

AN EMPIRICAL STUDY ON COMMUNITY-BASED ECOTOURISM AND ITS SOCIO-ECONOMIC BENEFITS: EVIDENCE FROM NELAPATTU BIRD SANCTUARY

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Abstract

Community-based ecotourism has emerged as a key strategy for achieving sustainable development in protected areas by linking conservation objectives with local livelihoods. This study examines the socio-economic impacts of community-based ecotourism at Nelapattu Bird Sanctuary, a significant wetland ecosystem in South India. Using primary data collected from tourism stakeholders, including local residents, government employees, vendors, and tourism professionals, the research analyses employment patterns, income stability, community participation, environmental perceptions, and institutional support mechanisms. Findings reveal that ecotourism at Nelapattu has generated meaningful livelihood opportunities and improved standards of living for many households, though challenges such as seasonal employment, income insecurity, and unequal benefit distribution persist. The study highlights the importance of skill development, inclusive planning, and public-private partnerships in strengthening sustainable community-based tourism models. The paper concludes with policy recommendations aimed at enhancing socio-economic benefits while safeguarding ecological integrity.

Keywords: Community-based ecotourism, socio-economic impacts, livelihoods, wetland tourism, Nelapattu Bird Sanctuary

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1. Introduction

Sustainable tourism has gained global attention as a development approach that balances economic growth, environmental conservation, and social equity. Within this framework, community-based ecotourism (CBE) emphasizes the active participation of local communities in tourism planning, management, and benefit sharing. Protected areas such as bird sanctuaries present unique opportunities for CBE, as they attract nature-based tourists while depending heavily on local stewardship for long-term conservation.

Nelapattu Bird Sanctuary is one of South India's most important pelican breeding sites and a growing nature-based tourism destination. Tourism activities at the sanctuary provide income opportunities for nearby communities through guiding, transport services, small shops, and hospitality-related work. However, increased visitor flow also raises concerns regarding employment stability, social equity, and environmental pressures. This study aims to assess how community-based ecotourism contributes to socio-economic development around Nelapattu Bird Sanctuary and to identify challenges that may affect its sustainability.

2. Review of Literature

Previous studies on community-based ecotourism highlight its potential to generate rural employment, enhance conservation awareness, and empower local populations. Ecotourism initiatives have been shown to improve household income and strengthen community participation when local stakeholders are actively involved in decision-making processes. However, literature also points to persistent challenges such as seasonal employment, inadequate skills, unequal benefit distribution, and limited institutional support. Studies on wetland and bird sanctuary tourism emphasize the importance of visitor management, environmental education, and community engagement in maintaining ecological balance. Despite growing research on ecotourism in India, empirical studies focusing on community-driven socio-economic outcomes in bird sanctuaries remain limited, underscoring the relevance of the present research.

3. Methodology

The study adopts a descriptive and analytical research design. Primary data were collected through structured questionnaires and interviews administered to tourism stakeholders, including local residents, shop vendors, tour guides, tourism professionals, and government employees. Secondary data were sourced from official tourism records and sanctuary documentation. Quantitative data were analysed using percentage analysis and trend interpretation, while qualitative responses were examined through thematic analysis. The study focuses on socio-economic impacts, stakeholder perceptions, and institutional support structures related to community-based ecotourism.

4. Profile of Study Area

Nelapattu Bird Sanctuary is located in the Nellore–Tirupati region of Andhra Pradesh and is centred around a shallow freshwater lake surrounded by Barringtonia trees. The sanctuary is internationally recognized for hosting one of the largest breeding colonies of spot-billed pelicans in India. In addition to pelicans, the sanctuary supports a wide range of resident and migratory bird species, making it a popular destination for birdwatchers, photographers, students, and researchers. The sanctuary's proximity to Pulicat Lake enhances its appeal as part of a broader wetland tourism circuit. Local villages around the sanctuary depend partly on tourism-related activities for their livelihoods.

4.1. Tourism Trends

Tourism at Nelapattu Bird Sanctuary is primarily nature-based and education-oriented, centred on birdwatching, wetland interpretation, and low-impact visitor experiences. The sanctuary attracts a steady flow of visitors, particularly during the winter months when large breeding colonies of spot-billed pelicans and other migratory birds are present. Well-marked pathways and designated viewing points allow tourists to observe nesting and feeding behaviour without disturbing wildlife, making the site suitable for students, researchers, photographers, and conservation-minded travellers. An interpretation centre and information boards further enhance visitor understanding of wetland ecosystems, bird migration, and conservation values.

Table -1: Visitors trends to Nelapattu Bird Sanctuary in 2023

Month	Number of Visitors	Percentage Growth (%)	Cumulative Visitors
January	13,605	-	13,605
February	3,455	- 74.60	17,060
March	2,534	- 26.66	19,594
April	764	- 69.85	20,358
May	435	- 43.06	20,793
June	361	-17.01	21,154
July	400	10.80	21,554
August	462	15.50	22,016
September	315	-31.82	22,331
October	2,298	629.52	24,629
November	1,612	-29.85	26,241
December	1,845	14.45	28,086
Total	28,086	—	—

Source: Tourist Information Office, Tirupati

4.2. Community-Based Ecotourism Practices at Nelapattu

Tourism activities at Nelapattu remain largely non-commercial, with limited but functional infrastructure such as basic amenities, nature trails, and viewing platforms managed by the Forest Department. The sanctuary's proximity to Pulicat Lake strengthens its appeal as part of a broader wetland tourism circuit, encouraging short-duration visits and educational excursions. Local communities participate informally through guiding services, transport, and small retail outlets, linking tourism with rural livelihoods. Overall, tourism at Nelapattu is characterised by seasonal intensity, ecological sensitivity, and strong educational value, positioning the sanctuary as a model for quiet, responsible, and conservation-focused tourism rather than mass recreation.

5. Socio-Economic Impacts of Ecotourism

Table-2: Socio-Economic profile of the local Community

Variable	Category	Frequency	Percentage (%)
Age	Below 20	11	14.67
	20–30	25	33.33
	31–40	25	33.33
	41–50	12	16.00

	50 and above	2	2.67
Gender	Male	47	62.67
	Female	28	37.33
Occupation	Government employee	26	34.67
	Tourism professional	20	26.67
	Shop vendor	15	20.00
Education	Local resident	14	18.67
	Higher education	26	34.67
	Secondary	20	26.67
	Professional/Technical	15	20.00
Tourism employment	Primary	14	18.67
	Yes	67	89.33
	No	8	10.67

Source: Field data

Field data indicate that nearly 90 percent of respondents are directly engaged in tourism-related employment. Hospitality and transportation sectors account for the largest share of jobs, followed by guiding and small-scale handicrafts. However, 69 percent of employment is seasonal, closely linked to bird migration and breeding cycles. Income instability and lack of alternative livelihood options remain major concerns.

Stakeholders are predominantly young to middle-aged, with a majority possessing secondary or higher education. While male participation is higher, women play an important role in service and retail activities. The educational diversity of stakeholders suggests the need for tiered training programs to enhance skills and service quality.

A significant proportion of respondents report improvements in household income and standard of living due to tourism. Community participation has increased, and tourism has contributed to cultural promotion and local identity. However, many respondents also perceive growing socio-economic disparities, indicating uneven benefit distribution.

6. Lively hood and Employment Impact

Table- 3: Respondents opinion on Employment and Livelihood near Pulicat lake and Bird Sanctuary.

Indicator	Category	Percentage (%)
Employment sector	Hospitality	30.67

	Transportation	30.67
	Tour guiding	17.33
	Handicrafts	10.67
Job creation impact	High / Very high	40.00
	Moderate	29.33
	Low	30.67
Job stability	Yes	41.33
	No	26.67
	Not sure	32.00
Nature of employment	Seasonal	69.33
	Year-round	30.67
Major challenges	Unemployment	38.67
	Lack of alternative income	30.67
	Irregular income	22.67

Source: Field data

The findings indicate that community-based ecotourism at Nelapattu Bird Sanctuary has become an important source of livelihood for local stakeholders, with tourism forming the primary employment base for a majority of respondents. Nearly 90 percent of stakeholders are directly engaged in tourism-related activities such as hospitality services, transportation, guiding, and small-scale vending, highlighting the sanctuary's role in supporting local employment. Tourism has contributed positively to household income and improved living standards, particularly during peak birding seasons. However, employment remains largely seasonal, as visitor inflow is strongly linked to migratory and breeding cycles, resulting in income instability during off-season months. A significant proportion of respondents reported challenges such as irregular earnings, unemployment during lean periods, and limited access to alternative income sources. While tourism has generated new job opportunities, perceptions of job creation vary, with many stakeholders viewing employment growth as moderate or low due to limited year-round opportunities. The absence of structured training and skill development further constrains upward mobility, keeping many workers in low-paying, informal roles. Overall, the evidence suggests that ecotourism at Nelapattu provides meaningful livelihood support but requires targeted interventions, including skill enhancement, diversification of tourism activities, and year-round employment strategies, to ensure long-term economic sustainability for local communities.

7. Environmental and Cultural Impacts

Table-4: Stakeholders perception on impact on Environment and Culture

Aspect	Dominant Response	Percentage (%)
Heritage preservation	Community-based tours	42.67
Support for ecotourism	Yes	54.67
Standard of living	Improved / Significantly improved	69.34
Cultural impact	Positive	60.00
Social structure	Enhanced participation	48.00
Perceived disparities	Yes	66.67

Source: Field data

Stakeholders largely support eco-tourism initiatives and community-based heritage preservation. While most respondents view tourism as having a positive or neutral cultural impact, concerns exist regarding environmental pressure and social divisions. Support for access regulation and restoration activities reflects growing awareness of conservation needs.

8. Role of Institutions and Public–Private Partnerships

Table-5: Respondents opinion on the PPP Model at Nelapattu

Dimension	Preferred Option	Percentage (%)
PPP usefulness	Yes	62.67
Private sector role	Infrastructure development	50.67
Collaboration model	Co-management	34.67
Policy alignment	Yes	89.33
Regulation effectiveness	Effective / Very effective	69.33

Source: Field data

The study reveals strong stakeholder support for public–private partnerships in tourism development. Respondents emphasize the need for improved infrastructure, co-management models, and stronger promotion and branding. Existing policies are generally perceived as supportive, though further improvements in infrastructure, marketing, and community involvement are recommended.

9. Results and Discussion

The empirical findings reveal that community-based ecotourism at Nelapattu Bird Sanctuary has generated substantial socio-economic benefits for local stakeholders, while simultaneously exposing structural limitations that constrain its long-term sustainability. Analysis of tourist footfall data indicates a pronounced seasonal pattern, with visitor numbers peaking during the winter months aligned with pelican breeding and migratory bird presence. This seasonality is directly reflected in employment outcomes, as a significant majority of tourism-related jobs are seasonal in nature. Although nearly ninety percent of respondents are directly engaged in tourism-linked activities, including hospitality, transportation, guiding, and small-scale vending, employment stability remains limited, resulting in irregular incomes and heightened vulnerability during off-season periods.

The demographic composition of stakeholders predominantly young to middle-aged and moderately educated suggests a workforce with strong potential to support community-based tourism initiatives. However, the high dependence on tourism as a primary livelihood source, combined with limited alternative income opportunities, amplifies economic risk. Stakeholder perceptions of job creation are mixed, with many respondents characterising employment growth as moderate or low, underscoring the limited scale and informal structure of existing tourism enterprises. The lack of systematic training and skill development further restricts upward mobility, confining many workers to low-paying service roles and preventing broader economic diversification.

From a socio-cultural perspective, the results indicate largely positive outcomes, including improvements in household living standards, enhanced community participation, and favourable cultural exchange between visitors and local residents. Nevertheless, a substantial proportion of stakeholders perceive growing socio-economic disparities, suggesting unequal distribution of tourism benefits and potential sources of social tension. Environmental awareness and support for eco-tourism are notably strong, reflecting alignment with sustainable tourism principles. Overall, the findings suggest that while community-based ecotourism at Nelapattu contributes meaningfully to livelihoods and conservation awareness, targeted interventions addressing

seasonality, skill development, and inclusive benefit-sharing are essential to realise its full developmental potential.

10. Policy Recommendations

- Strengthen community participation in tourism planning and decision-making
- Introduce structured training programs in guiding, language, and hospitality
- Promote year-round tourism through education, research, and interpretation activities
- Support local enterprises, women, and youth entrepreneurs
- Enhance eco-friendly infrastructure and waste management
- Encourage co-management models through public–private partnerships

11. Conclusion

This study demonstrates that community-based ecotourism at Nelapattu Bird Sanctuary has emerged as a meaningful mechanism for linking conservation objectives with local socio-economic development. The findings indicate that tourism has generated employment opportunities, improved household incomes, and strengthened community engagement, particularly during peak visitation periods associated with bird migration and breeding cycles. At the same time, the results reveal structural challenges that limit the long-term sustainability of these benefits, including strong seasonality of employment, income instability, limited skill development, and perceived inequalities in benefit distribution. While stakeholders exhibit strong support for eco-tourism and conservation-oriented practices, the current tourism model remains largely informal and supplementary in nature. Addressing these constraints through targeted capacity building, diversification of tourism activities, inclusive governance frameworks, and strengthened public–private partnerships is essential. With strategic planning and community empowerment, ecotourism at Nelapattu can evolve from a seasonal livelihood support system into a stable, equitable, and sustainable development pathway that simultaneously enhances local well-being and protects the sanctuary’s ecological integrity.

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