressure is directed towards neighboring protected areas and offers the local community new opportunities to diversify their livelihoods.

Table 10. *Main analytical focus of the reviewed studies*

Focus	Number of studies	Percentage
Governance and institutional coordination	5	20.0
Community participation and benefit-sharing	6	24.0
Conservation–livelihood interface	8	32.0
Visitor management and tourism impacts	2	8.0
Adaptive management and planning	4	16.0
Total	25	100.0

However, the literature also illustrates that the mediating role is inherently unstable. In the absence of governance and with fragmented planning, tourism development in buffer zones can exacerbate ecological damage and pressure on social and infrastructural systems. Therefore, this review establishes that buffer zones are not neutral protected areas, but rather active and dynamic zones of trade-offs between development and conservation.

Governance fragmentation and institutional asymmetry

A second major theme concerns the fragmented governance arrangements that shape ecotourism development in buffer zones. The reviewed studies repeatedly show that tourism outcomes depend on interactions among protected area authorities, local governments, communities, NGOs, and tourism operators. Yet these actors rarely operate with equivalent power, information, or implementation capacity.

While conservation agencies focus on protecting the ecology, local actors often focus on livelihoods, access rights, and local infrastructure. Ecotourism initiatives were often ineffective not

because of a lack of tourism, but because of governance systems that were fragmented, poorly coordinated, or overly centralized. Therefore, the ineffectiveness of ecotourism within buffer zones is less about the presence of actors and more about the degree of coordination between actors.

Community participation and benefit-sharing

Community participation emerged as one of the most emphasized enabling conditions in the reviewed literature. However, the findings also illustrate that participation is highly variable in terms of depth and institutional significance. In some cases, participation involved consultation during planning, while in others it included joint management, local business development, staff creation, or income distribution.

The review highlights that when local communities are included as actors in the decision-making process, rather than being mere passive recipients, the social legitimacy and support for the conservation of ecotourism initiatives increases. The literature also cautions against overly optimistic views on participation. Participation was the focus of numerous studies that pointed to problems of capture by elites, unequal distribution of benefits, poor participation of the marginalized, and lack of transparency in the governance of local tourism. Thus, from literature, participation is necessary but not sufficient for sustainable ecotourism in buffer zones.

Visitor management: necessary but insufficient

The reviewed studies confirm that visitor management remains an important element in buffer-zone ecotourism, particularly in relation to carry capacity, congestion, waste management, trail erosion, wildlife disturbance, and the spatial concentration of tourism services. Nevertheless, the evidence also shows that visitor-management approaches alone are insufficient to explain or resolve the broader sustainability challenges found in these territories.

Frameworks such as carrying capacity, LAC, VIM, and PAVIM remain useful for identifying and mitigating tourism impacts. However, once applied to buffer zones, their effectiveness becomes dependent on broader institutional and territorial conditions. Tourism pressure in buffer zones is not shaped exclusively by visitor numbers, but also by infrastructure expansion, weak spatial planning, livelihood vulnerability, and land-use competition. Accordingly, the review indicates that visitor management must be embedded within wider governance and development strategies.

Adaptive management: widely endorsed, weakly operationalized

Adaptive management was widely invoked across the selected studies as a desirable principle for ecotourism governance in dynamic socio-ecological contexts. However, the review found that it was more often proposed normatively than implemented operationally. Although extensive research has been conducted on flexible and adaptive governance, only a handful have detailed how specific

indicators, thresholds, monitoring processes, or institutional accountability mechanisms would allow for practical adaptation.

This gap is particularly important in buffer zones, where governance institutions often face severe human, financial, and technical limitations. Under these conditions, adaptive management risks becoming rhetorical unless translated into simpler and more realistic implementation pathways. The evidence therefore suggests that adaptive governance must be resource-sensitive, staged, and linked to manageable monitoring systems.

SWOT-informed strategic synthesis

The SWOT-informed synthesis reorganized the thematic evidence into a strategic analytical structure. In terms of strengths, the reviewed literature highlights the capacity of buffer zones to diversify livelihoods, reduce direct tourism pressure on ecologically sensitive core areas, support conservation incentives, and enable more spatially distributed tourism development. These strengths position buffer zones as potentially strategic territories for reconciling conservation and local development.

At the same time, the review identified significant weaknesses, including fragmented governance, limited institutional capacity, weak monitoring systems, uneven participation, and insufficient coordination between tourism planning and land-use regulation. These weaknesses explain why ecotourism in buffer zones often produces partial or fragile outcomes even when the normative discourse surrounding sustainability is strong.

Regarding opportunities, the literature points to growing policy interest in nature-based tourism, increasing recognition of community-based and participatory approaches, and wider use of management tools that can support adaptive planning and territorial coordination. Finally, the principal threats identified include overtourism, ecological degradation, inequitable benefit distribution, land-use conflict, and the risk that tourism may intensify rather than alleviate local vulnerability when it is poorly governed.

Table 11. *SWOT-informed synthesis of ecotourism development in buffer zones*

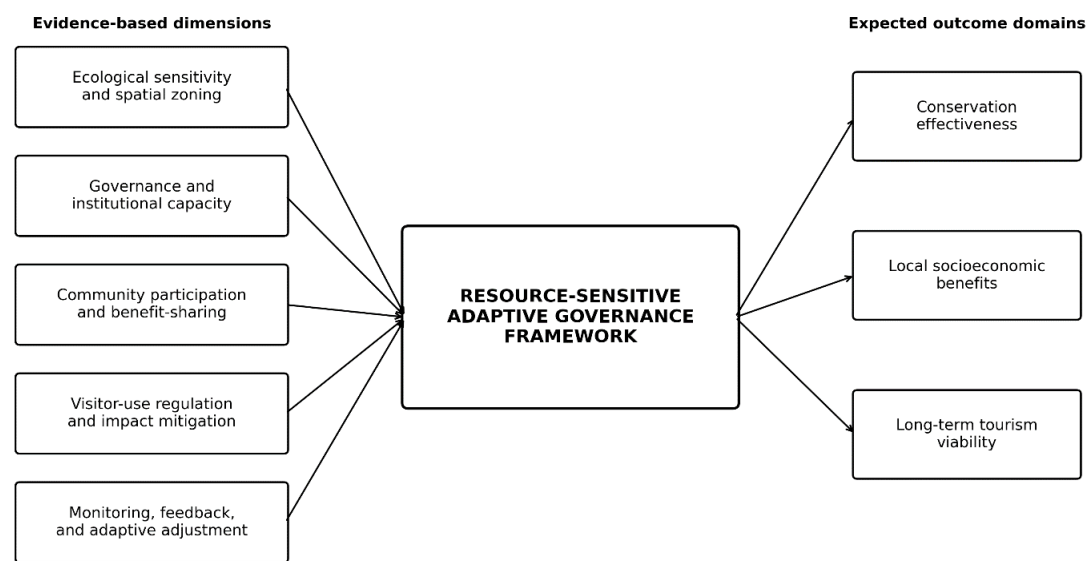
Category	Synthesis
Strengths	Livelihood diversification, reduced direct pressure on core protected areas, conservation incentives, and more spatially distributed tourism development
Weaknesses	Fragmented governance, weak institutional capacity, uneven participation, insufficient monitoring, and weak integration of tourism and land-use planning
Opportunities	Policy support for nature-based tourism, growing recognition of participatory governance, expansion of community-based models, and improved management tools
Threats	Overtourism, ecological degradation, unequal benefit-sharing, land-use conflict, and increased local vulnerability under poorly governed tourism expansion

From evidence synthesis to framework development

The combined results suggest that there is no single management model that can adequately govern the complexity of developing ecotourism in buffer zones. The literature suggests that there cannot be a purely protective approach, a market-driven tourism approach, or a visitor management approach. Rather, the literature suggests an ecosystem-sensitive, adaptive governance model that integrates ecological and zoning regulations, institutional governance and community participation, as well as beneficiary regulation, visitor use, and active and continuous monitoring and adjustment.

This finding constitutes the main analytical contribution of the review. Previous scholarships have made important contributions to visitor impact management and adaptive planning in protected areas. The synthesized evidence suggests that buffer zones highlight a broader governance problem that intersects conservation, livelihoods, spatial planning, and tourism. The framework developed in this study aims not only to conceptually integrate existing approaches but also to reconfigure them within a more pragmatic and contextually refined governance framework.

Figure 3. *Results to framework*



Discussion

The results indicate that ecotourism in buffer zones is better understood as a governance issue than as a simple extension of tourism within protected areas. This interpretation is broadly consistent with Li et al. (2024), who argued that visitor planning frameworks and management effectiveness assessments contribute to adaptive management, but the present synthesis suggests that, in buffer zones, management challenges are not limited to visitor use. They also involve institutional fragmentation, land-use pressures, and uneven local capacity, which makes the governance setting substantially more complex.

This pattern also helps clarify the limits of earlier visitor-impact approaches. Moore, Smith, and Blanco et al. (2022) showed that visitor impact frameworks and their indicators are useful for environmental performance reporting, while Farrell and Marion (2022) proposed PAVIM as a simplified process for management decision-making in protected areas. The present results do not contradict those contributions; rather, they suggest that such frameworks become insufficient when applied to buffer zones without incorporating broader social and territorial variables.

The findings on participation and benefit-sharing are also consistent with recent evidence. Dixit et al. (2024) found that perceived benefits, burdens, and programme effectiveness strongly influence protected area–people relationships in buffer-zone contexts. Like Wiratno et al. (2022), the current research under review supports the idea that community-based ecotourism can serve as a resource-sharing strategy (or resource pooling strategy) if local communities are actively and constructively engaged.

The review states that the most significant obstacle to sustainable ecotourism in buffer zones is fragmented governance. This aligns with the findings of Zhang et al. (2025), who documented the unequal social impacts of the complex interplay between conservation governance and tourism development on the social impacts of protected areas. It also converges with Gale et al. (2025), who highlighted persistent governance gaps and a lack of governance consensus and synergy in buffer zones. Collectively, these studies strengthen the understanding that the impact of tourism in buffer zones is as much a function of governance gaps, equity, and control over ecological factors as it is of control over environmental factors.

A further point concerns adaptive management. Amore et al. (2025) presented adaptive management as a valuable orientation for protected area governance, yet the reviewed studies show that in buffer zones it is more often recommended than operationalized. Adaptive governance frameworks for buffer zones should be viewed as flexible and responsive to available contextual resources, rather than as a transcendent standard that must be implemented in any context.

Finally, the suggested framework responds to emerging requests to improve analytical integration in ecotourism studies. Guerrero & Oliveira (2024) pointed out the ongoing gaps in research on community-based ecotourism, particularly the systematic integration of social, environmental and management aspects. The present results respond to that gap by showing that buffer zones are precisely the spaces where those dimensions intersect most clearly. The contribution of this study, therefore, lies not in merely combining existing frameworks, but in repositioning them within a governance architecture that is more context-dependent, operationally realistic, and empirically grounded.

CONCLUSION

This systematic review demonstrates that ecotourism development in the buffer zones of protected areas should not be treated as a marginal extension of tourism within protected areas, but as a distinct socio-ecological governance challenge. The evidence synthesized from 25 studies published between 2021 and 2025 shows that buffer zones are not passive transitional areas.

Rather, they are strategic territories where conservation objectives, livelihood needs, institutional capacity, and tourism pressures converge in ways that are both dynamic and uneven. Their importance lies precisely in this interface condition: buffer zones can reduce pressure on ecologically sensitive core areas, create opportunities for local economic diversification, and strengthen conservation support, yet they can also reproduce ecological degradation, governance fragmentation, and distributive inequities when tourism development is weakly coordinated.

The review further indicates that the main barriers to sustainable ecotourism in buffer zones are not exclusively environmental, but also institutional, social, and territorial in nature. Across the reviewed literature, fragmented governance, weak inter-institutional coordination, uneven community participation, limited monitoring capacity, and insufficient alignment between tourism planning and land-use regulation consistently emerged as structural constraints that undermine long-term sustainability.

These findings suggest that the viability of ecotourism in buffer zones cannot be ensured through visitor-management instruments alone, since even well-established approaches such as carrying capacity, LAC, VIM, PAVIM, and adaptive management tend to lose effectiveness when they are implemented without due consideration of governance asymmetries, distributive justice, and the practical conditions of implementation.

The main contribution of this article is to promote the need for a governance architecture that is contextually specific and operationally pragmatic, rather than simply suggesting the constructive integration of different perspectives. To that end, the proposed strategic framework establishes five interdependent and resource-sensitive dimensions that reflect the management realities of buffer zones: ecological understanding and spatial zoning; governance and institutional capacity; community participation and benefit-sharing; visitor use, impact regulation, and mitigation; and flexibly adjusted monitoring and management. By interrelating these dimensions, the framework presents an analytically more robust proposal regarding the extent to which ecotourism can be effectively combined with conservation, the local economy, and sustainable tourism.

From a theoretical standpoint, this study contributes to tourism and protected area literature by repositioning buffer zones as analytically distinct spaces within contemporary sustainability debates, rather than as secondary extensions of protected areas. From a practical perspective, it offers a strategic foundation for managers and policymakers seeking to design ecotourism interventions that are not only environmentally sound, but also socially legitimate and institutionally feasible.

Future research should therefore test the proposed framework across diverse ecological and governance settings, with particular attention to longitudinal dynamics, distributive outcomes, and the operationalization of adaptive management under conditions of limited human and financial capacity. Taken together, the findings confirm that buffer zones should no longer occupy a secondary position in ecotourism research, as they represent critical territories for assessing whether ecotourism can evolve from a normative aspiration into a genuinely sustainable conservation-development strategy.

Authors' contribution statement

Walter Patricio Gaibor Sotomayor: Conceptualization, Funding Acquisition, Project Administration, Supervision, Writing – Original Draft Preparation

Mariamparo Moreno Navarrete: Data Curation, Investigation, Resources, Validation, Writing – Review & Editing

Christian Alfredo Mera Mera: Formal Analysis, Methodology, Software, Visualization, Writing – Review & Editing

Declaration of conflict of interest

The authors declare that there is no conflict of interest.

Data availability statement

The research data are included in the manuscript itself.

AI Usage Statement

The ChatGPT artificial intelligence tool has been used to assist in the grammar review of the text and the standardization of references.

REFERENCES

- Amore, A., Adie, B., Carnicelli, S., Lunden, A., & Hall, C. (2025). Planning for sustainable development and tourism in biosphere reserves: a metagovernance appraisal. *Tourism Geographies*, 1-18. <https://doi.org/10.1080/14616688.2025.2590180>
- Belsky, J. (2009). Misrepresenting Communities: The Politics of Community-Based Rural Ecotourism in Gales Point Manatee, Belize. *Rural Sociology*, 64(1), 641-666. <https://doi.org/10.1111/j.1549-0831.1999.tb00382.x>Digital Object Identifier (DOI)
- Bernhard, K., Smith, T., Sabuhoro, E., Nyandwi, E., & Munanura, I. (2021). Effects of integrated conservation–development projects on unauthorized resource use in Volcanoes National Park, Rwanda: a mixed-methods spatio-temporal approach. *Oryx*, 55(4), 613-624. <https://doi.org/10.1017/S0030605319000735>
- Blanco, L., Diéguez, I., Fraiz, J., & Gueimonde, A. (2022). Protected Areas and Tourism Resources: Toward Sustainable Management. *Land*, 11(11), 1-16. <https://doi.org/10.3390/land11112059>

- Dixit, S., Poudyal, N., Silwal, T., Joshi, O., & Bhandari, A. (2024). Perceived benefits, burdens and effectiveness of a buffer zone programme in improving protected area–people relationships. *Environmental Conservation*, 51(1), 141-151. <https://doi.org/10.1017/S0376892924000018>
- El Archi, Y., Benbba, B., Nizamatdinova, Z., Issakov, Y., Vargáné, G., & Dávid, L. (2023). Systematic Literature Review Analysing Smart Tourism Destinations in Context of Sustainable Development: Current Applications and Future Directions. *Sustainability*, 15(6), 1-14. <https://doi.org/10.3390/su15065086>
- Farrell, T., & Marion, J. (2022). The Protected Area Visitor Impact Management (PAVIM) Framework: A Simplified Process for Making Management Decisions. *Journal of Sustainable Tourism*, 10(1), 31-51. <https://doi.org/10.1080/09669580208667151>
- Gale, T., Astorga, E., Adiego, A., & Báez, A. (2025). Expert Consensus on Buffer Zone Governance: Interface Concepts, Ecosystem Service Priorities, and Territorial Strategies Around Cerro Castillo National Park, Chile. *Land*, 14(9), 1-32. <https://doi.org/10.3390/land14091763>
- Gidebo, H. (2022). Linking livelihood and biodiversity conservation in protected areas: Community based tourism development perspective from developing country. *Tourism and Hospitality Research*, 23(3), 361-375. <https://doi.org/10.1177/14673584221102699>
- Guerrero, M., & Oliveira, J. (2024). Approaches, Trends, and Gaps in Community-Based Ecotourism Research: A Bibliometric Analysis of Publications between 2002 and 2022. *Sustainability*, 16(1), 1-21. <https://doi.org/10.3390/su16072639>
- Hafezi, F., Bijani, M., Gholamrezai, S., & Savari, M. (2023). Towards sustainable community-based ecotourism: A qualitative content analysis. *Science of The Total Environment*, 891(1), 1-11. <https://doi.org/10.1016/j.scitotenv.2023.164411>
- Jakiel, M. (2025). The effectiveness of spatial planning in preventing the expansion of built-up areas in the buffer zones of Polish national parks. *Land Use Policy*, 159(1), 1-16. <https://doi.org/10.1016/j.landusepol.2025.107795>
- Kandel, P., Pandit, R., & White, B. (2024). Impacts of buffer zone policy on household income: Evidence from Chitwan National Park, Nepal. *Land Use Policy*, 146(1), 1-18. <https://doi.org/10.1016/j.landusepol.2024.107249>
- KC, B., Adhikari, H., & Stainback, G. (2024). Tourism and national collaboration in protected areas. *Annals of Tourism Research Empirical Insights*, 5(2), 1-6. <https://doi.org/10.1016/j.annale.2024.100151>
- Li, J., Stoffelen, A., Wijburg, G., & Vanclay, F. (2024). Tourism-induced land acquisition in protected areas: Land rent dynamics and state monopoly rent around the Wulingyuan world heritage site in China. *Annals of Tourism Research*, 109(1), 1-14. <https://doi.org/10.1016/j.annals.2024.103823>
- Lun, Y., Na, Q., & Ning-tao, T. (2025). The livelihood-resource nexus in UNESCO biosphere reserves: A case study from Chebaling Biosphere Reserve in China. *Journal for Nature Conservation*, 84(1), 2-15. <https://doi.org/10.1016/j.jnc.2024.126802>
- Matovi', S., Lovi'c, S., & Gaji'c, T. (2025). Sustainable Tourism in Protected Areas: Comparative Governance and Lessons from Tara and Triglav National Parks. *Sustainability*, 17(1), 1-23. <https://doi.org/10.3390/su17157048>

- Min, J., & Serenari, C. (2021). Segmenting Wildlife Value Orientations to Mitigate Human–Wildlife Conflict for Ecotourism Development in Protected Areas. *Tourism Planning & Development*, 19(4), 339-356 . <https://doi.org/10.1080/21568316.2021.1947889>
- Navarro, N. (2019). Community Perceptions of Tourism Impacts on Coastal Protected Areas. *Journal of Marine Science and Engineering*, 7(8), 1-18. <https://doi.org/10.3390/jmse7080274>
- Nyaupane, G., Poudel, S., & York, A. (2022). Governance of protected areas: an institutional analysis of conservation, community livelihood, and tourism outcomes. *Journal of Sustainable Tourism*, 30(11), 2686-2705. <https://doi.org/10.1080/09669582.2020.1858089>
- Petersena, C., Kellyb, C., Merrelle, I., Trapanod, L., & Wilkinson, T. (2025). Local businesses as boundary actors shaping sustainable tourism futures in Biosphere Reserves. *Tourism Geographies*, 1-18. <https://doi.org/10.1080/14616688.2025.2515090>
- Poudyal, N., Silwal, T., Dixit, S., & Bhandari, A. (2024). A Perception-Based Assessment of Buffer Zone Programs' Contribution to Integrated Conservation and Development: Evidence from Protected Areas in Nepal. *Society & Natural Resources*, 37(1), 1313-1338. <https://doi.org/10.1080/08941920.2024.2349889>
- Rodrigues, B., dos Reis, P., & Lima, V. (2025). Land cover changes in buffer zones and the effectiveness of this conservation strategy: Case study of Southeastern Brazil. *Land Use Policy*, 157(1). <https://doi.org/10.1016/j.landusepol.2025.107665>
- Samal, R., & Dash, M. (2023). Ecotourism, biodiversity conservation and livelihoods: Understanding the convergence and divergence. *International Journal of Geoheritage and Parks*, 11(1), 1-20. <https://doi.org/10.1016/j.ijgeop.2022.11.001>
- Shahi, K., Khanal, G., Raj Jha, R., Bhusal, P., & Silwal, T. (2023). What drives local communities' attitudes toward the protected area? Insights from Bardia National Park, Nepal. *Conservation Science and Practice*, 5(1), 1-11. <https://doi.org/10.1111/csp2.12883>
- Silwal, T., Devkota, B., Poudel, P., & Morgan, M. (2022). Do Buffer Zone Programs Improve Local Livelihoods and Support Biodiversity Conservation? The Case of Sagarmatha National Park, Nepal. *Tropical Conservation*, 15(1), 1-11. <https://doi.org/10.1177/19400829221106670>
- Tilavova, M., Safarova, N., Alimova, M., & Bo'ronova, N. (2024). Ecotourism as a sustainable development strategy: Exploring the role of natural resource management. *E3S Web of Conferences*, 587(1), 1-18. <https://doi.org/10.1051/e3sconf/202458705020>
- Trišić, I., Privitera, D., Ristić, V., Štetić, S., & Milojković, D. (2023). Protected Areas in the Function of Sustainable Tourism Development—A Case of Deliblato Sands Special Nature Reserve, Vojvodina Province. *Land*, 12(2), 1-20. <https://doi.org/10.3390/land12020487>
- Wang, C., Zhang, W., & Gao, J. (2025). The Impact of Geographical Location of Households' Residences on the Livelihoods of Households Surrounding Protected Areas: An Empirical Analysis of Seven Nature Reserves Across Three Provinces in China. *Land*, 14(1), 2-26. <https://doi.org/10.3390/land14061231>
- Wiratno, W., Withaningsih, S., Gunawan, B., & Iskandar, J. (2022). Ecotourism as a Resource Sharing Strategy: Case Study of Community-Based Ecotourism at the Tangkahan Buffer Zone of Leuser National Park, Langkat District, North Sumatra, Indonesia. *Sustainability*, 14(6), 1-18. <https://doi.org/10.3390/su14063399>

- Zeng, Y., Raymond, J., Brown, C., & Rounsevell, M. (2025). Exploring outcome-driven policymaking on protected areas with an endogenous institutional model. *Journal of Cleaner Production*, 501(1), 1-17. <https://doi.org/10.1016/j.jclepro.2025.145262>
- Zhang, Y., Hanna, P., & Vanclay, F. (2025). Social impacts from tourism development in protected areas: Comparing communities in different conservation zones of Wulingyuan World Heritage Site, China. *Land Use Policy*, 158(1), 1-13. <https://doi.org/10.1016/j.landusepol.2025.107753>

This preprint was submitted under the following conditions:

- The authors declare that the necessary Terms of Free and Informed Consent of participants or patients in the research were obtained and are described in the manuscript, when applicable.
- The authors declare that the preparation of the manuscript followed the ethical norms of scientific communication.
- The authors declare that they are aware that they are solely responsible for the content of the preprint and that the deposit in SciELO Preprints does not mean any commitment on the part of SciELO, except its preservation and dissemination.
- The authors declare that the data, applications, and other content underlying the manuscript are referenced.
- The deposited manuscript is in PDF format.
- The authors declare that the research that originated the manuscript followed good ethical practices and that the necessary approvals from research ethics committees, when applicable, are described in the manuscript.
- The authors declare that once a manuscript is posted on the SciELO Preprints server, it can only be taken down on request to the SciELO Preprints server Editorial Secretariat, who will post a retraction notice in its place.
- The authors agree that the approved manuscript will be made available under a [Creative Commons CC-BY](#) license.
- The submitting author declares that the contributions of all authors and conflict of interest statement are included explicitly and in specific sections of the manuscript.
- The authors declare that the manuscript was not deposited and/or previously made available on another preprint server or published by a journal.
- If the manuscript is being reviewed or being prepared for publishing but not yet published by a journal, the authors declare that they have received authorization from the journal to make this deposit.
- The submitting author declares that all authors of the manuscript agree with the submission to SciELO Preprints.