



Review

Tourism Research on Sustainability: A Bibliometric Analysis

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Abstract: Tourism represents one of the main industries in terms of job creation and economic development while sustainability in tourism represents a worldwide challenge. The objective of the present study is to use a bibliometric approach to review the relevant literature. Bibliometric indicators, such as citations, are used to identify the field structure and the VOSviewer software is used to map the main trends in this area. Over the period 1987–2018, a total of 4647 papers were found in Scopus regarding sustainability issues in tourism. Analysis of the leading journals, authors, institutions, and keywords indicates that: (1) the literature on sustainability issues in the field of tourism is significantly growing; (2) a mere six papers accounted more than 300 citations, but there are several prolific authors; (3) of the 614 sources included in the review, the most important have published 46.7% of the papers; (4) in terms of documents and citations, the United States is the leading country in this topic; (5) according to keyword trend network analysis, sustainability is becoming a strategic approach for companies and tourist destinations. Finally, this subfield within the tourism literature has considerable potential and is expected to continue growing.

Keywords: sustainability; sustainable tourism; ecotourism; tourism management; systematic literature review; bibliometric analysis

1. Introduction

Economic growth and the need for more resources to satisfy societal needs increase public awareness regarding the sustainability of economic development. While there exists a broad conceptual framework applicable to sustainability, a widely recognized definition, from the report of the World Commission on Environment and Development [1] is often applied—this states that “sustainable development should ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs”. In this sense, sustainability is usually represented by a Venn diagram [2] including three fundamental pillars or dimensions: the economic, social, and environmental [3].

Economic sustainability seeks resource efficiency in order to achieve profitability in the long term. Social sustainability encompasses social justice, social capital, community development, and social responsibility [4]. It occurs when communities are equitable, diverse, connected and democratic and provide a good quality of life [5]. Finally, environmental sustainability implies that natural resources should be maintained at a sustainable rate as these are generally non-renewable [6]. It implies maintaining environmental assets, or at least not depleting them. If one of these three pillars is weak, development may be viable, equitable, and bearable [7], due to the interaction between these pillars, nevertheless, as a whole, it is unsustainable [8] (Figure 1).



Figure 1. Sustainability dimensions and its intersections. Adapted from Lozano (2008) [2].

The relationship between sustainability and tourism is particularly interesting due to the considerable role of tourism in the global economy. In 2016, it directly contributed 3.1% (and indirectly 10%) of the GDP and generated millions of jobs worldwide [9]. This capacity to produce employment is highlighted in the literature as one of the positive effects of tourism. Additionally, as compared to other industries, it has a major capacity to distribute wealth [10], contributing especially to the economic development of emerging economies [11].

However, tourism can also exert negative impacts in the long-term on the environment, such as pollution, destination degradation, damages on biodiversity, etc. [12–14], as well as impacting on the resident communities [13,15,16]. Overall, it may hurt the future economic development of tourist destinations.

Therefore, tourism is a double-edged sword that needs to be planned, managed and monitored to configure a development proposal according to sustainability criteria [17]. Otherwise, it can compromise further development of tourist regions due to an imbalance between steady economic growth and finite natural resources [18]. Consequently, the notion of sustainable tourism is highly important.

The World Tourism Organization states that tourism is sustainable when it takes into account its current and future economic, social and environmental impacts, meeting the needs of visitors, industry, environment and host communities [19]. Moreover, any form of tourism can be sustainable, whether large-scale tourism (mass tourism) or small-scale tourism [20,21].

In recent years, much has been written about the relationship between tourism and sustainability, highlighting the importance and the difficulty of improving sustainability in the sector [22], but also identifying it as a crucial tool for competitiveness [23,24].

This relationship is a major concern among academics and practitioners and has been addressed conceptually as well as empirically. The purpose of this work is, firstly, to clarify the concepts included under the umbrella of sustainability and, secondly, to synthesize the tourism literature on sustainability issues with a view to identifying future research trends. To do so, a bibliometric analysis was conducted on papers published in the Scopus database. The period covered was from 1987, when the first paper titled “Green tourism” appeared in *Tourism Management* [25] and ran to the current year when the Brundtland Report related to sustainable development was published [1].

In the following section, we develop a review on the conceptual framework of sustainability, focusing specifically on tourism. In Section 3, we describe the search strategy and identify the sample of papers for further analysis. The results and discussion are included in Section 4. Finally, we conclude with some recommendations for further research.

2. Sustainability, Related Concepts, and Tourism

Sustainability involves a wide spectrum of concepts, related to reconciling economic, social, and environmental issues, such as the bio, green economy, or circular economies. All of them are based on responsible consumption and production through the efficient use of resources and waste reduction.

From a general economic perspective, the bio economy refers to the set of economic activities related to the invention, development, production and use of biological products and processes [26]. The bio economy concept was firstly introduced by Georgescu-Roegen [27] and refers to the survival of humanity based on free energy sources, such as the energy received from the sun or the Earth. The bio economy approach holds a weak position on sustainability since it is focused on using natural resource inputs to production processes and does not completely consider the social dimension [28].

The green economy concept was introduced in 1989 by Pearce et al. in the book titled *Blueprint for a Green Economy* [29]. These authors wanted to demonstrate the environmental costs that economic activity can cause and to promote tax systems to reduce or clean the damages caused by pollution derived from such activities. It was only years later, at the Rio + 20 conference that policies were approved to make green economy the path towards the sustainability of organizations [30]. The definition proposed by the United Nations Economic Commission for Europe [31] is a holistic definition that encompasses the different dimensions of sustainability, stating that “Green economy is an economy that improves human well-being and social equity, while significantly reduces environmental risks and ecological scarcities. It can be seen as a means to achieve a resilient economy that provides a better quality of life for all within the ecological limits of the planet. It can be also seen as a means to link the economic, environmental and social considerations of sustainable development in such a manner that long-term economic development is achieved by investing in environmentally friendly and socially equitable solutions” [31]. Finally, Ferreira Gregorio et al. [32] pointed out that the term blue economy has emerged to complement the concept of green economy, with the goal of managing the oceans.

For its part, the circular economy, which appears for the first time in the book of Pearce and Turner [33], contemplates a model where the agents who intervene in the economy do not exert negative effects on it, based on reusing, recycling and reducing resources [34]. As opposed to the linear economy, it seeks to create a closed loop and avoid the sequence “take-make-dispose”, reconciling development with environmental sustainability.

D’Amato et al. [35] make a conceptual comparison between the three terms bio, green, and circular economy as related to sustainability. They found that in environmental terms, the green economy is a concept that contain elements of both the circular and bio economies, acting as an “umbrella” concept of everything related to the environment such as biomass and renewables, recycling, re-use and reduction in products life cycle. The other two concepts, bio and circular, are more based on resources and their management, which is the economic aspect. Finally, the social aspect and some more local aspects are mostly explored in the green economy.

Focusing on the tourism sector, some of these generic concepts related to sustainability are also applicable. Despite the relevance of bio aspects at an economic level, their neglect of the social dimension means that this approach has been rarely applied in tourism. On the contrary, the green notion constitutes an important line of research in the sector due to its awareness of human well-being and social equity. For example, Jones introduced the notion of green tourism or ecological tourism [25] in which people are encouraged to pursue rural leisure activities in a manner that will benefit, rather than harm, the countryside. This vision, nowadays, is wider and refers not only to the countryside. Tourism can be sustainable regardless of the destination type [20].

For Ruhanen et al. [36] ecological tourism (ecotourism) is seen as a synonymous with sustainable tourism, although other authors think that this is not necessarily true [37]. Wall argues that ecotourism is not automatically sustainable. It must be economically viable, environmentally appropriate, and socio-culturally acceptable to be considered sustainable. In fact, most of the tourism literature focused on sustainable issues refers to the ecotourism concept which involves socially responsible travel, personal growth, and environmental sustainability. According to Weaver and Lawton [38], ecotourism should satisfy three core criteria, i.e., (1) attractions should be predominantly nature-based, (2) visitor interactions with those attractions should be focused on learning or education,

and (3) experience and product management should follow principles and practices associated with ecological, socio-cultural and economic sustainability.

The notion of circular tourism also emerges in [39], applying the principles of the circular economy (nothing being waste, but everything being open to reuse [34]), to the tourism sector. Here, the purpose is to change the linear model to a more sustainable circular one according to the amount of resources that the sector employs.

There are also some articles focused on the management of ocean and coastal-based tourist activities such as that of McKinley et al. [40], incorporating the notion of blue tourism.

As it was mentioned, tourism is an important economic sector worldwide and it has an important underlying academic literature. Some of these studies are related to the sustainability of the sector [41]. There is an abundant literature on the subfield of sustainable tourism and several literature reviews have been carried out to analyze the state of art, trends and patterns [17,36,38,42]. These revisions, on the other hand, have not considered including all the aforementioned concepts (shown in Figure 2) encompassed by the general notion of sustainability (including bio, green, blue, circular, eco, and ecological).

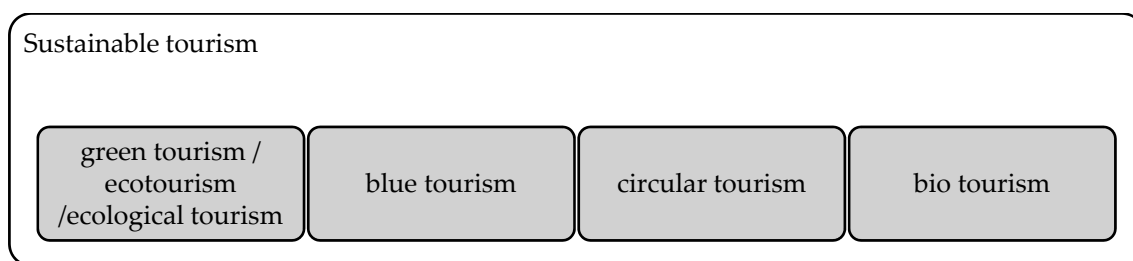


Figure 2. Sustainable tourism and related concepts.

3. Methodology

Tranfield et al. [43] proposed a design for systematic literature reviews in the management field based on three stages: planning, conducting and reporting/dissemination of the results. We followed this methodology in conducting our review.

We chose one of the most important bibliographic databases, Scopus, which belongs to Elsevier [44]. This is a multidisciplinary database (Life Sciences, Social Sciences, Physical Sciences, Health Sciences) which has over 69 million records [45].

In order to carry out the search process, we used several keywords related to sustainable tourism and the aforementioned concepts. They are shown in Table 1. “Tourism” could occur in the title, abstract or keywords, however, the other words should be in the title.

We focused the search only in the title because using a broader search retrieved not directly related documents. Up to 2018, there were 2647 published articles written in English regarding tourism sustainability issues. These academic outputs included only journal papers (articles, reviews, letters, and notes [46]) rather than books, doctoral theses, or congress proceedings, because they can be considered “certified knowledge” and have been critically reviewed [47].

The sample is composed of 2647 papers, 2503 of them are considered articles, nine are letters, 26 are notes and, finally, 109 are reviews.

Table 1 shows that the keyword “bio economy” is not the best descriptor for tourism papers because, as it is shown, only three papers contains it. This is probably due to the sector having a significant social dimension and, as previously mentioned, the bio economy concept usually obviates this human-related dimension. On the other hand, the circular and blue economies do not give rise to many documents, but it is expected to grow in tourism like in other sectors.

The bibliometric details of the papers were exported into an Excel spreadsheet for analysis. They included the journal title, publication date, author details (name/s and affiliation/s), article title, keywords, abstract, and citation count.

Table 1. Keywords search result (31 December 2018).

Combination of Words	Journal Papers
Tourism sustainability or sustainable tourism + tourism	1736
“Eco tourism” or ecotourism or eco-tourism or ecological + tourism	912
“Green economy” or “green tourism” + tourism	40
“Blue economy” or “blue tourism” + tourism	5
“Circular economy” or “circular tourism” + tourism	5
“Bio economy” + tourism	3
Total (after removing duplicates)	2647

Before starting with data analysis, we carried out an initial homogenization step to improve the consistency of the results. We disambiguated the journal and authors’ names and did the same with the keywords.

In order to undertake a descriptive data analysis and network analysis we took advantage of bibliometric tools provided by VOSviewer for analyzing citations, authorships, geographical distribution, and word frequency (keywords) [48]. Figures and tables were prepared with Excel.

4. Bibliometric Analysis of Literature: Results and Discussion

The following five subsections are the results of our bibliometric review. Publication analysis in terms of number of papers per year, citations, authors, journals, countries, and keywords provides an overview of the tourism sustainability research.

4.1. The Annual Trends of Tourism Sustainability Related Publications

Sustainable tourism encompasses several different concepts, some more recent than others. The first paper appeared in 1987 and, since then, the literature has grown rapidly. In Figure 3 we observe that the total number of publications related to sustainable tourism (especially those using sustainability among their keywords) is growing exponentially. We can confirm that the findings of the Ruhanen et al. review (up to 2012) [36] continue to hold up to 2018. The dashed line corresponds to the linear regression of the total number of publications relating to sustainable tourism. The R-squared coefficient of determination of 85% indicates that sustainability explains 85% of the growth in the total number of publications considered.

We also found it important to disaggregate the sample according to the concepts it addresses (ecotourism, green tourism, blue tourism, circular tourism, or bio tourism), although these all have to do with sustainability, in order to visualize the current importance of each one in terms of the number of academic publications, and especially to see if the concepts are still interesting for academia or if there are differences between them.

According to the data, ecotourism always has shown a positive trend and its growth has been similar to sustainability literature until 2005. From this date, the number of publications is growing more slowly as can be seen in Figure 3. Clearly, the difference between the number of publications citing “tourism sustainability” is, in 2018, more than double than those citing “ecotourism”, and this difference has been increasing over the last 10 years.

On the other hand, publications with the keywords, green tourism, blue tourism, and circular tourism are less important at a quantitative level. Publications mentioning green tourism first appeared in 2007. Discounting the year 2011, the rest of the period until 2018 has remained at a very low but stable level. Publications with “blue tourism” keywords appeared later, but only for two years, 2013 and 2014. Circular tourism is the most recent keyword to have been included in the publications analysed—this started in 2016 and, although is still very low, it seems that will continue.

In conclusion, what can be extracted from these data is that sustainability is an interesting topic for authors who carry out research on tourism, and one that is increasingly attracting attention. Moreover, new concepts are appearing that may have an impact in the future. One of these is circular tourism,

since the circular economy is already having a great impact on other sectors. Another is blue tourism, a subfield within tourism sustainability that is related to the management of the oceans and everything related to the maritime—here, the trend should be analyzed to check whether interest in it continues into the future. Finally, bio tourism is not a common concept (as one would expect on analyzing its definition [28])—for this reason, relatively few papers were found in our search.

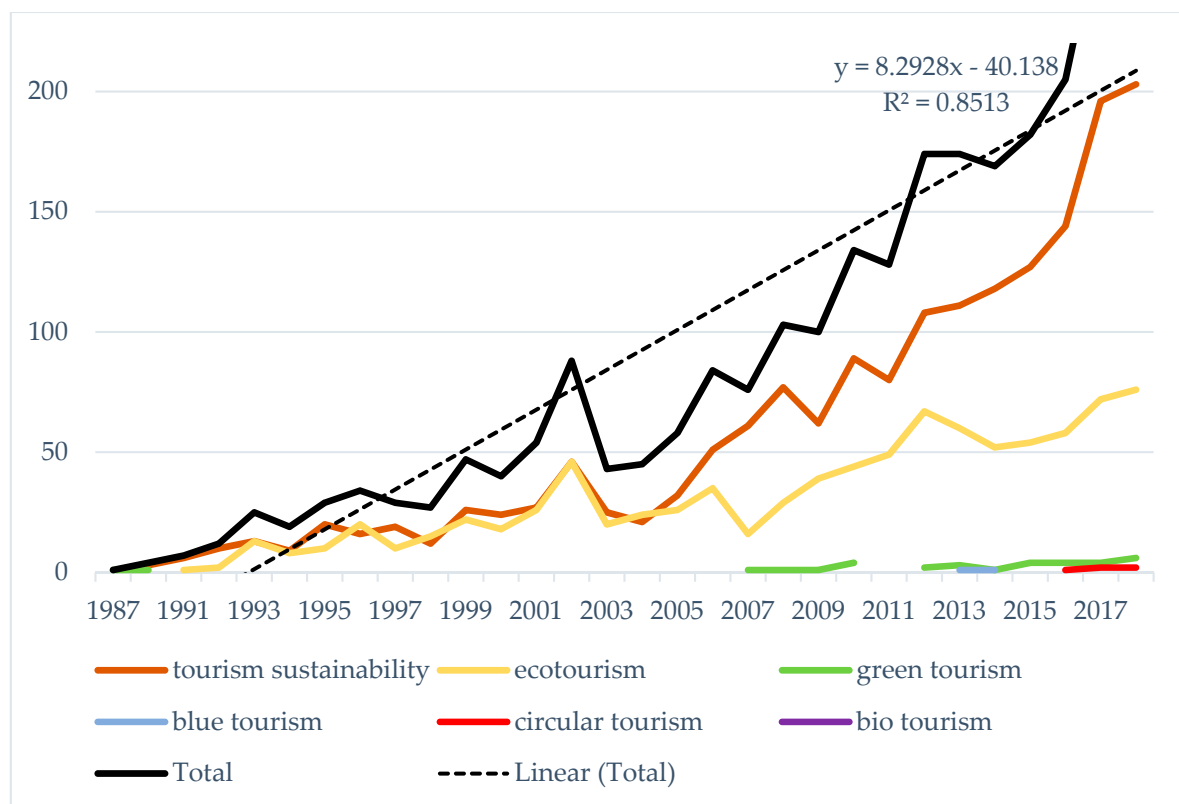


Figure 3. Publication trends.

4.2. Citation and H-Index Analysis

In the previous section, we saw the growth in the number of papers related to sustainability and tourism, but are all documents equally relevant for scholars? Citation is the most frequent method used as a measure of the influence of an author, journal, or paper, since it allows quick identification of important works in the field [49,50].

Table 2 analyses the citations structure of the field under study. One can see what papers have received many citations, or if a very high percentage have low academic visibility, etc. On the other hand, it also allows us to compare citations between different literatures. In this case, the literature on sustainable tourism presents a structure with a small number of papers responsible for a high percentage of the citations. Concretely, six papers have more than 300 citations (Table 3) and ten papers more than 200 citations. In contrast, more than 50% of the papers do not reach the five-citation level, which can mean one of two things, either they were not interesting or relevant enough to be cited by other works, or they are very recent articles that have not had time to be cited yet. Since the field has been rapidly growing, we expect that citations may well increase in the near future.

Since the beginning of sustainable tourism research, many authors have made fundamental contributions to the development of this field. In our database we found a total of 4864 authors who published articles related to sustainability and tourism between 1987 and 2018. To identify the most relevant authors, we created a ranking list, considering authors with more than 300 citations in all their publications found in Scopus (Table 4). Clearly, Weaver is the reference author in the field, in terms of citations and papers.

Table 2. General citation structure in sustainable tourism.

Number of Citations	Number of Articles	% Articles
≥300	6	0.23%
≥200	10	0.38%
≥100	74	2.80%
≥50	152	5.74%
≥25	234	8.84%
≥5	809	30.56%
<5	1362	51.45%
Total articles	2647	100%

Table 3. Most cited papers.

Year	Authors	Title	Source	TC	C/Y
1999	Butler R.W.	Sustainable tourism: A state-of-the-art review	Tourism Geographies	373	18.65
1997	Hunter C.	Sustainable tourism as an adaptive paradigm	Annals of Tourism Research	371	16.86
2006	Choi H.C., Sirakaya E.	Sustainability indicators for managing community tourism	Tourism Management	342	26.31
2000	Sharpley R.	Tourism and sustainable development: Exploring the theoretical divide	Journal of Sustainable Tourism	326	17.16
2006	Saarinen J.	Traditions of sustainability in tourism studies	Annals of Tourism Research	316	24.31
2003	Liu Z.	Sustainable tourism development: A critique	Journal of Sustainable Tourism	307	19.19

Abbreviations: TC = Total citations in Scopus; C/Y = Citations per year.

Table 4. The most influential authors on tourism sustainability.

R	Author	Country	TP	TC	H-Index
1	Weaver, D.B.	Australia	27	1139	27
2	Gössling, S.	Norway	14	1085	37
3	Butler, R.W.	United Kingdom	12	975	31
4	Bramwell, B.	United Kingdom	15	725	31
5	Hunter, C.	United Kingdom	7	698	23
6	Wall, G.	Canada	12	688	34
7	Choi, H.C.	Canada	3	670	7
8	Sirakaya, E.	United States	4	613	18
9	Lane, B.	United States	9	579	19
10	Buckley, R.C.	Australia	15	557	34
11	Jamal, T.	United States	13	482	26
12	Miller, G.	United Kingdom	4	457	22
13	Saarinen, J.	South Africa	8	426	19
14	Sharpley, R.	United Kingdom	4	403	25
15	Hall, C.M.	New Zealand	15	402	49
16	Fennell, D.A.	Canada	9	381	23
17	Stronza, A.	Botswana	6	367	16
18	Ryan, C.	New Zealand	5	353	42
19	Moscardo, G.	Australia	10	348	27
20	Scott, D.	Canada	5	336	37
21	Ballantyne, R.	Australia	3	335	24
22	Packer, J.	Australia	3	335	20
23	Clarke, J.	United Kingdom	4	312	12
24	Liu, Z.	United Kingdom	1	307	1

Abbreviations: R = Rank; TP = Total number of publications regarding tourism sustainability; TC = Total number of citations to the author's work published on the field of tourism sustainability.

In addition to the number of citations, we included the total papers of each author on the topic to test if sustainable tourism is really a relevant research line in their career. We can thus differentiate authors with many citations, but few papers focused on the topic, such as Choi, from others with numerous papers but with fewer citations, such as Buckley or Jamal.

Additionally, the H-index is provided as it is a score that quantifies an individual's scientific research output by comparing papers and citations [51]. Having a higher H-index means that an author's research has greater impact. In this regards, Hall is the author with the highest index: 49.

4.3. Journal Analysis

There are 614 journals with at least one article related to sustainability issues in tourism. Of these, 59.5% (365 journals) have published only one article, which indicates that they are not specialized journals on the topic and that this can be a cross-cutting theme that may be of interest to different fields of knowledge, not only to tourism journals [22]. Another 15.5% of the journals have published two papers, 6.7% have published three, 4.1% four and, finally, 14.3% of the journals (88 journals) have published five or more articles.

The 20 most relevant journals in terms of citations and numbers of published papers are shown in Figure 4, and how they have evolved over the years is shown in Table 5.

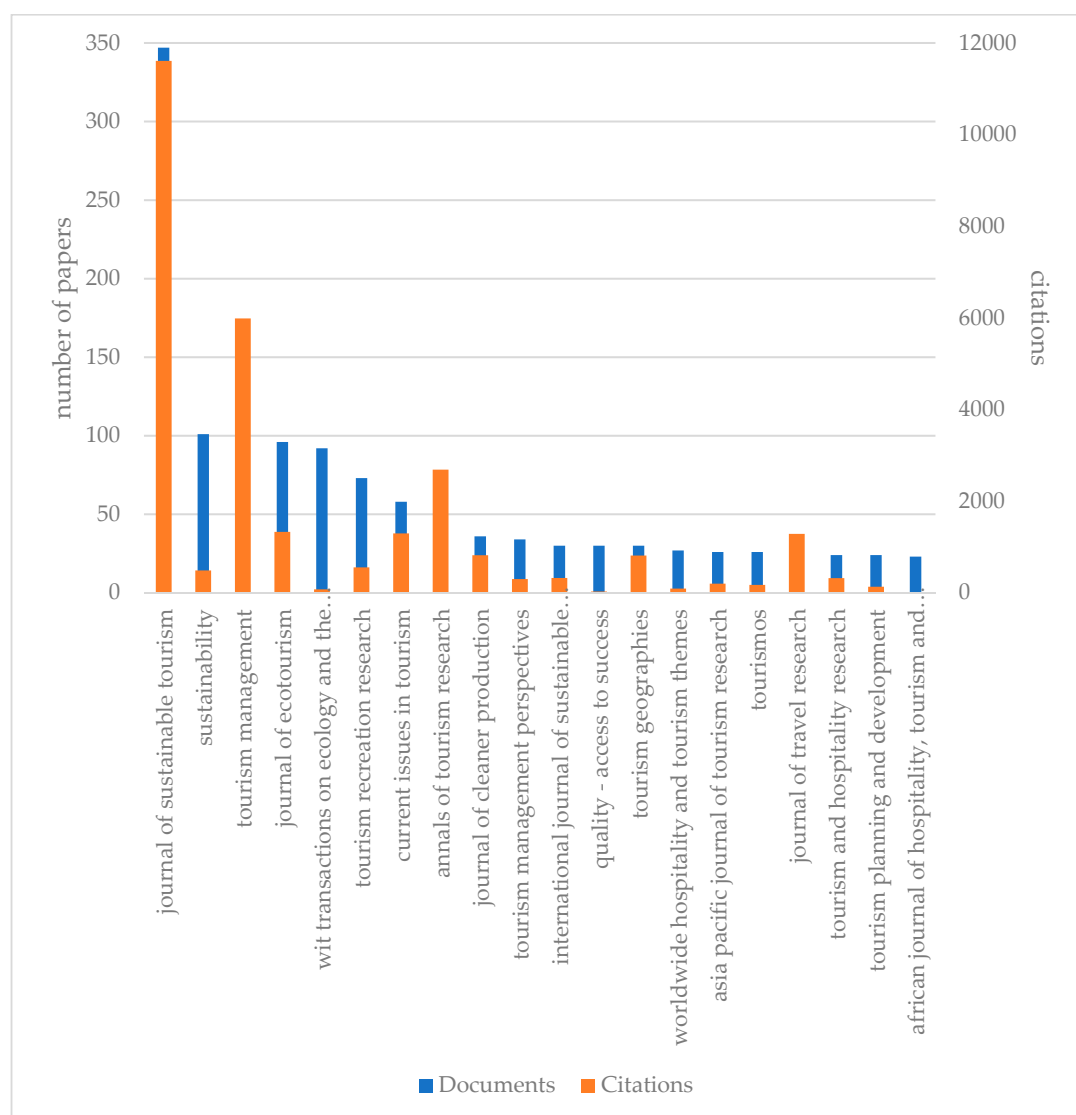


Figure 4. Top journals in terms of papers and citations.

Table 5. Evolution of publications per year in the top journals.

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The top 20 journals have published 1236 articles, representing 46.7% of the papers in the sample. The Journal of Sustainable Tourism is the leader on both indicators (number of papers and citations). It is a journal that fits perfectly into the subject of study as, since 1993, it has been the only journal exclusively devoted to sustainable tourism research [52]. Previous reviews also pointed out its importance in the field [53].

Furthermore, we found that not all the journals in Figure 4 are specialized in tourism and hospitality [22], which is quite strange in comparison with other disciplines, where would be difficult to find journals out of the discipline among the most important ones. In this case, journals, such as the Journal of Cleaner Production, have published 36 articles on the topic, Quality-Access to Success brings together 30 publications and the aforementioned Sustainability, 101 publications.

Monitoring the evolution of each source, showed in Table 5, allows us to see that recently the Sustainability journal is taking the lead in terms of published papers but in terms of citations this novelty has not allowed it to reach a remarkable number.

Tourism Management publishes a pretty stable number of articles, related to sustainability, with a great impact when observing their citations. This shows us the quality of the journal and its impact, as a matter of fact the journal occupies the first position in the ranking of the tourism, leisure and Hospitality Management category in Scimago (Scopus) and JCR (Journal Citation Reports).

Overall, Table 5 reveals that 20 years ago a small number of journals had published articles on this topic. Nowadays we see that it is a research line with an important number of interested outlets. Moreover, their articles addressing concerns between tourism and sustainability are growing year in, year out.

4.4. Geographic Distribution

Using authors' country of affiliation, it was noticed that the interest of sustainable tourism is worldwide, because there are 122 countries that have published at least one article related to the topic, 72 countries have published more than five papers, 46 countries more than 10, and 15 countries more than 50. This fact suggests that it is a global issue that attracts the attention of authors from many countries.

Table 6 shows the ten countries with the highest academic output on the subject. Together, they represent 65.72% of the articles and 84.77% of the citations. According to the data, the United States is the country where more documents have been written, 415 documents, followed by the United Kingdom and Australia, with 294 and 274, respectively. According to the review by Ruhanen et al. in 2012 [36], the countries were the same but with different orders: United Kingdom (119 documents), Australia (98 documents), and the United States (76 documents). These authors consider only the four most relevant journals in sustainable tourism research, hence the differences in the total number of articles. Recently, Garrigos-Simon et al. [42] has included Spain in the first three places, in detriment of the United Kingdom.

We consider also interesting to analyze the papers for the last five years to the present, since we have seen that the last years have been very successful in terms of publications. United States continues to lead the ranking, followed by Australia that has overtaken United Kingdom in both indicators (publications and citations) in the most recent papers. It is noticeable the absence of Canada in the top 10. In the last five years, Canadian authorship registered 32 papers with a total of 145 citations, which leaves it in eleventh place. In contrast to the total sample, in the period 2014–2018, it is observed that China and Spain have published 60% of all their papers, which means that their contribution to this research is very recent. Previous reviews indicated that in 2012 only 18 papers had been published in Spain [36]. Finally, in proportion to its production, South Africa is the country with most of the papers published during this last period, 51 of the 76 papers, which represents 67%. This data has allowed them to climb from the tenth to the seventh position.

Table 6. Ten main countries in the topic.

Country	Total Sample		Last Five Years (2014–2018)		
	Documents	Citations	Country	Documents	Citations
United States	415	10,102	United States	123	607
United Kingdom	294	10,064	Australia	111	996
Australia	274	6305	United Kingdom	75	550
Canada	160	4838	China	74	239
China	124	727	Spain	70	399
Spain	118	1523	Malaysia	56	147
Malaysia	103	497	South Africa	51	211
New Zealand	89	2264	Italy	50	156
Italy	86	721	Romania	44	117
South Africa	76	595	Taiwan	34	229

4.5. Keyword Trends

This section aims to identify the most common keywords used to classify the papers regarding sustainable tourism. From this analysis, it is possible to determine the most frequently occurring topics in the field. To conduct the analysis, we considered indexed and authors' keywords.

In our sample (2647 papers), we obtained 7748 keywords. Only 2070 appeared more than once, which means 26.7%. Concretely, 629 keywords appeared more than five times, 132 more than 20 times, and only 43 appeared more than 50 times. These keywords, which appeared more than 50 times, are displayed in Table 7. Ecotourism is the most recurrent keyword for sustainable tourism articles followed by tourism development.

On the other hand, in Table 7, the total link strength indicates the number of links of an item with other items and the total strength of the links of an item with other item [54]. This value denotes the importance of a keyword in the field since higher value means that it has been linked with others and many times. In VOSviewer, these values are used for representing the keyword network.

Table 7. Keyword co-occurrence.

Keyword	Occurrences	Total Link Strength
Ecotourism	1236	3926
Tourism Development	678	2614
Sustainable Development	661	2274
Sustainability	624	2130
Sustainable Tourism	519	1351
Tourism	399	1114
Tourism Management	367	1466
Tourist Destinations	235	1132
Stakeholder	173	738
Protected Area	137	546
Tourism Market	124	569
Environmental Protection	110	540
Eurasia	109	594
Conservation	106	453
Tourism Economics	103	511
Ecology	98	386
Local Participation	94	441
Environmental Impact	93	393
Developing Countries	92	401
China	86	394
Nature Conservation	86	368
Environmental Management	85	358

Table 7. *Cont.*

Keyword	Occurrences	Total Link Strength
Perception	79	342
Heritage Tourism	76	317
Biodiversity	73	309
Economic Development	67	284
Europe	67	327
Tourist Attraction	66	326
Australia	64	254
Planning	64	271
Environment	63	227
Tourist Behaviour	63	283
National Park	61	257
Decision Making	60	269
Rural Tourism	60	168
Asia	59	321
Sustainable Tourism Development	59	172
Climate Change	58	189
United States	54	213
Governance	53	229
Development	51	181
Ecosystem	51	266
Strategic Approach	51	232

Figure 5 shows the result of running the VOSViewer algorithm restricted to a minimum number of 50 occurrences of a keyword. The size of the nodes and words represents the weight of the nodes (keywords) i.e., occurrences. Ecotourism is the biggest node and it appears in almost half of the papers in our database.

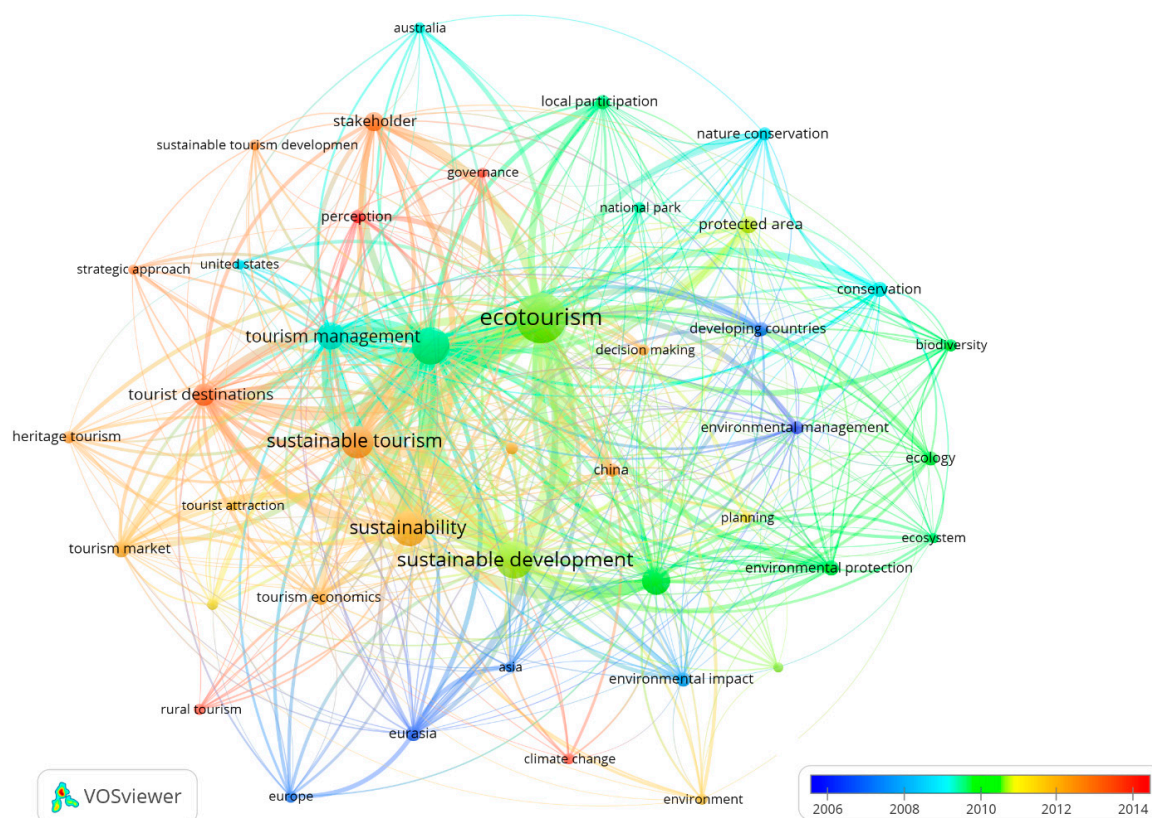


Figure 5. Keyword trends.

The distance between two nodes reflects the strength of the relation between them, i.e., shorter distance means stronger relationship. The network connections show the keywords that appear together more frequently in the analyzed papers; a line between two keywords indicates their co-occurrence. The thicker the line is, the greater the co-occurrence frequency. Finally, the color of the node indicates the average number of publications per year in relation to the node [54]. In this way we can see the keywords trend over the period analyzed (1987–2018).

Blueness nodes correspond to keywords used especially at the beginning of our study period. While more red nodes correspond to keywords that have appeared more recently.

It should be noted that the term ecotourism is in the middle of the scale (green) due to the repetition of this keyword across the period analyzed, as well as ecology, environmental protection, or tourism.

Other relevant trends that can be extracted from this analysis are the change of nomenclature in terms of territorially positioning the research, i.e., Europe, Eurasia, Asia, or developing countries have become obsolete (blue), while currently it is quite more often to talk about tourist destinations (orange), which do not have to be associated with a political geographical area. The three countries that appear in the keywords, United States, Australia, and China, coincide with what was seen in the previous geographical analysis. Moreover, the red color of China shows its recent interest.

It is noteworthy the importance that sustainability is gaining in the sector from a strategic point of view according to the keywords analyzed. Keywords as perception, strategic approach, stakeholders, governance, decision making, etc., appear in orange or red. Therefore, it is observed that sustainable tourism is responding to the need for more responsible policies and forms of corporate governance in the sector which embed stakeholder involvement in the processes [17,55]. Several stakeholders, i.e., “any group or individual who can affect or is affected by the achievement of the organizations objectives” [56] are involved in sustainable tourism. For example: present visitors, future visitors, present host communities (residents, business owners, and government), and future host communities [57].

Recently, climatic change also appears among the keywords in the database. Tourism highly contributes to the carbon emissions linked to tourist transport, waste generation, etc. [58–60]. In this regard, there are articles assessing and making suggestions to mitigate these effects [61–64]. Other articles evaluate changes in tourism demand due to the consequences of climatic change [65,66].

Finally, it has also verified that green, circular, and blue tourism still do not appear in this list of words used in the field of tourism sustainability. The number of papers thrown by the initial search to form the database already predicted this result. We will have to wait a few years to see if these keywords gain weight in the literature and consolidate or not.

In addition to seeing the evolution of these main keywords, their identification is relevant for researchers to use the correct keywords to describe their articles and thus improve their visibility.

5. Conclusions and Directions for Future Research

This review carries out a bibliometric and visualization/network analysis on tourism field related to sustainability issues until 2018. This analysis has been done over 32 years (1987–2018) that covers the entire period of publication in this topic and helps to have a large number of publications that allow to build a complete overview. This is an important contribution of the paper because previous reviews have studied shorter periods of time.

Through the articles search in Scopus database we have noticed that there is a recent successful period of academic literature related to this topic, specifically from 2005 to the date. Specifically, in the last two years of the study, we found more than 400 publications on the topic. The quantitative analysis of the sample of 2647 papers, has served to draw a series of conclusions that we detail below. In the first place, although in the economy and business fields, green economy, circular economy, and bio economy emerge as relevant concepts related to sustainability, in the tourism sector the bio notion

is not used. On the contrary, we have verified that ecotourism is a recurring word, being the main keyword in this field and appearing in the title of 34% of the articles in our database.

The relational analysis of keywords has not only served to identify the main descriptors of the papers but also to see how their use has evolved over time. Initially described as “environmental management” or “tourism management”, these terms are currently losing relevance in favor of concepts such as “sustainable tourism development” understanding that tourism and its management should consider all the pillars of sustainability not only paying attention to the environment. We have seen a strong relationship of proximity between keywords that set the current trend in this subfield, which are related to the vision of the organization’s strategy. Therefore, it is observed that sustainability was previously perceived to be something of doors to the outside, more linked to reinforcing the image of the company; we see it in keywords such as “environmental impact” or “nature conservation” etc. Currently it is part of the whole organization, making relevant internal impacts, especially in the formulation of the business strategy also for tourist companies and destinations.

The attention that sustainable tourism research has received has not been distributed evenly throughout the world, although many countries have published a paper in this regard. The United States is the leader in this research. In recent years some countries, like Australia, have approached in number of publications and exceeded in terms of citations. On the other hand, the recent emergence of Asian countries, such as China, Malaysia, and Taiwan, is also noticeable.

From an academic perspective, the number of journals that have paid attention to the topic is notable, to a greater or lesser extent, since sustainability is a multifaceted topic that is of interest in many disciplines as well as the tourism sector. This large number of sources of different research domains represents an opportunity for researchers to find an outlet for their papers.

The insights gained from this research have also some implications for academics and practitioners. From an academic point of view, the bibliometric analysis carried out contributes to give some answers to important questions that researchers should have into account in their research on sustainability and tourism. This analysis can help researchers to understand and identify the new trends in this topic, the terminology used, the journals that mostly address these investigations, as well as the reference studies on the field. From a practical point of view, the findings of this research suggest that practitioners in the tourism field have to consider, understand and integrate different dimensions of the sustainability development in their decision-making process. These dimensions include economic, social and environmental aspects that considered together will help to mitigate the potential negative consequences of economic development.

The analysis carried out in this review also identifies some future research lines. Tourism is an economic sector with a strong impact on ecosystems, for this reason its sustainability in the broadest sense, not only environmental, is being taken into consideration in the academic literature. Future research should continue exploring the relationship of sustainable tourism with other current concepts such as business ethics or corporate social responsibility, in order to satisfy the expectations of all stakeholders. Moreover, future research should continue to provide empirical evidence on the results of the implementation of different policies developed at both, local and international levels, aiming at enhancing the efficiency and reuse of resources. Likewise, we believe that one line of research to be developed is that related to circular tourism. Other sectors are working to change the take-make-dispose model towards a more sustainable model and in tourism there is much to contribute both theoretically and empirically. Especially in environments where tourism is massive, the efficient management of resources should be considered a major objective for all the agents that intervene in the system.

Despite the contributions of the paper there is a series of limitations that we must mention as the use of a single database instead of different sources to retrieve the information. The use of multiple databases always gives greater coverage to the subject although we believe that Scopus offers a large collection of documents that could be representative of the total. On the other hand, the use of the search algorithm only in the title also limits the search. The reasons for not using them in

the Title-abstract-keywords option available in Scopus responds fundamentally to the fact that the database returned more than seven thousand entries, many of them not related to the tourism field. As it has been mentioned several times throughout this review, this is a cross-cutting topic and we did not want to lose the focus of the study by adding works not directly related to the field. The third limitation is regarding the type of documents analyzed. We excluded conference proceeding, doctoral theses, textbooks, and unpublished working papers in the sustainable tourism literature. Moreover, we considered only documents written in English which leads to underestimating research using other languages.

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