

Sustainable Tourism and Climate Change: a Bibliometric Analysis of Environmental Impacts (2014-2024)

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Abstract—This article conducts a bibliometric analysis of research on sustainable tourism (ST) and its environmental and climate impacts from 2014 to 2024, using data from the Scopus database. The study explores trends, key contributors, and the relationship between sustainable tourism and environmental challenges. Two main themes are examined: 1) the environmental and climate impacts on sustainable tourism, which dominates due to the sector's vulnerability to climate change, and 2) the impacts of sustainable tourism on the environment, a growing area aligned with the Sustainable Development Goals (SDGs) and the Paris Agreement. The analysis identified 244 publications, with research output surging since 2018, reflecting the urgency of climate change. Studies on climate change impacts dominate, focusing on adaptation strategies, biodiversity loss, and resource depletion. Research on sustainable tourism's environmental impacts, though less prominent, has grown, emphasizing waste reduction, energy efficiency, and greenhouse gas mitigation. China leads with 36 publications, followed by the UK, Italy, and Malaysia. The UK and Sweden produce highly impactful research, while the US leads in volume but with lower impact per paper. Raihan, A. leads with four articles, followed by several authors with two each. Common themes include responsible tourism, ecosystem protection, and the need for effective policies. Citations have risen sharply, with 1,332 citations for 38 papers in 2024, indicating growing influence. The UK and Sweden have the highest citation-to-document ratios. "Climate change" and "tourism" are the most frequent keywords, showing strong interconnections. Sustainable development and environmental impact are also significant but less represented, indicating gaps in broader sustainability research. Sustainable tourism practices are essential to mitigate climate change and environmental degradation. Policymakers and industry stakeholders should prioritize sustainable practices and adaptation strategies.

Increased international collaboration, interdisciplinary research, and funding are needed to address research gaps. Future research should focus on local climate impacts, social sustainability, and integrating sustainable development goals into tourism practices. Overall, the study highlights the critical role of sustainable tourism in addressing global environmental challenges and calls for integrated approaches to ensure the sector's resilience and sustainability.

Keywords—*climate action, environmental impacts, tourism development.*

I. INTRODUCTION

Research on sustainable tourism (ST) has increased steadily, especially after the adoption in 2015 of the United Nations Sustainable Development Goals (SDGs), 17 ambitious targets covering different areas such as poverty eradication, equitable education, climate action and sustainable consumption, with the aim of achieving sustainable development worldwide by 2030. They are intended as a comprehensive tool to promote economic, social and environmental sustainability [1].

Almost simultaneously, in December 2015, the Paris Agreement was signed as an international treaty to fight climate change. The agreement aims to limit global warming to 2°C (preferably 1.5°C) above pre-industrial levels by reducing greenhouse gas emissions and promoting sustainable development [2].

The focus on sustainability in tourism has increased as stakeholders seek to balance economic growth with environmental protection [3]. The urgency of climate change has further increased the number of these studies,

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particularly in relation to tourism's contribution to global emissions [4]. The IPCC report [5] highlights the dual role of tourism as both a contributor and a victim of climate change, calling for more research on sustainable solutions.

Bibliometric analyses have become a popular research method in sustainable tourism to identify trends in scientific publications, key researchers, networks and research areas [6] – [9].

The aim of this study is to conduct a Scopus analysis of articles on the climate and environmental impacts of sustainable tourism (STI) for the period 2014-2024, focusing on its impacts on the environment and climate, in order to explore the relationship of sustainable tourism to environmental challenges and opportunities to address them.

II. MATERIALS AND METHODS

The study uses data from the international database Scopus, indexes over 25,000 peer-reviewed journals, including those with high impact factors, ensuring broad coverage of high-quality research [10] – [13].

The search for publications was based on TITLE-ABS-KEY (impact AND sustainable AND tourism AND climate AND environment) with restrictions document type article (ar), conference paper (cp) for the period of 10 years from 2014-2024.

The selected articles were downloaded in "CSV Excel" format and a visual map was extracted using VOSViewer software [14].

The study applied quantitative research methods and bibliometric analysis techniques to conduct a systematic review of scientific publications on sustainable tourism, focusing on its environmental and climate impacts and possible solutions to mitigate the problems.

To achieve the research objective, the questions were answered in the following order [15]:

Q1: What are the research trends on STIs 2014-2024?

Q2: What co-authorship in different countries?

Q3: What is the information about co-occurrence with author keywords?

Q4: What is the co-occurrence of all keywords and the strength and importance of their relationships?

Q5: Which countries, organisations have more ST publications?

Q6: What are the number of articles and citations from 2014-2024?

Q7: What is the highest number of articles per author and their contribution?

III. RESULTS AND DISCUSSION

For Q1, the bibliometric sample identified 244 publications with TITLE-ABS-KEY (impact AND sustainable AND tourism AND climate AND environment) from 2014 to

2024. Conference paper and Article ratio is 1:4. Fig. 1 shows the evolution of number of documents on Environment and climate impacts of sustainable tourism and Environment and climate impacts on sustainable tourism from 2014 to 2024.

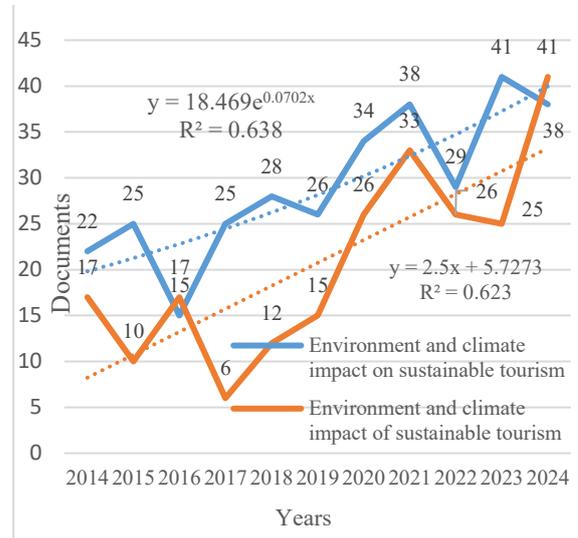


Fig.1. Environment and Climate and Sustainable Tourism Cross-Cutting Impact Papers, Scopus, (2014 - 2024).

Research on the environmental and climate impacts of tourism has long been a focus of attention in academia, and the number of studies has increased significantly since 2018. The number of papers is growing exponentially (R^2 reaching 0.638 and 0.623), indicating a rising interest among academics in this field (Fig. 1). The urgency of climate change has further reinforced the importance of this research, particularly in relation to tourism's contribution to global emissions [4]. As evidence of this, a trend has been observed that while the number of studies on the environmental and climate impact of ST was almost twice as low until 2019, the increase in the number of studies surpassed that of studies on the environmental and climate impact on ST in 2023.

In order to compare research trends on the environmental and climate impacts of sustainable tourism and the environmental and climate impacts of sustainable tourism, it is important to understand that these two trends are interlinked but have a different focus:

1. Environmental and climate impacts on sustainable tourism

This trend is dominant because climate change and environmental degradation are pressing global issues that have a direct impact on the tourism sector. Research in this area focuses mainly on: the impacts of climate change tourism destinations (e.g. coastal and mountain tourism); adaptation strategies for the tourism sector in the context of climate change; environmental challenges such as biodiversity loss and depletion of natural resources. The reasons for dominance are, firstly, that climate change is one of the most important global challenges affecting all economic sectors, including tourism. Secondly, the

tourism sector is particularly vulnerable to environmental and climate change because it depends on natural resources and favourable climatic conditions [16] – [17].

2. Sustainable tourism impacts on the environment and climate

This trend is less pronounced, but it has become an important area of research, especially in the last decade. Research in this area focuses mainly on: the environmental impacts of tourism, such as waste generation, water and energy consumption; the adoption of sustainable tourism practices to reduce negative environmental and climate impacts; and the contribution of the tourism sector to reducing greenhouse gas emissions. The reasons for the lower dominance are firstly that the environmental and climate impacts of Sustainable Tourism is a relatively newer field of research that has developed with the growing awareness of the need to protect the environment and secondly that research on this trend is often linked to the Sustainable Development Goals (SDGs), which were only adopted in 2015 [18] – [18].

In response to **Q2**, the data provided on co-authorship across countries reveal interesting patterns in research output (measured by number of papers, "doc") and impact (measured by citations, "cit").

Key observations:

1) the USA has the highest number of docs (59), indicating that it is the most active in research among the countries listed; 2) the UK follows closely with 46 docs, indicating strong research activity; 3) Canada and the Netherlands are moderately active with 33 and 25 docs respectively; 4) Sweden is the lowest among the countries listed with 18 docs.

Research impact:

1) despite having the largest number of papers, the US has fewer citations (3,361) than the UK, suggesting that its research has the greatest impact or visibility in this area; 2) Despite having the largest number of papers, the US has fewer citations (3,361) than the UK, suggesting that its research is likely to have less impact per paper; 3) Canada has a high number of citations (2905), which is remarkable given its moderately high number of papers; 4) Sweden has a relatively low number of citations (1768), which is consistent with its lower number of papers; 5) The Netherlands stands out with a surprisingly low number of citations (57) despite having 25 papers, suggesting that its research may have limited visibility or impact.

Citation-to-Document Ratio (Impact per Document): UK: 94.17 cit per doc; USA: 56.97 cit per doc; Canada: 88.03 cit per doc; Sweden: 98.22 cit per doc; Netherlands: 2.28 cit per document; The UK and Sweden have the highest citation-to-document ratios, indicating that their research is highly impactful relative to the volume of output. The Netherlands has an exceptionally low ratio, suggesting that its research may not be widely cited or recognized.

Analysis of Co-Authorship Patterns UK Dominance in Impact:

The UK's high citation count and citation-to-document ratio suggest that its researchers are producing highly influential work. This could be due to strong collaborations, high-quality institutions, or a focus on impactful research topics; USA: High Output, Moderate Impact. The USA leads in document output but has a lower citation-to-document ratio compared to the UK and Canada. This could indicate a larger volume of research that is less focused on high-impact studies or may reflect differences in research dissemination and collaboration patterns. Canada: Balanced Output and Impact. Canada demonstrates a strong balance between output and impact, with a high citation-to-document ratio. This suggests efficient and impactful research practices. Sweden: Low Output, High Impact. Sweden's low document output but high citation-to-document ratio indicates that its researchers are producing fewer but highly influential studies. Netherlands: Low Impact Despite Moderate Output. The Netherlands' low citation count and citation-to-document ratio are unusual given its moderate document output. This could be due to factors such as limited international collaboration, less visibility in high-impact journals, or a focus on niche areas with lower citation potential.

Possible explanations for the observed patterns include:

1) *Networks*: countries with stronger international networks (e.g. UK, USA, Canada) may benefit from increased visibility and references;

2) *Research focus*: differences in research (e.g. theoretical and applied research) can affect citation rates;

3) *Institutional support*: access to funding, resources and high quality institutions can lead to greater outputs and impact;

4) *Publication practices*: differences in publication practices, such as targeting high-impact journals, can affect citation rates.

For **Q3**. Fig.2 by analysing the co-occurrence information with the authors' keywords, conclusions can be drawn about the thematic focus and interrelationships of the studies, that 1) the most popular keywords are "climate change" (148) is the most frequent keyword, indicating that climate change is the dominant theme in the studies. "Tourism (81) is the second most popular keyword, showing that tourism is closely linked to climate change. Other keywords, such as "impact," "sustainable tourism," "sustainability," "sustainable development" and "climate impact," are less frequent, but their correlation (total link strength) shows their importance in the research context; 2) the correlation (total link strength) between "climate change" and "tourism" (125) is the strongest a couple of them, indicating that the impact of climate change on tourism is one of the main areas of research.

"Tourism" and "impact" (41) also show a strong correlation, suggesting that the impact of tourism on the environment and society is an important topic. "Sustainable tourism" (22) and "sustainability" (16) are less prominent, but their association with other key words shows their importance in the context of sustainable development. "Climate impact" is less well represented as a keyword (11), but its association with other keywords indicates its importance in climate change impact studies.

Thematic groups and their meaning:

1) *Climate change and tourism.* Fig.2 "climate change" (148) and "tourism" (81) are the two most frequent key words with a strong interconnection (125). This indicates that research is mainly focused on the impacts of climate change on the tourism sector, such as changing tourism destinations, environmental changes and economic consequences.

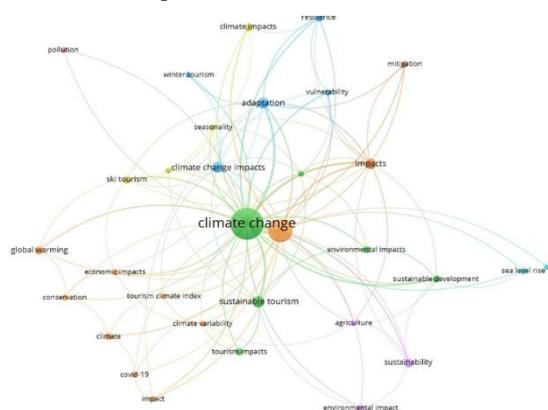


Fig.2. Co-occurrence with author keywords analysis map, Scopus, 2014-2024.

2) *Sustainable tourism and sustainability.* "Sustainable tourism" (20) and "sustainability" (12) are less prominent, but their combination with other key words shows that sustainability principles are being explored in the context of tourism, especially in relation to climate change. "Sustainable development" (8) is even less well represented, which may point to the need to promote more research on the integration of sustainable development in the tourism sector;

3) *Impact and climate impact studies:* "impact" (16) and "climate impact" (9) are less frequent, but more likely to be associated with other key words. These keywords are likely to reflect research on the wider impacts of tourism and climate change, such as environmental degradation, economic consequences and social change.

4) *Sustainable development.* "Sustainable development" (8) has the lowest frequency, but it is still an important link strength (15). This indicates that although sustainable development is not a central theme, it is still being explored in the context of tourism and climate change.

Analysis of research gaps and opportunities:

1) *Dominance of climate change and tourism.* The strong focus on climate change and tourism reflects the urgency of addressing environmental challenges in the tourism sector. However, this dominance may overshadow other important themes such as social sustainability and community-based tourism;

2) *Under-representation of sustainable development.* The low frequency of "sustainable development" (8) reflects a gap in research that explicitly links "tourism" and "climate change" to broader "sustainable development" goals (e.g. poverty reduction, gender equality and resource efficiency);

3) *Limited focus on climate impacts.* The relatively low frequency of "climate impacts" (9) suggests that specific studies on local or sectoral impacts of climate change (e.g. on coastal tourism or winter sports) may be under-represented;

4) *Opportunities for interdisciplinary research.* The advantages of moderating the link between "sustainable tourism" and "sustainability" suggest opportunities for more interdisciplinary research integrating environmental, social and economic aspects of sustainability.

Q4 Co - occurrence to all keywords. The analysis of co-occurrence with all keywords showed the following keywords, their strength and importance:

1) "Climate change." This is the most frequent keyword with 129 occurrences and an overall association strength of 347. This indicates that climate change is an important topic that is closely related to the other topics covered;

2) "Sustainable development." With 90 occurrences and a total linkage strength of 260, this keyword is also highly significant. It shows that the principles of sustainability are relevant in different contexts, including tourism and environmental protection;

3) "Tourism." Tourism occurs 77 times with a total association strength of 243. This indicates the importance of tourism, especially in relation to sustainability and environmental impact;

4) "Sustainability." This keyword has 51 occurrences and an overall commitment strength of 160. This shows that sustainability is an important aspect, especially in the context of tourism and environmental protection;

5) "Environmental impact." With 31 occurrences and an overall association strength of 143, this keyword highlights the importance of environmental protection, especially in the context of tourism and sustainability;

6) "Sustainable tourism." This keyword has 30 occurrences and an overall commitment strength of 92 shows that sustainable tourism is an important trend that combines tourism and sustainability principles;

7) "Tourism development." With 26 occurrences and an overall commitment strength of 86, this keyword highlights the importance of tourism development,

especially in relation to sustainability and environmental protection;

8) "Carbon emission." This keyword has 14 occurrences and an overall commitment strength of 51. It highlights the importance of reducing carbon emissions, particularly in the context of climate change and sustainable development.

Overall, these keywords show the close link between climate change, sustainability, tourism and environmental protection. They underline the need for sustainable development and environmental impact reduction, especially in the tourism sector.

For **Q5** the author analysed the ST publications most produced by countries and researchers. Top 15 countries with ST publications: China (36); United Kingdom (15); Italy (14); Malaysia (13); Greece (12); Germany (11); Indonesia (11); United States (9); Australia (8).

The Chinese Academy of Sciences is the leader when comparing the higher education institutions with the highest number of publications over the period (9). Universiti Kebangsaan Malaysia, University of Chinese Academy of Sciences, Taylor's University of Malaysia have four publications each, while Universidade do Algarve, Asian Institute of Technology Thailand, University of Piraeus, Oulun Yliopisto and Northwest Institute of Eco-Environment and Resources have three publications each.

In response to **Q6**, from 2014 to 2024, there were a total of 4,985 articles on sustainable tourism and its environmental and climate impacts in the Scopus database.

The study found that in 2024, four papers had 161 citations. Since 2020, the number of articles increased to 24 papers with 306 citations, and in 2024, 38 papers already had 1,332 citations.

Answer to **Q7**: The highest number of articles per author on the topic of environmental and climate impacts of sustainable tourism is four for Raihan, A., while Bausch, T., Du, J., Fleming, L.E., Grigiene, J., Ichisugi, Y., Itsubo, N., Karkour, S., Kitamura, Y., Panagopoloulos, T., Tuspekova, A., Wang, S. and another 13 authors had two articles each.

The author conducted a concise analysis of the contributions of authors with high citation value such as Asif Raihan, Thomas Bausch, Almagul Tuspekova and Shuxin Wang on sustainable tourism, its impact on the environment and climate:

- 1) Raihan Asif:
 - *Key focus*: The role and impact of sustainable tourism on the environment and climate;
 - *Research*: Sustainable tourism as a tool to protect the environment and mitigate climate change;

- *Strategies*: Responsible tourism, ecosystem protection, public awareness;
- *Benefits*: Environmental conservation, economic development, social well-being;
- *Challenges*: Balance between tourist inflow and environmental protection, need for stricter regulations.

2) Thomas Bausch:

- *Focus*: Sustainable tourism development and environmental and climate impacts;
- *Research*: Reduced negative environmental impacts, climate change mitigation;
- *Strategies*: Energy efficiency, renewable energy, waste reduction;
- *Benefits*: Job creation, involvement of local communities;
- *Challenges*: Need for effective policies and regulations.

3) Almagul Tuspekova:

- *Focus*: Sustainable tourism development and environmental and climate impacts;
- *Research*: *Sustainable tourism as a tool to protect the environment and mitigate climate change*;
- *Strategies*: Ecotourism, green technologies, involvement of local communities;
- *Benefits*: Job creation, preservation of cultural heritage;
- *Challenges*: Balance between tourism and environmental protection, effective policies.

4) Wang Shuxin:

- *Focus*: Sustainable tourism development and environmental and climate impacts;
- *Research*: Reduced negative environmental impacts, climate change mitigation;
- *Strategies*: energy efficiency, renewable energy, waste reduction;
- *Benefits*: Job creation, involvement of local communities;
- *Challenges*: Need for effective policies and regulations.

Overall conclusions:

All authors stress the importance of sustainable tourism in protecting the environment and mitigating climate change. Common themes: responsible tourism, economic and social benefits, need for effective policies and regulations. Each author brings a unique perspective, but all agree on the potential of sustainable tourism to have a positive impact on the environment, climate and society.

IV. CONCLUSIONS

Q1. The bibliometric analysis identified 244 publications from 2014 to 2024, with a ratio of conference papers to articles of 1:4, indicating strong academic

interest in the impact of sustainable tourism on climate and the environment.

The number of studies has increased significantly since 2018, reflecting the growing relevance of climate change and its impact on tourism. This trend aligns with global awareness and urgency surrounding climate issues.

Research emphasizes the tourism industry's vulnerability to climate change and its dependence on natural resources, which drives the focus on mitigating environmental challenges.

Emerging Focus on Sustainable Tourism's Impact: While less pronounced, research on the impact of sustainable tourism on the environment and climate has gained traction in the last decade. This includes studies on sustainable practices, reducing greenhouse gas emissions, and mitigating tourism's environmental footprint.

The field's growth is closely tied to the Sustainable Development Goals (SDGs) adopted in 2015, particularly those related to climate action, sustainable cities, and responsible consumption.

By 2023, studies on the environmental and climate impact of sustainable tourism surpassed those on the impact of climate change on sustainable tourism, indicating a shift toward proactive solutions and sustainable practices in the tourism industry.

Global Relevance: The research reflects the urgency of addressing climate change and environmental degradation, underscoring the need for sustainable tourism practices to ensure the industry's resilience and long-term viability.

Key Implications: 1) The findings highlight the need for continued research and innovation in sustainable tourism to address climate change and environmental challenges; 2) Policymakers and industry stakeholders should prioritize sustainable practices and adaptation strategies to mitigate the tourism industry's vulnerability to climate change; 3) The alignment with SDGs reinforces the importance of integrating sustainable tourism into global climate action and environmental conservation efforts.

The dominant theme is "Environmental and climate impacts on sustainable tourism", highlighting the focus on how climate change and environmental degradation affect tourism destinations. Key areas of study include adaptation strategies, biodiversity loss, and resource depletion.

Future Directions: 1) Continued research is essential to address the dual challenges of mitigating tourism's environmental impact and adapting to climate change; 2) Emphasis on sustainable tourism practices and policies will be crucial in aligning with global sustainability goals and reducing the sector's carbon footprint.

Overall, the research highlights the critical interplay between sustainable tourism, environmental preservation, and climate change mitigation, underscoring the need for integrated approaches to ensure the sector's sustainability and resilience.

Q2. The UK and Sweden are notable for producing highly impactful research relative to their output. The

USA, while leading in volume, may need to focus on enhancing the impact per paper. Canada demonstrates a commendable balance between output and impact. The Netherlands should consider strategies to increase the visibility and impact of its research, possibly through enhanced international collaboration and targeting high-impact journals.

These insights highlight the importance of not only increasing research output but also ensuring that research is impactful and widely recognized, which can be influenced by collaboration networks, research focus, institutional support, and publication strategies.

Q3. The research landscape is heavily focused on the impacts of climate change on tourism, reflecting the sector's vulnerability to environmental changes. There is a need for more balanced research that also addresses social sustainability, community-based tourism, and broader sustainable development goals. Specific studies on local or sectoral climate impacts are under-represented, indicating a potential area for future research. Interdisciplinary approaches that integrate various aspects of sustainability could provide more comprehensive insights and solutions for the tourism sector in the context of climate change.

These conclusions highlight the importance of broadening the research scope to include a more diverse range of themes and interdisciplinary approaches to address the complex challenges at the intersection of tourism, climate change, and sustainability.

Q4. The analysis reveals a strong interconnection between climate change, sustainability, tourism, and environmental protection. These themes are deeply intertwined, indicating that addressing one often involves considerations of the others. There is a clear emphasis on the need for sustainable practices across different sectors, particularly in tourism. This includes reducing environmental impacts, lowering carbon emissions, and integrating sustainable development goals. The research focus on the importance of the keywords used suggests that future research should further explore the intersection of these themes, focusing on the development of practical solutions for sustainable tourism and environmental protection.

The findings highlight the importance of policies and practices that promote sustainability and mitigate the impacts of climate change, particularly in the tourism sector. This includes strategies for sustainable tourism development and reducing carbon emissions.

These findings highlight the need for a holistic approach to addressing the challenges posed by climate change, ensuring that sustainability and environmental protection are an integral part of tourism and development strategies.

Q5. China leads significantly in the number of ST (Science and Technology) publications, with 36 publications, far ahead of other countries. This highlights China's strong focus and investment in scientific research and development.

The United Kingdom, Italy, Malaysia, Greece, Germany, Indonesia, the United States, and Australia follow China in terms of ST publications, though with significantly lower numbers. This indicates a global distribution of research output, with certain countries emerging as key contributors.

The Chinese Academy of Sciences is the top higher education institution with 9 publications, reflecting its prominent role in global scientific research. Other institutions, such as Universiti Kebangsaan Malaysia, University of Chinese Academy of Sciences, and Taylor's University of Malaysia, also contribute significantly but with fewer publications.

Institutions from Asia (e.g., Malaysia, China, Thailand) and Europe (e.g., Italy, Greece, Germany) are well-represented, indicating a strong regional focus on ST research.

The presence of multiple institutions with similar publication counts suggests potential collaborations or shared research efforts, particularly in regions like Malaysia and China.

Recommendations: 1) Countries and institutions with lower publication counts (e.g., the United States, Australia) could benefit from increased collaboration with leading countries like China and institutions such as the Chinese Academy of Sciences to enhance their research output; 2) Countries lagging behind in ST publications should consider increasing funding and resources for scientific research to compete globally; 3) Institutions in regions like Southeast Asia (e.g., Malaysia, Indonesia) are showing strong potential. Supporting these regions through partnerships and funding could further boost global ST research; 4) Institutions should explore interdisciplinary research and emerging fields within ST to increase their publication output and global impact; 5) Institutions with fewer publications (e.g., Universidade do Algarve, Asian Institute of Technology Thailand) could focus on capacity building, training researchers, and improving infrastructure to increase their research productivity; Governments should implement policies that incentivize research and development, such as grants, tax incentives, and academic-industry partnerships, to foster a culture of innovation and publication.

By addressing these recommendations, countries and institutions can enhance their contributions to global ST research and bridge the gap with leading contributors like China.

Q6. From 2014 to 2024, the Scopus database recorded 4,985 articles on sustainable tourism and its environmental and climate impacts, indicating a substantial and growing body of research in this field. The number of articles and citations has increased dramatically since 2020. In 2020, there were 24 papers with 306 citations, and by 2024, this number rose to 38 papers with 1,332 citations. This reflects a surge in academic interest and the growing urgency of addressing climate and environmental issues in sustainable tourism. The sharp increase in citations (from 306 in 2020

to 1,332 in 2024) suggests that recent studies are highly influential and widely referenced, highlighting the relevance and importance of this research area. The data underscores the increasing focus on the environmental and climate impacts of sustainable tourism, aligning with global concerns about climate change and sustainability. The rapid growth in publications and citations since 2020 indicates that this field is evolving quickly, with new research trends and findings emerging to address contemporary challenges. Key Implications: 1) The growing number of publications and citations reflects the critical role of sustainable tourism in addressing climate change and environmental degradation; 2) Researchers and practitioners should continue to prioritize this area, as it is gaining significant traction and influence in the academic community; 3) Policymakers and industry stakeholders should leverage this growing body of research to inform sustainable tourism practices and policies, ensuring alignment with global climate and sustainability goals.

Q7. Raihan, A. leads four articles, followed by Bausch, T., Du, J., Fleming, L.E. and 24 other authors with two articles each, highlighting their significant contributions to the field. All authors emphasize sustainable tourism's role in environmental protection and climate change mitigation. Responsible tourism, energy efficiency, renewable energy, waste reduction, ecotourism, and community involvement are widely recommended. Environmental conservation, economic development, job creation, social well-being, and cultural heritage preservation are key outcomes. Environmental conservation, economic development, job creation, social well-being, and cultural heritage preservation are key outcomes. Balancing tourism growth with environmental protection, stricter regulations, and effective policies are recurring challenges. Overall Agreement: All authors agree on the potential of sustainable tourism to positively impact the environment, climate, and society, while underscoring the need for robust policies and regulations to achieve these goals.

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