



AN INTEGRATIVE MODEL OF SUSTAINABLE TOURISM VILLAGES: SYNERGIZING EDUCATION, GREEN ECONOMY, AND TECHNOLOGICAL INNOVATION WITHIN THE SDGS FRAMEWORK

Muhammad Ozi Setiawan^{1*}, Yulita Suryantari², Alfatri Anom³

^{1,2,3}Universitas Terbuka

*Corresponding Author Email: ozisetiawan208@gmail.com



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Abstract: *This study aims to formulate a sustainable tourism village development model based on the Sustainable Development Goals (SDGs) through the integration of education, green economy, and innovation and technology. This research employs a qualitative method with a literature review approach, in which data were collected through an in-depth analysis of national and international academic literature indexed in Scopus, Web of Science, and Sinta with a publication year limitation from 2016 to 2025. This approach was chosen as it is considered appropriate for identifying conceptual patterns, comparing findings, and systematically formulating an integrative model of sustainable tourism village development. The findings reveal that quality education serves as a key factor in enhancing the human resource capacity of local communities, the implementation of a green economy contributes to more inclusive and equitable economic growth, while innovation and technology accelerate the transformation toward adaptive and sustainable tourism development. The main finding of this study shows that the synergy between education, green economy, and technological innovation acts as the primary driver in creating a sustainable tourism village model that is adaptive to global dynamics and aligned with the SDG principles. Nglanggeran Tourism Village is positioned as a model of sustainable rural tourism that reflects the successful integration of these three dimensions. This study concludes that the synergy of education, green economy, and technological innovation is the key to developing sustainable, adaptive, and inclusive tourism villages that remain relevant to global challenges. The implications of this study strengthen the literature on SDG-based sustainable tourism development models and provide practical guidance for governments and tourism village managers, particularly in designing inclusive, innovative, and environmentally friendly development strategies.*

Keywords: *Sustainable Tourism; Inclusive Rural Tourism Model; Nglanggeran.*

Abstrak: *Penelitian ini bertujuan merumuskan model pengembangan desa wisata berkelanjutan berbasis Sustainable Development Goals (SDGs) melalui integrasi pendidikan, ekonomi hijau, serta inovasi dan teknologi. Penelitian ini*

menggunakan metode kualitatif dengan pendekatan studi kepustakaan, di mana data dikumpulkan melalui telaah mendalam terhadap literatur akademik nasional dan internasional yang terindeks Scopus, Web of Science, dan Sinta dengan batasan tahun publikasi 2016–2025. Pendekatan ini dipilih karena dinilai tepat untuk mengidentifikasi pola konseptual, membandingkan temuan, serta merumuskan model integratif desa wisata berkelanjutan secara sistematis. Hasil kajian menunjukkan bahwa pendidikan berkualitas menjadi faktor kunci dalam peningkatan kapasitas sumber daya manusia masyarakat lokal, penerapan ekonomi hijau berkontribusi terhadap pertumbuhan ekonomi yang inklusif dan berkeadilan, sementara penguatan inovasi dan teknologi berperan mempercepat transformasi menuju pembangunan pariwisata yang berkelanjutan dan adaptif. Temuan utama dari penelitian ini menunjukkan bahwa sinergi antara pendidikan, ekonomi hijau, dan inovasi teknologi menjadi penggerak utama dalam menciptakan model desa wisata berkelanjutan yang adaptif terhadap dinamika global dan selaras dengan prinsip SDGs. Desa Wisata Nglanggeran diposisikan sebagai model desa wisata berkelanjutan yang mencerminkan keberhasilan integrasi ketiga dimensi tersebut. Penelitian ini menunjukkan bahwa sinergi pendidikan, ekonomi hijau, dan inovasi teknologi merupakan kunci dalam menciptakan desa wisata berkelanjutan yang adaptif, inklusif, dan sesuai dengan prinsip SDGs, sekaligus relevan dalam menghadapi tantangan global. Implikasi penelitian ini memperkuat literatur mengenai model pengembangan pariwisata berkelanjutan berbasis SDGs serta memberikan panduan praktis bagi pemerintah dan pengelola desa wisata, khususnya dalam merancang strategi pembangunan yang inklusif, inovatif, dan ramah lingkungan.

Kata Kunci: *Pariwisata Berkelanjutan; Model Desa Wisata Inklusif; Nglanggeran.*

INTRODUCTION

The development of tourism, which has grown significantly in recent years, has become a driving force in promoting economic growth, cultural preservation, and the improvement of community welfare. One type of tourism that is currently being extensively developed is rural tourism, commonly known as *village tourism*. It refers to rural areas that serve as models for tourism attractions aimed at increasing tourist visits and are characterized by unique features in terms of nature, culture, or community structure.

According to Sudheer (2021), rural tourism has now evolved into a system that contributes positively to the tourism industry, particularly in countries where the majority of the population resides in rural areas. This indicates that village tourism holds significant potential for large scale development in line with the continuously growing tourism trends, and is therefore expected to serve as a stimulus for national economic growth. As explained by Kadir and Chew (2024), a sustainability oriented village tourism model should be based on a strategic approach that encompasses improving community welfare, providing authentic

tourism attractions, and preserving the ecological environment in order to maintain the sustainability of the tourism village.

Tong et al., (2024) revealed that the development of rural areas serves as an instrument capable of driving tourism growth while simultaneously acting as a central point for environmental conservation aimed at improving the welfare of rural communities and stimulating economic growth. However, in Indonesia, many tourism villages still focus solely on one dimension of development, such as the economic aspect or cultural preservation. Only a few are able to comprehensively integrate the three main dimensions of the Sustainable Development Goals (SDGs), namely: quality education that enhances human resource capacity (Goal 4), economic growth oriented toward environmentally friendly or green economy practices (Goal 8), and the promotion of technological innovation in sustainable development (Goal 9), as the foundation for managing and developing tourism villages. Therefore, it is essential to establish an integrative model for tourism village development so that the principles of sustainability can be implemented in a holistic and continuous manner.

Amid the intense competition in today's tourism market, many tourism villages across various regions are actively promoting their potential and natural beauty to attract visitors. Nevertheless, several challenges remain to be addressed, particularly concerning how to formulate an appropriate framework model for the development of inclusive and sustainable tourism villages. Therefore, the main focus of this study is to develop a model that fosters effective synergy in accordance with sustainability principles, thereby building a tourism sector that is adaptive, superior, and competitive amid the continuously changing global dynamics. This issue has become increasingly urgent to resolve, considering the emergence of various contemporary challenges such as climate change, the rapid pace of technological disruption, and the complexity of socio-economic dynamics (Sana, 2025).

In line with these issues, the development of sustainable tourism villages requires a new approach that is more comprehensive and integrative. Previous studies indicate that most research has focused on a single dimension, such as economic or socio-cultural aspects, while the interconnections among education, the green economy, and technological innovation have not been extensively explored. Based on this condition, there exists a research gap that must be systematically examined in order to formulate an integrative model for sustainable tourism village development.

Therefore, this study aims to systematically analyze an effective integration model that unites these three elements as the foundation for sustainable tourism village development. This research is expected to provide theoretical contributions by strengthening the discourse on

SDGs-based tourism studies, as well as practical contributions for policymakers and tourism village managers in designing inclusive, innovative, and sustainable development strategies. The findings of this study are expected to serve as a reference for stakeholders in formulating strategic policies that promote tourism as a leading sector that remains adaptive to future challenges without neglecting the needs of the present generation. Through this approach, rural tourism activities are expected to generate positive contributions not only by advancing rural development, but also by stimulating economic growth, preserving natural ecosystems, and safeguarding local cultural heritage within tourism village areas (Chan, 2023).

LITERATURE REVIEW

The theories employed to support this study include the Sustainable Tourism Development Theory, the Rural Tourism Theory, and the Community Empowerment Theory.

Sustainable Tourism Development Theory

According to UNWTO (2023), the value chain reflected in the 17 Sustainable Development Goals (SDGs) has the potential to position the tourism sector as a leading industry, providing opportunities for policymakers and stakeholders across the tourism value chain to actively participate in supporting the sustainable development agenda. This statement establishes a linear correlation indicating that sustainable tourism development requires an integrated approach, in which the tourism system must be able to meet present needs without compromising the needs of future generations. The Sustainable Tourism Development Theory is relevant for addressing issues related to destination management, local community welfare, environmental conservation, and innovation in tourism product development, so that the tourism sector can continue to grow inclusively, sustainably, and with high competitiveness.

The role of the SDGs in tourism destination development requires an integrative framework that is coherent and aligned with the sustainability pillars embedded within it. SDG 4, which emphasizes the provision of quality education, highlights education as a fundamental pillar for strengthening the capacity of local communities to become active agents in tourism development. In the context of tourism villages, education is not limited to access to formal learning, but also encompasses tourism literacy, skills training based on local potential, and an understanding of environmental conservation. By enhancing educational quality, local communities are better equipped to plan, manage, and develop tourism destinations independently. Thus, SDG 4 serves as a strategic instrument that ensures tourism development is not solely oriented toward increasing visitor numbers, but also toward improving knowledge,

competencies, and sustainability awareness among the community as key actors in development.

Furthermore, the integration of SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure) provides a synergistic foundation for sustainable tourism village development. SDG 8 promotes inclusive and equitable economic growth through the utilization of local resources and the application of green economy principles. This includes job creation, the development of micro-enterprises based on village potential, and the strengthening of environmentally friendly tourism value chains. Meanwhile, SDG 9 underscores the essential role of innovation and sustainable infrastructure in enhancing efficiency, accessibility, and destination competitiveness. The use of digital technologies, innovative tourism services, information systems, and sustainable infrastructure becomes a crucial factor not only for improving tourist experiences but also for maintaining environmental integrity. The synergy between SDG 8 and SDG 9 reinforces the argument that the success of tourism village development is not solely determined by economic performance, but also by the destination's ability to transform through adaptive and sustainable innovation.

The researcher observes that the synergy among these three pillars mutually reinforces and complements one another, providing a relevant foundation for a sustainable tourism village development model amid increasingly complex and competitive global dynamics. The integration of improved educational quality, the application of green economy principles within tourism activities, and the strengthening of innovation and infrastructure offers a more comprehensive strategic direction for designing sustainable tourism development. This approach is not only intended to enhance community capacity and strengthen the local economy, but also to ensure that destination management remains grounded in environmental conservation principles. Through such integration, tourism village development has the potential to become more adaptive and sustainable, as each pillar contributes to shaping a resilient management system. Education enhances the capabilities of community members as primary actors, the green economy guarantees the sustainable use of local resources, while innovation and infrastructure expand accessibility and increase the destination's competitiveness. Therefore, the collaboration among these three SDG pillars forms a more coherent framework for tourism village development and serves as a solid conceptual foundation for the integrative model proposed in this study.

Rural Tourism Theory

Rural tourism possesses distinctive characteristics that set it apart from other types of tourism and has been increasingly favored by the public. According to Baiquni (2021), rural tourism refers to the development of tourism areas that integrate local natural diversity into a cohesive whole, where natural attractions are harmoniously combined with the local culture that has developed within the community. This tourism commodity is considered a precursor to the development of a sustainable tourism sector, where tourists not only enjoy natural beauty but also engage in cultural exchange with local communities, understand local traditions, and experience authentic interactions that enrich social and economic engagement within tourism villages.

Community-Based Tourism Theory

In efforts to maintain the integrity of tourism destinations, the role of local communities is distinctive and serves as a fundamental element in the development of complex tourism systems. According to Prakoso et al., (2021), the success of tourism development heavily depends on the active participation of local communities in shaping and preserving local culture, which forms an integral part of destination management. This system emphasizes that community-based tourism requires local awareness as the primary driver for systematically developing the potential of tourism areas. Consequently, tourism development can be better aligned with contributions from local communities while explicitly ensuring that the economic needs of the local population are adequately met.

Integrated Theoretical Framework

The three theories employed in this study Sustainable Tourism Development Theory, Rural Tourism Theory, and Community-Based Tourism Theory are linear and interrelated, as they collectively provide a coherent and strategic conceptual foundation for developing an integrative model of inclusive and sustainable tourism villages. Sustainable Tourism Development Theory offers an overarching framework that supports the creation of an integrated approach aligned with the SDGs, where tourism activities are expected to generate economic benefits without compromising the needs of future generations. Consequently, tourism development must reflect responsible resource management, community welfare enhancement, and innovation that supports long-term sustainability.

Rural Tourism Theory further contextualizes the development of tourism villages within the socio-cultural and ecological landscape of rural areas, which possess unique characteristics. This theory explains that the appeal of tourism villages derives not only from natural landscapes but also from local culture and community practices that shape their

distinctiveness. These unique features strengthen destination image and naturally enhance brand positioning, allowing the identity of tourism villages to be interpreted more authentically by visitors. Such identity is not reflected solely through tourist attractions but also through the values, traditions, and everyday experiences of the local community, all of which form an integral part of the tourism product. Thus, sustaining tourism villages requires the preservation of local identity and the wise utilization of rural potential.

Meanwhile, Community-Based Tourism Theory complements the previous two theories by positioning local communities as central actors in the development process. Community participation in planning, managing, and benefiting from tourism activities is essential to ensure inclusive village tourism development. This theory emphasizes that communities should not merely be objects of tourism, but should function as subjects who possess the capacity, decision-making power, and clear economic benefits. This demonstrates that high-quality human resources are crucial for achieving superior and inclusive tourism development, as the process relies on character strengthening, enhanced innovation and technological capabilities, and active community involvement in reinforcing key elements of village tourism. Therefore, community capacity becomes a critical factor in ensuring that tourism villages develop not only economically but also socially and institutionally, securing long-term sustainability.

When combined, these three theories form a mutually reinforcing framework for designing and structuring an integrative model of sustainable tourism villages. Sustainable Tourism Development Theory provides strategic direction, Rural Tourism Theory situates the model within the appropriate rural context, and Community-Based Tourism Theory ensures that community involvement remains the core foundation. The integration of these theories results in a model that is not only conceptually robust but also relevant and applicable to real-world sustainable tourism village development.

RESEARCH METHODOLOGY

This study employs a qualitative method based on a literature review to formulate a sustainable tourism village model. This method was chosen because it allows the researcher to conduct an in-depth exploration of relevant literature without the constraints of time and space, while providing flexibility in examining conceptual issues holistically.

According to Haryono et al., (2024), literature review plays a crucial role not only as a means of gathering information but also as an approach to explore, interpret, and analyze various relevant references, thereby establishing a strong conceptual foundation. This approach

is particularly suitable for theoretical research aimed at developing a conceptual model based on literature studies. Therefore, this study adopts the literature review method, as it enables the integration of findings from previous studies, the identification of literature gaps, and the formulation of a theoretical framework and conceptual model aligned with the research focus (Synder, 2019).

The literature was collected from reputable international academic databases (Scopus, Web of Science, ScienceDirect, DOAJ) and national databases (Sinta), as well as relevant academic books. The search process was conducted using keywords such as ‘sustainable development goals,’ ‘rural tourism,’ and ‘green economy.’ Literature selection was based on three main criteria: (1) relevance to the research topic, (2) academic validity and source reputation, and (3) recency of the reference, prioritizing publications from the last nine years (2016–2025) while also considering classical or seminal works that provide significant conceptual contributions to sustainable tourism studies.

The collected literature was then analyzed in depth using a descriptive synthesis approach. The analysis process included identifying key themes, grouping information based on the tourism village development model, and examining its relevance to the integration of economic, educational, and technological aspects within the context of sustainable tourism development.

Each piece of information was critically reviewed by the researcher to construct accurate arguments within the narrative. This process ensures that every idea presented is not only theoretically relevant but also grounded in a strong and structured rationale. Consequently, this study is expected to produce a systematic conceptual framework that serves as a basis for the development of policies and strategies for sustainable tourism development.

To avoid methodological ambiguity, this study is positioned as a general conceptual analysis rather than an empirical case study. Although Nglanggeran Tourism Village is discussed in the results and discussion section, it is included only as an illustrative example to demonstrate how SDG 4, SDG 8, and SDG 9 intersect and how their integration can be reflected in the development of an inclusive, sustainable, and adaptive tourism village model. Nglanggeran is not treated as the primary unit of analysis nor as a formal case study within this research design. Its use serves solely to support the theoretical argument by providing a practical illustration of the proposed integrative model, helping to clarify how the three SDG pillars can work together in a real-world context. Therefore, this study should be understood as a conceptual inquiry grounded in literature synthesis, with contextual examples used to reinforce the conceptual validity of the model that is developed.

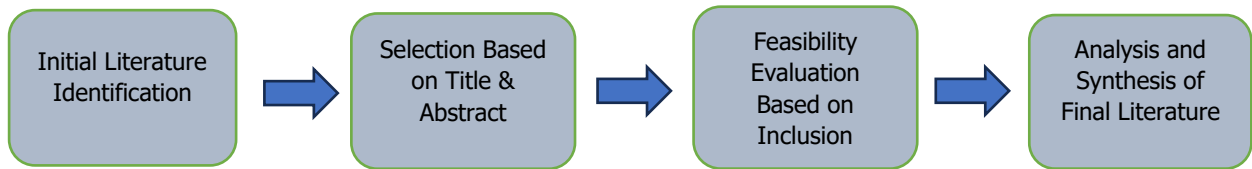


Figure 1. Analysis of the Literature Selection Process (Authors, 2025)

RESULTS AND DISCUSSION

The results of this study indicate that the development of tourism villages must meet quality criteria that align harmoniously with the principles of the SDGs. Integration of the green economy concept, quality education, and innovation development is essential in creating an inclusive tourism village model. According to Liu et al. (2023), the concept of tourism development, particularly in rural areas, has been shown to contribute to local economic growth while simultaneously improving the quality of community welfare. These indicators suggest that innovation serves as a key driver in the development of tourism villages. Thus, the successful construction of an integrative tourism model framework can be achieved through synergy among improving education quality, fostering innovation and technology, and implementing green economy principles.

In building a sustainable and inclusive tourism village model, management must consider multiple perspectives comprehensively. At the strategic level, the development of tourism village commodities requires significant support from economic growth, the application of innovation that promotes tourist mobility, and a quality education system to strengthen the capacity of communities as primary actors in tourism activities. In this way, the tourism sector not only generates value integrated with various aspects of development but also optimizes the potential of tourism destinations as a source of local economic growth (Satyarini et al., 2017).

Table 1. Fulfillment of Inclusive Tourism Village Criteria Based on Education, Economy, and Innovation

SDGS Point	SDGS Principle	Criteria	Indicator/Implementation
SDG 4: Quality Education	Ensuring inclusive, equitable, and quality education for all.	The tourism village provides quality education programs, including tourism literacy workshops, local culture introduction for all age groups, and entrepreneurship training.	Number of education programs implemented; community participation; enhancement of local residents' skills.
SDG 8: Decent Work and Economic Growth	Supporting sustainable economic growth and decent work for all.	The tourism village fosters local economic growth and adopts green economy principles in its tourism activities.	Increase in the number of new jobs and enhancement of local community income.
SDG 9: Industry, Innovation, and Infrastructure	Promoting innovation and sustainable infrastructure development.	The tourism village develops digital technology and sustainable innovations to enhance tourist access and experiences.	Availability of digital applications for tourism promotion, increase in tourist visits, and the introduction of new tourism products or services.

(Authors Data Analysis, 2025)

The researcher identified several framework patterns reflected in various tourism villages in Indonesia that demonstrate the integration of sustainability principles. One representative example is Nglanggeran Tourism Village in the Special Region of Yogyakarta, which illustrates how technology, quality education, and green economy practices can be applied in an integrated and mutually reinforcing manner. Similar patterns although with varying degrees of success can also be observed in other tourism villages such as Penglipuran Tourism Village in Bali, which demonstrates that the integration of these three elements can be adapted to the unique characteristics of each locality. In Penglipuran, for instance, tourism development is grounded in cultural preservation, traditional spatial planning, and consistent environmental stewardship as integral components of communal identity. The village's ability to maintain harmony between culture, environment, and tourism activities provides another example of how sustainability principles can be operationalized through different approaches while remaining aligned with SDG values. These examples indicate that the synergy among

technology, the green economy, and quality education can be realized through diverse strategies tailored to the social, cultural, and ecological conditions of each village. As a result, the proposed integrative model remains relevant and adaptable in supporting sustainable tourism development. Therefore, the use of multiple illustrative cases underscores that the model is not rigid or singular, but flexible enough to be applied across various tourism village contexts in Indonesia.



Figure 2. Geography of Nglanggeran Tourism Village (Ministry of Tourism and Creative Economy, 2025)

According to Hendrayani et al., (2018), Nglanggeran Tourism Village has successfully increased tourist visits without compromising environmental sustainability. The success in maintaining a balance between tourism growth and ecological sustainability was internationally recognized when the village received an award from the United Nations World Tourism Organization (UNWTO) in 2021 as one of the world's best tourism villages. These findings indicate that sustainability strategies not only play a role in preserving ecosystems but also serve as a critical factor in building long-term competitive advantages in tourism.

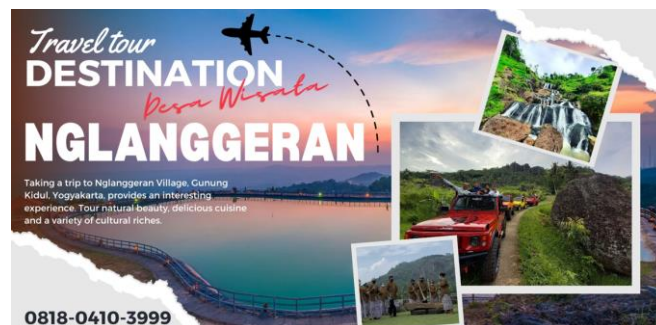


Figure 3. Promotion of Nglanggeran Tourism Village (Nglanggeran Tourism Village Official Website, 2023)

These findings underscore that sustainable tourism development requires the cultivation of a strong and competitive reputation in a harmonious manner. Nglanggeran Tourism Village serves as concrete evidence that creating a leading tourism village necessitates collaborative synergy among the government, academia, industry, local communities, and the media. The key to this success lies in the combination of pillars outlined in the SDGs, particularly economic, educational, and technological innovation aspects, which function as a paradigm for delivering high-quality experiences to tourists. Thus, the development model of Nglanggeran Tourism Village can serve as a reference for building tourism destinations that are not only economically oriented but also emphasize social and ecological sustainability.

The researcher developed several analytical frameworks for each element that effectively illustrate the strengths of Nglanggeran Tourism Village. These findings are then elaborated into three main aspects: innovation and technology, quality education, and the green economy, which simultaneously serve as the foundation for formulating a sustainable tourism village model.

Strengthening Community Commodity Systems through Quality Education

According to Coll-Ramis et al., (2023), education plays a fundamental role as a determining factor influencing tourist demand patterns, ranging from community perceptions of tourism impacts to shaping tourists' profiles, behaviors, and travel choices. This is reflected in the practices of Nglanggeran Tourism Village, where early awareness has been instilled among local residents to collaboratively develop the area's potential through the values of togetherness and mutual cooperation. The integration of education, collective awareness, and sustainable practices not only strengthens the socio-economic capacity of the community but also creates a competitive tourism village model that aligns with sustainability principles. A similar finding was observed in Penglipuran Tourism Village, Bali, where the development of high-quality educational aspects positively impacted the improvement of services provided to visiting tourists, resulting in enhanced tourist satisfaction during their travel experience (Artha Putra et al., 2023) Therefore, this element demonstrates that strengthening education plays a fundamental role in creating superior service quality, increasing tourist satisfaction, and supporting sustainable tourism development.

The scenic charm of the Ancient Mountain has fostered ecotourism activities, where tourists are invited to enjoy the landscape while learning about the local flora and fauna in Nglanggeran Tourism Village. As explained by Setiawan and Suryantari (2024), ecotourism activities contribute positively to the sustainability of tourism while promoting the importance of maintaining a green and pristine local environment. In Nglanggeran Tourism Village, these

activities are designed as one of the leading tourist attractions, enabling educational interactions between visitors and nature, thereby providing meaningful experiences while reinforcing a collective commitment to ecological balance.

The fertile cocoa plantations in Nglanggeran Tourism Village provide significant potential as a producer of premium chocolate in Indonesia. This potential is not only utilized in agricultural products but also developed into a culinary tourism attraction. Chocolate-based products, such as chocolate dodol, chocolate-flavored drinks, and chocolate bakpia, are often taken home by visitors as souvenirs, thereby strengthening the village's culinary identity. These activities also offer a unique gastronomic tourism experience, allowing tourists to learn the process of transforming cocoa into value-added products. Thus, local-based culinary innovation not only preserves the region's distinctive flavors but also promotes sustainable economic growth for the community.



Figure 4. Ecotourism Activities Related to Cocoa Farming Practices (Kelurahan Nglanggeran Official Website, 2019)

Implementation of the Green Economy for Local Economic Growth

According to Zhironkin and Cehlár (2022), the green economy is an economic approach that emphasizes sustainable development by maximizing the use of renewable resources, reducing the environmental impact of human activities, and promoting the adoption of modern technologies. The implementation of this concept aims to create economic growth that aligns with ecological sustainability, enhances production efficiency, and encourages environmentally friendly industrial innovation, allowing both communities and the environment to benefit simultaneously. Through a well-structured approach, tourism activities

are expected to generate economic benefits without compromising the needs of future generations.

The implementation of the green economy in Nglanggeran Tourism Village has led to positive growth for the local community. Tourism activities have shown significant year-to-year increases, driving village economic growth through job creation, increased community income, and the development of local enterprises such as chocolate processing, handicrafts, and eco-friendly homestays. Moreover, high tourist participation encourages the community to preserve the environment, ensuring that the green economy not only contributes to economic welfare but also strengthens ecological sustainability practices within the village.

Nglanggeran Tourism Village, which has received various awards for sustainable tourism programs, has become an example of an economically self-reliant village capable of bringing significant change to the local community. In line with this, Hermawan (2016) states that current tourism development has created an inclusive economy, marked by the opening of employment opportunities and improvement in the economic welfare of local residents. Therefore, enhancing these positive contributions serves as a guideline for the management strategies of other tourism villages, which are not only economically oriented but also emphasize social and ecological sustainability, thereby creating a competitive and sustainable tourism development model.



Figure 5. Nglanggeran Tourism Village Potential in Promoting Local Economic Growth
(CNN Indonesia YouTube Channel, 2024)

Tourism Village Transformation through Sustainable Innovation and Technology

In today's rapidly advancing era of industrial revolution, technological development and innovation are essential for various industries, including tourism. Innovation arising from the competencies of human resources fosters technological advancements that create value, particularly in developing tourism destinations that are sustainable, highly competitive, and

capable of providing higher-quality experiences for visitors. Technology not only serves as a tool for digital promotion and tourism information systems but also supports environmental management, local product development, and efficiency in sustainable tourism services.

Nglanggeran Tourism Village has demonstrated the effective use of technology in building branding that attracts tourists. In line with this, the concept of open innovation functions not only as a strategy to increase tourist visits but also plays a role in driving the transformation of the tourism sector. Open innovation has enabled continuous service improvements, the provision of higher-quality tourist experiences, and adaptation to environmentally friendly technological applications (Cardoso et al., 2018).



Figure 6. Nglanggeran Tourism Village Website (Nglanggeran Tourism Village Official Website, 2023)

Nglanggeran Tourism Village actively utilizes social media as a promotional tool and for branding purposes to introduce its attractions to a wider audience. This strategy has proven effective, as tourism villages that optimize technology use tend to be more competitive in realizing inclusive tourism. The implementation of technology in Nglanggeran can be seen in the use of e-ticketing, attraction booking systems, a dedicated website that also functions as a promotional platform, and digitally-based lodging services that facilitate tourists. This demonstrates that technology not only brings convenience but also creates significant potential when utilized optimally. Therefore, the use of technology in tourism village development should be directed toward creating tourist experiences that are not only efficient but also support sustainability and provide added value for the local community.

Synthesis Results of the Sustainable Tourism Village Model Synergy

The development of Nglanggeran Tourism Village demonstrates that the success of a tourism destination is not solely determined by the classical three pillars economy, socio-

culture, and environment but also requires specific attention to technological development and the enhancement of quality education. The analysis shows that the three elements encompassed in the SDGs—particularly equitable and quality education, green economic growth, and innovation and technological development are essential to realizing the potential of sustainable tourism villages.

In line with this, Suminar et al., (2023) also state that sustainable tourism destination development must meet criteria aligned with the principles of the SDGs and is expected to deliver long-term effects in addressing present needs without compromising future requirements. Therefore, a sustainability chain must be pursued to establish tourism development that creates holistic experiences while adhering to SDG values.

Implementation in Nglanggeran Tourism Village illustrates how tourism literacy-based education, entrepreneurship, and cultural preservation enhance the capacity of local human resources. The utilization of digital innovations, such as e-ticketing, online promotion, and tourism service applications, strengthens management efficiency while expanding promotional reach. At the same time, the implementation of the green economy through ecotourism, conservation, and sustainable agriculture ensures a balance between tourism activities and environmental preservation.

From this synthesis, a new integrative framework emerges that emphasizes the symbiosis between education, the green economy, and technological innovation. Without the integration of these three dimensions, tourism development risks becoming unbalanced by focusing excessively on a single aspect. This framework is not only relevant for Nglanggeran Tourism Village but can also serve as a reference model for developing other sustainable tourism villages in Indonesia.

CONCLUSION

The findings indicate that the synergy between quality education, the green economy, and technological innovation forms a fundamental component in achieving sustainable, inclusive, and globally adaptive tourism village development. The integration of these three aspects strengthens human resource capacity, promotes equitable economic growth, and creates an innovative and environmentally friendly tourism management system. These results highlight that the classical three pillars of sustainable development socio-cultural, economic, and environmental also need to be reinforced through the integration of education, the green economy, and technological innovation to enable tourism villages to adapt sustainably.

The study reveals that quality education serves as a vital instrument in enhancing the capacity of local human resources by improving knowledge, skills, and awareness of sustainability values. The implementation of the green economy promotes inclusive economic growth through ecotourism practices, the development of value-added local products, and the sustainable management of natural resources. Meanwhile, innovation and technology function as the primary drivers for increasing competitiveness, management efficiency, and adaptation to global changes in the tourism sector. The synergy of these three SDG dimensions forms the main foundation for building a sustainable, inclusive, and highly competitive tourism village model. Thus, sustainable tourism village development should be regarded as a multidimensional transformation process that integrates human capacity enhancement, economic sustainability, and technological innovation to create an adaptive and equitable tourism system in accordance with UNWTO guidelines.

Practically, these findings provide a basis for governments and tourism village managers to formulate SDG-based policies and development strategies that emphasize community empowerment, appropriate technological innovation, and the application of a green economy oriented toward ecological balance. Academically, this research enriches the literature on conceptual models of sustainable tourism based on multidimensional integration and can serve as a reference for similar studies in tourism development. Future research is recommended to empirically test the application of this model across various tourism villages in Indonesia to assess the effectiveness of SDG dimension synergy in practice and to identify supporting factors as well as barriers to its implementation.

REFERENCES

- Artha Putra, I. S., Arini, N., & Raditya, I. T. (2023). Analysis of Domestic Tourist Satisfaction and Loyalty in Penglipuran Tourism Village, Bangli. *Journey: Journal of Tourismpreneurship, Culinary, Hospitality, Convention and Event Management*, 6(2), 71-84. doi:<https://doi.org/10.46837/journey.v6i2.172>
- Baiquni, M. (2021). *Geografi Pariwisata Nasional*. Tangerang Selatan: Universitas Terbuka.
- Cardoso, R. C., Sohn, A. L., Ferasso, M., & Júnior, S. P. (2024). Open Innovation in The Tourism Field: A Systematic Literature Review. *Journal of Open Innovation: Technology, Market, and Complexity*, 10(3), 100359. doi:<https://doi.org/10.1016/j.joitmc.2024.100359>
- Chan, J. K. (2023). Sustainable Rural Tourism Practices From the Local Tourism Stakeholders' Perspectives. *Global Business & Finance Review (GBFR)*, 28(3), 136-149. doi:<https://doi.org/10.17549/gbfr.2023.28.3.136>



- CNN Indonesia (Producer). (2024). *Local Pride: Desa Nglanggeran Resmi Jadi Desa Keuangan Pertama di Indonesia* [Motion Picture]. Retrieved October 2, 2025, from <https://www.youtube.com/watch?v=Br8DxqN8rxw>
- Coll-Ramis, M., Horrach-Rosselló, P., Genovart-Balaguer, J., & Martinez-Garcia, A. (2023). Research Progress on the Role of Education in Tourism and Hospitality. A Bibliometric Analysis. *Journal of Hospitality & Tourism Education*, 36(4), 320–332. doi:<https://doi.org/10.1080/10963758.2023.2180377>
- Desa Wisata Nglanggeran. (2023). *Desa Wisata Nglanggeran – Website Resmi*. Retrieved October 10, 2025, from <https://desawisatanglanggeran.id/>
- Habib, M. A. F., & Fatkhullah, M. (2023). Identifikasi Kemiskinan dan Strategi Optimasi Sumber Penghidupan Petani Kelapa di Desa Karangrejo, Kabupaten Trenggalek. *Manhaj: Jurnal Penelitian dan Pengabdian Masyarakat*, 12(2), 129-147.
- Haryono, E., Suprihatiningsih, S., Septian, D., Widodo, J., Ashar, A., & Sariman. (2024). New Paradigm Metode Penelitian Kepustakaan (Library Research) di Perguruan Tinggi. *Jurnal Ilmiah An-Nuur*, 14(1). doi:<https://doi.org/10.58403/annuur.v14i1.391>
- Hendrayani, Y., Zen, I. S., Uljanatunnisa, & Maryam, S. (2025). Nglanggeran Village: A Model for Sustainable Tourism Through Multi-Stakeholder Engagement and Corporate Social Responsibility. *SAGE Open*, 15(3), 16. doi:<https://doi.org/10.1177/2158244025136367>
- Hermawan, H. (2016). Dampak Pengembangan Desa Wisata Nglanggeran Terhadap Ekonomi Masyarakat Lokal. *Jurnal Pariwisata*, 3(2), 105-117. doi:<https://doi.org/10.31294/par.v3i2.1383>
- Kadir, I. A., & Chew, L. N. (2024). Assessing Tourism Potential for Rural Tourism Development: Promoting SDGs and Economic Opportunities to The B40 Community—A Mixed Method Approach. *Smart Tourism*, 5(1), 2477. doi:<https://doi.org/10.54517/st.v5i1.2477>
- Kementerian Pariwisata dan Ekonomi Kreatif. (2025). *Desa Wisata Nglanggeran Jadi Wakil Indonesia pada Ajang Best Tourism Village UNWTO*. Retrieved October 1, 2025, from <https://www.kemenparekraf.go.id/ragam-pariwisata/Desa-Wisata-Nglanggeran-Jadi-Wakil-Indonesia-pada-Ajang-Best-Tourism-Village-UNWTO>
- Liu, N., Yue, K., & Zhang, X. (2023). Ignored Opinions: Villager-Satisfaction-Based Evaluation Method of Tourism Village Development—A Case Study of Two Villages in China. *Sustainability*, 15(22), 15726. doi:<https://doi.org/10.3390/su152215726>
- Pemerintah Desa Nglanggeran. (2019). *Artikel pada Website Resmi Pemerintah Desa Nglanggeran*. Retrieved October 2, 2025, from <https://desatanglanggeran.gunungkidulkab.go.id/first/artikel/972>
- Prakoso, A. A., Pradipto, E., Roychansyah, M. S., & Nugraha, B. S. (2020). Community-based Tourism: Concepts, Opportunities and Challenges. *Journal of Sustainable Tourism and Entrepreneurship (JoSTE)*, 2(2), 95-107. doi:<https://doi.org/10.35912/joste.v2i2.563>



- Sana, I. L. (2025). Transformasi Manajemen Pariwisata Berbasis Teknologi Digital Menuju Green Tourism yang Tangguh dan Inklusif. *Journal of Mandalika Social Science*, 3(2), 101-109. doi:<https://doi.org/10.59613/jomss.v3i2.271>
- Satyarini, N. M., Rahmanita, M., & Setarnawat, S. (2017). The Influence of Destination Image on Tourist Intention and Decision to Visit Tourist Destination (A Case Study of Pemuteran Village in Buleleng, Bali, Indonesia). *TRJ Tourism Research Journal*, 1(1), 81-97. doi:<https://doi.org/10.30647/trj.v1i1.10>
- Setiawan, O., & Suryantari, Y. (2024). Strategi Pengembangan Taman Wisata Alam Mangrove Angke Kapuk Menuju Pengembangan Pariwisata Berkelanjutan. *Jurnal Kajian Pariwisata*, 6(2), 166-174. doi:<https://doi.org/10.51977/jiip.v6i2.1866>
- Sudheer, A. (2021). Integrated Village Tourism For Rural Sustainability and Development: A Review of Village Tourism and Its Impact on The Environment and Society of Kumbalanghi Model Tourism Village. *JournalNX- A Multidisciplinary Peer Reviewed Journal*, 7(5), 256-266.
- Suminar, R. E., Sastrosasmito, S., & Iskandar, D. A. (2023). Rural Identity and Its Roles in Boosting Local Economic Sustainability in Nglanggeran Village of Yogyakarta. *Jurnal Kawistara*, 13(3), 357-372. doi:<https://doi.org/10.22146/kawistara.78471>
- Synder, H. (2019). Literature review as a research methodology: An Overview and Guidelines. *Journal of Business Research*, 104, 333-339. doi:<https://doi.org/10.1016/j.jbusres.2019.07.039>
- Tong, J., Li, Y., & Yang, Y. (2024). System Construction, Tourism Empowerment, and Community Participation: The Sustainable Way of Rural Tourism Development. *Sustainability*, 16, 422. doi:<https://doi.org/10.3390/su16010422>
- World Tourism Organization. (2023). *Achieving the Sustainable Development Goals through Tourism – Toolkit of Indicators for Projects (TIPs)*. UNWTO. doi:<https://doi.org/10.18111/9789284424344>
- Zhironkin, S., & Cehlár, M. (2022). Green Economy and Sustainable Development: The Outlook. *Energies*, 15(3), 1167. doi:<https://doi.org/10.3390/en15031167>