



# Bibliometric Analysis of Ecotourism and Sustainable Tourism: A Study of Trends in Scientific Publications

Análisis Bibliométrico sobre Ecoturismo y Turismo Sostenible:  
Un Estudio de las Tendencias en Publicaciones Científicas

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Review Article

Submitted: 26/01/2024

Reviewed: 19/06/2024

Accepted: 04/09/2024

Published: 24/09/2025

Thematic lines: Administration and Organizations

JEL classification: Q01

<https://doi.org/10.25100/cdea.v41i82.13466>

## Abstract

Ecotourism and sustainable tourism have experienced significant growth globally, driven by increasing concerns about environmental conservation and sustainable development. In central Valle del Cauca, Colombia, these forms of tourism emerge as alternatives with potential to promote ecosystem conservation and local economic development. This study conducts a bibliometric analysis of scientific literature on ecotourism and sustainable tourism, aiming to identify trends, authors, institutions, and key terms in research published between 2014 and 2024. Using tools such as the UNESCO Thesaurus, Scopus, Web of Science, Tree of Science, and VOSviewer, descriptors, keywords, and co-occurrences are analyzed to map the current state of research in these fields. The results indicate that ecotourism is a central topic in recent literature, with a strong correlation between the concepts of sustainability and tourism development. However, the analysis reveals a gap in the practical application of this knowledge to the specific context of Valle del Cauca,

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where the challenges and opportunities associated with implementing ecotourism and sustainable tourism have not been sufficiently explored. This study contributes to the understanding of research dynamics in ecotourism and sustainable tourism, highlighting the need for future studies to more directly address local implications, thereby strengthening the link between theory and practice in promoting sustainable tourism in the region.

**Keywords:** ecotourism, sustainable tourism, central Valle del Cauca, conservation, local development.

## Resumen

El ecoturismo y el turismo sostenible han experimentado un crecimiento significativo a nivel global, impulsado por la creciente preocupación por la conservación ambiental y el desarrollo sostenible. En el centro del Valle del Cauca, Colombia, estas formas de turismo surgen como alternativas con potencial para promover la conservación de los ecosistemas y el desarrollo económico local. Este estudio realiza un análisis bibliométrico de la literatura científica sobre ecoturismo y turismo sostenible, con el objetivo de identificar tendencias, autores, instituciones y términos clave en investigaciones publicadas entre 2014 y 2024. Mediante el uso de herramientas como el Tesoro de la UNESCO, Scopus, Web of Science, Tree of Science y VOSviewer, se analizan descriptores, palabras clave y coocurrencias para mapear el estado actual de la investigación en estos campos. Los resultados indican que el ecoturismo es un tema central en la literatura reciente, con una fuerte correlación entre los conceptos de sostenibilidad y desarrollo turístico. Sin embargo, el análisis revela una brecha en la aplicación práctica de este conocimiento al contexto específico del Valle del Cauca, donde los desafíos y oportunidades asociados con la implementación del ecoturismo y el turismo sostenible no han sido suficientemente explorados. Este estudio contribuye a la comprensión de la dinámica investigativa en ecoturismo y turismo sostenible, resaltando la necesidad de que futuras investigaciones aborden de manera más directa las implicaciones locales, fortaleciendo así el vínculo entre teoría y práctica en la promoción del turismo sostenible en la región.

**Palabras clave:** ecoturismo, turismo sostenible, centro del Valle del Cauca, conservación, desarrollo local.

## Introduction

The global focus on environmental conservation and sustainable development has led to the emergence of ecotourism and sustainable tourism as key issues in the tourism industry. These types of tourism are distinguished by their emphasis on the preservation of natural resources and the promotion of economic development that benefits both local communities and the environment. Given these circumstances, the central Valle del

Cauca region of Colombia represents an optimal setting for the implementation of these practices, due to its geographic characteristics and the diversity of its ecosystems, which range from tropical rainforests to Andean moorlands.

The region is facing several challenges to effectively implement ecotourism and sustainable tourism. To achieve this, the region must address several challenges, including the need for adequate infrastructure, environmental awareness and education of tourists, and the inclusion of local communities in managing and developing tourism activities. Nevertheless, there are considerable opportunities for the region, including the potential to promote natural resource conservation, generate employment, and reinforce cultural identity through sustainable tourism.

This study was initiated to gain a deeper understanding of the dynamics and trends in ecotourism and sustainable tourism research, with a particular focus on Valle del Cauca. The objective is to conduct a bibliometric analysis to identify thesauri, countries, the most representative institutions, and authors in the field, using tools such as the UNESCO Thesaurus, Scopus, Web of Science, Tree of Science, and VOSviewer. This approach allows us to map the current state of research and identify areas where further attention and development are required, specifically in the context of Valle del Cauca.

This work is significant because it contributes to the existing body of knowledge on ecotourism and sustainable tourism. It identifies gaps in the application of these concepts at the regional level and provides a foundation for future research that effectively addresses these challenges. By providing a detailed analysis of the scientific literature, this study offers a comprehensive overview that can guide both researchers and policymakers in promoting more sustainable and equitable tourism in Valle del Cauca.

Finally, this study is distinct from previous research in that it employs a targeted bibliometric analysis, offering a novel perspective on the evolution of research in this field and its potential impact on tourism development decisions and policies in Valle del Cauca.

## Methodology

This bibliometric analysis was conducted using a descriptive and quantitative approach, following the methodology proposed by Hernández-Sampieri et al. (2014). The objective was to analyze the scientific production on sustainable tourism and ecotourism. To that end, two well-reputed databases were used: Scopus (Elsevier) and Web of Science (Clarivate Analytics), which offer extensive coverage of academic and scientific literature in various disciplines. (Elsevier, 2021; Clarivate Analytics, 2021).

### Information sources and search criteria

Search thesauri were defined using the UNESCO Thesaurus, with the keywords “sustainable tourism” and “ecotourism”. The search for articles was carried out in Scopus and Web of Science, applying a set of inclusion and exclusion criteria as follows (see Table 1).

### Methodological process

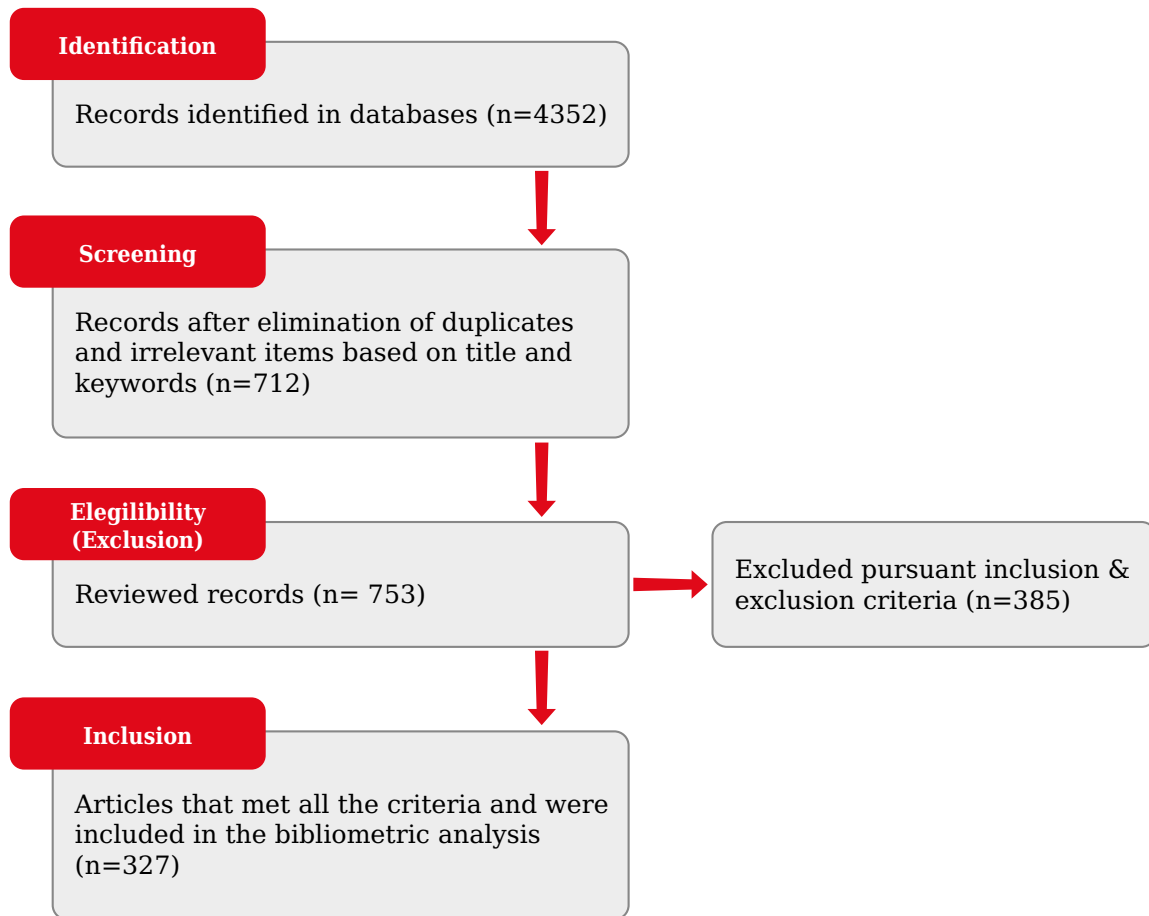
The bibliometric analysis was conducted following the methodological phases detailed in Table 2 and Figure 1.

**Table 1. Search criteria and analysis parameters**

Criterion	Parameter
<b>Language</b>	Articles in English and Spanish were included
<b>Period analyzed</b>	Publications between 2000 and 2023.
<b>Date of search</b>	Search queries were conducted on September 5, 2023.
<b>Type of document</b>	Scientific articles (research articles) were included, excluding reviews and conferences.
<b>Type of journal</b>	Only journals indexed in Scopus and Web of Science with impact factor were considered.
<b>Thematic subareas</b>	Social sciences, environmental sciences, business and economy.
<b>Document access</b>	Both open access and restricted access documents were selected.

**Table 2. Methodological procedure for bibliometric analysis**

Phase	Information source	Consultation link
Definition of thesauri for search queries	UNESCO Thesaurus	<a href="http://vocabularies.UNESCO.org/browser/thesaurus/es/">http://vocabularies.UNESCO.org/browser/thesaurus/es/</a>
Database selection	Scopus, Web of Science	<a href="https://www.scopus.com/home.uri">https://www.scopus.com/home.uri</a>
Search for keywords	Scopus, Web of Science	<a href="https://www.scopus.com/home.uri">https://www.scopus.com/home.uri</a> <a href="https://www.webofscience.com">https://www.webofscience.com</a>
Refining information	Scopus, Web of Science	Same consultation links
Information analysis	RStudio, VOSviewer, Core of Science	<a href="https://www.vosviewer.com/">https://www.vosviewer.com/</a> <a href="https://rstudio.cloud/projects">https://rstudio.cloud/projects</a>
Bibliometric report	VOSviewer, Tree of Science	Same consultation links

**Figure 1. PRISMA scheme for article selection process.**

#### 1. Definition of thesauri for search queries:

The UNESCO Thesaurus was used to define the keywords “sustainable tourism” and “ecotourism”.

#### 2. Database selection:

Search for articles was carried out in Scopus and Web of Science, using the search equations described below.

#### 3. Searching for and refining information:

First, separate searches were conducted using each group of keywords. Then, the searches were combined using the logical operator “AND” to identify articles that addressed both topics at the same time.

#### 4. Inclusion and exclusion of articles (PRISMA scheme):

Following the PRISMA methodology, an outline was included to detail the process of inclusion and exclusion of articles. This process included an initial review of titles and abstracts, followed by an evaluation of the full text. Exclusion criteria discarded duplicate studies, articles irrelevant to the selected thematic subareas, and publications that did not meet access criteria or document type.

#### 5. Information analysis:

Scopus references were exported in .csv format for analysis in RStudio, where the Tree of Science (TOS) tool was used to build the Tree of Science. VOSviewer (2021) was used

in parallel to generate visualizations of bibliometric networks, with a focus on citation, co-citation, and co-authorship. To verify the results, references were also exported from Web of Science in .txt format, comparing the information by using Core of Science.

## Results

### *Trend of descriptors and keywords*

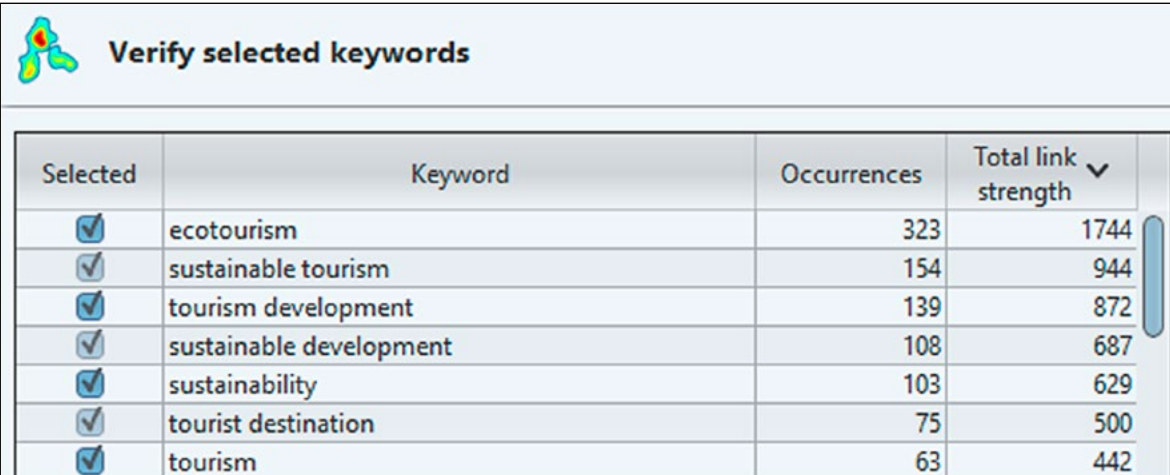
Based on the combined keywords used for this analysis and with the help of the VOSviewer tool, the analysis by co-occurrence, which refers to “the joint appearances of two terms in a given text, with the purpose of identifying the conceptual and thematic structure of a scientific domain” was performed (Galvez, 2018). The result of the analysis is presented in Figure 2.

The bibliometric analysis indicates that the keyword “ecotourism” is the most frequently utilized in publications pertaining to this subject matter, followed by “sustainable tourism” and “tourism development.” Furthermore, other terms with a high degree of co-occurrence have been identified, including

“sustainable development” and “sustainability.” These keywords indicate that sustainability is a significant area of focus in tourism research. Moreover, an examination of the interconnections between the various keywords and thesauri indicates that “ecotourism” has the highest number of connections, suggesting that it is a pivotal theme in sustainable tourism research and literature. The most significant keyword network is illustrated on the map created based on bibliographic information. (Figure 3).

The bibliometric analysis carried out with the VOSviewer tool shows that cluster 1, identified by its green color, is headed by the keyword “ecotourism”, indicating that it is the most relevant topic in the academic literature on sustainable tourism. In addition, it can be noticed that this keyword has a strong relationship with other keywords such as “sustainable tourism”, “sustainable development”, “tourism development”, “sustainability”, and “tourism destinations”, suggesting that there is a close relationship between these concepts in ecotourism and sustainable tourism research. (Figure 4).

**Figure 2. Keywords by co-occurrence**

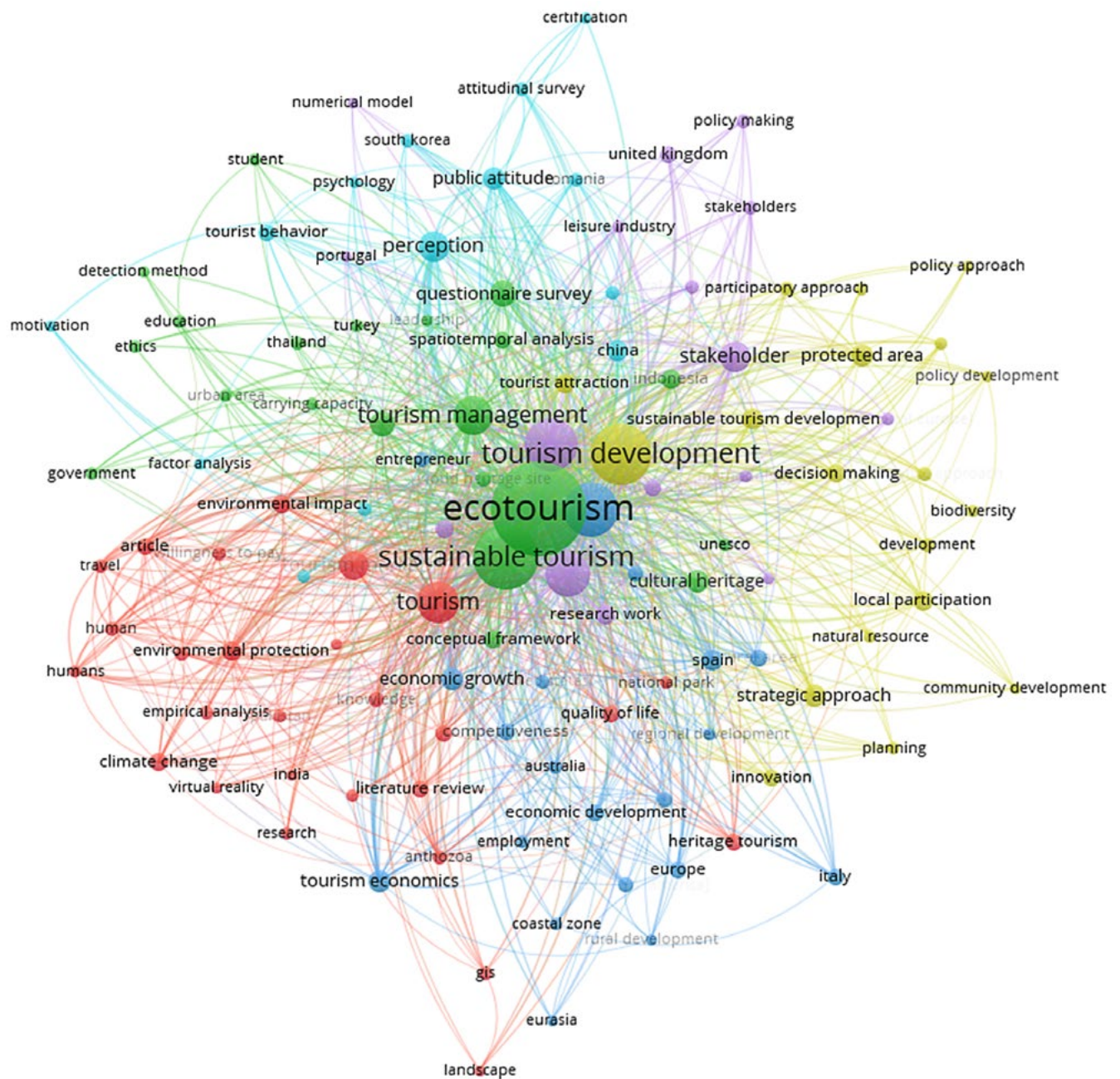


Selected	Keyword	Occurrences	Total link strength
<input checked="" type="checkbox"/>	ecotourism	323	1744
<input checked="" type="checkbox"/>	sustainable tourism	154	944
<input checked="" type="checkbox"/>	tourism development	139	872
<input checked="" type="checkbox"/>	sustainable development	108	687
<input checked="" type="checkbox"/>	sustainability	103	629
<input checked="" type="checkbox"/>	tourist destination	75	500
<input checked="" type="checkbox"/>	tourism	63	442

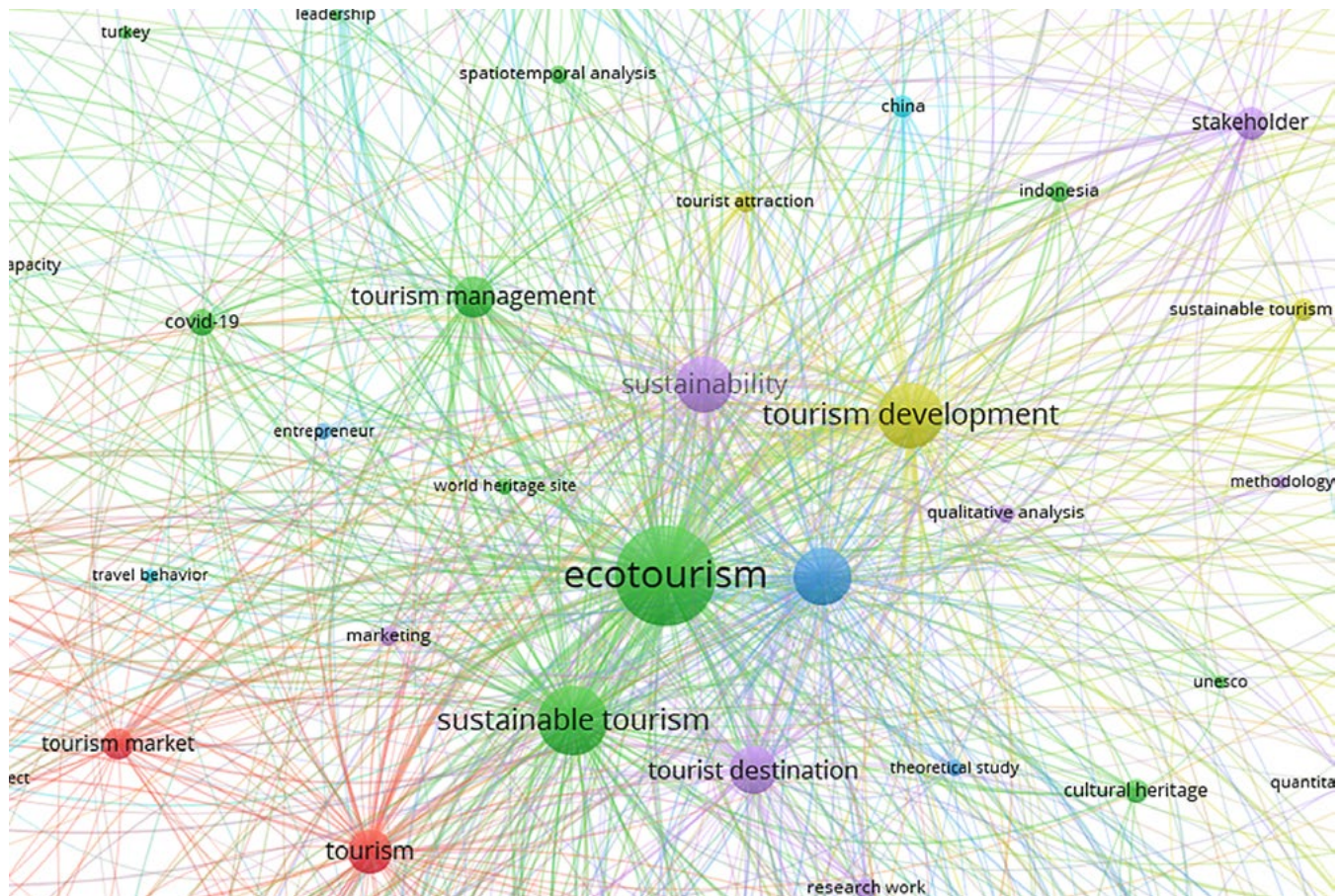
Source: Prepared by the authors based on VOSviewer search results



**Figure 3. Map based on bibliometric information**



Source: Prepared by the authors based on VOSviewer search results

**Figure 4. “ecotourism” cluster**

Source: Prepared by the authors based on VOSviewer search results

The bibliometric analysis also shows that the term “sustainable tourism” has a strong relationship with keywords such as “tourism development”, “tourism”, “tourism management”, and “tourism planning”. In this sense, it can be point out that studies related to sustainable tourism address aspects that go beyond tourism promotion while focusing on tourism development planned and managed in a responsible and sustainable manner. Likewise, the importance of tourism management and planning in the context of sustainable tourism stands out, thus suggesting that these aspects are fundamental for the achievement of tourism that respects the environment, culture and local economy.

### Analysis of Authors

The most representative authors by number of papers are (See Figure 5): Igor Trišić, professor and researcher at the University of Belgrade in Serbia. He specializes in sustainable tourism, tourism development, tourism planning, tourism management, and ecotourism. He has published numerous articles and book chapters in these areas and is recognized as an expert in sustainable tourism in the Balkan region. He has also participated in several research projects in collaboration with other universities and organizations in Serbia and other European countries (Scopus, 2023a).

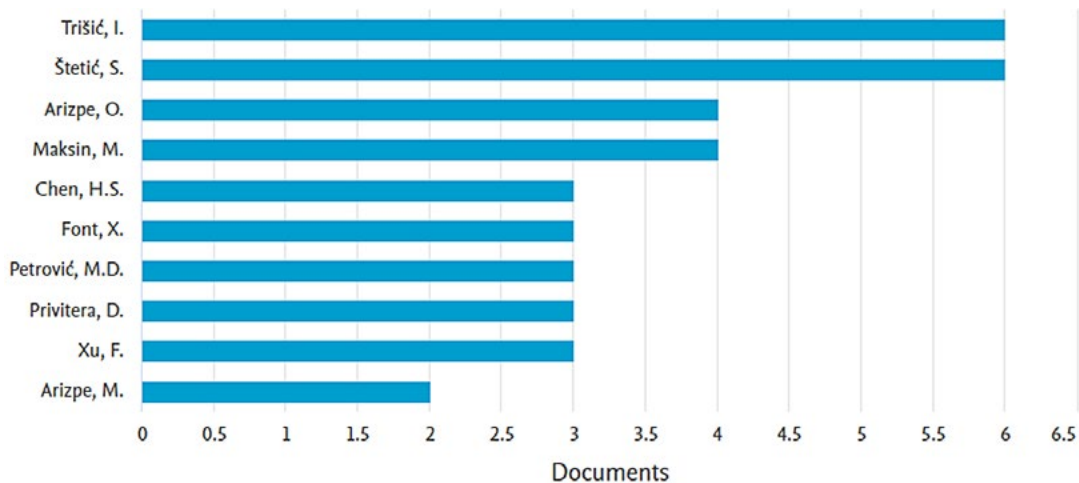


Snežana Štetić, from Belgrade's The College of Tourism, in Serbia, also stands out for having conducted studies on ecotourism and destination management between 2017 and 2021 (Scopus, 2023b).

Running a co-authorship analysis using VOSviewer confirmed the previous results, considering that this is a type of bibliometric analysis that examines collaboration between authors in scientific publications. This allows for finding the frequency and nature of collaboration between authors, while helping to understand the structure and dynamics of

research in a specific field. The importance of co-authorship analysis lies in its ability to identify patterns of research collaboration and to highlight the most influential authors and research teams in a field. It can also assist in identifying research and collaboration networks, as well as trends and changes in collaboration over time. This analysis is based on the number of citations, where it can be noted that the most representative authors are Trišić, with 54 citations, as well as Štetić, with the same number of citations (Figure 6).

**Figure 5. Documents by author**



Source: Prepared by the authors based on Scopus search results

**Figure 6. Co-authorship Analysis**

Verify selected authors				
Selected	Author	Documents	Citations	Total link strength
<input checked="" type="checkbox"/>	trišić i.	6	54	17
<input checked="" type="checkbox"/>	štetić s.	6	54	17
<input checked="" type="checkbox"/>	maksin m.	4	19	12
<input checked="" type="checkbox"/>	das s.	2	65	10
<input checked="" type="checkbox"/>	duy n.t.	2	65	10
<input checked="" type="checkbox"/>	dzung p.t.	2	65	10
<input checked="" type="checkbox"/>	minh d.x.h.	2	65	10

Source: Prepared by the authors based on VOSviewer search results



## Analysis of publications

Figure 7 shows the number of papers related to sustainable tourism and ecotourism that have been published in the last 20 years. It can be seen that the academic production in the early 2000s was low, however, since 2017 the number of papers has grown significantly.

## Financing institutions and countries

Figure 8 shows a bar analysis of the institutions that have published papers whose keywords are related to those chosen for this research. According to the graph, the institutions that have conducted the most research on sustainable tourism and ecotourism are

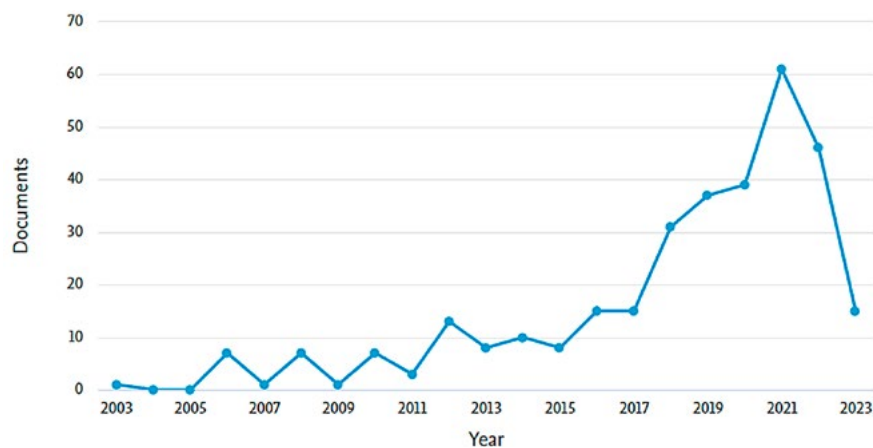
Kyung Hee University, followed by South Ural State University, University of Surrey, and Griffith University.

Regarding the number of publications by country, Spain has the highest number of documents, followed by the United Kingdom and China. (see Figure 9).

## Analysis by area of knowledge

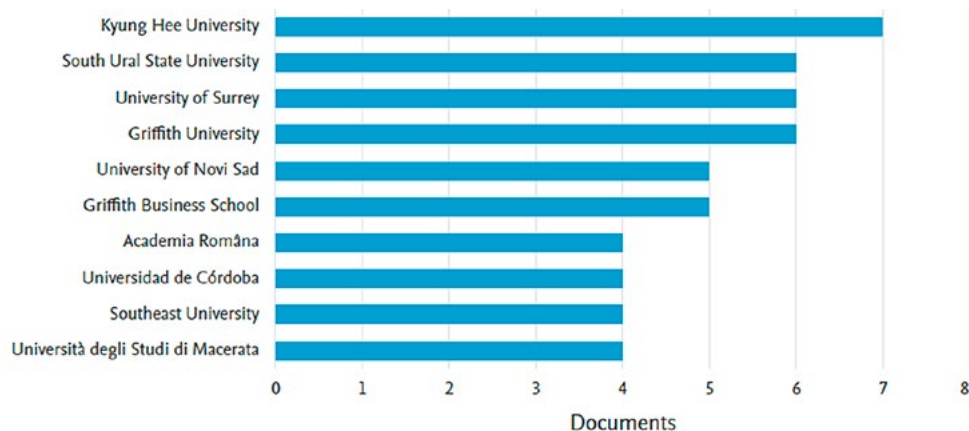
The analysis reveals that sustainable tourism and ecotourism have been primarily addressed from a social and environmental science perspective. Figure 10 illustrates that a considerable proportion of the research is concentrated in these areas, with social

**Figure 7. Number of publications in the last 20 years.**

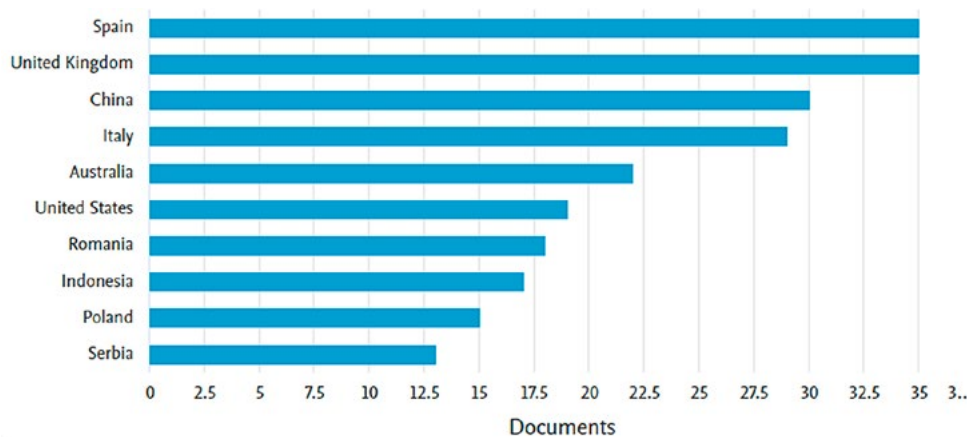


Source: Prepared by the authors based on Scopus search results

**Figure 8. Documents by institution.**



Source: Prepared by the authors based on Scopus search results

**Figure 9. Documents by country**

Source: Prepared by the authors based on Scopus search results

sciences accounting for approximately 40% of the studies and the environmental sciences contributing approximately 35%. This distribution underscores the value of multidisciplinary strategies for effectively addressing the inherent complexity of these issues. The social sciences, which encompass disciplines such as anthropology, sociology, psychology, and economics, are vital for grasping the social, economic, and cultural dynamics that impact both local communities and tourists. Conversely, environmental sciences concentrate on the preservation and management of natural resources, which are vital for the sustainable development of tourism.

Furthermore, Figure 10 indicates that the energy sector accounts for approximately 10% of the studies, emphasizing the growing significance of energy resource management in the context of sustainable tourism. Incorporating this approach into the analysis indicates that energy sustainability is a crucial element for the long-term success of ecotourism, particularly in regions where infrastructure and access to energy resources are limited.

It is notable that approximately 15% of the studies originate from the field of business and management, reflecting a growing acknowledgment of the significance of sustainable tourism in business management and strategic planning for tourism destinations. This approach highlights the dual benefit of

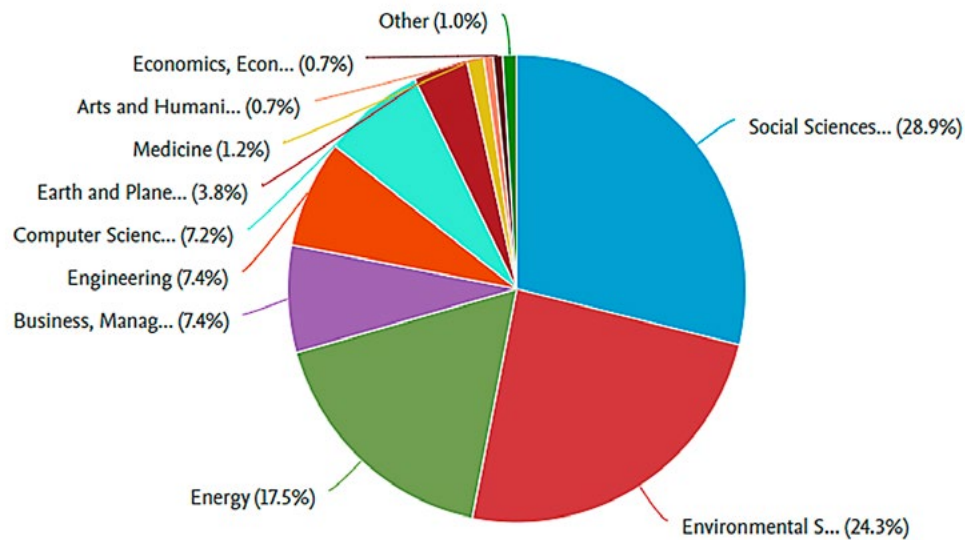
sustainable practices: they are good for the environment and can also drive economic growth and competitiveness in the tourism sector.

## Discussion

### *Tree of Science*

The Tree of Science (TOS) web tool was employed to facilitate the discussion of results. TOS provides a sophisticated platform for the intelligent selection of scientific articles through the application of network analysis. This initiative, created by Sebastián Robledo Giraldo, provides researchers with a tool to identify the most pertinent articles, displaying them in a tree structure. Classic articles are located at the root, articles that provide structured knowledge are situated at the trunk, and the most recent articles are at the leaves (Universidad Nacional de Colombia, 2016).

To create the Tree of Science, the Web of Science database was utilized, and the data were exported in .txt format. The tree was then constructed on the Core of Science website, resulting in a total of 57 articles that correspond to the most relevant ones according to the tool's algorithm. Figure 11 illustrates the inclusion of 20 classic articles, which serve as the foundation for the topic (root), 18 articles that comprise the knowledge structure (trunk), and 19 more recent articles (leaves).

**Figure 10. Documents by area of knowledge**

Source: Prepared by the authors based on Scopus search results

**Figure 11. Tree of Science**

Source: Prepared by the authors on Core of Science

### *Analysis of root documents (root)*

In order to conduct an analysis of the root documents, five articles were selected for review. These articles were chosen based on the keywords “sustainable tourism” and “ecotourism” appearing in their titles. Subsequently, we analyzed the abstracts and the structure of the main ideas presented by the authors. It is important to note that this section of the “tree of science” focuses on the most significant articles related to the topic of interest.

Hunter (1995) states that in the 1990s, a dominant paradigm emerged in sustainable

tourism development that appeared to chart a responsible course, balancing the requirements of tourism development with environmental protection. However, the article posits that the dominant paradigm was excessively focused on tourism, lacked diversity, and was therefore inherently flawed. It effectively condemned planning, management, and policy approaches that did not align with the overarching objectives and requirements of sustainable development. Specifically, the tourism-centric paradigm is said to encourage inappropriate and inconsistent consideration of the scope and geographic scale of the tourism resource base, as well as fail to ade-

quately account for the cross-sectoral context of tourism development. To re-engage sustainable tourism development with its parent concerns (those of sustainable development in general), an alternative, extra-parochial paradigm is proposed. This new paradigm would re-conceptualize the scope of sustainable tourism development primarily in terms of tourism's contribution to sustainable development. This alternative perspective would allow for sufficient consideration of the environmental, social, and economic aspects of tourism, as well as the impact of tourism on communities and the natural environment.

Subsequently, in 1997, another article by the same author asserts that, although the concept of sustainable tourism originates from the broader concept of sustainable development, it has evolved in isolation from the ongoing discourse on the definition of the latter. The study indicates that this disconnect has resulted in the emergence of an overly simplistic and inflexible sustainable tourism paradigm that fails to account for specific circumstances. In light of these considerations, a redefinition of the concept of sustainable tourism in terms of a general paradigm that encompasses a range of approaches to the tourism/environment system in destination areas is put forth. These approaches are outlined for a variety of hypothetical scenarios to illustrate the viability of different interpretations of sustainable tourism. The value of this analysis lies in the necessity to overcome the limitations of the sustainable tourism paradigm and consider the complexities and singularities of each tourism destination. This will ensure the achievement of true sustainable development in the tourism sector.

Ross and Wall (1999) conducted an analysis to identify discrepancies between the theoretical framework of ecotourism as presented in academic literature and the actual practice of ecotourism based on on-site observations. The authors have put forth a framework that, if properly managed, can help achieve a balance between conservation and development by promoting synergistic relationships between natural areas, local populations, and tourism. The framework can also be used to evaluate the status of ecotourism at particular locations. The article high-

lights the discrepancy between ecotourism theory and practice, emphasizing the need for a more effective approach to achieve a balance between conservation and development. Furthermore, this framework offers a valuable tool for evaluating the status of ecotourism at particular locations and enhancing ecotourism management practices. The proper implementation of this framework will help maximize the benefits of ecotourism while minimizing its negative impacts on the environment and local communities.

Conversely, Scheyvens (1999) explored ways to gain a deeper understanding of how ecotourism enterprises impact the lives of individuals residing in and around the environments visited by eco-tourists. From a development perspective, an ecotourism company can be considered successful when local communities have some degree of control over it and share equitably in the benefits of ecotourism activities. The proposal is to use an empowerment framework as a suitable tool for analyzing the social, economic, psychological and political impacts of ecotourism on local communities.

In his research, Scheyvens (1999) highlights the significance of evaluating the impact of ecotourism on local communities. He emphasizes that active involvement and empowerment of these communities are essential for achieving sustainable development in this industry. The empowerment framework allows for the identification and analysis of the effects of ecotourism on various dimensions of community life, including social, economic, psychological, and political well-being. This approach also ensures an equitable distribution of benefits between local communities and entrepreneurs in the sector, which can foster fairer and more sustainable relationships in the long term. It is also important to note that the effective implementation of this framework requires the cooperation of all relevant stakeholders, including ecotourism businesses, local governments, and the communities themselves. However, if properly implemented, this approach can ensure that ecotourism acts as a positive force for sustainable development and improves the quality of life of those living in the areas visited by eco-tourists.



Sharpley (2000) highlights a notable gap in the tourism literature: despite the considerable attention devoted to sustainable tourism development by scholars and practitioners, there has been a persistent failure to connect the concept to the theory of its parent paradigm, sustainable development. Consequently, the relevance of this concept to the tourism sector is seldom challenged. This article addresses this gap in the existing literature. By examining development theory and the concept of sustainability, the article puts forward a model of sustainable development in which the principles of sustainable tourism are compared. It is argued that tourism development remains embedded in early modernization theory, while the principles of sustainable tourism overlook the characteristics of tourism production and consumption. As a result, there are notable distinctions between the concepts of sustainable tourism and sustainable development, indicating that the principles and objectives of sustainable development may not be directly applicable to the specific context of tourism.

In light of the above, Sharpley (2000) highlights the importance of evaluating the suitability of sustainable development for the tourism sector and suggests a tailored model of sustainable development for the tourism industry. It is important to consider tourism development in the context of a broader framework of sustainable development. The lack of connection between these two concepts has led to a lack of understanding and inadequate addressing of the problems associated with sustainable tourism. It is therefore recommended that those involved in the tourism industry, as well as those responsible for decision-making, consider the specific principles and objectives of sustainable tourism when planning and developing sustainable tourism destinations. Furthermore, a grasp of the distinctive features of tourism as an economic sector is vital to formulating effective sustainable tourism policies and practices. With this understanding, we can develop sustainable tourism practices that benefit tourists, host communities, and the environment.

The aforementioned authors concur on the significance of assessing the impacts of tourism and ecotourism on local communities

and on the necessity of considering the distinctive context of each tourism destination. Hunter (1995; 1997) emphasize the importance of integrating the environmental, social, and economic dimensions of tourism into planning, management, and policy approaches. Ross and Wall (1999) put forth a suitable management framework to achieve equilibrium between conservation and ecotourism development. Scheyvens (1999) proposes an empowerment framework as a suitable tool for analyzing the social, economic, psychological, and political impacts of ecotourism on local communities. The authors concur that a more effective approach is required to achieve genuine sustainable development in the tourism sector. They also emphasize the importance of optimizing the benefits of tourism while minimizing its negative impacts on the environment and local communities.

### *Analysis of trunk document (trunk)*

This component of the “tree of science” includes articles that present a structure corresponding to the first authors to discover the applicability of sustainable tourism and ecotourism. The methodology used for the root documents was employed for this selection. A total of five articles were selected based on the following criteria: the presence of the keywords “sustainable tourism” and “ecotourism” in the article title. Next, we analyzed the abstracts and the structure of the main ideas presented by the authors.

Plummer and Fennell (2009) address the challenging task of managing protected areas for sustainable tourism. They highlight that over the past 25 years, multi-stakeholder conflicts, complexity, and uncertainty have emerged and persisted as significant challenges requiring responses from managers. These issues reflect significant shifts in thinking when it comes to pursuing and understanding sustainability. Governance encourages a broad participatory approach, while complex systems theory emphasizes transformative change and an integrative perspective that brings together human and natural systems (a social-ecological system).

The article presents adaptive co-management as a potential alternative approach to protected area management for sustainable

tourism. Furthermore, it emphasizes the need for an interdisciplinary approach, citing significant and insightful developments outside the realm of tourism studies. Adaptive co-management integrates governance and complex systems by combining cooperative and adaptive management approaches. In evaluating the potential of adaptive co-management, a comprehensive approach is taken, considering the conceptual, technical, ethical, and practical dimensions. While adaptive co-management is not a universal solution, insights from natural resource management can inform the application of this approach in protected areas for sustainable tourism.

Subsequently, Buckley (2012) reviews the social and environmental impacts, responses, and indicators of the global tourism sector in five categories: population, peace, prosperity, pollution, and protection. Of the approximately 5000 relevant publications, very few attempt to assess the global tourism sector in terms that reflect worldwide research on sustainable development. Therefore, it is concluded that the industry is still far from achieving sustainability.

According to Buckley (2012), the main driver of improvement is regulation rather than market measures. Some tourism advocates still use political approaches to avoid environmental restrictions and gain access to public natural resources. Future research priorities include: the role of tourism in the expansion of protected areas; improved environmental accounting techniques; and the effects of individual perceptions of responsibility in responding to climate change. He also argues that more research is needed to achieve sustainability in the tourism industry. Regulation appears to be the most effective approach to improving tourism practices. Despite some political efforts to avoid environmental restrictions, there is a need for the tourism industry to take responsibility for protecting the environment and natural resources. In addition, attention should be paid to the education and individual awareness of tourists, as well as to improving environmental accounting techniques and expanding protected areas.

Hung and Hsieh (2016) present an article whose objective was to identify indicators for

sustainable tourism in wetlands. In the first study, the fuzzy Delphi method was used to determine key dimensions and indicators. In the second study, the relative weights of these dimensions and indicators were examined using the analytical hierarchy process. The empirical results revealed 141 indicators in the hierarchy for sustainable wetland tourism. At the first level, the weight of the stakeholder dimension was higher than that of the environment dimension. At the second level, community development impact was the most important factor within the stakeholder's dimension.

The top seven point eight percent (7.8%) of indicators identified by Hung and Hsieh (2016) included respect for local traditional culture, respect for local lifestyle, compliance with destination guidelines, traffic problems, destruction of the natural environment, crowds at the destination, participation in cultural activities, understanding of culture, assimilation into local culture, overall effect of tourism, cost-benefit difference, and reduced environmental impact. The authors identify several key management implications, including the need to leverage this information to drive stakeholder engagement and collaboration, prioritize planning for sustainable tourism development, and utilize these indicators for the management of sustainable wetland-based tourism development.

In a 2016 study, Chih-Hsing and Jeou-Shyan questioned the terms "sustainable tourism and satisfaction." They argued that although sustainability and tourism satisfaction are often used as means of evaluating and experiencing attractions, their social significance extends far beyond current tourism planning. The study is based on empirical material collected from 642 tourists who had sustainable tourism experiences and were sampled from several natural resource conservation areas in Taiwan.

The findings demonstrate that when tourists perceive a destination as novel, they are more likely to have a positive experience with sustainable tourism practices, leading to greater willingness and satisfaction. Furthermore, research on sustainable tourism indicates that novelty increases excitement,

which in turn leads to more valuable evaluations and higher satisfaction. The study employs structural equation modeling to test both direct and indirect mechanisms, and the results align with the predicted outcomes. This underscores the significance of novelty in the sustainable tourism experience and its impact on tourist satisfaction, offering valuable insights for future sustainable destination planning (Chih-Hsing & Jeou-Shyan, 2016).

In their 2021 study, Trišić and Štetić examine the significance of sustainable tourism development in the 21st century, particularly in relation to eco-certificates and green procurement in the hotel industry. Their research falls within the field of responsible or green economy. The green economy of hotels encompasses the selection of environmentally responsible accommodations and other facilities, as well as business operations that align with green procurement, eco-labeling, and a responsible economy. To this end, a quantitative research study was conducted on the attitudes of 506 international tourists, who expressed their opinions about their needs in terms of eco-hotels and the green economy in the hotel industry (Trišić & Štetić, 2021).

The research also included the collection of data on green (responsible) business practices through a survey of 100 hotels located in the capitals of Southern Europe. By comparing the hotels' results with the needs of tourists in terms of the green economy in the hotel industry, we were able to obtain significant results that contribute to sustainable tourism development. The study finds that eco-certificates and green procurement can positively impact accommodation selection and tourist behavior, while promoting a responsible and sustainable economy in the hotel industry.

In alignment with the aforementioned points, the authors Plummer and Fennell (2009), Hung and Hsieh (2016), and Trišić and Štetić (2021) concur on the significance of adaptive and collaborative management strategies to advance sustainable tourism and the necessity of stakeholder involvement in decision-making processes. Furthermore, they emphasize the significance of environmental sustainability and the necessity to

enhance tourists' awareness and education on sustainability. Conversely, Buckley (2012) places greater emphasis on the assessment of tourism impacts and the necessity for regulation and environmental accounting to address them. Additionally, he highlights the necessity for consideration of individual perceptions of responsibility in addressing climate change.

In addition, Chih-Hsing and Jeou-Shyan (2016) emphasize the significance of novelty in creating a sustainable tourist experience and enhancing satisfaction. The other authors do not prioritize tourism satisfaction, instead focusing on adaptive management and environmental sustainability.

Therefore, despite differing emphases among the authors, there is a consensus on the value of adaptive and collaborative management to advance sustainable tourism and the necessity of stakeholder involvement in decision-making processes. Furthermore, they concur on the significance of environmental sustainability and the necessity to enhance tourists' awareness and education regarding sustainability.

### *Analysis of leave documents (leaves)*

This component of the "tree of science" is dedicated to examining the latest advancements in the field of inquiry. Additionally, five articles were selected based on the keywords "sustainable tourism" and "ecotourism" in their titles. We then conducted an analysis of the abstracts and the structure of the main ideas presented by the authors.

Mackenzie and Gannon (2019) employed two historical case studies (UK and Costa Rica) to examine the origins and justification of sustainable development in hospitality and tourism. They underscored the value of historical analysis through a detailed examination of motivations, context, and forms of development in diverse contexts.

To conduct their analysis, the authors utilized a range of materials, including government and private archival data, oral history testimonies, industry reports, and secondary literature, to examine the approach of developing and developed countries in relation to two cases of tourism and hospitality

development and how this affects notions of sustainability.

The study's findings indicate that sustainability issues in hospitality and tourism are long-standing and context-specific. In examining the "bottom-up" and "top-down" approaches, the study revealed that the private sector plays a pivotal role in legitimizing tourism and hospitality development by addressing sustainability objectives. Moreover, the study underscores the pivotal role of private sector involvement in fostering the growth of a sustainable tourism industry. By influencing the adoption of more sustainable practices and approaches within the sector, the private sector can play a crucial part in driving the industry towards greater sustainability.

As stated by Alfaro et al. (2020), the rich cultural and natural heritage of European countries has positioned European tourism as a leading sector. This status necessitates the implementation of measures to ensure the responsible management of tourism, with a particular focus on the assessment of its sustainability. While there is consensus on the need to carry out an analysis at the local level using indicators as a key tool, several authors have highlighted the difficulties of transferring the principles of sustainable development to a specific sector. It is therefore clear that there is a need for an international set of indicators to assess the transition to sustainability at the local level. However, to date, there is no widely adopted approach. This paper puts forward a proposal for an index to measure sustainable tourism at the European NUTS 2 level, given the unavailability of data that would otherwise allow the production of indicators for cities.

As Alfaro et al. (2020) point out, tourism is one of Europe's most significant industries, making its sustainability a matter of great importance. While there is a clear need to measure sustainability in tourism, there are significant challenges in defining relevant indicators and collecting data to assess them. The authors put forth a sustainable tourism index for the NUTS 2 level, which is founded upon a set of indicators including energy consumption, water consumption, greenhouse gas emissions, and biodiversity. Furthermore, the index considers social factors, such as

accessibility and tourist satisfaction. The index has been applied to a number of regions across Europe, revealing significant variations in the sustainability of tourism in different locations.

In a recent study, Roblek et al. (2021) sought to analyze the evolution of content in the field of tourism and its relationship with the development of sustainable tourism concepts. To this end, an automated comparative content analysis (ACA) was conducted on scientific articles published between 1990 and 2020 in the Web of Science database. The results demonstrate that, while various definitions of sustainable tourism have emerged over time, there are notable similarities in their content. The analysis yielded the following conclusions: the topic encompasses changes in business models, the adoption of organizational processes related to mitigation, the implementation of cleaner and smarter technologies, the importance of cultural heritage for sustainable tourism products, rural development, green investment, sustainable standards and information, and sustainable tourism products.

Akinci and Oksuz (2022) present an article with the objective of analyzing the attitude and active participation of local inhabitants in the decision-making processes and implementation of sustainable tourism activities in their area, considering their central role as key actors in the tourism destination. To this end, an importance-performance analysis (IPA) was conducted to ascertain the perceived importance and performance of locals in relation to the principles of sustainable tourism established by the World Tourism Organization. The data were collected via surveys of 389 locals in the city of Demre, Antalya region, Turkey. The findings demonstrate that local residents view all assessed sustainable tourism principles as crucial. However, with regard to perceived performance, implementation levels were found to be low across the board, with the exception of biodiversity protection. This study contributes to our understanding of how local people evaluate sustainable tourism principles and highlights the importance of considering the differences between importance and perceived performance in this area.



The study by Saparnienė et al. (2022) examines the behavior and attitudes of young people in tourism activities, which are considered crucial for sustainable tourism development. The survey data were collected from 1,085 respondents representing various countries in the Baltic Sea region. The research was conducted in Latvia, Lithuania, and Russia. The authors developed a unique research instrument that responds to the latest theoretical ideas and models and has been empirically validated by statistical methods. The factorial validity of the scales was tested with Cronbach's alpha coefficient.

The results indicated that the majority of youth (50.6%) can be classified as "sustainable behavior-oriented." Additionally, the analysis of youth attitudes revealed that 71.5% belonged to the socioeconomic type. This indicates that youth prioritize the long-term socioeconomic well-being of the region. This can be achieved through efficient management, tourism planning, and active public participation in the implementation of tourism policies. This study provides valuable insights into how young people assess the principles of sustainable tourism and underscores the significance of proactive planning and public involvement in ensuring the long-term sustainability of tourism.

Based on the above, it is possible to identify the similarities and differences between the authors considered in the analysis of the leaf component of the "tree of science." In this regard, the studies by Mackenzie and Gannon (2019) and Alfaro et al. (2020) address sustainability in tourism and hospitality, while Roblek et al. (2021) examine the evolution of content in the field of tourism and its relationship with the development of sustainable tourism concepts. Akinci and Oksuz (2022) concentrate on the attitude and active participation of local inhabitants in decision-making processes and the implementation of sustainable tourism activities in their area.

The studies by Mackenzie and Gannon (2019) and Alfaro et al. (2020) concur on the significance of sustainability in the tourism industry and underscore the necessity for meticulous evaluation and measurement of pertinent indicators for sustainable development. Furthermore, they highlight the crucial

role of the private sector in the adoption of more sustainable practices.

In contrast, Roblek et al. (2021) concentrate on the examination of the evolution of content in the domain of sustainable tourism, emphasizing the parallels in the content of the various sustainable tourism concepts over time. Akinci and Oksuz (2022) emphasize the significance of local involvement in decision-making and the implementation of sustainable tourism initiatives in their communities.

In conclusion, the studies concur on the significance of sustainability in the tourism industry, the necessity for meticulous evaluation and measurement of pertinent indicators, and the importance of the involvement of the private sector and local residents in the implementation of more sustainable practices.

## Conclusions

According to the studies and authors reviewed, challenges and opportunities for ecotourism and sustainable tourism in central Valle del Cauca can be established. There is agreement on the importance of evaluating the impacts of tourism and ecotourism on local communities and the need to consider the specific context of each tourist destination. The importance of including the environmental, social and economic dimensions of tourism in planning, management and policy approaches is also emphasized.

Authors Plummer and Fennell (2009), Hung and Hsieh (2016) and Trišić and Štetić (2021) agree on the importance of adaptive and collaborative management to promote sustainable tourism and the need to involve stakeholders in decision making. They also share the importance of environmental sustainability and the need to improve tourist awareness and education on sustainability.

Buckley (2012) focuses more on the assessment of tourism impacts and the need for regulation and environmental accounting to address them. He also notes the need for attention to individual perceptions of responsibility in responding to climate change.

Chih-Hsing and Jeou-Shyan (2016) focus on tourism satisfaction and the importance of novelty in enhancing sustainable tourist experience and satisfaction.

On another side, studies by Mackenzie and Gannon (2019) and Alfaro et al. (2020) agree on the importance of sustainability in the tourism industry and emphasize the need for careful evaluation and measurement of relevant indicators for sustainable development. They also emphasize the importance of the private sector in the adoption of more sustainable practices.

Roblek et al. (2021) focus on the analysis of the evolution of content in the field of sustainable tourism and highlight the similarities in the content of different sustainable tourism concepts over time.

Finally, Akinci and Oksuz (2022) highlight the importance of the active participation of local inhabitants in decision-making processes and in the implementation of sustainable tourism activities in their area.

In conclusion, the reviewed studies concur on the significance of sustainability in the tourism industry, the necessity for meticulous evaluation and measurement of pertinent indicators, adaptive and collaborative management to advance sustainable tourism, active involvement of local residents, and education of tourists on sustainability. The challenges and opportunities for ecotourism and sustainable tourism in the central Valle del Cauca region include the necessity for comprehensive planning and management, meticulous assessment of tourism impacts, and the importance of engaging local communities and the private sector in the implementation of more sustainable practices.

The analysis of the literature on ecotourism and sustainable tourism reveals significant challenges and opportunities for the implementation of these concepts in the central Valle del Cauca region. The studies reviewed concur that a comprehensive assessment of the impact of tourism on local communities is essential, emphasizing the necessity of considering the specific context of each tourism destination. Such an evaluation must encompass not only environmental consider-

ations but also social and economic factors, which are indispensable for the formulation of effective plans, the implementation of management strategies, and the development of policies pertaining to sustainable tourism.

As evidenced by the works of Plummer and Fennell (2009), Hung and Hsieh (2016), and Trišić and Štetić (2021), the implementation of adaptive and collaborative management strategies represents a pivotal element in the advancement of sustainable tourism practices. These authors emphasize the necessity of actively engaging stakeholders in decision-making processes and the significance of raising awareness and educating tourists about environmental sustainability. This perspective is pivotal to guaranteeing that tourism practices are not only sustainable, but also responsive to local realities and needs.

Conversely, Buckley (2012) underscores the necessity for robust regulatory frameworks and precise environmental accounting to mitigate the adverse effects of tourism. His analysis underscores the significance of individual accountability in addressing climate change, proposing that sustainable solutions must integrate both regulatory measures and awareness at the individual level.

Chih-Hsing and Jeou-Shyan (2016) provide a significant new perspective by focusing on the concept of tourism satisfaction. They highlight the potential for novelty in the tourist experience to enhance both sustainability and satisfaction. This approach suggests that sustainable tourism strategies should also consider the quality of the tourism experience as a critical factor for their long-term success.

Furthermore, Mackenzie and Gannon (2019) and Alfaro et al. (2020) underscore the critical importance of sustainability within the tourism industry, underscoring the need to establish reliable indicators to assess and monitor sustainable development. Their work underscores the pivotal role of the private sector in the adoption of sustainable practices, thereby suggesting that collaboration between public and private actors is indispensable for success in achieving sustainability goals.

Roblek et al. (2021) adopt a longitudinal perspective in their analysis of the evolution of content in the field of sustainable tourism. Their findings illustrate how sustainability concepts have changed and adapted over time, underscoring the necessity for continuous revision of practices and concepts in sustainable tourism to maintain their relevance and effectiveness.

Finally, Akinci and Oksuz (2022) emphasize the active participation of local communities in decision-making processes and the implementation of sustainable tourism activities. This participatory approach is pivotal to ensure that sustainable tourism initiatives are accepted and supported by those most directly affected.

In light of these considerations, the challenges and opportunities for ecotourism and sustainable tourism in the central Valle del Cauca can be defined as follows: the necessity for proper planning and management, rigorous assessment of tourism impacts, and the active involvement of both local communities and the private sector. These elements are fundamental to the development of a sustainable tourism model that not only avoids environmental degradation but also generates tangible social and economic benefits for the region.

## Conflict of Interest

The authors declare no conflict of interest.

## Financial Resources

The Unidad Central del Valle del Cauca (UCEVA) plays a crucial role in the promotion and development of projects related to ecotourism and sustainable tourism in the region. Funding resources for these initiatives are managed with the objective of promoting practices that respect the environment and contribute to local economic development. UCEVA allocates funds from government budgets and specific grants for the implementation of research and development projects in the field of sustainable tourism. In addition, the Unit actively seeks partnerships with private entities and non-governmental organizations to complement available resources,

ensuring greater coverage in the scope and effectiveness of the initiatives supported.

## References

- Akinci, Z., & Oksuz, E. (2022). Local People's View on Tourism in Context of Sustainable Tourism Principles: An Importance-Performance Analysis. *An International Journal of Akdeniz University Tourism Faculty*, 10(4), 501-529. <https://doi.org/10.30519/ahtr.894259>
- Alfaro, J., Martínez, A., & Mondéjar, J. (2020). An approach to measuring sustainable tourism at the local level in Europe. *Current Issues in Tourism*, 23(4), 423-437. <https://doi.org/10.1080/13683500.2019.1579174>
- Buckley, R. (2012). Sustainable tourism: Research and reality. *Annals of Tourism Research*, 39(2), 528-546. <https://doi.org/10.1016/j.annals.2012.02.003>
- Chih-Hsing, L., & Jeou-Shyan, H. (2016). An Empirical Examination of the Form of Relationship Between Sustainable Tourism Experiences and Satisfaction. *Asia Pacific Journal of Tourism Research*, 21(7), 717-740. <https://doi.org/10.1080/10941665.2015.1068196>
- Clarivate Analytics. (2021). *El índice de citas y la plataforma de inteligencia de investigación más grande del mundo sin editoriales*. <https://www.webofknowledge.com>
- Elsevier. (2021). *Scopus: base de datos de citas y resúmenes de expertos*. <https://www.elsevier.com/solutions/scopus>
- Galvez, C. (2018). Análisis de co-palabras aplicado a los artículos muy citados en Biblioteconomía y Ciencias de la Información (2007-2017). *TransInformação*, 30(3), 277-286. <https://doi.org/10.1590/2318-08892018000300001>
- Hernández-Sampieri, R., Fernández-Collado, C., & Baptista-Lucio, P. (2014). *Metodología de la investigación* (6.ª ed.). México: McGraw Hill.
- Hung, T., & Hsieh, H. (2016). Indicators of sustainable tourism: A case study from a Taiwan's wetland. *Ecological Indicators*, 67, 779-787. <https://doi.org/10.1016/j.ecolind.2016.03.023>
- Hunter, C. (1995). On the need to re-conceptualise sustainable tourism development. *Journal of Sustainable Tourism*, 3(3), 155-165. <https://doi.org/10.1080/09669589509510720>
- Hunter, C. (1997). Sustainable tourism as an adaptive paradigm. *Annals of Tourism Research*, 24(4), 850-867. [https://doi.org/10.1016/S0160-7383\(97\)00036-4](https://doi.org/10.1016/S0160-7383(97)00036-4)
- Mackenzie, N., & Gannon, M. (2019). Exploring the antecedents of sustainable tourism development. *International Journal of Contemporary Hospitality Management*, 31(6), 2411-2427. <https://doi.org/10.1108/IJCHM-05-2018-0384>
- Plummer, R., & Fennell, D. (2009). Managing protected areas for sustainable tourism: prospects for adaptive co-management. *Journal of Sustainable Tourism*, 17(2), 149-168. <https://doi.org/10.1080/09669580802359301>
- Roblek, V., Drpic, D., Mesko, M., & Milojica, V. (2021). Evolution of Sustainable Tourism Concepts. *Sustainability*, 13(22), 12-29. <https://doi.org/10.3390/su132212829>

- Ross, S., & Wall, G. (1999). Ecotourism: towards congruence between theory and practice. *Tourism Management*, 20(1), 123-132. [https://doi.org/10.1016/S0261-5177\(98\)00098-3](https://doi.org/10.1016/S0261-5177(98)00098-3)
- Saparnienė, D., Mejerė, O., Raisutienė, J., Juknevičienė, V., & Rupulevičienė, R. (2022). Expression of Behavior and Attitudes Toward Sustainable Tourism in the Youth Population: A Search for Statistical Types. *Sustainability*, 14(1), 473. <https://doi.org/10.3390/su14010473>
- Scheyvens, R. (1999). Ecotourism and the empowerment of local communities. *Tourism Management*, 20(2), 245-249. [https://doi.org/10.1016/S0261-5177\(98\)00069-7](https://doi.org/10.1016/S0261-5177(98)00069-7)
- Scopus. (2023a). Štetić, Snežana. Perfil generado por Scopus. <https://www.scopus.com/authid/detail.uri?authorId=55609246400>
- Scopus. (2023b). Trišić, Igor. Perfil generado por Scopus. <https://www.scopus.com/authid/detail.uri?authorId=57212602280>
- Sharpley, R. (2000). Tourism and Sustainable Development: Exploring the Theoretical Divide. *Journal of Sustainable Tourism*, 8(1), 1-19. <https://doi.org/10.1080/09669580008667346>
- Trišić, I., & Štetić, S. (2021). Perspectives on Sustainable Tourism Development in the Hotel Industry—A Case Study from Southern Europe. *Sustainability*, 13(10), 55-63. <https://doi.org/10.3390/su13105563>
- Universidad Nacional de Colombia. (2016). Una idea emprendedora. *Tree of Science*. <http://untelevision.unal.edu.co/detalle/article/tree-of-science.html>
- Vosviewer. (2021). Welcome to VOSviewer. <https://www.vosviewer.com/>

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#### How to cite this paper?

Ducuara Celis, E., Jaramillo Rodríguez, E., & De la Cruz Rojas, J. E. (2025). Bibliometric analysis of ecotourism and sustainable tourism: A study of trends in scientific publications. *Cuadernos de Administración*, 41(82), e30113466. <https://doi.org/10.25100/cdea.v41i82.13466>