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# Mapping a Sustainable and Responsible Tourism Paradigm: A Bibliometric and Citation Network Analysis

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**Abstract:** Sustainable tourism as a concept, and responsible tourism as its successful implementation, represent two major challenges for researchers in different academic fields and for tourism stakeholders in destinations responsible for sustainable tourism planning, policies, actions, and outcomes. This paper provides a bibliometric inventory of research published in the field of sustainable and responsible tourism (SRT). The results identify the publications on SRT; author cooperation between countries and their nodes; the disciplinary areas of SRT and the influential works, journals, and authors; and the bibliometric clusters. The aim of the study was to determine whether SRT has merged into a single "responsustainable" tourism discourse that could shift the mainstream paradigm of sustainable tourism towards the full content of SRT. The analysis was unable to confirm this shift towards an expanded paradigm of SRT but the results do indicate that SRT will remain an important area of tourism research for the foreseeable future.

**Keywords:** sustainable tourism; responsible tourism; responsustainable tourism; bibliometric analyses; tourism paradigm

## 1. Introduction

In 1987, the United Nations (UN) World Commission on Environment and Development (WCED) published the report *Our Common Future* [1]. The report defined and popularized the concept of sustainable development. The concept was widely accepted by governments and organizations, industry, and academia, and became popular in tourism research and practice, although tourism was hardly mentioned in the original report. Nevertheless, the concept of sustainable tourism has become widely disseminated among tourism stakeholders.

Tourism academia and the UN World Tourism Organisation (UNWTO) have defined sustainable tourism and published many recommendations and manuals on how to deal with sustainability in tourism [2,3]. A balanced approach to the three pillars of sustainability—economic, socio-cultural and natural—has been proposed. Many countries have since developed sustainable tourism strategies based on the pillars of sustainability and balancing the impacts of tourism on these pillars [4]. Due to the too slow and ineffective penetration of sustainability in tourism practice, many tourism researchers have proposed to expand the narrower three-pillar approach to include triggers for sustainability implementation. A new aspect of responsibility or "sustainability in action" has therefore been added to the main conceptual understanding of sustainable tourism [5–7]. Although sustainable and responsible tourism in its dual meaning (sustainability pillars and implementation triggers) has not yet reached sufficient critical mass among academics and practitioners to change mainstream tourism practices, some authors have already proposed a paradigm shift in sustainable tourism towards implementation effectiveness [8,9].

In this context, sustainability and responsibility have already permeated the social and political awareness in tourism and could lead to a new or updated paradigm of tourism development.

Sustainable tourism refers to a concept of sustainable tourism and its pillars and impacts; responsible tourism refers to the implementation of sustainability and its triggers. The importance of sustainable tourism is historically clear, but the full meaning of its implementation is based on responsibility. Therefore, some authors have used the term "responsible tourism" alone [6,7] to characterize tourism or tourists that are responsible and sustainable, and other authors and institutions have combined both terms to create the term "sustainable and responsible tourism" (SRT), to fully capture both sides [10,11]. The terms "responsustable tourism" or "responsustainable tourism" were proposed to help clarify the terminology [5].

Other terminological issues are notable. The tourism literature has often used the terms natural and environmental as synonyms. For example, the UNWTO discusses economic, socio-cultural, and environmental (meaning natural) pillars [3]; the latter two pillars are often joined into a single, ecological dimension [12]. Although the term "sustainable tourism" is predominant in tourism discourse, some authors have also used the terms "green tourism", "corporate social responsibility" (CSR), or "triple bottom line" (TBL) as synonyms or related concepts [5].

SRT, or responsustable tourism, has therefore challenged researchers in various academic fields. Although a large amount of literature has been published, no overall bibliometric analysis of this research area has been provided. To fill this gap, this paper maps the academic research in SRT by conducting bibliometric analyses based on tourism publications. The main research question concerns the bibliometric characteristics of the published material. This paper addresses the research questions related to SRT under the aspects of the publication outputs, the cooperation between countries, the co-occurrence analyses of the multidisciplinary subject categories involved, the co-cited analyses on the most influential articles in this field, and the knowledge map, to bring together the field of SRT and its paradigm.

## 2. Sustainable and Responsible Tourism

### 2.1. Sustainability Paradigm

"Sustainability is a paradigm for thinking about the future in which environmental, social and economic considerations are balanced in the pursuit of an improved quality of life" [12] (p. 1). The sustainable development paradigm materializes through jointly accepted and respected conceptual definitions by academia and their practical implementation by social and political actors. At a certain point in time, not all known conceptual elements are relevant for all actors; therefore, only relevant elements might appear in the agreed paradigms, and some might stay out of the paradigm until an event or problem occurs that attracts attention and suddenly makes the issue relevant for the actors. In this respect, paradigms must evolve over time.

Sustainable development was advanced to the forefront of the global development paradigm by the Brundtland Report *Our Common Future* [1]. The report set out the requirements for sustainable development and the long-term perspective: preservation of ecological integrity and diversity, fulfilment of basic human needs, justice, equality and open options for present and future generations, and increased self-determination. The report calls for justice between human (i.e., social) and other environments. The idea soon attracted the interest and acceptance of scientists and decision-makers. The paradigm of sustainable development designed by the UN [12] touches the ecological (i.e., social and natural), economic, and welfare (i.e., quality-of-life (QoL)) dimensions of sustainability. It explicitly addresses the future of the planet in the context of QoL through sustainable economic gains and opportunities for ecological well-being for the planet and people.

*2.2. Sustainable Tourism*

Many in tourism academia, government, and industry have embraced the Brundtland report's conceptualization of sustainability. Tourism researchers have applied different dimensions of sustainability, such as ecological, economic, social, and political, sustainability, in addition to global equity and equality [13–15]. The dominant sustainability paradigm in tourism has culminated in a three-dimensional sustainability concept, which refers to the economic, social (including cultural), and natural environments and has been renamed in tourism as the "three pillars of sustainability" [3,15–17].

The ecological environment, comprising the natural (also called environmental) and socio-cultural environment, builds on the proposals of several authors with respect to the relationship between tourism and ecology [18]. It refers to key ecological statements and scientific approaches to landscape ecology, community ecology, and human or social ecology. Tourism ecology is understood in this paper as an approach to the theory and practice of tourism development that enables effective tourism development by relying on and respecting local natural and socio-cultural resources [19,20].

The economic environment, e.g., tourism economy, refers to the third pillar of sustainability. Neoliberal economic principles and values represent the model according to which the tourism industry is managed and its resources are allocated. There are some asymmetries between the ecological and economic drivers and values of tourism. Economic interests could overuse, pollute, or destroy the natural or sociocultural resources of destinations that the ecology attempts to preserve.

The definition of sustainable tourism, as retrieved from the websites of the UNWTO in October 2020, states that sustainable tourism is "tourism that takes full account of its present and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment, and host communities" ([3,21] paragraph 1). Here, the sustainability principles of tourism affect the balance between economic and ecological aspects, and ideological and value asymmetries are completely ignored. It is also assumed that harmony is possible between the interests of the relevant visitor stakeholders: the visitors, the industry, the environment, and the local communities. The definition also states: "Sustainable tourism development also requires the informed participation, all relevant stakeholders, strong political leadership and consensus building and should maintain a high level of tourist satisfaction...." [21] (paragraph 4).

The last part of the above definition explicitly supports the needs of visitors by ensuring tourist satisfaction, which drives effective demand and supports the neoliberal economic model. However, the UNWTO definition does not convincingly combine the sustainability of tourism with the welfare for its ecological parts, such as QoL for the local people and welfare of the natural environment [22]. Although the UNWTO works on sustainable tourism indicators [17] to address these dimensions, they have not fully penetrated the socio-political awareness and strategic agendas and policy actions for sustainable destination development. A UNWTO study published in 2019 of approximately 100 national tourism strategies showed that all countries have sustainable tourism strategies and policies [4]. These predominantly focus on balancing the three pillars of sustainability and promoting economic sustainability and tourism growth. These too narrow strategic "sustainable" tourism agendas and policies have led to an observed gap between the wonderful idea of sustainability and its low effectiveness in tourism practice [23–26].

Asymmetric drivers of the neoliberal economy drive the growth and development of tourism; cause undesirable impacts on ecological resources; overlook the welfare interests of many tourism stakeholders, especially residents or visitors of destinations; and insufficiently address environmental issues such as climate change. In this respect, the existing paradigm of sustainable tourism has limitations because it overly balances the three pillars, focusing on visitor satisfaction and thus on the economic environment, and makes insufficient efforts with regard to QoL and other sustainability aspects [27–29]. Experience in the tourism industry suggests that economic performance is more important than ecological performance [5,30,31].

### 2.3. Responsible Tourism

The first Conference on Responsible Tourism resulted in a *Declaration on Responsible Tourism*. It called on all stakeholders to "take responsibility for achieving sustainable tourism and to create better places for individuals to live in and for individuals to visit" [32] (p. 2). The Declaration is based on the three pillars of sustainability in tourism because it calls for economic, social, and natural (e.g., environmental) responsibility.
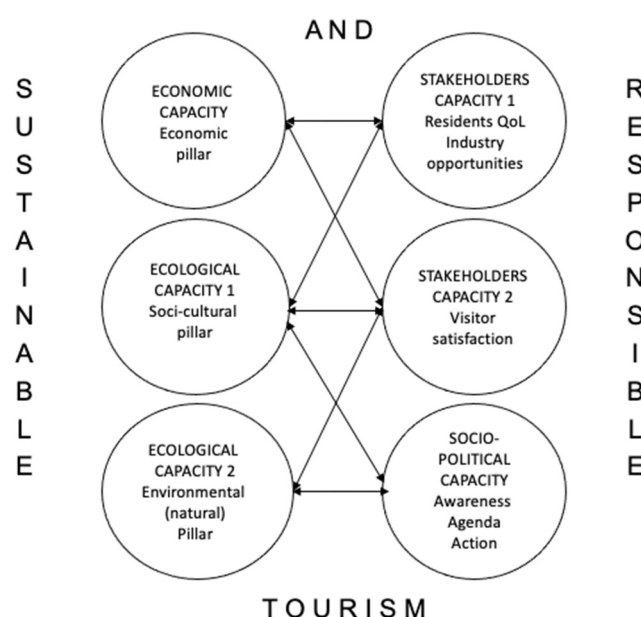
Responsible tourism uses tourism for sustainable development and focuses on what people, businesses, and governments do to maximize the positive economic, socio-cultural, and environmental impacts of tourism. It calls for operators, hoteliers, governments, locals, and tourists to take responsibility and action to make tourism more sustainable. The common ground between academic and socio-political perspectives is in a document from the European Union in which tourism responsibility is defined as "awareness, decisions and actions of all those involved in the planning, delivery and consumption of tourism, so that it is sustainable over time" [11].

Because the main objective of responsibility is to promote sustainability in all its dimensions (e.g., ecological and economic), the discourse on responsibility is searching for implementation triggers that should lead to sustainable tourism in practice [33,34]. The first so-called socio-political implementation trigger refers to "Awareness–Agenda–Action" implementation phases [5] (p. 467). The phase of "awareness" raising involves social awareness of all sustainability issues, stimulates sustainable ethics, and informs the destination about appropriate and inappropriate behavior. In the next phase, the sustainability challenges are translated into objectives, codified in the destinations' strategies, and placed on their "agendas" and lists of relevant policy instruments. The last phase is the sustainability implementation or responsible "action".

Another two triggers for implementation thus relate to tourism stakeholders and are called socio-psychological triggers or capacities. The second trigger is destination or supply based and refers to the residents and industry. It unlocks the rights and responsibilities of tourism for a QoL of the residents on the basis of their socio-psychological satisfaction or irritation with the tourists' presence and tourism development [9,35]. The tourism industry based on the neoliberal paradigm has rights to business opportunities as a user, polluter, and affected party. The third trigger refers to the visitors who are entitled to the quality of the tourist experience while visiting destinations and who turn away when the experience is unsatisfactory, which has profound negative effects on the attractiveness of destinations and their economic and broader welfare success.

### 2.4. Merging Sustainable and Responsible Tourism

The ensuing academic and institutional debate on responsible tourism provides an opportunity to develop an SRT paradigm, and the latter combines SRT and all elements of the tourism sustainability and responsibility discourse. The term SRT was first published in 2016 [5]. Since then, the model has been further refined by new developments in academic thinking and practical developments [9] triggered by developments in the field of overtourism [36–39]. The SRT elements are presented in Figure 1.

**Figure 1.** Sustainable and responsible tourism. Note: QoL: Quality of Life. Source: Adapted from Mihalic, 2020 [30].

In terms of the debate on sustainable development, the SRT re-joins many of the elements of sustainable thinking [21] that failed to fully penetrate the socio-political agendas, and sustainability implementation in tourism realities. Sustainability conceptualizations are usually accompanied by actions or agendas that manage the action plan for implementing sustainability. The examples of this are numerous. One such example was Agenda 21 [40]—a plan by the UN for sustainable development. The new document is Agenda 2030, which includes Sustainable Development Goals (SDGs), designed as an action plan or the "the blueprint to achieve a better and more sustainable future for all" [41] (paragraph 1).

*2.5. Bibliographic Research in Sustainable and Responsible Tourism*

Numerous reviews of different aspects of sustainability and responsibility in tourism have been conducted. Buckley [23] reviewed the social and environmental impacts, and the responses and indicators, of the most important tourism research. The research was divided into five categories: population, peace, welfare, pollution, and protection. He noted that the industry has not achieved sustainability. Zolfani et al. [42] examined the progress of research on sustainable tourism and analyzed the topics, journals, articles, and authors. The study comprised 132 scientific articles from 47 journals from 1993 to 2013 in 14 areas. The scientific articles were analyzed on the basis of the publication year, the publication journal, and the citations of the subject areas. Ruhanen et al. [43] examined the trends and patterns of research on sustainable tourism over the past 25 years by conducting a bibliographical analysis of the most prestigious journals on tourism. The results indicated that the increasing research on sustainable tourism has been significant in terms of the growth of the topic and that, with some limited exceptions, the topics and issues of sustainable tourism remained constant, while theoretical and methodological approaches matured over time. Toelkes [44] focused on sustainable communication in tourism. This systematic review showed that the extensive research has focused on green hotel marketing and environmental sustainability and that sustainability messages were not as effective as expected. Maftuhah et al. [45] reviewed the literature on sustainable tourism and the main pillars of its development by focusing on the five main elements of sustainable tourism development: tourism attractions, accessibility, amenity, ancillary, and community involvement. These results suggested a need to create a model for all key elements to support sustainable tourism.

Pan et al. [46] reviewed the interrelations between tourism and sustainability from a cross-disciplinary perspective. No review article on responsible tourism has been written, although Zanfardini, Aguirre, and Tamagni [47] included "responsible tourism" as a search term in their review of the evolution of CSR research in tourism from 1992 to 2012. Kallio [48] reviewed 130 journal articles and two book chapters on sustainability based responsibility and found that a separate discourse on responsibility has developed within tourism research, covering all tourism stakeholders, but especially consumers. Another in-depth study in this area [49] provided a critical overview of progress in research on CSR in tourism management and possible directions for future research, focusing mainly on determining the position of CSR in tourism.

Because of the growing, maturing research on sustainability, there is increasing interest in the application of systematic reviews and other bibliographic methods in providing empirical assessments of the development of research in these fields. For example, Ninerola et al. [50] analyzed the leading journals, authors, institutions, and keywords in Scopus for 1987–2018 and concluded that sustainability research in tourism has increased significantly, sustainability is becoming a strategic approach for companies and destinations, and the research area will continue to grow in the future. Memdoza, Santana-Tavaler and Leon applied UCINET software to analyze stakeholders' networks and their impact on responsible tourism in the field of cultural heritage [51].

However, SRT, which potentially represents two important parts of the same tourism paradigm, has not been jointly bibliometrically examined. This study focuses on the articles on SRT published in the journals indexed in the Web of Science (WoS) database from 1990 to October 2020. The analysis of the publications on "sustainability", "responsibility" and "sustainability and responsibility" was carried out.

## 3. Methodology

This study focused on tourism articles on SRT published in journals indexed in the WoS database from 1990 to October 2020. We used 1990 because we assumed that the tourism sustainability academic debate followed the Brundtland commission report [1] and started in the 1990s.

We used the WoS for several reasons. First, many studies have recommended the WoS [52–54], which covers an array of indices from the social sciences, arts, and humanities (SCI, SSCI, A&HCI), conference proceedings (CPCI-S, CPCI-SSH), and emerging sources (ESCI). The first three citation indices are well known and widely used in universities [55,56].

To systematically review the studies of sustainable tourism and responsible tourism, the search string was defined by topics which enabled a search of the WoS by title, abstract, author keywords, and keywords plus (Figure 2).

> *Tourism responsustable OR*
> *((\*tourism OR tourist\*)*
> *AND (green OR sustaina\* OR responsib\* OR 'tourist behavior'*
> *OR 'social effects OR 'environmental impact'*
> *OR 'environmental protection'*
> *OR 'environmental policy' OR 'environmental planning'))*
> *OR 'our common future'*

**Figure 2.** Search string for sustainable and responsible tourism. Source: Own research.

The main stages of research were divided into five phases. First, data from the WoS were collected on the basis of the search string, and the results were converted into a plain text format and stored such that they were recognizable to CiteSpace Software. Second, we cleared the data. Synonyms such as behavior and behavioral that convey a meaning were combined; meaningless words such as conjunctions or meaningless names were ignored. Third, the search results were imported into CiteSpace software. Fourth, the research

content was defined for analysis, using the time period and the pruning method, and for the extraction of the data in the software. Fifth, the results were illustrated and analyzed in the form of diagrams and tables and discussion. Cooperation and collaborative network analyses were conducted using CiteSpace (5.7.R2) software.

Co-word analysis is a bibliographic method widely used in scientometric research to describe, interpret, and organize knowledge in a scientific discipline. This method involves co-occurrence analysis of keywords or meaningful terms from selected texts of the subject's literature [57,58] and a key action for data mining and communication analysis to identify areas of research based on most relationships among them. It analyses the dynamics of science, achieved by mapping correlation patterns between a pair of keywords, expressing different topics in a field [57,59,60]. It is assumed that the words used in an article are related and similar in some way. Therefore, co-word analysis was based on the use of statistical techniques such as cluster analysis or factor analysis to generate a set of effective and relevant keywords according to the power of communication between them. The communication power between keywords was obtained by determining the number of common uses of these words in the subject literature. In addition, some techniques, such as drawing the charts, are used to show the relationships between the keywords in each group [57,61]. For example, word A is related to word B, and word B is also closely related to word C. Thus, there is a relationship between words A and C, which creates a new field of research. Similarly, method D is used to analyze system E. For example, if there is a system F that is related to system E, it is possible to analyze this system using method D. The study of the word co-occurrence relationship thus creates new fields of research [62].

When analyzing co-occurrence or cooperation networks, the literature has typically selected the relevant articles based on their titles. Betweenness centrality [63] was calculated by the following Equation (1):

$$BC_i = \sum_{i \neq j \neq k} \frac{n^i_{st}}{g_{st}} \tag{1}$$

In the above Equation (1), $g_{st}$ means the shortest paths between the $s$ and node $t$ ($n_{st}$) and equals the number of paths through node $i$. The importance of network notes is measured by the betweenness centrality indicator (BC). A node $i$ with a high $BC_i$ ($\geq 0,1$) represents a turning point [64].

## 4. Analysis and Discussion

### 4.1. Publication Outputs

Figure 3 shows that the total number of publications (TP) increased from 1 in 1990 to 1804 in October 2020. The total number of journal articles increased from 1 to 1641. During the period studied, we found 18,002 publications on SRT in the form of 15 different document types (articles, book review, news item, biographical item, review, editorial material, book chapter, data paper, early access, meeting abstract, correction, reprint, proceedings paper, letter, note). The body of literature comprised articles (12,354), conference papers (4250), book reviews/book chapters (662), and others. From 1990 to 2000, only a few papers were published on the SRT topic; after 2000, publications on SRT showed a growing trend. The number of publications in 2019 (1977) was about 37 times higher than in 2000 (53). The publications from 2015 to 2020 accounted for 62.08% of the total from 1990 to 2020.
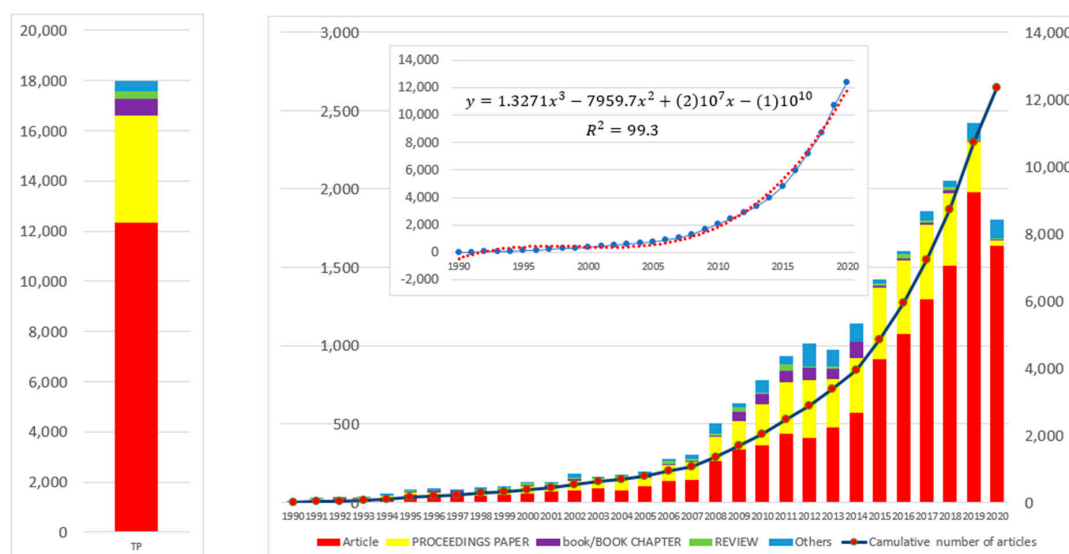
**Figure 3.** Publication output on sustainable and responsible tourism, Web of Science (WoS), 1990–2020 (October). Source: Own analysis, derived from the WoS website and analyzed with Excel.

Figure 3 also shows the trend curve with a high degree of fitness ($R^2$ = 99.3). The trend curve predicts that SRT will continue to rapidly grow in coming years.

A total of 18,002 retrieved publications were published in 1818 journals, and 14,757 articles were published in the 20 most productive publications between 1990 and 2020, corresponding to approximately 26.40% of all publications (Table 1). The leading journals on the topic of responsible and sustainable tourism are *Sustainability*, *Journal of Sustainable Tourism*, *Tourism Management*, *Annals of Tourism Research,* followed by the open access collection of conference proceedings in *Procedia Social and Behavioral Sciences.*

**Table 1.** Top 20 publications on sustainable and responsible tourism, WoS, 1990–2020 (October).

| JOURNALS | TP | % of 18,002 |
|---|---|---|
| Sustainability | 995 | 5.53% |
| Journal of Sustainable Tourism | 800 | 4.44% |
| Tourism Management | 503 | 2.79% |
| Annals of Tourism Research | 258 | 1.43% |
| Procedia Social and Behavioral Sciences | 236 | 1.31% |
| Current Issues in Tourism | 209 | 1.16% |
| Wit Transactions on Ecology and The Environment | 177 | 0.98% |
| Ocean & Coastal Management | 163 | 0.91% |
| Journal of Cleaner Production | 149 | 0.83% |
| Tourism Geographies | 139 | 0.77% |
| Advances in Social Science Education and Humanities Research | 128 | 0.71% |
| IOP Conference Series Earth and Environmental Science | 125 | 0.69% |
| Journal of Travel Research | 123 | 0.68% |
| Worldwide Hospitality and Tourism Themes | 119 | 0.66% |
| Journal of Coastal Research | 117 | 0.65% |
| International Journal of Tourism Research | 110 | 0.61% |
| Tourism Management Perspectives | 108 | 0.60% |
| Asia Pacific Journal of Tourism Research | 105 | 0.58% |
| Pasos Revista De Turismo Y Patrimonio Cultural | 98 | 0.54% |
| International Journal of Contemporary Hospitality Management | 95 | 0.53% |

Note: TP: total publications (number). Source: Own analysis, derived from the WoS website.

### 4.2. International Cooperation

The international cooperation analysis in the field of sustainable and responsible discourse resulted in a 72-node network, which is presented in Figure 4 and Tables 2 and 3.
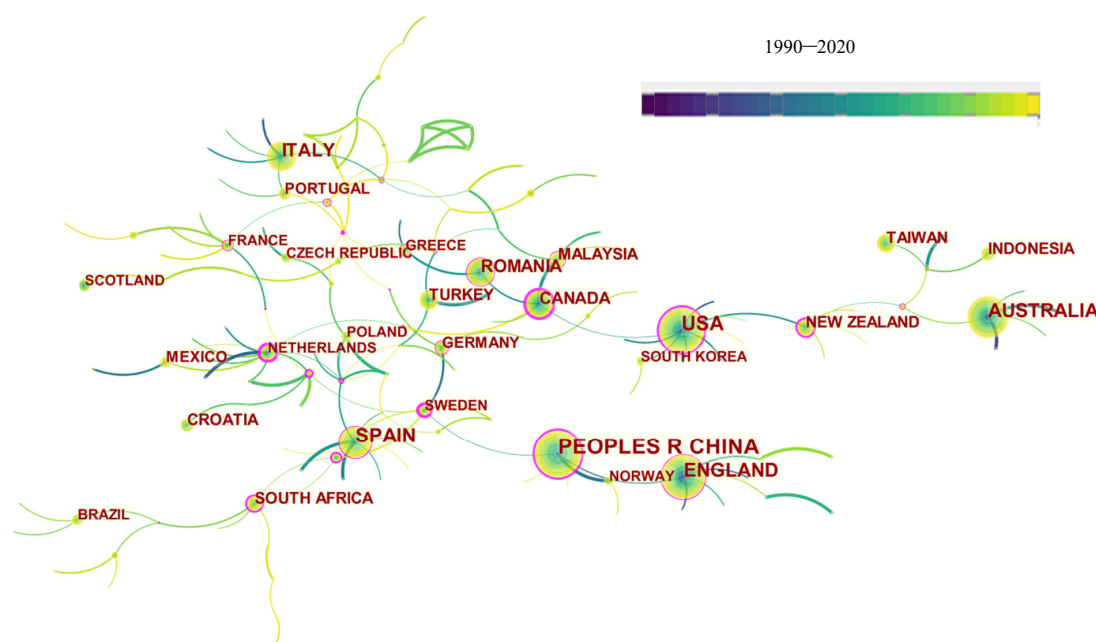
**Figure 4.** An international cooperation network of sustainable and responsible tourism, WoS, 1990–2020 (October). Note: The sizes of the circles are proportional to the total publication count. The purple circles mark the nodes or turning points of the network. The thickness of the line between two nodes represents the cooperation frequency. The colors of the lines between nodes reflect the time of the first cooperation between the two countries, as specified by the colored line in the above right corner. Source: Own analysis, derived from CiteSpace.

**Table 2.** Top 10 countries with sustainable and responsible tourism publications, WoS, 1990–2020 (October).

| COUNTRIES | TP | BC | YEAR | COUNTRIES | TP | BC | YEAR |
|---|---|---|---|---|---|---|---|
| China | 496 | 0.21 | 2000 | Italy | 204 | 0.06 | 1996 |
| USA | 336 | 0.36 | 1992 | Romania | 162 | 0.11 | 2006 |
| Spain | 305 | 0.12 | 2002 | Canada | 123 | 0.43 | 1994 |
| Australia | 289 | 0.07 | 1996 | Taiwan | 99 | 0.00 | 2006 |
| England | 287 | 0.13 | 1993 | Malaysia | 95 | 0.11 | 2007 |

Note: TP: total publications (number). BC: betweenness centrality. YEAR: published year of the first publications in the country. Source: Own analysis, derived from CiteSpace.

**Table 3.** Turning points in sustainable and responsible tourism, WoS, 1990–2020 (October).

| COUNTRIES | BC | TP | COUNTRIES | BC | TP |
|---|---|---|---|---|---|
| Sweden | 0.48 | 55 | Vietnam | 0.16 | 22 |
| Canada | 0.43 | 123 | France | 0.14 | 54 |
| Netherland | 0.43 | 61 | Switzerland | 0.14 | 29 |
| Denmark | 0.39 | 23 | Latvia | 0.14 | 7 |
| USA | 0.36 | 336 | England | 0.13 | 287 |
| Estonia | 0.33 | 7 | Greece | 0.12 | 53 |
| Ireland | 0.25 | 17 | Spain | 0.12 | 305 |
| Pakistan | 0.25 | 7 | Belgium | 0.12 | 19 |
| New Zealand | 0.22 | 91 | Romania | 0.11 | 162 |
| Finland | 0.22 | 38 | Malaysia | 0.11 | 95 |
| South Africa | 0.21 | 79 | Iraq | 0.11 | 3 |
| PR China | 0.21 | 496 | Slovakia | 0.10 | 22 |
| Austria | 0.19 | 34 | Mauritius | 0.10 | 5 |
| Germany | 0.17 | 71 | | | |

Note: BC: betweenness centrality. TP: total publications (number). Source: Own analysis, derived from CiteSpace.

China, the USA, Spain, Australia, and the UK, as indicated by the largest circles, are the countries with authors with the largest number of publications on SRT. Among the most productive countries, the earliest research on SRT started in 1992 in USA, followed by UK (1993) and Canada (1994). China joined the production eight years later in 2000, and Malaysia followed in 2017 (Table 2). Academics in China, Canada, USA, UK, and Spain have the largest number of publications, presented by the size of the country circle in Figure 2. Academics from the first three largest publication countries cooperate closely in international nodes, as demonstrated by the purple circles in Figure 3 and the BC indicator values in Table 2, and play an important role in the SRT discourse. Researchers in Sweden, the Netherlands, Denmark, and Estonia represent a small portion of the research on SRT but are highly associated with other countries and play an important role in the international cooperation network (Table 3). The top ten countries that contributed most to the literature in terms of quantity or sustainable and responsible research publications, or in terms of international cooperation through turning points (BC ≥ 0.1), are presented in Tables 2 and 3.

### 4.3. Subject Category Co-Occurrence Analysis

To address the disciplinary aspects of SRT discourse, we conducted subject category co-occurrence analysis. After simplification by pathfinder network scaling, a 78-node network of category coincidence was obtained from 1990 to 2020 (Figure 5).
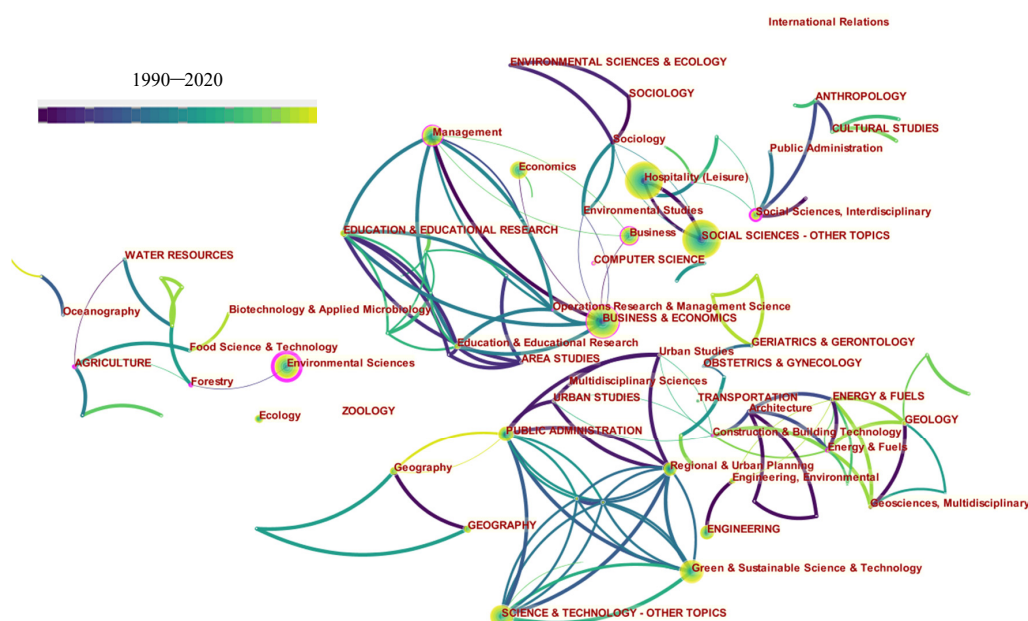


**Figure 5.** A 78-node co-occurrence network by subject categories for sustainable and responsible tourism publications, WoS, 1990–2020 (October). Note: The sizes of the nodes are proportional to the frequency of the subject category co-occurrence. The thicknesses of the lines between two nodes mark the strength of the linkages. The colors of the lines between nodes reflect the time of the first co-occurrence between the two categories, as per the colored line in the upper right corner of the figure. The purple circles mark the nodes or turning points of the network. Source: Own analysis, derived from CiteSpace.

Figure 5 indicates that research on SRT is diverse and covers a wide range of interests. CiteSpace identified nine subject category clusters. The largest are "Environmental Science and Ecology," "Computer Science," "Engineering, Industrial,", "Social Science, Interdisciplinary," and "Agriculture". These clusters are turning points, marked with purple outer circles. For example, in the network, the most frequent topic category (Table 4) is "Social Sciences-Other Topics," the largest node with 1806 publications, followed by "Hospitality, Leisure, Sport and & Tourism" (1667), "Environmental Sciences & Ecology" (1234), and "Environmental Studies" (848). We expected these categories to contain the majority of

articles on SRT. Table 4 shows the most frequently occurring thematic categories from 1990 to October 2020.

**Table 4.** Top 10 subject categories in the co-occurrence network on sustainable and responsible tourism, WoS, 1990–2020 (October).

| WoS CATEGORIES | TP | BC | YEAR |
|---|---|---|---|
| Social Sciences-Other Topics | 1806 | 0.03 | 1990 |
| Hospitality, Leisure, Sport and & Tourism | 1667 | 0.00 | 1990 |
| Environmental Sciences & Ecology | 1234 | 0.00 | 1990 |
| Environmental Studies | 848 | 0.03 | 1991 |
| Science & Technology-Other Topics | 814 | 0.01 | 1995 |
| Business & Economics | 810 | 0.15 | 1990 |
| Green & Sustainable Science & Technology | 775 | 0.00 | 1995 |
| Environmental Sciences | 721 | 0.52 | 1990 |
| Management | 450 | 0.11 | 1990 |
| Business | 301 | 0.18 | 1900 |

Note: TP: total publications (number). BC: betweenness centrality. YEAR: published year of the first publications in the subject category. Source: Own analysis, derived from CiteSpace.

Table 5 shows that the subject category "Environmental Science" had the highest centrality (0.52), followed by "Computer Science Interdisciplinary Applications" (0.52), "Engineering Industrial"(0.34), "Social Sciences Interdisciplinary" (0.31), and "Architecture" (0.29). These are turning points that link the studies conducted in different subjects and can significantly impact the multidisciplinarity of SRT research.

**Table 5.** Turning points of the co-occurrence network on sustainable and responsible tourism by subject category, WoS, 1990–2020 (October).

| WoS SUBJECT CATEGORIES | BC | TP | WoS SUBJECT CATEGORIES | BC | TP |
|---|---|---|---|---|---|
| Environmental Sciences | 0.52 | 721 | Business | 0.18 | 301 |
| Computer Science Interdisciplinary Applications | 0.52 | 37 | Energy Fuels | 0.17 | 54 |
| Engineering Industrial | 0.34 | 9 | Physics | 0.17 | 8 |
| Social Sciences Interdisciplinary | 0.31 | 143 | Computer Science Cybernetics | 0.16 | 14 |
| Architecture | 0.29 | 44 | Business and Economics | 0.15 | 810 |
| Psychology | 0.24 | 13 | Construction Building Technology | 0.15 | 21 |
| Computer Science Information Systems | 0.23 | 34 | Imaging Science & Photographic Technology | 0.15 | 4 |
| Operations Research Management Science | 0.22 | 35 | Operations Research Management Science | 0.15 | 35 |
| Forestry | 0.22 | 25 | Computer Science | 0.13 | 91 |
| Engineering Electrical Electronic | 0.22 | 22 | Mathematics Applied | 0.12 | 7 |
| Construction Building Technology | 0.20 | 21 | Management | 0.11 | 450 |
| Computer Science Artificial Intelligence | 0.20 | 17 | Computer Science, Theory and Methods | 0.10 | 18 |

Note: TP: total publications (number). BC: betweenness centrality. Source: Own analysis, derived from CiteSpace.

The results showed that some categories have low relations to SRT research. For example, publications in "Computer Science Interdisciplinary Applications" have a strong connection point, although there are only 37 articles on SRT. Thus, when there is a higher BC, publications draw from different thematic categories. However, SRT discussions in areas such as "Hospitality, Leisure, Sport and Tourism," with 1667 articles, could not relate to almost any other thematic category (BC = 0.00, Table 4). The same was observed for publications in "Environmental Science & Ecology".

Table 6 shows the citation bursts of the subject category co-occurrence. Burst detection in the subject categories allows us to identify the rapidly growing topics in the studied research area in a certain period of time.

**Table 6.** Top 30 subject categories with the strongest citation bursts in the co-occurrence network on sustainable and responsible tourism, WoS, 1990–2020 (October).

| WoS CATEGORIES | YEAR | STREN-GTH | BEGIN | END | YEARS 1990–2020 BY RED AND BLUE LINE |
|---|---|---|---|---|---|
| Sociology | 1990 | 43.07 | 1990 | 2009 | |
| Geography | 1990 | 13.17 | 1991 | 2001 | |
| Ecology | 1990 | 9.64 | 1995 | 2008 | |
| Management | 1990 | 6.16 | 1995 | 2001 | |
| Public Administration | 1990 | 17.99 | 1996 | 2009 | |
| Regional & Urban Planning | 1990 | 16.77 | 1996 | 2009 | |
| Environmental Studies | 1990 | 8.82 | 1996 | 2004 | |
| Biodiversity & Conservation | 1990 | 4.37 | 1998 | 2002 | |
| Water Resources | 1990 | 7.74 | 2001 | 2006 | |
| Engineering, Environmental | 1990 | 6.65 | 2001 | 2005 | |
| Transportation | 1990 | 14.98 | 2002 | 2006 | |
| Engineering | 1990 | 7.37 | 2003 | 2007 | |
| Operations Research & Management Science | 1990 | 5.84 | 2003 | 2010 | |
| Urban Studies | 1990 | 5.08 | 2003 | 2007 | |
| Computer Science | 1990 | 4.33 | 2003 | 2006 | |
| Economics | 1990 | 10.72 | 2007 | 2008 | |
| Business | 1990 | 20.48 | 2008 | 2010 | |
| Geology | 1990 | 5.2 | 2009 | 2013 | |
| Geosciences, Multidisciplinary | 1990 | 4.73 | 2009 | 2013 | |
| Energy & Fuels | 1990 | 4.53 | 2011 | 2015 | |
| Materials Science | 1990 | 6.67 | 2012 | 2014 | |
| Materials Science, Multidisciplinary | 1990 | 6.44 | 2012 | 2014 | |
| Social Sciences, Interdisciplinary | 1990 | 12.93 | 2015 | 2017 | |
| Education & Educational Research | 1990 | 5.49 | 2015 | 2018 | |
| Multidisciplinary Sciences | 1990 | 3.47 | 2015 | 2017 | |
| Arts & Humanities—Other Topics | 1990 | 5.67 | 2017 | 2020 | |
| Humanities, Multidisciplinary | 1990 | 5.54 | 2017 | 2020 | |
| Area Studies | 1990 | 5.08 | 2017 | 2020 | |
| Science & Technology | 1990 | 41.22 | 2018 | 2020 | |

Note: YEAR: published year. STRENGTH: citation burst strength. BEGIN: starting date of the bursts. END: finishing date of the bursts. THIN BLUE LINES: from 1990 to 2020 (October). THICK RED LINES: the start and end time of the period of the burst. Source: Own analysis, derived from CiteSpace.

The strongest citation bursts refer to publications in the disciplinary fields of sociology, geography, ecology, and management. The sociological perspective research had the longest burst period between 1990 and 2009, with the highest burst strength of 43.07. Sociology was an active field of SRT research during this period. Soon, geographers followed, and a few years later, sustainable and responsible research became popular in ecology and urban planning. The recent categories of study for the corresponding research moved to the field of humanities and area studies. Most recently, SRT has been addressed by "Science and technology".

*4.4. Co-Cited Analysis*

Co-citation analysis involves tracking pairs of papers cited together in source articles. When the same pairs of articles are co-cited by many authors, research clusters are formed. The co-cited articles in these clusters usually have a common topic. Combined with single-link clustering and multidimensional scaling techniques, co-citation analysis maps the structure of specialized research areas, in addition to the science as a whole [65].

Figure 6 shows a co-citation analysis map. The most important documents are shown in this map. Warm colors indicate that the citation is recent, and cool colors indicate older citations.
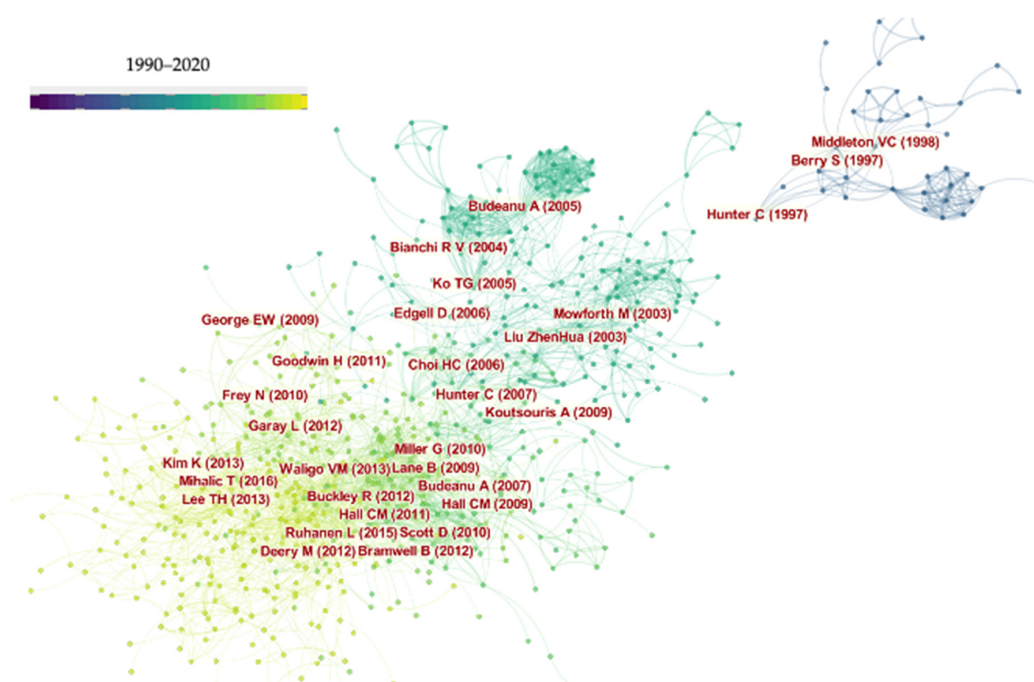
**Figure 6.** A 1279-node network of document co-citation for sustainable and responsible tourism, WoS, 1990–2020 (October). Note: Colors indicate the age of a cluster, as per the colored line in the upper left corner of the figure. Source: Own analysis, derived from CiteSpace.

The stronger publications by burst are Saarinen [66], Choi and Sirakaya [67], and Liu [68], who have addressed sustainability and its indicators (Table 7). The burst was between 2006 and 2014. The strongest authors and publications that are still highly co-cited (in the period up to 2020) are Bramwell et al. [69], Torres-Delgado et al. [70], and Mihalic [9], who have investigated sustainable tourism, its measurement, and SRT as a joint discourse.

**Table 7.** Top 20 references with the strongest citation bursts in the co-occurrence network for sustainable and responsible tourism, WoS, 1990–2020 (October).

| REFERENCES | YEAR | STREN-GTH | BEGIN | END | 1990–2020 |
|---|---|---|---|---|---|
| Saarinen J. 2006. Traditions of sustainability in tourism studies. *Annals Tourism Research* | 2006 | 20.86 | 2009 | 2014 | |
| Choi, H.C., Sirakaya, E., 2006. Sustainability indicators for managing community tourism. *Tourism. Management* | 2006 | 20.84 | 2008 | 2014 | |
| Liu, Z., 2003. Sustainable tourism development: A critique. *Journal of sustainable tourism*, | 2003 | 13.79 | 2006 | 2011 | |
| Mowforth, M. and Munt, I. 2003. Tourism and Sustainability. | 2003 | 12.76 | 2007 | 2010 | |
| Weaver, D.B., 2006. Sustainable tourism: Theory and practice. Routledge. | 2006 | 11.3 | 2007 | 2014 | |
| Miller, G., 2001. The development of indicators for sustainable tourism. *Tourism Management* | 2001 | 10.74 | 2004 | 2009 | |
| Bramwell, B., et al., 2017. Twenty-five years of sustainable tourism. *Journal of Sustainable Tourism* | 2017 | 10.13 | 2018 | 2020 | |
| Weaver, D.B., 2012. Organic, incremental and induced paths to sustainable mass tourism convergence. *Tourism Management* | 2012 | 9.85 | 2014 | 2016 | |
| Torres-Delgado, A. et al., 2014. Measuring sustainable tourism at the municipal level. *Annals of Tourism Research* | 2014 | 9.83 | 2018 | 2020 | |

**Table 7.** *Cont.*

| REFERENCES | YEAR | STREN-GTH | BEGIN | END | 1990–2020 |
|---|---|---|---|---|---|
| Mihalic, T., 2016. Sustainable-responsible tourism discourse–Towards 'responsustable' tourism. *Journal of Cleaner Production* | 2016 | 9.58 | 2017 | 2020 | |
| Frey, N. and George, R., 2010. Responsible tourism management. *Tourism Management*. | 2010 | 9.55 | 2016 | 2018 | |
| Sharpley, R., 2009. Tourism development and the environment: Beyond sustainability?. Earthscan. | 2009 | 9.48 | 2012 | 2015 | |
| Miller, G., et al., 2010. Public understanding of sustainable tourism. *Annals of Tourism Research.* | 2010 | 9.19 | 2012 | 2018 | |
| Torres-Delgado, A. and Saarinen, J., 2014. Using indicators to assess sustainable tourism development. *Tourism Geographies* | 2014 | 8.96 | 2018 | 2020 | |
| Ko, T.G., 2005. Development of a tourism sustainability assessment procedure. *Tourism Management*, | 2005 | 8.68 | 2008 | 2013 | |
| Lee, T.H. and Hsieh, H.P., 2016. Indicators of sustainable tourism: A case study from a Taiwan's wetland. *Ecological Indicators* | 2016 | 8.67 | 2018 | 2020 | |
| World Tourism Organization, 2004. Indicators of Sustainable Development for Tourism Destinations. | 2004 | 8.64 | 2008 | 2012 | |
| Lu, J. and Nepal, S.K., 2009. Sustainable tourism research. *Journal of Sustainable Tourism.* | 2009 | 8.45 | 2012 | 2016 | |
| Miller, G. and Twining-Ward, L., 2005. Monitoring for a sustainable tourism transition | 2005 | 8.12 | 2008 | 2011 | |
| Mowforth, M. and Munt, I., 2009. Tourism and sustainability | 2009 | 7.96 | 2011 | 2016 | |

Note: YEAR: published year STRENGTH: citation burst strength. BEGIN: starting date of the bursts. END: finishing date of the bursts. THIN BLUE LINES: from 1990 to 2020 (October). THICK RED LINES: start and end time of the period of the burst. Source: Own analysis, derived from CiteSpace.

The highest cited publications or authors are Buckley [23] on sustainable tourism research and reality, Hall [71] on sustainable tourism governance, and Waligo et al. [72] on implementing sustainable tourism. The top three, according to the BC indicator, are Liu [68] on the critiques of sustainable tourism development, Choi and Sirakaya [67] on sustainability indicators, and Garrod and Fyall [73] on the rhetoric of sustainable tourism. Tables 7 and 8 also show that the top three publications by the number of citations, co-citations, and BC were published in the three main tourism-specialized journals, *Annals of Tourism Research* (2 items), *Journal of Sustainable Tourism* (3 items), and *Tourism Management* (4 of the 9 items), indicating that SRT discourse is discussed in tourism social science publications and research circles.

**Table 8.** Top-ranked in the sustainable and responsible tourism knowledge mapping tree, WoS, 1990–2020 (October).

| TP | BC | STRENGTH | REFERENCES |
|---|---|---|---|
| 159 | | | Buckley, R., 2012. Sustainable tourism: Research and reality. Annals of Tourism Research |
| 75 | | | Hall, C.M., 2011. Policy learning and policy failure in sustainable tourism governance. Journal of Sustainable Tourism |
| 70 | | | Waligo, V.M. et al., 2013. Implementing sustainable tourism. Tourism Management |
| 58 | | | Lee, T.H., 2013. Influence analysis of community resident support for sustainable tourism development. Tourism Management. |
| 56 | | | Miller, G., 2001. The development of indicators for sustainable tourism. Tourism Management |
| 54 | | | Ruhanen, L., Weiler, B., Moyle, B.D. and McLennan, C.L.J., 2015. Trends and patterns in sustainable tourism research. Journal of Sustainable Tourism, |
| 48 | | | Bramwell, B., et al., 2017. Twenty-five years of sustainable tourism. Journal of Sustainable Tourism |

**Table 8.** *Cont.*

| TP | BC | STRENGTH | REFERENCES |
|---|---|---|---|
| 45 | | | Choi, H.C. and Sirakaya, E., 2006. Sustainability indicators for managing community tourism. Tourism Management |
| 45 | | | Mihalic, T., 2016. Sustainable-responsible tourism discourse–Towards 'responsustable' tourism. Journal of Cleaner Production |
| 43 | | | Saarinen J. 2006. Traditions of sustainability in tourism studies. Annals of Tourism Research |
| | 0.07 | | Liu, Z., 2003. Sustainable tourism development: A critique. Journal of sustainable tourism, |
| | 0.06 | | Choi, H.C. and Sirakaya, E., 2006. Sustainability indicators for managing community tourism. Tourism Management |
| | 0.05 | | Garrod, B. and Fyall, A., 1998. Beyond the rhetoric of sustainable tourism?. Tourism Management. |
| | 0.04 | | Dolnicar, S. and Leisch, F., 2008. Selective marketing for environmentally sustainable tourism. Tourism Management |
| | 0.04 | | Barr, S., et al., 2010. 'A holiday is a holiday': practicing sustainability, home and away. Journal of Transport Geography. |
| | 0.04 | | Miller, G., 2001. The development of indicators for sustainable tourism. Tourism management |
| | 0.04 | | Boley, B.B., et al., 2014. Empowerment and resident attitudes toward tourism. Annals of Tourism Research. |
| | 0.04 | | Goodwin, H. and Francis, J., 2003. Ethical and responsible tourism. Journal of Vacation Marketing. |
| | 0.03 | | Saarinen J. 2006. Traditions of sustainability in tourism studies. Annals of Tourism Research |
| | 0.02 | | Ruhanen, L., Weiler, B., Moyle, B.D. and McLennan, C.L.J., 2015. Trends and patterns in sustainable tourism research. Journal of Sustainable Tourism, |
| | | 20.86 | Saarinen J. 2006. Traditions of sustainability in tourism studies. Annals of Tourism Research |
| | | 20.84 | Choi, H.C., Sirakaya, E., 2006. Sustainability indicators for managing community tourism. Tourism management |
| | | 13.79 | Liu, Z., 2003. Sustainable tourism development: A critique. Journal of Sustainable Tourism, |
| | | 12.76 | Mowforth, M. and Munt, I. 2003. Tourism and Sustainability. |
| | | 11.3 | Weaver, D.B., 2006. Sustainable tourism: Theory and practice. Routledge. |
| | | 10.74 | Miller, G., 2001. The development of indicators for sustainable tourism. Tourism Management |
| | | 10.13 | Bramwell, B., et al., 2017. Twenty-five years of sustainable tourism. Journal of Sustainable Tourism |
| | | 9.85 | Weaver, D.B., 2012. Organic, incremental and induced paths to sustainable mass tourism convergence. Tourism Management |
| | | 9.83 | Torres-Delgado, A. et al., 2014. Measuring sustainable tourism at the municipal level. Annals of Tourism Research |
| | | 9.58 | Mihalic, T., 2016. Sustainable-responsible tourism discourse–Towards 'responsustable' tourism. Journal of Cleaner Production |

Note: TP: total publications (number). BC: betweenness centrality. STRENGTH: citation burst strength. Source: Own analysis, derived from CiteSpace.

    The modularity (Q) and the mean silhouette (S) measure the quality of the result of the co-cited node cluster. Larger Q values indicate better clusters of nodes, and Q > 0.3 indicates that the co-cited network's community structure is significant. The higher the value S, the greater the homogeneity of the cluster nodes. A value of S greater than 0.7 indicates high cluster credibility. In this study, Q and S were 0.832 and 0.904, respectively, indicating high reliability of the results. Detailed information about these co-citation clusters is presented in Table 9.

    In the co-cited analysis, representatively cited works usually represent the intellectual foundations, whereas actively citing works reveal the research frontiers [74–76]. The three most actively cited and citing documents and authors in the top five clusters are listed in Table 10 [76].

**Table 9.** Detailed information of document co-citation clusters, WoS, 1990–2020 (October).

| CLUSTER ID/MEAN | SIZE | MODULA-RITY (Q) | SILHOUETTE (S) | MEAN YEAR | *LLR* |
|---|---|---|---|---|---|
| 0 | 138 | 0.679 | 0.830 | 2015 | Sustainable Development Goals |
| 1 | 123 | 0.688 | 0.793 | 2010 | Sustainable Tourism Research |
| 2 | 116 | 0.693 | 0.848 | 2003 | Key Indicator |
| 3 | 95 | 0.795 | 0.823 | 2011 | Corporate Social Responsibility |
| 4 | 85 | 0.864 | 0.881 | 2013 | Residents Perceptions |
| 5 | 52 | 0.876 | 0.983 | 2004 | Responsible Tourism Management |
| 6 | 51 | 0.890 | 0.935 | 2009 | Sustainable Tourism Mobility |
| 7 | 39 | 0.925 | 0.901 | 2007 | Sustainable Mass Tourism Convergence |
| 8 | 39 | 0.953 | 0.997 | 1995 | Reginal Perspective |
| 12 | 22 | 0.959 | 0.972 | 2008 | Political Economy Approach |
| Mean | | 0.832 | 0.904 | | |

Note: SIZE: the number of studies in a cluster. Q: measure the quality of the network community structure S: measure the quality co-cited node cluster. MEAN YEAR: denotes the median year of all references in the cluster. LLR: log-likelihood ratio. Source: Own analysis, derived from CiteSpace.

**Table 10.** The three most actively cited/citing publications in the five largest co-citation clusters for sustainable and responsible tourism, WoS, 1990–2020 (October).

| CLUSTER | CITED PUBLICATIONS | CITING PUBLICATIONS |
|---|---|---|
| No. 0 | Buckley, R. (2012); Hall, C.M. (2013); Farmaki, A. (2015) | Buckley R. (2012); Hall C.M. (2011); Waligo V.M. et al., (2013) |
| No. 1 | Passafaro, P. (2020); Confente, I. et al., (2020); Shen, Sh. (2020) | Miller G. (2010); Juvan E. et al., (2014); Chiu Y.T.H. et al. (2014) |
| No. 2 | Bramwell, B. et al., (2011); Bramwell, B. et al., (2017); Hunter, C. et al., (2007) | Choi H.C. et al., (2006); Mowforth M. et al., (2006); Weaver D.B. (2006) |
| No. 3 | Rasoolimanesh, S.M. et al., (2020); Alfaro Navarro, J.L. et al., (2020); Alonso-Almeida, M. et al., (2016) | Castellani V. et al., (2010); Lozano-Oyola M. et al., (2010); Tanguay G.A. et al., (2013) |
| No. 4 | Lee, T.H. (2013); Ballantyne, R. et al., (2011); Khalid, Sh. (2019) | Lee T.H. (2013); Kim K. et al., (2013); Deery M. et al., (2012) |

Source: Own analysis, derived from CiteSpace.

As Figure 7 and Table 9 indicate, there were remarkable differences in the size of the clusters. The largest cluster (no. 0) had 138 members, almost 7.33% of the nodes of the co-citation network. Conversely, the smallest cluster (cluster no. 12) contained 13 nodes, 2.37% of the co-citation network. The three largest clusters of the Research Network on SRT are clusters entitled "Sustainable development goal", "Sustainable tourism research", and "Key Indicators". The authors addressed the challenges of sustainable tourism and its implementation difficulties and measurements that led thinking on tourism responsibility for implementation of sustainability. The fourth largest cluster is "Corporate Social Responsibility", addressing the responsibility of tourism in the tourism industry. The fifth largest cluster refers to "Residents' perceptions", which has been intensively studied in the tourism literature and brought the social dimension and residents' rights to the attention of tourism sustainability. Responsible tourism from the management perspective is directly addressed by the sixth cluster.
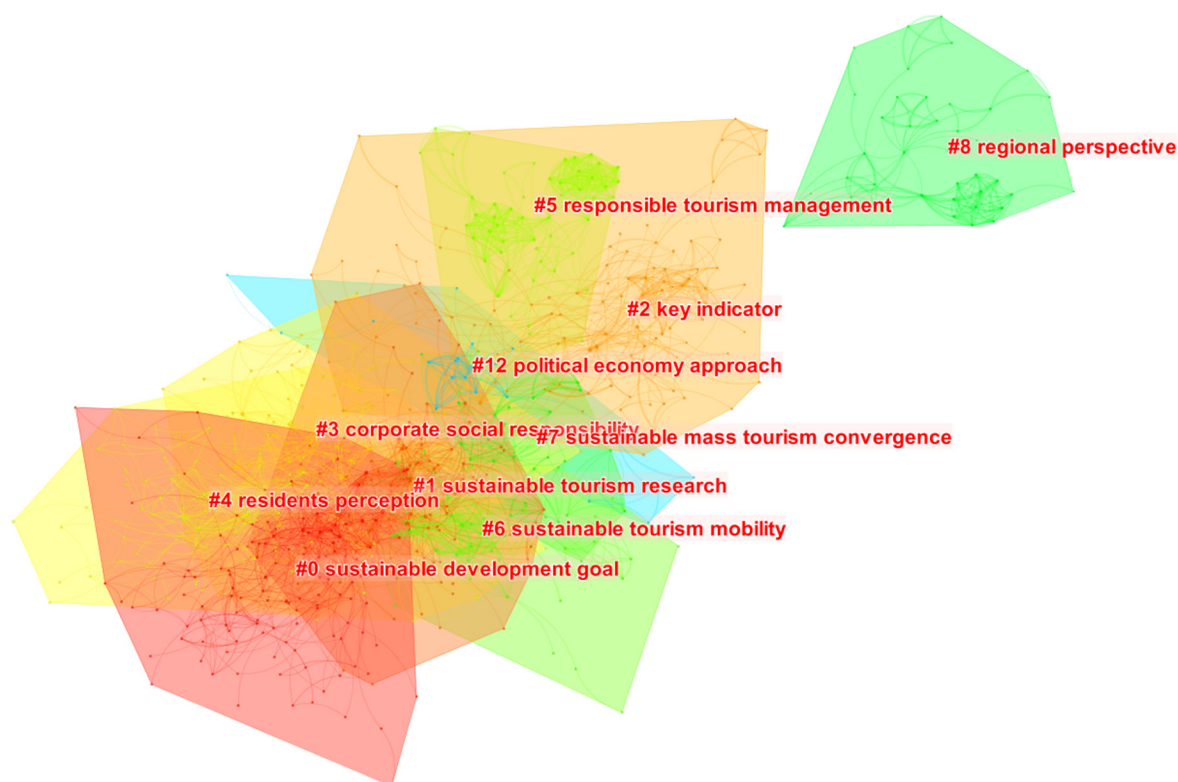
**Figure 7.** A 1279-node, 10-cluster network of sustainable and responsible tourism document co-citation of clusters, WoS, 1990–2020 (October). Note: The colors represent different clusters. Source: Own analysis, derived from CiteSpace.

The largest cluster (no. 0) had 138 members and a silhouette value of 0.83. The three most actively cited publications reported on the importance of sustainable tourism and its impacts. Buckley [23] examined the social and environmental impacts, responses, and indicators for tourism. He concluded that future research priorities include the role of tourism in the expansion of protected areas, the improvement of environmental accounting techniques, and the impact of individual responsibility in managing climate change. Hall [18] expanded sustainability thinking with the responsible tourism philosophy and identified three different groups of approaches to understanding behavior in relation to sustainable tourism mobility and consumption: utilitarian, social/psychological, and systems of provision/institutions. From the perspective of socio-political sustainability implementation triggers, Farmaki [77] suggested that effective governance was identified as one of the most important factors in the implementation of sustainable tourism and suggested that further research should reflect the horizontal relationships between regional, national, and global networks.

To determine the development of studies on SRT during the period under study, a knowledge mapping tree of SRT with the timeline view was presented in CiteSpace (Figure 8). Each cluster is shown from left to right and represents its temporal distribution [71]. The clusters are arranged vertically from top to bottom in descending order of size.
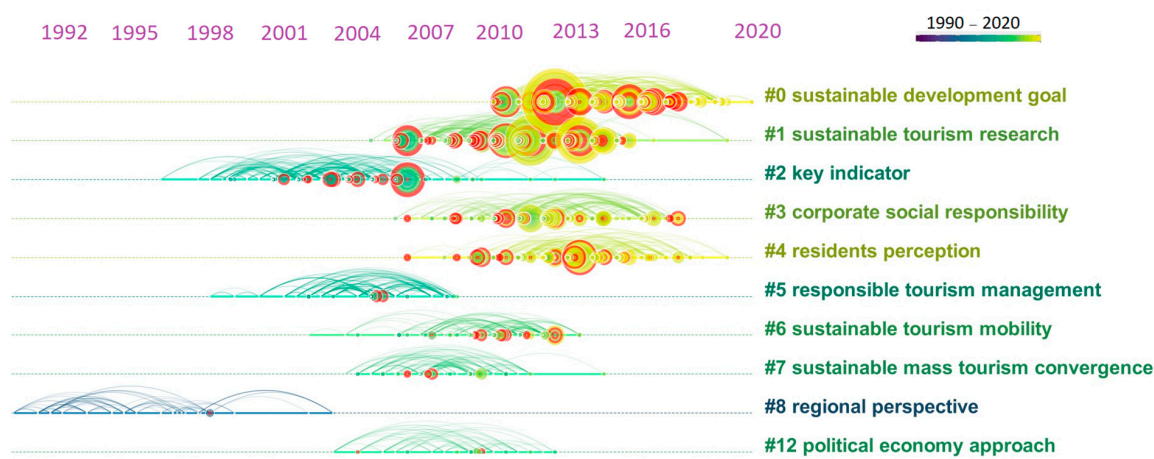
**Figure 8.** Timeline visualization of the 10 clusters of sustainable and responsible tourism document co-citations, WoS, 1990–2020 (October). Note: The sizes of the nodes are proportional to the frequency of the of the co-citation of the publications. The different colors of nodes represent different years, with early years to recent years (1990–2020) as per the colored timeline in the upper right corner of the figure. The colors of the cluster labels correspond to the average year of the cluster. Warm colors indicate that the clusters are newer, and cool colors indicate older clusters. Source: Own analysis, derived from CiteSpace.

The research boundaries do not always share the same topic with their intellectual foundations. In most cases, the research frontiers are the developments or extensions of the intellectual foundations. In summary, the largest clusters covered the most popular research areas of SRT (Figure 8).

Currently active clusters (nos. 0, 1, 3, and 4) are included in the group of new clusters representing the research front. In the knowledge mapping tree, the large nodes with red rings or purple circles have an important value for SRT research. These markers usually represent high citation rates, citation bursts, or turning points of the co-citation network. These studies occupy an important position on the topic of SRT and must attract the attention of the readers. Therefore, the knowledge tree provides researchers with a quick understanding of the general situation of a particular research area. For example, when gathering information on the "convergence of sustainable mass tourism", Buckley is the most cited [15], Ninerola et al. [45] is the most recent important research, and Saarinen [61] had a ground-breaking research item in this area.

The research cluster in connection with Responsible Tourism Management started in the early 2000s and was an active cluster until 2007, and Responsible Behaviour has been established in this area. In addition, between 2004 and 2018, research clusters related to CSR were formed separately from Responsible Tourism. Sustainable Tourism has been an active research cluster since 2000, but subthemes have recently emerged as separate, new clusters (key indicators and sustainable tourism mobility). In connection with the theme of the UN SDGs 2030, a new cluster of research has recently emerged.

This survey did not provide evidence for the merger of sustainable and responsible tourism into a single "responsustainable" discourse, as shown in Figure 1 in Section 2.4 of this paper. This could be because the merger as such has only recently been proposed and the research discussion in this area has not been sufficient to form a separate research cluster. It is possible that the high number of cited publications and the recent citation strength for the so-called "responsustainable" (SRT) model (Table 8) suggest that this could happen in the future.

## 5. Conclusions

This paper provided a detailed account of developments in the areas of sustainable and responsible tourism. It charted the considerable growth in this sector over a period of 30 years and highlighted some of the major themes and key contributions that have

occurred in this period. The history of research in this area is marked by both continuity and change. Making tourism sustainable remains a constant theme in the literature and implementation, which, at least in part, has led to the emergence of responsible tourism as a separate field of tourism research and philosophy that complements the discourse on sustainable tourism. This has been demonstrated in our research cluster analyses, as different clusters on sustainable or responsible tourism have formed.

The interrelationships between the various elements of SRT are also reflected in the substantial international connections that characterize the work in this area, and in the interdisciplinary and multidisciplinary nature of the research. Although this research has contributed to the growth in both the number of academic publications and the number of publications by different agencies and institutions, it has not more closely connected tourism to the seemingly elusive goal of sustainability at a destination or on a global scale, although numerous case studies have highlighted positive developments at the business and destination level. However, responsible tourism substantially contributes to this more applied area, in contrast to the broader system-wide approach of many publications on sustainable tourism. Nevertheless, responsible tourism is, in most cases, closely linked to the conceptual model of sustainable tourism, and de facto addresses both SRT and their different dimensions. The combined model for SRT, which combines the conceptual dimensions of sustainability with triggers for implementation, was first proposed in 2016 [5] and may need more time to fully penetrate the academic and practical discourse on sustainability in tourism in all of its dimensions.

Although it is too early to observe the future directions of research on SRT, it is clear that it will enhance the effectiveness of the implementation of sustainable tourism development and provide an improved approach against unsustainable tourism development caused by internal or external forces such as neoliberalism, climate change, and pandemics or other crises and disasters. Given that climate change is a major challenge for sustainable tourism development and research, together with emerging areas such as biodiversity loss and social justice, exploring if there is a learning transfer regarding socio-political ignorance and its impact on the unsustainability of the tourism industry would be worthwhile. Although the analyses could not confirm a paradigm shift in sustainable tourism towards an expanded, integrated paradigm of SRT, it will remain an important area of tourism discourse for the foreseeable future. The authors believe that a combination of sustainable and responsible tourism by concept and triggers would significantly increase the level of knowledge and quality of tourism research and implementation. In the context of the sustainable tourism paradigm, which is still in the process of encompassing all dimensions of sustainability in tourism, SRT tourism that clearly combines the full range of sustainability values and responsibility triggers (to make tourism sustainable) would certainly enhance (expand) the sustainable tourism paradigm and thus increase the effectiveness of sustainable tourism implementation.

This study has two main limitations: the survey excluded two months of 2020, and only WoS data were used to collect the publications on responsible and sustainable tourism. Both limitations can be overcome in future analyses, which could also cover a wider range of years of publications to better capture the developments of the responsible and sustainable tourism literature, including a potential paradigm shift in which they have merged.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** Data were extracted from the Web of Science (WoS), following the predefined research string and time period, as presented in Methodology section of this paper.

**Conflicts of Interest:** The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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