

# Environmental governance in the development of tourist village based local wisdom

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**Abstract.** Environmental governance in the tourism sector must be developed in an integrated manner through national environmental protection and management policies that are implemented consistently from the center to the regions, including developing the potential of tourist villages in the Pusuk Buhit area, Samosir Regency. The tourism village development program in the Pusuk Buhit area also poses a risk of pollution and environmental damage. This condition is one that can cause the carrying capacity and productivity of the environment to decrease which ultimately becomes a social burden. The aim of this research is to determine the management of the potential of tourist villages in the Pusuk Buhit area through strategic environmental governance in the Samosir area. The method used in this research is a survey and then analyzed using SWOT analysis. This research resulted in the development of the potential for a Tourism Village based on local wisdom in the Pusuk Buhit area. So that it can support more focused and integrated environmental governance and preservation. Structuring and preserving the environment to develop the potential of a tourism village based on local wisdom requires maximum collaboration and interaction, so as to create superior and competitive tourism in Pusuk Buhit, Samosir Regency.

## 1 Introduction

Environmental problems are a major problem that must be resolved by the whole world, including Indonesia. The impact of this environment can have negative and positive impacts on all areas of community life, including the tourism sector. To produce good results from the environment, integrated planning and management is needed so that it can preserve environmental functions which include policies for structuring, utilizing, developing, maintaining, restoring, monitoring and controlling the environment.

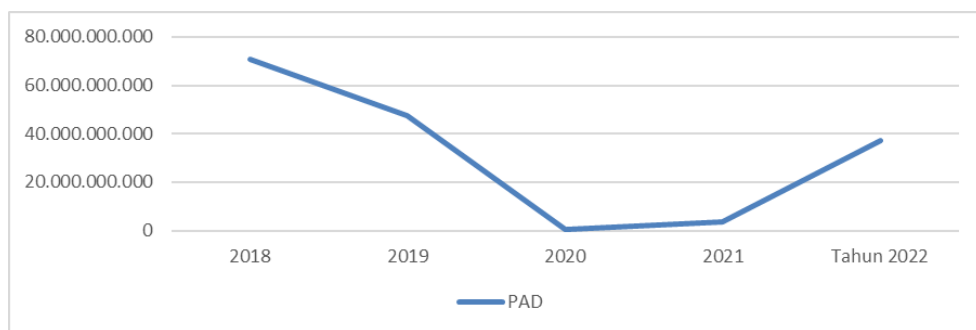
The implications of poor environmental governance can result in a decrease in the carrying capacity, capacity and productivity of the environment which ultimately becomes a social burden [1, 2]. That is occurrence of environmental pollution and damage in tourist areas is the shared responsibility of both the government, the community and parties operating in the tourism and environmental sectors. This is in accordance with the

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explanation in the 1945 Constitution of the Republic of Indonesia that a good and healthy living environment is a human right and constitutional right for every Indonesian citizen. Thus, [3] the environment must continue to be protected and managed well based on the principles of State responsibility, the principle of sustainability and the principle of justice, including in tourism development.

That is tourism development in the Pusuk Buhit area of Samosir Regency as a tourist village based on local wisdom must be supported by adequate environmental infrastructure, so that environmental planning can be realized which aims to preserve local culture [4, 5]. However, around the Pusuk Buhit area there are still several tourist attractions that do not comply with environmental regulations, resulting in a lot of environmental pollution, especially rubbish problems. Environmental governance is very important to support the development of regional tourism which makes a major contribution to regional income, especially Samosir Regency, where the tourism sector is the main sector in improving the community economy and regional income.



**Fig. 1.** Diagram samosir regency PAD. Source: BPS samosir regency 2022.

The data above shows (Fig. 1) that the tourism sector has an important role in regional development in Samosir Regency, the decline in regional income figures was very drastic in 2020. This decline was caused by global world problems, namely Covid-19 which had an impact on all sectors so that it had implications on state and regional economies. Tourism development, especially tourist villages that are oriented towards local wisdom through the uniqueness or characteristics of the village, has provided color to regional development in Samosir Regency in 2020, however the implementation of this program has not been adequate due to the lack of knowledge and skills of the community in developing the uniqueness and excellence of their villages. However, in implementing the development of tourist villages in the Pusuk Buhit area, Samosir Regency experienced a crisis of environmental awareness for both local communities and visitors. Meanwhile, using the environment properly and correctly in tourist areas can have a positive impact on increasing visits and the regional economy.

The potential for tourism in the Pusuk Buhit area is abundant, particularly centered around the environment, encompassing natural landscapes, mountain exploration, waterfalls, and educational tourism. Overall, the tourist activities in this region primarily revolve around environmentally conscious endeavors, aiming to inspire a love for nature and promote environmental conservation among visitors. Therefore, there is a crucial need to prioritize the development of tourism villages that align with local wisdom, especially in relation to the environment. The preservation of the environment in the Pusuk Buhit area holds significant importance for the progress of tourism, as it directly influences the management and sustainable utilization of the available resources.

Environmental governance in the development of local wisdom-based tourist villages in the Pusuk Buhit of Samosir Regency is more directed towards the socio-cultural

environment, because it is a follow-up to the policy for structuring environmental functions as regulated in Act of the Republic of Indonesia Number 23 of 1997 concerning Environmental Governance in paper 1 Point 3 explains that sustainable development with an environmental perspective is a conscious and planned effort, which integrates the environment, including resources, into the development process to guarantee the capabilities, welfare and quality of life of present and future generations. Environmental governance in tourist areas also requires the readiness of human resources, including the government and local communities [6, 7]. That is the environment must be preserved is not only related to the physical but also non-physical, such as the preservation of traditional culture, the quality of art, pollution of monuments or other tourist attractions, or the decline in morals of young people (local communities) with the freedom to do things without being limited by norms and religious and tribal ethics including in the Pusuk Buhit area of Samosir Regency. Environmental problems in the Pusuk Buhit tourist area, in general, are careless disposal of rubbish, poor cleanliness at tourist attractions, causing environmental pollution which must be dealt with immediately. Regarding environmental management issues in the Pusuk Buhit area of Samosir Regency related to tourist destinations, as explained by Mason [8] and Schwann [9], that in planning and managing tourism which focuses on geographical and natural conditions, it has a big impact on the environmental planning around tourist areas, both those with direct interaction. with the local community and environment. So, in tourism development efforts are needed to preserve and organize the environment through actions in the form of regulations that specifically regulate the preservation and arrangement of the environment at tourist attractions, because the environment around tourism must be preserved, both the natural environment and the socio-cultural environment.

The advancement of tourist villages necessitates environmental governance, which entails overseeing and managing environmental elements to uphold sustainable practices. This entails implementing strategies and mechanisms to harmonize tourism development with the preservation of the environment, addressing concerns like conserving resources, engaging the local community, safeguarding cultural heritage, and mitigating the broader ecological consequences of tourism activities. Successful environmental governance within the framework of tourist village development strives to attain a balanced integration of economic progress, social welfare, and environmental sustainability.

## 2 Literature review

The development of tourist villages is an increasingly important phenomenon in the context of sustainability and the well-being of local communities. One key aspect that plays a crucial role in the success of this development is environmental governance. In the existing literature, various concepts, models, and approaches have been proposed to understand and implement environmental governance in the context of tourist villages. This literature review aims to explore recent developments in this area and highlight key issues that continue to be the focus of debate, including:

1. Keyim [10], Indicating that active participation of the local community has a positive impact on environmental governance in tourist villages. They emphasize the importance of building the capacity of the local community, empowering them in the decision-making process, and accommodating local needs in the development.
2. Anjos [11], Proposing an integrated governance model that combines ecological, economic, and social aspects within a single framework. This model offers a holistic approach to the management of tourist villages.
3. Vrontis [12], Highlighting the importance of effective governance in achieving a balance between economic development and environmental preservation in rural

tourist destinations. Offering a strategic perspective, this research identifies key factors that policymakers should consider.

4. Liu [13], Describing the conflict that arises between environmental conservation goals and the economic needs of the village. This research demonstrates that policies seeking a balance between environmental preservation and economic development are key to the sustainability of tourist villages.
5. Roxas [14], Conducting an in-depth analysis of the roles of stakeholders and governance in the development of sustainable tourist villages. With a focus on implementing best practices, this research provides valuable insights for planning and sustainable development.

Considering these key findings, this literature review provides a crucial foundation for understanding the complexity of environmental governance in the development of tourist villages. Further research is needed to explore the dynamic interactions among various factors related to environmental governance and to develop practical guidelines for practitioners and decision-makers. This is essential to gain a deeper understanding of the complexities and challenges faced in achieving a balance between the development of tourism potential and environmental sustainability at the local level. Consistent with previous research outlined, it can be concluded that the key indicators in this study encompass various aspects that aid in measuring environmental sustainability, community participation, and the management of tourism potential.

### **3 Methods**

This study employed the survey method as its initial phase, with the objective of identifying the tourism potential of villages based on key components of tourism implementation: tourist attractions, accessibility, accommodation, amenities, and infrastructure supporting tourism activities. Survey research, as defined by Gorard [15] dan Suryana [16], involves directly investigating and coordinating with relevant parties, such as the village government/Village Head and Tourism Awareness Groups, to comprehend the environmental conditions of the research location, including its character and nature. The survey design incorporated questionnaires, interviews, and observations, with a pilot test of the survey instrument conducted to identify potential issues and devise solutions. Research instruments, specifically a list of questions aligned with the indicators of variables in the conceptual model, were utilized to measure the studied variables. These measurement indicators were transformed into question formulations for the questionnaire used in the research. Employing a Likert scale, the questionnaire assessed answers to each question item on a scale ranging from 1 to 5. The manual creation of the questionnaire involved the researcher filling it out based on questions and responses obtained from prior interviews with respondents. Subsequently, the collected data underwent analysis using SWOT analysis to understand environmental management concerning the potential development of tourism villages in the Pusuk Buhit area of Samosir Regency. The research concludes by summarizing its findings and presenting suggestions for further research or practical implications, accompanied by recommendations.

### **4 Results and discussion**

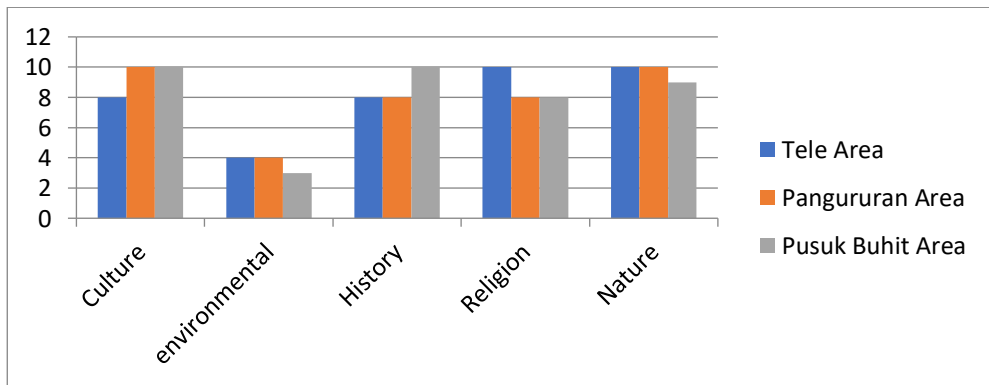
Tourism policy and planning tends to be combined with thinking and change that involves tourism issues as factors influencing both international institutions and political practices regarding the quality of economic, socio-cultural and environmental policies and planning aimed at increasing competitiveness and sustainable resource management. In principle,

sustainable tourism development refers to environmental, economic and socio-cultural aspects and these three aspects must be mutually compatible. As stated by Edgell [17], the three elements of sustainable tourism development, namely environmental, economic and socio-cultural, are as follows: 1) Utilizing environmental resources optimally which is a key element in tourism development, maintaining the process ecologically important and helps to conserve natural heritage and biodiversity; 2) Respect the socio-cultural authenticity of the host community, preserve the built and living cultural heritage and traditional values, and contribute to intercultural understanding and tolerance; 3) Ensure long-term viable economic operations, provide socio-economic benefits for all stakeholders that are distributed fairly, including stable employment and income generation opportunities and social services for local communities, and contribute to poverty alleviation.

Responding to the opinion of Hartman [18] stated that good and optimally successful tourist area planning must be based on four aspects, namely:

1. Maintain environmental sustainability
2. Improving the welfare of the community in tourist areas
3. Guarantee visitor satisfaction
4. Increase the integration and unity of community development around the area and its development zone.

Based on the explanation above, it can be concluded that tourism potential development policies must be able to introduce planning concepts that can support the development of all existing potential [19, 20]. A process of planning a tourist attraction requires a more thorough focus on aspects other than the resources (attractions) in the tourist area so that tourism development can also move the wheels of the economy, play a role in preserving the environment and improve the welfare of the community in the tourist area through involvement. directly or indirectly. Samosir Regency has three areas which are grouped into sustainable tourism planning, namely:



**Fig. 2.** Tourism potential in 3 (three) Samosir regency areas.

Derived from the provided illustration (Fig. 2), one can infer that in Samosir Regency, the emphasis in developing tourist villages, including the Pusuk Buhit area, is placed on prioritizing the environment. Consequently, the environmental management associated with the development of tourist villages plays a crucial role in fostering integrated tourism innovations harmonized with the surrounding environment.

The Pusuk Buhit tourist area, situated in Samosir Regency, stands as a protected forest zone with abundant potential for showcasing natural beauty, camping sites, outbound activities, and trekking opportunities. The intention behind this attraction is to encourage collaboration between local communities and tourists in order to uphold cleanliness and

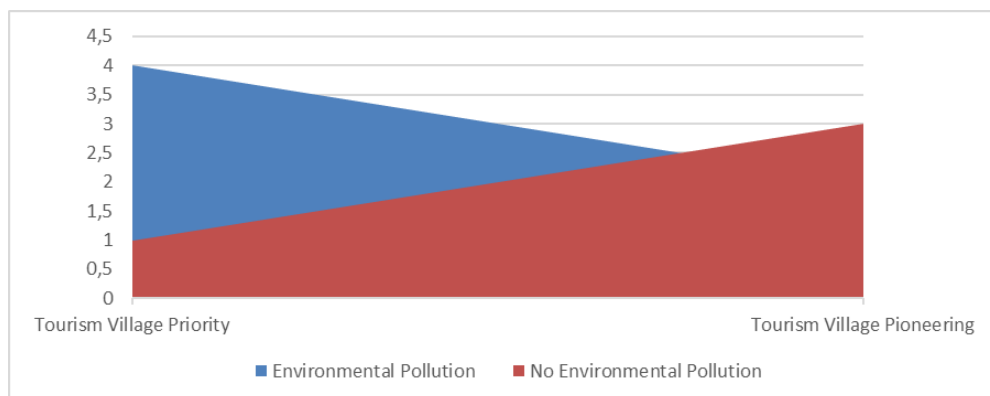
preserve the environment within the Pusuk Buhit tourist area. It is emphasized that leveraging the environment for tourism development can yield economic, social, and cultural advantages. This aligns with the principles outlined in the Republic of Indonesia Act Number 23 of 1997 on Environmental Management, particularly in Article 1, Point 3, which articulates the importance of sustainable development with an environmental perspective. This entails a deliberate and planned effort to integrate the environment, including its resources, into the development process, aiming to ensure the capabilities, welfare, and quality of life for both current and future generations. Environmental management in tourist areas within Samosir Regency should align with the National RTRW document, specifically addressing the development of the Lake Toba DSK area, recognized as a National strategic area with a focus on environmental concerns. These concerns encompass: 1) maintaining and enhancing ecosystem balance; 2) conserving biodiversity; 3) sustaining and improving the protective function of the area; 4) safeguarding the unique features of the natural landscape; and 5) preserving national cultural heritage. The Lake Toba KSN RTR outlines objectives that include: 1) safeguarding the community's essential water sources, ecosystems, and Batak traditional village areas; and 2) fostering the development of globally significant tourism zones integrated with the management of cultivation areas in harmony with the environmental carrying capacity and resilience to natural disasters. To accomplish these objectives, various policy strategies are implemented, namely:

1. Ensuring the stability of Lake Toba's quantity and overseeing water quality control.
2. Safeguarding the crucial ecosystems in and around the lake waters.
3. Protecting the village areas and cultural heritage of the Batak traditional community.
4. Developing and restoring upscale tourism zones and popular tourist areas of international, national, and regional appeal, designed to be resilient to natural disasters.
5. Regulating the cultivation areas for lake fisheries.
6. Preserving areas dedicated to the cultivation of food crops to ensure food security.
7. Monitoring community-based and environmentally sustainable horticultural and plantation cultivation areas.
8. Facilitating collaboration in managing and preserving environmental quality, marketing produce from cultivation areas, and enhancing infrastructure and service facilities across regions.

Paramati [21], Rajaonson [22], that is environmental management in the tourism sector is an integral part of sustainable development which aims to combine aspects in development strategies that realize community welfare, through increasing the ability to support human life and other living creatures as the carrying capacity of the environment. Currently, environmental problems are still a strategic and crucial issue that has a major influence on sustainable development. The grouping of tourist villages in Samosir Regency, namely Advanced Tourism Villages, Priority Tourism Villages and Pioneer Tourism Villages, however for the Pusuk Buhit area it only fulfills 2 tourist village groupings, namely

1. Priority Tourism Villages, including Boho Tourism Village, Bntu Mauli Tourism Village, Hutabalian Tourism Village, Sarimarihit Tourism Village, Aek Sipitu Dai Tourism Village
2. Pilot Tourism Villages, namely Siboro Tourism Village, Huta Ginjang Tourism Village, Tamba Dolok Tourism Village, Sabulan Tourism Village, Partungko Naginjang Tourism Village

In accordance with the survey results obtained in ten tourist villages in the Pusuk Buhit area, especially with regard to environmental planning, namely:



**Fig. 3.** Number of Villages Implicated by Environmental Pollution. Source: data processing, 2023.

Based on the presented data (Fig. 3), it is evident that there is insufficient environmental management in the progression of tourist villages within the Pusuk Buhit area. An environmental evaluation conducted in 2023 revealed that a significant portion of tourist attraction administrators has not conscientiously taken measures to conserve the environment, consequently impacting the participation of visiting tourists. Of particular concern is the cleanliness of restroom facilities and waste disposal, critical factors influencing the categorization of tourist villages in Samosir Regency. This initiative aligns with the execution of the policy set forth by the Regent of Samosir, North Sumatra Province, as outlined in the Decree Number 67 of 2023 regarding the Recognition of Tourism Villages and Tourism Villages in Samosir Regency for the year 2023. This recognition is determined based on criteria assessment scores and clarifications:

1. Tourist attractions which include natural tourism, cultural tourism, historical tourism, artificial tourism and special interest tourism or other tourism.
2. Availability of infrastructure including roads (village roads, district roads, provincial roads and national roads), electricity networks, telecommunications networks (telephone networks and data networks) and information signs
3. Availability of public facilities such as toilets (tourist toilets and international toilets) and meeting halls (village halls and tourist meeting halls)
4. Tourist attraction land ownership status (village, district, forestry and private)
5. Tourism support facilities such as types of accommodation (homestays, guest houses and hotels), food stalls (traditional food stalls and national food stalls), craftsmen (wood carving, traditional weaving, traditional culinary and national culinary), parking facilities and rubbish bins.
6. Other considerations that support tourist villages such as tour packages.

Based on the results of research conducted, the acceleration of tourism village development in Samosir Regency still faces many obstacles, both in terms of facilities and infrastructure and social aspects related to community behavior, especially in the Pusuk Buhit area. The development of tourist villages oriented towards local wisdom is the main target of regional development in Samosir Regency, this is in accordance with the opinion of Jubaedah [23], Syafrizal [24] and Tanjung [25], who argue that local wisdom is customs and habits that have become traditions in certain Traditions within certain social groups, passed down through successive generations, endure as a community culture of significant value, deeply ingrained to contribute to the enhancement of the local economy. However, Chiu underscores the influence of public perspectives on natural conditions, revealing low trust, which adversely affects the government's capacity to establish enduring opportunities aligned with



long-term tourism development. The opportunities and challenges in the advancement of tourist villages in the Pusuk Buhit area hinge on community participation in adhering to environmental standards that can bolster village tourism in each tourist locale. Subsequently, the research findings enable the formulation of a SWOT analysis, yielding the following insights:

**Table 1.** SWOT Matrix for environmental management of tourism villages based on local wisdom in the Pusuk Buhit Area.

<p>INTERNAL</p> <p>EKSTERNAL</p>	<p><b>STRENGTH</b></p> <ol style="list-style-type: none"> <li>1. There is tourism potential that can be developed in environmental planning that is oriented to local wisdom</li> <li>2. There is a tourism policy regarding determining criteria and grouping tourist objects as support for tourism development</li> <li>3. Samosir is one of the tourist destinations in the Lake Toba area as priority tourism</li> </ol>	<p><b>WEAKNESSES</b></p> <ol style="list-style-type: none"> <li>1. Insufficient 4A components in the development of tourist villages in the Pusuk Buhit area</li> <li>2. Limited community capacity in environmental planning so that it can support the development of tourist villages</li> <li>3. Collaboration and cooperation in developing tourism in Samosir Regency which is environmentally oriented is not yet optimal</li> </ol>
<p><b>OPPORTUNITIES</b></p> <ol style="list-style-type: none"> <li>1. Environmental management is inadequate due to low access to information technology</li> <li>2. High development and dynamics of regional social, economic and cultural life</li> </ol>	<p><b>STRATEGY SO</b></p> <ol style="list-style-type: none"> <li>1. Increase the capacity/capability of local governments in tourism development, especially environmental management</li> <li>2. Creating tourism products that focus on local values that exist in the community</li> </ol>	<p><b>STRATEGY WO</b></p> <p>Drafting regulations regarding environmental management of tourist villages</p>
<p><b>THREATS</b></p> <ol style="list-style-type: none"> <li>1. The quality of the community's ability to develop tourism to produce innovation is still limited</li> <li>2. There are no standards for environmental management of tourist villages</li> </ol>	<p><b>STRATEGY ST</b></p> <p>There is special assistance and guidance for the community in the tourism sector, especially the principles in environmental management of tourist villages</p>	<p><b>STRATEGY WT</b></p> <p>Fulfillment of the 4A components optimally so that it becomes a supporting capacity in structuring the tourist village environment</p>

Source: data processing, 2023

Based on the results of the SWOT analysis matrix (Table. 1), preserving local values as a form of local wisdom becomes an opportunity and challenge in the tourism sector which does not ignore environmental conditions but can also provide the implementation of natural and cultural sustainability which can be collaborated optimally so as to create tourism innovations that excel in the era of society 5.0 through the use of digitalization technology.



The development of a tourism village based on local wisdom in Samosir Regency is also a breakthrough in promoting tourism at the international level by utilizing the natural environment and digital transformation.

The results of this research also have strengths and weaknesses in realizing its objectives, especially regarding environmental management around tourist village destinations, namely (Table. 2):

**Table 2.** Strengths and weaknesses of research results.

<b>Strengths</b>	<b>Weaknesses</b>
<p><b>Environmental Maintenance:</b>                      Provides an in-depth view of how local wisdom-based environmental governance relates to tourism development in Samosir Regency</p>	<p><b>Conflict of Interest:</b>                      There is a potential conflict between environmental management policies and the economic or social interests of the community in achieving sustainable tourism village development</p>
<p><b>Local Community Empowerment:</b>                      Increase the sense of ownership and responsibility for the environment among local communities in future tourism development</p>	<p><b>Uneven Community Involvement:</b>                      Not all community members may be equally involved in the environmental governance process</p>
<p><b>Sustainable Development in the Tourism Sector:</b>                      Generate ways in which environmental governance can be integrated with tourism village development to ensure long-term sustainability.</p>	<p><b>Dependence on External Factors:</b>                      Village tourism may depend on external factors, such as the global tourism market, which can be difficult to control.</p>
<p><b>Local Economic Improvement:</b>                      Strengthening environmental governance on local economic outcomes so as to have a positive impact on community welfare through tourism development</p>	<p><b>Resource Limitations:</b>                      Research on environmental governance in local wisdom-based tourism village development may require significant resources in terms of time, money and human energy.</p>

The strengths and weaknesses resulting from this research are a critical step in achieving sustainable development and high support capacity in the tourism sector in Samosir Regency. The results of this research can make a positive contribution to the development of tourist villages, encourage innovation in environmental management, and help create tourist villages that are not only attractive tourism destinations, but also maintain unique local culture and ecology for future generations.

## 5 Conclusion

The progress of tourism is achieved by establishing institutions, leveraging local strengths and values, involving tourism groups, empowering and cultivating the potential of natural resources and regional communities, thereby transforming into a regional asset for establishing tourist villages rooted in indigenous wisdom. The implementation of environmentally conscious principles in tourism development can serve as a groundbreaking approach to creating fair and community-enhancing tourist villages while prioritizing environmental conservation. This ensures that the neighboring tourist areas remain aesthetically pleasing and unspoiled. Effective environmental management not only enhances the beauty of tourist destinations but also guarantees a comfortable experience for every visitor.

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