

Analysis of Ecotourism Development Typology in Indonesia: A Scoping Review

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Abstract: Ecotourism has emerged as a strategic alternative to support sustainable development, particularly in biodiversity-rich countries like Indonesia, where balancing ecological preservation and economic growth remains a major challenge. This research examines the typology of ecotourism development in Indonesia through a scoping review approach by analyzing 37 scientific articles. The results show seven main categories of ecotourism development: education-based, regional or local potential, community, local wisdom, national regulation or strategy, conservation, and disaster mitigation. Each category illustrates a specific approach tailored to Indonesia's geographical, social, and cultural conditions. Community-based approaches and local wisdom support active community engagement, while conservation and disaster mitigation-based approaches emphasize the importance of environmental preservation in climate change. By combining perspectives from various disciplines, this research offers novelty in systematically mapping of ecotourism management. Analysis of the effectiveness of government policies, more in-depth exploration in less accessible areas, and the use of digital technology in tourism area management are some recommendations for further research. These results can be an important reference for readers around the world who are interested in ecotourism practices in tropical and developing countries. In addition, they can provide guidance to support sustainability for policymakers, academics, and ecotourism practitioners.

Keywords: *ecotourism, ecotourism development, ecotourism typology, Indonesia, scoping review*

1. Introduction

Ecotourism is currently one of the driving sectors of tourism development as an approach that is able to integrate environmental, social, and economic aspects so that ecotourism has huge potential to support sustainability, especially in areas of countries with high biodiversity such as Indonesia [1]. Ecotourism is currently developing into one of the main pillars of sustainable tourism development in various countries including Indonesia [2]. Ecotourism is a concept that not only prioritizes environmental conservation but also seeks to improve the welfare of local communities through a community-based approach [3]. Ecotourism is a strategic step in marketing tourism, with a sustainability approach as the main attraction for tourists [4]. The extraordinary wealth of biodiversity in Indonesia, which has more than 17,000 islands and occupies a position as one of the mega biodiversity countries in the world, can make it potential tourism destination for ecotourism development [5].

Based on data from the Ministry of Tourism and Creative Economy in the third quarter of 2023, the stretch of tourism foreign exchange value reached more than 6 billion US \$ with a contribution to the tourism gross domestic product (GDP) of 3.76% and will continue to grow until the end of 2023 [6]. Since the COVID-19 pandemic subsided, visits by Indonesian and foreign tourists to several tourist villages in priority tourism destinations such as Komodo National Park, Ujung Kulon National Park, and Raja Ampat as leading tourism destinations that carry the concept of ecotourism [5], [6]. The Central Bureau of Statistics of the Republic of Indonesia, (2022) noted the development of the amount of foreign exchange in the tourism sector from 2021 amounting to US\$0.54 billion, and in 2022 amounting to US\$7.03, this shows a significant increase in the country's foreign exchange from the tourism sector [7]. In addition, the tourism sector has made a record of absorbing more than 45 million workers with details of 21.93 million tourism workers and 24.34 creative economy workers [6]. Indonesia is experiencing encouraging economic progress through

its tourism sector. In 2024, the average income of the Indonesian population reached around US\$4,960.33, which when converted is equivalent to IDR78.62 million per year. The tourism industry is an important driver of the national economy with a projected contribution of 4.01-4.5% to total GDP in 2024 [8]. This continues the positive trend that has been seen in recent years, where the sector's contribution to national GDP increased from 3.6% in 2022 to 3.8% in 2023 [9]. This shows that conservation-based tourism also provides great opportunities to continue to be developed [10].

However, ecotourism development in Indonesia still faces various problems and challenges such as inequality in the distribution of ecotourism destinations, lack of consistent management standards, and low participation of local communities in supporting sustainability efforts that can hinder the maximum potential of ecotourism [11]. Various previous studies have discussed issues related to ecotourism management and development in various regions in Indonesia. Bahwono and Ariwangsa [12], analyzed the typology of tourists in the development of ecotourism in Komodo National Park, East Nusa Tenggara and found that tourist segmentation is one of the key factors in creating a sustainable tourism experience. Meanwhile, Agus [13], identified the potential of ecotourism while evaluating the readiness of the community in the development of community-based ecotourism in Talamau District.

The increase in ecotourism needs to be balanced with marketing which has an important role in the success of ecotourism management such as in Wonorejo Mangrove Ecotourism in Surabaya City [14]. In a similar context, Suta & Mahagangga [15] highlighted the development of tourism in Crab Village, Tuban, Bali which combines aspects of ecosystem preservation with local economic empowerment. The need for collaboration between cultural and environmental preservation to support ecotourism principles such as in the Jatiluwih Village Area, Tabanan Regency [16]. Furthermore, Pereira and Adikampana [17], through ecotourism in Beloi

Village, Atauro Island provide an ecotourism management model that focuses on the integration of social, economic, and ecological aspects.

These studies illustrate that ecotourism management and development in Indonesia have complex dynamics. Many studies have focused on the development of certain regions, creating this research gap, so there have not been many efforts to map and analyze the typology of ecotourism development nationally that integrates various aspects, such as geographical, cultural, social, and economic characteristics. This gap shows the need for a broader and more systematic study to identify management patterns and factors that influence the success of ecotourism in various regions in Indonesia. This research aims to fill the gap with a scoping review approach, which can optimize the identification, classification, and analysis of ecotourism development patterns comprehensively. With this approach, this research is expected to make a significant contribution in enriching the academic literature as well as providing applicable guidelines for tourism managers from the government to local communities. In addition, this research is expected to provide a comprehensive understanding of efforts related to environmental conservation with community empowerment in building sustainable tourism in Indonesia.

2. Method

This research uses a scoping review approach as a systematic literature review method [18]. By combining various definitions, methods, and results from various broad and thorough empirical studies, this approach has the ability to identify the expected research objectives [19]. Some of the databases used in this study are Scopus, ScienceDirect, and GARUDA [20]. To identify the literature in this study, a rigorous article sampling method was used. This method generates various query strings for indexed titles, abstracts, and keywords [21]. Table 1 shows the Boolean formulas used for this study.

Table 1. Research Boolean Formula

Keywords	Description
"ecotourism" OR "eco-tourism" AND	This section ensures that the search includes the term ecotourism, which is the core of this research, including spelling variants such as "eco-tourism". It aims to collect all references relevant to the topic of ecotourism.
"development" OR "direction" OR "strategy" OR "planning" OR "policy"	This phrase covers several aspects such as development or implementation or management or strategy planning, or policy related to ecotourism.
"Indonesia"	This term limits the scope of the search to the geographical context of Indonesia. By adding this word, the search will display literature relevant to ecotourism within Indonesia, including specific islands and areas such as national parks, tourist villages, or conservation areas.

Source: Researcher Analysis, 2025

The inclusion criteria set and used in this study are: 1) Articles published from 2020 to 2025, 2) Only empirical articles, 3) Articles written in English and/or Indonesian (specifically the GARUDA database), 4) Open-access, and 5) articles relevant to the research Boolean formula. The stages of article selection using the PRISMA-ScR guidelines are presented in Figure 1 [22]. The research process begins with determining the

source of the database used, creating a Boolean formula, and establishing the inclusion criteria used, then articles that meet the research objectives are reviewed by reviewers if there are differences of opinion between reviewers, a review and discussion are carried out with the results of the review being thoroughly analyzed to answer this research question [23].

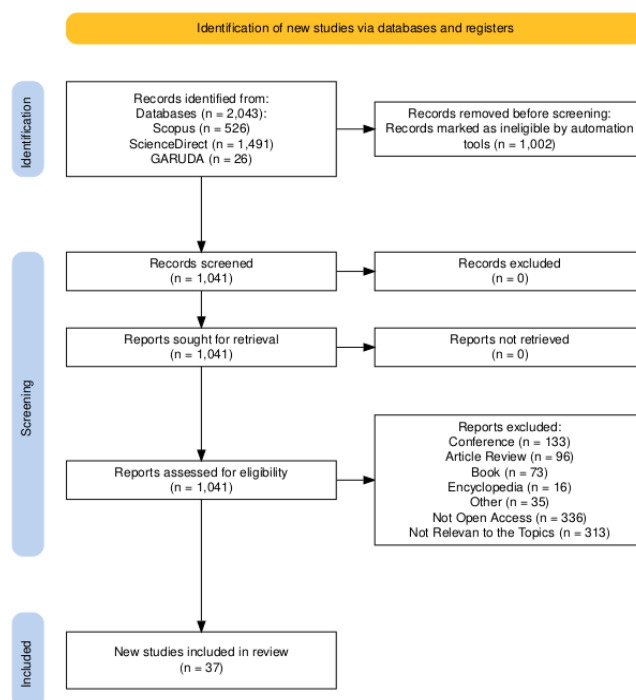


Figure 1. PRISMA - ScR Research Flow Diagram
Source: [24]

3. Results and Discussion

Much research on ecotourism development has been done and produced, however, the research only focuses on certain topics so understanding of ecotourism development is not optimal. This study reviewed the articles that were selected in this study so as to provide comprehensive research information on the typology of ecotourism development through a scope review approach. The review results showed that 37 articles met the research criteria and objectives. The results of the article review can be seen in Table 2.

3.1. Education – Based

The education-based approach to ecotourism development aims to raise awareness among communities and tourists about the importance of environmental conservation through tourism. The concept of education-based ecotourism development emphasizes the role of environmental education as an important component of the ecotourism experience [11]. Through the development of education-based ecotourism, we will provide a view of supporting conservation efforts and environmental preservation in a different perspective [62]. Education-based ecotourism development by making environmental

management efforts is a means of education and character education for the community [63]. This is in line with research by Surjanti *et al.* [26], which shows that mangrove ecotourism-based learning can provide behavioral changes in students to care more about environmental sustainability by understanding the benefits of ecotourism not only in theory but also being able to see directly between ecotourism and environmental sustainability in mangrove ecotourism. The concept of developing education-based ecotourism in Indonesia is still very limited, this is because education-based ecotourism development programs often involve direct activities in the field such as the readiness of tour guides, and activities that support education need to be prepared to optimize tourists' understanding of ecotourism. Research by Hidajat *et al* [25], shows that tourists at Jatimalang Beach still have a limited understanding of ecotourism, so the need for educational activities for tourists is a top priority such as activities that can be carried out efforts to keep the beach environment clean, respect the local culture of coastal communities, and activities that are relevant in supporting sustainability. In addition, research by Azzahra *et al* [27], showed that by involving the community in educational programs to improve the skills of local

communities in managing mangrove ecotourism in Karimunjawa, this training will create a memorable tourist experience for tourists without damaging the environment. One of the innovative approaches that can be taken to develop education-based ecotourism is to integrate technology so that it can provide information about the biodiversity of tourist areas for materials and enhance learning experiences [64]. The development of education-based ecotourism has a long-term impact on the sustainability of tourist areas

providing a better understanding of the expected tourists can reduce the negative impact of tourist visits. In addition, local communities can better optimize the potential of natural resources around them so that the combination of technology-based education and ecotourism development programs creates a sustainable ecotourism ecosystem while ensuring that future generations can enjoy the benefits.

Table 2. Results of the literature review

Ecotourism Development	Development Goals	Sources
Education – Based	Increase awareness, knowledge, and skills of communities and tourists through ecotourism development.	[25], [26], [27], [28].
Local Potential – Based	Optimizing the natural potential and uniqueness of certain areas is the main attraction in ecotourism development.	[29], [30], [31], [32], [33].
Community – Based	Empowering local communities to actively participate in the management and development of sustainable ecotourism.	[34], [35], [36], [37], [38], [39].
Local Wisdom – Based	Preserving tradition, culture, and local wisdom as part of ecotourism	[40], [41], [42], [43], [44].
Policy – Based	Establish national policies, regulations, and strategies to ensure structured ecotourism management based on the regulations made.	[45], [46], [47], [48], [49], [50], [51].
Conservation – Based	Protect and restore biodiversity and natural ecosystems through environmentally friendly ecotourism activities.	[52], [53], [54], [55], [56], [57], [58]
Disaster Mitigation – Based	Integrate disaster mitigation and disaster adaptation efforts in the management and development of ecotourism areas.	[59], [60], [61].

3.2. Local Potential – Based

The local potential area-based approach emphasizes the utilization of natural resources and unique characteristics of an area as the main attraction for ecotourism development. This condition is very appropriate: Indonesia has extraordinary landscape wealth and mega biodiversity so that it has the potential to develop ecotourism based on local potential [4]. Various studies show that local wisdom has great potential in the development of ecotourism in Indonesia, especially in supporting environmental sustainability and community empowerment. Affandi *et al* [65] identified that in the development of ecotourism in the Lolong Adventure area, business capital assistance (64.8%), institutionalization (23%), and human resource development (12.2%) were the main priorities based on local wisdom. Meanwhile, research by Lake *et al* [43] on the Dawan Indigenous community in North Central Timor confirmed that conservation practices based on local traditions are still very strong and effective in maintaining ecosystems and supporting ecotourism activities. The same thing was also found by Husein *et al* [66] in Kendari, where socialization of mangrove conservation, training on the utilization of mangrove products, and training of local community-based tour guides are the main strategies towards sustainable tourism. These three studies confirm that the integration of local wisdom in ecotourism planning and implementation can be an effective approach achieving a balance between nature conservation and improving community welfare.

Hidrawati *et al* [29], highlighted the potential for ecotourism in Konawe Islands Regency which includes beaches, waterfalls, and hilly landscapes see that by utilizing the local potential of this region, ecotourism can provide a unique experience that cannot be found elsewhere. This development approach also supports sustainability efforts because it focuses on existing potential without the need to change environmental conditions.

This is in line with the research of Zulharman *et al* [30], in Sambori Tribe, West Nusa Tenggara which shows that local flora and fauna with distinctive landscapes can captivate as the main attraction so that this uniqueness attracts tourists who want to enjoy an authentic experience by supporting local environmental conservation. Ecotourism management based on local potential requires careful planning so as not to damage the environment. Regulating visitor capacity and waste management are important aspects of ensuring that local potential is not depleted due to exploitation. Aditya *et al* [31], stated that the management of the River Tourism Area in Jambi shows the importance of regulating the zone or visitor capacity to maintain environmental quality while maximizing the tourist experience for tourists. In addition, the local potential is not only limited to nature but also includes the culture and traditions of local community. The combination of nature tourism and local culture can contribute to providing added value that is attractive to tourists. For example, Tembawang Ecotourism in West Kalimantan not only offers the beauty of traditional

forests but also provides a cultural experience that involves visitors in local community activities such as traditional rituals and making traditional crafts as a tourist attraction [32]. In addition to supporting regional economic diversification, the development of ecotourism based on local potential allows local communities to utilize existing resources to increase their income. This creates a sustainable economic cycle where the success of ecotourism depends on the preservation of local potential, which is the main attraction.

3.3. Community – Based

Community-based ecotourism development involves local communities as the main role responsible for the management of tourist areas [11]. This development strategy aims to empower the community, create a sense of ownership of local resources, and improve economic welfare [2]. Research by Sentanu *et al* [45], shows that collaboration involving the government, community, academics, media, and the private sector can increase the effectiveness of ecotourism management by including local communities in decision-making. In addition, according to Nugroho [67], the development of community-based ecotourism in Ngargoyoso District, Karanganyar Regency is a form of effort to improve the local economy through economic potential through the management of BUMDES participation that develops in tourist areas by supporting sustainability in tourist areas.

This community-based ecotourism development is supportive of maximizing local potential and supporting the formation of economic areas in the ecotourism development area [68]. Community-based ecotourism development also serves to build awareness among local communities of the importance of environmental conservation. For example, the community in Tiga Warna CMC, East Java Province shows community involvement in the management of tourist areas such as counseling activities, conservation training for tourists to encourage local communities to actively participate in developing local potential. This approach not only produces sustainable ecotourism in the region but also provides direct economic benefits for local communities [36]. Another aspect that can be developed more optimally from a community-based approach is the development of the capacity of local communities to maximize the economy through training programs such as tour guides, community training, ecotourism management and waste management can improve the skills of local communities in community-based ecotourism development [69]. This is in line with the results of research by Zulharman *et al* [30], in Sambori Village, showing that training in making medicinal plant-based products not only supported ecotourism but was able to improve the economic quality of local

communities.

The success of community-based ecotourism is highly dependent on the existence of good partnerships between the community and interested parties. A study by Prihadi *et al* [38], found that mangrove ecotourism management in Karangsong requires collaboration between local communities, government and private parties to ensure the optimization of ecotourism sustainability. Through harmonious partnerships, it creates stability in ecotourism management in terms of management, environment and economy. Community-based ecotourism development strategies have been widely applied in Indonesia, such as in Kalibiru Hamlet, Kulon Progo Regency, Yogyakarta Special Region Province, which has an impact on improving the economy of the local community and has a broad impact on the progress of Indonesian tourism through the development of ecotourism that is applied [70]. Community-based ecotourism development is proven to provide long-term benefits not only in terms of natural resource conservation but also in terms of improving the quality of life of local communities. By being part of ecotourism management, communities have more control over the resources they have and can ensure that the results are used for the common good

3.4. Local Wisdom – Based

Local wisdom-based ecotourism development integrates the values of tradition, culture and local knowledge into ecotourism management. This strategy aims to preserve unique cultural heritage while making it a tourist attraction [71]. Research by Marlina *et al* [41], in Wakatobi, Southeast Sulawesi Province showed that the use of cave water for traditional rituals provides a unique and different tourism experience while preserving local traditions so as to connect tourists with the local community environment to create respect for nature in Wakatobi. In addition to these traditions, local wisdom is also reflected in the way communities manage resources sustainably. Research by Riana *et al* [44], showed that local myths about mangroves not only protect these areas from exploitation but also create tourist attraction. Myths such as these provide tourists with an experience of the value of conservation while offering a deep cultural experience for tourists. Basically, the development of local wisdom-based ecotourism involves local communities in cultural preservation.

According to Kurniawati *et al* [43], in Tulungagung highlighted local indigenous community groups maintain and preserve local traditions such as the Ulur-Ulur ceremony which becomes a group part of tourism management and protects the surrounding environment so that community involvement in activities like this ensures sustainability and the ecosystem that supports it.

Local wisdom-based ecotourism development, such as the cultural potential of the Mandar tribe to support the development of local wisdom-based coastal ecotourism on Kerayaan Island [72]. For example, Katir Boat as the identity of Mandar fishermen and Pamacca as a portrait of Mandar martial arts shows that local wisdom-based ecotourism not only preserves nature but also maintains cultural values and local wisdom that can be the main attraction of the destination [72]. In addition, the integration of local wisdom into ecotourism adds value to the tourist experience. Through the involvement of tourists in cultural activities such as traditional festivals or traditional crafts, tourists not only learn about culture but also indirectly contribute to the preservation of traditions [73]. According to Singgalen [42], in Halmahera, it shows that local wisdom-based ecotourism can increase tourists' awareness of the importance of maintaining the uniqueness of regional culture. This provides a view that the local wisdom-based ecotourism development approach plays an important role in preserving cultural identity and encouraging local communities to maintain and maintain cultural values and create economic benefits. Prioritizing local traditions and knowledge, local wisdom-based ecotourism development is not only a tool for cultural preservation but also increases the attractiveness of tourism worldwide.

3.5. Policy – Based

Policy-based ecotourism development focuses on the establishment of laws, regulations, and strategic plans to support ecotourism development. Research by Desembrianita *et al* [48], highlighted marketing strategies for super-priority destinations such as Mandalika and Labuan Bajo to help create more sustainable ecotourism areas such as making policies that cover the management of tourist areas by considering aspects between infrastructure development and environmental preservation. Synergies between the roles of government, private sector, and community are also an important element in this approach. Sukuryadi *et al* [46], found that the management of mangrove areas in West Lombok requires collaboration between local governments and local communities to improve institutional capacity. Regulations that support integrated ecotourism management help overcome conflicts of interest and ensure the sustainability of local tourism areas. National policy strategies also include zoning and spatial planning to protect tourist areas from excessive development pressure. According to Nurhayati *et al* [74], the Pangandaran region of West Java Province highlights the importance of using information technology to help determine tourism zones that are by ecotourism principles.

This policy-based approach allows the

management of tourist areas that are more adaptive to environmental changes and visitor needs. Government policy is often a key stabilizer for development of ecotourism. For example, research by Tamrin *et al* [51], in Dalegan Beach showed that institutional arrangements such as the establishment of ecotourism management organizations were able to increase the effectiveness of tourism management. These regulations provide a clear framework for all parties to contribute to achieving a common goal. A regulatory-based approach provides a strong foundation for sustainable ecotourism development. Through supportive policies, tourism areas can develop without compromising environmental aspects or local culture. This strategy ensures that ecotourism not only provides economic benefits but also supports the preservation of natural and cultural resources [11].

3.6. Conservation – Based

The goal of Conservation-based ecotourism development is to protect and restore biodiversity and natural ecosystems through ecotourism [75]. Mangroves, coasts, and tropical forests are often the main focus of conservation-based development strategies. In Banyuwangi Regency, Sari Beach is one of the places that has good ecotourism potential to be developed as a conservation area because of its location in the middle of a mangrove forest on the coast of the Banyuwangi Region this beach is suitable for conservation-based ecotourism development [76]. Ni'am *et al* [52] studied ecotourism in Tangkahan, North Sumatra Province, which utilizes tourist interaction with elephants as the main attraction while emphasizing the importance of elephant habitat conservation. This shows that ecotourism can be an effective tool to mobilize support for environmental conservation. In addition, the development of conservation-based ecotourism includes aspects of rehabilitation of damaged areas. According to Ridwan *et al* [55], in Kedah Rainforest Lodges, Nangroe Aceh Darrusalam Province showed that the rehabilitation of medicinal plants not only helped preserve biodiversity but also created a conservation-based tourist attraction for education. This rehabilitation involves local communities through training and cooperation programs with the private sector to obtain funding related to conservation efforts. The importance of sustainable biodiversity management is also highlighted by conservation-based ecotourism development. According to Idris *et al* [53], in the firefly ecotourism area, shows that land use change affects the habitat of flora and fauna in ecotourism. Therefore, appropriate conservation strategies such as monitoring vegetation cover and controlling anthropogenic activities are essential to maintain ecosystem balance.

This approach also requires collaboration between local communities, government and

conservation institutions or organizations. Rifai *et al* [54], stressed that stakeholders who better understand the importance of the Bintan seagrass ecosystem can encourage better management of the area. This collaboration will create an environment that supports ecosystem sustainability and enhances the tourist experience by informing tourists about the importance of environmental conservation. Ecotourism makes a direct contribution to environmental conservation with its conservation-based approach, which ensures that tourist activities do not damage natural resources but become part of the long-term conservation solution.

3.7. Disaster Mitigation – Based

The development of disaster mitigation-based ecotourism focuses on the integration of disaster mitigation and disaster risk adaptation efforts into ecotourism management. This approach is very relevant in Indonesia, which is a country with a high level of disaster risk, such as tsunamis, earthquakes, hydro climatology, landslides, and other disasters [77].

According to Nugraha *et al* [59], in conservation areas it is important to plan for flexible land use to reduce the impact of disasters on tourist areas. In addition, disaster simulations and training are implemented to help local communities become more prepared for emergency situations. Because of their ecological role in protecting coastlines from abrasion and tsunamis, mangrove ecotourism is often an important part of disaster mitigation efforts. According to research conducted by Mulyadi *et al* [60], mitigation strategies include replanting mangroves, creating adaptive facilities, and community training. These efforts increase tourist interest in learning about the ecological functions of mangroves and protecting tourist areas. This method emphasizes the importance of working together with all parties involved. The study conducted by Junaid *et al* [61], in Bantaeng, South Sulawesi, showed that ecotourism management that relies on seaweed cultivation can help mitigate disasters, especially those related to flooding and sea level rise. Disaster-resilient tourism infrastructure can be achieved through cooperation between the government, community and private sector. The Nyarai ecotourism site is a nature-based ecotourism activity that is vulnerable to environmental degradation and threatened by climate change, however, aspects of economic, social, ecological, and governance resilience must work together to enhance tourism activities that lead to sustainable development and climate resilience to contribute to disaster mitigation in the surrounding area [78]. Of course, the development of disaster mitigation-based ecotourism also requires supporting policies, according to Erlinda *et al* [49], zoning policies and disaster-resistant building standards are an important part of managing disaster mitigation-based tourism areas.

Policies will guide tourism developers and managers in creating infrastructure that is not only attractive but also provides a sense of security for tourists and the surrounding community. Integrated disaster mitigation into ecotourism development contributes greatly to the sustainability of ecotourism, especially while increasing disaster risk and climate change. This approach protects tourism investments while ensuring the safety of communities and tourists. This method results in a flexible, resilient, and sustainable ecotourism development model.

4. Conclusion

This research provides a comprehensive insight into the typology of ecotourism development in Indonesia through a scoping review approach. The findings show that ecotourism development in Indonesia can be grouped into seven main categories, namely education-based, regional or local potential, community, local wisdom, policy, conservation, and disaster mitigation. This approach not only involves preserving the environment but also empowers local communities, preserves culture, and supports economic development. The novelty of this research lies in the systematic mapping of various ecotourism management approaches that have not previously been done at the national level. The results of this study identify the linkages between geographical, cultural, social, and policy characteristics in supporting ecotourism sustainability in various regions of Indonesia. Further research is recommended to conduct more in-depth field research with empirical data, especially in areas that are not easily reached by ecotourism such as inland or border areas. In addition, research needs to be conducted on how different types of ecotourism development can be supported by digital technologies, such as ecotourism apps and interactive education platforms. Further research can look at how government policies maintain a balance between tourism infrastructure development and environmental preservation, and how local communities can be more actively involved in this. Thus, the research results are expected to make a greater contribution to achieving sustainable ecotourism in Indonesia.

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