

UNVEILING THE TRANSFORMATIVE IMPACT OF WETLAND TOURISM ON LOCAL LIVELIHOODS: A CAPTIVATING STUDY OF MAGURI BEEL, TINSUKIA DISTRICT, ASSAM.

Dr. Krishnamoni Saikia

E-mail: krishnamoni2016saikia@gmail.com

Abstract: Wetlands support incredible biodiversity, hosting migratory birds, fish, and other wildlife. These "kidneys of the earth" filter pollutants and maintain water quality. Maguri Beel, a vital wetland ecosystem in Assam, India, is a haven for biodiversity and a lifeline for local communities, supporting fishing, agriculture, and emerging tourism activities. However, the increasing influx of tourists, drawn by its scenic beauty and rich avifauna, poses threats to its ecological balance. Set amidst lush wetlands, grasslands, and tropical forests, the area's tourism potential necessitates sustainable management to prevent environmental degradation and cultural disruption. This study examines the interplay between social and economic impacts of tourism in Maguri Beel using a mixed-methods approach. Data were collected through household surveys in Maguri Motapung Village (N=150), stakeholder interviews, and field observations, focusing on community engagement, income generation, and perceptions of conservation. Correlation analysis revealed a strong positive correlation ($r = 0.954^{***}$) between social engagement and economic benefits, highlighting synergies between community involvement and tourism gains. The findings underscore the need for sustainable strategies prioritising eco-friendly practices, community-led tourism, and conservation efforts. Proposed measures include promoting nature-based activities, enhancing local capacities, ensuring responsible tourism practices, and strengthening wetland conservation initiatives. Implementing these strategies can conserve Maguri Beel's ecological integrity while enhancing local benefits, offering a replicable model for balancing tourism growth with environmental stewardship in sensitive wetland ecosystems.

Keywords: Wetland Tourism, Maguri Beel, Assam Tourism, Socio-economic impact.

Introduction:

Wetland tourism, a rapidly growing sector globally, presents both economic opportunities and risks to fragile ecosystems and local communities. Understanding tourism's impacts helps balance economic benefits with conservation needs, ensuring wetlands continue to support communities and ecology sustainably. Studying wetland tourism is crucial as these ecosystems

support immense biodiversity, provide livelihoods for millions, and face growing threats from increasing tourism pressures. Understanding tourism's impacts on wetlands is essential to balance economic benefits with conservation needs, ensuring these ecosystems continue to support communities, buffer against climate change, and sustain ecological functions. Assam's wetlands, like Maguri Beel and Deep Beel, are ecotourism gems, attracting nature lovers and birdwatchers. These wetlands support diverse flora and fauna, including endangered species, and offer scenic landscapes ideal for boating, fishing, and cultural exploration. Local communities benefit through homestays and eco-tourism initiatives, but balancing visitor growth with conservation remains key (Bhattacharya & Deka 2018). Maguri Beel, a wetland in Assam's Tinsukia district, is recognised for its ecological and socio-economic significance. Studies like Dutta et al. (2018) document the beel's biodiversity, highlighting its role as a habitat for migratory birds and aquatic species. The wetland's rich fish diversity supports local fisheries, a key livelihood for nearby communities like Motapung village (Baruah et al., 2020).

Research on wetland tourism (Gupta & Singh, 2019) indicates that while tourism boosts local economies, it can disrupt ecosystems and strain local resources if unmanaged. For Maguri Beel, balancing tourism growth with conservation is critical to sustaining both ecology and community benefits. Unregulated tourism may lead to habitat degradation, pollution, and wildlife disturbance, thereby impacting the wetland's ecological balance.

Ecosystem services of wetlands like Maguri Beel—flood regulation, groundwater recharge, and carbon sequestration—are vital but threatened by habitat alteration and pollution (Kumar & Das, 2017). Community-based ecotourism models are suggested as pathways to empower locals while preserving wetland ecosystems (Das & Choudhury, 2019). These models promote stakeholder engagement, ensuring tourism benefits are equitably shared and conservation goals are met.

Studies also highlight policy gaps in wetland management. The Ramsar Convention emphasises wise use of wetlands, but implementation remains challenging in India (Prasad et al., 2020).

Sustainable tourism can enhance livelihoods while preserving Assam's wetland heritage. Wetlands like Maguri Beel offer cultural, recreational, and economic value, but unregulated tourism can disrupt habitats, strain local resources, and marginalise communities. Researching wetland tourism helps identify sustainable practices, inform policies, and empower

stakeholders to manage tourism responsibly, safeguarding both local livelihoods and the environment for future generations. Maguri Beel, a scenic wetland in Tinsukia District, Assam, exemplifies this trend. Known for its biodiversity and as a habitat for migratory birds, Maguri Beel has become a popular ecotourism spot, attracting nature enthusiasts and researchers alike. As tourism activities intensify, questions arise about their impact on the livelihoods of communities living around the wetland (Saikia & Bhattacharya, 2019). This study explores how tourism around Maguri Beel influences local socio-economic conditions, examining both the benefits and challenges. Understanding these dynamics is key to ensuring tourism supports sustainable development without compromising the wetland's ecological integrity.

Significance of the study:

This study on Maguri Beel is significant as it examines the interplay between wetland tourism and local livelihoods in a biodiversity hotspot. Insights gained can guide policymakers, NGOs, and communities in crafting strategies that maximise tourism benefits while mitigating environmental and socio-economic risks. Understanding these dynamics is vital for Maguri Beel's conservation and for replicating sustainable models in Assam's other wetlands. The study also adds to broader discussions on balancing ecological integrity with economic development in vulnerable ecosystems.

Study Area:

The area of this study covers Maguri Motapung Village, Tinsukia District. Maguri Beel has a humid subtropical climate with heavy rainfall (June-Sept) and mild winters (Dec-Feb). Alluvial soils, which are fertile for agriculture, dominate the area. Summers (March-May) are warm, while monsoons bring heavy rains. Winters are cool and relatively dry. Tea gardens, forests, and farmland surround Maguri Beel. The wetland is part of the Brahmaputra valley's eco-sensitive zone. Latitudinal Extension of the area is $27^{\circ}33'$ N and $27^{\circ}35'$ N, longitudinal extension is $95^{\circ}21'$ E to $95^{\circ}25'$ E.

LOCATIONAL MAP OF THE STUDY AREA

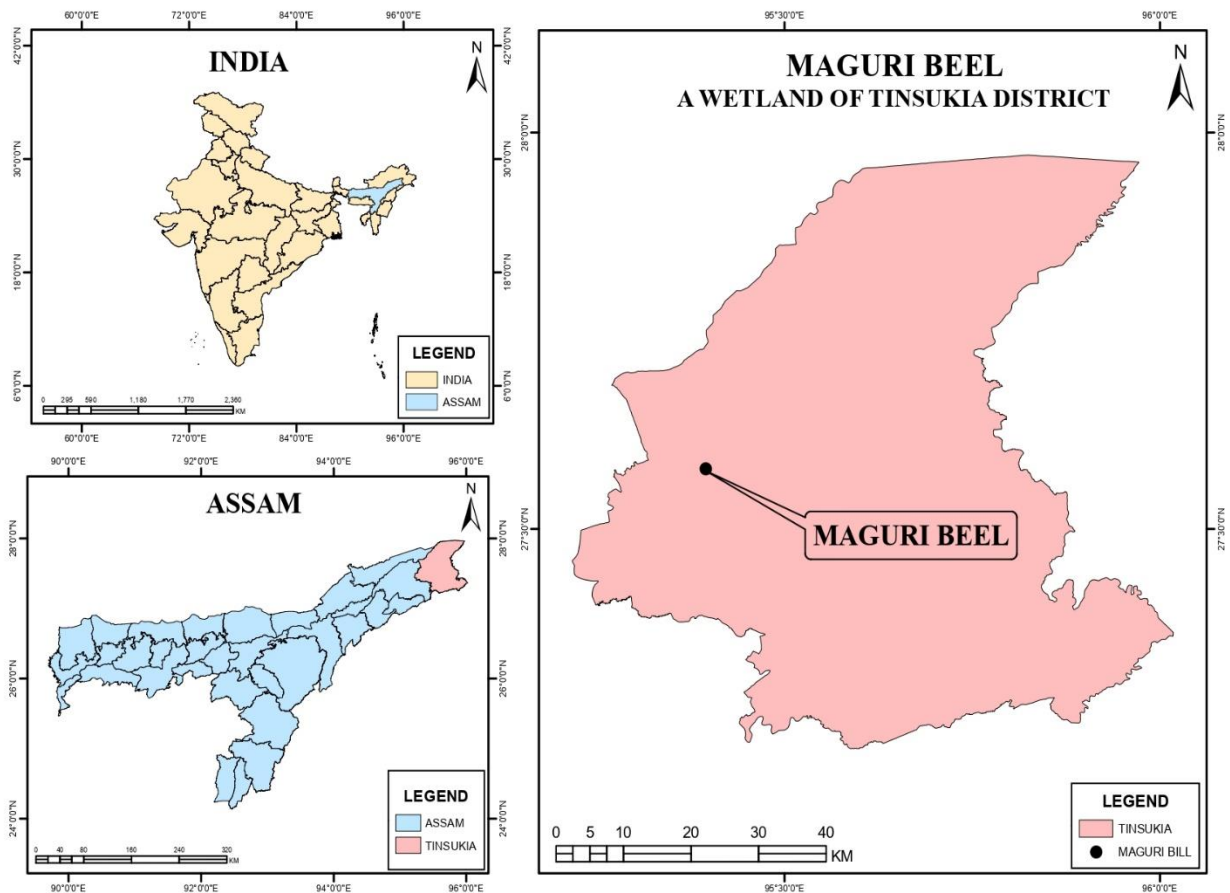


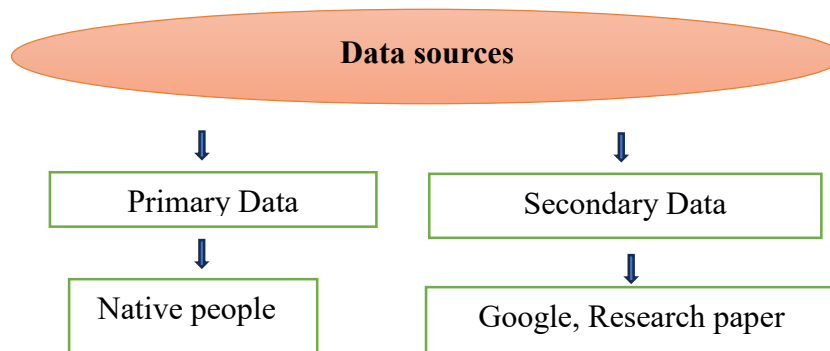
Figure: Map of the study area.

Objectives:

1. To assess the socio-economic impacts of wetland tourism on local livelihoods in Maguri Beel, Tinsukia District, Assam.
2. To identify sustainable tourism strategies that can enhance local benefits and conserve Maguri Beel's ecological integrity.

Database and methodology:

The study on Maguri Beel's wetland tourism used a mixed-method approach, surveying 150 respondents via open-ended questionnaires by adopting the simple random sampling technique. Primary data captured perceptions on tourism impacts, conservation, and livelihoods, while secondary data from government reports and journals supplemented contextual insights. The mixed-method design (Quan+qual) enabled triangulation, enriching findings on sustainable tourism practices in this ecologically sensitive area.



Results and discussions:

Objective 1 explains the socio-economic impacts of wetland tourism on local livelihoods in Maguri Beel, Tinisukia District, Assam. Wetlands like Maguri Beel in Tinisukia District, Assam, are vital for biodiversity and local economies, supporting livelihoods through fishing, farming, and tourism. As tourism grows, understanding its socio-economic impacts on communities is critical for sustainable development. This study assesses how wetland tourism shapes livelihoods in Maguri Beel, guiding strategies to balance economic benefits with ecological conservation. The analysis assessed these socio-economic impacts of wetland tourism on the local livelihoods of the native people of Maguri Motapung Village:

Table 1: Socio-economic impacts of Wetland Tourism on the native people of Maguri Motapung Village.

Impacts	
Social	Community empowerment via tourism roles
	Cultural exchange boosts local pride
	Exposure to tourism promotes education and awareness
	Strengthens community networks and cooperation
Economic	Tourism creates jobs
	Income rises for locals
	Infrastructure development benefits locals long-term
	Promotes local entrepreneurship

In Maguri Motapung Village, wetland tourism drives significant social and economic transformations. On the social front, locals gain empowerment and pride through active roles like guides, cooks, or homestay owners, allowing them to showcase and preserve their rich cultural heritage. Interaction with tourists fosters cultural exchange, boosting village pride in traditions like festivals, boat-making, or folk arts. Exposure to the outside world also promotes education – villagers learn skills like digital literacy for bookings, language for better engagement, or eco-friendly practices to sustain tourism. Cooperation among residents increases as they unite for tourism activities, strengthening community bonds. Economically, tourism injects money into the local economy through diverse jobs and sales. Households earn via homestays, local food, boating services, or selling handicrafts, adding crucial income streams. Infrastructure like roads, sanitation, or internet improves for both tourists and locals, enhancing the overall quality of life. It also sparks entrepreneurship – locals start ventures like craft shops, eateries, or nature guides, leveraging tourist interest. Overall, income rises, adding stability and growth to village livelihoods. The key impacts pattern of wetland tourism on Maguri Motapung Village is concisely presented in Table 2. The correlation analysis is used to investigate the relationship between the social and economic impacts of wetland tourism in Maguri Motapung Village. By understanding this relationship, the study aims to determine whether social benefits, such as community engagement and cultural preservation, are associated with economic gains, like increased income and job creation.

Table 2: Showing the key socio-economic impacts pattern of the Wetland Tourism on Local Livelihood in Maguri Motapung Village.

Impacts		Pattern of Impacts
Social	Community empowerment via tourism roles	Locals get jobs as guides, cooks, or homestay owners. This involvement lets them lead tourism activities and preserve culture
	Cultural exchange boosts local pride	Tourists learning about local traditions (like festivals, crafts) make villagers proud of their heritage.
	Exposure to tourism promotes education and awareness	Interaction with tourists encourages locals to learn skills (language, digital literacy) for better engagement.
	Strengthens community networks and cooperation	Tourism often unites villagers for homestays, festivals, or eco-groups, boosting cooperation.
Economic	Tourism creates jobs	Jobs in boating, Hospitality, Guides, cooking, or selling handicrafts add income sources.
	Income rises for locals	Tourists paying for local stays/food directly benefit households.

Infrastructure development benefits locals long-term	Roads, sanitation, or internet for tourism also help villagers access services.
Promotes local entrepreneurship	Locals start small ventures (crafts, food stalls) leveraging tourist interest.

Table 3: Statistical Analysis (Descriptive statistics)

Descriptives (Statistical Analysis)		
	Social	Economic
N	150	150
Missing	0	0
Mean	13.7	13.7
Median	13.5	12.0
Mode	12.0	12.0
Sum	2053	2048
Standard deviation	3.10	2.83
Minimum	8	8
Maximum	20	20

Table 4: Pearson's Correlation Matrix.

Correlation Matrix		
	Social	Economic
Social	Pearson's r	—
	df	—
	p-value	—
	95% CI Upper	—
	95% CI Lower	—
	N	—
Economic	Pearson's r	0.954***
	df	148
	p-value	<.001
	95% CI Upper	0.967
	95% CI Lower	0.937

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Note. * $p < .05$, ** $p < .01$, *** $p < .001$

statistical summary and a correlation matrix (Pearson's) involving two variables: Social and Economic.

○ Descriptive statistics:

- Sum: 2053 (Social), 2048 (Economic).
- Standard deviation: 3.10 (Social), 2.83 (Economic).
- Minimum = 8 for both.
- Maximum = 20 for both.

○ Correlation matrix:

- Pearson's r between Social and Economic = 0.954* (strong positive correlation).
- Degrees of freedom (df) = 148.
- p -value $< .001$, indicating the correlation is statistically significant.
- 95% confidence interval for r : [0.937, 0.967].
- Sample size (N) = 150.

The results suggest a very high positive linear relationship between the social and economic variables, meaning they tend to increase together strongly in the dataset.

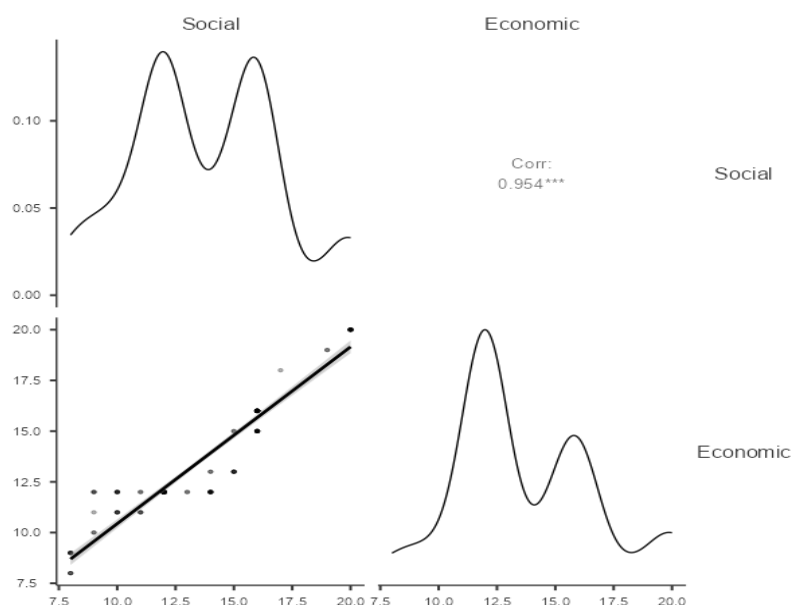


Figure: Scatter Plot

The correlation plot between “Social” and “Economic” variables explains that the bottom-left scatter plot shows a strong positive linear relationship between Social and Economic variables, with a regression line. The density plots (top-left and bottom-right) indicate bimodal distributions for both variables.

The analysis employs a correlation assessment to quantify how strongly social impacts (e.g., community involvement, cultural effects) are linked with economic outcomes (e.g., income, livelihood changes). The high positive correlation ($r = 0.954^{***}$) indicates that improvements in social aspects are closely associated with improvements in economic aspects, supporting the objective of understanding synergies between social and economic sustainability in the tourism ecosystem.

➤ **Sustainable tourism strategies that can enhance local benefits and conserve Maguri Beel's ecological integrity are:**

1. Eco-friendly accommodations: Develop environmentally friendly lodges, resorts, and homestays that blend with the natural surroundings, reducing carbon footprint and promoting eco-tourism.
2. Community-led tourism: Involve local communities in decision-making, benefit-sharing, and tourism management, ensuring they receive fair benefits and are stakeholders in conservation efforts.
3. Nature-based activities: Focus on activities like birdwatching, nature walks, kayaking, and wildlife photography, minimising disturbance to the ecosystem.
4. Waste management: Implement proper waste disposal systems, reduce plastic use, and promote recycling, composting, and eco-friendly products.
5. Conservation efforts: Support wetland conservation, wildlife protection programs, and habitat restoration initiatives, involving local communities and tourists.
6. Capacity building: Train locals in tourism management, hospitality, and entrepreneurship, enhancing their skills and economic opportunities.
7. Responsible tourism practices: Educate tourists on respecting local culture, environment, and wildlife, promoting mindful tourism practices.

8. Sustainable livelihoods: Encourage sustainable livelihood options like eco-tourism, handicrafts, and local products, reducing dependence on natural resources.
9. Infrastructure development: Develop sustainable infrastructure like solar-powered facilities, eco-friendly transportation, and waste treatment systems.
10. Monitoring and evaluation: Regularly monitor tourism impacts, involve stakeholders, and adapt strategies to ensure the sustainability and conservation of Maguri Beel's ecological integrity.

Conclusion:

Maguri Beel's ecological significance and tourism potential necessitate a balanced approach prioritising conservation and community benefits. This study underscores the critical interplay between social and economic factors in wetland tourism, with a strong correlation ($r = 0.954^{***}$) highlighting that enhanced community engagement aligns with improved economic outcomes. By implementing sustainable strategies like eco-friendly practices, community-led tourism, nature-based activities, and conservation efforts, stakeholders can safeguard Maguri Beel's biodiversity while maximising local benefits. Effective collaboration among policymakers, communities, and tourists is vital. With rising tourism pressures, timely interventions are crucial to prevent ecological degradation. Prioritising sustainability will conserve this vital wetland, support local livelihoods, and offer a replicable model for managing tourism in sensitive ecosystems. Protecting Maguri Beel ensures ecological, social, and economic resilience for future generations.

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