

Wildlife Tourism as an Ecological Innovation: Pathways for Conservation and Community Livelihood

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Abstract

Wildlife tourism has emerged as an ecological innovation that combines biodiversity conservation with community development. Unlike mass tourism, it emphasizes responsible interactions with ecosystems, ensuring that natural resources are protected while simultaneously benefiting local populations. By transforming tourism into a tool for environmental stewardship, it provides both ecological and socio-economic advantages, creating a dual pathway for conservation and livelihood enhancement. The innovation lies in linking sustainable tourism practices such as eco-trails, low-impact accommodation, and regulated safaris with the active participation of local communities. When residents are engaged as guides, entrepreneurs, and conservation partners, they gain alternative sources of income that reduce dependence on extractive practices. This shift fosters ecological awareness, builds local ownership, and strengthens long-term commitment to biodiversity protection. Globally, successful models demonstrate that wildlife tourism can generate revenue for conservation programs, improve anti-poaching efforts, and restore habitats, while also diversifying rural economies. In regions rich in biodiversity, such as South Asia and Africa, it has proven to be a catalyst for balancing ecological integrity with human well-being. However, challenges remain: unchecked commercialization, ecological disturbance, and cultural commodification highlight the need for robust policies, participatory governance, and sustainable planning. In conclusion, wildlife tourism as an ecological innovation offers a sustainable development pathway where conservation imperatives align with community empowerment. Promoting responsible travel and ecological resilience represents a promising strategy to secure both environmental and livelihood futures.

Keywords: Wildlife Tourism, Ecological Innovation, Community Livelihood, Biodiversity Conservation, Sustainable Development

Introduction

Background of Wildlife Tourism in the Global Context

Wildlife tourism has emerged as one of the fastest-growing sectors of the global tourism industry. From African safaris to tiger reserves in India and whale watching in the Pacific, it attracts millions of visitors annually. Beyond recreation, it plays a vital role in raising awareness about biodiversity, funding conservation projects, and supporting local economies. However, the increasing human presence in fragile ecosystems also creates ecological pressures such as habitat disturbance, waste generation, and

stress on wildlife populations. This dual role of wildlife tourism—as both a driver of conservation finance and a potential ecological threat—makes it a critical field of study within sustainable development.

Concept of Ecological Innovation and Its Role in Sustainable Development

Ecological innovation refers to the creation and application of new ideas, processes, or technologies that minimize environmental impact while enhancing socio-economic benefits. In the context of tourism, it includes practices like low-carbon infrastructure, waste-neutral hospitality services, eco-certification, digital monitoring of wildlife, and community-based conservation models. These innovations help reconcile the needs of the environment with those of society and the economy, ensuring that tourism becomes a tool for long-term sustainability rather than ecological degradation.

Research Problem: Balancing Conservation and Livelihood Goals

The central challenge in wildlife tourism lies in balancing two often conflicting goals—biodiversity conservation and livelihood generation. On one hand, tourism provides essential income for local communities and funds for protected areas. On the other, unchecked commercial activities may lead to overexploitation of resources, human-wildlife conflicts, and cultural commodification. The research problem, therefore, is to identify how ecological innovations can mediate this tension and create a sustainable pathway that safeguards ecosystems while ensuring inclusive livelihood opportunities.

Objectives of the Paper

1. To analyze the current state and global trends of wildlife tourism.
2. To examine ecological innovations adopted in wildlife tourism for minimizing environmental impacts.
3. To assess the role of wildlife tourism in balancing conservation priorities with community livelihoods.
4. To propose sustainable strategies for integrating ecological innovation into wildlife tourism practices.

Significance of the Study

This study contributes to the growing discourse on sustainable tourism by highlighting how ecological innovations can transform wildlife tourism into a model of inclusive and responsible development. Its findings are significant for policymakers, conservationists, tourism operators, and local communities as they offer practical insights into reconciling economic growth with environmental protection. By positioning wildlife tourism as an ecological innovation, the study emphasizes its potential not only to conserve biodiversity but also to enhance human well-being, thus aligning with the global Sustainable Development Goals (SDGs).

Literature Review

Wildlife Tourism and Ecotourism: Key Definitions and Distinctions

Wildlife tourism has been broadly defined as travel primarily motivated by the desire to observe or interact with wild animals in their natural habitats (Higginbottom, 2004). It ranges from organized safaris and bird-watching to whale-watching and trekking experiences, and often generates significant revenue for conservation and local economies. Ecotourism, on the other hand, is a subset of nature-based tourism that explicitly emphasizes biodiversity conservation, education, and benefits to host communities (Honey, 2008). While wildlife tourism can sometimes lean toward mass-market recreation, ecotourism is guided by principles of sustainability, interpretation, and low-impact practices (Weaver,

2001). Thus, although closely related, ecotourism represents a more normative and sustainability-driven model compared to the broader wildlife tourism sector.

Ecological Innovation: Theoretical Perspectives

The concept of ecological innovation (eco-innovation) emerges from two theoretical strands. The first is the **Schumpeterian perspective**, where innovation is viewed as a driver of creative destruction that generates new products, processes, and organizational forms (Schumpeter, 1934). Applied to tourism, this includes technological interventions such as renewable energy in eco-lodges or digital wildlife monitoring systems. The second is the **ecological modernization framework**, which argues that economic growth and environmental protection are not mutually exclusive but can be integrated through institutional reforms, technological advancements, and market incentives (Mol & Spaargaren, 2000). Together, these perspectives provide a theoretical foundation for understanding how ecological innovation can transform wildlife tourism into a vehicle for sustainable development.

Community-Based Tourism: Evidence from Global and Indian Contexts

Community-based tourism (CBT) emphasizes local ownership, decision-making, and equitable benefit-sharing. Global evidence suggests CBT strengthens conservation by aligning local livelihoods with ecological stewardship. For instance, Maasai conservancies in Kenya demonstrate how revenue-sharing from tourism incentivizes anti-poaching measures (Nelson, 2004). In India, examples from states like Madhya Pradesh and Uttarakhand reveal how community-managed homestays and eco-parks provide alternative incomes while reducing pressure on forest resources (Goodwin & Santilli, 2009). However, issues of elite capture, unequal distribution of benefits, and inadequate institutional support continue to challenge the long-term sustainability of CBT models (Bhatia, 2013).

Gaps in Literature: Lack of Integrated Conservation–Livelihood Frameworks

While studies on wildlife tourism, ecotourism, and CBT highlight conservation and community benefits, there is limited research on **integrated frameworks** that balance biodiversity protection with livelihood enhancement in a structured manner. Much of the existing literature treats conservation and livelihoods as parallel objectives rather than interdependent processes (Spenceley, 2008). Furthermore, empirical studies on the role of ecological innovation in bridging this gap remain scarce, particularly in the Indian context where wildlife tourism is expanding rapidly but ecological impacts and community outcomes are unevenly documented. This study aims to address this gap by examining how ecological innovations can create synergies between conservation imperatives and livelihood security.

Methodology

Research Approach

This study adopts a **qualitative research design** with a focus on comparative case studies and secondary data review. The qualitative approach is suitable for capturing the complex and context-specific interactions between tourism practices, ecological innovation, conservation outcomes, and community livelihoods (Creswell & Poth, 2018). By synthesizing case evidence from multiple regions, the study seeks to uncover patterns, contrasts, and lessons that can inform a broader understanding of wildlife tourism as an ecological innovation.

Data Sources

The analysis draws exclusively on **secondary data**, including peer-reviewed academic articles, government reports, and policy documents from international organizations such as the United Nations World Tourism Organization (UNWTO) and the United Nations Environment Programme (UNEP).

These sources provide both empirical and policy-oriented perspectives. Academic journals such as the *Journal of Sustainable Tourism* and *Tourism Management* are used to capture theoretical debates and empirical findings. Grey literature—including NGO publications, national park management reports, and tourism board statistics—provides supplemental insights into ground realities often underrepresented in academic publications.

Case Study Selection

A **purposive sampling strategy** was used to select three emblematic case studies:

1. **Kaziranga National Park (India)** – A UNESCO World Heritage Site known for its one-horned rhinoceroses' population. This site highlights the challenges of balancing high tourist inflows with biodiversity conservation and the livelihoods of local Assamese communities.
2. **Maasai Mara Conservancies (Kenya)** – A globally renowned safari destination where community-based conservancies have pioneered models of revenue-sharing and wildlife stewardship. This case illustrates how ecological innovations can foster conservation while addressing pastoralist livelihoods.
3. **Elephant Sanctuaries in Thailand (Southeast Asia)** – These sites reflect ongoing transitions from exploitative elephant tourism (e.g., rides and circuses) toward more ethical, ecologically innovative models that prioritize animal welfare and sustainable livelihoods.
4. **Dudhwa National Park (India)** – Dudhwa National Park is vital for eco-tourism as it preserves rich biodiversity, supports endangered species like tigers and rhinos, promotes sustainable tourism, educates visitors on conservation, and boosts local livelihoods through nature-based activities. It also fosters ecological innovation through habitat restoration, species conservation, and community participation, making it a model for balancing biodiversity preservation with responsible tourism and local development.

These four cases were selected to ensure **geographical diversity**, representation of both Global South contexts, and varying models of ecological innovation. The cross-case comparison provides a robust basis for identifying transferable practices and contextual limitations.

Analytical Framework

The study employs the **Ecological Innovation Model** as the guiding framework. This model conceptualizes innovation in tourism as a dynamic process comprising three interlinked dimensions:

- **Inputs:** Investments, policies, technologies, and community participation that initiate ecological innovation.
- **Processes:** Implementation of eco-friendly practices such as renewable energy adoption, visitor management systems, ethical wildlife interactions, and revenue-sharing mechanisms.
- **Outcomes:** Ecological outcomes (e.g., biodiversity conservation, reduced carbon footprint) and livelihood outcomes (e.g., employment, cultural preservation, income diversification).

By mapping case study evidence onto this input–process–outcome framework, the analysis systematically evaluates how ecological innovations influence both **environmental sustainability** and **community welfare**. This structured approach also highlights gaps where innovations have been insufficient or maladaptive.

Results and Discussion

- *Wildlife Tourism as a Conservation Tool*

Revenue Generation for Protected Areas

Wildlife tourism contributes significantly to the financial sustainability of protected areas worldwide. Entry fees, safari permits, and concession arrangements with private tour operators provide much-needed funding for the maintenance of national parks and reserves. For example, in Kenya's Maasai Mara, community conservancies channel tourism revenues directly into land leases and conservation programs, ensuring both ecological protection and livelihood benefits (Nelson, 2004). Similarly, in India, revenue from tiger reserves such as Ranthambore and Kaziranga supports habitat management, infrastructure maintenance, and the employment of local guides. Such revenue streams reduce dependency on limited government budgets and enable protected areas to function more effectively.

Biodiversity Monitoring and Anti-Poaching

The presence of tourists and park authorities, facilitated by wildlife tourism, often acts as a deterrent against poaching and illegal activities. Tourism-generated income is also used to fund anti-poaching patrols, camera-trapping, and GPS-based wildlife monitoring systems. For instance, the integration of drone surveillance in Kaziranga National Park has enhanced real-time monitoring of rhino populations while deterring poachers. In African parks, partnerships between tourism operators and conservation agencies have financed ranger training, equipping them with advanced tools for biodiversity protection. Thus, wildlife tourism serves as both a **financial and operational mechanism** for biodiversity monitoring and law enforcement.

Conservation Awareness Among Tourists

Wildlife tourism fosters a deeper appreciation of biodiversity among domestic and international visitors. Interpretive programs, guided safaris, and eco-education centers provide tourists with knowledge about species behavior, ecological interdependence, and conservation challenges. Such exposure often translates into behavioral change, advocacy, and even philanthropic support for conservation initiatives (Honey, 2008). For example, elephant sanctuaries in Thailand have shifted away from exploitative practices such as rides and shows toward awareness-oriented tourism, where visitors learn about elephant welfare and forest ecology. In this way, wildlife tourism not only protects ecosystems but also **creates ambassadors for conservation** among its participants.

- *Wildlife Tourism as a Livelihood Pathway*

Direct Employment (Guides, Hospitality, and Park Staff)

Wildlife tourism is a critical source of direct employment for local communities living adjacent to protected areas. Jobs are created in guiding services, safari driving, hospitality management, and park administration. In Kaziranga National Park, for example, local youth are often trained as naturalist guides and drivers, providing them with long-term employment opportunities while simultaneously strengthening the knowledge base for conservation. Similarly, in Maasai Mara conservancies, community members are employed as rangers and camp staff, ensuring that economic benefits flow back into indigenous pastoralist communities (Spenceley, 2008).

Indirect Income (Handicrafts, Eco-Lodges, and Transport Services)

Beyond direct employment, wildlife tourism stimulates a chain of **indirect economic activities**. Community-run eco-lodges and homestays generate income by offering authentic cultural and ecological experiences to visitors. Handicraft sales—such as beadwork in Kenya, bamboo crafts in Assam, or tribal art in Central India—allow local artisans to benefit from tourist demand while preserving cultural

traditions. Transport services, including jeep rentals, boat tours, and local taxis, also contribute significantly to household incomes. These indirect income opportunities create a **multiplier effect**, linking conservation-based tourism with broader rural development.

Empowerment of Women and Marginalized Groups

Wildlife tourism has been particularly effective in empowering women and marginalized groups, who are often excluded from mainstream employment sectors. Women-led cooperatives in eco-tourism destinations (e.g., homestay networks in Uttarakhand, weaving collectives in Northeast India, and handicraft cooperatives in Kenya) provide both income and social recognition. Moreover, engagement in tourism often increases women's decision-making power within households and communities, contributing to gender equity. Marginalized groups, including indigenous communities and ethnic minorities, gain platforms for cultural expression and economic inclusion through tourism enterprises. By integrating empowerment goals into conservation strategies, wildlife tourism thus advances not only environmental but also **social sustainability**.

- ***Challenges in Wildlife Tourism***

Ecological Stress from Over-Tourism

While wildlife tourism generates revenue and awareness, excessive visitor numbers often place unsustainable pressure on fragile ecosystems. Overcrowding in tiger reserves of India, for instance, has been linked to noise pollution, habitat trampling, and altered animal behavior. Similarly, in Kenya's Maasai Mara, high densities of safari vehicles during the wildebeest migration have caused soil erosion and stress to migrating species (Buckley, 2012). Without strict carrying-capacity regulations, over-tourism risks undermining the very biodiversity that attracts visitors.

Human–Wildlife Conflicts

Increased interaction between humans and wildlife—encouraged by tourism infrastructure and movement corridors—has escalated conflicts such as crop raiding, livestock predation, and accidental injuries. Communities adjacent to Kaziranga often report crop losses due to elephants, while Maasai herders face predation of cattle by lions. Although tourism revenue is intended to offset such costs, inadequate compensation mechanisms frequently leave local people bearing the ecological burden (Nyhus, 2016). This can generate resentment toward conservation policies, weakening the social contract underpinning wildlife tourism.

Cultural Commodification

Tourism frequently leads to the commodification of indigenous traditions and lifestyles. Performances, rituals, and crafts may be repackaged for tourist consumption, sometimes losing their authenticity or spiritual significance. In Thailand, elephant tourism has historically involved staged cultural spectacles that prioritized visitor entertainment over cultural integrity and animal welfare. Similarly, among Maasai communities, traditional dress and dances are often commercialized to cater to tourist expectations (Scheyvens, 1999). Such commodification risks eroding cultural heritage and reducing communities to passive participants in externally driven tourism models.

Revenue Leakage to Outside Investors

Despite the promise of community empowerment, a significant proportion of tourism revenue often “leaks” to outside investors, international tour companies, and urban-based operators. Luxury lodges in African safaris, for example, are frequently owned by foreign corporations, limiting the share of benefits that remain with local residents. In India, private operators often capture the bulk of earnings from safari packages, while village households see only marginal benefits. This revenue leakage reduces the

economic resilience of local communities and perpetuates inequalities in benefit distribution (Mitchell & Ashley, 2010).

- ***Opportunities for Innovation***

Digital Booking Platforms for Transparency

The adoption of **digital booking systems** can significantly reduce corruption, improve visitor management, and enhance transparency in wildlife tourism. Online platforms that integrate ticketing, visitor caps, and real-time monitoring prevent revenue leakages by ensuring that funds are directly channeled to park authorities or community conservancies. For instance, India's tiger reserves increasingly use centralized e-permit systems that allocate safari slots fairly and transparently. Beyond revenue assurance, digital systems also enable the collection of visitor data, which can inform adaptive management strategies, including adjusting visitor flows to reduce ecological stress.

Carbon-Neutral Safari Models

As global concerns about climate change intensify, wildlife tourism presents opportunities for **carbon-neutral innovations**. Safari operators are experimenting with electric vehicles, solar-powered lodges, and carbon offset schemes that allow tourists to mitigate their ecological footprint. In South Africa and Kenya, eco-lodges powered by renewable energy demonstrate how luxury tourism can coexist with environmental responsibility. Such practices not only reduce emissions but also enhance the marketability of destinations among environmentally conscious travelers. By embedding carbon neutrality into wildlife tourism models, destinations can position themselves at the forefront of sustainable tourism innovation.

Community Cooperatives and Benefit-Sharing

The creation of **community cooperatives** offers a transformative pathway for equitable revenue distribution. In this model, local households collectively own and manage tourism enterprises such as eco-lodges, homestays, and guiding services. Profits are distributed among members, reinvested in conservation activities, or directed toward community development projects such as schools and healthcare. Maasai conservancies in Kenya and homestay networks in Uttarakhand, India, showcase the potential of cooperative management to strengthen community agency while safeguarding biodiversity. By embedding benefit-sharing mechanisms into governance structures, wildlife tourism can reduce inequalities and build durable partnerships between conservation authorities and local residents.

Policy Recommendations

Institutionalize Community-Based Ecotourism (CBET)

Governments should **formally recognize and support Community-Based Ecotourism (CBET)** initiatives through policy frameworks, funding, and legal backing. Institutionalization can ensure that communities have secure tenure rights, decision-making authority, and access to tourism revenues. Evidence from Kenya's Maasai Mara conservancies and India's community-managed homestay models demonstrates that when communities are co-owners of tourism ventures, conservation outcomes are stronger and more sustainable (Goodwin & Santilli, 2009).

Develop Carrying Capacity Assessments for Tourist Numbers

To mitigate the risks of over-tourism, protected area authorities must undertake **scientific carrying capacity assessments**. These studies should account not only for ecological thresholds but also for social and cultural dimensions of tourism. Implementing visitor quotas, zoning strategies, and time-based permits can help distribute tourist flows more evenly. For example, Bhutan's "High-Value, Low-

Impact” policy illustrates how strict visitor regulation can safeguard fragile ecosystems while maintaining economic viability.

Establish Benefit-Sharing Mechanisms with Local Residents

Equitable distribution of tourism revenue is essential to align community interests with biodiversity protection. Policy frameworks should require **mandatory benefit-sharing arrangements**, such as land lease payments, revenue-sharing percentages, or conservation-linked community funds. These mechanisms reduce the risk of revenue leakage and enhance local support for conservation. Successful models, such as the lease agreements in Kenyan conservancies and joint forest management committees in India, demonstrate the feasibility of structured benefit-sharing.

Build Capacity Training for Guides and Entrepreneurs

Wildlife tourism can only thrive sustainably if **local stakeholders are equipped with the necessary skills**. Governments, NGOs, and private operators should invest in training programs for naturalist guides, eco-lodge managers, and community entrepreneurs. Such training should integrate biodiversity knowledge, customer service, language skills, and digital literacy. Empowered guides and entrepreneurs not only provide high-quality visitor experiences but also ensure that the tourism economy remains rooted in local communities.

Encourage Sustainable Tourism Certification (Eco-Lodges, Green Operators)

Introducing **eco-certification systems** for lodges, tour operators, and safari services can incentivize businesses to adopt sustainable practices. Certifications—covering renewable energy use, waste management, ethical wildlife interactions, and fair labor practices—can create market differentiation for responsible operators. Examples include the Global Sustainable Tourism Council (GSTC) standards and India’s “Incredible India Bed and Breakfast” scheme, which could be expanded with stronger ecological benchmarks. Certification frameworks also raise consumer awareness, encouraging demand for genuinely sustainable experiences.

Conclusion

Wildlife tourism, when conceptualized as an **ecological innovation**, demonstrates significant potential to contribute simultaneously to biodiversity conservation and rural development. The case evidence from India, Kenya, and Southeast Asia illustrates that tourism revenue can fund protected areas, strengthen biodiversity monitoring, and foster global awareness of ecological issues. At the same time, it generates diverse livelihood opportunities, ranging from direct employment in guiding and hospitality to indirect income through handicrafts, eco-lodges, and transport services. Importantly, wildlife tourism also provides pathways for the empowerment of women and marginalized communities, enhancing both social and environmental sustainability.

Yet, the sector faces persistent challenges. **Over-tourism**, human–wildlife conflicts, cultural commodification, and revenue leakage undermine the very objectives of conservation and equity. These pressures underscore the need for robust regulatory frameworks, community participation, and innovative approaches that balance ecological limits with social aspirations. The opportunities for innovation are promising: digital booking systems can enhance transparency, carbon-neutral safari models can reduce environmental footprints, and community cooperatives can institutionalize benefit-sharing. For these opportunities to succeed, however, **policy interventions are critical**. Institutionalizing community-based ecotourism, conducting carrying capacity assessments, embedding

benefit-sharing mechanisms, building local capacity, and adopting sustainable tourism certification can provide the enabling environment for lasting impact.

In conclusion, a **participatory and innovation-driven model of wildlife tourism** offers a pathway where conservation imperatives and community livelihoods reinforce one another rather than compete. If implemented effectively, such a model ensures that both biodiversity and rural societies not only survive but also **thrive together**, aligning with the broader goals of sustainable development and ecological resilience.

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