



Meta-Analysis of the Relationship Between Ecotourism Planning and Environmental Policy Development: Research Dynamics from 2015-2025

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ABSTRACT

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This study aims to analyze the literature related to ecotourism, biodiversity, and environmental policies using a bibliometric approach, employing the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method. This approach enables the identification of research trends, patterns of collaboration among authors, and the development of key topics in ecotourism and environmental policy research published between 2015 and 2025. The article selection process began with identifying records from various databases, followed by screening and evaluating the articles' eligibility, ultimately resulting in 227 relevant articles for further analysis. As for the research findings, they are (1) Annual publications show a significant increase in the number of publications in 2024, with 36 articles, compared to 34 articles in 2023 and 2021. Factors contributing to the high global attention on sustainability and natural resource management in the context of tourism; (2) Contribution by country, placing China as the highest contributor with 56 articles, followed by Indonesia and India with 33 articles each; (3) The field of study is finding that Environmental Science and Social Science dominate the research area, while environmental policy and local community participation are the main topics frequently discussed; (4) The network aspect of research trends with research issues is the research finding that ecotourism development involves the tourism sector, environmental sustainability, and the empowerment of local communities; and (5) The collaboration network aspect is finding research relationships between natural conservation sustainability, tourism sector management, and the empowerment and involvement of local communities. As for policy recommendations, they are (1) Environmental and ecotourism management policies that can integrate environmental conservation with profitable tourism sectors and (2) Cross-country collaboration with interdisciplinary fields of science to create a role for local communities in the management and benefit from ecotourism destinations.

1. INTRODUCTION

As global awareness of the importance of environmental protection and the sustainability of natural resources increases, the concept of ecotourism has become one of the main strategies to support biodiversity conservation and empower local communities. Ecotourism is considered a more sustainable approach compared to mass tourism, as it aims to minimize negative impacts on nature while simultaneously providing economic benefits to local communities. Research on ecotourism has rapidly developed, encompassing various disciplines such as environmental science, tourism management, and public policy, with a primary focus on the relationship between sustainability, conservation, and natural resource management. The contribution of research in Ecotourism, identified as an increasingly dynamic segment of the tourism industry, is gradually acknowledged for its ability to enhance socio-cultural and economic growth while

contributing to biodiversity protection, particularly in safeguarded environments and biodiversity-rich regions throughout Asia and Africa [1], and the finding that aging factors do not significantly affect ecotourism efficiency [2].

Biodiversity is one of the main aspects underlying the existence of ecotourism, considering that the diversity of flora and fauna in a natural area often becomes the main attraction for tourists. Therefore, research linking ecotourism with biodiversity conservation is very important to ensure that tourism activities do not harm the environment, but instead support nature conservation efforts. However, the main challenge in implementing ecotourism is how to integrate effective environmental policies into the planning and management of tourist destinations. Meanwhile, the implications of research related to the Indian tourism industry face significant challenges, including a lack of diverse information, limited resource availability, high transaction costs, and inadequate ICT infrastructure. The implementation

of smart tourism practices can directly address these issues by enhancing information dissemination and resource management [3]. Land use research for tourism explores the potential of land use to promote tourism, particularly focusing on sustainable land use practices that align with community needs in climate-smart agriculture and forestry. The implementation of ecotourism policies has faced challenges such as inadequate infrastructure and a lack of understanding among local communities, but the opportunities for development remain significant through increased community participation and collaboration between the public and private sectors [4].

Strong and adaptive environmental policies are urgently needed to regulate and monitor the impact of ecotourism activities on biodiversity. In many countries, these policies include regulations related to land use, management of conservation areas, and the application of sustainable development principles in the tourism sector. Nevertheless, research on environmental policies in the context of ecotourism and biodiversity remains limited and often fragmented, lacking a holistic study of the relationship between the three. Studies on ethno-cultural heritage highlight the relationship between the rich cultural traditions in the Northeast Caucasus region and the potential for sustainable tourism [5]. Research explains how rural populations interact with and manage (eco) tourism about land use practices [6], providing empirical evidence of the important roles of political and financial openness, alongside foreign direct investment, in promoting ecotourism in China, offering actionable policy insights for sustainable tourism development [7].

Bibliometric research is an effective method for understanding the dynamics of research development in a scientific field. By mapping trends in scientific publications, collaboration between authors and institutions, and keyword analysis, this research aims to provide a comprehensive overview of the dynamics of ecotourism, biodiversity, and environmental policy research. In this context, the bibliometric approach can identify emerging key topics, reveal patterns of international collaboration, and map the role of environmental policies in existing research. The evolution of ecotourism research can be divided into several phases, with the current focus on ecosystem services and sustainable development, indicating its maturity as a scientific discipline [8]. There is a need for local community involvement in the planning and decision-making processes to ensure authenticity and sustainability [9].

Through this study, it is hoped that a deeper understanding of the trends and directions of research related to ecotourism and biodiversity conservation can be obtained, as well as how environmental policies play a role in guiding research and practices in the field. This research is also expected to make significant contributions to policymakers, researchers, and practitioners in the fields of ecotourism and nature conservation, particularly in formulating better and more effective policies to support the sustainability of global ecosystems. Some findings that support the researchers' opinions globally are as follows: this study found that the good governance index positively influences green economic growth in ASEAN economies [10]. Effective governance, community involvement, and strategic planning are crucial for the success of ecotourism initiatives, as they help balance tourism growth with environmental conservation [11], the enforcement of sustainable tourism faces significant obstacles and challenges [12].

Ecotourism is a form of tourism designed to preserve nature and support biodiversity conservation. In ecotourism, tourists are invited to enjoy the beauty of nature while paying attention to the importance of environmental preservation. Biodiversity is the main attraction in ecotourism destinations, with the diversity of flora and fauna serving as a resource that can support the local economy. However, without proper management, tourism activities can hurt the ecosystem, such as habitat destruction or over-exploitation. Therefore, research on ecotourism and biodiversity becomes very important to ensure that tourism can go hand in hand with nature conservation efforts, while also introducing tourists to sustainable conservation values. Research findings on the conservation aspects of ecotourism can influence the improvement of ecotourism destinations, which is expected to enhance tourist satisfaction. With increased satisfaction, visitors are more likely to become loyal and frequently visit ecotourism destinations throughout Indonesia [13]. Moreover, the lack of adequate infrastructure and services hinders the sustainability of heritage village rehabilitation for tourism. An integrated cultural and environmental approach to ecotourism emphasizes the need for national policies to protect resources and encourage investment [14].

Environmental policies play a crucial role in directing and regulating ecotourism practices, particularly in managing the impact on biodiversity. Proper regulations and policies can ensure that ecotourism is not only economically beneficial but also supports the preservation of natural resources. Some countries have developed policies that promote nature-based tourism by introducing sustainably managed conservation areas. However, the biggest challenge is how to balance economic development and nature conservation, especially in areas with high biodiversity. Therefore, research on environmental policies related to ecotourism is essential to identify effective policies in supporting sustainability. The contribution of the environmental conservation aspect identifies that the participation and motivation of tourists are the most important determinants, followed by the quality of services and available tourism resources, with personal experience and communication having a relatively smaller impact on their choice of ecotourism destinations in Con Dao, China [15]. The findings of ecotourism research for local communities contribute by illustrating practical approaches to ecotourism and sustainable development in the context of remote tribal societies [16].

Bibliometric research allows for understanding the dynamics of the development of scientific literature in the fields of ecotourism, biodiversity, and environmental policy. This method identifies trends, main topics, and patterns of author collaboration worldwide, as well as providing an overview of the contributions of each country and institution in the development of research. Through bibliometric analysis, we can see how topics such as environmental policy are integrated into studies of ecotourism and biodiversity, as well as how attention to these issues has evolved. Additionally, this research can help uncover the relationship between environmental policies and sustainability, as well as provide direction for further studies focusing on policy solutions for increasingly complex environmental issues. The research findings can strengthen the aspect of improving the quality of ecotourism resources and the development of tourism technology promotion [17]. Additionally, Normawati et al.'s [18] research explores innovative and collaborative solutions involving various stakeholders in addressing climate change

challenges holistically.

Research on ecotourism, biodiversity, and environmental policies has rapidly developed over the past two decades, in line with the increasing global awareness of sustainability and nature conservation issues. Ecotourism is now seen as a more environmentally friendly alternative compared to mass tourism, with a focus on the sustainable use of natural resources and the empowerment of local communities. Biodiversity has become one of the main topics in ecotourism because it plays a significant role in attracting tourists and maintaining ecosystem balance. However, despite numerous studies examining the relationship between ecotourism and nature conservation, there are still many gaps in understanding how environmental policies can be effectively integrated into ecotourism management. This bibliometric research is important for understanding the direction and dynamics of research on this theme, as well as the contribution of environmental policies in maintaining the balance between ecotourism and biodiversity conservation. Furthermore, the findings of Wancea et al. [19] provide recommendations for researchers in eastern Indonesia to study climate change mitigation issues in the fields of social humanities, agriculture and fisheries, management and economics, as well as astronomy and geography, which are still limited and can serve as academic references, policy sources, and recommendations for the government. Meanwhile, the findings of Lestaluhu et al. [20] contribute to initiatives aimed at raising public awareness about the importance of environmental and sustainability issues in the future.

The theme of this research has several advantages that can make an important contribution to ecotourism management and nature conservation. One of its advantages is the ability to map global trends in ecotourism and biodiversity research, as well as identify effective environmental policies. Thus, this research can help formulate better, evidence-based policies. However, there are also some shortcomings in this theme. One of them is the challenge of accurately measuring the impact of environmental policies on ecotourism and biodiversity, considering the complexity and variability of ecosystems as well as the need for a multidisciplinary approach. Moreover, although environmental policies are increasingly developing, their implementation in the field is often hindered by diverse political, economic, and social factors in various countries. This research can open up a space for discussion on policy improvements and the implementation of more effective models in the field.

This research occupies a different position compared to previous studies, as it focuses on a bibliometric analysis examining the dynamics of research development on ecotourism, biodiversity, and environmental policies during the period 2000–2025. Although there have been various studies discussing the relationship between ecotourism and biodiversity conservation, as well as the impact of environmental policies on this sector, most of these studies tend to focus on case studies or only analyze one aspect in a limited manner. This research, with a bibliometric approach, will provide a more comprehensive overview of global and regional trends in this field, as well as map the contributions of various countries, institutions, and leading authors. The main novelty of this research is the effort to identify the connections between environmental policies and ecotourism and biodiversity conservation, which have not received in-depth attention in the existing literature. The urgency of this research is very high, considering the importance of a deeper

understanding of the direction of sustainable ecotourism research and how environmental policies can be optimized to support biodiversity conservation amidst global challenges such as climate change, natural degradation, and socio-economic inequality. The results of this research are expected to provide new insights for policymakers and researchers to design more effective strategies for integrating ecotourism and environmental policies.

This research will address various important issues related to the development of research in the fields of ecotourism, biodiversity, and environmental policy. First, the analysis of the number of publications per year will provide an overview of the growth trends in research and the relevance of this topic from year to year. Next, this research will also identify the journals that publish the most articles related to the topic, which can indicate the quality and influence of the journals in this field. This research will also examine the most contributing authors, through citation and productivity analysis, to see who the leaders in this field are and the collaboration patterns among authors. Additionally, subject areas related to themes such as nature conservation and sustainable tourism will be analyzed to map the connections between these fields and the main theme. A clustering analysis of the main topics will show how ecotourism, biodiversity, and environmental policies are interconnected, as well as the topics most frequently discussed in the literature. Finally, this research will identify emerging potential topics, providing insights into areas that require more attention and exploration, as well as opening up relevant research opportunities in the future. Thus, this research is expected to make a significant contribution to the development of science and more sustainable environmental policies.

2. LITERATURE REVIEW

The body of work pertaining to ecotourism planning and the formulation of environmental policy from 2015 to 2025 illustrates a vibrant and progressively changing domain, marked by both challenges and prospects. A comprehensive systematic literature review elucidates the considerable capacity of ecotourism to advance sustainable development by fostering environmental preservation, economic advancement, and cultural conservation [21]. Nevertheless, the progression of ecotourism is frequently obstructed by challenges such as inadequate governmental support, substandard infrastructure, and a deficiency in local expertise [22]. This investigation accentuates the necessity of incorporating ecotourism within sustainable development frameworks, especially in conservation areas, which is vital for the preservation of biodiversity. Bibliometric analyses indicate an increasing scholarly interest in ecotourism policy, with notable contributions emerging from nations such as Indonesia, the United States, China, and Australia, although considerable research voids persist, particularly in the realms of environmental management and climate change [23]. Moreover, the active participation of local communities in the planning and management of ecotourism is essential, as it not only bolsters the local economy but also facilitates cultural preservation [24]. In spite of the obstacles, ecotourism remains a promising pathway for the realization of sustainable development objectives, contingent upon the rectification of identified deficiencies through focused research and policy initiatives [25].

Ecotourism planning is integral to the formulation of sustainable environmental policies, as it synergistically aligns conservation initiatives with economic and socio-cultural advantages, thus fostering sustainable development. A systematic review conducted by Patil and Pattanshetti elucidates that ecotourism plays a significant role in environmental conservation through financial support and heightened awareness, while concurrently bolstering local economies and preserving cultural heritage, contingent upon the presence of effective governance and community engagement [21]. Mazmishvili [26] accentuated the necessity of comprehensive policy frameworks and stakeholder collaboration to optimize the advantages of ecotourism, particularly in developing nations, where the equilibrium between economic advancement and environmental stewardship is paramount. Xaba and Adanlawo [27] further underscore the imperative to mitigate social inequality and engage local communities in ecotourism initiatives to enhance their contributions to sustainable development [28]. Kiper [29] asserted that ecotourism, when meticulously planned and executed, has the potential to alleviate the pressures exerted by less sustainable practices by delivering tangible benefits to local communities and safeguarding natural and cultural resources. Seervi [24] highlighted the dual capacity of ecotourism to advance environmental conservation and promote community welfare, emphasizing its viability as an instrument to reconcile environmental issues with sustainable development objectives. Tushishvili and Aladashvili [30] deliberated on the significance of amalgamating tourism planning with various community endeavors to ensure sustainable development, stressing the necessity for policies that take into account the utilization of competitive resources. The case study of Mount Gede Pangrango National Park exemplifies the imperative to prioritize ecosystem preservation and community welfare within ecotourism policies to maintain ecological functions and enhance visitor satisfaction [31]. Kumar et al. [32] advocated for a holistic approach to ecotourism that encompasses community participation, environmental education, and sustained monitoring to optimize its capacity for sustainable development. Lastly, Vorovka et al. [33] emphasized the significance of crafting ecotourism policies grounded in the principles of conservation, sustainability, and local development to further promote comprehensive sustainable development. Collectively, these investigations highlight the essential function of ecotourism planning in the development of sustainable environmental policies that harmonize ecological integrity with economic and social advantages.

3. METHOD

This research uses a bibliometric approach to analyze literature related to ecotourism, biodiversity, and environmental policies by adopting the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology. The PRISMA method is applied to filter, evaluate, and select relevant articles from various sources published between 2015 and 2025. This bibliometric approach allows the research to identify key trends, author relationships, and thematic distributions in the existing literature, providing deeper insights into the development of research in this field. By using PRISMA, this study not only relies on existing articles but also ensures that the selected articles meet strict

criteria for quality, relevance, and feasibility, thereby producing valid and comprehensive findings [26]. Thus, this research aims to provide a clear picture of the development of research and the contributions of studies in ecotourism management and environmental policy, as well as to map out research areas that require further attention.

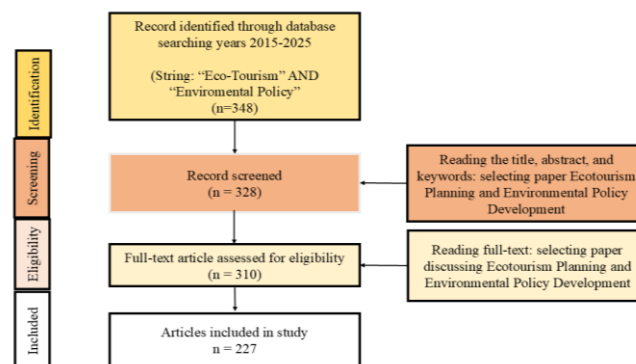


Figure 1. PRISMA research method

The PRISMA method employed in this study commenced with the article identification stage, which involved a comprehensive search across scientific databases (see Figure 1). The main focus was on articles published between 2015 and 2025, aiming to obtain recent studies relevant to ecotourism, biodiversity, and environmental policy. Using the Scopus database, articles were identified with keywords such as "Eco-Tourism" and "Environmental Policy" within the specified period, resulting in 348 articles. These articles then underwent a screening process based on title, abstract, and keywords to determine their relevance to the main research topic of ecotourism planning and environmental policy. After screening, 328 articles met the criteria and advanced to the next stage.

The third stage, article eligibility, involves a more in-depth assessment of each article's suitability. The complete, screened articles were thoroughly evaluated to ensure they met stricter inclusion criteria, including relevance to a more specific research focus. After the eligibility assessment, 310 articles were considered eligible for further analysis. Ultimately, only 227 articles truly met the criteria for inclusion in the review and further analysis, ensuring that only relevant and high-quality articles were used in this study. This systematic process ensures valid and accountable results and provides a clear overview of the development of the topic discussed.

After relevant articles were selected and screened, further analysis was conducted using the VOSviewer application to map the research network related to the themes of ecotourism and environmental policy. VOSviewer allows for effective visualization of bibliometric data in RIS format obtained from Scopus, which includes 227 selected articles. This application is used to analyze various aspects of research, including mapping the collaboration network between authors, as well as research development trends and density within the topics studied. This network mapping provides an overview of the relationships between authors and their contributions to shaping scientific collaboration, while the research density map shows areas with the highest concentration of research in the fields of ecotourism and environmental policy. Researchers used VOSviewer to identify collaboration patterns among authors and emerging areas in ecotourism and environmental policy research topics, with the aim of

providing important insights into the direction of research development and the strengths of the existing scientific network within this discipline.

4. RESULT AND DISCUSSION

4.1 Number of publications per year

The research team analyzed and summarized the number of publications on the issue of ecotourism and environmental policy planning conducted by researchers globally, as follows.

Figure 2 shows a clear trend in the number of publications per year on the topics of ecotourism, biodiversity, and environmental policy. From 2010 to 2025, there has been a significant increase in the number of publications, especially after 2020. In 2020, the number of publications reached 20, which then continued to increase to 39 by 2025. A sharp increase is seen from 2021 to 2023, with the number of publications reaching 33, 26, and 34, respectively. This increase reflects growing attention to these topics, which may be influenced by global factors such as awareness of climate change, evolving environmental policies, and interest in sustainability and conservation.

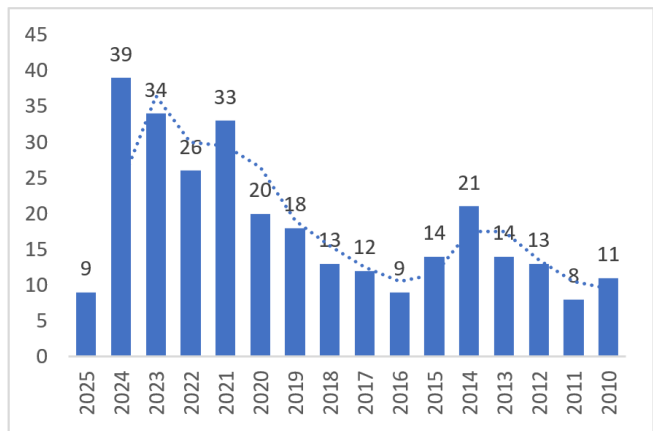


Figure 2. Number of publications from 2010 to 2025
Source: Scopus data, 2025

On the other hand, previous years (2010 to 2019) showed lower and fluctuating numbers, with the first peak occurring in 2014 with 21 publications. However, this number remained relatively stable at 12-14 publications per year until 2019, before experiencing a significant surge in 2020. Although data for 2025 is still limited, with 9 publications, this figure shows high potential given the positive trend recorded in previous years. Overall, this graph shows that research related to ecotourism and biodiversity is growing rapidly, in line with the global concern for increasingly urgent environmental issues.

A significant increase in the number of publications between 2021 and 2024 related to ecotourism, biodiversity, and environmental policy was influenced by a number of important factors. One of these was the global environmental crisis and increasingly urgent climate change. A number of natural disasters, such as large forest fires, floods, and extreme climate change, encouraged the public and researchers to pay more attention to nature-based solutions. Ecotourism is seen as one way to support sustainability while involving local communities in preserving biodiversity. On the other hand, increased awareness of sustainability has also contributed to

the surge in publications, as the tourism sector increasingly recognizes the importance of sustainability in managing environmentally friendly tourist destinations. Several findings reinforce the global researchers' perspective that bibliometric analysis can provide insights into trends and hot topics in ecotourism research, and that ecotourism practices, management, and academic development offer important theoretical support and practical guidance [34].

Additionally, the post-COVID-19 pandemic period has had a significant impact on this research trend. The pandemic has altered travel and tourism patterns, with increased interest in ecotourism, which is perceived as safer and more sustainable. Many countries have begun introducing policies to support nature-based tourism as a solution for economic and environmental recovery. This creates opportunities for research to explore how ecotourism can serve as a more environmentally friendly alternative and help mitigate the negative impacts of mass tourism. Systematically reviewing three specific categories of factors related to tourist involvement in the context of ecotourism: (1) Antecedent Factors: These are factors that precede and influence tourist involvement. (2) Consequential Factors are the outcomes or results of tourist involvement. (3) Intervention Factors are strategies or actions that can be implemented to influence or modify tourist involvement [35]. Additionally, the issue of interest in ecotourism requires policymakers and developers to foster sustainable ecotourism practices [34].

Interesting topics to explore during the period from 2021 to 2024 include sustainable tourism and biodiversity conservation, as well as the role of environmental policy in managing ecotourism. Much of the research focuses on developing conservation area management models that involve local community participation, as well as how policies can encourage responsible tourism management. In addition, the topic of empowering local communities through ecotourism is also in the spotlight, with the aim of creating sustainable economic benefits for communities around conservation areas. This research is increasingly relevant with the growing attention to ecosystem recovery after environmental crises, which makes ecotourism one of the solutions for nature recovery and conservation.

Figure 3 illustrates the percentage distribution of publications on the relationship between ecotourism planning and environmental policy development across several countries, as follows.



Figure 3. Number of publications by country
Source: Scopus data, 2025

Based on the data presented, China recorded the highest number of publications related to ecotourism, biodiversity, and environmental policy, with a total of 59 publications. This shows that China is paying close attention to environmental and sustainability issues, in line with the country's efforts to address the increasingly urgent challenges of climate change and natural resource management. Other countries that also recorded a significant number of publications are Indonesia and India, with 33 publications each. As developing countries with high biodiversity, these two countries naturally have a strong research focus on ecosystem management and nature-based tourism development. Malaysia, with 20 publications, also demonstrates its commitment to exploring environmental policy and ecotourism, in line with the rapid growth of the tourism industry in Southeast Asia. Additionally, countries such as Russia, South Africa, and Australia, each with 8 publications, contribute significantly to examining global environmental challenges, including biodiversity conservation and adaptation to climate change. Overall, these countries with a high number of publications reflect that research related to ecotourism and environmental policy is increasingly gaining global attention, particularly in countries with rich biodiversity and significant environmental challenges.

In addition to countries with significant numbers of publications, such as China, Indonesia, and India, there are also a number of countries that each have one publication related to ecotourism, biodiversity, and environmental policy. These countries include Tajikistan, Switzerland, Sweden, Singapore, Portugal, Poland, Peru, the Netherlands, Morocco, Mexico, Macao, Jamaica, Iran, Ethiopia, Hong Kong, Greece, Germany, French Polynesia, Fiji, Dominica, the Czech Republic, and Belgium. Although their contribution in terms of the number of publications is relatively small, the existence of publications from these countries remains important as it demonstrates that research on ecotourism and environmental policy has reached various parts of the world, albeit with a lower level of attention compared to countries with more publications. These countries with a single publication, though limited in number, can enrich the global perspective on ecosystem management and nature-based tourism and highlight the importance of international collaboration in addressing global environmental issues.

4.2 Types of publications

In this section, researchers describe and analyze the percentage of types of publications with research issues on the relationship between ecotourism planning and environmental policy development, which can be described as follows.

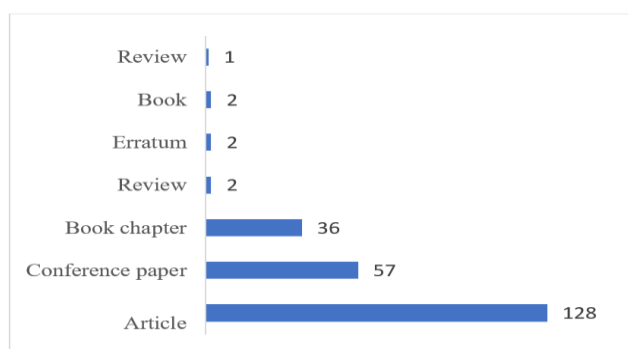


Figure 4. Types of publication documents
Source: Scopus data, 2025

Figure 4 shows the distribution of publication types in research related to ecotourism, biodiversity, and environmental policy. Based on the data, the most common type of publication is articles, with a total of 128 publications. This reflects that most research in this field is published in the form of journal articles, which are the primary form of publication for scientific research as they enable faster and more detailed dissemination of research results. Conference papers (57 publications) also recorded a significant number, indicating that scientific conferences are an important platform for discussion and exchange of ideas in this field. This indicates a high level of interaction and collaboration among researchers at various international conferences, which often serve as venues for sharing the latest findings and discussing current research developments.

Other types of publications, such as book chapters (36 publications), show an important contribution to scientific literature in the form of book chapters discussing topics related to ecotourism, but in a broader and often more in-depth scope. Meanwhile, reviews (2 publications) and errata (2 publications) indicate that although this research is important, the volume of reviews and corrections is lower compared to articles or conferences. Reviews (2 publications) have the lowest number, which may reflect that reviews from scientific conferences are less frequently published compared to other types of publications. Overall, this data indicates that journal articles remain the dominant form of publication in ecotourism and environmental policy research, with conferences as the second platform that also plays an important role in knowledge dissemination.

4.3 Journals most relevant to the research topic

This section describes the most relevant journal publications on the research topic of the relationship between ecotourism planning and environmental policy development conducted by researchers globally, as follows:

Table 1. Journals related to the topic

Journal Name	Amount	Journal Rank
IOP Conference Series Earth and Environmental Science	24	Q3
Journal of Environmental Protection and Ecology	9	Q4
E3s Web of Conferences	7	Q4
Social Entrepreneurship and Social Innovation in Eco Tourism	5	Q4
Geojournal of Tourism and Geosites	5	Q1
AIP Conference Proceedings	4	Q4
Journal of Hospitality and Tourism Management	3	Q1
Environmental Science and Pollution Research	3	Q1
African Journal of Hospitality Tourism and Leisure	3	Q3
Sustainability Switzerland	2	Q1
Regional Science Inquiry	2	Q2
Proceedings of the International Conference on Tourism Research	2	Q3
Proceedings of the International Conference on Management Information and Educational Engineering MIEE 2014	2	Q4
Planning Malaysia	2	Q2
Lecture Notes on Data Engineering and Communications Technologies	2	Q4

Source: Scopus data, 2025

Based on the data recorded in Table 1, the journal that published the most articles related to ecotourism, biodiversity, and environmental policy was IOP Conference Series: Earth and Environmental Science, with a total of 24 publications, despite being classified in Q3. This journal focuses on environmental and sustainability issues, which are highly relevant to the topics of ecotourism and ecosystem protection. Additionally, the Journal of Environmental Protection and Ecology has recorded 9 publications, classified as Q4, focusing on environmental protection and ecosystem management, which are closely related to sustainability in the tourism sector. E3S Web of Conferences, with 7 publications, also makes a significant contribution to ecology-based research and sustainable development despite being classified as Q4. On the other hand, journals with Q1 classification, such as GeoJournal of Tourism and Geosites (5 publications) and Journal of Hospitality and Tourism Management (3 publications), make significant contributions to nature-based tourism management and discuss the integration of nature conservation, resource management, and impacts on local communities. These journals and proceedings reflect the growing global interest in ecotourism research and environmental policy, encompassing various perspectives on sustainability challenges and conservation within the tourism context.

4.4 The most contributing author

The section describes the number of authors globally who cite and are referenced by other researchers on the research issue of the relationship between ecotourism planning and environmental policy development, as illustrated in Table 2 below.

The five authors listed in the table have made significant contributions to research on ecotourism and sustainability. Gabriel-Campos et al. [36], through the article “Community eco-tourism in rural Peru: Resilience and adaptive capacities to the COVID-19 pandemic and climate change”, have provided important insights into the resilience of community ecotourism in Peru in the face of global challenges such as the COVID-19 pandemic and climate change, which has been cited 102 times. Shasha et al. [37], through the article “Past, current, and future perspectives on eco-tourism: a bibliometric review between 2001 and 2018,” offered a comprehensive bibliometric review of eco-tourism research developments over the past two decades, cited 101 times. Lee et al. [38] contributed research on destination social responsibility and visitors' pro-environmental behavior in the article “Sustainable intelligence, destination social responsibility, pro-environmental behavior of visitors: Evidence from an eco-tourism site,” which has been cited 93 times. Meanwhile, McNally and Maroun [39], in their article “It is not always bad news: Illustrating the potential of integrated reporting using a case study in the eco-tourism industry,” discuss the importance of integrated reporting in the ecotourism industry to enhance accountability and transparency, cited 87 times. Finally, Soliku et al. [40], through the article “Tourism amid COVID-19 pandemic: impacts and implications for building resilience in the eco-tourism sector in Ghana’s Savannah region,” make an important contribution to understanding the pandemic's impact on eco-tourism in Ghana and how the sector can build resilience to face future crises, cited 64 times. These five authors demonstrate diverse multidisciplinary approaches in ecotourism research, ranging from social resilience to innovation in reporting and managing sustainable tourism sectors.

Table 2. Authors with the most citations globally

No.	Document Title	Authors/Year	Source	Cited by	Journal Rank
1	Community eco-tourism in rural Peru: Resilience and adaptive capacities to the COVID-19 pandemic and climate change	Gabriel-Campos, E., Werner-Masters, K., Cordova-Buiza, F., Paucar-Caceres, A. (2021) [36]	Journal of Hospitality and Tourism Management	102	Q1
2	Past, current, and future perspectives on eco-tourism: a bibliometric review between 2001 and 2018	Shasha, Z.T., Geng, Y., Sun, H.P., Musakwa, W., Sun, L. (2020) [37]	Environmental Science and Pollution Research	101	Q1
3	Sustainable intelligence, destination social responsibility, and pro-environmental behaviour of visitors: Evidence from an eco-tourism site	Lee, C.K., Olya, H., Ahmad, M.S., Kim, K.H., Oh, M.J. (2021) [38]	Journal of Hospitality and Tourism Management	93	Q1
4	It is not always bad news: Illustrating the potential of integrated reporting using a case study in the eco-tourism industry.	McNally, M.A., Maroun, W. (2018) [39]	Accounting, Auditing and Accountability Journal	87	Q1
5	Tourism amid the COVID-19 pandemic: impacts and implications for building resilience in the eco-tourism sector in Ghana's Savannah region	Soliku, O., Kyiire, B., Mahama, A., Kubio, C. (2021) [40]	Heliyon	64	Q1

Source: Scopus data, 2025

4.5 Subject areas related to the theme

The researchers describe the results of their analysis of the research trend network, Meta-Analysis of the Relationship Between Ecotourism Planning and Environmental Policy Development: Research Dynamics from 2015 to 2025. The purpose of the research results on the subject area most frequently published by researchers globally can be seen in the image below.

An analysis of subjects related to ecotourism, biodiversity, and environmental policy shows that Environmental Science

dominates with the highest number of publications, namely 94 (Table 3). This reflects that most research in this field focuses on sustainability, natural resource management, and the impact of climate change on ecosystems and ecotourism areas. This field is highly relevant because ecotourism is often associated with the management of conservation areas and the environmentally friendly use of natural resources. Additionally, Social Sciences, with 66 publications, also play a significant role, as many studies explore the interactions between ecotourism and local communities, socio-economic impacts, and policy analyses supporting sustainable

development. Research in this field helps to understand how policies can create a balance between economic growth and environmental conservation.

Table 3. Subject area of publication

No.	Subject Area	Amount
1	Environmental Science	94
2	Social Sciences	66
3	Business, Management, and Accounting	59
4	Earth and Planetary Sciences	48
5	Economics, Econometrics, and Finance	44
6	Engineering	43
7	Agricultural and Biological Sciences	24
8	Computer Science	21
9	Energy	17
10	Arts and Humanities	13
11	Mathematics	11
12	Multidisciplinary	7
13	Decision Sciences	7
14	Physics and Astronomy	6
15	Materials Science	4
16	Psychology	2
17	Medicine	2
18	Chemistry	2
19	Biochemistry, Genetics, and Molecular Biology	2
20	Neuroscience	1
21	Chemical Engineering	1

Source: Scopus data, 2025

Furthermore, the subject of Business, Management, and Accounting (59 publications) also makes a significant contribution, particularly in the economic aspects of ecotourism, such as sustainable business model analysis, environmentally friendly tourism sector management, and economic impacts on local communities. Earth and Planetary Sciences (48 publications) demonstrate important contributions in studying ecosystem dynamics and geological phenomena that influence ecotourism areas. The field of Economics, Econometrics, and Finance (44 publications) is

highly relevant in examining the economic policy impacts on ecotourism, as well as funding flows for conservation projects. Meanwhile, contributions from Agricultural and Biological Sciences and Engineering demonstrate the important role in biodiversity conservation and the development of environmentally friendly technologies to support sustainability in ecotourism. Overall, this data underscores the importance of a multidisciplinary approach to addressing the challenges faced by the ecotourism sector in maintaining sustainability and conservation of nature.

4.6 Network, development trends, and research density

The research section presents the results of an analysis of research trends related to the issue of Ecotourism and Biodiversity Research Dynamics in the Perspective of Environmental Policy: A Bibliometric Review 2015-2025. The purpose of this analysis is to map keywords and research networks closely related to the main research, as illustrated in Figure 5 below.

The analysis of the image above shows the close relationship between various key themes in ecotourism development. At the center of the network, “tourism development” is connected to several key concepts, such as tourist destination, eco-tourism destination, and tourism sector, which illustrate how the development of nature-based tourist destinations and the tourism sector as a whole interact to support the growth of ecotourism. Eco-tourism resources also play an important role, highlighting the sector's dependence on natural resources that must be managed wisely to ensure sustainability. On the other hand, concepts related to environmental conservation, such as sustainable tourism, natural resources, environmental protection, and protected areas, form a more red and blue cluster, emphasizing the importance of protecting nature and resources to ensure that ecotourism can proceed with minimal impact on the environment.

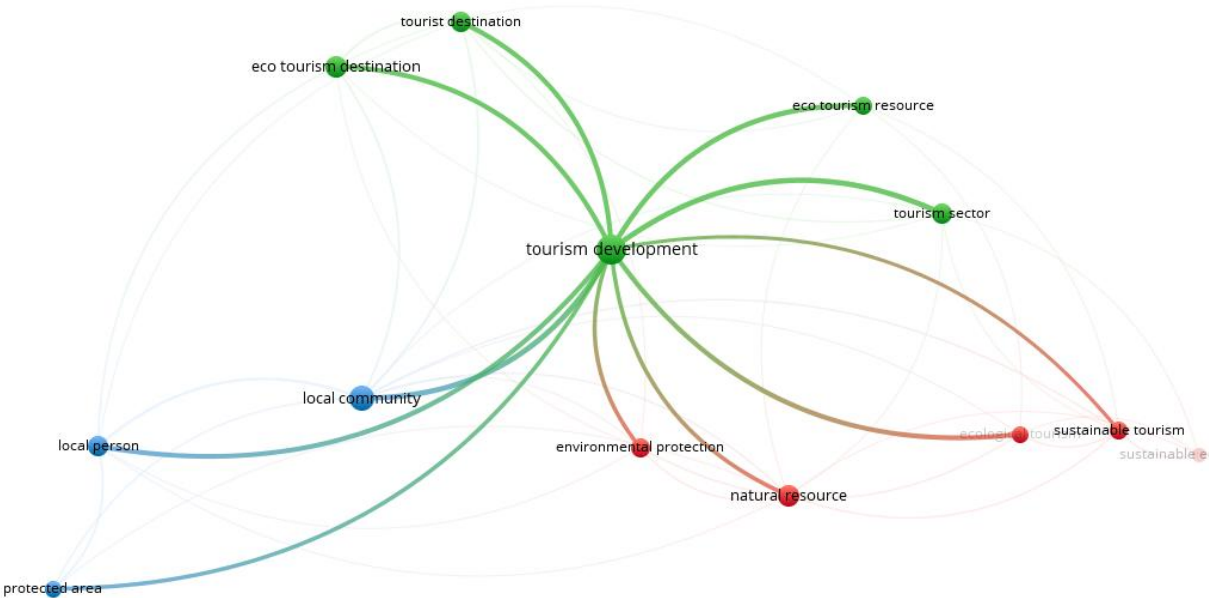


Figure 5. Research trends and research networks
Source: Scopus data, 2025

The theme of local communities and local people also emerges as an integral part of eco-tourism development, reflecting the importance of the role of local communities in the management and benefits of eco-tourism destinations. This map illustrates how ecotourism development must involve integration between the tourism sector, environmental sustainability, and local community empowerment to create tourist destinations that are not only economically beneficial but also preserve nature and provide social benefits for local communities. This shows that effective ecotourism management requires a holistic and sustainable approach, with balanced attention to all these aspects. The interrelated research themes illustrate the thematic focus and conceptual scope of current research in this field.

4.7 Research cluster analysis results

In this section of the table, the researchers describe and analyze the research issue of the relationship between ecotourism and environmental policy planning, which is divided into the following three issue clusters:

Table 4. Results of research cluster analysis

Cluster	Research Issues
Cluster 1	Ecological tourism, environmental protection, natural resources, sustainable eco tourism, sustainable tourism
Cluster 2	eco tourism destination, eco tourism resource, tourism development, tourism sector, tourist destination
Cluster 3	Local community, local person, protected area

Source: Scopus data, 2025

Table 4 shows that the research clusters divide issues related to ecotourism into three main clusters, each reflecting different focuses and dimensions of this topic. Cluster 1 covers issues related to environmental conservation and sustainability in ecotourism. Keywords such as ecological tourism, environmental protection, natural resources, sustainable eco-tourism, and sustainable tourism indicate that this cluster emphasizes the importance of maintaining environmental sustainability, conserving natural resources, and applying

environmentally friendly eco-tourism principles. Research in this cluster is likely to focus on policies and practices that support nature conservation, reduce negative impacts on the environment, and ensure that ecotourism can be sustained in the long term without damaging existing ecosystems.

Cluster 2 focuses on the development of ecotourism and tourism sector management. Issues such as ecotourism destinations, ecotourism resources, tourism development, the tourism sector, and tourist destinations reflect an interest in how ecotourism can be developed as a profitable sector, both economically and socially. Research in this cluster is likely to investigate managerial and operational aspects of ecotourism destination management, as well as ways to enhance the appeal of nature-based tourist destinations while maintaining the sustainability of existing resources. Cluster 3 covers issues related to the role of local communities and the protection of natural areas. Keywords such as local community, local person, and protected area emphasize the importance of empowering local communities in ecotourism management and their contribution to the sustainability of this sector. Research in this cluster is likely to examine how local community involvement can improve the effectiveness of ecotourism and provide economic and social benefits for them, as well as how conservation and protected areas can be managed in collaboration with local communities to maintain environmental sustainability. Overall, these three clusters illustrate the interrelated dimensions of ecotourism: sustainability and nature conservation (Cluster 1), tourism sector management (Cluster 2), and local community empowerment and involvement (Cluster 3). All three are important for creating a sustainable ecotourism model that benefits all stakeholders.

4.8 Collaboration roadmap for writers

The research team outlined and analyzed a global roadmap of authors collaborating on research into the relationship between ecotourism planning and environmental policy development: A review of research dynamics from 2015 to 2025 can be summarized as follows.

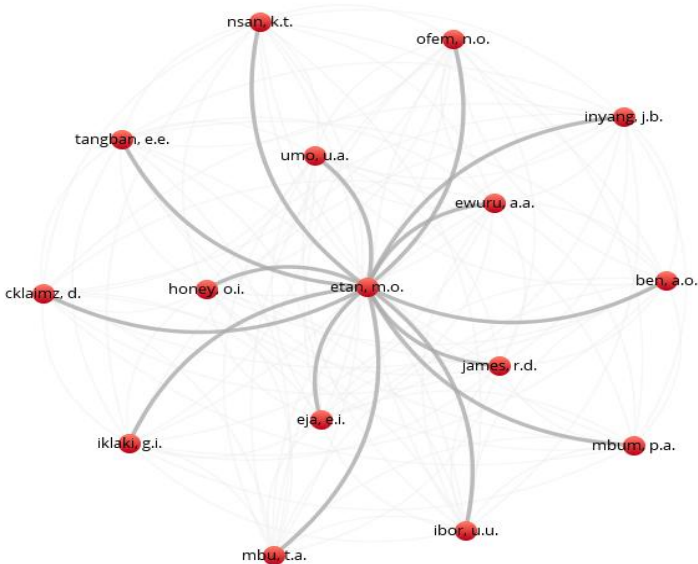


Figure 6. Roadmap for author collaboration
Source: Scopus data, 2025

Figure 6, the map of author collaboration networks shown, provides a clear picture of the relationships between authors involved in research related to ecotourism, biodiversity, and environmental policy. Etan emerges as the center of this network, indicating that this author has a high level of collaboration with various other authors, such as Honey James, and Ben. His central position shows that Etan, plays an important role in this research, possibly as a leader in various collaborative projects. This extensive collaboration highlights the importance of inter-author cooperation in developing deeper and broader knowledge in the fields of ecotourism and environmental sustainability. Other authors, despite having fewer connections, still make significant contributions, such as Mbun, who is connected to several other authors, indicating more focused collaboration on specific topics within ecotourism.

Looking at this map, it can be concluded that research on ecotourism and environmental policy is highly dependent on interdisciplinary collaboration. Authors such as Etan, who have extensive networks, serve as connectors between various approaches and perspectives in this research. The collaboration reflected in this map not only highlights the importance of involving authors from diverse backgrounds and expertise but also indicates that themes related to ecotourism and sustainability are increasingly becoming the focus of research involving multiple stakeholders. In this context, collaboration among authors enables the production of more comprehensive and applied research, thereby contributing more significantly to the development of environmental policies and nature-based solutions.

4.9 Research findings

The findings of this study provide deep insights into the complex relationship between ecotourism, biodiversity, and environmental policy, and how the three can support each other to achieve sustainability. One of the key findings is the importance of clear and firm environmental policies in the management of ecotourism destinations, which can promote nature conservation while still providing economic benefits to local communities. This research also highlights the important role of local community participation in ecotourism management, which is key to maintaining sustainability and ensuring fair distribution of benefits. In addition, this research identifies that multidisciplinary collaboration between environmental science, social science, and economics is essential for developing a holistic and sustainable ecotourism model.

The contribution of this research is to provide a theoretical and practical framework for integrating environmental policy with ecotourism, which can be used as a reference in formulating public policy in countries with high natural wealth, such as Indonesia. This research also guides policymakers to strengthen local community involvement in ecotourism planning and management, as well as to promote more inclusive policies based on sustainability principles. In addition, this research contributes to the development of evidence-based ecotourism management strategies, which can improve the effectiveness of ecotourism programs that have been implemented in various regions. Overall, these findings provide a strong foundation for the development of more sustainable ecotourism policies and practices that are responsive to global environmental challenges.

Research issues related to ecotourism, biodiversity, and

environmental policy are highly relevant to the global challenges we face today, particularly those related to climate change, environmental degradation, and biodiversity loss. Ecotourism, which aims to integrate nature conservation with tourism development, has great potential to promote sustainability and ecosystem restoration while providing economic benefits to local communities. However, to achieve these goals, clear and firm environmental policies are needed to ensure that nature-based tourism does not damage the environment but instead contributes to nature conservation. Research on effective environmental policies in supporting ecotourism management is crucial, as good policies can create a balance between economic development and nature conservation, while also involving communities in sustainable management.

On the other hand, ecotourism management not only depends on policies, but also on the active involvement of local communities that are part of ecotourism destinations. Through research involving various disciplines, we can gain a deeper understanding of how policies, destination management, and community empowerment can work together to achieve sustainability goals. Therefore, it is important to continue to encourage interdisciplinary research that not only examines the ecological aspects but also the social and economic aspects of ecotourism. In this way, we can create a holistic ecotourism model that benefits local communities and preserves the environment for future generations.

The research issues raised regarding ecotourism, biodiversity, and environmental policy are highly relevant to various programs that have been implemented by governments in many countries, including Indonesia, which focus on sustainable development and nature conservation. The Indonesian government, through programs such as Cinta Alam Indonesia (Love Nature Indonesia) and Biodiversity Conservation, for example, strives to preserve and maintain biodiversity through conservation policies and the protection of natural areas. In addition, the Indonesian tourism sector is increasingly moving towards sustainable tourism that supports nature conservation and local community empowerment, as reflected in the Tourism for Tomorrow program, which promotes ecotourism destinations in areas rich in biodiversity, such as Raja Ampat and West Bali. This program aims to integrate environmental conservation policies with the profitable tourism sector, in line with the findings of this study, which emphasize the importance of environmental policies in ecotourism management.

However, despite positive government programs, the biggest challenge in implementing ecotourism policies is often related to a lack of supervision and coordination between the responsible agencies. Some environmental protection policies are still poorly enforced, so environmental damage caused by tourism activities continues to occur, both in conservation areas and ecotourism destinations. In the findings of this study, it is evident that effective environmental policies do not only depend on regulations but also on the active participation of local communities in ecotourism management and monitoring of environmental impacts. In line with this, many government programs have attempted to involve local communities, but improvements are still needed to ensure that they have a more significant role in decision-making and policy implementation.

Government policies that focus on empowering local communities and increasing their capacity to manage

ecotourism still have great potential, although they are often overlooked in their implementation in the field. The findings of this study indicate that local community participation in ecotourism management is crucial to ensuring sustainability and fair distribution of economic benefits. Programs such as Community-Based Tourism (CBT) and Local Ecotourism Empowerment, implemented by the government in some regions, can serve as positive examples, but these programs require evaluation and strengthening to be more effective. This shows that although government policies are already geared towards sustainable ecotourism, their implementation still needs to be adjusted to truly provide maximum benefits for the environment and the community. Overall, although in line with the research findings, there are still challenges that must be addressed in the more comprehensive implementation of this policy.

5. CONCLUSIONS

The findings of this study provide a comprehensive overview of the dynamics of research related to ecotourism, biodiversity, and environmental policy from 2010 to 2025. Based on the analysis of the number of publications, there has been a significant increase since 2020, reflecting growing global interest in this topic, with the largest surge recorded between 2021 and 2023. This indicates the increasing relevance of research on sustainability and ecotourism in light of global environmental challenges.

The journal with the most articles on this research theme is IOP Conference Series: Earth and Environmental Science, which has made a significant contribution to the development of this research, although there is still variation in the rankings of journals serving as primary publication platforms. The most contributing authors, such as Gabriel-Campos and Shasha, are key references in this research, as evidenced by the high number of citations to their works. Additionally, subject areas related to this theme show a dominance of Environmental Science, followed by Social Sciences, Economics, and Business, further highlighting the interconnection between environmental management and socio-economic aspects in the development of ecotourism.

From the perspective of research trend networks, there is a growing collaboration between various disciplines, forming a research cluster analysis that highlights the close relationship between ecosystem management, environmental policy, and sustainable tourism development. The authors' collaboration roadmap also highlights the importance of synergy between authors from different countries and disciplines, with lead authors such as Etan, serving as key connectors in this research. Overall, the findings of this study underscore the importance of multidisciplinary and cross-national collaboration in creating more effective and sustainable solutions to the challenges faced by the ecotourism sector and global environmental policy.

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