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Review

Approaches, Trends, and Gaps in Community-Based Ecotourism Research: A Bibliometric Analysis of Publications between 2002 and 2022

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Abstract: Community-based ecotourism (CBET) has emerged as an alternative that seeks to integrate environmental, cultural, social, and economic sustainability through community participation, generating increasing interest in research. In this context, we conducted a bibliometric analysis to understand the research patterns, trends, and gaps associated with scientific production on CBET between 2002 and 2022. To achieve this, articles related to CBET and its variants were extracted from Scopus and Web of Science. A total of 1145 publications were selected. *Sustainability* is the journal with the most articles published on CBET. The countries with the highest scientific production were the USA and China. Most of the studies were conducted in protected areas. The most used data sources are interviews and case studies. The field research focused on evaluating impacts and identifying perceptions, attitudes, or experiences. Despite the recent increase in the number of publications, there are still gaps related to the inclusion of indigenous populations, the use of quantitative methods in the research, the evaluation of the impact of CBET on biodiversity conservation, and the disparity between countries leading academic production and those developing CBET initiatives. These patterns and gaps suggest areas of opportunity for future research, strategies, and policies in the field of CBET.

Keywords: sustainability; sustainable tourism; conservation; biodiversity; community participation; protected areas; indigenous communities

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1. Introduction

Tourism, as one of the world's largest industries, has demonstrated substantial economic benefits, contributing significantly to the global GDP (Gross Domestic Product), job creation, and industrial development despite its seasonality [1–3]. However, the increase in tourist demand, the lack of public policies and tourism planning, and the purely monetary focus oriented towards market dynamics have also brought various adverse effects at the economic, social, cultural, and environmental levels [4,5]. This became even more evident between the 1950s and 1970s when the number of international tourists worldwide doubled every seven years, thus receiving the term mass tourism [6].

In response to these challenges, alternative tourism emerged, also referred to by some authors as sustainable tourism, which aims to encourage local development in a contextualized manner, adapting to the realities and needs of a place [7,8]. According to Dangi and Petrick [9], various forms of alternative tourism have been in practice since the 1980s as approaches to sustainable tourism development, such as ecotourism, community-based tourism or community-based ecotourism, agrotourism, volunteer tourism, and

responsible tourism. Among these, community-based tourism (CBT) and ecotourism have emerged as promising approaches to reconciling tourism development with environmental conservation and community well-being [10].

CBT constitutes a type of tourism that focuses on environmental, social, and cultural sustainability. The creation, management, and administration of tourism are in the hands of local communities with the purpose of promoting local development and enabling visitors to increase their awareness and learn about various forms of life and local cultures [11]. This considers the fact that external agency control and paternalistic approaches contrast with the empowerment and development of the socioeconomic potential of communities [12]. Thanks to these characteristics, community-based tourism has often been used as a tool for rural growth in peripheral areas, as well as a viable instrument for poverty reduction, restoration [13], and rural economic growth [14]. As a result of these incentives, many CBT programs in developed countries have evolved into community-based enterprise development [15]. Given that CBT has also grown in protected and non-protected natural areas, it is necessary to establish strategies that guarantee environmental protection, poverty reduction, and community development [16]. Following this line of thought, the success of the conservation of such areas requires the participation of local communities and training about the benefits they can obtain from conservation efforts [15]. Furthermore, community tourism can promote a variety of empowerment-related benefits, including economic, psychological, social, and political empowerment, as well as community unity [17]. This is especially relevant as biases have been found in the distribution of tourism benefits based on gender [18], education [19], ethnic origin [20], age [21], and elite domination [22]. Therefore, CBT also functions as a political tool for managing natural resources and local culture, community empowerment, and economic influences [23], as well as for addressing the different inequalities that emerge from tourism activity. Considering the above, authors such as Mtapuria and Giampiccoli [24] caution that CBT is generally biased toward socio-economic issues, namely social equity, redistributive justice, tourism sector control, and local participation or benefits, paying little or no attention to aspects related to environmental sustainability.

Ecotourism emerged in the academic literature in the late 1980s as a branch of sustainable tourism and gained momentum in subsequent decades [25], primarily in tropical, developing, or peripheral countries, given the wealth of natural, cultural, and scenic beauty they possess [26]. It is characterized by promoting environmental conservation in the various spaces where it operates, generating economic and social benefits for the host communities, fostering environmental education, and promoting sustainable regional development [27]. Ecotourism is widely recognized for the value it provides in reconciling biodiversity conservation and economic development within local populations [28]. It also serves as support for the permanence and sustainability of other productive strategies, such as forestry, agroecology, environmental education, and scientific research [29].

Ecotourism focuses on reducing negative effects on the environment and local communities, aiming to assist in the responsible management of natural resources through social inclusion and awareness among both visitors and community members, which implies equity, economic viability, and environmental sustainability [26]. In this context, the inclusion of the sociocultural component is fundamental since few natural areas, if any, are completely free of human influences [30]. Despite the importance and advantages of ecotourism, questions have also been raised regarding the economic benefits perceived by local communities of ecotourism activity [31]. This considers that community participation in ecotourism development in ecological areas is limited and passive, mainly because tourism companies are disconnected from the community, resulting in the shared benefits with the community generally being nonexistent or insignificant [32].

In line with the above, community-based ecotourism (CBET) emerges as an alternative solution, which faces the challenge of integrating three areas of great importance to the sustainability of territories, community tourism, ecotourism, and environmental education, which can produce combined effects that transcend the results obtained through

isolated actions [26]. While community tourism emphasizes local participation and control over tourism activities with the aim of economically and socially empowering the host communities, guided by the principles of a solidarity economy, associationism, and the valorization of local culture [33,34], ecotourism focuses on a low negative socio-environmental impact and friendly interaction with nature, respecting local communities, and employing environmental education as a strategy to change habits regarding concern for and the conservation of biodiversity [26,35]. In addition, a preponderant factor that differentiates community-based ecotourism from other types of nature tourism is that at least some members of the community must participate in economic activities related to tourism and most or all the tourism businesses must be owned and managed by the community [24,36]. This implies that the community cares for and conserves its natural resources to generate income through the creation of community tourism enterprises, using the proceeds to improve the quality of life of the local population [24].

Despite the described divergences, it has been found that the concepts of community-based tourism and community-based ecotourism are generally used interchangeably in the literature. This is due to the general conceptual ambiguities and overlaps that persist in the terminology on various alternative tourism variants given the similarity of their approaches [24] and even due to the similarity of their denominations. This situation is reinforced given that both CBET and CBT have gained increasing relevance in conservation and sustainable development programs in protected and/or rural areas [37–39], converging in discourses and strategies on environmental, cultural, and social sustainability through community participation; see, for example, [39–42]. Therefore, in the present research, we will use the term community-based ecotourism to designate all proposals that integrate both environmental, cultural, and social sustainability, as well as community participation, redistributive justice, local development, and control of the tourism sector [26,35]. This is because CBET is a broader concept that encompasses, in turn, community tourism [24,35].

Taking the above into account, the present research aimed to understand the research patterns, trends, and gaps associated with the scientific production on CBET between 2002 and 2022. To achieve this, we conducted a bibliometric analysis, which is a rigorous method for exploring and analyzing large volumes of scientific data that allow the visualization of the evolutionary nuances of a specific field of knowledge and sheds light on emerging areas of research [43]. To this end, we posed eight guiding questions: (i) what is the temporal trend in publications?; (ii) which journals are publishing the articles?; (iii) which countries lead the research on CBET?; (iv) what are the most frequent keywords?; (v) in what areas of study is the research being developed?; (vi) does CBET research include indigenous populations?; (vii) what are the most used research methods?; and (viii) what is the main research focus in this field?

2. Materials and Methods

2.1. Search and Selection Process

To explore the trends and gaps in the scientific literature regarding community-based ecotourism in the last two decades (2002–2022), we conducted a bibliometric analysis on the scientific and academic research published in scientific articles. For this purpose, two databases were employed: Scopus (Elsevier) and Web of Science (WoS) (Clarivate Analytics). The choice of these databases was based on Scopus's extensive coverage in terms of the number of indexed journals, supplemented by the strength in certain areas provided by WoS, a combination that suggests a more comprehensive representation of the scientific literature across various fields and disciplines [44,45].

The keywords used were chosen considering the synonyms found in the literature on community-based ecotourism, resulting in the following search pattern in English for both WoS and Scopus: (TITLE-ABS-KEY (ecotourism) OR TITLE-ABS-KEY (tourism) AND TITLE-ABS-KEY (community-based) OR TITLE-ABS-KEY (community)) AND (LIMIT-TO (DOCTYPE, "ar")). In the search for documents, the results were limited to scientific articles published between 2002 and 2022. The choice of this time frame stems from the researchers'

particular interest in identifying research trends related to CBET and its variants over the past two decades. Reviews, conferences, or book chapters were excluded since, among the different types of documents available on scientific platforms, articles constitute the most reliable source for literature review, as they are peer-reviewed and evaluated in their full versions [46,47]. No specific domain area was selected because, on the one hand, this is a multidisciplinary study topic, and on the other hand, this ensured obtaining a larger volume of records in the search, thereby guaranteeing the sample's representativeness to gain a global perspective. Language was also not considered among the exclusion criteria. There is an ongoing debate among scholars regarding the impact of linguistic criteria on the effectiveness of bibliometric analysis, as some argue that it is preferable to focus exclusively on articles published in English since publications in other languages have a low impact and their contribution to different levels of bibliometric analysis is minimal [48]. In contrast, other authors argue that a true analysis of the international scientific literature should identify and synthesize relevant evidence regardless of geographical origin or language of publication, as these publications may contain ideas or provide contexts that are not available in English articles [49]. Embracing this latter perspective, the present research included 66 publications in other languages (2 in Chinese, 2 in French, 1 in German, 1 in Japanese, 1 in Thai, 13 in Portuguese, and 45 in Spanish). Thus, we sought to ensure the compilation of the largest possible number of research works related to CBET. The search was conducted on 29 August 2023 in both WoS and Scopus.

2.2. Integration and Data Cleansing

The searches yielded 1331 articles in Scopus and 3719 articles in WoS, which were downloaded in CSV (Comma-Separated Values) format for further consolidation. Considering that there are usually duplicated articles between the two selected repositories, we proceeded to use RStudio software (Version 4.3.1) both to merge the two databases and to automatically eliminate duplicate articles, resulting in a final consolidated database of 4856 documents. The choice of RStudio is based on it being an integrated development environment for the R programming language, dedicated to statistical computing and graphics, which offers open-source statistical packages and a robust ecosystem [50–52]. Compared to other scientific computing languages, several authors have shown a preference for R due to its ability to merge databases, offer practical statistical algorithms, and provide almost complete bibliometric analyses [53]. The use and integration of the two databases in this study helped reduce the risk of losing relevant documents and data for the proposed research objective. Subsequently, considering that the quality of the results depends on the quality of the data [53], each of the articles was reviewed to eliminate duplicate documents that persisted in the consolidated database, as although most bibliometric data are reliable, cited references sometimes contain multiple versions of the same publication and different spellings of authors' names [54]. This sometimes occurs with certain titles, something that RStudio cannot easily detect and therefore must be handled manually.

Afterward, an Excel file was generated, in which we meticulously analyzed the title, abstract, keywords, materials and methods employed, the areas and countries in which each of the studies had been conducted, the most relevant journals, the populations included in the research, and the research focuses on community-based ecotourism to answer the questions posed. Considering the discussion raised in the introduction, only articles that fit the premises of community-based ecotourism were considered: community tourism management; community participation; local development; social, cultural, and environmental sustainability [24,26]. The remaining documents were excluded. At the end of this detailed and exhaustive process, a total of 1145 viable articles were selected for the analysis (Figure 1).

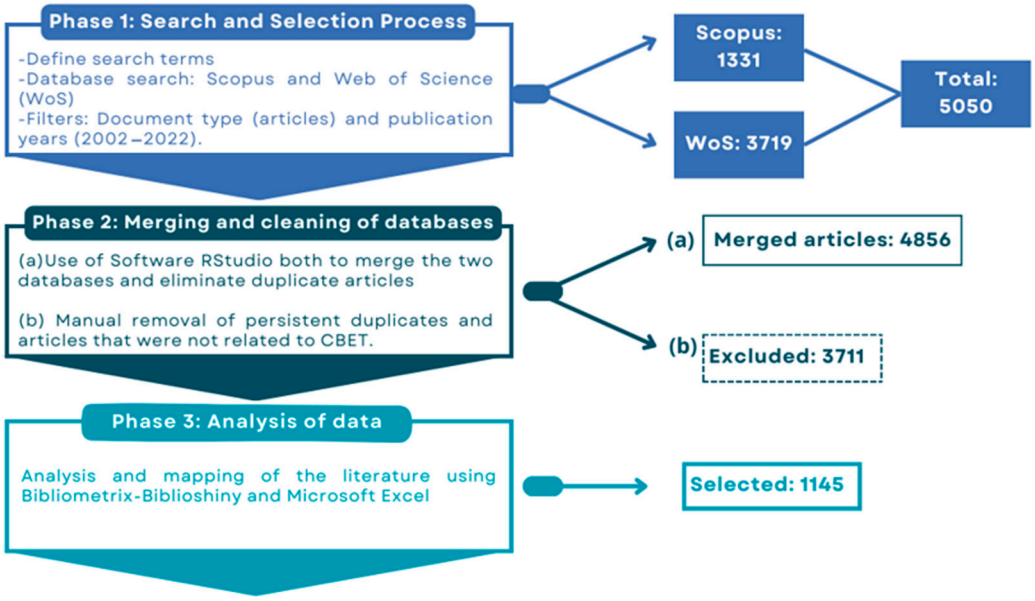


Figure 1. Overview of the methodology used for search, consolidation, cleaning, and data analysis of articles about community-based ecotourism (CBET) from the Web of Science and Scopus databases, from 2002 to 2022.

2.3. Classification and Organization of the Information

From the Excel template created, we proceeded to organize and classify the information contained in the articles regarding the types of study areas, study populations, methods or data sources used, and research focuses as follows:

Types of study areas: (a) Rural areas—studies conducted in remote areas with a low population density and an economy primarily based on agricultural, livestock, forestry, or fishing activities; (b) Protected areas—studies conducted in legally protected territories managed to preserve biodiversity. These areas include natural reserves, biosphere reserves, national parks, wildlife sanctuaries, and natural monuments.

Study populations: (a) indigenous; (b) non-indigenous.

Methods or data sources: (a) Interviews; (b) Case studies; (c) Literature reviews; (d) Questionnaires; (e) Observations.

Research approaches: (a) Impact—investigations that evaluate, analyze, and determine the positive and negative effects of community-based ecotourism; (b) Perception, attitudes, and experiences—studies focused on assessing the perceptions, experiences, and/or attitudes of visitors, local communities, experts in the field, community leaders, decision-makers, and stakeholders; (c) Potential—research focused on identifying and/or evaluating the social, environmental, economic, and cultural capacities to develop and limitations to developing community-based ecotourism in a specific area; (d) Sustainable Development Goals (SDGs)—works focusing on evaluating and/or establishing relationships between CBET and the SDGs according to the 2030 agenda; (e) Socioeconomic sustainability—articles focusing on evaluating the socioeconomic impact of CBET in the various territories where it is carried out; (f) Community participation and empowerment—publications highlighting the participation and management by local communities in the planning and development of community-based ecotourism; (g) Biodiversity and conservation—studies evaluating the impact and effectiveness of CBET in biodiversity conservation; (h) Sociocultural sustainability—articles seeking to identify the impact of community-based ecotourism on the social and cultural aspects of communities; (i) Women and CBET—research establishing relationships between gender and community-based ecotourism; (j) COVID-19—studies emphasizing evaluating the impact of the pandemic and post-pandemic on the development of CBET.

2.4. Data Analysis

The data from the 1145 selected articles were organized and tabulated according to the guiding questions described in the introduction. From these questions, the following analysis criteria were established: (i) annual global publication trends; (ii) most relevant journals; (iii) country analysis (most productive countries and most studied countries/collaboration networks and most cited countries); (iv) most used keywords; (v) types of study areas (rural areas/protected areas) and study populations (indigenous/non-indigenous); (vi) most used methods or data sources; (vii) research focuses in the area. These analyses were conducted using Microsoft Excel 2019 and Bibliometrix (Version 4.1.4) with Biblioshiny incorporated, the latter being an open-source tool based on R used for comprehensive analysis and the mapping of scientific literature. The choice of the Bibliometrix package with built-in Biblioshiny for data analysis is associated with its extensibility in the RStudio programming language. The latter was implemented in the present research to merge and clean the selected databases (WoS and Scopus) [53]. Furthermore, the open-source nature ensures regular updates and continuous support from a community of users and developers, making these tools relevant and functional over time [53]. Additionally, their availability for free contrasts with other applications that may be expensive or require subscriptions to access comparable functionalities [55]. The extensive documentation and learning resources available for these tools facilitate their adoption and effective use, providing researchers with a solid foundation for conducting meaningful and accurate bibliometric analyses, as well as enabling information mapping using simple and complex graphics [53].

3. Results and Discussion

3.1. Annual Global Publication Trends

The highest scientific productivity occurred between 2019 and 2022, with a production of 604 articles, equivalent to 52.75% of the total production, with 2022 (n = 183; 15.98%) being the most prolific year (Figure 2). In contrast, the lowest academic production was recorded between 2002 and 2003, each with only 3 publications (0.26%).

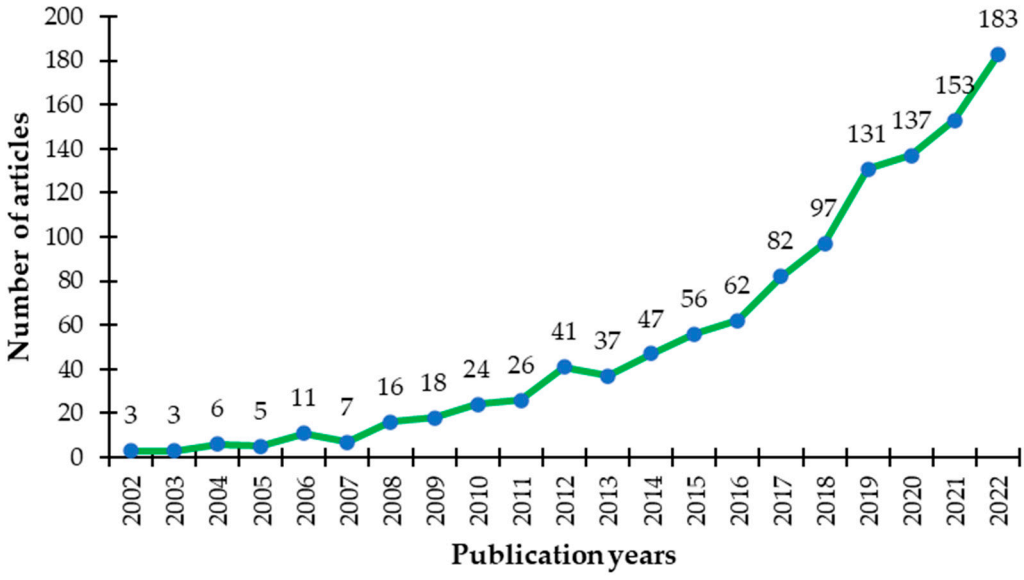


Figure 2. Annual scientific production on community-based ecotourism (2002–2022). Databases used: Scopus and WoS.

The percentage growth rate reflected an increase in academic production of 21.62% per year. Overall, there is a trend towards an exponential increase in the number of articles on CBET. This can be attributed to the fact that sustainable alternatives [56], and specifically sustainable tourism development, have increased rapidly in recent times [57–59], and that

community-based ecotourism is a growing phenomenon worldwide [38]. This reflects the increasing interest that CBET arouses among researchers, which allows for an increased understanding of its impacts, potential, gaps, and trends.

3.2. Most Relevant Journals

The five journals with the most publications on community-based ecotourism are, respectively, *Sustainability* (*n* = 77; 6.72%), *Journal of Sustainable Tourism* (*n* = 67; 5.85%), followed by the *African Journal of Hospitality, Tourism and Leisure* (*n* = 36; 3.14%), *Journal of Ecotourism* (*n* = 28; 2.44%), and *Geojournal of Tourism and Geosites* (*n* = 28; 2.44%) (Figure 3).

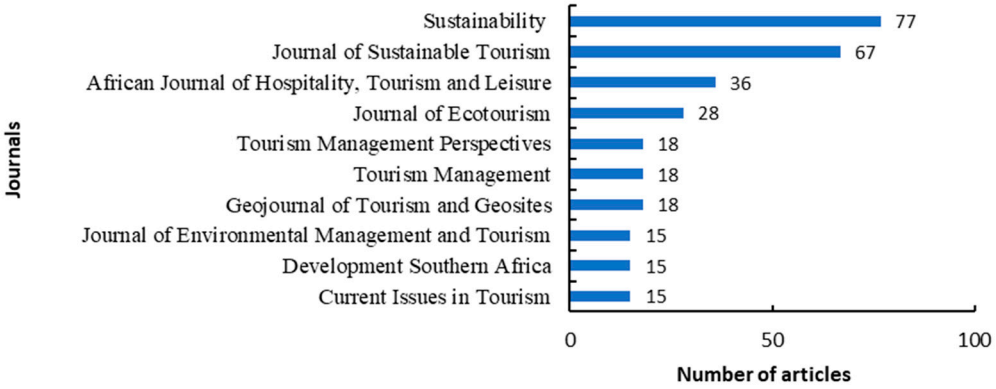


Figure 3. Scientific articles on community-based ecotourism by publishing journal. The top ten journals with the highest number of publications between 2002 and 2022 are plotted. Databases used: Scopus and Web of Science.

Sustainability is an international and interdisciplinary journal that focuses on research on sustainability and sustainable development, while *Journal of Sustainable Tourism* seeks to understand the relationships between tourism and sustainable development. *African Journal of Hospitality, Tourism and Leisure* publishes research on tourism, hospitality, and leisure exclusively within the Pan-African context. On the other hand, *Journal of Ecotourism* is a leading international journal in the field of ecotourism, standing out as the primary source of knowledge in this area worldwide. It also covers research on nature-based tourism and analyses of parks and protected areas, as well as ethical issues related to the use of animals in the tourism industry. Finally, *Geojournal of Tourism and Geosites* is an international journal that addresses topics such as geography, tourism, geopark studies, cartography, geographic information science, spatial analysis, urban and rural landscapes, ethnography, tourism planning, environmental sciences, geomarketing, and other areas whose analysis is related to these fields. The number of publications in *Sustainability* can be attributed to the fact that it is among the top fifty prestigious journals worldwide addressing sustainability-related topics [60]. Furthermore, *Journal of Sustainable Tourism* has been recognized as a diverse and interdisciplinary journal, a leader internationally in topics associated with leisure and tourism, [61] and excels in the ranking of journals dealing with leisure and tourism [62]. From a general perspective, the highest number of articles on CBET are published in an interdisciplinary journal like *Sustainability* (index h = 25), indicating that this field of study is considered relevant and valuable to researchers and academics from various disciplines. However, from a global view, it is identified that cumulatively scientific articles associated with community-based ecotourism are also being published in specialized tourism journals such as *Journal of Sustainable Tourism* (index h = 36), *African Journal of Hospitality, Tourism and Leisure* (index h = 7), *Journal of Ecotourism* (index h = 12), *Tourism Management Perspectives* (index h = 13), and *Tourism Management* (index h = 17). Additionally, we wanted to evaluate the Hirsch index (index h), which is defined as the number x of articles that have been cited x times, meaning that if the index h is equal to 5, there are 5 publications from the journal that have been cited at least 5 times [53,63]. Following this line of thought, it can

be inferred that *Journal of Sustainable Tourism* (h = 36) is particularly focused on publishing relevant and significant research within the field of CBET.

3.3. Country Analysis (Most Productive Countries and Most Studied Countries/Collaboration Networks and Most Cited Countries)

3.3.1. Most Productive Countries and Most Studied Countries

A comparison is presented between the top 10 countries that are producing scientific articles on community-based ecotourism contrasted with the top 10 countries where these studies are being implemented the most (Figure 4a). To visually reference these trends, choropleth maps were created, which allowed us to identify the spatial distribution of the phenomena under analysis using colored or shaded areas [64] (Figure 4b).

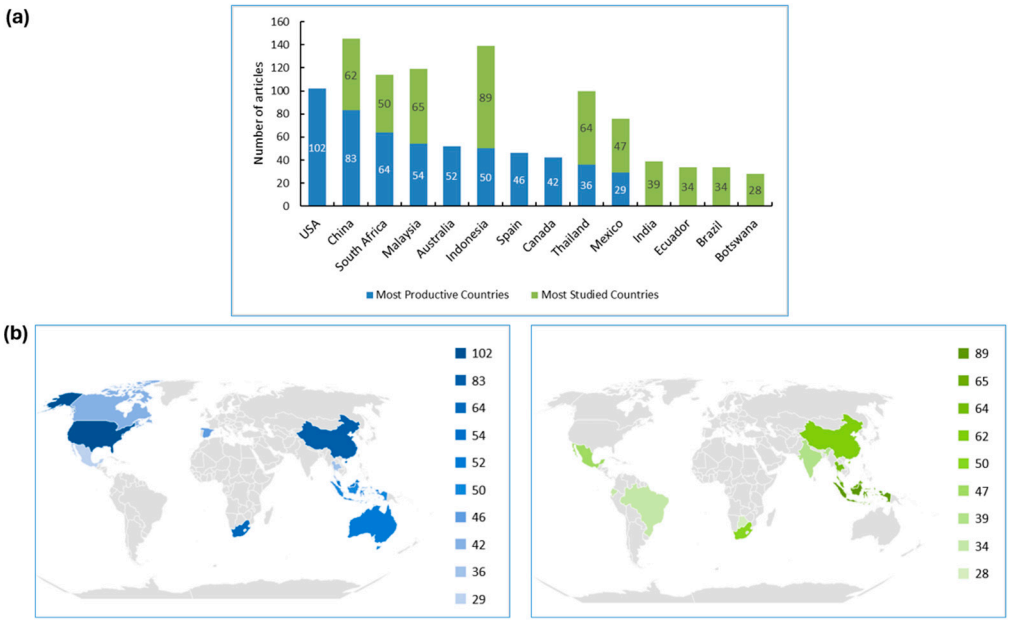


Figure 4. (**a**) Geographical distribution of the top 10 countries with the highest academic production and most studied countries regarding community-based ecotourism. (**b**) Choropleth maps.

Among the countries with the highest scientific production, the USA (*n* = 102; 8.90%), China (*n* = 83; 7.24%), and South Africa (*n* = 64; 5.58%) stand out. This can be attributed to the fact that the USA and China (overall) and South Africa (in Sub-Saharan Africa) are among the countries with the highest global innovation index [65], which is directly related to the increase in funding for scientific research and development, as well as the establishment of research centers, fostering the necessary conditions to increase academic productivity in various fields. In turn, South Africa and China stand out for making significant efforts in biodiversity conservation. For example, China has established 2750 nature reserves, representing 14.88% of its total land area, surpassing the global average [66], and more than 70% of these reserves have implemented CBET as a sustainable strategy [39]. On the other hand, South Africa has 1580 protected areas (PAs), standing out as a global leader in systematic diversity planning, developing various sustainable alternatives for conservation [67], including ecotourism, which is significant in the country due to its abundant wildlife, diverse landscapes, and rich cultural heritage [68].

On the other hand, among the most studied countries, Indonesia (*n* = 89; 7.77%), Malaysia (*n* = 65; 5.67%), and Thailand (*n* = 64; 5.58%) stand out. This may be associated with Indonesia being the largest island nation in the world with 17,000 islands, of which 21.26% are managed as protected areas, surpassing the proportion of protected areas in most countries in Asia, Africa, and Latin America [69]. To date, various successful cases of community-based ecotourism development have been recorded in protected areas of Indonesia, such as in Gunung Leuser National Park, where local communities have worked

collectively to control massive illegal logging, invasion, and poaching [69], or the utilization of mangrove forests as sustainable livelihoods and as an alternative strategy to mining [70], alongside other initiatives associated with CBET [71,72].

Malaysia and Thailand are also globally recognized for having extensive mangrove forests, which constitute a significant attraction for tourists from around the world [73,74]. Malaysia stands out for its rich marine resources and wide cultural diversity, making it an exceptional ecotourism destination that has fostered conservation, economic growth, and the quality of life of the local community [75]. Community-based ecotourism in Malaysia has been consolidated through homestay programs with local families, which have boomed since the 1990s, attracting millions of tourists from around the world who want to experience the local culture and exceptional biodiversity up close [76]. On the other hand, Thailand has had various sustainable political projects since 1980 that have allowed the creation of initiatives such as the National Ecotourism Action Plan, the Cooperative Ecotourism Network, the Thai Ecotourism Association, and the Foundation for Environmental Protection and Tourism, from which various community-based ecotourism proposals have emerged [77].

A critical analysis of the choropleth maps (Figure 4b) reveals that academic production is strongly represented by countries that are part of the Global North or the so-called developed countries, such as the USA (n = 102), Malaysia (n = 54), Australia (n = 52), Spain (n = 46), and Canada (n = 42) In contrast, it reveals that the most studied countries regarding CBET are mostly part of the Global South or developing countries, such as Indonesia (n = 89), Thailand (n = 64), China (n = 62), South Africa (n = 50), Mexico (n = 47), India (n = 39), Brazil (n = 34), Ecuador (n = 34), and Botswana (n = 28). Similar results were obtained in the research conducted by Wardle et al. [78]. The high academic production of developed countries can be linked to the presence of solidly established research institutions and significant economic resources [79], allowing them to maintain a competitive research system, conduct research in multiple fields, and establish collaboration partnerships globally [79–81]. Another possible explanation can be attributed to the migration of researchers from the Global South to the Global North [81].

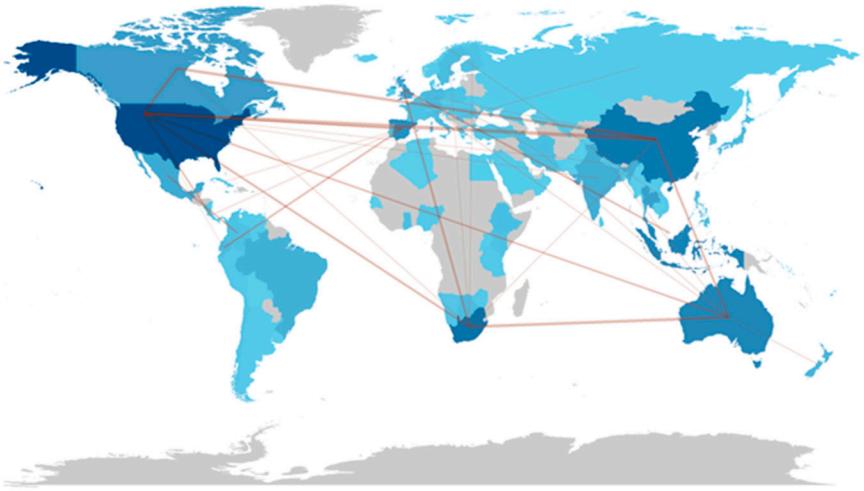
On the other hand, the representation of Global South countries in the development of community-based ecotourism reflects two important aspects: firstly, the differential distribution of biodiversity hotspots within developing countries [78], and secondly the adoption of CBET as an integral part of biodiversity conservation policies and strategies, as well as cultural, social, and economic development in these nations [36,82]. From a general perspective, it is identified that developing countries such as China, South Africa, Indonesia, Thailand, and Mexico are among the top 10 countries at the forefront of both development and academic production related to CBET, suggesting that these territories are leveraging their natural, economic, social, and cultural resources to promote research, foster biodiversity conservation, and generate sustainable income for local populations.

3.3.2. Collaboration Networks and Most Cited Countries

In this section, the aim was to identify the relationship between international networks of scientific collaboration among countries (Figure 5a) and the number of citations associated with CBET (Figure 5b). A choropleth map (Figure 5a) was used to represent the quantitative data associated with the areas where there is a higher frequency of collaboration between countries (more colored areas) and a lower frequency (fewer colored areas) [54], while the red lines represent the collaborative connections between one country and another. Initially, it was found that the United States emerged as a central actor in this network, with a prominent frequency of collaboration with China (7 connections), Canada (6 connections), and South Africa (4 connections). China's active presence on the international scene is also evident in its links with Australia and Canada, each with 5 connections. South Africa, in turn, shows a notable interaction with Australia (5 connections) and the United Kingdom (4 connections), while the connections between Mexico–Colombia and Spain–Ecuador are low. These results reveal that countries with a high production

of articles on CBET such as the USA, China, and South Africa act as central nodes in the scientific collaboration network related to community-based ecotourism, forming strategic scientific alliances with countries such as Canada, Australia, and the United Kingdom. On the other hand, there is also a broader and stronger collaboration among English-speaking countries compared to Spanish-speaking countries such as Mexico, Colombia, Spain, and Ecuador, which seems to function as a linguistic barrier in the establishment of collaborative networks associated with the study of CBET. In response to this, studies such as that by Tenzer et al. [83] demonstrate that language barriers significantly influence the development, participation, and communication of multinational teams. Additionally, it is found that scientific collaborations related to CBET impact the number of citations, as the most cited countries include the United States (3348), China (1854), the United Kingdom (1521), Australia (1344), and Canada (1280). In the specific cases of the USA and China, this phenomenon is also related to the high academic production on CBET (Figure 4) and also reflects the growing interest within the scientific community towards articles produced by these countries. Overall, it is confirmed that the creation of networks of scientific collaboration generates a greater number of citations compared to research conducted individually [84–86]. However, some authors warn that citation-based metrics could be partially biased due to self-citations by authors and their collaborators, which would increase the frequency of citation [54,86].

(a)



(b)

Most Cited Countries		
Country	**N° of citations**	**Average Article Citations**
USA	3383	33.2
China	1854	22.3
United Kingdom	1521	54.3
Australia	1344	25.8
Canada	1280	30.5
Botswana	1139	57.0
South Africa	1019	15.9
Spain	876	19.0
Korea	556	29.3
Malaysia	554	10.3

Figure 5. Publications on community-based ecotourism. (**a**) Collaboration networks between countries. In the choropleth map, the most heavily shaded areas (dark blue) represent higher collaboration between countries, while the less shaded areas (light blue) represent lower collaboration. Grey areas indicate no reported academic production on CBET. The red lines represent collaborative connections between one country and another. (**b**) Most cited countries. Databases used: Scopus and Web of Science.

3.4. Most Used Keywords

In general, keywords are considered one of the most important components of any research work, aimed at identifying the central themes of study in different fields of scientific research [87]. Figure 6 shows the top 25 keywords represented in a word cloud. Word clouds are a visual representation of the most relevant keywords from a text, where the size of each word is determined by the number of times it appears in each scientific article (frequency). In a word cloud, the most frequent words appear in a larger font size and are usually placed in the center or in prominent positions, while less frequent words are smaller and located on the edges or in less prominent areas [88]. Word clouds are useful for visualizing patterns and trends in large sets of text quickly and are easily understandable. Consistent with this, the 10 most frequent keywords associated with CBET are ecotourism (n = 308; 26.89%), tourism development (n = 169; 14.75%), tourism (n = 116; 10.13%), conservation (n = 111; 9.69%), sustainability (n = 94; 8.20%), local participation (n = 89; 7.77%), management (n = 73; 6.37%), sustainable development (n = 67; 5.85%), biodiversity (n = 66; 5.76%), and tourism management (n = 61; 5.32%), respectively. This makes sense as the most prominent keywords reflect the context in which the research was conducted [89]. Thus, the term ecotourism stands out as the predominant identifier and theme in the field of CBET given its ability to reconcile the economic and social well-being of local communities with conservation [24,90]. The importance of terms such as local participation, sustainability, sustainable development, and tourism management is also highlighted as they are part of the fundamental principles of community-based ecotourism [24,39] and focus on the effective balance of CBET at the social, economic, cultural, and environmental levels. Words such as biodiversity and conservation reflect the growing interest in nature preservation and care associated with community-based ecotourism.

Figure 6. Word cloud created with the 25 most relevant keywords from scientific articles on community-based ecotourism (2002–2022).

Additionally, a thematic mapping is conducted aiming to identify and visualize the evolution of a research field [91]. This tool enables researchers to identify emerging areas of study and relationships between different disciplines or subfields and assess the evolution of topics over time [92]. This can be useful for decision-making in research planning, identifying potential collaborators, and detecting interdisciplinary research opportunities in the field of CBET. In line with this, the map is organized into four categories: niche topics, driving or motivating topics, emerging or declining topics, and basic topics. It is noteworthy that the degrees of relevance (centrality) are on the horizontal axis and the

degrees of development (density) are on the vertical axis, where the sizes of the circles are related to the number of publications associated with each keyword [93]. When analyzing niche topics, themes such as community-based management, co-management, and marine protected areas, as well as community-based natural resource management, community predominance, and nature conservation, are found to have low levels of development but are important due to their cross-cutting nature in the research fields associated with community-based ecotourism (Figure 7). Within the driving topics, community-based tourism, community-based ecotourism, and sustainable tourism are widely represented, well developed, and predominant within the research field, as they constitute the theoretical foundation of CBET [24,26,33,35]. On the other hand, within the emerging or declining topics, community-based conservation, attitudes towards CBET, and wildlife tourism are sparsely developed and over time could either be enhanced or disappear. In contrast, topics such as conservation, protected areas, management, ecotourism, tourism, and sustainability appear as advanced and relevant topics for structuring the conceptual framework of CBET.

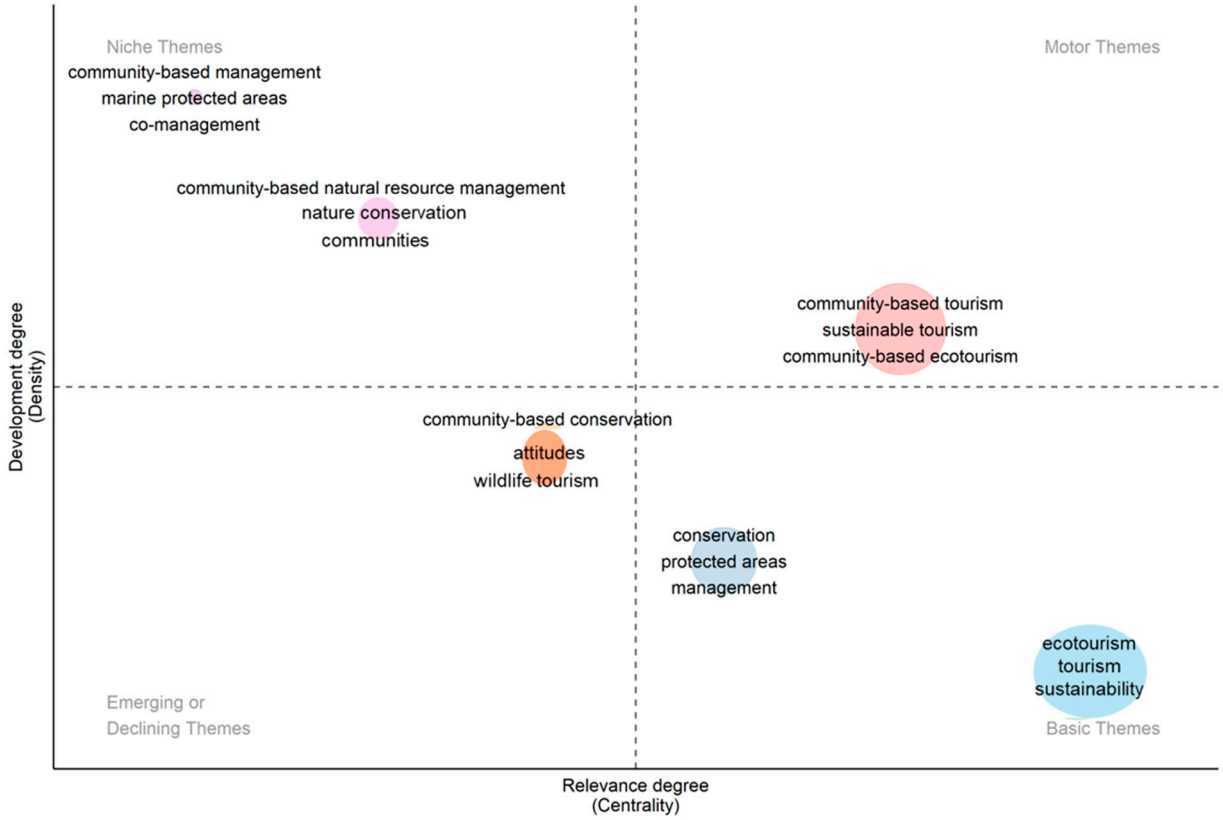


Figure 7. Thematic map of the most relevant topics in the field of research on community-based ecotourism (2002–2022).

3.5. Types of Areas (Rural Areas/Protected Areas) and Study Populations (Indigenous/Non-Indigenous)

Most of the studies on CBET have been conducted in protected areas (n = 669; 58.43%) (Figure 8), meaning in natural reserves, biosphere reserves, national parks, wildlife sanctuaries, and natural monuments. Within the research conducted in protected areas, it is found that the study population consists of 18.98% indigenous communities and 78.63% non-indigenous communities. On the other hand, studies in rural areas represented 39.91% (n = 457), where indigenous populations represented 6.6% and non-indigenous communities 84.90%.

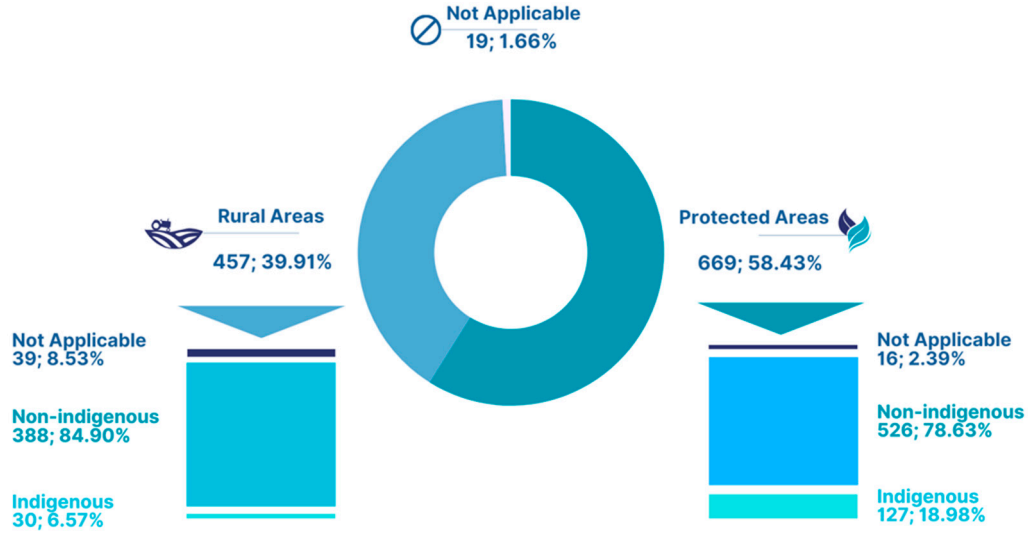


Figure 8. Types of study areas and populations involved in community-based ecotourism (CBET) studies (2002–2022). "Not Applicable" refers to articles that do not mention the study area and/or population.

The predominance of studies in protected areas in the research on community-based ecotourism was also evident both in the word cloud (Figure 6) and the thematic map (Figure 7). It is noteworthy that the establishment of protected natural areas is considered an effective strategy for conserving and protecting biodiversity and natural resources [94]. However, despite the significant benefits and ecosystem services offered by conservation areas, the establishment of these delimited spaces also signifies a redistribution of resources, territories, and rights, often increasing the vulnerability of the livelihoods of the local population [95,96]. Hence, governments and authorities implement various sustainable strategies, including ecotourism and community-based ecotourism, as strategies to protect biological and cultural diversity and promote community participation [39,97,98], thus contributing to the socio-economic development of indigenous and non-indigenous communities inhabiting these territories. While the publications on CBET with indigenous populations (18.98%) are scarce compared to non-indigenous populations (78.63%), there are increasingly more studies including indigenous peoples in their research; see, for example, [32,99,100]. Nevertheless, this disparity poses challenges in the inclusion and representation of indigenous communities in the planning and management of community-based ecotourism in these areas.

Another significant aspect to highlight is that articles on CBET reflect that indigenous communities predominantly inhabit protected areas. This is because for centuries, various indigenous peoples have inhabited and preserved large expanses of natural areas [101], which are now recognized as protected areas. Thus, the territories of indigenous peoples are often distant from developed areas; they are typically located in conserved or pristine ecosystems because, from their worldview, nature is an integral part of their daily life, culture, spirituality, and ancestral traditional knowledge [32,102]. In this way, CBET underlies a sustainable strategy that also promotes the valorization of cultural identity and indigenous lifestyles, thus empowering social groups that have historically been vulnerable or excluded [100].

On the other hand, the studies on CBET in rural areas are also representative. This may be related to the fact that sustainable tourism has been employed since the 1970s as a fundamental tool for rural growth in peripheral areas [15]. In addition to the above, these geographical areas prove to be priorities for the development of sustainable initiatives, as they are often not supervised by state entities and tend to be more vulnerable to social, environmental, cultural, and economic impacts [103], associated to a greater or lesser extent with deforestation, large-scale livestock farming, intensive agriculture, mining, predatory

tourism, and even in some cases political violence [98,104]. In this way, community-based ecotourism emerges as a strong source of income for rural communities, fostering local development through the generation of employment opportunities, local empowerment, infrastructure development, and nature conservation [76,105], as well as the expansion of local services, integration of regional development strategies, reduction in migration to urban centers, and depopulation [106]. These elements lead rural communities to embrace CBET as an alternative to improve their quality of life [107].

3.6. Most Used Methods or Data Sources

The use of interviews as the main method of data collection represents 53.45% (n = 597) of the identified studies (Figure 9). According to the analyzed articles, interviews were conducted with local communities, visitors or tourists, experts in the field, decision-makers, and other parties involved in CBET initiatives; see, for example, [76,105,108]. The importance of this method lies in its ability to explore contextualized perspectives, experiences, attitudes, and perceptions, thereby enriching and expanding the understanding of ecotourism phenomena from the viewpoint of the involved actors. On the other hand, case studies are another commonly used method (n = 200; 17.91%). These provide a detailed and specific insight into how CBET initiatives are implemented and experienced in natural areas, primarily located in Southeast Asian, Latin American, and African countries (Figure 4), coinciding with studies such as Weaver et al. [109]. This methodology allows for the examination of CBET's impacts in various study areas distributed globally; see, for example, [77,110–114].

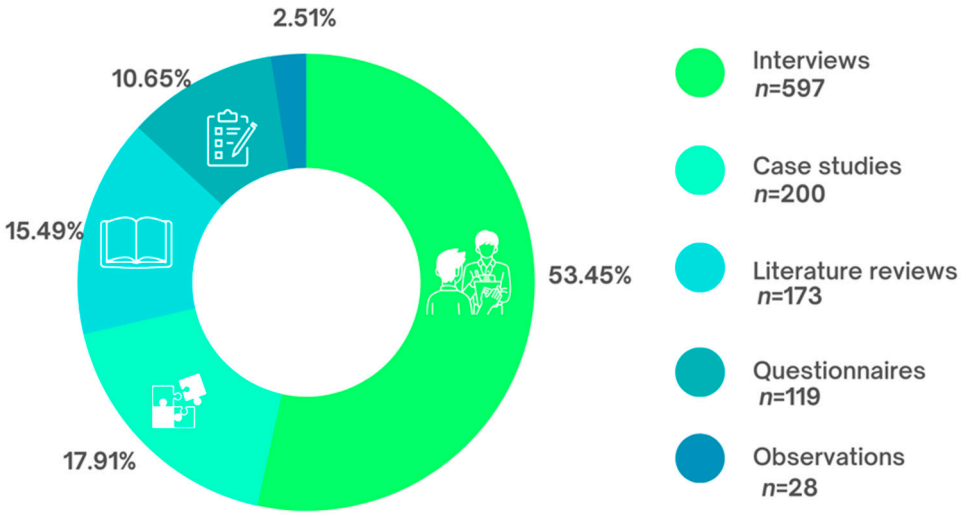


Figure 9. Top five most used methods or data sources in scientific articles on community-based ecotourism (CBET) (2002–2022).

On the other hand, although they are less commonly used, studies based on literature reviews (n = 173; 15.49%), questionnaires (n = 119; 10.65%), and direct observations (n = 28; 2.51%) are also relevant to CBET research. This is because literature reviews provide a synthesis of previous knowledge and conceptually discuss various terminologies associated with community-based ecotourism. Questionnaires and observations are generally used complementarily with interviews and case studies. Together, these research methods offer a diverse range of approaches to understanding and addressing the challenges and opportunities in the field of CBET. However, authors like Kiss [82] and Sakata [115] emphasize the need to include more and better quantitative data and conduct more rigorous analyses to measure in depth the economic and biodiversity conservation impacts in CBET development, as many of the methods employed rely more on anecdotal or experiential data, which are subject to multiple interpretations. In this same vein, Wardle et al. [78] state that there is a scarcity of studies and methods that measure the direct impacts on wildlife

populations or other components of the natural biophysical environment. In response to this, the implementation of mixed methods is suggested to systematically evaluate the impact and effectiveness of CBET [112,113].

3.7. Research Focus

There is a strong research focus associated with the evaluation of CBET's impacts (n = 255; 22.27%), followed by the analysis of perceptions, attitudes, and experiences (n = 247; 21.57%) and assessment of community-based ecotourism's potential (n = 189; 16.51%) (Figure 10). The importance of focusing the research on measuring CBET's impacts lies in the fact that these studies not only provide crucial data for informed decision-making at the governmental level but also help identify best practices and potential areas to be addressed to strengthen the dynamics within local populations, foreseeing and/or mitigating negative impacts. Among the positive impacts found in the research are economic development through tourism income, economic diversification, the creation of community-led businesses, the protection and valorization of indigenous communities, job creation, cultural and natural protection, the improvement of community livelihoods, community empowerment, women's empowerment, and infrastructure development. Among the negative impacts are the inequitable distribution of resources, intra- and intercommunity rivalries and conflicts, environmental and cultural degradation, an increased cost of living for the local population, ethnic discrimination, job insecurity, and a lack of opportunities for training in CBET. Research such as Ohl-Schacherer [114], Wiratno et al. [60], Sakata and Prideaux [116], Pookhao [117], and Mensah [118] illustrate some examples of this approach.

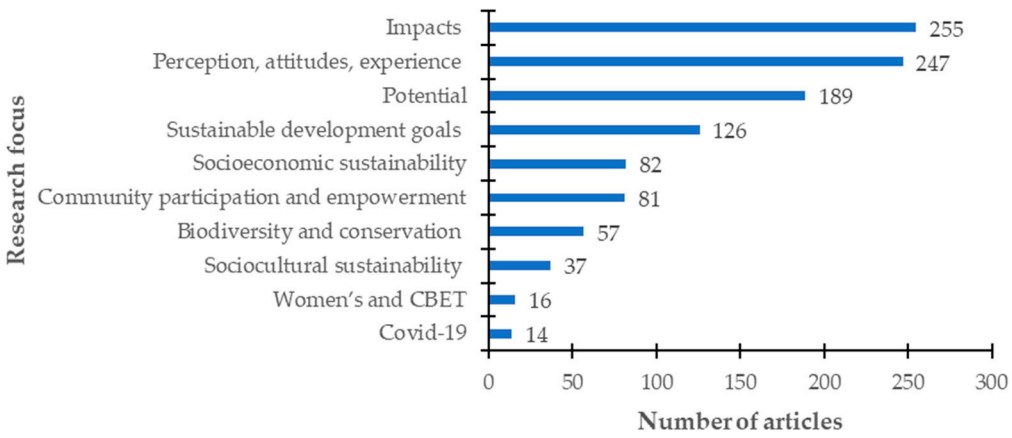


Figure 10. Research focuses of scientific publications on community-based ecotourism (CBET) (2002–2022). The top 10 most frequent focuses are graphed.

On the other hand, CBET research focusing on perceptions, attitudes, and experiences is becoming increasingly common [119] and relevant as it seeks to establish the values, attitudes, or emotions predominantly experienced by visitors and host communities at different stages of tourism development, providing important information about its sustainability and success [120]. This is significantly relevant to local communities, as it directly influences their livelihoods [119]. Finally, the focus on community-based ecotourism potential is key as it allows for the gathering of information prior to the development of a CBET project, assessing the natural, cultural, economic, and social resources available to the community, including aspects such as infrastructure, connectivity, and accessibility [101], as well as the opportunities and tensions surrounding its implementation to identify its viability. In this way, involving the perspectives of host communities and experts in the field allows for reaching a consensus that can maximize community well-being without jeopardizing biodiversity [39].

However, according to the analyzed publications, very few studies on CBET potential have considered the views of tourists and/or visitors, which limits their viability and

success by not considering all the involved parties. Finally, it is noteworthy that within the research approaches, studies on biodiversity and conservation (n = 57; 4.98%) (Figure 9) are so scarce, even more so considering that the conservation of biological diversity is one of the principles of community-based ecotourism [24,82,121]. Wardle et al. [78] associates this situation with the fact that ecological field studies often consume more time, may require specialized equipment, require reference data or control sites to determine trends and results, and generally extend over multiple seasons in the study areas. Despite the difficulties it may pose, it is considered crucial to increase the research to thoroughly evaluate the impacts of CBET on biodiversity, especially considering that most studies are conducted in protected areas (Figure 7). Finally, the study of the role of women in the development of CBET is highlighted as an emerging focus [122–124].

4. Conclusions

The results obtained reveal a significant increase in scientific production on community-based ecotourism, reaching its peak in 2022. Additionally, there is a high academic publication rate in internationally recognized journals such as *Sustainability* and *Journal of Sustainable Tourism*, which are fundamental to disseminating knowledge on this topic. Regarding the geographical distribution of the research, there is a gap between the countries leading academic production and those developing CBET initiatives, with the latter mostly belonging to Latin America, Africa, and Southeast Asia. This disparity reflects both the impact of the economy on scientific production and the commitment to conservation and sustainable development in different regions of the world. It is important to highlight the relevance of implementing CBET in protected areas and rural areas, as it reflects the potential of community-based ecotourism as a tool for local development and nature conservation. However, there are also gaps related to the inclusion and representation of indigenous communities in the planning and management of CBET in these areas. Regarding the research's data sources, there is a trend towards the use of qualitative methods, which allows for contextualized results. However, the importance of integrating quantitative or mixed methods and of more rigorous analysis to thoroughly evaluate the impacts of CBET on the economy and biodiversity conservation are noted. In terms of the research focuses, there is a predominance of evaluating both the positive and negative impacts of community-based ecotourism, providing relevant information for local communities and tourists, as well as the governmental and non-governmental entities funding these initiatives. However, ecological studies in the field are still scarce, suggesting an area for future exploration. Finally, the emerging focus on the role of women in CBET suggests a more inclusive and sustainable direction.

5. Limitations and Future Research

Our paper is not without limitations. Although we utilized two recognized databases (Scopus and Web of Science), there is a possibility that some relevant articles may have been excluded due to the selection of these databases, limiting the comprehensiveness of the study in terms of its bibliographic coverage. Moreover, the choice of keywords and search criteria may have influenced the inclusion or exclusion of certain articles, potentially biasing the results. In line with this, the study was confined to scientific articles and excluded reviews, conferences, or book chapters, which may have overlooked important analyses or conceptual studies on the topic that could have enriched the research landscape in CBET. Finally, despite identifying the most productive countries in terms of CBET research, some countries may not be represented due to language barriers, a lack of access to publications, or underrepresentation in the selected databases. Despite these limitations, we hope that our paper contributes to a better understanding of the scientific production on community-based ecotourism and encourages further research in the field.

As a future agenda, this research could be conducted using different databases, time periods, or bibliometric analysis parameters. Furthermore, we believe that bibliometric analysis provides a general overview of the CBET research in a specific period, but longi-

tudinal studies could offer a deeper understanding in terms of biodiversity conservation, socioeconomic development, and community empowerment, providing a more comprehensive view of the effectiveness of these initiatives over time. In line with this, investigating and comparing CBET research in less represented or underrepresented geographic regions could help us better understand the cultural, economic, and environmental variations in the implementation and effectiveness of CBET. Additionally, considering that the study indicates a lack of rigorous quantitative analyses, we suggest that future research could focus on gathering quantitative data such as biodiversity inventories, environmental impact assessments, systematic samplings, or economic analyses to complement qualitative insights and provide a more comprehensive assessment of CBET's impacts. Finally, we consider it relevant to compare different CBET models and their effectiveness in different geographical and cultural contexts, as this could help identify best practices to ensure the sustainability of community-based ecotourism.

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