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THE EMERALD HANDBOOK OF TOURISM ECONOMICS AND SUSTAINABLE DEVELOPMENT

EDITED BY

AHMED IMRAN HUNJRA
ANUKRATI SHARMA



The Emerald Handbook of Tourism Economics and Sustainable Development

BUILDING THE FUTURE OF TOURISM

Series editor: Anukrati Sharma

The world is entering the Third Millennium in which great changes are expected in all areas of human interest, life, and activity. These changes have been brought on by past and present man-made events, which have had both positive and negative consequences. The coming millennium will be marked by significant social, political, demographic, and technological changes and will definitely differ from the last century. The future will bring more leisure time, a higher standard of living, and a better quality of life for us all. This series examines recent and the most probable changes and gives a wide range of visionary insights, as well as operational takeaways.

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Preface

The *Emerald Handbook of Tourism Economics and Sustainable Development* is a meticulous effort of many minds. Before finalizing the topic of the book, the editors conducted a lot of research. We received constant support from Emerald Publishing's team during the whole process, and the contributors were very committed. The face of the tourism industry is vastly changed. Tourism economics is experiencing several unpredictable changes around the world, especially after COVID. Chapters have been thoroughly organized and revised, yet greatly edited to emphasize the key points. There are several specialization chapters in the handbook, including Bridging the Nexus: A Comprehensive Review of Tourism, Technology, and Climate Change – Uncharted Territories and Future Avenues, Green Horizon, Qualitative Insights into Harvesting Sustainability: The Role of Organic Agriculture in Advancing Sustainable Development Goals, Chapter on Agrotourism, Chapter on Transshipment Troubles, Challenges and Socio-economic Impacts of Proposed Road Development to Gunung Mulu National Park, Sarawak, Malaysia: A Case Study of Local Community Perspectives in Sustainable Tourism, The Role of ICT and Infrastructure in Tourism Development: New Evidence from Asian Economies, The Tourism-Climate Nexus, Tourists' Behavior Post-Covid 19: Do Education, Perceived Knowledge and Perceived Risk Matter? Branding India as a Sustainable Blue Economy Destination in the Indian Ocean Region, Fostering Resilience through Travel: Prioritizing Well-being, Accessibility, and Sustainability, The Importance of Relational Marketing in Health and Wellness Tourism: Study applied to the Euroregion Northern of Portugal and Galicia, The Economics of Market and Inclusive growth in tourism: A Narrative of Rural artisans' Socio-economic Well-being, Halal Tourism as a New Strategy for Sustainable Tourism Economic Contribution and Employment Opportunities of Tourism and Hospitality Sectors, Revenge or Renewal? Nexus of Revenge Tourism, Boomerang Effect, and Sustainable Development Goals, Revitalization and Adaptive Re-use of Heritage Buildings for Event Venue in Rajasthan: Opportunities and Challenges. Thus, this handbook serves as an indispensable guide for navigating the complex terrain of tourism economics and sustainability. Drawing upon the collective wisdom of leading experts in the field, this book offers a comprehensive framework to drive sustainable development, making it a valuable resource for scholars and practitioners. Within the pages of this handbook, you will discover an invaluable resource for those seeking a deeper understanding of tourism

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economics and its pivotal roles in forging a path toward sustainable development. We wish you all a happy reading.

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Chapter 1

Bridging the Nexus: A Comprehensive Review of Tourism, Technology and Climate Change – Uncharted Territories and Future Avenues

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Abstract

Tourism, Technology and Climate Change: The tourism industry is indispensable both for its socio-cultural offerings and its profound economic implications. The economic multiplier effects inherent in the drivers of tourism can stimulate the regional economy even before these areas emerge as tourism meccas. While vast amounts of research have detailed tourism's overarching significance, there is an evident void in understanding its multifaceted impacts, particularly where technological advances, environmental performance (EP) and economic benefits converge. A thorough examination of 907 research records led to this chapter, which identifies these gaps by referencing nine observational and 11 intervention studies. Achieving a Cohen's kappa value of 0.75, the authors note a strong consensus among reviewers, adhering to Cohen's (1940) standards. The findings from the first quarter highlight several areas within the tourism industry that have been under-researched. Particularly, the integration of technology, from ATM infrastructures enhancing tourist financial experiences to digital platforms elevating traveller education and awareness, and tech-driven solutions addressing demographic and ethical considerations in tourism, remains insufficiently explored. Additionally, the authors recognise an existing gap in knowledge regarding the nexus between tourism

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development and its climatic repercussions, especially before tourism ventures are fully realized. This chapter aims to channel future research into these lesser-trodden areas, fostering a comprehensive grasp of tourism's evolution in the face of rapid technological advancements and its interplay with environmental shifts.

Keywords: Tourism multiplier effects; environmental performance; infrastructure development; economic implications; traveller awareness; ethical tourism; climate impact

1. Introduction

The interplay between tourism, technology and climate change has witnessed increased scrutiny in recent years. However, this scrutiny, more often than not, is skewed towards recognising the threats rather than exploring sustainable, technology-driven solutions. While there is an undeniable global consensus on the adverse effects of climate change – often amplified by rapid industrialisation and sectors like tourism – a nuanced understanding remains lacking. The world's leading economies, such as the USA, China, Russia and India, although major contributors to global pollution, also have the resources and technological prowess to innovate and spearhead global initiatives towards sustainable tourism. The Paris Agreement and United Nations' guidelines have attempted to set a global framework, but the actualization of these guidelines remains scattered, with sectors like tourism often eluding stringent oversight.

This chapter delves into a comprehensive literature review, aiming to bridge existing research gaps, particularly in the tourism industry's technological and environmental facets. Several recent studies have highlighted the escalating emissions from tourism, with the aviation sector being a prime contributor (Sid Perkins, 2018; Davide, 2020). The relationship between global tourism and climate change is multifaceted. It is not merely about the carbon footprint but also about issues like sewerage contamination, which has direct implications for public health (Seabloom et al., 1998). We delve deep into research trends, including studies on the negative repercussions of infrastructure development on biodiversity, the rampant carbon dioxide (CO₂) emissions and the often-overlooked aspects of tourism like the effects of financial management systems such as ATMs on the environment. Recent literature, for instance, points towards the increasing carbon footprint of global tourism and its projected growth (Avi & Hassan, 2022; Huseynova & Mazanova, 2022; Zulvianti et al., 2022).

The originality of this chapter lies in its amalgamation of disparate research areas, bringing together technological, environmental and touristic perspectives to provide a holistic view of the ongoing challenges and potential solutions. Instead of merely identifying problems, this review highlights areas ripe for innovative, tech-driven solutions, making it a beacon for future research endeavours. While various qualitative and quantitative approaches have dissected the tourism-climate conundrum, we identify the spatial panel model (SPM) as a promising tool, outclassing traditional panel procedures that could lead to skewed parameter approximations. In aligning

with the reviewer's feedback, we have incorporated a wider range of studies, ensuring the literature review is robust, comprehensive and up-to-date. This chapter leans heavily on recent studies, ensuring our discourse remains relevant to the current global scenario and setting the tone for future explorations in the domain.

2. Research Methodology

For the systematic review, the selection criteria were executed step-by-step to identify gaps in prior research and provide guidance for upcoming research. The research methodology for conducting a systematic review encompasses a search strategy, selection criteria and ultimately synthesising the search results.

2.1 Search Strategy

In April 2022, this research meticulously scoured prototypical articles published in major databases, including PubMed/Medline, PsycINFO, SportDiscus and Embase. Various terms and their combinations were used to identify suitable articles, such as carbon footprints of tourism, environmental performance (EP) of tourism, CO₂ and tourism and tourism and climate change. The exact term combinations utilized were as follows: [(CO₂*) OR (carbon*) OR (pollution*) OR (climate change)]. Titles and abstracts that did not align with the selection criteria were excluded. Full versions of the chosen articles were procured and subsequently reviewed by two independent assessors for validity. Additional keywords and phrases employed included climate change effects on tourism; climate change effects on travel; global warming and travel; global climate change and tourism; climate change tourism in North America; climate change and outdoor recreation; climate change, nature and travel; ecology, tourism and economy; climate change, economy and tourism; climate change's impact on winter tourism, oceans, mountains and skiing.

Furthermore, references related to climate change were sourced from academic researchers worldwide. Cohen's kappa (Cohen, 1940) was used as a measure of agreement between the reviewers see Table 1.1. The reference lists of included articles were also scrutinized to ensure a comprehensive search. Cohen's kappa coefficient is a statistical measure employed to gauge inter-rater reliability for qualitative data. With a resultant value of 0.625, as determined by Cohen's Kappa, there is assurance that the literature was meticulously reviewed by the author, and identified gaps were duly reported. A *P*-value less than 0.005 indicates significant concordance between

Table 1.1. Cohen's Kappa.

	Value	Asymp. Std. Error	Approx. T	Approximately Significance
Measure of kappa agreement	0.624	0.147	3.957	0.000

Source: Author.

the two reviewers. The observed P -value stands at 0.000, signifying a significant level of agreement. However, it is noteworthy to mention the variation between the values obtained in Excel (0.75) and SPSS (0.625). This slight discrepancy arises from SPSS's kappa correction for probability, as indicated in Table 1.2. McHugh (2012) posits that an optimal approach for researchers might involve calculating both percent agreement and kappa concurrently. In cases where the probability of guesswork among raters is elevated, employing the kappa statistic would be advisable. Conversely, if raters have undergone rigorous training and minimal guesswork is anticipated, researchers can confidently utilise percent agreement to ascertain inter-rater reliability.

In Table 1.2, 'count' refers to observed occurrences, differentiating between actual count and expected outcomes based on chance. If an expected value surpasses 0.2, it is indicative of a result above mere chance. The data suggest that Reviewer 2's evaluations are closely aligned with another reviewer's sentiments.

2.2 Selection Criteria for the Systematic Review

The selection criteria for the systematic review were meticulously executed to identify gaps in earlier research and guide future inquiries. These criteria encompass

- Types of studies;
- Participants;
- Outcome measures;
- Data extraction;
- Search results and
- Characteristics of included studies.

Table 1.2. Cross-tabulation of Reviewer 1 and Reviewer 2.

			Reviewer Two			Total
			1	2	3	
Reviewer one	1	Count	5	1	0	6
		Expected	2.1	2.1	1.8	6.0
	2	Count	2	5	1	8
		Expected	2.8	2.8	2.4	8.0
	3	Count	0	1	5	6
		Expected	2.1	2.1	1.8	6.0
Total	Count	7	7	6	20	
	Expected	7.0	7.0	6.0	20.0	

Source: Author.

2.2.1 Types of Studies

The focus was on research studies featured in peer-reviewed English-language journals, though select books were also incorporated. The analysis included both observational (cross-sectional and longitudinal) and intervention studies (randomized and non-randomized). Notably, apart from two references (Sid Perkins, 2018; Davide, 2020), all cited materials were sourced from reputable books and scholarly publications. These references are widely recognized within the academic community and serve as foundations for theses and dissertations across both qualitative and quantitative research domains. Future researchers would benefit from adhering to guidelines provided in this chapter.

2.2.2 Participants

One primary objective of this review was to discern variables pertinent to carbon footprints and EP in tourism. As such, global case studies addressing these metrics were incorporated.

2.2.3 Outcome Measures

Included studies needed to provide comprehensive evaluations of the carbon footprints and EP within the tourism sector. This encapsulated both observational and intervention studies, particularly those highlighting relationships among various components of carbon footprints and EP in tourism.

2.2.4 Data Extraction

Data from prior research were systematically extracted using a structured template. Two independent reviewers handled this process, focussing on

- Author details;
- Year of publication;
- Nature and methodology of the study;
- Participant demographics and
- Geographical context relevant to assessing tourism's environmental impact.

Researchers operated autonomously and with discretion. No attempts were made to contact original authors for supplementary or missing details from the articles under review.

3. Results

3.1 Search Results

Approximately 907 records were initially identified through systematic research. After removing duplicates, 443 unique records remained for the filtering process.

The study inclusion procedure is depicted in Fig. 1.1. Upon reviewing titles and abstracts, 24 studies were shortlisted for potential inclusion. Full-text articles were then accessed and assessed for suitability. As a result, 20 studies were ultimately included. A Kappa value below 0.4 is considered subpar (with a Kappa of 0 indicating agreement no better than random chance). Kappa values ranging from 0.4 to 0.75 are deemed moderate to good, while a Kappa exceeding 0.75 indicates excellent agreement. The observed Cohen’s kappa was 0.89, signalling a strong concurrence between reviewers, consistent with the benchmarks set by Cohen (1940). The methodology review is supported by Yasmeen et al. (2019), Yasmeen and Adnan (2023) and Yasmeen and Viswanathan (2017).

3.2 The Characteristics of Included Studies

Within the curated collection of 20 studies, nine were classified as observational, seven as cross-sectional, one as longitudinal and 11 as intervention studies. Notably, only two articles originated from the year 2000, with the remainder being disseminated post-2007. Contributions from Sid Perkins (2018) and David (2020) were also integrated for comprehensive analysis. These studies, with their

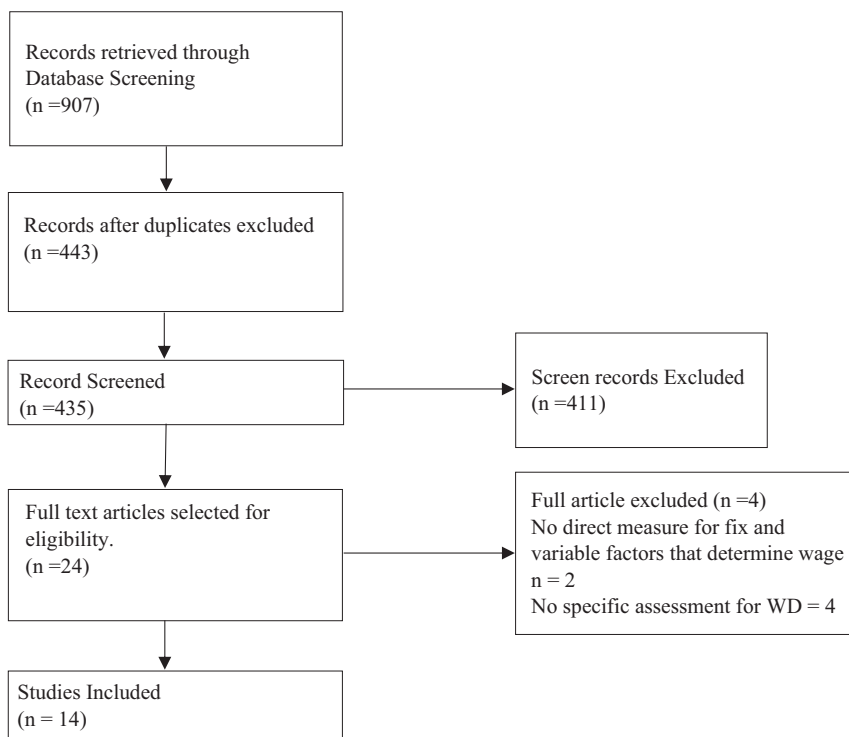


Fig. 1.1. The Flowchart of Study Selection. *Source:* Author.

global scope, sought to elucidate the existing lacunae in conventional research pertaining to the carbon footprints and environmental efficacy of the tourism sector. Fig. 1.1 shows the flowchart of study selection.

4. Results

In this chapter, two pivotal facets of previous research are examined. The first facet delineates the considerable carbon footprint preceding the inauguration of the tourism industry to visitors, while the second underscores the substantial carbon emissions post-visitor accessibility. A thorough analysis reveals notable gaps in the literature presented herein. For the benefit of forthcoming scholars, various methodologies related to environmental studies and climate change are elaborated upon in the appendices.

5. Prior Research and Remarks

Write in an academic language and incorporate technological actors that impact on the environment with coherence: Enormous volume of carbon is emitted before we embark onto the tourism industry, quote [GhulamRabbany et al. \(2013\)](#). They further add that tourism is among the largest and most rapid developing industries at the global economic arena and contains a substantial amount of environmental, cultural, social and economic impacts, both constructive and deleterious. Tourism potentially can play a significant role in the economic amelioration of a country. Contrary to that, the meagerness of appropriate planning can cause adverse influences on biodiversity and a pristine environment. In addition to that, the augmentation of tourism facilities such as accommodation, water supplies and recreational resorts can involve sand and soil erosion, extensive paving and land degradation which can evidently cause the distinction of wildlife and deterioration of scenery ([Oad et al., 2022](#)).

The developments of marinas and breakwater have been responsible for causing changes in currents and coastlines, deforestation, extraction of building material such as sand affects coral reefs leading to erosion and destruction of habitats. Hence, tourism undermines the ecosystem and depletes the potential to encounter natural calamities such as floods, drought and hurricanes and with human-created stresses, such as pollution can cause climate change [GhulamRabbany et al. \(2013\)](#). Evidence suggest that nature tourism is meticulously integrated with bio-diversity and the fascination developed by the rich and wide-ranging environment can also cause diminishing of biodiversity when land and resources are strained by exaggerated exploitation and effects on vegetation, wildlife, mountain, marine and coastal environment, and water resources surpass their carrying capacity.

The diminishing of biodiversity leads to extinction of tourism potential. Tourists and suppliers can carry/import exotic species such as insects, wild and cultivated plants and contagious diseases that the natives are not associated with can cause immense disruption and even annihilation of the ecosystem. The

tourism industry/destinations contribute to global warming. Prior to inaugurating destinations for tourism, appropriate measures and policies documented may be implemented, failing to comply with the policies, these destinations can prove to be a continual threat to the world's biodiversity and ecosystem, which can lead to extinction (Davide, 2020; Hunjra et al., 2022; Mohanty et al., 2022). Hence, it is evident that in this chapter, several devoted researchers are focussing on the impacts of the tourism industry on environmental change and global warming before travelers' influx towards tourists' destinations. There is meagreness in the implementation of the Paris agreement and climate change guidelines while, they are adopted when the developmental work is under process.

Moreover, the carbon is emitted while clearing and levelling the natural areas before the construction work is proceeded (Gössling, 2000). Ecosystems such as forests perform as carbon sinks through the absorption and storing process while CO₂ is emitted. Once this carbon-rich vegetation is eliminated, CO₂ is discharged back into the atmosphere. The mangrove forests which grow in many tropical areas are an important source not only to absorb but also have the capacity to store huge amounts of carbon resulting in an eco-friendly environment. Studies suggest that mangrove forests have the capacity to store four times more than any other tropical forests around the globe.

In the contemporary global landscape, the tourism sector stands as a prominent contributor to both economic development and environmental impact. GhulamRabbany et al. (2013) emphasise that while the tourism industry holds potential for economic upliftment, it simultaneously emits a substantial volume of carbon even before it fully establishes itself. Notably, tourism, with its expansive reach, exerts multifaceted repercussions, encompassing environmental, cultural, social and economic domains, each carrying the potential for both beneficial and detrimental outcomes. The double-edged sword that is tourism can stimulate economic progress. However, the lack of strategic planning can inflict deleterious effects on biodiversity and environmental sanctity. Infrastructure developments catered to tourism, like accommodations, water facilities and leisure centres, often necessitate land modifications, leading to issues like soil erosion, extensive paving and land degradation. Such alterations can result in biodiversity diminution and landscape deterioration, as noted by Oad et al. (2022).

Technological interventions, such as the establishment of marinas and breakwaters, have been observed to perturb natural coastlines and water currents, leading to challenges like deforestation and coral reef destruction due to excessive material extraction. The interplay of these factors not only weakens the ecosystem's resilience against natural disasters like floods, droughts and hurricanes but also heightens human-induced stresses like pollution, further exacerbating climate change. There exists a nuanced relationship between nature tourism and biodiversity. While the allure of diverse ecosystems can promote tourism, undue exploitation can strain the very resources that attract visitors, affecting vegetation, wildlife and water resources beyond their thresholds. This strain can lead to biodiversity loss, nullifying the potential for sustainable tourism. Another critical aspect involves the inadvertent introduction of non-native species by tourists, which can destabilise local ecosystems. Such anthropogenic interferences, if not