

*International Journal of Green Tourism
Research and Applications*

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International Journal of Green Tourism Research and Applications is, as the name implied, focused on green tourism research and applications. Its scope covers philosophies, theories, science and technology, practices, and applications of responsible, sustainable, and green tourism; eco-, natural, and village/rural tourism; cultural, religious, and alternative tourism; community-based tourism; all tourism businesses and tourist activities which are ecologically/environmentally and socio-culturally friendly.

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Green Tourism Implementation Strategy in Ecotourism Development in Garut Regency

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Abstract: Garut Regency holds considerable potential for ecotourism development, yet faces a persistent implementation gap characterized by poor infrastructure, environmental degradation, and weak policy enforcement, despite supportive regulations. This study aims to comprehensively analyze the internal and external factors influencing Garut's ecotourism and formulate integrated green tourism strategies to address this gap. Employing a qualitative descriptive case study approach, data were obtained through literature review and policy document analysis, including scholarly articles, local policy documents (e.g., RIPPDA, strategic plans), and other credible secondary sources. The data were analyzed using qualitative content analysis within a SWOT framework. The findings indicate that while Garut benefits from diverse natural and cultural resources and a rising interest in green tourism, infrastructural deficiencies, substandard services, environmental threats, and lax law enforcement offset these strengths. To overcome these barriers, four strategic directions are proposed: (1) strengthening governance and policy enforcement, (2) promoting community-based ecotourism, (3) developing green infrastructure and service quality standards, and (4) executing authentic green marketing initiatives. This study underscores the urgency of closing the implementation gap. It offers actionable recommendations for stakeholders including government, communities, and the private sector to promote authentic and sustainable ecotourism practices at the local level.

Keywords: development strategy, ecotourism, Garut regency, green tourism, SWOT analysis.

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Introduction

Tourism has transformed into one of the most vital economic sectors in the world, especially for developing countries. This sector has proven capable of driving economic growth, creating jobs, and improving infrastructure (Arianti, 2014; Rahmi et al., 2024). For example, developing tourism in many regions, including Indonesia, has contributed significantly to regional income and created new job opportunities for local communities (Pribadi et al., 2021; Sulistyo et al., 2023). However, the conventional tourism development paradigm, which is oriented towards economic profit, often ignores the negative impacts on the environment and the socio-cultural fabric of local communities. Poorly planned tourism activities can negatively impact environmental conditions and the community's social life (Satria, 2023; Kurnianingtyas & Pratama, 2024).

A global shift toward sustainable tourism has emerged in response to these ecological and social crises. This concept has given rise to various derivative approaches, such as sustainable tourism, green tourism, and ecotourism, which are now increasingly popular among environmentally conscious traveler segments (Andrea, 2024). Green tourism, for example, focuses on implementing environmentally friendly practices and ensuring that the tourism industry is economically profitable and contributes to

environmental conservation (Riswano & Rachmat, 2023). Furthermore, including ecotourism elements that involve local communities in managing and implementing tourism activities is crucial to maintaining a balance between economic benefits and environmental sustainability (Lavenia et al., 2024).

Thus, sustainable tourism development requires collaboration between all stakeholders, including the government, communities, and tourism industry players, so that the resulting benefits can be felt evenly without sacrificing the sustainability of the environment and local culture (Sugiarto & Gabriella, 2020; Wibowo & Belia, 2023). In the future, to achieve this goal, more in-depth research and development are needed to find practical approaches in tourism management and assess their impact on the environment and society (Satria, 2023; Kurnianingtyas & Pratama, 2024).

Although often used interchangeably, there are fundamental differences between green tourism and ecotourism. Green tourism is defined as any form of tourism activity striving to be environmentally friendly. However, due to its broad scope and lack of strict standards, the term is often susceptible to greenwashing, where industry players use the "green" label as a marketing ploy without being based on substantive conservation efforts (Shang et al., 2023). This leads to confusion among tourists about what being environmentally responsible truly means in the context of tourism.

In contrast, ecotourism is a more specific subcategory with stricter principles, defined by The International Ecotourism Society (TIES) as "responsible travel to natural areas that conserves the environment, supports the well-being of local communities, and involves interpretation and education" (Wahono et al., 2025). This definition emphasizes three inseparable pillars: environmental conservation, economic and social empowerment of local communities, and education for tourists and communities (Anuar et al., 2019). Ecotourism aims to provide direct benefits to local communities and the environment, which aligns with the principle of sustainability, which focuses on economic development that does not damage natural resources (Purwoko et al., 2022).

Overall, the main difference between green tourism and ecotourism lies in the level of commitment and practices adopted to achieve sustainability. Green tourism tends to be general and often a result of marketing. At the same time, ecotourism is more focused on clear and measurable principles that contribute to environmental conservation and empower local communities (Ridlwan et al., 2017). Therefore, it is important for industry players to adopt a more substantive and responsible approach to ecotourism so that tourism can positively impact the environment and communities.

In Indonesia, the risk of misuse of the ecotourism label is becoming increasingly apparent. The term "ecotourism" is often used loosely and serves more as a marketing label to attract tourists than as a reflection of actual practices on the ground (Weaver, 2005). Many destinations carry the "ecotourism" label but significantly neglect crucial elements such as limiting visitor numbers to maintain environmental sustainability and failing to authentically involve local communities in planning and management (Pynanjung, 2018). This phenomenon, essentially a form of greenwashing, can damage a destination's credibility in the long term.

A relevant example can be found in Garut Regency, where the Kamojang Eagle Conservation Center was deemed not to comply with ecotourism principles fully, despite being located in a strategic area for such development (Ramdan & Ikhwana, 2017). This location's development demonstrates a gap between designation and practice, posing a fundamental challenge to authentic ecotourism development. Furthermore, research suggests that ecotourism success should be measured by the increase in visitors and its positive impact on the environment and local communities. Therefore, strong

collaboration between managers, the government, and the community is necessary to create genuine ecotourism (Sardiana & Sarjana, 2021).

The implications of this situation suggest that ecotourism development in Indonesia needs stricter regulations to ensure that destinations that claim to be ecotourism destinations truly implement effective sustainability principles. Policies are needed to support and ensure transparency in the management, governance, and reporting of ecotourism practices, allowing tourists to make informed decisions when choosing a destination (Nazwin & Hidayat, 2022).

Garut Regency, long known as the "Switzerland of Java," is an interesting location for this research. This region possesses exceptionally comprehensive tourism potential, often summarized by the acronym "Gurilaps" (Mountain, Jungle, Sea, Beach, Situ). This potential spans a broad spectrum, from iconic natural attractions such as Mount Papandayan, Kamojang Crater, Santolo Beach, and Situ Bagendit; unique cultural and historical attractions such as Cangkuang Temple and Kampung Pulo; to pioneering tourism villages that are beginning to show signs of development, such as Sindangkasih Tourism Village (Tetep et al., 2021). However, behind this potential lies a significant implementation gap. Various studies and reports have highlighted chronic problems hindering the realization of this potential, such as poor basic infrastructure, including inadequate road access and minimal amenities (Malik et al., 2019; Hazita et al., 2022). In addition, the low quality of human resources and services, minimal community participation, and severe threats to environmental degradation due to illegal activities and weak law enforcement are determining factors (Malik et al., 2019).

This implementation gap is a key research issue. Although the Garut Regency Government has a formal policy framework through Regional Regulation (Perda) No. 2 of 2019 concerning the 2019-2025 Regional Tourism Development Master Plan (RIPPDA), which targets the development of competitive and sustainable nature-based tourism, the ideal vision in this planning document has not been translated into effective action on the ground. This is characterized by failures in the execution, monitoring, and implementation of existing regulations (Mulyana & Indriani, 2023). Suboptimal tourism management capacity in Garut Regency creates challenges for policy implementers in aligning potential with established objectives (Prawira et al., 2021).

Therefore, this study aims to: (1) analyze internal factors (strengths and weaknesses) and external factors (opportunities and threats) that comprehensively influence the development of ecotourism in Garut Regency; and (2) formulate an integrated and implementable green tourism strategy to bridge the gap between potential and reality, thereby promoting the realization of authentic and sustainable ecotourism in the region. Through a holistic and participatory approach, this study seeks to generate constructive solutions for addressing tourism development challenges while empowering local communities as key stakeholders in ecotourism advancement (Mauluddin & Rosita, 2022).

To sharpen the research focus, this study is guided by the following research questions.

1. *What internal and external factors influence the development of ecotourism in Garut Regency?*
2. *How can an integrated green tourism strategy close the implementation gap in Garut's tourism development?*

Methodology

This research uses a qualitative approach with a descriptive case study design. This approach was chosen to enable an in-depth and holistic understanding of a complex

phenomenon within its specific context (Adharani et al., 2020). The unit of analysis in this study is ecotourism development in Garut Regency, which is examined through the various dynamics that influence it.

Data collection in this study relied entirely on secondary data obtained through extensive literature review techniques. This study did not involve primary respondents or participants, as it relied solely on secondary data sources. The data sources were classified into three main categories. The first source was peer-reviewed scientific journal articles, covering previous research on tourism in Garut Regency, as well as the concepts of green tourism and ecotourism (Nugraha et al., 2024). The second was government policy documents that serve as the formal basis for tourism development, particularly Garut Regency Regulation (Perda) No. 2 of 2019 concerning the Regional Tourism Development Master Plan (RIPPDA) (Nugraha et al., 2024). The third was other supporting data sources, such as research reports, news from credible mass media, and tourist reviews from digital platforms, providing a user perspective.

The data analysis technique used was qualitative content analysis combined with the SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis framework. The SWOT framework was chosen due to its relevance and effectiveness, as demonstrated in several previous studies examining tourism development strategies in Garut Regency (Nugraha & Hariyanto, 2024). The analysis process involved identifying, classifying, and synthesizing information from various data sources into four SWOT quadrants. The results of this mapping then served as the basis for formulating an integrative strategy through a TOWS analysis, which systematically links internal factors (strengths and weaknesses) with external factors (opportunities and threats) to produce comprehensive and implementable strategic recommendations.

Through this approach, it is expected that the research results will contribute tangibly to ecotourism development in Garut Regency and serve as a valuable reference for stakeholders in formulating more effective, evidence-based policies (Gavrilović & Maksimović, 2018). By considering the findings of the analysis, relevant solutions can be proposed to preserve ecosystem sustainability while improving the welfare of local communities (Chen, 2024).

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Results and discussions

Results

Analysis of the collected secondary data resulted in a comprehensive mapping of various internal and external factors influencing the ecotourism development landscape in Garut Regency. These factors include strengths, weaknesses, opportunities, and threats faced in the development of the ecotourism sector. All of these elements are systematically summarized in a SWOT analysis matrix (Table 1), to provide a clearer, more structured picture that can serve as a basis for formulating effective and sustainable development strategies in the region. Utilizing this SWOT approach allows stakeholders to identify priorities, maximize existing potential, and anticipate challenges that may arise in the implementation of future ecotourism policies.

Table 1. SWOT Analysis Matrix for Ecotourism Development in Garut Regency

Internal Factors		External factors	
Strengths	Weaknesses	Opportunities	Threats
Complete and Diverse Natural Assets of "Gurilaps": Has the potential of mountains (Papandayan, Guntur, Cikuray), jungles (Leuweung Sancang), sea & beaches (Santolo, Rancabuaya), and lakes (Bagendit, Cangkuang) which are very varied.	Poor Infrastructure and Accessibility: Roads leading to many tourist destinations are damaged, narrow, and prone to landslides, and there is minimal availability of adequate public transportation.	Growing Trend of Interest in Green Tourism: The market of global and domestic tourists seeking authentic, eco-friendly and responsible tourism experiences continues to grow significantly.	Serious Environmental Degradation: Forest encroachment, illegal gold mining, and water pollution directly damage the main natural tourism assets and threaten their sustainability.
Unique Cultural and Historical Heritage: The existence of Cangkuang Temple as the only restored Hindu temple in West Java, Pulo Traditional Village, and unique traditions such as the Garut sheep agility art.	Inadequate and Unmaintained Facilities (Amenities): Many public facilities such as toilets and gazebos were found to be in a state of disrepair, there was a lack of trash bins, and supporting facilities such as	Central and Provincial Government Policy Support: The existence of national priority programs for the development of tourism and tourist villages that can provide funding,	Weak Regulatory Enforcement (Regulatory Failure): Regional Regulations related to environmental protection (e.g. Regional Regulation No. 2 of 2018) exist but are not enforced effectively, with

	camping areas did not meet standards.	technical and promotional support.	sanctions tending to be only light warnings.
Supporting Regional Policy Basis: The mission of sustainable tourism development has been formally stated in the 2019-2025 Garut Regency RIPPDA and the Disparbud Renstra.	Low Quality of Human Resources and Services: Lack of friendliness and professionalism from management, as well as the rampant practice of extortion which damages the image of the destination.	Potential for Multi-Party Collaboration: Opportunities to establish strategic partnerships with academic institutions for research and community service, as well as attract investment from the private sector for facility development.	Low Public Awareness and Participation: Apathy among some communities towards tourism, focus on subsistence economy, and even involvement in environmentally damaging activities for economic reasons.
The Existence of Pioneering Tourism Villages: The existence of embryos of ecotourism development through tourism villages such as Sindangkasih Tourism Village and Kamojang Ecopark which can be used as pilot models.	Weak Destination Management: Lack of structured Standard Operating Procedures (SOPs) in many tourist villages, as well as poor waste management systems at the destination level.	Local Economic Empowerment: Huge potential to create new jobs (guides, homestay managers) and micro-enterprises (culinary, crafts) that directly increase the income of local communities.	Greenwashing Risk: The potential use of the "ecotourism" label without authentic practices can damage a destination's reputation and credibility in the eyes of discerning and concerned travelers.
	Less Effective Promotion and Marketing: Still relying on conventional promotion methods and lack of utilization of innovative and narrative-based digital marketing strategies.		Potential for Social Conflict and Cultural Erosion: The unfiltered entry of foreign culture and unhealthy business competition can cause social friction and erode local wisdom values.

Source: Processed by researchers from various sources (2024)

Discussions

The SWOT analysis reveals a scenario in Garut that mirrors challenges observed in other ecotourism regions, where abundant natural and cultural assets are offset by serious infrastructural and institutional weaknesses. This finding aligns with broader studies of green tourism in Indonesia, which note that rich tourism potential often coexists with poor infrastructure and inconsistent policy enforcement (Islahuddin & Ismail, 2024). For example, research on urban green tourism initiatives identified inadequate infrastructure and weak implementation of regulations as critical barriers to sustainability. Our results support these trends and underscore the need for a proactive, integrative strategy. Rather than reacting piecemeal to problems, effective ecotourism development must simultaneously leverage strengths and address weaknesses – an approach consistently advocated in sustainable tourism literature. Nazwin and Hidayat

(2022) emphasize that true ecotourism success depends on balancing multiple dimensions (social, economic, environmental, and institutional) in a holistic evaluation. This directly parallels our four strategic pillars, which integrate governance, community empowerment, green infrastructure, and authentic marketing to ensure all these dimensions are addressed in Garut's ecotourism development. In this way, our study's strategic framework both reflects and adds empirical weight to existing theories calling for comprehensive sustainable tourism planning.

Therefore, effective strategy formulation cannot be merely reactive but must be proactive and integrative—maximizing existing strengths and opportunities while simultaneously addressing weaknesses and addressing threats. Based on these findings, this discussion formulates four main strategic pillars as a foundation for implementing the green tourism concept to encourage sustainable ecotourism development in Garut Regency. These four pillars are designed to integrate environmental, social, economic, and institutional approaches to ensure inclusive, adaptive, and highly competitive ecotourism development.

One important finding from the data analysis is the emergence of a paradox in the role of local communities in ecotourism development. On the one hand, communities are the guardians of local wisdom, owners of authentic cultural heritage, and providers of potential labor, which are key elements in creating authentic and sustainable ecotourism experiences. An example is seen in the Sindangkasih Tourism Village, which successfully demonstrates how the community is able to harmoniously manage cultural and natural potential, thus creating a unique, community-based tourist attraction.

However, on the other hand, there is evidence from various sources that suggests that some communities are actually the main actors in environmentally damaging practices. The phenomena of forest encroachment, illegal mining, and low participation in tourism programs are often caused by the subsistence economic orientation that still dominates the mindset of some communities. This paradox positions communities as ambivalent entities—both a driving force and a potential obstacle to ecotourism development.

This situation indicates that local communities act as a double-edged sword: they can be key to the successful implementation of green tourism-based ecotourism, but they can also be a source of failure if not managed properly. Therefore, development strategies that focus solely on "empowerment" without being accompanied by elements of "environmental education, participatory monitoring, and strict law enforcement" risk not achieving the desired goals.

The required approach must be both dualistic and adaptive, encouraging the participation and empowerment of community groups committed to conservation and sustainability, while also providing decisive interventions against destructive behavior through effective regulation, social control, and legal sanctions. This will ensure a balance between incentives and discipline, creating a social ecosystem that supports inclusive and sustainable ecotourism development in Garut Regency.

Strategy Pillar 1: Strengthening Governance and Policy Enforcement

The most fundamental weakness in tourism development in Garut Regency lies not in the absence of policies, but rather in the failure to implement them on the ground. The ambitious vision outlined in the Garut Regional Tourism Development Master Plan (RIPPDA)—particularly the commitment to sustainable tourism development—remains little more than a written discourse that has yet to be fully implemented. Without robust enforcement, oversight, and evaluation mechanisms, this strategic planning document

risks becoming merely an administrative document with no real impact on tourism development.

The gap between planning and implementation, known as the implementation gap, is a serious challenge that must be addressed immediately. Factors such as weak coordination between agencies, limited competent human resources, inadequate operational budgets, and a lack of political will are the main causes of delays in the execution of various policies and programs.

The strategies proposed in this study aim to specifically bridge this implementation gap. This includes the formulation of a transparent monitoring and evaluation system, strengthening the capacity of implementing institutions at the regional level, increasing cross-sector collaboration (government, private sector, and community), and establishing operational regulations that support the enforcement of sustainable tourism principles. Thus, the vision outlined in the RIPPDA (Regional Development Planning Agency) will no longer remain normative but will instead be realized in concrete actions that directly impact the comprehensive and sustainable progress of Garut tourism.

1. Revitalizing the Role of Supervision and Law Enforcement

The establishment of a multi-stakeholder Sustainable Tourism Task Force is needed as a systematic effort to strengthen tourism development governance in Garut Regency. This task force should consist of representatives from the Tourism and Culture Office, the Environmental Office, the Public Order Agency (Satpol PP), the police, academics, and civil society representatives with integrity and a proven track record in environmental and tourism issues.

The primary responsibility of this Task Force is to strictly monitor the implementation of sustainable tourism policies and ensure law enforcement against violations that damage environmental carrying capacity. Specifically, the Task Force is responsible for consistently and firmly enforcing Garut Regency Regulation No. 2 of 2018 concerning Environmental Protection and Management.

Sanctions against illegal practices such as forest encroachment, unauthorized land clearing, and illegal mining are no longer sufficient with administrative warnings alone. They must be enforced with legal sanctions that provide a deterrent effect and create a clear precedent for law enforcement. This is crucial, given that weak regulatory enforcement has been identified as a critical obstacle in various studies and evaluations of regional policies.

The formation of this Task Force is not only a response to current issues, but also a strategic step towards building a collaborative, transparent, and accountable oversight ecosystem. With a cross-sectoral working structure and clear authority, the Sustainable Tourism Task Force is expected to serve as a driving force in maintaining a balance between tourism development and environmental sustainability in Garut Regency.

2. Mandate for Developing Green SOPs

The regional government, through the Tourism Office, needs to establish a policy requiring every tourist destination manager—especially those carrying the “ecotourism” label—to develop and implement Green Standard Operating Procedures (SOPs) comprehensively. These Green SOPs must be designed comprehensively, encompassing three main components: first, environmental management aspects, including waste management based on the 3Rs (Reduce, Reuse, Recycle), water resource conservation, as well as energy efficiency and carbon emission reduction; second, excellent service standards based on local wisdom that guarantee tourist comfort, safety, and satisfaction; and third, security and disaster mitigation protocols that are adaptive to local geographic and climatic conditions.

The implementation of these SOPs is a crucial step in building professional, sustainable, and consistent tourism destination governance, aligned with green tourism principles. The requirement to develop and implement Green SOPs indirectly addresses fundamental issues encountered in many tourist villages in Garut Regency, including Sukalaksana Village. The lack of structured SOPs has led to inconsistent tourism services, weak environmental management, and low destination management capacity.

Furthermore, the implementation of this SOP must be accompanied by training mechanisms, technical assistance, and periodic evaluation by the Tourism Office and other relevant agencies. Thus, the SOP will not only serve as an administrative document but also serve as a concrete operational guideline that supports the achievement of competitive, resilient destination quality aligned with the principles of sustainable tourism development.

Strategy Pillar 2: Implementation of Community-Based Ecotourism Models

This strategy is designed to transform the position of local communities—previously often viewed as a potential threat to ecotourism sustainability—into a key force in driving sustainable tourism development. This approach directly addresses the paradox of community roles identified in the previous analysis, namely that communities can play a dual role as agents of conservation and perpetrators of environmental degradation.

This transformation is being implemented through integrated efforts, encompassing environmental education-based empowerment, managerial capacity building, strengthening the role of local institutions, and enforcing social and legal norms against destructive behavior. By making communities active subjects of development—rather than mere objects of policy—this strategy places them at the center of tourism destination governance, while simultaneously opening up broader, more inclusive, and more effective participation.

1. Structured Capacity Building Program

Local governments, in collaboration with strategic partners such as academics, non-governmental organizations (NGOs), and tourism industry players, must consistently organize intensive, participatory, and sustainable training and mentoring programs for communities in potential tourism villages. These programs should not only be technical but also transformative—designed to develop local human resources (HR) that are competent, adaptive, and able to compete in a sustainable tourism ecosystem.

Training materials must be designed comprehensively and contextually, encompassing three main dimensions. First, a deep understanding of the principles of green tourism and ecotourism, to avoid cosmetic greenwashing practices without concrete implementation for sustainability. Second, strengthening practical skills that are directly applicable in the field, such as hospitality services, microfinance management for tourism businesses, and guiding techniques based on nature and local culture. Third, developing environmental management capacity, including composting techniques, organic waste processing, and waste recycling practices as part of strengthening green ecosystems in tourist areas.

This program addresses the urgent need to improve the quality of local human resources, which has been a major obstacle to the development of sustainable tourism villages. Beyond just technical training, this initiative aims to foster ecological awareness, a professional work ethic, and a sense of community ownership in managing tourism destinations in their own areas.

2. Development of Authentic Tourism Products Based on Local Assets

Regional governments, along with development partners, need to encourage and facilitate local communities to design and develop unique, authentic tourism packages based on their natural resources and local culture. This initiative is crucial to ensure that tourism development does not become mired in imitation of other destinations but instead highlights the unique character of each region. The tourism packages developed must reflect local identity, traditional wisdom, and sustainable living practices passed down through generations.

Concrete examples of this approach include: the development of an "Educational Tour Package on the Palm Sugar Making Process" in Sindangkasih Village that directly involves tourists in traditional production activities, a "Cangkuang Temple Cultural Interpretation and Conservation Tour" that combines historical, religious, and ecological elements in one travel narrative, and a "Garut Coffee Agroforestry Tour" that explores sustainable forest-based agricultural practices and the potential of local coffee products as a tourist attraction.

This effort not only increases economic value for the community but also strengthens their position as key actors in the tourism value chain. Furthermore, this approach aligns with the principles of sustainable tourism, which position communities as guardians of cultural heritage and the environment, as well as innovators in creating memorable and responsible tourism experiences.

3. Strengthening Local Institutions

Local governments and relevant stakeholders need to encourage the establishment or revitalization of local institutions, such as Tourism Awareness Groups (Pokdarwis) and Village-Owned Enterprises (BUMDes), to ensure their optimal function as the primary drivers of community-based tourism destination management. These institutions play a strategic role in ensuring sustainable management, improving the quality of tourism services, and collectively empowering the local economy.

For this institution to function effectively and inclusively, it is crucial to design and implement a fair, transparent, and consensus-based benefit-sharing mechanism. This scheme should clearly define the proportion of profits allocated to the institution's operations, incentives for active members, tourism facility development, and contributions to village funds or community social programs. The principles of transparency and accountability in the institution's financial management must be maintained through regular reports, participatory audits, and active community involvement in the evaluation process.

This mechanism ensures that the economic benefits of tourism activities are distributed equitably across all levels of society, preventing social inequality and potential internal conflict, and strengthening a sense of ownership of tourist destinations. Revitalizing local institutions also opens up broader participation opportunities, particularly for vulnerable groups such as women and rural youth, to participate in decision-making and productive economic activities in the tourism sector.

Further analysis revealed a systemic interconnectedness among the various problems facing tourism development in Garut Regency. These problems do not exist in isolation, but rather form a vicious cycle that mutually reinforces and exacerbates each other. This complex pattern of cause-and-effect relationships indicates that failure in one sector will directly or indirectly impact other sectors.

For example, poor road infrastructure leading to a tourist destination—a major physical weakness—will create an uncomfortable experience for tourists. This inconvenience has the potential to trigger negative reviews on digital platforms and social media, which in turn damages the destination's image and discourages future visits. The resulting decline in visits automatically leads to stagnant local income and lowers community motivation to continue developing its tourism potential.

At the same time, weak law enforcement and environmental oversight—reflecting a failure in governance—allow illegal activities such as forest encroachment and illegal mining to continue around tourist areas. These practices not only destroy the ecological appeal that is the main driving force of ecotourism destinations, but also increase the risk of environmental disasters such as landslides and flash floods. When such disasters occur, damage to road infrastructure is exacerbated, reinforcing a chain of pre-existing problems.

This chain of events clearly demonstrates that partial or sectoral solutions, such as simply repairing roads without addressing environmental governance and legal issues, will fail to produce significant change. Instead, the required strategy must be holistic and systemic—one that relies not only on physical or technical aspects but also encompasses institutional, social, environmental, and economic dimensions in an integrated manner. This approach allows for synchronous and sustainable policy interventions to break the chain of structural failures that have hampered the progress of sustainable tourism in Garut.

Strategy Pillar 3: Green Infrastructure Development and Quality Improvement

Based on an understanding of the systemic interconnections between various mutually reinforcing failures, this strategy is designed to focus not only on physical improvements but also simultaneously integrate sustainability principles into every stage of the intervention. This approach aims to break the vicious cycle that has hampered the development of sustainable tourism in Garut Regency.

By combining physical aspects—such as improving road infrastructure, tourism facilities, and basic utilities—with institutional, social, and ecological approaches, this strategy seeks to create comprehensive and long-term change. Each intervention is designed to complement and reinforce the others, such as improving accessibility while enforcing environmental laws, developing destinations while strengthening community capacity, and expanding promotion while preserving natural resources.

Through this integration, it is hoped that a systemic transformation will be created that not only improves surface symptoms but also addresses the deeper roots of the problem—creating inclusive, resilient, and sustainable tourism governance.

1. Investment in Green Infrastructure

Regional government budget allocations in the tourism sector should prioritize not only basic infrastructure improvements such as conventional roads, but also green infrastructure development that supports environmental sustainability principles. This approach reflects a paradigm shift from exploitative development to environmentally friendly and long-term development.

The green infrastructure in question includes, among other things: the construction of Reduce-Reuse-Recycle Waste Processing Facilities (TPS3R) in each tourist destination cluster as a systematic effort to manage waste independently; renewable energy installations such as solar panels for street lighting, public facilities, and tourist

information centers; and the construction of small-scale wastewater treatment systems in lodging and homestay areas to prevent environmental pollution.

This investment in green infrastructure will not only strengthen the ecological carrying capacity of tourist destinations but also create a positive image for Garut Regency as a destination committed to green tourism principles. This approach aligns with best practices implemented in various sustainable tourism destinations at home and abroad, and has proven effective in reducing ecological footprints, increasing energy efficiency, and building trust among tourists who are increasingly concerned about environmental issues.

Furthermore, the existence of this green infrastructure also has the potential to open up opportunities for cross-sector collaboration, such as partnerships with the private sector in green investment projects, involvement of local communities in the operation of environmentally friendly facilities, and integration of educational programs that can strengthen the ecological awareness of the community and tourists.

2. Quality Certification and Standardization

Local governments need to actively encourage and facilitate tourism businesses—such as hotels, homestays, restaurants, and other tourism service providers—to adopt environmentally friendly business practices as part of the transformation toward sustainable tourism. One concrete step that can be taken is to expand access to green tourism certification programs, such as the Green Labeling scheme, CHSE Green, or other nationally and internationally recognized environmental certifications.

This certification has a highly strategic dual function. First, it serves as a standardization tool and improves the quality of tourism business services, encompassing energy efficiency, waste management, water conservation, and environmental education for guests and staff. Second, it serves as a credible and value-added marketing tool to attract eco-conscious travelers, a segment currently showing a growing trend globally.

To ensure this program's effectiveness, local governments can provide incentives in the form of technical training, assistance with the certification process, and discounts on local taxes or levies for businesses that successfully obtain the green label. Furthermore, collective promotion of certified destinations through digital channels, tourism events, and national networks will strengthen Garut's competitiveness as a leading ecotourism destination with integrity.

By encouraging the adoption of green certification, Garut Regency not only strengthens its commitment to responsible environmental management, but also paves the way for the development of an innovative, professional, and long-term sustainable tourism industry ecosystem.

The discussion also extends to the importance of green infrastructure development as a means to break the vicious cycle hindering Garut's ecotourism. Our findings point out that inadequate infrastructure leads to negative tourist experiences, environmental strain, and subsequently a decline in visits – a cycle that perpetuates under-development. This observation is supported by general tourism research: poor infrastructure and environmental neglect are known to diminish destination competitiveness and tourist satisfaction, which in turn can reduce tourism revenue and local support (Ismail et al., 2019). In Garut, the need for infrastructure upgrades is coupled with the need for sustainability, and here our study's recommendations align with both local and international research. Empirical evidence from Garut itself underscores these points. A recent study by (Adiatma and Rukma, 2024) on Situ Bagendit (a natural tourist attraction in Garut) found that rising tourist numbers, unaccompanied by proper infrastructure, led to problems like water pollution and waste

accumulation. They recommend improving waste management systems and environmental regulations, which directly supports our proposal for facilities like Reduce-Reuse-Recycle waste processing (TPS3R) in tourist areas (Adiatma & Rukma, 2024). By citing this local evidence, we strengthen the argument that Garut's ecotourism development requires tangible green infrastructure investments to handle current environmental impacts. This is in line with (Gavrilović and Maksimović's, 2018) findings that green innovations in the tourism sector such as renewable energy usage and effective waste treatment can significantly reduce the ecological footprint of tourism and bolster a destination's sustainable image. Our strategic pillar calls for exactly such innovations, suggesting that Garut is following globally recommended practices for sustainable tourism development. Moreover, integrating infrastructure improvements with environmental management reflects a systems approach; literature on sustainable destinations often notes that infrastructure development must go hand-in-hand with conservation efforts to be truly effective. In summary, our discussion on infrastructure not only identifies a critical local issue but also demonstrates that our solutions are grounded in empirical and theoretical precedent about the value of sustainable infrastructure in tourism.

Strategy Pillar 4: Authentic Green Marketing and Branding

This strategy is specifically designed as a concrete effort to combat greenwashing practices—the manipulative use of sustainability claims without concrete implementation—which can undermine public trust and undermine the essence of sustainable tourism. Through a measured, transparent, and evidence-based approach, this strategy aims to build Garut's image as a tourist destination that is honest in practice, credible in policy, and attractive to tourists who value authenticity and environmental responsibility.

This image strengthening is achieved through verified certification, community involvement in environmental conservation, and consistent and educational communication to the public. Thus, Garut is positioned not only as a physically beautiful destination but also as a role model for the application of genuine green tourism principles—not merely symbolic or cosmetic.

1. Evidence-Based Marketing

A complete overhaul of Garut Regency's tourism promotion narrative is needed. Instead of relying on generic slogans like "Garut Beautiful and Natural," which tend to be clichés and fail to distinguish Garut from other destinations, the promotional narrative must shift to an evidence-based storytelling approach. This approach emphasizes telling real, authentic, and inspiring stories that reflect real-world sustainability practices.

One form of implementation is by utilizing social media as the main channel to display micro-storytelling content in the form of short videos, documentary photos, or community testimonials. For example: a short documentary video entitled "From Trash to Fertile: The Story of Compost in Sindangkasih Village" which shows how local communities process organic waste into compost for their coffee plantations, or "Preserving Water Heritage: The Story of the Cangkuang Temple Tourism Group in Preserving the Lake Ecosystem", which showcases community-based environmental conservation efforts.

This kind of narrative will create a destination image that is not only visually appealing but also engages tourists emotionally and ethically. Marketing built on true stories about environmental conservation, community empowerment, and cultural preservation will be far more effective in building trust, expanding the reach of a

sustainability-conscious audience, and strengthening Garut's position as a truly green tourism destination.

More than just selling beauty, Garut tourism promotion must be a medium for education, advocacy, and inspiration—one that elevates local realities as the main narrative force.

2. Collaboration with Green Influencers

Local governments and tourism industry players need to establish strategic partnerships with travel bloggers, vloggers, and social media influencers who have a proven track record, integrity, and credibility in sustainable tourism, ecotourism, and nature adventure. This collaboration is not merely a promotional tool, but part of a more authentic and persuasive communication strategy to build a positive destination image.

These content creators possess the ability to convey travel experiences narratively, personally, and visually, reaching a wider audience without a patronizing or commercial approach. Through their reviews, testimonials, and travel documentation—whether in the form of vlogs, Instagram posts, or blog articles—they can convey true stories about the uniqueness, conservation values, and local experiences of Garut's tourist destinations.

This type of content tends to be more trusted and appreciated by the ecotourist and millennial traveler market segments than conventional, one-way advertising. To increase its effectiveness, this collaboration must be selectively curated, involving influencers who are not only popular but also have values and audiences relevant to green tourism principles.

Furthermore, this collaboration can be expanded into integrated digital campaigns, familiarization trips (famtrips), or storytelling projects that showcase aspects of sustainability in Garut, such as environmental conservation, agroecotourism practices, and local community empowerment. Thus, this strategy will not only increase the destination's visibility but also build a strong, credible, and inspiring narrative about Garut tourism in the public eye.

Finally, our study's findings on authentic green marketing and branding address a gap between mere promotion and genuine sustainable practice. The emphasis on authenticity in marketing is strongly supported by prior studies that warn against "greenwashing" in tourism. (Shang et al., 2023) note that the term green tourism has often been misused as a marketing label without substantive conservation action, leading to tourist confusion and skepticism. Our discussion concurs with this critique – indeed, one motivation for Pillar 4 is to combat precisely those manipulative sustainability claims that undermine public trust. We argue that Garut should build its destination image through verified environmental certifications, community-based conservation success stories, and educational promotion, rather than generic slogans. This approach finds resonance in the literature on sustainable tourism marketing. Tourists, especially the environmentally conscious segment, are more likely to be attracted and loyal to destinations that can demonstrate real sustainability efforts (Andrea, 2024). For example, research has shown that evidence-based storytelling creates a more compelling narrative and emotional connection with eco-travelers than conventional advertising. By aligning Garut's marketing with actual green practices on the ground, our strategy ensures that promotion does not outpace reality – a principle supported by both theoretical and empirical work on destination branding integrity. In practice, destinations that have adopted transparent and honest marketing about their sustainability initiatives have seen improved tourist trust and destination. Thus, our findings support earlier studies in the call for authenticity over mere rhetoric in tourism marketing, and our

recommendations put those principles into actionable steps. In doing so, this study's discussion contributes to filling the gap noted by (Shang et al., 2023) moving from "greenwashing" towards genuinely green branding and provides empirical justification that Garut's strategy to execute authentic green marketing is not only novel for the region but also grounded in established best practices in sustainable tourism promotion.

Conclusions

This study concludes that the key to Garut Regency's successful transformation into an authentic and sustainable ecotourism destination does not lie in discovering new potential—such potential is already abundant. Rather, the primary challenge lies in bridging the wide implementation gap between well-formulated policies and on-the-ground realities. A paradigm shift from rhetorical planning to coordinated, concrete action through an integrated strategic approach is essential. The four strategic pillars proposed—strengthening governance, implementing community-based ecotourism, developing green infrastructure, and executing authentic green marketing—are designed to work synergistically to address existing weaknesses and threats while leveraging Garut's natural and cultural strengths and emerging tourism opportunities.

Based on the analysis, several policy and practical recommendations are formulated.

For the Garut Regency Government

1. Allocate a specific and measurable budget for community capacity-building programs and green infrastructure development—not merely conventional infrastructure.
2. Establish and empower an effective environmental law enforcement task force with a clear mandate to impose strict sanctions on environmental violations in tourism areas.
3. Mandate the adoption of Green Standard Operating Procedures (Green SOPs) for destinations seeking ecotourism branding and promotion.

For Local Communities and Village Institutions (Pokdarwis/BUMDes)

1. Proactively engage in all phases of tourism planning, implementation, and evaluation at the regional level.
2. Strengthen transparent and accountable local institutions, especially in designing fair and inclusive benefit-sharing mechanisms to maintain social harmony.

For Private Business Actors

1. Adopt environmentally friendly business practices as part of corporate social responsibility and long-term strategy.
2. Invest in green certification as a means of product differentiation and competitive advantage to attract environmentally conscious markets.

Future Research Directions

Given the study's reliance on secondary data and qualitative analysis, future research should include field-based validation of the proposed strategies. Quantitative studies are also recommended to measure the tangible impacts of green tourism implementation. Furthermore, participatory research focusing on models of community engagement in ecotourism would provide deeper insights into sustainable, bottom-up development pathways.

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The Impact of Tourism Pollution and Entrepreneurs' Role to Finding Sustainable Waste Management Solutions in Kuta, Seminyak, and Ubud

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Abstract: The rapid growth of tourism in Bali, one of the world's leading tourist destinations, has contributed to an escalating waste management crisis. This research aims to assess the impact of tourism-related waste generation in Kuta, Seminyak, and Ubud and evaluate the effectiveness of existing waste management policies. This study employs a qualitative research approach, focusing on waste distribution patterns and the tourism sector's contribution to plastic waste. The participants in the study include waste management authorities, tourism-related businesses, and local communities. Data were collected through interviews and field observations to identify key sources of waste and evaluate policy implementation. Data analysis was conducted using thematic analysis to identify recurring issues and challenges. The results indicate that tourism-related businesses, particularly luxury resorts and restaurants, generate over 60% of Bali's plastic waste. Despite efforts such as the 2019 plastic ban, weak enforcement, inadequate infrastructure, and inefficient waste disposal systems continue to cause pollution and landfill overflow. The study highlights critical gaps in waste collection, recycling facilities, and policy enforcement. It suggests that tech-driven waste collection services, large-scale recycling plants, and sustainable product alternatives could offer viable solutions. Additionally, implementing sustainability-focused education programs and community-based initiatives is essential for long-term waste reduction. The research implies that stricter policy enforcement, infrastructure investment, and enhanced collaboration between the government, businesses, and local communities are necessary. Future research should focus on the feasibility of waste-to-energy projects and the impact of sustainable tourism practices on waste management.

Keywords: entrepreneurs' role, tourism pollution, sustainable, waste management.

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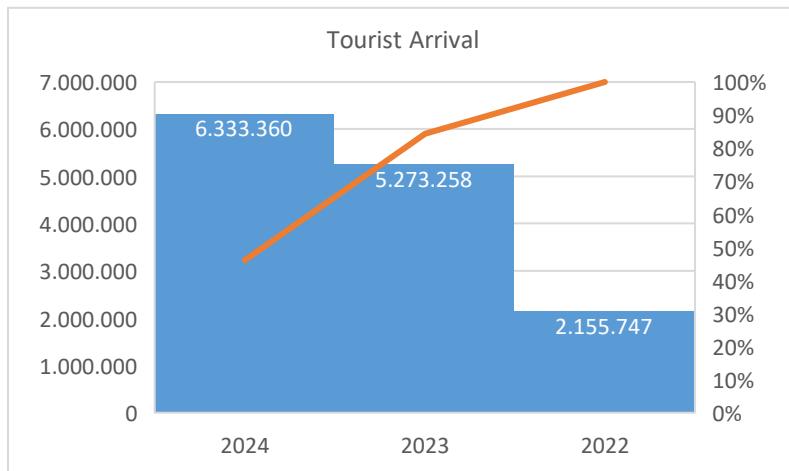
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Introduction

Tourism in Bali represents a paradox; while it strengthens economic resilience and global recognition, it also exposes the island to structural vulnerabilities, particularly for marginalized groups such as women in the tourism workforce. Each year, millions of global visitors are drawn to Bali for its natural beauty, cultural richness, and welcoming local communities. Bali's thriving tourism sector has fostered a dynamic hospitality industry, offering accommodations that range from budget-friendly guesthouses to world-class luxury resorts and private villas. The island is also known for its vibrant culinary scene, featuring traditional Balinese cuisine and international gourmet dining experiences. Bali faces over-tourism, environmental sustainability, and waste management challenges despite its popularity. Efforts are being made to promote responsible tourism practices, such as eco-friendly resorts, sustainable waste

management initiatives, and community-based projects empowering local communities while preserving the island's natural and cultural heritage (Mentansan et al., 2023).

According to the latest data from the Bali Province Central Bureau of Statistics (Bali Province Central Bureau of Statistics (BPS: Badan Pusat Statistik), 2024); in 2024, international tourist arrivals to Bali reached 6,333,360, marking a 20.1% increase from the 5,273,258 recorded in 2023. This surge was particularly prominent during the peak travel seasons of July and December. In December 2024, the number of international arrivals reached 551,100, reflecting a 16.54% increase from November 2024.



(Source: Bali Province Central Bureau of Statistics (BPS: Badan Pusat Statistik))

Figure 1. International Tourist Arrival in Bali 2022-2024

Among these visitors, Australia remained the leading source country, followed by India and South Korea. The Bali provincial government has set a target of 6.5 million international arrivals for 2025. While this growth significantly benefits the local economy through tourism, it also presents substantial challenges, particularly in waste management. The rising number of tourists has led to an exponential increase in waste production, particularly plastic and food waste, which, if inadequately managed, poses serious risks to Bali's environment and ecosystem (Rudyana & Rijal, 2022).

The correlation between increasing tourist arrivals and the rising volume of waste management is undeniable. According to reports from the Bali Regional Environmental Agency, Bali generates approximately 3.5 million tons of waste annually, with around 1,300 tons produced daily during peak tourist seasons (Urmila et al., 2023). A significant portion of this waste consists of plastic materials, which, if not properly managed, can lead to severe environmental degradation. The accumulation of waste contributes to pollution on both land and water bodies, posing a serious threat to Bali's pristine landscapes and fragile marine ecosystems. In this context, effective waste management is not merely an environmental concern but also a critical factor in preserving Bali's reputation as a world-class travel destination and ensuring the well-being of its local communities (Sari et al., 2023).

Waste management is crucial in advancing the United Nations Sustainable Development Goals (SDGs), particularly goals 3 through 17. In tourism-dependent regions such as Bali, improper waste disposal accelerates environmental degradation, contaminating water and soil while reducing land usability and aesthetic value. Despite Bali's global image as a paradise destination, its waste management infrastructure reveals inefficiencies, particularly in stakeholder coordination (Sujawoto et al., 2023). While high-end hotels and luxury resorts continue to generate significant amounts of

non-biodegradable waste, local communities often lack the necessary resources and knowledge to dispose of such materials properly. Consequently, a large proportion of waste is in illegal dumpsites, worsening pollution levels and creating long-term sustainability challenges. This issue exemplifies the broader pattern of unsustainable tourism, often worsened by inconsistent government oversight and inadequate policy enforcement. Addressing these challenges requires a holistic and collaborative approach, balancing economic gains with environmental responsibility to ensure the long-term sustainability of Bali's tourism sector (Utama et al., 2023).

Recognizing the urgency of sustainable waste management, the Balinese government and local communities have initiated various measures, including waste segregation at the source, recycling education programs, and environmental cleanup campaigns (Widiana et al., 2022). While these efforts have yielded some progress, significant challenges remain. This presents a unique opportunity for entrepreneurs with diverse backgrounds and expertise in innovative waste management practices. Their active participation can contribute to the resolution of Bali's waste crisis while unlocking lucrative business opportunities in the environmental sector.

Despite numerous initiatives ranging from recycling businesses to community-based education and large-scale cleanup programs, Bali continues to face an escalating waste crisis that threatens both its environmental sustainability and its long-term viability as a global tourism destination. Existing efforts remain largely fragmented, small in scale, and insufficiently integrated into the wider tourism economy, thereby limiting their capacity to address underlying structural challenges. This gap underscores the urgent need for more comprehensive and innovative approaches that not only alleviate environmental pressures but also create socio-economic opportunities for local communities. Accordingly, this study seeks to address the following research question: In what ways can entrepreneurial initiatives, community education, and participatory environmental programs be systematically integrated into Bali's tourism sector to establish sustainable waste management models that balance economic growth with ecological responsibility?

Methodology

This study employs a qualitative research design to examine the distribution and impact of waste generated by the tourism sector in Bali. Tourism in Bali contributes significantly to waste production, with approximately 1,300 tons of waste produced daily during peak seasons. The main objective is to provide a detailed analysis of waste management challenges and explore potential solutions that align with sustainability goals.

Primary data were collected through semi-structured interviews with key informants, including hotel and restaurant managers, local entrepreneurs involved in recycling initiatives, government officials from the Bali Environmental Agency, and community leaders engaged in waste management programs. These participants were selected using purposeful sampling because of their direct involvement in tourism-related waste issues. Their diverse professional backgrounds ensured that the study captured multiple perspectives on waste generation, management practices, and sustainability challenges. To complement primary data, secondary sources, such as peer-reviewed journal articles, government policy documents, environmental agency reports, and statistical data from the Bali Province Central Bureau of Statistics (BPS), were analyzed. Only sources published within the last five years were included to ensure relevance and accuracy.

Interview transcripts and secondary data were analyzed thematically through a three-stage process. The first stage involved coding, where key phrases and ideas related to waste generation, management practices, and sustainability were identified. The second stage focused on categorization, in which the initial codes were organized into broader themes, such as systemic barriers, entrepreneurial opportunities, and policy effectiveness. Finally, the stage of interpretation linked these themes with the chosen theoretical frameworks to explain recurring patterns, contradictions, and gaps across the data. This structured process provided a comprehensive and nuanced understanding of the behavioral and systemic factors influencing waste management in Bali's tourism sector.

The study draws upon two key theoretical perspectives. First, Parsons's Systems Theory (2001) is used to analyze how different actors, businesses, communities, and government institutions interact within Bali's waste management system (Chotim, 2022). Second, Creswell's Qualitative Inquiry Framework (2018) guides the methodological choices, particularly the emphasis on purposive sampling, open-ended interviews, and interpretive analysis. Together, these theories provide a foundation for understanding systemic interactions and capturing the lived experiences of stakeholders (Creswell & Poth, 2018).

To strengthen the credibility of this study, the research included a diverse group of informants representing different sectors directly involved in tourism-related waste management. Purposive sampling was employed to ensure that participants provided relevant and informed perspectives, including hotel managers, local entrepreneurs, community leaders, government officials, and NGO representatives. To protect confidentiality, each informant has been assigned a code (R1–R5), and their affiliations are presented in generalized terms. The demographic profile of the informants is summarized in Table 1.

Table 1. Demographic Informants

Code	Position/Role	Sector/Organization	Years of Experience	Relevance to Waste Management in Tourism
R1	Manager	Hotel (3-star)	12	Oversees hotel waste disposal practices and compliance with local regulations
R2	Entrepreneur	Recycling business	8	Runs a plastic upcycling initiative producing eco-friendly souvenirs
R3	Community Leader	Local village (desa adat)	15	Coordinates community-based waste segregation and cleanup events
R4	Government Official	Environmental Agency	10	Involved in drafting and monitoring waste management policies
R5	NGO Representative	Environmental NGO	7	Designs educational programs on waste segregation for tourists and residents

(Source: Primary Data, Researcher, 2025)

Results and discussions

Results

The literature on waste management in Bali, particularly regarding the tourism sector and its influence on dumpsite areas, highlights significant challenges and potential strategies for improvement. The following synthesis examines the key findings from various studies on this issue. Several specific case studies highlight the waste management challenges and solutions in different regions of Bali. In Nusa Penida District, research found that high tourist activity contributes significantly to waste generation, with an average of 15.90 tons of waste produced daily.

Table 2. Classification of Waste in Bali's Tourism Sector

Waste Type	Examples	Main Sources	Environmental Impact
Plastic	Bottles, bags, straws	Hotels, restaurants, tourists	Non-biodegradable marine pollution
Organic	Food scraps, garden waste	Restaurants, hotels, households	Produces methane if unmanaged, but compostable
Paper	Brochures, packaging, napkins	Tourism businesses, events	Biodegradable, contributes to landfill volume
Glass/Metal	Bottles, cans, packaging	Bars, restaurants, resorts	Recyclable but often improperly disposed of
Hazardous	Batteries, cosmetics, chemicals	Hotels, spas, medical tourism sector	Toxic leachate, soil, and water contamination

Source: Primary Data, Researcher, 2025; supported by Bali Environmental Agency reports

A substantial portion of this waste is improperly managed, emphasizing the need for improved systems to handle the growing waste load on the island (Widyarsana & Agustina, 2020). Similarly, a study in the Tukad Bindu area found that increased tourism has led to rising waste production, requiring better waste management and monitoring strategies to ensure that ecotourism efforts do not exacerbate the problem. Effectively monitoring and evaluating waste management practices ensured their regional success (Negara et al., 2024). Research at the Talangagung Education Tourism Landfill demonstrated that implementing Waste-to-Energy (WtE) programs can provide both environmental benefits and alternative energy solutions. However, it also highlighted the need for comprehensive waste sorting and management practices to ensure the success of such programs (Dewi & Roziqin, 2022). These case studies provide valuable insights into the specific waste management challenges faced by different tourist hotspots in Bali, showing that solutions must be adjusted to each area's unique needs and contexts. However, indicates that despite the presence of such initiatives, waste management in Bali's mainstream tourism sector remains fragmented and lacks systematic integration with entrepreneurial and community-driven programs. Whereas earlier studies tend to focus on isolated solutions such as recycling, monitoring, or energy recovery, my research emphasizes the urgency of developing an integrated model that combines entrepreneurial innovation, educational initiatives, and participatory environmental programs. This broader approach addresses not only technical waste handling but also structural gaps that limit scalability, thereby extending the conversation from localized case studies to systemic change within Bali's tourism economy.

Bali, one of the world's most popular tourist destinations, faces escalating waste management challenges, primarily due to the enormous amount of waste generated by the influx of tourists. In 2021, Bali produced an estimated 4,281 tons of waste per day,

11% of this being plastic waste (Astuti et al., 2024). This waste production has placed immense pressure on the island's waste management infrastructure. The Suwung landfill, Bali's largest waste disposal site, is increasingly unable to cope with the growing waste volume (Muliarta, 2023). The accumulating waste at landfills has become a pressing environmental issue, as these dumpsites were not designed to handle such a large-scale waste load, leading to concerns over their long-term environmental impact.

This study examines the environmental impact of tourism-related waste in Bali and investigates how entrepreneurial initiatives can contribute to sustainable waste management solutions. Several studies emphasize the importance of community-driven initiatives in addressing waste management issues. Local programs, such as waste banks and community cleanup campaigns, have proven effective in improving recycling rates and reducing waste. Grassroots programs, such as waste banks (*bank sampah*), community-based recycling centers, and island-wide cleanup campaigns, have demonstrated tangible results in improving recycling rates, reducing illegal dumping, and promoting more responsible waste disposal behaviors among residents.



(Source: Danielle Muller / Greenpeace (BETAHITA NEWS, 2025))

Figure 2. The campaign to ban single-use plastic

Community-led efforts are particularly impactful because they go beyond short-term interventions; they cultivate environmental stewardship, foster social cohesion, and create opportunities for livelihood generation through recycling-based entrepreneurship. For example, waste banks not only serve as recycling hubs but also act as microeconomic institutions where residents can exchange sorted waste for monetary value or essential goods. These initiatives encourage environmental responsibility and foster a stronger sense of ownership within the local population, leading to more sustainable practices. Research suggests that when communities are empowered to take control of waste management processes, they tend to develop innovative and tailored solutions that can significantly improve the effectiveness of waste reduction efforts (Koski-Karell, 2019). Such community-based approaches are vital for Bali, where local engagement is key to

adopting sustainable waste management practices. Encouraging residents and businesses to participate actively in waste sorting and recycling at the source can help reduce the island's overall waste load and minimize the pressure on central waste management systems.

Entrepreneurial initiatives are crucial in addressing waste management challenges in tourism-intensive regions. In Bali, Indonesia, where tourism significantly contributes to environmental waste, various entrepreneurial approaches have emerged to tackle the issue sustainably. This literature review explores entrepreneurial waste management initiatives, including plastic recycling, digital waste banking, and community-based strategies. One prominent example of plastic recycling entrepreneurship is eCollabo8, which specializes in converting plastic waste into reusable materials. By utilizing advanced recycling technologies, eCollabo8 reduces plastic pollution, particularly in tourism areas where single-use plastics are prevalent. This initiative highlights the importance of private-sector involvement in sustainable waste management and circular economy practices.

A research by Dewi et al. (2024) highlights the role of Griya Luhu's Waste Digital Bank program, which exemplifies an innovative entrepreneurial solution that empowers rural communities in Bali to manage waste efficiently. By leveraging digital technology and a transparent waste banking system, the initiative incentivizes proper waste disposal while providing economic benefits to participants. This model aligns with the broader trend of integrating technology into waste management, improving efficiency, and fostering community participation.

Moreover, the findings from Dewi et al. (2024) in Tourism villages, such as Penglipuran in Bali, local entrepreneurs incorporate local wisdom into their waste management strategies. Households in Penglipuran actively segregate waste, with plastic bottles sold to generate income while reducing environmental pollution. This initiative demonstrates how traditional knowledge and community engagement contribute to sustainable waste management. The approach also underscores the value of local customs and cultural practices in fostering environmentally responsible behaviors. Entrepreneurs in Bali have also established community-driven waste management initiatives, including:

1. TPS3R (Tempat Pengolahan Sampah Reduce, Reuse, Recycle): Small-scale waste processing centers encouraging recycling and organic waste composting.
2. Composting Projects: These programs transform organic waste into compost, reduce landfill waste, and promote sustainable agriculture.
3. Community Participation: Engaging local stakeholders in waste reduction efforts to enhance sustainability and social responsibility.

Entrepreneurial initiatives in Bali's tourism waste management landscape illustrate diverse and effective strategies for tackling environmental challenges. From high-tech recycling companies to community-based waste banks and traditional knowledge-based waste practices, these initiatives provide valuable insights into sustainable entrepreneurship in waste management. Moving forward, technological innovation, community involvement, and policy support will be essential in achieving long-term waste management solutions in tourism destinations.

Source-based waste management, which involves processing waste locally, is another proposed strategy for tackling Bali's waste issues. This approach focuses on recycling and composting waste at its source, reducing the need for long-distance transport and centralized waste processing. By promoting the conversion of organic waste into compost and other valuable materials, source-based management can reduce the amount of waste that ends up in landfills (Muliarta, 2023). This strategy is supported

by policies such as Bali Governor Regulation Number 47 of 2019, which encourages sustainable waste practices among residents and businesses (Muliarta, 2023; Astuti et al., 2024)

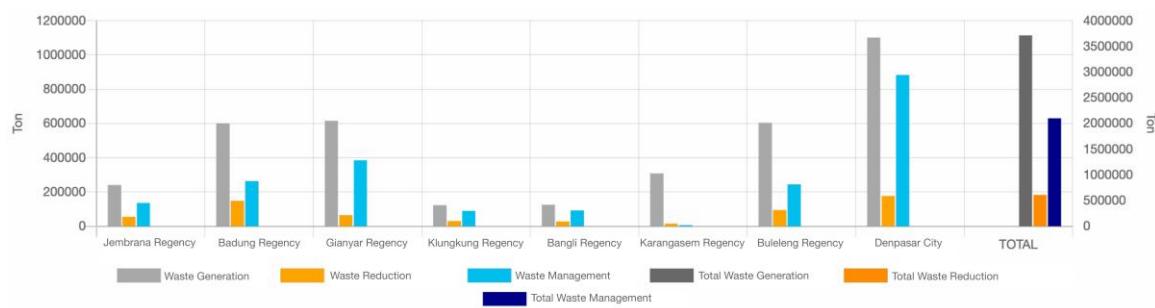
Adopting source-based waste management reduces landfill dependence and empowers communities to take a more active role in waste reduction. By engaging locals in waste separation, composting, and recycling efforts, Bali can mitigate its waste management challenges while simultaneously promoting environmental sustainability. Integrated Sustainable Waste Management (ISWM) models have been recommended as an essential solution to Bali's waste management issues, particularly in the tourism sector. These models advocate for a holistic approach, involving collaboration between various stakeholders, including government bodies, businesses, and communities. Such an approach allows for the integration of waste prevention, reduction, recycling, and disposal strategies, ensuring a more effective and sustainable waste management system (Koski-Karell, 2019). The ISWM model is especially relevant to Bali's tourism industry, where the volume of waste generated requires a coordinated and comprehensive approach. Collaboration across different sectors, such as tourism, local government, and waste management services, is crucial for creating a waste management system that is effective and sustainable in the long term.

Policy measures play a critical role in ensuring sustainable tourism development in Bali. Various regulations, such as those aimed at reducing single-use plastics and promoting environmentally friendly practices, have positively impacted waste management behavior among locals and tourists (Astuti et al., 2024). The local government's commitment to enforcing these regulations is vital for their long-term success. To further enhance waste management efforts, policies should focus on education and awareness campaigns, particularly in the tourism sector, where tourist behavior significantly contributes to waste generation. Encouraging businesses to adopt sustainable practices and promoting waste reduction at the tourist level can drive Bali toward a more sustainable future.

Analyzing waste distribution patterns in Bali reveals that tourism is the primary contributor to the island's waste crisis. Hotels, restaurants, and beach clubs generate over 60% of Bali's plastic waste, with high-end resorts and international hotel chains producing significantly more per guest than budget accommodations. This disparity can be attributed to the extensive use of imported packaging, single-use amenities, and lavish dining experiences that often result in excessive food waste. One of the most pressing concerns is the dominance of plastic waste, which stems from the heavy reliance on bottled water, plastic-wrapped toiletries, and disposable dining utensils. Many luxury establishments prioritize guest convenience over sustainability, leading to the frequent replacement of amenities and excessive resource consumption. While some eco-conscious hotels and resorts have adopted waste reduction strategies, such as refillable toiletry dispensers and biodegradable packaging, their implementation remains inconsistent across the industry. Waste accumulation is most severe in popular tourist areas such as Kuta, Seminyak, and Ubud, particularly during peak seasons, overwhelming Bali's already strained waste management infrastructure. Inefficient collection systems, limited recycling facilities, and inadequate landfill space exacerbate the crisis, resulting in waste leakage into rivers and coastal areas. Consequently, Bali's renowned beaches and marine ecosystems face significant environmental degradation, impacting biodiversity and the island's appeal as a premier travel destination.

In contrast, local households and traditional markets generate significantly less plastic waste, with more biodegradable materials often repurposed or composted. Many Balinese households engage in traditional waste reduction practices, such as reusing

containers, making compost from organic waste, and using minimal packaging in daily transactions. Similarly, the agricultural sector mainly produces organic waste, which is reintegrated into farming practices. This circular approach helps reduce the burden on waste management systems, as much of the waste is reused or sustainably returned to the ecosystem. Industrial waste, while present, remains minimal compared to the vast quantities produced by tourism, as Bali's economy is not heavily reliant on large-scale manufacturing. Bali's industrial base is relatively small, and the few factories that operate primarily produce non-toxic waste materials, which are often handled more effectively than the waste generated by tourism-related businesses. The disparity in waste generation between the tourism sector and other sectors becomes even more evident when examining the inefficiencies in waste collection and disposal systems. The infrastructure for managing waste in tourist-heavy areas is often inadequate, leading to overflowing bins, waste accumulation in public spaces, and illegal dumping in rivers and oceans. On the other hand, the waste management systems in local communities and agricultural areas tend to be more efficient due to smaller-scale waste production and a stronger tradition of waste reuse. However, these systems still face challenges such as limited access to proper disposal facilities and a lack of modern recycling infrastructure, particularly in remote areas.



(Source: National Waste Management Information System - Ministry of Environment and Forestry, Republic of Indonesia)

Figure 3. Performance Targets for Waste Management in Bali (2024)

Based on the data from the chart, Bali's total waste generation in 2024 is projected to exceed 3.5 million tons, with the waste distributed across the nine regencies. Among these, Denpasar and Badung show the highest levels of waste generation. The waste reduction efforts, marked by Waste Reduction, are significantly lower than total waste generation, indicating a need for more robust waste management initiatives. Notably, a significant portion of the waste burden is attributed to the tourism sector, with an estimated 1,300 tons of waste expected to be generated during peak seasons. This highlights tourism's important role in Kuta, Seminyak, and Ubud's overall waste management challenge, especially considering the contributions from hotels, restaurants, and other tourism-related businesses.

One of the most pressing challenges arising from this influx of waste is the overflow in waste management systems, particularly in tourist-heavy areas. The Suwung landfill, located near Denpasar, serves as Bali's primary disposal site for waste. Originally designed to handle 1,000 tons of waste per day, the landfill now faces immense pressure, receiving more than 1,300 tons daily during peak tourist seasons, surpassing its capacity. This overburdened landfill, unable to cope with the increasing waste volume, contributes to environmental degradation and poses a significant challenge to the island's waste management infrastructure.

The data underscores the urgency of addressing the waste crisis in Bali. Tourism is a major contributor to the strain on existing waste management systems, particularly during peak seasons when waste generation is at its highest. Without a coordinated effort to enhance waste management infrastructure and adopt sustainable practices across all sectors, the situation will likely worsen, further threatening the island's environmental and economic sustainability.

This situation has led to widespread illegal dumping and open burning, both of which pose severe environmental and health risks. The illegal disposal of waste in unauthorized areas, particularly near rivers, beaches, and forests, contaminates natural landscapes, harms wildlife, and disrupts ecosystems. Open waste burning, often seen as a quick disposal solution, releases toxic pollutants such as dioxins and particulate matter into the air, which can cause respiratory problems and contribute to climate change. These hazardous practices threaten the environment and endanger the health of local communities and tourists, exacerbating Bali's already strained public health infrastructure.

Despite Bali's 2019 ban on single-use plastics, plastic pollution remains widespread due to weak enforcement and a lack of viable, sustainable alternatives. Although the law aimed to reduce plastic waste, enforcement has been inconsistent, and many businesses continue to use plastic products due to the absence of affordable or accessible substitutes. As a result, plastic waste remains a pervasive issue, particularly in tourist-heavy areas. Currently, only 48% of Bali's total waste is appropriately managed, meaning that nearly half of the island's waste is either dumped illegally, finds its way into waterways, or is disposed of by being burned in open spaces. This improper waste disposal significantly contributes to air pollution, which poses additional health risks and groundwater contamination, jeopardizing the island's water supply.

Food waste is another major issue, particularly within the tourism industry. Luxury hotels and large restaurants, many of which operate buffet-style dining, discard vast amounts of food daily, adding to the growing waste crisis. However, few programs exist to address this issue, such as composting or redistributing excess food to needy people. The lack of waste-reducing initiatives or efforts to repurpose food waste highlights a significant gap in the island's waste management strategies. In contrast, local households generate considerably less food waste. Traditional Balinese practices, which emphasize minimizing waste and repurposing leftovers, contribute to a more sustainable waste culture at the community level. This stark difference further emphasizes the tourism sector's disproportionate impact on Bali's waste crisis.

These findings underscore that Bali's waste problem is primarily driven by tourism, rather than local communities or other industries. The seasonal visitor surge exacerbates the waste overflow, placing immense pressure on the island's limited waste disposal infrastructure. During peak seasons, waste volumes skyrocket, and collection systems are overwhelmed, pushing Bali's waste management facilities beyond their capacity. Without urgent intervention, such as stricter enforcement of waste regulations, enhanced recycling initiatives, and promoting sustainable tourism practices, the imbalance between tourism-driven waste production and the island's waste management capacity will continue to threaten Bali's environmental sustainability. The situation calls for immediate and comprehensive action to reduce the tourism sector's waste footprint, ensuring the long-term health of the island's environment and the well-being of its residents and visitors.

Discussions

Tourism's Waste Impact: Where Does the Trash Go?

Bali's booming tourism industry has significantly worsened the island's waste problem, particularly in plastic and food waste from hotels, restaurants, and other tourism-related businesses.



(Source: Instagram Sam Benchehib, The Free Press Journal, 2025)

Figure 4. Bali Trash Wave (2025)

The sector alone accounts for over 60% of Bali's plastic waste, with luxury resorts and international hotel chains generating the highest amounts due to single-use amenities, imported packaging, and excessive food waste. These businesses prioritize convenience and guest experience, often resulting in large quantities of disposable plastics, such as water bottles, toiletries, and packaging. In comparison, local households and traditional markets produce less waste, emphasizing repurposing organic materials, recycling, and composting, aligning with Bali's traditional waste minimization practices.



(Source: Bali Straits Times, November 2024)

Figure 5. Bali Waste Management, 2024

According to The Straits Times, approximately 48% of Bali's waste is managed responsibly through landfill or recycling, while the remaining 52% is mismanaged, including by burning, illegal dumping, or entering waterways. The improper disposal of waste is most evident in popular tourist destinations like Kuta, Seminyak, and Ubud, where waste collection services struggle to keep up with the overwhelming volume of refuse. The Suwung landfill, designed to handle 1,000 tons per day, now receives 1,300 tons daily during peak seasons, pushing it beyond capacity and leading to frequent overflows. This overburdened landfill exacerbates the island's waste crisis and contributes to environmental pollution, particularly affecting nearby rivers and coastal areas.

Illegal dumping has surged in tourist-heavy areas, as waste collection services cannot keep pace with the surge in waste generation. Open waste burning, a standard disposal method in some areas, further contributes to air pollution and health risks, as it releases harmful toxins into the atmosphere. Additionally, while Bali's 2019 ban on single-use plastics was a promising step toward reducing plastic pollution, weak enforcement and the absence of viable alternatives have rendered the ban largely ineffective. Many businesses continue to rely on non-biodegradable materials due to cost, convenience, and a lack of affordable substitutes, undermining the progress made through the policy.

These findings underscore that tourism is the primary driver of Bali's waste crisis. The seasonal influx of visitors generates an enormous volume of unmanaged waste, further straining the island's already overburdened waste management system. As tourism grows, this imbalance between waste production and management capacity will likely worsen, threatening the island's environmental sustainability. Without stricter enforcement of waste regulations, the implementation of more robust recycling initiatives, and the adoption of targeted waste management policies for tourism-related businesses, Bali's environmental health will continue to deteriorate. The government, the tourism sector, and local communities must work together to adopt sustainable practices that minimize waste generation and improve waste management infrastructure to secure Bali's healthier, more sustainable future.

The Role of Entrepreneurial Initiatives in Addressing Tourism-Driven Waste

Bali's tourism industry significantly exacerbates the island's waste crisis, particularly through the excessive plastic and food waste generation by hotels, restaurants, and other tourism-related enterprises. Research indicates that the tourism sector is responsible for over 60% of Bali's plastic waste, with luxury resorts and international hotel chains contributing disproportionately due to the widespread use of single-use amenities, imported packaging, and food overproduction (Provinsi Bali, 2024). These practices have led to an unsustainable cycle of waste generation, which strains Bali's waste management systems and threatens the island's pristine environment.

In response to these challenges, various entrepreneurial initiatives have emerged to promote sustainable waste management and reduce the environmental impact of tourism. Companies like eCollab08 specialize in plastic recycling, transforming plastic waste into reusable materials, thus supporting circular economy practices in tourism areas. These businesses contribute to reducing plastic waste and creating valuable materials for reuse in other sectors, thereby developing a more sustainable tourism industry. Additionally, digital waste banking solutions, such as Griya Luhu's Waste Digital Bank program, leverage technology to facilitate waste collection and incentivize community participation. This innovative model encourages individuals and businesses

to properly sort and dispose of waste by offering rewards or incentives, fostering environmental and economic benefits (Dewi et al., 2024).

Community-driven models have also played a crucial role in addressing Bali's waste crisis. The TPS3R (Tempat Pengelolaan Sampah Reuse, Reduce, Recycle) waste management system, which promotes the sorting, recycling, and composting waste at the community level, has proven effective in diverting organic waste from landfills. Local stakeholders are actively involved in these efforts, with community members playing a hands-on role in waste management, composting, and recycling initiatives (Junita et al., 2024). These grassroots efforts not only help reduce the volume of waste sent to landfills but also encourage a cultural shift towards more sustainable practices within communities.

Despite these entrepreneurial and community-driven efforts, tourism's overwhelming volume of waste continues to challenge Bali's waste management infrastructure. The island's waste management systems are often overwhelmed, especially during peak tourist seasons, leading to waste overflow and pollution. Furthermore, the effectiveness of these initiatives is often hindered by insufficient policy enforcement, inadequate recycling facilities, and inconsistent waste segregation practices within the hospitality sector. Many hotels and businesses still fail to implement proper waste separation systems, and the lack of proper infrastructure for recycling or composting further limits the potential impact of these programs.

Strengthening the integration between private-sector innovations, local community involvement, and governmental regulations is essential to achieving long-term waste reduction and sustainability in Bali's tourism industry. Greater collaboration between the government, local businesses, and entrepreneurs will ensure that sustainable waste management practices are more effectively implemented and that Bali's tourism sector can thrive while minimizing its environmental footprint. The success of these initiatives hinges not only on innovation but also on comprehensive policy enforcement, improved infrastructure, and a collective commitment to reducing waste across all tourism industry sectors.

Policy vs. Reality: The Gap in Bali's Waste Management

Despite various efforts to combat Bali's waste crisis, a significant disparity persists between policy and real-world implementation. In 2019, the government introduced Gubernatorial Regulation No. 97/2018, which aimed to reduce Bali's plastic waste by 70% by banning single-use plastics such as plastic bags, straws, and Styrofoam. While this policy was intended to curb plastic pollution, enforcement has been inconsistent, and plastic waste remains widespread. Many businesses, including hotels, restaurants, and street vendors, continue distributing plastic products due to a lack of viable alternatives and weak oversight. Additionally, tourists, who play a significant role in waste generation, still rely heavily on plastic packaging, further undermining the effectiveness of the policy. The demand for single-use plastics has proven resilient, particularly in the absence of affordable, accessible alternatives, and weak regulatory enforcement allows many businesses to bypass the ban.

Beyond the plastic ban, the government has launched waste segregation programs and recycling initiatives to encourage households and businesses to separate organic and inorganic waste. However, Bali's waste collection infrastructure remains inadequate to support these efforts. While some resorts and businesses have implemented in-house waste management systems and recycling programs, the lack of comprehensive recycling facilities and inadequate waste processing capacity means that much of the segregated waste still ends up in illegal dumpsites or rivers. Reports suggest that only

48% of Bali's total waste is appropriately managed, with the remaining waste either left uncollected or disposed of through environmentally harmful methods such as burning or dumping in open spaces. This highlights the severe infrastructure limitations and difficulty in translating policy into effective waste management practices.

The Suwung landfill exemplifies the gap between policy intentions and reality. Originally designed to accommodate 1,000 tons of waste daily, the facility now receives more than 1,300 tons daily during peak tourist seasons, far exceeding its capacity. This overload leads to significant environmental degradation, including overflow, groundwater contamination, and increased pollution. Despite government promises to expand landfill capacity and improve waste treatment infrastructure, the Suwung landfill remains overwhelmed, contributing to the island's ongoing waste crisis. Illegal dumping has also surged, with over 1,000 informal dumpsites scattered across Bali, particularly in tourist-heavy areas like Kuta, Seminyak, and Ubud. These illegal sites exacerbate environmental pollution, with waste often reaching rivers, oceans, and scenic landscapes, further threatening Bali's natural resources.

These findings underscore the critical gap between Bali's waste management policies and their practical application. While Bali has made strides in addressing its waste issues through regulation and public awareness campaigns, the lack of robust enforcement, insufficient infrastructure, and the overwhelming waste production from the tourism sector have severely hindered progress. More vigorous policy enforcement, significant investment in recycling and waste management infrastructure, and increased collaboration between the government, private sector, and local communities are essential to bridge this gap. Only by closing this gap can Bali manage its waste crisis effectively, ensuring environmental sustainability while maintaining its status as a premier global tourist destination.

Conclusions

This study highlights the tourism sector's significant role in worsening Bali's waste crisis, with hotels, restaurants, and other tourism-related businesses generating over 60% of the island's plastic waste. Despite government policies such as the 2019 single-use plastic ban, weak enforcement, and insufficient infrastructure have limited their effectiveness, leading to continued illegal dumping, waste overflow, and environmental degradation. The findings indicate that Bali's waste management system is struggling to keep up with the rapid expansion of the tourism industry, particularly in high-traffic areas like Kuta, Seminyak, and Ubud.

A key discovery of this research is the disparity between policy and practice. While regulatory frameworks exist, enforcement mechanisms remain inadequate, and waste segregation programs lack proper infrastructure. The Suwung landfill, originally designed to handle 1,000 tons of waste per day, now receives 1,300 tons daily, pushing it beyond capacity. Furthermore, illegal dumpsites and open burning are standard practices, contributing to severe environmental and health hazards.

These findings underscore an urgent need for more effective waste management solutions, particularly in tourism-heavy areas. Stricter policy enforcement, investment in recycling infrastructure, and implementing sustainable tourism practices are critical to mitigating Bali's waste crisis. Additionally, Entrepreneurial initiatives in Bali's tourism waste management landscape illustrate diverse and effective strategies for tackling environmental challenges. From high-tech recycling companies to community-based waste banks and traditional knowledge-based waste practices, these initiatives provide valuable insights into sustainable entrepreneurship in waste management. Moving

forward, technological innovation, community involvement, and policy support will be essential in achieving long-term waste management solutions in tourism destinations.

For future research, a deeper examination of informal waste management systems, including local waste-pickers and community-led recycling efforts, could provide insight into alternative solutions that leverage local knowledge and participation. Additionally, longitudinal studies tracking the impact of recent waste management initiatives help determine their long-term effectiveness and areas for improvement. Further research could also explore the feasibility of circular economy models, such as waste-to-energy projects and eco-innovation in sustainable tourism, to create Bali's more resilient and environmentally responsible waste management system.

By integrating multi-stakeholder collaboration, including government agencies, private enterprises, local communities, and worldwide investors, Bali can work toward a more sustainable waste management ecosystem that balances economic growth with environmental preservation.

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Situ Gunung Nature Tourism Park: Applying the Ecotourism Principle of The International Ecotourism Society (TIES)

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Abstract: This study analyses the application of eight ecotourism principles set forth by The International Ecotourism Society (TIES) in Situ Gunung Ecotourism, Sukabumi, West Java, Indonesia. The study adopts a qualitative methodology incorporating Focus Group Discussions with destination managers, tour guides, and security staff. The research assesses the conformity of Situ Gunung's Ecotourism activities with the concepts of TIES. Research demonstrates that Situ Gunung successfully alleviates environmental repercussions by measures including visitation restrictions, bans on animal feeding, and sustainable infrastructure development. Environmental and cultural education is advanced through community involvement, signage, and traditional performances such as Degungan and Kecapi Suling music at the Amphitheater. The suspension bridge and additional attractions are sustainably maintained through regular safety assessments. Community empowerment is manifested through local engagement in tourism activities, cultural conservation, and infrastructure administration. The study concludes that Situ Gunung effectively incorporates TIES concepts, harmonizing tourism development with environmental and cultural sustainability. The report advocates for the enhancement of cultural preservation programs and the implementation of transparent revenue management to bolster the long-term sustainability of ecotourism. Situ Gunung exemplifies sustainable ecotourism, illustrating the utilization of natural and cultural resources for community empowerment and environmental preservation.

Keywords: community empowerment, cultural preservation, ecotourism, environmental conservation, TIES principles

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Introduction

Tourism was formerly defined as an individual's journey of no less than 80 kilometers from their place of residence to a destination (Joppe, 2019). As scientific progress continues, the journey is segmented into many components according to the tourists' objectives, encompassing shopping (Kemperman et al., 2009), food (Kim et al., 2011), and culture (Brown, 1999). It seeks to ascertain the requirements of service providers and tourists to guarantee adequate facilities that align with supply and demand. Fleischer (2010) defines ecotourism as a type of tourism that emphasizes environmental conservation and the sociocultural development of local people. Ecotourism encompasses educational components and extends beyond mere nature conservation. Nonetheless, due to its similarities with other tourism modalities, particularly in utilizing infrastructure, ecotourism is often perceived as a facade for the exploitation of the environment (Dowling, 1998).

The concept of ecotourism evolves with each generation, reflecting the changing interpretation of its significance (Cobbinah, 2015). This reflects a more sophisticated perspective on the relationship among tourism, environmental conservation, and

community welfare; ecotourism in the 1980s emphasized education and ecological sustainability. Ecotourism was defined as a form of travel centered on the exploration of the natural environment with minimal adverse ecological impact. The primary objectives are experiences in nature and environmental education. Moreover, ecotourism prioritized sustainability during the 1990s. The concept of sustainability began to garner increased prominence during this decade. Ecotourism, as mandated by the government, is responsible travel to natural areas aimed at environmental protection, educational promotion, and the enhancement of local communities' well-being to foster equality. In 1990, the International Ecotourism Society (TIES) characterized ecotourism as ethical travel to pristine locations that foster environmental conservation, enhance local community welfare, and provide educational opportunities. In the 2000s, "ecotourism" was expanded to include social, cultural, and economic aspects. Ecotourism associated with community-based tourism can enhance local livelihoods, minimise economic leakage, and foster social development (Mtapuri et al., 2022; Zielinski et al., 2021). The advantages are optimised when locals possess ownership and authority over the tourism resources at the destination (Strydom et al., 2019).

Table 1. Evolution of the Ecotourism Concept

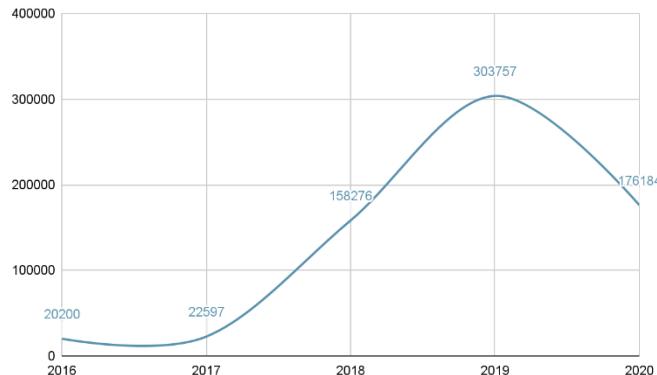
Year	Concept
1980s	Focused on ecological education and low-impact nature experiences, ecotourism was defined as travel to natural areas that conserve ecosystems while educating visitors.
1990s	The rise of sustainability discourse expanded ecotourism's mandate. The International Ecotourism Society (TIES, 1990) formalized it as "ethical travel to natural areas that conserves the environment, sustains local well-being, and involves education." Governments began integrating ecotourism into policies to balance conservation, community empowerment, and economic growth.
2000s-present	Ecotourism incorporates social, cultural, and economic dimensions, emphasizing community-based tourism (Mtapuri et al., 2022). Key principles now include Indigenous rights, low-impact infrastructure, and equitable benefit-sharing (TIES, 2015). Studies highlight that success depends on local ownership of tourism resources (Strydom et al., 2019).

Source: Researcher's finding (2025)

The concepts of ecotourism, essential for guidelines in ecotourism management, are the most significant aspect. The International Ecotourism Society (TIES) advocates for a principle of ecotourism. The non-profit organization TIES is dedicated to promoting ecotourism globally. Six foundational principles characterized ecotourism at the establishment of TIES in 1990: minimize impact, foster respect and awareness of the environment and culture, generate positive experiences for both hosts and guests, ensure direct financial support for conservation, deliver economic benefits, empower local communities, and enhance awareness of the political, environmental, and social contexts of host nations (Cobbinah, 2015). Nonetheless, the following concepts have been incorporated: recognize the rights and spiritual beliefs of the Indigenous Peoples within the community, design, construct, and operate low-impact facilities, and engage in collaboration to empower them (TIES, 2015).

Situ Gunung ecotourism is located in Sukabumi Regency, West Java Province. The prominent feature is the 240-meter suspension bridge tour, the longest suspension bridge in Asia (Resort PTN Situ Gunung, 2019), and one of the most significant attractions. It is administered by PT Fontis Aquam Vivam. The establishment of this

attraction is characterized by a notable rise in visitor attendance, as illustrated in the subsequent graph:



(Source: Amellia & Adi Jaya, 2021)
Figure 1. Graphic of the Number of Visitors to Situ Gunung

Situ Gunung Ecotourism is situated within a national park in Indonesia and is similarly tasked with the protection and conservation of the region's natural resources. Advancing local economic empowerment necessitates extensive community engagement. The research examines the use of eight TIES ecotourism concepts in the natural site of Situ Gunung, Sukabumi.

Methodology

The research employed a qualitative approach to investigate the principles of ecotourism development implementation in the Situ Gunung protected area (Creswell, 2003). The research depended on the accessibility of primary and secondary data to investigate topics pertinent to the research aims. A Focus Group Discussion (FGD) involving destination management represented by PT Fontis Aquam Vivam's managers, Usep Suherlan, and tour guides. The focus group discussion lasted roughly 45 minutes and comprised two management personnel, three security officers, and five tour guides. The respondents were considered proficient based on their roles as destination management leaders and field managers. The interviews concentrated on the execution of TIES indicators and sustainable tourism practices at the destination.

Researchers analysed eight ecotourism indicators identified by TIES. Subsequently, they correlated these indicators with the conditions at the mountainous location. The eight indicators are Minimizing Physical, Social, Behavioral, and Psychological Impacts, Building environmental and cultural awareness and respect, Providing Positive Experiences for Both Visitors and Hosts, Providing Direct Financial Benefits for Conservation, Generating Financial Benefits for Both Local People and Private Industry, Delivering Memorable Interpretative Experiences to Visitors that Help Raise Sensitivity to Environmental and Social Climates, Designing, Constructing, and Operating Low-Impact Facilities, and Recognizing the Rights and Spiritual Beliefs of the Indigenous people in the Community and Work in Partnership with Them to Create Empowerment.

The discourse is on the conditions, visitation frequency, capacity, attractions and recreational activities, tourist rates, cultural aspects, community engagement, conservation initiatives, and the distinctiveness of flora and wildlife in Situ Gunung. Researchers subsequently performed direct observations of the Situ Gunung Ecotourism area. The observations concentrated on diverse attractions within the tourist destination, activities undertaken by tourists, community involvement, and the established

management strategy. Moreover, the literature review from pertinent sources, including scientific journals, news, and government publications, supplements the data field. The collection procedures authenticate the data using triangulation to guarantee consistency and precision.

Results and discussions

The findings of this study indicate that the implementation of the TIES concept in Situ Gunung nature tourism can be articulated as follows:

Minimizing Physical, Social, Behavioral, and Psychological Impacts

The eight principles deemed the "latest principles" in ecotourism are fundamentally based on the issues stemming from the adverse effects of tourism activity. Consequently, ecotourism arose to mitigate the adverse effects of tourism while enhancing its beneficial aspects. The core of ecotourism, which aims to mitigate adverse effects and amplify beneficial results in tourism, is intrinsically consistent with the tenets of utilitarian ethics (Sugiarto, 2023). Ecotourism should focus on reducing adverse effects on both cultural and environmental aspects to the greatest extent possible. Consequently, the notion of ecotourism at a site necessitates meticulous planning and design. The new initiative, designed for tourists, aims to facilitate a more authentic engagement with nature while preserving the aesthetic and sustainability of the surrounding ecotourism environment.

Otherwise, numerous regulations enacted at Situ Gunung exemplify this methodology. Visitors are advised against approaching or disturbing wildlife to ensure the safety of both humans and animals. This rule is created to guarantee that animals exist devoid of stress or hazards stemming from human presence. The wildlife of Situ Gunung will be conserved in this manner. Moreover, tourists are forbidden from feeding the animals in the Situ Gunung ecotourism region to avert the transfer of diseases between humans and animals. The management has implemented measures to limit visitor numbers to prevent overtourism, which could severely damage and threaten the preservation of the surrounding natural ecosystem.

Situ Gunung Ecotourism close to the primary idea of mitigating physical, social, behavioral, and psychological consequences. This is achieved by the implementation of environmentally conscious development and legislation designed to avert significant environmental harm, thereby safeguarding both the natural landscape and the species within the ecotourism region. In the future, the administration of Situ Gunung may implement additional initiatives to enhance the preservation of nature's sustainability.

Building Environmental and Cultural Awareness and Respect

With the growing significance of environmental consciousness, eco-tourism has surfaced as a viable option for individuals seeking to discover the planet's natural marvels while minimizing their carbon footprint. The transition to sustainable tourism is not merely a transient trend, but a lifestyle that aims to harmonize with the ecosystems we explore. Nonetheless, promoting awareness of ecotourism has certain problems. A significant problem is the deficiency of accessible information, especially in remote regions. Moreover, local populations may lack a comprehensive understanding of ecotourism and its potential advantages. A further problem is guaranteeing that ecotourism operations are genuinely sustainable and do not adversely impact the environment. Enhancing environmental consciousness among tourists and local populations is essential for the advancement of ecotourism. As individuals have a heightened awareness of the surrounding natural beauty and the significance of environmental conservation, they are more inclined to participate in responsible tourist

practices. Environmental education and awareness are essential elements in the advancement of ecotourism. Tourists must be educated on the significance of environmental conservation, the safeguarding of flora and fauna, and the adoption of eco-friendly behaviors. This method can motivate visitors to act as responsible tourists and aid in the conservation of the natural beauty of the locations they explore (Angela, 2023).

In Situ Gunung, local populations actively engage in ecotourism initiatives, acknowledging the significance of conserving the natural environment to maintain its integrity. Furthermore, they recognize that environmental protection might attract tourists, thereby generating revenue for them. The community is essential in instructing tourists on the significance of environmental conservation. For instance, they caution visitors against littering, discourage the excessive collection of flora that may lead to their damage, and advise against shooting or harming wildlife within the ecotourism zone. It is usual to encounter signs that advise people against littering or carelessly feeding animals. These signs are integral to the continuous initiatives aimed at educating tourists and promoting responsible conduct to safeguard the environment and wildlife in ecotourism regions.

Environmental conservation is acknowledged as an essential component of ecotourism; yet, it must not compromise cultural preservation. Nature and culture must be concurrently preserved, as they are interrelated components that enhance the identity and sustainability of a location. Ecotourism promotes environmentally and socially responsible exploration of destinations, ensuring that the experience transcends appreciation of natural beauty. It empowers local people, safeguards cultural traditions, and fosters sustainable village tourism development. Ecotourism acknowledges the significance of traditional cultural practices in safeguarding the legacy and identity of local people. By honoring and safeguarding these practices, ecotourism promotes cultural sustainability and preserves the cultural wealth of local communities for future generations. Ultimately, this enhances the tourist experience while enabling local communities to safeguard their unique heritage.

Utami and Mardiana (2017) asserted that ecotourism must be founded on consultation and consensus with local populations, while being attuned to and respectful of the social, cultural, and religious values maintained by the neighboring communities of tiny island regions. Barna et al. (2011) contended that ecotourism is not a panacea; it necessitates collaboration among governments, indigenous people, and management, emphasizing the importance of comprehending the cultural ramifications in the establishment of protected areas. The participation of indigenous and local populations is essential in ecotourism development to alleviate adverse effects on their culture. By including them in decision-making about the number of tourists, location, timing of visits, and types of activities, local communities may regulate the cultural transformations that take place. This guarantees that they not only reap the economic advantages of ecotourism but also maintain authority over their cultural legacy. A notable instance of local community engagement is shown at Situ Gunung, where inhabitants actively participate in cultural preservation and the advancement of ecotourism. A designated location known as the Amphitheatre features a wooden stage that functions as a hub for traditional arts performances, including Degungan, Karinding, and Kecapi Suling. Tourists not only appreciate the performances but also engage directly with local artists affiliated with the Kadudampit Arts Council. Thus, ecotourism serves as both a revenue stream and a mechanism for cultural preservation.



(Source: Personal Documentation, 2025)

Figure 2. Traditional music performance at Situ Gunung

The Amphitheatre in Situ Gunung functions not only as an entertainment venue but also as an educational area, imparting Sundanese traditional values to guests. This method promotes tourists' comprehension and reverence for the environment and local customs. Tourists benefit, and the local community and authorities are increasingly cognisant of the necessity to preserve a balance between tourism and cultural preservation. Consequently, ecotourism in Situ Gunung has effectively established a balance between economic objectives and cultural conservation. Sustainable ecotourism must engage local populations to facilitate cultural transformation while reaping its advantages. Situ Gunung exemplifies the synergy of tourism management, artists, and governmental entities in fostering ecotourism that is environmentally sustainable and culturally respectful. The primary premise maintained is the respect for the rights of indigenous groups while fostering understanding of environmental conservation and cultural traditions.

Providing Positive Experiences for Both Visitors and Hosts

Positive experiences in the ecotourism setting are suggested to be recognized by tourists, management, tour operators, and local communities. The research by Neuhofer (2024) emphasizes good experiences as a long-term effect that leads to individual development directly associated with the third Sustainability aim (EDG's 3), specifically Health and Wealth. Simultaneously, hosts derive good experiences from enhanced knowledge and information, reciprocal cultural respect, and improved local welfare (Alizadeh & Filep, 2023). Personal transformation enhances travelers' intrapersonal satisfaction through happiness or the development of a robust character, significantly contributing to tourism activities and destination promotion (Uysal et al., 2012). Situ Gunung provides an adventurous experience in nature at locations including the Suspension Bridge, Curug-Sawer Waterfall, Lembah-Purba Waterfall, Basket-Sultan, Floating Lodge Lake Situ Gunung, and Flying Fox, along with art performances and local community Small and Medium Size Enterprises (SMEs) activities.

The execution of individual change is conducted with the principal keys (Neuhofer, 2024), specifically transformational and scalable design, training for tour guides, community-provided facilities and guides, and design utilizing digital technologies. The

pre-visit experience at Situ Gunung Nature Tourism Park is marked by the accessibility of information, communication, and transactions facilitated by technology via digital platforms (Hasna et al., 2022). Muqsith et al (2023) asserted that the good influence experienced by tourists arises from the availability of sufficient cleanliness and safety measures, which enhance tourist satisfaction, alongside knowledgeable tour guides who enrich the experience of the place. Ecotourism exploration is enhanced by innovative attraction technologies that preserve the preservation of environment and its tourism potential (Icha Agustina & Sambas Basuni, 2021).

Situ Gunung Nature Tourism Park offers beneficial experiences for local populations in promoting tourism activities. The advantages of enhancing knowledge and information are evidenced by the significant demand for research and training at the host. Mutual appreciation for culture is demonstrated through artistic performances and legislation governing tourism ethics. Enhanced well-being is attained through the empowering of human resources both within and beyond the managerial purview of destination managers (Sofiyudin et al., 2021). Nonetheless, certain residents perceive the detrimental impact of tourists' views and activities.

Situ Gunung Nature Tourism Park adheres to the principles of ecotourism to deliver beneficial experiences for both tourists and residents. The beneficial ecotourism experience is an intervention aimed at enhancing travel and promoting well-being. Furthermore, Saarinen and Wall-Reinius (2019) said that the symbiotic mutualism between tourists and hosts is guaranteed by their mutual harmonization and advantages.

Providing Direct Financial Benefits for Conservation

Mount Pangrango is a National Park managed by the Ministry of Environment and Forestry (KLHK), governed by nature tourism legislation grounded in sustainable development principles, specifically Law No. 5 of 1990 concerning the Protection of Natural Resources and Forest Ecosystems and Law No. 9 of 1990 regarding Tourism, which prioritizes the conservation of forests and ecosystems. Situ Gunung Nature Tourism Park is an external area of Mount Pangrango administered by the Gunung Gede Pangrango National Park Center. The 222.31 hectares situated on the southern slope of Mount Gede are characterized by their natural abundance and exceptional biodiversity of flora, fauna, and ecosystems.

The management of the central government signifies money distributions that guarantee the viability of conservation efforts. The use of the designated development zone for the establishment of adventure tourism attractions creates locations that draw both domestic and foreign tourists seeking diverse recreational experiences (Hasna et al., 2022). The management of Situ Gunung has developed a sustainable framework that harmonizes ecosystem conservation with economic advantages. Since 2020, governmental resources have been designated for the rehabilitation of 15 hectares of degraded land and the establishment of patrol posts to mitigate criminal activities. A digital ticketing system that designates revenue for conservation exemplifies sustainable financing. Moreover, the region enhances community welfare by employing 65% of the local labor (guides, craftsmen) and promoting the development of over 40 micro, small, and medium enterprises in Curug Sawer.

Generating Financial Benefits for Both Local People and Private Industry

The essence of tourism development is unequivocally focused on augmenting revenue for local communities as well as the public and private sectors. The economic advantages for hosts are receiving heightened focus through emerging tourism development concepts; ecotourism, sustainable tourism, and community-based tourism

emphasize enhanced economic circulation within lower-class areas. In the context of ecotourism, the economic advantages for local populations are a fundamental principle that must be prioritized in development.

The establishment of Situ Gunung National Park under the ecotourism model enhances the region's function from a protected ecosystem to a recreational location. The role of the protected area enhances economic interactions among tourists, local residents, and ecotourism management. The evolution of protected areas into nature tourism captivates travelers from diverse backgrounds. The tourist count ranges from 50 to 200 on weekdays and from 1000 to 2000 on holidays. Significant tourist interest generates funding for ecotourism managers and financial resources to execute the environmental objectives.

Simultaneously, our findings affirm that the advancement of Situ Gunung Ecotourism has directly generated employment for over 200 local individuals and created tourism-related business options, including accommodations, tour guide services, restaurants, and vehicle rentals. This correlates with the rise in community activities within the ecotourism sector. The findings from our focus group discussions indicate that a minimum of 625 households are directly engaged in ecotourism activities. Ecotourism development yields economic advantages through the relationships between tourists, management, and the community.

Delivering Memorable Interpretative Experiences to Visitors that Help Raise Sensitivity to Environmental and Social Climates

Besides highlighting economic advantages, ecotourism aims to offer tourists enriching experiences, promote environmental sustainability, and ensure the social sustainability of the community. Situ Gunung Ecotourism provides a captivating experience with sights including waterfalls, Basket-Sultan, Flying Fox, Situ Gunung Lake, as well as camping and glamping options. The meticulously kept surroundings and appealing tourist attraction designs offer an unforgettable experience and serve as a compelling reason to visit.

Simultaneously, ecotourism serves to enhance tourists' comprehension of the critical significance of conservation and environmental sustainability. Scenic natural environments and the chance to observe biodiversity are fundamental to ecotourism. Implementing ecotourism in Situ Gunung generates chances for environmental education, the introduction of flora and fauna, the role of protected areas, and conservation funding. Situ Gunung Ecotourism presents ecological diversity to visitors and educational opportunities to the community, including the introduction of plant species and fauna such as the Javanese Eagle, Javanese Gibbon, Leopard, and Langur.

Ecotourism, in terms of social impact, enables community welfare enhancement, cultural preservation, community empowerment, and the provision of experiences and knowledge for tourists. Situ Gunung Ecotourism features traditional music and dance as integral components of its attraction. The local community offers many tourism items and processed foods to satisfy tourist demands. Moreover, several empowerment initiatives, including tour guide training and ecotourism management, are conducted to ensure quality service. A variety of development initiatives aim to enhance the perception of ecotourism as environmentally sustainable, socially conscious, and offering significant experiences.

Designing, Constructing, and Operating Low-Impact Facilities

The administration of Situ Gunung established routine maintenance, which is inherently connected to facilities management. Three principal kinds exist: natural tourism, cultural tourism, and artificial tourism, with particular emphasis on the most frequented sites, particularly Situ Gunung Lake, Curug Sawer, and Lembah Purba Waterfall. Furthermore, artificial tourism features the Red Bridge, Sultan Basket, and Purba Bridge. The operational standards of these sites are consistently upheld and monitored to guarantee safety. The inspection process is meticulously carried out for each unique component of the attraction that tourists encounter, including wire ropes, wooden footholds, fasteners, and similar elements. Likewise, other natural attractions undergo continuous inspections to guarantee tourist safety and prevent ecological harm.

Table 2. Existing Facilities in Situ Gunung

No	Attraction	Attraction Type	Activity	Description
1	Suspension Bridge	Artificial Tourism	<ul style="list-style-type: none"> • Tracking; • Animal Observation 	Purba Bridge can accommodate 90 passengers and is roughly 200 meters long. This bridge has an ironwood floor and is suspended. The Javan Gibbon is available for people to observe.
2	Sultan Basket	Artificial Tourism	<ul style="list-style-type: none"> • Take in the scenery while riding a cable car that offers views of the river and tropical jungle. 	This attraction, which can accommodate four people per lane, is known as the Sultan Basket because of its shape, which is similar to a sultan's chair from the kingdom era. On the left and right, there are two crossing lanes.
3	Purba Valley Waterfall	Natural Tourism	<ul style="list-style-type: none"> • Savor water and environment; • Cross the river; • Take a bath or bathe in the river 	Both ordinary and extraordinary images, including pre-wedding ones, can be taken strategically at this location.
4	Situ Gunung Lake	Natural Tourism	<ul style="list-style-type: none"> • Flying Fox • Camp Ground • Glamor Camping 	Visitors can unwind while taking in the splendor of Situ Gunung Lake.

No	Attraction	Attraction Type	Activity	Description
5	Sawer Waterfall	Natural Tourism	<ul style="list-style-type: none"> • River Tubing • Culinary 	There are 40 food-serving stall booths at this 35-meter-tall waterfall.
6	Red Bridge	Artificial Tourism	<ul style="list-style-type: none"> • Tracking • Animal Observation 	This bridge, which is 80 meters above the river, is the route home.

Source: Research Findings (2025)

Recognizing the Rights and Spiritual Beliefs of the Indigenous People in the Community and Working in Partnership with Them to Create Empowerment

The Situ Gunung Suspension Bridge is expected to benefit the local community. Residents engage in several activities, such as constructing and maintaining the infrastructure of the extensive bridge. Locals sell food and handicrafts without incurring rent, hence reducing unemployment. The management encourages citizens to engage in activities while traversing and exiting the suspension bridge. For example, they assist with sanitation, parking, and the installation of safety apparatus.

Dede Asad, a destination manager and managing director of Situ Gunung Suspension Bridge since 2007, has focused on the tourist sector. Dede has become a prominent and reliable figure due to his passions (Situgunung Suspension Bridge, 2025). In 2012, Dede established a glamping site with two sites in Ciwidey, South Bandung. This was his inaugural endeavor, and it achieved success. In 2017, Dede was assigned the responsibility of developing a tourism destination at Sawarna Beach in Banten. In that same year, he contributed to the construction of the Situ Gunung suspension bridge, marking another significant achievement in tourism.

Cultural tourism, in contrast, showcases Sundanese traditional performances with musical instruments such as the lute and flute. Different categories of travelers may consider Situ Gunung Ecotourism an enticing destination, whether they seek outdoor adventures, wish to engage with the local culture, or just relax and enjoy the captivating tropical atmosphere. The multitude of captivating attractions accounts for this.

Conclusions

This study demonstrates how Situ Gunung Ecotourism successfully operationalizes TIES principles through an adaptive governance model that bridges conservation and sustainable development. The integration of Sundanese cultural programming with biodiversity protection offers a replicable template for Indonesia's national parks to prove that cultural preservation can enhance both ecological outcomes and economic benefits as a previously understudied synergy in developing country contexts.

For practitioners, Situ Gunung provides two key innovations. First, its digital ticketing system creates a transparent funding mechanism for conservation, addressing the common challenge of sustainable financing in protected areas. Second, the Amphitheatre's cultural programming demonstrates how traditional arts can serve as both tourist attractions and conservation education tools, increasing visitor engagement while preserving intangible heritage. These practical solutions respond to Barna et al.'s call for culturally-grounded approaches to ecotourism.

Moving forward, the study highlights the need for policy frameworks that formalize indigenous co-management - an area where Situ Gunung's experience could inform revisions to Indonesia's Tourism Law (No. 9/1990). The remaining challenge of economic leakage presents an opportunity to test local supply chain interventions, offering potential lessons for similar sites across Southeast Asia. This case ultimately redefines success metrics for protected area tourism, arguing for triple-bottom-line assessments that equally value ecological, cultural, and economic sustainability.

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Nature-Based Tourism and Mental Health: A Study of “Green Therapy” for Tourists in Bali

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Abstract: This study investigates the relationship between nature-based tourism and tourists' mental health through the concept of green therapy in Bali, a destination renowned for its diverse natural landscapes and wellness traditions. Green therapy is conceptualized as a psychological restoration process derived from direct interaction with natural environments, where elements such as vegetation, forest ambience, flowing water, and natural sounds contribute to stress reduction, emotional regulation, and improved cognitive clarity. Using a qualitative design, data were collected from fifteen tourists through in-depth interviews and focus group discussions, and analysed using thematic analysis to identify core experiential patterns. The findings indicate that engagement with Bali's natural settings including forest walks, terraced rice fields, meditation, and yoga, significantly enhances emotional well-being, reduces anxiety, and strengthens self-awareness. However, the restorative potential of these experiences is diminished by overtourism and overcrowding in popular destinations. These results underscore the need for sustainable and decentralized destination management that preserves ecological quality while maintaining therapeutic value. The study further suggests integrating green therapy principles into tourism planning to enhance visitor well-being and support long-term sustainable development. Overall, the research contributes empirical insight into how Bali's natural assets can function as an effective medium for psychological healing.

Keywords: green therapy, mental health, nature based tourism.

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Introduction

Nature-based tourism is a global trend experiencing significant growth (Haukeland et al., 2023). This trend has been strengthened after the COVID-19 pandemic, which has changed the method of travelling and raised awareness concerning the importance of mental health and quality of life (Dam et al., 2020). Many travelers are now seeking deeper and more meaningful experiences, including through interactions with nature to relieve stress, anxiety, and mental fatigue that have increased during the global crisis (Buckley, 2020a; Geng et al., 2021). In this context, nature-based tourism concerned with adventure and environmental exploration has included healing and self-recovery. The research indicators supporting nature-based tourism include the quality of natural elements such as water sounds, wind, and vegetation; direct tourist experiences through forest walks, meditation, and yoga; and psychological impacts such as reduced stress and increased tranquility. In addition, the integration of Bali's cultural-spiritual elements and sustainable destination management further enhance the therapeutic experience for visitors (Wilks et al., 2021).

Bali has great potential in developing the green therapy tourism segment, considering the diverse natural landscapes, the limitations of this research are only in the Tegalalang and Ubud areas because ranging from terraced rice fields in Tegalalang forests to rivers in Ubud (Wirawan, Ardika, Anom, & Sudiarta, 2022). However, the approach to Balinese tourism tends to focus on economic and cultural aspects. The psychological and therapeutic aspects of nature tourism have not been explored in depth (Ernawati et al., 2018). Various research have shown that exposure to nature can reduce the hormone cortisol, improve mood, and improve cognitive function (Bratman et al., 2019; Corazon, S. S. et al., 2019). Therefore, nature tourism in Bali can be used more optimally as part of a holistic method for tourists' mental health.

The emphasis of this research is in the absence of a comprehensive scientific understanding of nature tourism as a form of green therapy that makes a real contribution to the recovery and improvement of mental health. The mental health indicators in this study include reduced levels of stress, anxiety, and mental fatigue after interacting with nature. Tourists also experience improved mood, tranquility, mental clarity, and better sleep quality. Additionally, they develop a stronger sense of self-connection, enhanced self-awareness, and greater emotional stability. Furthermore, there are limited research directly connecting certain elements of the natural landscape in Bali with the psychological impacts experienced by tourists during and after visit. In the post-pandemic context, the need for tourism experiences that provide healing effects and emotional balance is becoming increasingly urgent (B & Hsu, 2022).

The main problem is related to the lack of research directly connecting nature tourism experiences with mental health benefits for tourists. Most of the literature on green therapy and ecological healing is still dominated by research from Western countries, with little adaptation to the cultural, geographic, and psychological contexts of Southeast Asian communities (Chen et al., 2020). Furthermore, there is no empirical data-based method that captures tourists' actual perceptions and experiences in tropical nature tourism destinations.

The novelty of this research lies in the integration of environmental psychology and locally based nature tourism perspectives. Primary data are presented from tourists who witness emotional experiences during visits to nature tourism destinations and explore the potential of a healing-centered nature-based model (Hari Krishna et al., 2023). Therefore, this research fills the gap in scientific analyses and makes a real contribution to the development of more holistic, inclusive, and sustainable tourism destination strategies.

Based on the background and problems, tourist's perceptions and experiences related to the psychological benefits of visiting natural tourism destinations are analyzed in Bali. This research also identifies elements of the natural environment with a significant influence on mental health, as well as formulating recommendations for developing a nature-based tourism model focused on healing. The results contribute to the development of tourism strategies that are ecologically sustainable and effective in improving individual psychological well-being in the post-pandemic era.

Although previous studies have demonstrated that nature exposure can reduce stress, improve mood, and support cognitive restoration, current scholarship has not yet provided a comprehensive scientific understanding of how nature-based tourism in Bali specifically contributes to tourists' psychological healing. Existing literature is still dominated by Western contexts and lacks adaptation to Southeast Asian cultural and ecological settings. Moreover, empirical studies directly linking specific components of Bali's natural environment to measurable psychological outcomes remain limited. This study aims to analyze tourists' perceptions and lived experiences related to the

psychological benefits of visiting nature-based destinations in Bali, identify key environmental elements influencing mental well-being, and formulate recommendations for developing a healing-centered, sustainable tourism model integrating environmental psychology and local cultural wisdom.

Nature-based tourism focuses on exploration and direct interaction with the natural environment, such as forests, beaches, mountains, and conservation areas (Fossgard & Fredman, 2019). In addition to offering aesthetic and educational value, this tourism is also increasingly seen as a method to achieve psychological calm, especially in the post-COVID-19 pandemic context where many individuals experience mental fatigue and stress (Haft et al., 2020).

Several research have shown that nature plays an important role in supporting mental health. The Attention Restoration Theory, developed by Kaplan and Kaplan (1989) explained that the natural environment had the ability to restore cognitive capacity disrupted due to activities of high concentration. Nature offered a light and non-coercive form of attention to reduce mental fatigue. In a broader context, Wilson (1984), through the Biophilia Hypothesis, suggested that humans were biologically attracted to and connected to nature(Wilson, 1984). Empirical support for this theory was strengthened by Bratman et al. (2019), where exposure to natural landscapes reduced cortisol levels, improved mood, and enhanced cognitive function.

The green therapy trend based on contact with nature is starting to grow as part of the practice of wellness tourism focused on holistic recovery. Nature tourism was seen as a recreational activity and an effective medium for mental healing (Avecillas-Torres et al., 2025). Research by Corazon et al. (2019) reported that activities such as walking in the park, being active in the forest, or simply sitting by the lake could have a real therapeutic effect. In the context of tourism, Buckley (2020) stated that national parks and nature destinations had great potential to contribute to the happiness and mental recovery of people post-pandemic.

Ramadhani et al (2024) reported that Bali had long been a place for tourists to seek spiritual balance. However, limited research explicitly connects elements of the Balinese landscape with the psychological benefits experienced by tourists. In this context, research is needed to combine environmental psychology with a tourism perspective in understanding green therapy, specifically within the framework of sustainable tourism and mental well-being.

Methodology

This research used a qualitative method with a case study to examine the relationship between nature tourism and tourists' mental health, and a special focus on the green therapy phenomenon in Bali (Çakar & Aykol, 2021; Risfandini & Adinda Putri Mustika, 2023). The qualitative method was selected because the main objective was to explore in depth the psychological experiences of tourists interacting with Balinese nature (Muhtadi, 2023). In this context, Bali was chosen as the research location considering the diversity of natural landscapes, including tropical forests, terraced rice fields, and beaches, as well as the great potential in supporting tourists' mental well-being through nature-based activities such as yoga and meditation (G. Bagus et al., 2024); Murtono, 2024; Wirawan, Ardika, Anom, Sudiarta, et al., 2022).

The sample consisted of tourists who visited nature tourism destinations in Bali in the last six months, with specific criteria in the form of direct experience. The sample selection used a purposive sampling method, where participants with relevant experiences were interviewed in depth to explore perceptions of the psychological benefits obtained during nature tourism (Bazen et al., 2021). The number of participants

was estimated to be around 15 people considered sufficient to achieve data saturation in a qualitative research (Creswell, 2014).

Primary data collection was conducted through in-depth interviews and focus group discussions (FGDs). In-depth interviews aimed to obtain personal information related to tourists' experiences of Balinese nature and therapeutic effects (Rutledge & Hogg, 2020). Meanwhile, FGDs included several tourists in discussion session to explore collective views on the importance of certain natural elements in supporting mental health (O.Nyumba et al., 2018). FGDs allowed research to gain multiple perspectives and enrich the understanding of psychological benefits.

Table 1. Key Informants

No	Informant Name	Position/Role
1	I Made Surya	Head of the Tegalalang Tourism Awareness Group (Pokdarwis)
2	Ketut Dharma	Ubud Nature-based Destination Manager
3	Ni Luh Ayu Pramesti	Yoga & Meditation Instructor in Ubud
4	Jero Mangku Sudarsana	Traditional Leader Conducting Nature-based Rituals
5	Putu Arimbawa	Nature Tour Guide (forest walk guide)
6	Putri Apsari	Nature-based Wellness Practitioner
7	Ayu Lestari	Mindfulness Activity Instructor
8	I Wayan Ratna	Ubud Forest Trekking Trail Manager
9	15 tourists	Yoga, meditation and green therapy participants

Source: Wirawan (2025)

Based on the description, this research collected secondary data related to the concept of green therapy, wellness tourism, and nature-based tourism in Bali. Data were collected using thematic analysis, including coding, identification of main themes, and interpretation of meaning from the results of interviews and FGDs (Ahmed et al., 2025). The results contributed to the understanding of nature tourism in acting as mental therapy and providing recommendations for the development of a more sustainable nature-based tourism model.

Results and discussions

Results

Based on the analysis of data obtained from in-depth interviews and FGDs with tourists visiting Bali, most participants felt significant psychological benefits from interactions with nature. Furthermore, nature tourism activities, such as walking in the tropical forests of Ubud, visiting the Tegalalang rice terraces, and relaxing on the beaches of Bali, provided a calming effect (Bray et al., 2022). Most participants described experiences with words such as "finding peace" and "feeling connected to nature". These effects were in line with the Attention Restoration Theory (Kaplan & Kaplan, 1989), where nature provided a space for cognitive recovery and stress reduction more effective than busy urban environments.

From the interviews and FGDs, natural elements such as the sound of trickling water, the wind in the trees, and the aroma of tropical vegetation had a great influence on tourists' mental health. These elements provided mental calm, increased self-awareness, and allowed tourists to fully absorb the moment. The concept of soft fascination explained by Kaplan and Kaplan (1989) showed that interactions with nature without full attention could reduce anxiety and increase mental focus.

The green therapy experience provided by Bali's nature tourism activities facilitated the recovery process from mental fatigue or burnout. Several participants reported improved sleep quality, better mood, and increased energy after interacting with nature. An Australian tourist (Philip, interviewed in February 2025) stated:

"After doing yoga in the middle of the rice fields and walking in the forest, I feel more refreshed and can think more clearly. This reduces the anxiety that I usually feel."

This result was in line with Bratman et al. (2019), where exposure to natural views reduced stress levels and improved overall emotional well-being (Bratman et al., 2019).



(Source: Wirawan, 2025)

Figure 1. Tourists enjoy the beauty of the rice terraces in Tegalalang, Bali

Even though most participants reported positive psychological benefits, there were several factors influencing the effectiveness of green therapy in Bali. The crowds in some nature tourism destinations, such as Tegalalang and Kuta reduced the tranquility expected. The hustle and bustle of mass tourism could interfere with experience and reduce the therapeutic benefits of nature tourism. This suggested that sustainability and better management of tourism destinations were key to optimizing the positive effects of nature tourism on mental health.

Tourists who engaged in activities such as meditation, yoga, and self-reflection amidst Balinese nature were more connected to the surrounding nature. This underlined the importance of integrating physical and spiritual activities into nature-based tourism experiences (Seočanac, 2022). The activities served as a form of holistic mental therapy, which touched on the physical aspects and had a deeper impact on the emotional and psychological well-being of tourists.

Green therapy in Bali was influenced by the natural landscape and accompanied by social and cultural context (Dewi et al., 2023). Most participants who engaged in activities including Balinese cultural elements, such as meditation and spiritual rituals in temples or yoga activities in the middle of rice fields reported that the experience deepened therapeutic effects. These activities allowed tourists to experience a deeper sense of spirituality and calmness in line with the concept of biophilia expressed by Wilson (1984), where human connectedness with nature was influenced by cultural and spiritual elements. This showed that Bali provided a natural environment supporting mental recovery and offering a cultural layer to enrich tourist experience.

The spiritual concept in green therapy emphasizes a deep interconnectedness between humans and nature as a source of inner healing. The healing process occurs not only through exposure to green environments but also through contemplative experiences that evoke awareness, tranquillity, and harmony with the natural world. Interactions with natural elements such as trees, flowing water, and sunlight create

space for inner reflection, reduce psychological burdens, and strengthen feelings of gratitude and life meaning. Thus, green therapy offers a holistic healing approach that unites the physical, emotional, and spiritual dimensions within a harmonious human-nature relationship.

Several participants stated that nature tourism in Bali provided a chance to escape from the demands of fast-paced daily life. A participant stated, *"I came to Bali to forget about work and stress, but what I found here was more than just relaxation. I felt like there was a change in the way I looked at life."* This change in perspective led to increased self-awareness and decreased anxiety in line with Attention Restoration Theory (Kaplan & Kaplan, 1989). Therefore, nature tourism in Bali facilitated physical and emotional recovery as well as possessed a deeper impact on self-awareness and life understanding.

In terms of long-term impacts, several participants who had traveled to Bali felt more "connected" to nature after several visits. Bali was described as a "healing place", where each visit provided an opportunity to renew intentions and life goals. Green therapy experience formed positive behavioral patterns in daily lives after returning to usual routines. This was related to the concept of wellness tourism proposed by Konstantopoulou et al (2024), where tourism experiences focused on health and wellness had a long-term impact on well-being.

Some tourists did not feel the same benefits from interacting with Bali. The participants complained about the impacts of mass tourism and commercial facilities disrupting tranquility, such as traffic congestion and crowds in popular tourist destinations. Sustainable and decentralized destination management was suggested to enhance the green therapy experience and maintain the quality of the natural environment. This showed the importance of sustainable management in creating a therapeutically effective nature tourism experience.

Participants opened to spirituality-based tourism concepts, such as yoga and meditation, reported significant changes in managing stress and anxiety after interacting with Balinese nature. The activities were viewed as an integral part of mental recovery, rather than simply a physical or recreational event. This experience reflected the holistic aspect of wellness tourism as proposed by Buckley (2020), where the physical, emotional, and spiritual aspects of tourists interacted simultaneously to have a greater impact on overall well-being.

Discussions

This research explores the impact of nature-based tourism on the mental health of tourists in Bali, focusing on the phenomenon of green therapy. The grand theory of this study is grounded in the *Attention Restoration Theory* (ART), which propose that humans possess an inherent tendency to seek natural environments to restore cognitive clarity, reduce stress, and enhance emotional well-being. These theories emphasize that direct interaction with natural elements such as: water, vegetation, and green landscapes produces significant therapeutic effects on mental health. Therefore, they serve as the foundational framework for understanding how nature-based tourism in Bali functions as a form of green therapy that supports psychological recovery for visitors.

The experience of nature tourism has a significant impact on psychological well-being through in-depth interviews and FGDs conducted with tourists. These results support previous results on the benefits of nature therapy shown to reduce levels of stress, anxiety, and depression (Bratman et al., 2019; Buckley, 2020) However, the discussion will expand the understanding by exploring the various dimensions during

data collection and the contribution of the methodology to deepening the analysis (Konstantopoulou et al., 2024).

An important result from the interviews is the importance of natural elements in creating a therapeutic experience for tourists. Participants identify natural sounds, such as the trickling of water and the sound of the wind blowing through the trees, as factors with a calming effect. The sense of calmness felt when being in nature is described as "a release of tension" during busy daily lives. A British tourist (Sabrina Cathrine, interviewed in February 2025) who visited Ubud reports that:

"I feel calmer after listening to the sound of water and wind. It's as if the burden I've been carrying all my life is starting to disappear little by little."



(Source: Wirawan, 2025)

Figure 2. Tourists doing meditation activities in Ubud, Bali

This is in line with the Attention Restoration Theory (Kaplan & Kaplan, 1989), where exposure to natural scenery restored cognitive abilities and reduced mental stress. In-depth interview methodology allowed participants to express personal experiences in detail, providing deeper insight into perceptions of the therapeutic effects of nature (Perry & Bigelow, 2020).

Socio-cultural factors in Bali influence experiences in gaining mental health benefits from nature-based tourism. Several participants reported that activities combining local culture, such as yoga and meditation in the Balinese spiritual realm, increased the intensity of the therapeutic impact felt. This is in line with Wilson's (1984) result in the biophilia theory, where human connectedness with nature can be strengthened by cultural and spiritual contexts (Wilson, 1984). An Australian participant (Patrick James, interviewed in February 2025) who participated in a yoga class in the expanse of Ubud rice fields stated that:

"Apart from the beautiful nature, the atmosphere of Bali and the philosophy taught make me feel more connected to myself."



(Source: Wirawan, 2025)

Figure 3. Tourists doing yoga in Ubud, Bali

Bali, with strong spiritual culture, enriches the experience of nature therapy with a holistic method, including physical elements as well as emotional and spiritual aspects of tourists. However, the results also show challenges considered in managing nature-based tourism. Several participants stated that the crowds in certain tourist attractions reduced the level of peace obtained. In some popular destinations such as Tegalalang and Kuta, the large number of tourists can disrupt the peace needed to feel the benefits of therapy (Triyuni et al., 2019). An Australian tourist (Ethan Jimm, interviewed in February 2025) who visited with the family stated that:

"In some places, there are too many people, and it takes away from the sense of peace that I am looking for. I prefer quieter, more natural places."

The results suggested that more sustainable and decentralized destination management was essential for tourists to experience the maximum therapeutic effects of nature (Romão et al., 2021). Therefore, this research recommends the need for destination planning considering the development of tourism infrastructure and quality of the natural environment supporting a more effective therapeutic experience.

Nature-based tourism can be an effective method to improve tourists' mental health, especially through green therapy experiences enriched with cultural and spiritual elements. However, wise and sustainable management of nature tourism destinations is essential to maintain the quality of tourist experience and ensure optimal mental health benefits. Bali's nature tourism experience offers beautiful natural scenery, as well as facilitates spiritual and emotional connections (Clissold et al., 2022).

Conclusions

In conclusion, this research explored the impact of nature-based tourism on tourists' mental health, especially in the context of green therapy in Bali. Based on the results of in-depth interviews and FGDs, the experience of nature tourism in Bali had a significant positive impact on tourists' mental health. Activities such as walking in tropical forests, enjoying the beauty of terraced rice fields, and participating in cultural activities such as yoga and meditation provided a sense of calm, reduced stress, and improved emotional well-being. This answered the first problem formulation regarding the function of nature tourism as a mental therapy supporting tourists' psychological well-being. Social, cultural, and destination management factors played an important role in determining the perception level of green therapy by tourists. Crowds in some popular nature-based tourist destinations, such as Tegalalang and Kuta, reduced the therapeutic benefits of nature-based activities. Therefore, more sustainable destination managements were required to optimize the positive impact of nature-based tourism and pay attention to the balance between development and nature conservation. This result answered the second problem formulation about the challenges in optimizing the positive impact of nature therapy. Overall, Bali had great potential as a green therapy destination but required better management to obtain optimal and sustainable benefits for tourist's mental health.

Despite these findings, this study has several limitations inherent to qualitative research, including the limited number of participants, the use of purposive sampling that restricts generalizability, and the reliance on subjective narratives that may introduce participant and researcher bias. The study's geographical focus on Ubud and Tegalalang also narrows the range of natural contexts that might influence therapeutic experiences. Therefore, future research is recommended to adopt mixed-methods approaches that integrate qualitative insights with quantitative measures such as stress

scales or physiological indicators, expand the research locations to include diverse nature-based destinations, and involve more varied tourist segments. Longitudinal studies are also needed to examine whether the psychological benefits of green therapy persist over time. Further exploration of how Balinese cultural and spiritual elements strengthen the healing process will contribute to developing a more holistic and sustainable nature-based tourism model.

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Green Behaviour of Tourists in the Cultural Heritage Destination of Borobudur Temple

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Abstract: Tourism is one of the economic sectors that has a major impact on ecosystems, so its sustainability is receiving increasing attention in academic literature. The sustainability approach cannot be seen from the destination as the supply side only, but also from the demand side, namely tourists. However, limited research has examined the behavioral side of tourists, particularly the factors driving green behavior in cultural heritage destinations leaving a critical gap in understanding demand-side sustainability. As a UNESCO World Heritage site, Borobudur Temple faces challenges in maintaining sustainability amid high tourist activity. Although conservation efforts have been implemented, the extent and drivers of tourists' green behavior remain unclear. This study employs a quantitative design using a structured questionnaire distributed to 160 purposively selected domestic tourists at Borobudur Temple. Data were analyzed using descriptive statistics and Structural Equation Modeling (SEM) with SmartPLS to identify the influence of internal and external factors on green behavior. The findings reveal that environmental aspects dominate tourist green behavior, followed by social and economic aspects. Internal factors, particularly trusted values, show a slightly stronger influence than external factors, although aesthetic experience also plays a key role. Conversely, destination knowledge and habitual green actions were found to be weak points. These results highlight the need for sustainability strategies that combine value-based education, improved informational tools, and behavioral nudges to help translate environmental awareness into consistent tourist actions.

Keywords: Borobudur temple; cultural heritage destinations; green behavior; sustainable tourism; tourist behavior.

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Introduction

Tourism is a major economic sector with a significant impact on ecosystems, and its sustainability has become a central focus in recent academic literature (Niñerola et al., 2019). If managed properly, tourism can drive regional development and contribute to the preservation of local culture, especially in destinations that are rich in cultural heritage (Job et al., 2017; Silva & Henriques, 2021). Recent studies emphasize that the future of tourism depends on how well destinations can meet increasing tourist demand while minimizing damage to the environment and host communities (UNWTO, 2017).

Cultural heritage sites such as Borobudur Temple illustrate the double-edged nature of tourism. While tourism can support conservation and local livelihoods, it can also pose threats to fragile heritage structures due to high visitor numbers (Chenavaz et al., 2022). As a UNESCO World Heritage Site, Borobudur holds spiritual, educational, and economic significance. Built during the Sailendra Dynasty (780–840 AD), the temple functions as a place of Buddhist pilgrimage and worship (Yatno, 2022). Today, Borobudur is designated as one of Indonesia's five super-priority tourist destinations

(Ardhanariswari & Pratiwi, 2021) and is included in the National Tourism Strategic Area (Devi & Kesumasari, 2020).

In terms of supply-side sustainability, Taman Wisata Candi Borobudur (TWCB) has implemented several Sustainable Development Goals (SDGs)-aligned initiatives, including infrastructure improvements, community empowerment programs, the introduction of electric vehicles, and environmentally friendly digital marketing strategies (Purwaningsih et al., 2021; Susiyanto, 2022). The TWCB's sustainability index reflects moderate progress across environmental, social, economic, and institutional dimensions (Purwaningsih et al., 2021).

However, existing research on Borobudur tends to emphasize the supply side only, while the demand side, specifically tourists' behavior, remains underexplored. In fact, recent studies show that many of the negative environmental impacts at heritage sites are caused by irresponsible tourist actions (Vu et al., 2024). This action such as touching statues or sitting on temple structures at Borobudur that are often influenced by misinformation or myth (Hermawan et al., 2019). In response to these issues, the site management has introduced several protective measures, such as limiting daily visitor numbers, mandating guided tours, and requiring the use of special footwear to preserve the temple structure (Tempo.co, 2023).

Despite these efforts, there is limited understanding of the extent to which tourists actually engage in sustainable practices or demonstrate green behavior during their visits. This is concerning, as tourist behavior plays a crucial role in supporting sustainable tourism (Ibnou-Laaroussi et al., 2020). Therefore, this study aims to examine the green behavior of tourists visiting Borobudur Temple by identifying key internal and external factors that influence their environmentally responsible actions.

To guide the analysis, the Theory of Planned Behavior (TPB) is employed as a theoretical framework. TPB is well-suited for this context as it explains how individuals' actions are driven by behavioral intentions, which are in turn shaped by attitudes, subjective norms, and perceived behavioral control (Ajzen, 2020). This framework allows for a comprehensive understanding of how personal motivations and contextual influences interact in shaping sustainable tourist behavior. This is absolutely urgent due to the factors described above, particularly the imbalance between supply-side sustainability efforts and the limited understanding of tourist behavior that continues to threaten the integrity of Borobudur's heritage site.

Accordingly, this study is designed to answer the following research questions:

- (1) How is the green behavior of tourists visiting Borobudur Temple?
- (2) How do internal factors influence the green behavior of tourists visiting Borobudur Temple?
- (3) How do external factors influence the green behavior of tourists visiting Borobudur Temple?

This study fills a critical gap in the literature by focusing on the demand side of sustainability in heritage tourism, an area often overlooked. It contributes both theoretically and practically to understanding and promoting tourist green behavior in vulnerable heritage destinations such as Borobudur. The findings are expected to inform effective strategies for encouraging green practices among visitors and can serve as a model for similar cultural heritage destinations (Ulker-Demirel & Ciftci, 2020).

Methodology

A quantitative approach was employed in this study, with data collected through a structured survey. This method was chosen for its ability to gather systematic, measurable data from a sample representing a larger tourist population (Hox & Dillman,

2012; Schwarz et al., 1998). Questionnaires were distributed in person to tourists who had completed their visit, ensuring that responses were based on actual experiences.

Data collection was carried out between January and March 2025, during the first quarter of the year. Before completing the questionnaire, each participant was given an explanation of the research purpose and asked to provide informed consent. Participation was voluntary, and all responses were treated anonymously to ensure ethical research practice.

Purposive sampling was used, targeting domestic tourists who had completed their visit and had a minimum senior high school education. This criterion helped ensure respondents could understand and complete the questionnaire accurately. Additionally, a maximum of two individuals per travel group were surveyed to reduce potential response bias due to group influence. This approach was considered appropriate because it allowed the researchers to target respondents who could most reliably describe their behaviors and perceptions related to sustainable tourism.

The sample size was determined based on the recommended range of five to ten respondents per indicator (Hair et al., 2006). This study included 16 behavioral indicators (8 environmental, 7 social, and 7 economic), resulting in a minimum required sample of 80 and a maximum of 160. The sample size was set at 160 respondents to ensure sufficient statistical power. To maintain focus and consistency, only domestic tourists were included in this study.

Two types of statistical analysis were applied. First, descriptive statistics were used to identify patterns of green behavior among tourists. Frequencies and percentages were calculated to determine which behaviors were most and least common. Second, Structural Equation Modeling (SEM) was employed to assess the influence and the significance of internal and external factors on tourist behavior. SEM was conducted using SmartPLS 4.0 software, which is suitable for exploratory models and studies with relatively small to medium sample sizes.

Results and discussions

Results

Tourists Green Behaviour

To determine the form of green behavior of tourists, descriptive statistical analysis techniques were used, through frequency calculations of the data obtained as in table 1 below.

Table 1. Tourists Green Behavior at Borobudur Temple

Sub-Variable	Indicator	Ave- rage	Cap- tion	Ave- rage	Caption	Ave- rage	Caption
Enviromental Aspects	Water Use	3,59	Strongly Agree	3,64	Strongly Agree	3,40	Strongly Agree
	Trash-related Habits	3,62	Strongly Agree				
	Energy Use	3,64	Strongly Agree				
	Transportation related Habits	3,56	Strongly Agree				
	Conservation	3,78	Strongly Agree				

Social Aspects	Equality	3,95	Strongly Agree	3,35	Strongly Agree		
	Tolerance	3,44	Strongly Agree				
	Solidarity	3,23	Agree				
	Shared Responsibility	2,79	Agree				
Economy Aspects	Green Purchasing	3,21	Agree	3,21	Agree		
	Green Accommodation	3,23	Agree				

Source: Data Processing Results (2025)

The results show that the overall average green behavior score is 3.40, indicating that tourists generally agree with and demonstrate sustainable tourism practices. Among the three sub-variables, environmental behavior scores highest (3.64), followed by social behavior (3.35) and economic behavior (3.21). This shows that tourists' awareness and responsibility towards the environment and society are quite good, although economic contributions still need to be improved.

Factors Influencing Tourists Green Behavior

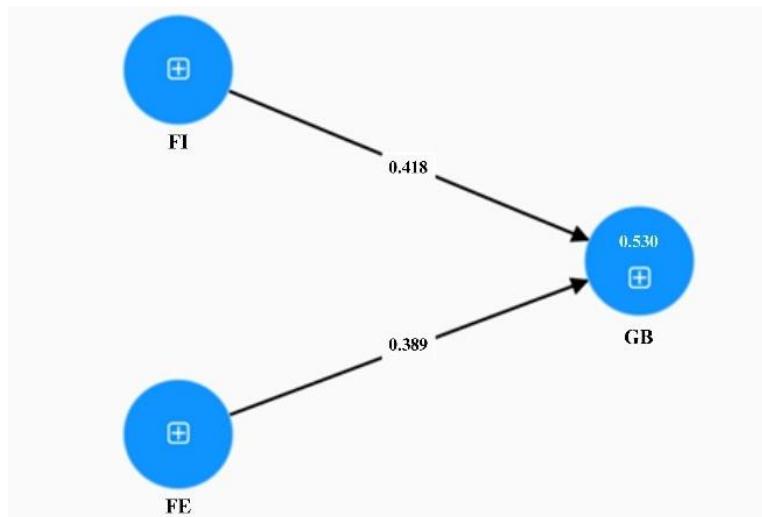
To determine the influence of internal and external factors on green behavior of tourists, several analysis steps were carried out, the analysis began with descriptive statistics, as shown in Table 2 below.

Table 2. Internal and External Influencing Factors Variables

Variable	Indicator	Average	Caption	Average	Caption
Internal Factors	Habit	3,47	Strongly Agree	3,58	Strongly Agree
	Trusted Values	3,69	Strongly Agree		
External Factors	Knowledge of Destination	3,67	Strongly Agree	3,74	Strongly Agree
	Aesthetic Experience	3,83	Strongly Agree		
	Sense of Unity with Nature and the Environment	3,72	Strongly Agree		

Source: Data Processing Results (2025)

Statistically, external factors have a greater value than internal factors. However, descriptive averages do not necessarily reflect the strength of statistical influence, which is further examined using Structural Equation Modeling (SEM) conducted in SmartPLS 4.0.



(Source: Data Processing Results, 2025)

Figure 1. Outer Model Variables

Figure 1 shows that the green behavior variable of tourists visiting Borobudur Temple is given the symbol letter GB, influenced by 2 variables, the internal factor variable with the letter FI and the external factor is given the symbol letter FE.

Table 3. Variable R Square Model

	R-square	R-square adjusted
GB	0.530	0.524

Source: Data Processing Results (2025)

The adjusted R Square value of variable GB or green behavior of tourists at Borobudur Temple is 0.524, this indicates that the internal factor variables (FI) and external factors (FE) are able to explain the green behavior variable of tourists at Borobudur Temple (GB) by 52.4%. This suggests that the model has moderate explanatory power.

Table 4. Hypothesis test

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
FI -> GB	0.418	0.424	0.062	6.716	0.000
FE -> GB	0.389	0.397	0.066	5.925	0.000

Source: Data Processing Results (2025)

In table 4, it can be concluded that the internal factor variable (FI) obtained a t-statistic value of $6.717 > 1.96$ and a p-value of $0.000 < 0.05$, so H_1 is accepted, that internal factors have a significant effect on the green behavior of tourists at Borobudur Temple.

Meanwhile, the external factor variable (FE) obtained a t-statistic value of 5.925> 1.96 and a p-value of 0.000 <0.05, so H1 for this variable is also accepted, that external factors have a significant effect on the green behavior of tourists at Borobudur Temple.

Based on all the analysis using SEM, it can be concluded that both internal and external factors have moderate significance on the green behavior of tourists at Borobudur Temple. Although external factors have slightly higher mean scores in the descriptive statistics, the SEM results indicate that internal factors exert a slightly stronger statistical influence on green behavior. This is evidenced by the path coefficient for internal factors (0.418), which is marginally higher than that of external factors (0.389). This suggests that tourists' personal values and beliefs are more predictive of sustainable behavior than environmental stimuli alone.

Discussions

Tourist Green Behaviour

The findings of this study indicate that tourists visiting Borobudur Temple tend to demonstrate environmentally friendly behavior, especially in the environmental aspect. The highest score was recorded on the conservation indicator, reflecting tourists' awareness in preserving the physical integrity of the temple, such as avoiding contact with stupas or refraining from sitting on temple structures. This behavior is further supported by management regulations that limit the number of visitors and require guided tours to the top of the temple (Jamaliah et al., 2021; Tempo.co, 2023). However, the environmentally friendly transportation indicator showed the lowest score. Although public transportation facilities are available, tourists continue to prefer private vehicles for reasons of practicality and convenience (Tang et al., 2020; Zhou et al., 2024). This suggests that tourists' green behavior tends to be situational, they may behave sustainably in some aspects, but revert to unsustainable habits when convenience is at stake. This aligns with findings regarding identity shifts between home and travel contexts, where comfort and autonomy often take precedence (Holmes et al., 2021).

In the social aspect, the highest score was obtained on the equality indicator, reflecting tourists' respect for the local community, in line with the principles of the UNWTO's tourism ethics. However, the lowest score was found in the shared responsibility indicator. This implies that although tourists show respect, they are less inclined to be actively involved in collective social efforts. This lack of shared responsibility may stem from tourists' unfamiliarity and emotional detachment from local communities, highlighting the need for destinations to actively facilitate meaningful interactions rather than relying on spontaneous engagement (Xiang et al., 2021).

In the economic aspect, tourists were found to have a degree of awareness regarding environmentally conscious consumption. However, behavior such as purchasing local products or selecting eco-friendly accommodations has not been widely adopted. Green consumption behavior is known to involve not only awareness, but also emotional connection and a sense of impact (Kaufmann et al., 2012). In this context, the lack of emotional attachment to the destination may hinder tourists from translating their awareness into real purchasing decisions, as emotional proximity and product authenticity are critical drivers for green purchasing (Pekersen & Canöz, 2022). Emotional proximity and product authenticity are vital in influencing green consumer behavior, especially when tourists are asked to make conscious choices in a temporary, unfamiliar setting.

Factors Influencing Tourists Green Behavior

Although descriptive statistics show that external factors received slightly higher mean scores than internal factors, the Structural Equation Modeling (SEM) analysis indicates that internal factors exert a somewhat stronger influence on tourists' green behavior. This finding is consistent with the Theory of Planned Behavior (Ajzen, 2020), which emphasizes the role of attitudes, subjective norms, and perceived behavioral control in predicting behavior. It also aligns with the Value-Belief-Norm (VBN) theory, which posits that environmentally responsible behavior stems primarily from deeply internalized values and moral obligations (Stern, 2000).

Among the internal factors, trusted values recorded the highest score, indicating that many tourists possess pro-environmental attitudes and personal norms, such as a desire to reduce emissions and preserve nature. However, habits scored the lowest, highlighting a gap between belief and action. This gap reflects the well-documented attitude-behavior inconsistency, where individuals support green principles in theory but fail to enact them in practice, particularly in unfamiliar or leisure-driven settings (Holmes et al., 2021; MacInnes et al., 2022). According to habit theory, consistent environmental behavior depends on stable contextual cues, which are often disrupted during travel (Neal et al., 2012; Wood, 2017).

Interestingly, even though internal factors had a slightly stronger influence on tourists' green behavior, external factors still play a critical supporting role in shaping tourists' behavior. Aesthetic experience scored the highest among all external indicators, suggesting that the architectural and natural beauty of Borobudur leaves a profound emotional impression on visitors (Saddhono et al., 2024). This supports earlier research in heritage destinations like Japan and Taiwan, where aesthetic appreciation was found to significantly influence sustainable behavioral intentions (Lee et al., 2023; Wynn & Nwe, 2022). Similarly, emotional connectedness with nature also scored high, suggesting that sensory and emotional immersion can catalyze pro-environmental actions (Cao et al., 2022).

External elements such as destination aesthetics and emotional immersion do not merely provide rational inputs, but also foster deep psychological engagement (Cao et al., 2022), which is essential for the adoption of sustainable practices. The more beautiful and meaningful a place is perceived to be, the stronger the intention to behave sustainably (Lee et al., 2023). These insights suggest that destination design and atmosphere can serve as powerful enablers of green behavior when supported by information and emotional resonance.

However, destination knowledge received the lowest score among external indicators. This indicates a general lack of tourist awareness regarding Borobudur's sustainability programs, such as conservation efforts, local regulations, or the role of community stakeholders. Tourists who are not well-informed may struggle to link their values with specific, supportive actions during their visit (Gomes & Lopes, 2023; Hu & Wall, 2005). This suggests that the availability of accessible, visible, and engaging information tools is crucial to reinforce sustainable behavior.

To address this gap, destination management at Borobudur should prioritize strategic communication tools, such as educational signage, interactive digital platforms, and guide-led briefings that communicate both cultural significance and environmental responsibility. Informational storytelling that links heritage with sustainability could deepen tourists' emotional engagement and translate values into action. This approach is particularly relevant for enhancing green behavior in the social and economic domains, where value-action gaps remain.

Additionally, providing accessible information about eco-labels, conservation programs, and sustainable tourism products not only encourages environmentally friendly choices but also enhances visitor satisfaction, strengthens destination loyalty, and boosts local economic outcomes (Bergin-Seers & Mair, 2009; Gomes & Lopes, 2023). Therefore, Borobudur's management should also consider offering tourist packages that incentivize green purchasing, such as discounts for staying in eco-certified hotels or purchasing local crafts made from sustainable materials.

Finally, campaigns that reinforce daily green habits in tourism settings, such as reducing plastic use, choosing low-emission transport, or saving energy, could help tourists transfer sustainable values from their home lives to travel contexts. These campaigns should be visible at multiple touchpoints across the tourist journey and be tied to emotionally relevant narratives.

Conclusions & Limitations

Conclusions

This study shows that in response to the first research question, tourists visiting Borobudur Temple generally demonstrate environmentally friendly behavior, with the environmental aspect scoring the highest compared to the social and economic aspects. Tourists show a high commitment to conservation, such as obeying the rules and maintaining the temple structure, where local guides play an important role in directing tourist behavior towards sustainability. This finding provides an overview of how green behavior is manifested in practical actions among visitors at Borobudur.

Regarding the second research question, this commitment is also driven by internal values such as responsibility to protect the environment and reduce carbon footprints. Internal factors, particularly environmental values, attitudes, and perceived behavioral control, emerge as key motivators influencing tourists' green behavior. On the other hand, as reflected in the third research question, external factors such as the aesthetic beauty of Borobudur and a sense of emotional connection with nature also influence tourist actions during the visit.

In the social aspect, tourists highly value equality and tolerance but are less active in shared social responsibility. This is influenced by tourists' unfamiliarity with the local environment which makes them tend to be passive. In the economic aspect, although there is interest in sustainable purchases and accommodation, this behavior has not been fully adopted. This indicates that tourists' green behavior in the social and economic dimensions still requires stronger behavioral reinforcement and situational engagement. The low emotional attachment to the destination is one of the reasons why tourists have not been motivated to contribute economically to green tourism practices.

Internal and external factors both have a moderate influence on tourist green behavior, with internal factors showing slightly greater significance. From external factors, aesthetic experience and sense of connectedness with nature scored high, while destination knowledge was the lowest, indicating a lack of information related to sustainability practices in Borobudur. From internal factors, values that are believed scored the highest, while habits scored the lowest, indicating an inconsistency between values that are held and real behavior in daily life, due to changes in context when traveling. As well as this findings, this is also a critic for development in near future, emphasizing the need for stronger integration between tourists' environmental values and their on-site practices.

To improve sustainable tourism at Borobudur, destination management should prioritize targeted actions such as installing educational signage, incentivizing green

purchasing through tourist packages, and promoting campaigns that help transfer green habits from daily life into tourism contexts. These strategies directly address the research objectives by strengthening both internal motivation and external support systems that shape tourists' green behavior. They could also bridge the gap between values and behavior, especially in the economic and social aspects.

Limitations

This study has several limitations. It was conducted only at Borobudur Temple Tourism Park during the first quarter of 2025, so the results may not be generalizable to other heritage or ecotourism destinations or different time periods. The sample consisted of 160 respondents, all of whom were domestic tourists. While this allows a focused understanding of green behavior within the local cultural context, it limits the generalizability of the findings to international tourist populations, who may have different environmental attitudes, values, and behaviors.

In addition, this study emphasizes a quantitative approach with limited qualitative observations, so tourists' deeper motivations and reasoning behind their behavior may not be fully explored. Other potentially influential factors, such as education level, home environment, income, and group dynamics, were not analyzed in this study, even though they may play a significant role in shaping sustainable tourist behavior.

Future research should consider including international tourists for comparative analysis, exploring how cultural background influences green behavior. It is also recommended to adopt mixed-method approaches, integrating interviews or focus group discussions to gain richer insights. Researchers could further test intervention strategies such as behavioral nudges, reward-based systems, or environmental storytelling to assess which tools are most effective in promoting green behavior in heritage tourism settings.

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Sustainable Heritage Tourism in Urban Settings: Evaluating Glodok Chinatown's of Jakarta Tourism Carrying Capacity

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Abstract: Urban heritage tourism increasingly contributes to cultural preservation and sustainable urban development, yet destinations in dense metropolitan settings often face acute pressure from rising visitation. This study evaluates the tourism carrying capacity of Glodok Chinatown, Jakarta's oldest Chinese heritage district, by assessing its physical, socio-cultural, economic, environmental, and managerial components. Using a qualitative exploratory approach supported by field observations, regulatory review, and interviews with local residents, business actors, heritage experts, and government officials, the study provides a multidimensional analysis of capacity constraints. Results indicate considerable disparities between potential and reality. While the area's Physical Carrying Capacity (PCC) and Real Carrying Capacity (RCC) remain structurally limited by narrow streets, mixed-use density, and constrained public spaces, the Effective Carrying Capacity (ECC) is found to be only 104 visitors per day. In contrast, actual visitation reaches 1,000–1,500 tourists on regular days, with spikes of over 5,000 visitors during major cultural festivals. This excess contributes to congestion, increased waste accumulation, deterioration of heritage structures, reduced walkability, and commercialization of cultural practices. Socio-economically, tourism benefits remain unevenly distributed, with small local MSMEs facing competition from larger commercial actors. Managerially, fragmented governance, sectoral decision-making, and the absence of an integrated heritage management entity hinder sustainable development efforts. The findings underscore the need for capacity-based planning through zoning, visitor flow redistribution, improved interpretation systems, and strengthened community participation to ensure Glodok's cultural authenticity and long-term resilience.

Keywords: carrying capacity, sustainable tourism, urban heritage tourism.

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Introduction

Heritage tourism has developed into one of the most dynamic and strategic segments in the global tourism industry (Light, 2014). Cultural heritage areas—whether archaeological sites, historic buildings, old city environments, or local community living traditions—have a strong appeal because they offer authentic experiences that cannot be found anywhere else. In an increasingly digitalized and homogenized global context, heritage tourism offers added value in the form of uniqueness, depth of historical narrative, and emotional connection to the past that can attract domestic and international tourists (Kaharuddin, et al., 2021).

According to the UNWTO Global Report on Cultural Tourism (2018) (UNWTO, 2018), around 40% of all international tourist trips have primary or secondary motivations related to culture and cultural heritage. This data shows a significant

increase compared to the previous decade, reflecting a change in tourist preferences towards the search for meaning, knowledge, and cultural engagement. In addition, UNESCO (2021) states that the cultural heritage sector contributes to more than 10 million jobs worldwide, including in conservation, site interpretation, and community-based tourism. This fact confirms that heritage tourism is not only about preserving history, but also a real economic force.

Theoretically, cultural heritage in the context of a city is not only an object that is observed, but also a space that is continuously negotiated between the past, present, and future. Therefore, the management of heritage areas cannot be separated from the socio-economic dynamics of urban communities that are part of the landscape. In the long term, the success of heritage tourism management is not only measured by the number of tourist visits, but also by the destination's ability to maintain cultural integrity, strengthen social cohesion, and maintain the sustainability of the physical environment (Colavitti, 2018).

Given this development, it is not an exaggeration to say that heritage tourism has become an important instrument in cultural diplomacy, city revitalization, and sustainable development. However, for this potential to be truly realized sustainably, a careful and data-based management approach is needed, including an evaluation of the carrying capacity of the area that is the heritage tourism destination (Su, et al., 2018).

On the other hand, the rapid growth of tourism activities in urban heritage areas often puts pressure on the local physical, social, and cultural environment. Phenomena such as tourist density, changes in land use, excessive commercialization, and damage to historical sites are real challenges faced by heritage area managers in big cities.

In Indonesia, the Glodok area in Jakarta is one example of a cultural heritage area that has high historical value. Known as the oldest Chinatown in Jakarta, Glodok holds a wealth of history, architecture, cuisine, and Chinese traditions that are still alive today. The DKI Jakarta government has identified Glodok as one of the leading destinations in the old city revitalization program and the development of cultural tourism. A study conducted by Fernando & Sarudin (2024) stated that in the first semester of 2023, tourist visits to the Glodok Chinatown area reached 450,641 in one semester. And data from a study by Kurniawan & Husin (2025) in the final semester of 2024, tourist visits to Glodok Chinatown reached 540,000 tourists, indicating an increase of approximately 20% in a year. However, along with the increasing number of tourist visits and the intensity of development, concerns have arisen regarding the sustainability of this area. If not managed properly, tourism potential can turn into a threat to the preservation of cultural values and the quality of life of the local community.

One important approach in managing tourism sustainably is through the evaluation of tourism carrying capacity. This concept refers to the maximum limit of the number of tourist visits that can be received by a destination without causing negative impacts that are ecologically, socially, culturally, or economically damaging (Erdogan, 2025). In the context of an urban heritage area such as Glodok, the application of the carrying capacity concept is crucial to maintain a balance between the preservation and utilization of cultural resources.

Unfortunately, studies related to the evaluation of tourism carrying capacity in urban heritage areas in Indonesia are still very limited. The approaches used are often sectoral, do not consider the overall sustainable dimension, and have not integrated stakeholder participation optimally. Therefore, this study aims to evaluate the tourism carrying capacity in the Glodok Chinatown area by considering the physical, social, economic, and psychological aspects that are relevant in the context of sustainability.

This study is expected to provide conceptual and practical contributions to the development of sustainable heritage tourism in urban areas.

According to Park, et al. (2019), heritage tourism provides various benefits, including:

- increasing local income and creating jobs,
- encouraging the preservation of local culture and identity,
- encouraging the conservation of historical sites and landscapes.

Meanwhile, in the urban context, heritage tourism refers to tourism activities that focus on exploring historical and cultural heritage found in urban environments, including colonial buildings, old town areas, museums, monuments, and distinctive urban traditions (Ponirin, et al., 2021). Cities with rich historical backgrounds, such as Yogyakarta, Jakarta, Melaka, or Barcelona, are often the main destinations for heritage tourism because they have historical traces integrated into the structure and culture of their cities.

In a specific context, the development of heritage tourism in urban areas has a special character. This is related to the complexity of the urban situation itself. Yagi & Frenzel (2022) explained that urban heritage has special characteristics, namely:

- Multifunction where heritage sites in the city often overlap with modern functions, such as old buildings that are used as restaurants or galleries.
- High spatial density. This is because heritage elements are often adjacent to commercial elements, residential, and modern infrastructure.
- Complex interactions between preservation and development. Heritage preservation efforts must be negotiated with the needs of city development and modernization.

However, there are specific challenges in developing heritage tourism in urban areas, such as:

- Gentrification where the modernization of historic areas can displace local communities and change the socio-cultural character of the area.
- Conflict between preservation and development. Tensions often arise between the conservation of sites and the demands of urban space for economic growth (Ripp & Rodwell, 2016).
- Congestion and infrastructure pressures caused by increasing numbers of tourists cause pressure on urban infrastructure, especially in the historic center.

Methodology

Using a qualitative research design with an exploratory approach, this study aims to investigate in depth the conditions and dynamics of the carrying capacity of heritage tourism in the Glodok Chinatown area of Jakarta. This approach was chosen because the issue of carrying capacity in the context of heritage areas is a complex topic and has not been fully revealed through quantitative approaches or previous studies. Through this approach, researchers seek to understand how social, cultural, physical, and institutional elements interact and influence the sustainability of tourism in the area.

The data sources in this study comprise primary data obtained through literature reviews, including scientific journals, books, laws and regulations, policy documents, and reports on heritage area planning and management. These sources provide a conceptual framework regarding the carrying capacity of tourism and the policy context applicable in the Glodok area. In addition, to strengthen the data, in-depth interviews were also conducted with various key informants, such as local tourism actors, heritage area managers, residents, business actors, and representatives from related agencies (for example, the). In addition, direct observation was also conducted at several strategic

points in the Glodok Chinatown area to observe the actual conditions of tourism facilities, tourist visits, social interactions, environmental aspects, and supporting infrastructure. The details of the informants and data requirements collected in this study are as follows.

Table 1. List of Informants

No	Informant	Required data
1	Leader of Pokdarwis (Tourism Awareness Group) Pecinan Glodok	Community participation, cultural preservation efforts, challenges in managing tourism at the grassroots level
2	DKI Jakarta Provincial Tourism and Creative Industry Office	Tourism policy, strategic plans, carrying capacity regulations, government programs for Glodok area
3	DKI Jakarta Public Works and Spatial Planning Office	Infrastructure planning, spatial regulation, revitalization projects, pedestrian facilities
4	Local Residents of Glodok Chinatown (street vendors)	Perception of tourism impacts, daily life disturbance, cultural continuity, social well-being
5	Local Business Actors (Culinary & Souvenir MSMEs)	Economic benefits, challenges in competition, support needed from government, tourism dependence
6	BPCB (Cultural Heritage Conservation Experts)	Conservation principles, evaluation of building restoration, threats to authenticity
7	Walking Tour Organizers	Visitor behavior, tourist expectations, challenges in interpretation and storytelling

Source: Researcher's Data (2025)

Data collection was carried out simultaneously by combining literature study techniques, interviews, and observations. Interviews were conducted in a semi-structured manner to provide flexibility in exploring the perspectives of informants, while observations were conducted in a non-participatory manner to capture symptoms that appear naturally in the field. All data were analyzed qualitatively using thematic analysis techniques, which include data coding processes, identification of categories and themes, and interpretations that refer to the local context of the Glodok area. This process aims to understand tourism carrying capacity not only in terms of physical capacity but also in socio-cultural and institutional dimensions.



(Source: Personal Documentation, 2025)

Figure 1. Data Collection through Deep Interview with the Informants

Results and discussions

Results

Pecinan Glodok (Glodok Chinatown) area in West Jakarta is one of the urban heritage tourist destinations that has a wealth of history, culture, and unique cuisine. Known as one of the oldest Chinatowns (Pecinan) in Indonesia, this area is a major attraction through the existence of historical buildings such as the Jin De Yuan Temple, old shophouses, and traditional markets that are still active, as well as the traditions of the Chinese community that continue to live in the form of cultural celebrations, religious practices, and authentic cuisine.

In terms of accessibility, Glodok Chinatown is quite easy to reach via various modes of public transportation such as TransJakarta, KRL Commuter Line, and MRT which are integrated with the Kota Tua Bus Stop, although it still faces the challenge of traffic jams and limited comfortable pedestrian paths. Supporting facilities (amenities) such as culinary centers, accommodation, and shopping areas are also available in various classes, although they are not yet fully organized in an integrated tourism framework. Meanwhile, support for ancillary services such as tourist information centers, certified tour guides, and digital promotions still need to be strengthened to support a quality tourism experience.

This area has been officially designated as part of the DKI Jakarta Provincial Tourism Strategic Area (KSPP) through the Regional Tourism Development Master Plan (RIPPARD DKI Jakarta No. 6 Year 2015), indicating its position as one of the priority destinations that integrates historical, cultural, and local economic values. In addition, Glodok is also the target of various government revitalization programs, including the arrangement of pedestrian areas, restoration of cultural heritage buildings, and strengthening accessibility implemented by the DKI Jakarta Provincial Government in collaboration with the Ministry of PUPR.



(Source: Personal Documentation, 2025)

Figure 2. Current Condition of Tourist Attraction in Glodok

Legally, several important locations such as the Jin De Yuan Temple and Petak Sembilan Market have been designated as cultural heritage according to local

government regulations, strengthening the legitimacy of the area as an urban historical heritage that needs to be preserved. In the realm of cultural promotion, the Glodok area consistently hosts various local to international cultural festivals, such as Cap Go Meh, the Jakarta Chinese New Year Festival, and the Peranakan Culinary Festival which have succeeded in attracting thousands of local and foreign tourists every year (Rianto, 2021).

These activities not only strengthen Jakarta's multicultural identity but also act as the main attraction in the 4A tourism concept (Camilleri, 2018). Recognition of Glodok as a leading destination can also be seen from its popularity in various educational tourism programs and walking tours organized by local communities and creative tourism industry players (Azizah, et al., 2024). Even international media such as CNN Travel call Glodok one of Jakarta's "hidden gems" that holds a wealth of history and typical Chinese cuisine. This series of achievements shows that Glodok not only has high historical value but is also able to position itself as an active and dynamic urban heritage destination in the tourism landscape of the city of Jakarta.

Current Condition of Urban Heritage Tourism in Glodok Chinatown

By adopting the concept of Lei & Zhou (2022), Lucia, et al. (2017), and Gaonkar & Sukthankar (2025), a comprehensive model was obtained on how urban heritage tourism should be implemented in a destination, which considers the sustainability aspect. The following is an elaboration of the three concepts and their application in the Glodok Chinatown area.

Table 2. The Current Condition of Heritage Tourism in Glodok

Elements	Indicators	Current Conditions
Environment	Physical conditions, visitor capacity, waste management, air/noise quality	The physical condition of the Glodok Chinatown area shows that there have been efforts to preserve cultural heritage buildings, such as the Jin De Yuan Temple and the old shopping area along Jalan Pancoran. However, environmental management is not yet optimal, especially in terms of waste management and cleanliness. Visitors often complain about traffic congestion and the lack of green open spaces. The physical capacity of the area tends to exceed the threshold during weekends or cultural events, resulting in pressure on infrastructure and increased motor vehicle emissions.
Socio-Cultural	Community participation, maintenance of traditions, sense of place, perception of local identity	Glodok Chinatown still maintains a strong Chinese cultural identity, seen from religious activities, culinary specialties, to the annual festival calendar such as Cap Go Meh. Local people show active involvement in maintaining traditions, although some feel that economic-oriented tourism activities are starting to shift native cultural values. There are also concerns about excessive commercialization, which has resulted in the whitening of the area's identity into merely a tourist attraction without deep social meaning.
Economic	Local income, MSME support, distribution of economic benefits,	Heritage tourism provides significant economic contributions to local MSMEs, especially in the culinary, souvenir, and tour service sectors. However, the economic benefits are not evenly

	product diversification	distributed. Large business actors are more dominant in reaping profits compared to local residents who are only involved as informal workers. Several entrepreneurs stated that government support in the form of training and access to capital is still very limited. In addition, the diversification of tourism products is considered still low, with a high dependence on culinary tourism.
Governance	Heritage policies, participatory planning, regular monitoring, collaboration between local/international actors	Coordination between the management institutions of the area, both from the city government, tourism office, cultural communities, and the private sector, is still sectoral and has not been integrated into a sustainable master plan. There is no single institution that is specifically responsible for the holistic management of the Glodok heritage area. Several cultural communities have taken the initiative to hold educational events or tours, but regulatory and budget support from the government is still minimal. In addition, there is no sustainable monitoring and evaluation system for the impact of tourism in the area.
Culture/Values	Authenticity, cultural integrity, sustainability of cultural practices, preservation of local identity	The historical and symbolic values of the area are still preserved in various forms, from building architecture, culinary traditions, to historical narratives. However, there is no adequate cultural interpretation system for tourists. Information available in the field is still limited and not in-depth, so that many educational potentials are not utilized. The authenticity of the site is still relatively well maintained, but some renovations of old buildings are not in accordance with conservation principles, which has the potential to reduce the integrity of the heritage.
Technology & Infrastructure	Digital monitoring systems, technology-based conservation, smart tourism	The application of technology to support heritage tourism is still very limited. There is no digital site interpretation system (such as QR codes, audio guides, or information applications), even though this potential can help tourists understand the historical context of the area. Supporting tourism infrastructure such as signage, pedestrian paths, and public transportation have not been well integrated. The absence of an integrated ticket system and tourist information center makes the tourism experience less than optimal, especially for foreign tourists.
Institutional/Political	Public-private partnerships, supranational participation, crisis management, heritage support policies	Policy support from the provincial government for the preservation of the Glodok Chinatown area is still not optimal. Although this area has been included in the Jakarta heritage priority destination map, there are no specific regulations that guarantee long-term cultural protection. Collaboration with national institutions such as the BPCB (Cultural Heritage Conservation Center) or UNESCO has not been formed systematically. The absence of community-based management institutions has weakened the

position of local residents in the planning and decision-making process.

Source: Processed Data (2025)

The seven dimensions show that Glodok Chinatown has great potential as a sustainable urban heritage tourism destination, but still faces various structural and institutional challenges. Strengthening cross-sector collaboration, active community involvement, and integration of technology and preservation regulations are important keys to encouraging sustainable tourism in the area.

Carrying Capacity Analysis

The tourism carrying capacity approach is used to detect the capacity of a heritage tourism destination, especially in an urban setting. As is known from scientific studies, urban heritage conservation areas have a much higher vulnerability than urban areas in general (Šćitaroci, et al., 2019). This is what makes urban heritage tourism activities need to be limited, and to obtain parameters according to the regional context, this carrying capacity approach is used. In general, the study of tourism carrying capacity is carried out through a sequential model consisting of Physical Carrying Capacity (PCC), Real Carrying Capacity (RCC), and Effective Carrying Capacity (ECC).

After going through the process of compiling the data needed from the Glodok Chinatown Area, the analysis of tourism carrying capacity as the analysis model proposed by Nugroho et al (2025) is as follows.

1) Physical Carrying Capacity (PCC)

Is the maximum number of tourists that can be accommodated by a tourist destination based on the capacity of the available space and physical facilities, without causing environmental damage or reducing the quality of the tourist experience. In the analysis of tourism carrying capacity, physical carrying capacity is usually calculated by considering the area that can be used for tourist activities, time limits for visits, and the minimum space standards required per person (personal space).

$$PCC = A \times \frac{V}{a} \times Rf \quad (1)$$

A = Land area of Pecinan Glodok= 132 ha

V/a = Space required per individual for tourism activities (specific for heritage tourism activities) = 1/1 m² (Butler, 2020)

Rf = Rotation Factor = 5.5 (Estimated daily tourist turnover cycle)

$$PCC = 132 \times \frac{1}{1} \times 5.5 = 726 \quad (2)$$

2) Real Carrying Capacity (RCC)

The maximum capacity of tourists that a tourist destination can actually accept after considering various real limitations in the field, such as environmental conditions, availability of facilities, and security aspects.

$$RCC = PCC - Cf1 - Cf2 - Cf3 \quad (3)$$

Cf1 = Average rainfall = 0.5

Cf2 = Average land slope area = 0

Cf3 = Average building = 0.035

$$RCC = 726 - 0.5 - 0 - 0.035 = 725.4 \quad (4)$$

3) Effective Carrying Capacity (ECC)

The maximum number of tourists that can be optimally served by the tourism destination manager based on the available resources, manpower, budget, and management system. Different from physical and real carrying capacity which focuses on space and environmental boundaries, effective carrying capacity emphasizes institutional and operational capacity in managing tourism visits.

$$ECC = RCC \times MC \quad (5)$$

Where

$$MC = \frac{Rn}{Rt} \times 100\% \quad (6)$$

Rn = Tourism-related worker = 135

Rt = Non-tourism-related worker = 940

$$ECC = 725.4 \times \left(\frac{135}{940} \times 100\% \right) = 103.73 \text{ (rounding: 104)} \quad (7)$$

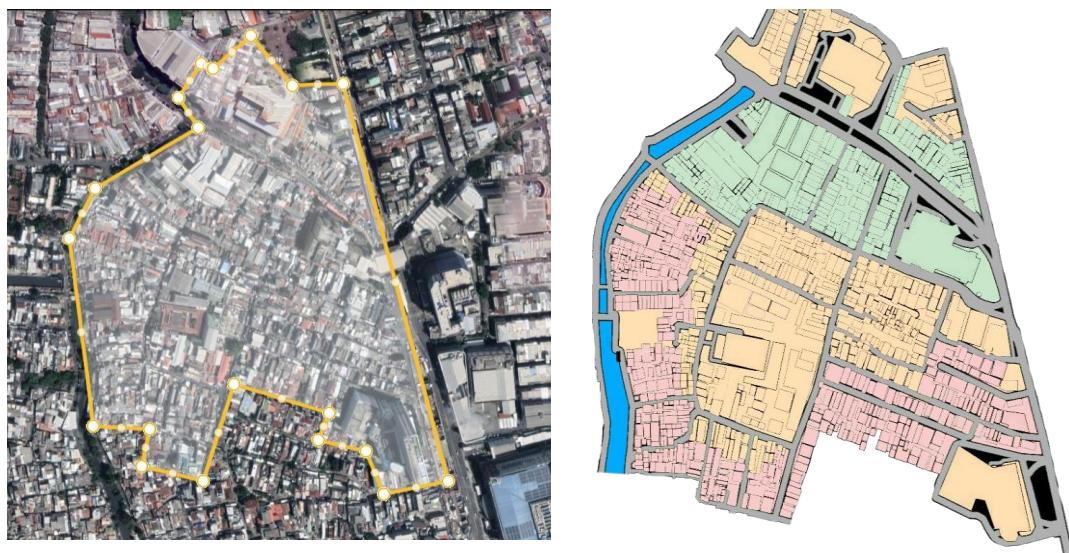
Discussions

From the results of the analysis, it can be said that the Effective Carrying Capacity of the Glodok Chinatown area is 104 tourists per day. This effective capacity is quite small. This is due to the original condition of the area which has been densely populated by trading activities. Moreover, with the density of buildings that have been standing for a long time. With this effective capacity, when compared to AV (Actual Visit), namely the average number of visits per day, it can be said that tourist visits to Glodok Chinatown exceed its effective capacity.

Table 2. Tourism Carrying Capacity Result Classification

No	Classifications			Status	Recommendations
1.	PCC > AV	RCC > AV	ECC > AV	Big CC	Can be further developed
2.	PCC < AV	RCC < AV	ECC < AV	Exceed CC	Must be organized and controlled
3.	PCC = AV	RCC = AV	ECC = AV	Optimal CC	Effective and efficient

Source: Nugroho et al. (2025)



(Source: Processed Data, 2025)

Figure 3. Pecinan Glodok Urban Heritage Tourism Destination Zoning

This study shows a stark reality for Glodok Chinatown: the space can comfortably host only around 104 visitors per day, yet it regularly welcomes 1,000 to 5,000 people during festivals. That's not just "a bit over" the limit—it's a flood that strains its streets, heritage buildings, and community life. In an urban heritage zone like Glodok, carrying capacity is more than a number; it's the balance point between keeping the place alive for visitors and keeping it livable for the people who call it home. When that balance tips too far, you see the telltale signs described by Butler (2020) and Ripp & Rodwell (2016): crumbling infrastructure, streets choked with crowds, traditional shops replaced by tourist trinkets, and a cultural rhythm that starts to feel staged rather than lived.

Glodok's situation isn't unique. Other heritage districts face the same challenge of keeping their charm without being overrun. Singapore's Chinatown is one example of how a destination can keep its cultural heartbeat while still welcoming the world. Since the Urban Redevelopment Authority's Conservation Plan in 1989, Singapore has carefully restored its historic shophouses, turned key streets like Pagoda Street into pedestrian zones, and spread visitors across several themed sub-districts—Kreta Ayer, Telok Ayer, Bukit Pasoh, and Ann Siang Hill—each with its own cultural flavor (Ajuhari et al., 2023). Festivals are timed, routes are designed to guide people through different parts of the district, and real-time monitoring helps smooth out the surges (Zeng et al., 2023). While Singapore doesn't always use the term "carrying capacity," these measures function exactly as the UNWTO (2018) describes: keeping visitor numbers within the social, cultural, and environmental limits of the place.

In Glodok, by contrast, most of the action—and therefore most of the people—end up in the same narrow core streets, especially during big cultural events. Without zoning, without designated alternative routes, and without tools to monitor and adjust visitor flows, those streets take the full brunt of every festival crowd. The result is a heavy "tourism burden" that shows up in three ways: physically, in the wear and tear on old buildings and public spaces (Erdogan, 2025); socially, in the disruption of daily life for residents and the commodification of cultural practices (Su et al., 2018); and managerially, in the constant firefighting mode of trying to handle crowds without a long-term, integrated plan (Yiu & Cheung, 2021).

The lesson from Singapore isn't that Glodok should copy it exactly—every Chinatown has its own history and personality—but that capacity management works

best when it's woven into the everyday fabric of the place. That could mean creating a network of attractions so crowds naturally spread out, setting up timed-entry or staggered programming during festivals, and making sure local residents are part of the decision-making so that tourism supports rather than replaces their culture (Colavitti, 2018).

The real heart of the issue is that Glodok's greatest strength—its cultural magnetism—is also its greatest vulnerability. Left unmanaged, the very things that draw people in could fade under the weight of too many visitors. A multidimensional approach, mixing smart spatial planning, community stewardship, and real-time monitoring, can help ensure Glodok stays both a vibrant cultural hub and a livable neighborhood—mirroring the best practices seen in sustainable urban heritage zones worldwide (UNESCO, 2021).

Conclusions

Glodok Chinatown stands as one of Jakarta's most vibrant cultural heritage areas, yet this study reveals that its tourism growth has outpaced the destination's ability to sustain it. With an Effective Carrying Capacity (ECC) of only 104 visitors per day, actual daily visitation—often exceeding 1,000 and peaking at more than 5,000 during festivals—places intense physical, social, and managerial burdens on the area. Left unchecked, these pressures risk eroding the very "soul" of Glodok: its authentic cultural practices, historical architecture, and sense of place.

The comparison with Singapore's Chinatown illustrates that sustainable tourism in urban heritage zones is possible when capacity management is built into daily operations through zoning, visitor flow diversification, timed programming, and continuous monitoring. These interventions not only protect heritage integrity but also maintain a high-quality visitor experience and safeguard community well-being. Glodok's challenge, therefore, is not simply to limit numbers, but to redesign the way tourism interacts with its urban fabric—shifting from reactive crowd control to proactive, data-informed stewardship.

This study underscores that carrying capacity is not a static number, but a dynamic threshold shaped by spatial design, governance structures, and community participation. To ensure Glodok's long-term viability as both a cultural hub and a livable neighborhood, stakeholders must adopt an integrated management framework that unites government, local communities, and the private sector. By doing so, Glodok can avoid the fate of heritage destinations that have lost their identity under tourism pressures, and instead emerge as a model of how urban heritage can thrive—sustainably, inclusively, and without sacrificing its cultural heartbeat.

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