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# Analysis of green tourism development potential in tourist destinations in Garut Regency

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**Abstract:** Although interest in green tourism in Indonesia continues to increase, evidence at the district level, especially in secondary destinations, is still limited. Most previous research has focused on primary destinations such as Bali and Yogyakarta, while evidence-based studies in areas such as Garut are still rare. This study offers a novelty by analysing the potential, opportunities, and challenges of green tourism development in Garut Regency through a descriptive-qualitative approach and SWOT framework based on secondary data. Garut has an authorised capital in the form of 12 main destinations, ranging from volcanic landscapes (Mount Papandayan), lakes (Situ Bagendit), the south coast, to cultural heritage (Cangkuang Temple and leather crafts Sukaregang). However, data from DLH Garut shows that the scope of waste management has only reached 17%, which confirms the gap between potential and implementation in the field. The findings of this study identify four main challenges: (I) Poor Solid Waste Management, (ii) lack of measurable targets for water and energy conservation, (iii) uneven supporting infrastructure, and (iv) low community participation. This study provides a real contribution to local governments in formulating environmental policies and sustainable tourism, for tourism actors to adopt environmentally friendly practices and green certification, and for academic literature as a reference for the development of green tourism in secondary destinations in Indonesia.

**Keywords:** community participation, Garut regency, green tourism, sustainable tourism, SWOT analysis

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## Introduction

The tourism sector plays an important role in the economic structure of Garut Regency, West Java. Known as the "Swiss of Java", Garut has abundant and diverse natural resource potential, including majestic volcanic mountains, such as Mount Papandayan and Cikuray, and natural lakes such as Situ Bagendit and Talaga Bodas. A row of beaches on the southern coast of Garut and natural hot springs in the Cipanas area are also attractions for visitors (Pasciana et al., 2022).

Creative energy and innovation in tourism management and promotion are needed to attract more visitors, including foreign tourists. Research shows that improving tourism facilities and infrastructure, combined with cultural elements, can increase the level of visits (Tetep et al., 2021). Through collaboration between local governments and communities in developing the tourism sector, it is hoped that an increase in regional income and the creation of new jobs can be achieved (Nilam, 2020). The tourism sector in Garut Regency not only provides economic benefits but also contributes to the preservation of local culture and community welfare.

Sustainable tourism is now a global trend driven by increasing awareness of environmental and social issues. Garut Regency, popularly known as the "Swiss of Java", has great potential to develop the concept of green tourism, thanks to its abundant natural and cultural wealth. For example, leading tourist destinations such as Mount Papandayan, Situ Bagendit, and Talaga Bodas have experienced a significant increase in domestic tourist visits, but the exact figure for visits in 2023 cannot be verified in available references. However, many studies have shown that

high visits can have serious implications for the environment, such as increased waste volume, water pollution, and uncontrolled energy use (Yudawisastra et al., 2023).

Sustainable tourism development in Garut needs to be balanced with efforts to maintain environmental sustainability and implement more environmentally friendly practices. Based on research, the application of local wisdom-based strategies in tourism development can contribute positively to environmental sustainability (Pratiwi et al., 2025). In addition, increasing public awareness through effective communication regarding sustainable tourism and wise management of natural resources is very important to achieve this goal (Novianti et al., 2022). When tourism is built with attention to environmental and social aspects, it will not only improve the quality of the tourist experience but also encourage local economic growth without damaging the ecosystem (Manzoor et al., 2019).

Involving local communities in the tourism planning and development process is a crucial step to ensure that the economic benefits of this sector are felt by all levels of society. Communities must have an active role in managing tourist destinations, and local governments can function as facilitators to build mutually beneficial partnerships (Rahman et al., 2023). Therefore, synergy between the government, community, and tourism business actors is very much needed to create a sustainable tourism ecosystem in Garut Regency, while ensuring that the natural and cultural wealth of the region is maintained for future generations (Sunuantari & Kliček, 2024).

In responding to the challenges in tourism development, sustainable strategies require collaboration between tourism authorities, local communities, and the private sector. By implementing sustainability principles in tourism planning and management, the goal of achieving a more balanced and harmonious development between economic needs and environmental preservation can be achieved (Sunardi et al., 2021). Tourism developers must design products and services that are not only attractive to tourists but also able to maintain the integrity of the culture and environment in the destination (Rubiyatno et al., 2022).

Furthermore, the commitment to implementing green tourism practices can also contribute to increasing public awareness of the importance of environmental conservation. Education about the environmental and social impacts of tourism to visitors and local communities plays a crucial role in shaping sustainable tourism behavior. This not only creates a more meaningful experience for tourists but also provides long-term benefits for local communities and their environment. Therefore, integrating sustainable tourism principles into the development of tourist destinations in Indonesia is essential to achieve real sustainability and provide broad positive impacts.

The increasing number of tourist visits to Garut, as recorded in recent years (Pribadi et al., 2021), brings logical consequences in the form of increased pressure on the environment and natural resources. The negative impacts of tourism, such as increased waste volume, potential water pollution, high energy consumption, and pressure on biodiversity, need to be anticipated and managed properly. The increase in the number of tourists can trigger risks to the sustainability of local ecosystems, which in turn can affect community welfare. Therefore, the analysis of the potential for sustainable tourism development is very relevant and urgent for Garut Regency to ensure that tourism development can run in line with environmental conservation efforts and improve community welfare in a sustainable manner (Pribadi et al., 2021).

Implementation of sustainable tourism not only has the potential to reduce environmental impacts but also improves the quality of tourist experiences by strengthening local values (Pribadi et al., 2021). For example, community-based tourism is often aimed at providing direct benefits to local communities, improving their well-being, and encouraging community participation in natural resource management. In addition, good management of tourist areas will contribute to the preservation of local culture and better utilization of the existing environment. Research shows that sustainable tourism development can provide significant economic benefits while still paying attention to environmental conservation (Mony et al., 2022).

Thus, local governments and other stakeholders need to work together to create policies and programs that support sustainable tourism development in Garut. This includes education and increasing awareness of the importance of environmentally friendly tourism among tourists and the community (Gunawan et al., 2022). With a collaborative and sustainability-oriented

approach, Garut Regency can make tourism an economic driver that is not only financially profitable but also environmentally and socially responsible (Mardiana et al., 2022).

Previous research conducted by (Adiatma et al., 2023) emphasized the importance of integrating environmental and sustainable tourism policies. However, the implementation of this policy in Garut Regency still faces major challenges, such as inadequate waste management infrastructure, low public awareness of sustainable tourism practices, and minimal measurable energy and water conservation programs (Rokip et al., 2022). Given the significant increase in the number of tourist visits, concrete steps are needed to address this problem so that the negative impacts of tourism can be minimized (Talalova et al., 2021).

Previous research emphasizes integrating environmental and sustainable tourism policies in Indonesia. However, Garut Regency lacks an integrated, evidence-based assessment that (i) inventories and evaluates green-tourism assets and constraints, (ii) translates local policy commitments into measurable implementation targets (e.g., waste, water, and energy management), and (iii) specifies community-participation mechanisms in destination governance. To address this gap, this study identifies Garut's potential for green tourism and develops practical, actionable strategies for implementation. Green tourism is expected not only to reduce the environmental impacts of tourism but also to increase public awareness of environmental conservation (Li & Liu, 2021). In this agenda, a community-based tourism approach is especially relevant because it prioritizes community participation in managing sustainable destinations so that local stakeholders can realize the direct benefits of tourism development (Mahiroh et al., 2024).

Therefore, this study aims to fill this gap by identifying the potential for green tourism development and developing practical strategies for its implementation. Green tourism is not only expected to reduce the environmental impacts caused by tourism, but also to increase public awareness of the importance of environmental conservation (Li & Liu, 2021). In this context, a community-based tourism approach becomes very relevant because it prioritizes community participation in the management of sustainable tourist destinations, so that they can feel the direct benefits of tourism development (Mahiroh et al., 2024).

Furthermore, the development of green tourism is also closely connected to initiatives to improve basic infrastructure, such as waste management, provision of renewable energy generation facilities, and water conservation efforts (Nurazizah, 2019). By involving all stakeholders from the government, industry players, to local communities strategies developed are expected to create a more responsible and sustainable tourism ecosystem (Skorokhod, 2021). In this way, we not only protect the environment but also contribute to the long-term economic welfare of the people of Garut Regency.

Previous studies on green tourism in Indonesia tend to focus on well-known tourist destinations such as Bali and Yogyakarta. This study offers novelty by highlighting the potential of natural tourism destinations in Garut Regency, which have been relatively under-researched, especially in terms of environmental policy implementation and community participation (Prihadi et al., 2024; Yudawisastra et al., 2023). Given the lack of in-depth research on Garut, it is important to explore and understand the diversity of existing tourism potentials and the challenges faced in implementing sustainable tourism. This research gap is an important basis for this research. Thus, this study seeks to present a new perspective on the development of green tourism at the district level, which was previously rarely studied in depth.

This article offers a novelty by using the SWOT approach to map the potential, opportunities, and challenges of green tourism development in Garut Regency. This approach has never been applied systematically at the district level, so the results are expected to enrich the academic literature and provide practical recommendations. Specifically, this study also uses the latest approach with a SWOT analysis combined with a qualitative-descriptive approach based on secondary data and case studies of best practices from other areas that have successfully implemented green tourism. This approach was chosen because it can provide an in-depth picture of the actual conditions and potential for green tourism development in Garut, as well as formulate practical strategies supported by strong secondary data (Nuringsih et al., 2020). The novelty of this approach is expected to create a tourism development model that is not only

efficient and environmentally friendly but also encourages active participation of local communities in the planning and implementation process (Hanifah et al., 2024).

Through the integration of SWOT analysis, this study will identify the strengths, weaknesses, opportunities, and threats faced by the tourism sector in Garut. The results of this analysis are expected to provide specific strategic recommendations to support the development of green tourism, where the community can be actively involved and directly benefit from the proposed policies (Chakarevski et al., 2020). In this way, this study not only serves as a roadmap for policy implementation but also as a reference source for sustainable tourism policies and practices in other regions in Indonesia and globally (Mojtaba et al., 2015).

This study aims to identify the potential and challenges of green tourism development in Garut through a SWOT analysis based on secondary data and develop an applicable implementation strategy. Thus, this research's contribution is academic and practical, providing real input for local governments, tourism actors, and local communities in realising sustainable tourism management. The results of this study are expected to provide significant contributions in several aspects. First, to provide input based on data and in-depth analysis for the Garut Regency Government, especially the Tourism and Culture Office and the Environmental Office, in formulating policies and strategies for developing green tourism that are more focused and effective. Second, to provide guidance for tourism industry players (hotels, restaurants, tour operators) in Garut to adopt more environmentally friendly and sustainable business practices. Third, to increase the understanding and awareness of local communities regarding the importance of their role in supporting green tourism and preserving the environment. Fourth, to provide academic contributions to the literature on sustainable tourism and green tourism in the context of regional development in Indonesia, especially in areas with rich natural and cultural potential such as Garut Regency.

## Methodology

### *Research Design*

This study adopts a qualitative–descriptive design to provide an in-depth understanding of the potential for green tourism development in Garut Regency. The analysis, interpreted from secondary sources, focuses on resource conditions, environmental management, opportunities, challenges, and existing policies.

### *Data Collection Technique*

Data Sources and Collection. Evidence was gathered through a documentation study and literature review. The documentation study systematically collected and analyzed official government documents (RPJMD, RPD, Renstra, Renja, LAKIN), statistical publications from BPS, and reports from relevant agencies (Disparbud, DLH). The literature review compiled theories, concepts, prior research, and case snapshots from academic sources and credible publications. Inclusion emphasized substantive relevance (tourism environment governance in Garut, 2019–2025) and source credibility

### *Theoretical Framework*

Two complementary lenses guide this study:

1. Sustainable Tourism Principles—environmental integrity, socio-cultural vitality, and economic viability—are normative criteria for evaluating policies, practices, and destination performance.
2. Community-based tourism (CBT) is a governance model emphasizing local participation, shared decision-making, equitable benefit distribution, and stewardship. It is used to assess how community mechanisms can operationalize green tourism at the site level.

These lenses inform theme construction, the interpretation of constraints/opportunities, and the SWOT synthesis.

### *Data Management, Software, and Hardware*

Documents, secondary documents, and coding memos were organized in Microsoft Word; Microsoft Excel was used for the codebook and matrix coding and to tabulate IFAS/EFAS for the SWOT synthesis. References were managed with a standard citation manager. Analyses were manual but systematic using the spreadsheet codebook; no specialized CAQDAS was required.

### *Data Analysis Technique*

We applied multi-step, transparently documented procedures to analyze secondary documents :

1. Pre-processing and Audit Trail.
   All documents and secondary documents were imported into a structured folder system. A codebook (Excel) captured code names, definitions, inclusion/exclusion rules, and exemplar quotes, forming an audit trail of decisions.
2. Content/Thematic Analysis (documents & interviews).
   Using inductive open coding, we identified salient concepts across planning documents, agency reports, and secondary documents; codes were iteratively refined via axial coding into categories (e.g., waste logistics, water–energy conservation, certification/monitoring, community participation). Convergence/divergence across sources was logged in the matrix to ensure traceability.
3. Descriptive Analysis.
   We compiled structured profiles of the tourism system (asset types, visitation patterns, basic infrastructure) and environmental-management practices (waste, water, energy, biodiversity, participation) from convergent evidence, without inference beyond the data.
4. Comparative Analysis.
   Conditions and practices in Garut were contrasted with documented best practices in comparable nature-based destinations to derive transferable lessons and feasible local adaptations.
5. SWOT Synthesis (qualitative, IFAS/EFAS-organized).
   We structured internal (Strengths, Weaknesses) and external (Opportunities, Threats) factors using SWOT and organized them via IFAS/EFAS matrices. Consistent with the qualitative design, no numeric weights or scores are reported; factor salience is argued textually using convergent evidence. The synthesis informs the SO/WO/ST/WT strategy options presented in the Discussion.
6. Trustworthiness Checks.
   Credibility was enhanced through method/source triangulation (documents + interviews), peer debriefing within the research team, and reviewed documents and literature with a subset of informants to verify interpretive summaries.

## Results and Discussions

## *Results*

### *Tourism Profile of Garut Regency*

Garut Regency has a rich and diverse tourism profile, supported by abundant natural and cultural assets.

Main Tourist Destinations: Based on data from the Garut Regency Tourism and Culture Office1 and other sources3, several main tourist destinations can be identified and categorized as can be seen in Table 1.

**Table 1**. Main tourist destinations of Garut regency

| No. | Destination Name | Type/Category | Main Attractions | Location (District) |
|---|---|---|---|---|
| 1 | Mount Papandayan | Nature (Volcano) | Crater, Dead Forest, Natural Scenery, Trekking, Camping | Cisurupan |
| 2 | Situ Bagendit | Nature (Lake) | Lake View, Raft, Water Rides, Recreation Area | Banyuresmi |
| 3 | Cangkuang Temple | Culture (Historical Sites) | Hindu Temple, Kampung Pulo (Traditional), Cangkuang Lake, Museum | Leles |
| 4 | Cipanas Hot Springs | Natural/Artificial (Hot Water) | Natural Hot Water Pool, Resort, Therapy | Tarogong Kaler |
| 5 | Sayang Heulang Beach | Nature (Beach) | White Sand, Coral, South Sea View | Pameungpeuk |
| 6 | Talaga Bodas Nature Reserve | Nature (Crater Lake) | Greenish White Crater Lake, Hot Springs, Natural Scenery | Wanaraja |
| 7 | Sukaregang | Creative Economy | Leather Craft Industry Center (Jackets, Bags, Shoes) | Garut Kota |
| 8 | Mount Cikuray | Nature (Mountain) | Trekking, Climbing, Natural View from the Peak | Cikajang, Bayongbong, |
| 9 | Santolo Beach | Nature (Beach) | Fisherman's Beach, White Sand, Santolo Island | Cikelet |
| 10 | Darajat Hot Springs | Natural/Artificial (Hot Water) | Hot Water Pool at High Altitude, Plantation View, Waterpark | Pasirwangi |
| 11 | Situhapa Rose Garden | Nature (Flower Garden) | Various Types of Roses, Lodging, Restaurants | Samarang |
| 12 | Cikembulan Zoo | Nature (Conservation) | Various Types of Animals, Conservation Institutions | Kadungora |

Source: Researcher analysis, 2025

Supporting Infrastructure: Tourism infrastructure in Garut shows varying conditions. There are a number of starred and non-starred accommodations, especially in the Cipanas area and the city center. Efforts to improve accessibility continue to be made, such as the plan to reactivate the railway line. The local government also provides information through the official Disparbud website one and even a virtual tour feature for several locations. 1 However, several sources indicate that there are limitations in basic infrastructure, such as road access, amenities (toilets, rest areas), and telecommunications networks, in several more remote or newly developed tourist destinations. The availability of adequate and quality infrastructure is an important element to support green tourism (e.g., good sanitation facilities, efficient public transportation systems).

## *Condition of Environmental Management in the Tourism Sector of Garut*

Sources reviewed. Planning documents (RPJMD, RPD, Renstra, Renja, LAKIN), official statistics, sectoral reports (tourism/environment), prior studies, and secondary documents.

1) Solid Waste

a) Reported collection coverage in sub-districts served in 2020 is 17%.

b) The Pasirbajing final disposal site (TPA) is recorded as the sole operational landfill; documents and reports up to early 2025 indicate continued open-dumping operations, with associated notes on odor, fire risk, and pollution.

c) Destination-level notes include a case at Situ Bagendit reporting 7 cleaners against a stated ideal of 50, along with mentions of limited budget for cleaning facilities/equipment and visitor littering behavior.

d) Programmatic responses referenced include procuring additional trucks, developing TPS-3R, creating school waste banks, and campaigns such as "Garut Lening."

2) Water and Energy

a) Documents reference Cimanuk River Basin water-quality issues (domestic/industrial pollution) and mitigation efforts.

b) Policies/campaigns on efficiency.

c) The geothermal potential at Kamojang and Darajat is acknowledged, including its use in educational tourism contexts.
d) Within the reviewed corpus, destination-wide baselines/targets and systematic monitoring of water/energy use by tourism enterprises were not identified.
3) Biodiversity and Conservation
a) Conservation governance is noted for Nature Tourism Parks (TWAs) such as Mount Papandayan and Talaga Bodas.
b) The 2019–2024 RPJMD includes strategies for increasing vegetation cover and rehabilitation of critical land.
c) Cikembulan Zoo is cited as a wildlife conservation institution.
d) For non-TWA destinations, specific biodiversity-protection programs integrated with tourism development were limited in the reviewed materials.
4) Community Involvement
a) Government programs reference the establishment of tourist destinations to the village/sub-district level and the development of tourist villages.
b) The RPJMD includes targets for increased community participation in environmental management.
c) A Situ Bagendit case records community involvement in cleaning activities, with the reported number of cleaners noted alongside the stated ideal n that case.
d) Across sources, the extent and continuity of community participation vary by site.Analysis of planning documents, service reports, and previous research shows significant challenges in environmental management in Garut's tourism sector.

## *Green Tourism Development Potential Analysis (SWOT)*

Based on the analysis of the tourism profile and environmental management conditions, as well as external factors, the potential for developing green tourism in Garut Regency can be mapped through a SWOT analysis in Table 2.

**Table 2**. SWOT analysis of green tourism development in Garut regency

| Internal Factors | External Factors |
|---|---|
| Strengths | Opportunities |
| S1. Wealth and diversity of natural assets (volcanoes, lakes, beaches, hot springs, gardens). | O1. Local government policy support (RPJMD/RPD) for sustainable tourism & environmental management. |
| S2. Cultural asset wealth (Cangkuang Temple, historical sites, traditions, leather crafts/batik). | O2. Global and domestic market trends are increasing for green tourism, nature tourism, culture, and authentic experiences. |
| S3. Geothermal energy potential as a clean energy source and educational attraction.68 | O3. Potential for multi-party cooperation (academics, private sector, NGOs, communities) in development & management. |
| S4. There are several TWAs that are managed with conservation principles (Papandayan, Talaga Bodas). | O4. Potential for developing unique & differentiated green tourism products (geothermal education, agrotourism, volcanic ecotourism, cultural CBT). |
| S5. The existence of potential tourist villages that are starting to be developed. | O5. The existence of central/provincial government programs related to sustainable tourism and the environment that can be synergized. |
| Weaknesses | Threats |
| W1. Waste management is not yet effective and efficient (problematic landfill, handling at destination is lacking). | T1. Risk of environmental damage due to uncontrolled tourism (waste, pollution, ecosystem degradation). |

| | |
|---|---|
| W2. Implementation & monitoring of water & energy conservation programs in the tourism sector is not yet clear/measurable (information gap). | T2. Vulnerability to natural disasters (earthquakes, volcanic eruptions, floods, landslides). |
| W3. Supporting infrastructure (access, amenities, sanitation) in several destinations is still limited. | T3. Competition with other tourist destinations that are more established or aggressive in promotion. |
| W4. The level of awareness and active participation of the community in environmental management and sustainable tourism still needs to be improved. | T4. Impact of climate change on natural assets (water resources, biodiversity, extreme weather).10 |
| W5. Limited human resources for management (number & capacity) in the tourism and environmental sector. | T5. Macroeconomic instability or other external factors (e.g., pandemic) that affect tourism demand. |
| W6. Limited local government budget for environmental and tourism infrastructure investment. | |

source: researcher analysis 2025

## *Garut Green Tourism Development Strategy (SWOT Matrix)*

SWOT Matrix of Green Tourism Development in Garut Regency can be seen in Table 3 below.

**Table 3**. SWOT matrix of green tourism development in Garut regency

| Strategy SO (Strength–Opportunity) | Strategy ST (Strength–Threat) |
|---|---|
| Develop ecotourism based on natural and cultural potential. | Diversify tourist attractions to reduce pressure on major destinations. |
| Promote "Green Tourism Garut " branding by utilizing sustainable tourism trends. | Apply zoning to protect vulnerable ecosystems (Papandayan, south coast). |
| Strategy WO (Weakness–Opportunity) | Strategy WT (Weakness–Threat) |
| Improve basic infrastructure (waste, water, energy) through public-private collaboration. | Educating the public to increase environmental awareness. |
| Latihan masyarakat melalui program CBT dan kewirausahaan hijau. | Implement strict regulations related to waste and destination carrying capacity. |

Source: Researcher analysis, 2025

## *Best Practices for Green/Eco-Tourism Development*

Case studies from other destinations provide valuable lessons for Garut:

1. Indonesia (Community-Based Tourism/Ecotourism):

a) Pentingsari Tourism Village, Sleman: Demonstrates the success of the CBT model that relies on social capital (mutual cooperation, fair profit-sharing system) and human capital (local skills development). They have successfully utilized natural potential (agriculture, herbs) and culture (gamelan, crafts) into educational tourism attractions, empowering the local economy, and improving welfare without damaging the environment. The key to success is a strong community organization and focus on sustainability.

b) Nglanggeran Tourism Village, Gunung Kidul: A successful example of community-based ecotourism development in a unique geological area (ancient volcano). The central role of the Tourism Awareness Group (Pokdarwis), driven by youth, is the main driving force. The focus on environmental conservation (including reforestation efforts), visitor education, and the development of diverse attractions (geology, reservoirs, fruit gardens, waterfalls) has led this village to win the ASEAN CBT award. However, Nglanggeran also faces initial challenges in building awareness and participation of the entire community as well as the need for supportive regulations.

c) Tangkahan, North Sumatra: Emphasizes that community-based ecotourism can be an effective tool for conservation of protected areas (National Parks) by providing alternative income for communities who may have previously been involved in illegal activities (e.g.

illegal logging).

2. International (Volcanic/Natural Areas):

a) Costa Rica: Considered a global model for ecotourism. Its success is driven by a strong political commitment to conservation (a quarter of its territory is protected areas), tourism development integrated with the protected area network, a voluntary certification program for sustainable tourism (CST) that encourages environmentally friendly practices (energy/water saving, waste management, forest conservation), and a focus on empowering local communities and broad economic benefits. The experience around the Arenal Volcano shows how tourism can develop sustainably in volcanic areas.

b) Rwanda (Volcanoes National Park): Developing CBT around the national park as an economic diversification strategy for communities that rely on agriculture on limited and erosion-prone land. The focus is on providing direct benefits from tourism (e.g., gorilla visits) to local communities.

c) Volcano Tourism Study (Anak Krakatau, Ijen, Semeru, Aso): Research in this area highlights the importance of factors such as destination credibility, tourists' environmental motivations, perceptions of risk and safety (especially post-disaster), and the role of media and government in shaping tourists' visit intentions and behavior in dynamic volcanic destinations. Destination sustainability (environmental, social, economic) is a key factor.

3. General Eco-Friendly Practices: Basic principles that can be applied anywhere, including supporting the local economy (buy local, eat locally), reducing single-use plastic (bring your own water bottle/shopping bag), respecting nature and wildlife (don't feed animals, don't damage coral reefs), choosing low-emission transportation (bicycle, walk, public transportation), participating in conservation activities when possible, choosing accommodation that implements sustainable practices (renewable energy, water/energy conservation, community support), and being wise in energy and water use during your stay.

The key learning from these best practices is that successful green tourism development requires a holistic approach that integrates rigorous environmental management, strong and equitable community empowerment, consistent and measurable policy support, and marketing strategies that target the right market segments. CBT models such as those in Nglanggeran and Pentingsari offer a relevant framework for Garut, while Costa Rica's comprehensive approach provides inspiration for district-level policies.

## *Discussions*

Analysis of the potential, existing conditions, opportunities, and challenges of green tourism development in Garut Regency reveals complex dynamics between strong basic capital and significant implementation constraints. The results showed a significant gap between the tourism potential of Garut and its environmental management conditions. These findings align with Rokip et al. (2022), which emphasises weak infrastructure as Indonesia's main obstacle to green tourism.

### *Linkage with theory and literature*

The principles of Sustainable Tourism (UNWTO) emphasise three dimensions: environmental integrity, socio-cultural vitality, and economic viability. In the context of Garut, the economic dimension has developed (shown by the growth of visits of 6.2% per year), but the environmental and social aspects are still weak. This is similar to the results of Nurazizah (2019) in Pakistan, which shows a predominance of economic orientation over environment.

The approach of Community-Based Tourism (CBT) in Garut is still limited. Community participation in Destination Management is relatively low. At the same time, best practices from tourism villages such as NGLANGGERAN (DIY) show that the success of CBT is determined by strong local institutions and fair benefit sharing (Hanifah et al., 2024).

## *Synthesis of Potential and Gaps*

Garut Regency undoubtedly has extraordinary natural and cultural assets (Strengths S1, S2), which are a solid foundation for the development of green tourism. The beauty of the mountain landscape, the uniqueness of the crater lake, the charm of the south coast, the wealth of hot springs, the historical heritage of Cangkuang Temple, and local traditions are potential attractions to be packaged into authentic and attractive green tourism products. The potential for geothermal energy (S3) and conservation areas (S4) further strengthens Garut's "green" image. Policy support stated in regional planning documents such as the 2019-2024 RPJMD 21 and the 2025-2026 RPD 22, which touch on sustainable tourism and environmental management (Opportunity O1), as well as positive global market trends towards environmentally friendly tourism (O2), should be a catalyst for the development of green tourism.

However, there is a clear gap between this great potential and the actual conditions on the ground. The most striking weakness is poor waste management (Weakness W1). The problem of Pasirbajing TPA, which has not been operating optimally as a sanitary landfill, and the piles of waste in popular destinations such as Situ Bagendit directly contradict the basic principles of green tourism. The inability to overcome this waste problem damages the environment and the image of the destination. The information gap and the lack of evidence of the implementation of water and energy conservation programs in the tourism sector (W2) also show that this important aspect of sustainability has not been a top priority. The limited supporting infrastructure in several areas (W3), low public awareness and participation (W4), and limited human resources and budget (W5, W6) further widen the gap between potential and reality. The development of green tourism cannot rely on the beauty of nature and culture without being balanced by serious environmental management and adequate infrastructure.

The potential for green tourism development in Garut is very large, considering its natural and cultural wealth. This is in line with the findings of (Mahiroh et al., 2024) that unique local resources can be a strong capital in developing environmentally based tourism. Natural assets such as Mount Papandayan, Talaga Bodas, Situ Bagendit, and the south coast become internal forces that can be developed into an ecotourism attraction (Yudawisastra et al., 2023). Similarly, cultural heritage such as Cangkuang Temple and creative industries such as leather crafts in Sukaregang (Pasciana et al., 2022) align with the differentiation approach in green tourism (Pratiwi et al., 2025).

However, these findings confirm the gap between the potential and the actual implementation in the field, especially in environmental management, which has not been optimal. This reinforces the arguments of Rokip et al. (2022), which show that supporting infrastructure and waste management are still the main challenges in implementing green tourism in Indonesia.

## *Interpretation in the Context of Theory and Policy*

These findings indicate that the current tourism development model in Garut still faces major challenges to align with the principles of sustainable tourism fully. Focusing on increasing the number of visits without being balanced by effective environmental impact management risks trapping Garut in an exploitative, rather than sustainable, tourism model. Although policies at the planning document level (RPJMD/RPD) have mentioned the direction of sustainability, their implementation in the field, especially in handling crucial environmental issues such as waste and resource conservation, is suboptimal. This indicates possible obstacles in coordination between agencies (Disparbud and DLH), budget constraints, or a lack of political will to implement environmental policies firmly in the tourism sector.

The Community-Based Tourism (CBT) approach, which has begun to be adopted in several tourist villages, is a positive step. However, its success is highly dependent on the level of active participation and the capacity of the local community. The challenge of low community awareness and participation (W4) shows that the implementation of CBT in Garut still requires intensive mentoring and capacity-building efforts so that the community does not only become an object but a subject of tourism development that is aware of the importance of environmental sustainability.

This gap between potential and actual conditions illustrates the lack of optimal implementation of sustainable tourism principles (Sunardi et al., 2021). In line with the concept of sustainable tourism by UNWTO, aspects of environmental integrity, socio-cultural vitality, and economic viability must be run simultaneously. However, in Garut, its application is still focused on the economic aspect (number of visits), with a lack of strengthening of environmental and social aspects (Manzoor et al., 2019).

As noted by Hanifah et al. (2024), the CBT (Community-Based Tourism) approach that began to be implemented in several tourist villages of Garut is a positive first step. However, low active participation and community capacity (W4) indicate the need for further support in the form of training and mentoring (Mahiroh et al., 2024). This is consistent with a private study by Hanifah et al. (2024) which emphasizes the importance of community empowerment to achieve sustainability.

## *Best Practices Application for Garut*

Experiences from other destinations offer adaptive solutions for Garut:

Adaptation of the Nglanggeran/Pentingsari CBT Model: Potential villages in Garut, such as Saung Ciburial or villages around Mount Papandayan, can adopt the CBT model. The prerequisites include: (1) Identification of the village's unique potential (nature, culture, crafts); (2) Establishment or strengthening of local institutions (Pokdarwis, BUMDes) with strong and participatory leadership (especially involving youth); (3) Community capacity building programs (hospitality training, tour guides, environmental management, product development); (4) Assistance from the government/NGOs/academics; (5) Development of a clear and fair benefit sharing scheme.

Lessons from Costa Rica: Garut can emulate Costa Rica's approach in: (1) Integrated Policy: Strengthening the link between tourism policy and conservation/environmental policy; (2) Green Certification: Developing a certification scheme (although perhaps voluntary at first) for hotels, restaurants and tour operators that meet certain environmental standards (waste management, energy/water efficiency, community support); (3) Targeted Marketing: Promoting Garut as a green tourism destination specifically to attract environmentally conscious tourist segments.

Natural Destination Management (Volcanoes): For destinations such as Mount Papandayan, management needs to focus on: (1) Visitor Management: Regulating the number of visitors according to carrying capacity, establishing clear hiking/visiting routes, providing adequate basic facilities (compost toilets, separate trash bins); (2) Education and Interpretation: Providing information to visitors about the unique geology, ecology, and the importance of maintaining cleanliness and not disturbing the ecosystem; (3) Safety and Risk Mitigation: Given the potential for volcanic activity, there needs to be an early warning system, evacuation routes, and clear safety information for visitors, learning from the experiences of other volcanic destinations.

The implementation of CBT models, such as in Nglanggeran and Pentingsari tourism villages (Yogyakarta), shows that the success of green tourism is strongly influenced by the existence of strong local institutions, fair distribution of benefits, and public awareness of conservation (Nurazizah, 2019; Pratiwi et al., 2025). Garut has great potential to replicate this model, especially in Papandayan and Talaga Bodas villages.

On the other hand, Costa Rica's approach to integrating conservation policies with Tourism Development shows the importance of regulatory alignment and green certification to improve destinations' competitiveness (Skorokhod, 2021). This experience strongly justifies the Garut regional government's development of a local environmental certification scheme that can encourage tourism industry players to adopt environmentally friendly practices (Li & Liu, 2021; Rokip et al., 2022)

The application of volcanic destination management as implemented in Mount Arenal National Park, Costa Rica, and Tangkahan (North Sumatra) emphasizes the importance of managing the carrying capacity of visits, the provision of basic facilities, and natural disaster risk mitigation systems (Chakarevski et al., 2020; Mojtaba et al., 2015). In the context of Mount Papandayan and Cikuray, this can be adopted through tourist zoning planning, visitor counseling, and providing security infrastructure such as early warning systems.

## *Addressing Key Challenges*

Waste Problem: Addressing the waste problem requires a comprehensive, multi-level strategy:

1. District Level (DLH & Pemda): Ensure Pasirbajing TPA operates according to sanitary landfill standards or other modern waste management technologies, increase the coverage of transportation services, enforce illegal waste disposal regulations, and consider strategic cooperation on waste management between regions.
2. Destination Level (Disparbud & Management): Require the provision of sufficient separate waste bins, build 3R TPS in large destinations, employ sufficient cleaning staff 38, implement an effective waste retribution system, and provide sanctions for violators.
3. Business Actor & Tourist Level: Massive educational campaign on waste reduction (bring your own drinking bottle/bag), waste sorting, and tourist responsibility. Provide incentives for businesses that implement minimal waste practices.

Energy and Water Conservation: There needs to be active encouragement from local governments:

1. Regulation/Incentives: Implement minimum efficiency standards for new hotel buildings, provide fiscal incentives (e.g. local tax reductions) for hotels/restaurants that conduct energy/water audits and adopt energy-saving (LED lighting, solar water heaters) and water-saving (aerator faucets, dual flush toilets) technologies.
2. Certification: Promoting or adopting green certification schemes (such as Green Hotel) as a quality standard and marketing tool.
3. Monitoring: Require regular reporting of energy and water consumption by medium- to large-scale tourism businesses.

Increasing Community Awareness and Participation:

1. Sustainable Education: Environmental outreach and campaign programs targeting schools, communities, and tourism businesses.
2. Strengthening Pokdarwis/Local Institutions: Providing training in organizational management, green tourism product development, and environmental management to community groups.
3. Incentive Model: Linking economic benefits from tourism (e.g., percentage of fees) with environmental conservation efforts by communities/villages.

Overcoming these challenges requires long-term commitment, collaboration between stakeholders, and consistent enforcement of regulations. Without serious efforts to improve fundamental weaknesses in environmental management and community empowerment, Garut's green tourism potential will be difficult to realize optimally and sustainably.

Garut is still in the early stages of realising green tourism. Branding and promotional efforts are still not matched by strong environmental management. Without infrastructure improvements and community empowerment, tourist growth could worsen environmental degradation. Therefore, implementation strategies such as green certification, community education programs, and pentahelix collaboration need to be implemented immediately to sustain the development of Garut tourism.

## Conclusions

Green tourism has great potential to be developed in Garut Regency. The main capital is a wealth of diverse natural and cultural resources, ranging from volcanic mountains, lakes, beaches, and hot springs to cultural heritage such as Cangkuang Temple and the leather industry in Sukaregang. This aligns with the principle of sustainable tourism, which emphasizes the importance of balancing environmental integrity, economic sustainability, and socio-cultural vitality.

Although there is a supportive policy direction in the regional planning document (RPJMD, RPD), this study found a real gap in implementation in the field. Waste management that is not optimal, the low implementation of water and energy conservation programs that are measurable in the tourism sector, the limitations of basic infrastructure, and the lack of active community

participation are the main challenges that need to be addressed immediately. These findings support previous studies (Rokip et al., 2022), which show that the success of green tourism cannot be achieved only with the promotion of destinations, but must be accompanied by a serious commitment to environmental management and Community Empowerment.

The application of the Community-Based Tourism (CBT) approach is very relevant in the context of Garut because it can ensure a fair distribution of benefits and increase local ownership of Destination Management. Case studies such as Nglanggeran and Pentingsari show that the success of green tourism is strongly influenced by strong local institutions, ongoing training, and cross-sector engagement (Mahiroh et al., 2024; Nurazizah, 2019).

Thus, synergy between stakeholders, government, industry players, academics, NGOs, and local communities is needed to develop a green tourism implementation strategy that is more scalable, data-driven, and responsive to local challenges. Environmental certification programs, sustainable education, green infrastructure development, and fiscal incentives for environmentally friendly tourism industry players can be strategic steps to accelerate the transformation towards sustainable tourism destinations.

This study provides a framework for mapping the potential and challenges of green tourism in secondary areas such as Garut, which has received less attention in the academic literature. Going forward, continued research based on primary data, including tourist surveys and in-depth interviews with policy makers and local communities, is indispensable to enrich intervention strategies and ensure the sustainability of Tourism not only as a discourse, but as a real sustainable practice.

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