



Contributions of Bicycle Tourism to Sustainable Development: A Review from the Perspectives of Environmental Management and Economic Strengthening

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Abstract

Cycling tourism is regarded as a more sustainable approach than conventional approaches to tourism; however, there is still little scientific evidence about the contribution of this activity in terms of the environment and economy. The core problem of the research is in the absence of a comprehensive review that will help us understand the role of this practice in achieving sustainable development goals and reinforcing the regions. The aim of the present study was to conduct a review of the latest literature concerning the contributions of bicycle tourism to sustainable development, particularly focusing on environmental management and economic development. For this purpose, a systematic review according to the PRISMA protocol was conducted; it involved searching academic databases with high impact factor and filtering the information according to the pre-set inclusion and exclusion criteria. The results obtained indicate that bicycle tourism is associated with clean mobility, decrease in the carbon footprint, landscape preservation and economic revitalization due to job creation and entrepreneurship. Thus, bicycle tourism is a tool for sustainable mobility and territorial governance.

Keywords: Cycling tourism, sustainability, environmental management, regional economy, systematic review.

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Introduction

The concept of sustainable tourism has become a strategic objective in the agendas of the international community due to the problems related to the environment and society caused by mass tourism. Against this backdrop, the phenomenon of bicycle tourism can be understood as the practice of all forms of tourism in which the main form of transportation used is the bicycle. It represents an interesting approach due to its capacity for promoting environmental sustainability while developing the economy through the creation of new forms of business activity such as hosting, food production, guide work, and bicycle maintenance.

There is enough international evidence to suggest that Europe has been successful in creating bike tourism as part of their policy for mobility and sustainable development but in the case of Latin America, this trend is just at its beginning stages (Derman & Keleş, 2023). It has been discussed in the recent academic research that the benefits of bike tourism include landscape preservation, cultural identity promotion, and job creation (Baloch et al., 2022). But there is a lack of consolidated academic research regarding the effect of this trend on the sustainability of these regions. The problem with research arises from the absence of a systematic study, which would define the contribution of bicycle tourism in sustainable development. There have been some case studies available but they do not present a complete picture because of their disjointed nature.

The rationale for the present research stems from the necessity to show how bicycle tourism can be used strategically in fighting the climate change and finding sustainable ways of development. It is important to know about its benefits to implement relevant policies and support sustainable mobility in the context of the tourism sector.

The broad objective of this literature review is aimed at the analysis of recent scientific articles about the role of bike tourism in sustainable development in terms of environmental management and regional economic development. In accordance with the broad objective, the narrow objectives are aimed at the

analysis of the environmental contribution of bike tourism, economic contribution of bike tourism, and gaps in research.

Theoretical Framework

The theoretical framework discussed explains the concept of the theoretical foundation of reviewing the concept of bicycle tourism and how it is related to sustainable development. This framework explains various issues such as the approaches to sustainable tourism and how it relates to the Sustainable Development Goals (SDGs), the basics of bicycle tourism as a new form of tourism, how it contributes to environmental management, and, finally, how it contributes to building local economies.

Sustainable Tourism and the SDGs

Sustainable tourism is a strategic pillar of the 2030 Agenda for Sustainable Development since this activity is seen as an area that can have positive implications on the environment, society, and economy. According to the World Tourism Organization, sustainable tourism can be viewed as ensuring the needs of present and future tourists are being met and the integrity of ecosystems is preserved and enhanced. This is why combining tourism with the Sustainable Development Goals (SDGs) is crucial in terms of addressing the urgent issue of changing tourism dynamics into sustainable ones and minimizing the impact of climate change (UN, 2022).

In light of SDGs, sustainable tourism has a close relationship with some of these goals which include SDG 8 (Decent Work and Economic Growth), SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action) and SDG 15 (Life on Land). It proves that tourism has the capacity to become an instrument of development due to the incorporation of sustainable approaches which promote nature conservation, the involvement of local population and diversified incomes. In such a way, bike tourism becomes one of the types of tourism that unites sustainable mobility, environmentally friendly nature and socio-economic benefits.

It is worth mentioning that recent research has also noted that the implementation of bicycle tourism not only encourages the adoption of sustainable transport but contributes to the creation of the awareness of the need for environmental conservation on the part of tourists. The development of bicycle tourism creates an opportunity for the formation of slow tourism, which is represented by travel programs that emphasize the significance of landscape enjoyment, cultural exchange, and sustainable consumption at local destinations. Therefore, bicycle tourism becomes a practical case of reorganizing tourism projects following the principles of sustainability (Dellova et al., 2023).

In conclusion, the concept of sustainable tourism in line with the SDGs provides a framework that helps demonstrate the relevance of bike tourism as an alternative in accordance with the present challenges facing the planet. This is due to the fact that bike tourism entails clean mobility, environment conservation, and local development. Contemporary academic studies point out that bike tourism is an innovative approach that contributes to governance, social equity, and ecosystem conservation in both urban and rural settings (Rasoolimanesh et al., 2020).

Tourism on Bicycle as a Developing Trend

During the last decade, tourism on bicycles has become a developing trend in global sustainable tourism. In this approach, the cyclist and the tourist combine their roles in order to provide a more leisurely and eco-friendly form of traveling. According to recent findings, bicycle tourism can be considered a suitable way of decreasing the negative impact on the environment caused by using motor vehicles while traveling (Ghosh et al., 2022). Moreover, the development of this approach is explained by the increasing interest in recreational and eco-friendly activities that include health promotion, which justifies its integration into mobility and tourism policies of different countries (Štreimikienė et al., 2020).

From an economic standpoint, cycle tourism creates a multiplier effect through stimulation of industries related to tourism. Studies emphasize the importance of the role played by this activity, in the sense that it fosters investments in hotels, restaurants, shops, and services in relation to the sport of cycling, thus making it easier for tourism sites to diversify sources of income (Luekveerawattana, 2022). In addition to this, cycle tourism is associated with the concept of circular economy since it encourages efficient use of resources (Velenturf and Purnell, 2021).

In terms of the social and cultural dimension, cycle tourism serves as an arena for interaction between the visitor and the local communities. As stated recently by some scholars, such tourism encourages the experience of what is referred to as "slow tourism" that is marked by direct interaction with the scenery

and the life of the sites, which helps shape the identity and enhances social cohesiveness (Cunha and Silva, 2022). Moreover, according to literature, bicycle tourism has been seen to contribute to environmental education through the conservation of the heritage of the sites (Bakogiannis et al., 2020).

To conclude, bicycle tourism has grown into a sector from being a niche recreational activity and has gained recognition among scientists in many works. The fact that it combines the advantages for the environment, economy, and society makes it a novel approach within the paradigm of sustainable tourism. Cycle tourism not only helps to minimize the negative effects of transport used in tourism but also supports the emergence of new economic and social processes that promote sustainability (Ciascai et al., 2022).

Environmental Contributions from Cycle Tourism

Cycle tourism is considered an environmentally-friendly kind of tourism because it involves the use of bicycles rather than motor vehicles for transport. This is a contribution towards the decrease of greenhouse gases, which is one of the most serious global issues considering climate change. New studies show that cycle tourism makes the carbon footprint smaller and helps create more sustainable destinations (Belotti, 2022). Also, cycle tourism is responsible for the construction of green infrastructure, including bicycle paths and ecological corridors, which in its turn makes nature better integrated into tourism activities (Carra et al., 2023).

One more advantage of bicycle tourism from the perspective of the environment is its role in the preservation of the landscape and biological diversity. In contrast to mass tourism, which places stress on the fragile ecosystems, bicycle tourism encourages low-impact tours in accordance with the carrying capacity of the territory. It has been proven that such tourism helps to preserve natural territories and develop environmental consciousness among tourists who gain an understanding of the significance of natural resources conservation while traveling (Jurkus et al., 2022). Moreover, there is evidence that the introduction of bicycle tourism involves the implementation of educational activities concerning environmentally friendly behavior, for example, waste sorting and proper use of natural resources (Belotti, 2022).

Furthermore, cycle tourism can help facilitate the shift to sustainable mobility paradigms in cities through the adoption of cycling tourism routes within urban clean transport policies. Different scholars state that the introduction of such routes contributes to the enhanced connectivity of natural and urban zones which enhances the environmental resilience of regions through protection from such processes as air pollution and degradation of green spaces (Crotti et al., 2022). In a similar way, cycle tourism can help to lessen the dependency on fossil fuels and to develop the practice of active mobility in place of polluting ones (Raposo and Silva, 2022).

In other words, cycle tourism has an impact on environmental management through many different ways that go way beyond just reducing the emissions. It is a concept that combines sustainable transportation, ecology and environmental education. The most recent studies show that cycle tourism should be considered an intersectional issue within sustainability policies because of the environmental benefits in urban and rural settings and the way it helps tackle today's climate change (Derman & Keleş, 2023).

Economic Strengtheners Contributions

The concept of cycle tourism has proven its potential to diversify tourism-based economies by creating entrepreneurial activities in related sectors, including accommodation, food industry, alternative means of transport, and bicycle maintenance. Contrary to mass tourism, this kind of tourism leads to the emergence of microbusinesses and families' enterprises that adjust to the tourists' needs. According to recent research, it plays an important role in ensuring economic sustainability through the minimization of reliance on the larger schemes (Agarwal and Gupta, 2021). In addition, bicycle tourism promotes responsible consumption, where tourists use local goods and services (Saboori et al., 2022).

It is also crucial to consider the employment opportunities that come about due to the increased cycling tourism trails. Studies conducted recently reveal that this type of tourism creates employment opportunities within sectors connected to guide services, hospitality, and cultural attractions, thus increasing labor absorption potential in regions with fewer economic diversities (Petino et al., 2021). In addition to this, the inclusive nature of the cycling tourism industry ensures the involvement of women and youth in the value chain, thus enhancing the process of social and economic inclusion (Južnik Rotar et al., 2022; Voumik et al., 2023).

In addition, cycle tourism has been associated with innovation and circular economy. The fact that bicycle riding is advocated for through cycle tourism means that there is an opportunity for the reusing and

recycling of material and use of clean energy in the infrastructure supporting the tourism industry. Recent studies have shown that this contributes to cost savings and also ensures that the benefits stay within the destination communities (Mao et al., 2021).

In conclusion, cycle tourism can be viewed as not only an environmentally friendly means of transport but also as an agent of economic development that enhances innovation and diversity in the tourism industry. According to recent scholars, cycle tourism is an innovative strategy that enhances the tourist experience and sustains the industry (Rus et al., 2023).

Literature review reveals that bicycle tourism is a developing form of tourism that has huge potential in terms of its association with sustainable development objectives. The inclusion of this type of tourism in the context of responsible tourism makes it a successful example that has helped in the preservation of the environment as well as the diversification of the economy. In recent times, research has revealed that not only does it fulfill the need for clean transportation and responsible leisure, but it has also become a catalyst in innovative procedures (Krittayaruangroj et al., 2023).

As a whole, all the theoretical frameworks discussed help to perceive bicycle tourism as a holistic approach in which environmental, economic, and social components are intertwined. Its role in terms of carbon footprint reduction, landscape preservation, job creation, and local value chain revival proves its appropriateness in terms of global sustainable development challenges. Hence, it becomes clear that the theoretical framework provides a necessary ground for the systematic literature review conducted in the current research, emphasizing bicycle tourism as a promising innovation for the sustainable tourism development (Ciascai et al., 2022).

Methodology

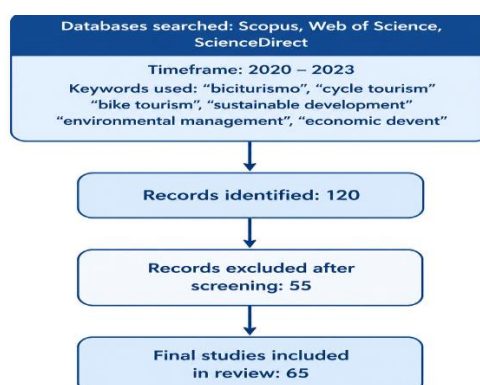
The current research was carried out within the framework of a systematic literature review using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) approach, known for its high transparency and rigorously concerning search, selection, and analysis of scientific information (Page et al., 2021). The reason for the choice of the methodology was the need to combine the evidence about the role of bicycle tourism for sustainable development by means of environmental management and economic growth.

First, is formulated the research question, which was the base for the whole research process: what are the contributions of bicycle tourism to sustainable development from the viewpoint of environmental management and economic development? Following the question, inclusion criteria were developed based on which the articles should have been published in 2020-2023, peer-reviewed, in English or Spanish language and related to bicycle tourism as a means of economic and/or environmental sustainability. Exclusion criteria excluded inaccessible documents, duplicate documents, gray literature, and papers which despite mentioning bicycle tourism had no relations to the studied dimensions of sustainability.

This search was done using high impact factor sources like Scopus, Web of Science, and ScienceDirect databases along with Google Scholar database for a wider perspective in carrying out the literature review. Keywords used were combination of both English and Spanish keywords including “biciturismo,” “cycle tourism,” “bike tourism,” “sustainable development,” “environmental management,” and “economic development.” Initially 95 articles were obtained from this search process.

In this way, the information went through the process of being selected according to the four steps provided by the PRISMA methodology: identification, screening, eligibility, and inclusion. The step of identification was carried out through the compilation of all the identified articles in the searches. The step of screening included the elimination of duplicate and irrelevant articles, thus decreasing considerably the number of articles found at the beginning of the research process. In the step of eligibility, only those articles meeting the criteria defined were kept, and others with poor methodological quality were discarded. Lastly, in the step of inclusion, the set of 65 articles was obtained (Figure 1).

Figure 1 The PRISMA method used for the systematic review



Note: The diagram below represents the stages involved in the selection of bibliographic references.

The studies selected were grouped into an analysis matrix, which enabled the organization of information based on variables like year of publication, country of study, method of research, environmental effects, and economic contributions. Such organization helped develop new categories that form the basis of the results discussion.

Results

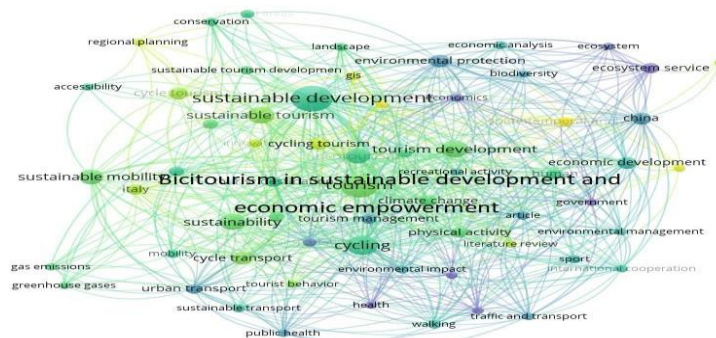
- Phase I: Searching for Bibliographic Sources

During the first phase of our research, we performed a search, selected, and filtered the scientific literature according to the PRISMA protocol. Using the keywords formulated in both English and Spanish, the search yielded 95 records from Scopus, Web of Science, and ScienceDirect databases. These records were analyzed considering the criteria previously determined by the team. Finally, after removing the duplicates and applying a screening process, 65 articles were left for this systematic review.

The first bibliometric analysis showed a clustering of papers within the 2020–2023 timeframe, which proves the relative novelty of the topic as the research object. It can be concluded that the selected papers are mainly devoted to the development of bike tourism and are published in scientific journals dealing with the topics of tourism, sustainability, and environmental management starting from 2021 in accordance with the relevance of the 2030 Agenda.

Moreover, the analysis of the collected information allowed creating a bibliometric network (refer to Figure 2) that reflects the central thematic connections and researchers with the most influential contribution in scientific research related to bicycle tourism and sustainability. The analysis allows obtaining crucial information regarding the major research areas and gaps that exist in this domain.

Figure 2. Bibliometric network of analytical categories related to environmental management and economic development through bicycle tourism.



Note: Created by the author in VOSviewer based on Scopus records

The network analysis generated through the 65 articles considered in the review study demonstrates the

importance of the concept of “sustainable development” by being represented as the most weighted node of the network. It proves that bicycle tourism is highly correlated with the idea of sustainability and is linked to the Sustainable Development Goals along with other low impact tourism models.

As for the surrounding terms that refer to the environmental aspect of sustainability, these include such notions as “sustainable tourism,” “environmental management,” “environmental protection,” “ecosystem services,” and “greenhouse gases.” The current literature emphasizes the positive aspects of bicycle tourism within the context of resolving issues regarding the decrease in greenhouse gases, biodiversity preservation, and sustainable ecosystem management. These relations indicate that one of the major advantages of this practice is the opportunity to counteract climate change and preserve nature.

Another important category relates to the economic dimension and includes such concepts as “economic development,” “economic empowerment,” “tourism management,” and “regional planning.” The presence of those concepts shows that bicycle tourism is not considered only from the environmental perspective; on the contrary, it is considered as the tool of economic recovery which will generate jobs and attract new fund

Fourth, relationships were found among groups of keywords associated with health and motion, including “sustainable mobility,” “cycle transport,” “public health,” and “physical activity.” It can be seen from this evidence that cycle tourism has been recently researched as an approach to improve people’s health and accessibility within urban and rural transportation system. The number of relationships between keywords proves the interdisciplinary approach of cycle tourism, which involves different aspects of people’s lives.

Phase II Findings: Bibliographic Sources’ Analysis

The second phase of our research work involved the analysis of the selected bibliographic sources following the screening. Through the analysis of the 65 documents included in the corpus, a systematic review was undertaken to examine the trends, similarities, and differences in terms of contributions of bicycle tourism towards sustainable development. It is through this analysis that we were able not only to trace the progression of the subject in the literature of 2020-2023 but also group our findings in three dimensions of analysis: environment management, economic empowerment, and sustainable development.

From the literature review, it can be found that, even though bicycle tourism is a relatively new area in the field of tourism, there has been a trend in the literature that places bicycle tourism as a practice that conforms to the Sustainable Development Goals and the new needs of responsible mobility. In addition, there has been a particular contribution to each one of these categories, showing the possibilities and the research needed in this practice regarding its impact on environment and economy.

Therefore, the findings provided below take into account the major outcomes of the review, divided into three categories stated above. Each category will be examined thoroughly in order to highlight the contribution of bicycle tourism to sustainable development from different viewpoints, paying special attention to the most important trends and the most recent research findings.

Environmental Management Contributions by Bicycle Tourism

According to contemporary sources, it is confirmed that bicycle tourism represents a sustainable type of mobility that plays an important role in the decrease of pollutant emissions. As it is stressed by different researchers, the use of bicycles as the main form of transport for tourists helps reduce the ecological footprint in comparison with other forms of transport used by traditional tourists. Thus, the discussed approach can be considered as a solution to climate change and promote responsible energy consumption (Allen and Nolmark, 2022).

Another crucial element noted in the review concerns landscape and ecosystem conservation. The trend of presenting bike tourism as an instrument of increasing the value of natural heritage has been rising, since bike tourism allows people to get into rural or natural areas without harming nature. It has been recently established that this type of tourism helps conserve ecological corridors and supports the preservation of biodiversity due to reduced pressure on natural resources like water and soil (Keleş et al., 2023).

In a similar way, the findings suggest that bicycle tourism helps in increasing environmental awareness and education. As pointed out by scholars like Petino et al. (2021), the process of engaging in bicycle tourism ensures that people develop a closer interaction with nature, thereby increasing their ecological awareness. Bicycle tourism is thus seen as a non-formal environment for learning.

In addition to this, contributions regarding sustainable management of tourist destinations have been noted. Some recent research studies reveal that certain infrastructure developments, including development of bicycle trails and interpretative trails, not only help to ensure clean transport mobility but also contribute to the initiation of environmental management plans in tourist destinations (Yeh et al., 2021). This clearly indicates the potential of bicycle tourism in inspiring local managers to consider sustainability criteria in tourism management.

Last but not least, some authors draw attention to the opportunity of integrating cycling tourism into more general approaches to enhancing resilience against climate change and territorial resilience. Modern scientific research shows that this kind of tourism allows for diversification of recreation opportunities in rural areas, alleviation of pressure from mass tourism, and improvement of communities' resilience to climate change (Fosgerau et al., 2023).

On the whole, the outcomes obtained for this particular category prove that the role of bicycle tourism in the process of environmental management is quite important in terms of reducing the ecological footprint, preserving ecosystems, and increasing awareness on the part of both tourists and the local community. This is what makes bicycle tourism an innovative type of tourism.

Contributions of Bike Tourism to the Enhancement of Economy

All the literature sources mentioned above provide information about the fact that bike tourism contributes to the revival of the local economy thanks to job creation. According to some recent studies, bike tourism is beneficial because it creates an incentive for activities connected with rural accommodation, food, and providing supplementary services, which results in income generation within host communities (Petino et al., 2021). Therefore, bike tourism is a means of entrepreneurship for building a strong economic base of destinations.

Concurrently, it is observed that there has been an emerging tendency towards innovation in tourism products and services. (Hussain et al., 2023) mention the fact that the development of themed trails, cultural tourism packages, and integrated tourist experiences helps destinations in differentiation due to the increased competition in the international market. The above-mentioned information shows that bicycle tourism contributes to sustainable transportation as well as innovation in tourism products.

Similarly, there are some peer-reviewed papers that have made explicit mention of the link between cycle tourism and the circular economy. In this connection, it can be noted that efforts related to this concept include the adoption of sustainability aspects when it comes to managing the accommodations, minimizing wastage, and reinforcing the local supply chain (Mao et al., 2021). This proves that cycle tourism goes beyond clean mobility and is also tied up with sustainable production methods.

Another aspect which can be identified based on the literature review is related to social inclusion and empowerment of communities. In particular, several researchers note that bike tourism has become increasingly inclusive towards women in terms of engaging in cycling tourism activities; however, there are certain gender-specific characteristics of the experience (Kim et al., 2021). The experience implies that the activity promotes economic development and social cohesion as well.

Furthermore, the review of literature indicates that bicycle tourism promotes the strengthening of production chains within the region through the integration with various economic sectors like transport, business, and culture. Ciascai et al. (2022) state that such interconnections provide more opportunities for the integration of bicycle tourism into other sectors of the economy. This once again proves the idea that bicycle tourism can be considered a tool that goes beyond individualism.

On balance, the reviewed literature can be used as a basis for claiming that bicycle tourism is an instrument of economic growth. Due to its capacity for income diversification, innovation, the application of circular economy principles, and social inclusion, bicycle tourism stands out as a promising approach to sustainable development.

Interrelations with Sustainable Development

From a review of the literature, it can be noted that bicycle tourism is highly interrelated with the SDGs. There are different researches which show the significance of cycle tourism to such SDGs as climate action, life on land, and decent work promotion (Gao and Li, 2020). It is possible to say that cycle tourism is an important part of sustainable development agenda.

Additionally, the analysis of recent literature indicates that bicycle tourism has become a part of policies related to tourism and mobility. It is demonstrated by research carried out in Europe and Latin America according to which there were initiatives undertaken by local and regional administrations aimed at promoting the building of cycling infrastructures and sustainable tourist routes as elements of territorial development strategy (Petino et al., 2021). These facts prove that the practice has gained legitimacy in institutions and is becoming a critical element of tourism planning.

The third element identified in relation to bike tourism refers to its interdisciplinary character. As seen from the analyzed literature, this type of tourism is not only related to the environment and economy but also to the social, cultural, and public health sectors. Researchers like Buning & Lamont (2020) say that bike tourism is associated with healthy living, physical exercise, and community cohesiveness in the regions where it takes place.

In this way, there are also attempts to study bicycle tourism as a global phenomenon with localized expressions. In the case of Europe, the phenomenon has already developed into a specialized industry with considerable investments in the development of the required infrastructure, while in Latin America its role in community tourism is more apparent (Avila-Palencia et al., 2023).

In addition, some authors support the idea of a multiplication effect of sustainable development by bicycle tourism as it acts as a link between environmentally friendly transport, social inclusivity, innovative economy, and environment protection (Hamidi and Zhao, 2020; Macioszek and Cieřla, 2022). Such cross-sectional approach enhances the scope of influence of bicycle tourism making it a good example for the transition to sustainable tourism practices.

From the above discussion, one may claim that bicycle tourism is not merely an activity in terms of tourists moving around but is an emerging concept that can help bring about structural changes in our current understanding of both tourism and sustainable development due to its link with public policy, connection to the SDGs, and interdisciplinary approach.

The review of the analyzed sources indicates that bicycle tourism has proved to be a developing industry that brings substantial input from various perspectives of sustainable development. In terms of environmental management, clear positive outcomes can be observed in terms of decreasing emissions, protecting landscapes, and increasing tourist and community awareness. In terms of economics, the findings provide evidence of its ability to increase diversity of income generation, stimulate innovations, connect production chains, and foster social inclusiveness. These inputs are supported by the increased incorporation of bicycle tourism in governmental policies and Sustainable Development Goals.

In total, findings from this stage demonstrate the possibility of supporting the idea that bicycling tourism is not just a concept of an alternative type of tourism but is capable of being an agent of transformation in social, economical, and environmental spheres as well. The development of the phenomenon shows that it is capable of adaptation and has endless possibilities of solving the global problems of sustainability. The presented data can serve as a basis for future research and policies related to international sustainable development issues.

Discussion

The findings of the literature review prove that bicycle tourism is indeed a rising practice that relates to the SDGs, namely SDG 8 (decent work and economic growth), SDG 11 (sustainable cities and communities), SDG 13 (climate action), and SDG 15 (life on land). As it follows from (Tambovceva et al., 2020; Scheyvens and Cheer, 2021), the outcomes of the review prove that the utilization of bicycles for the purposes of tourism ensures clean transportation and decreases the carbon footprint, which differentiates this form of tourism from traditional ones.

Multiple scholars state that bicycle tourism is not just capable of reducing greenhouse gas emissions but also supports landscape preservation and the protection of biodiversity (McQueen et al., 2020; Cheng et al., 2022). Nevertheless, research from Latin America is rare. In this context, the results presented by (Avila-Palencia et al., 2023) about bicycle commuting in Latin American cities reveal a steady growth, although it continues to be restricted by problems with the infrastructure and city governance. At the same time, the situation differs from Europe since there is a firm policy in place concerning cycling tourism (Binatti et al., 2022; Philips et al., 2022). It means that there is a need for regional research on the subject.

From an economic point of view, results agree with the findings obtained by (Tsitoura et al., 2021; Petino et al., 2021), which underline the possible impact of bike tourism for diversification of revenue and reinforcing of local production chains. Nonetheless, shortcomings have been found in the long-term

assessment of economic benefits, especially in the case of rural areas of Latin America, where bike tourism could be a viable alternative to the dependence on mass tourism (Ruiz-Real et al., 2020). Moreover, researchers such as (Dossou et al., 2021; Kim et al., 2021) point out that gender inequality is one of the problems in this activity and needs more attention.

Cycle tourism is a multidisciplinary concept that incorporates the elements of mobility, recreation, health, and resilience. (Kim and Hall, 2022) view cycle tourism in the light of its connection to healthy living and community engagement, whereas Oviedo and Sabogal-Cardona (2022) emphasize the possible change in behavior towards more sustainable modes of travel. Such studies are supplemented by the results of (Guo et al., 2021; Ospina-Mateus et al., 2023), who state the presence of risks connected with infrastructure dependency and seasonal fluctuations in demand.

In spite of the evident benefits, both environmental and economic, some shortcomings of this study should be considered as well. First, the majority of the empirical research is quantitative, and is conducted in Europe and Asia, whereas qualitative or case-based research is prevalent in Latin America (Kou et al., 2020; Ciascai et al., 2022). Second, there are no criteria of measuring the contribution of bike tourism in the sphere of reducing CO2 emission or creating jobs. Third, there are some inconsistencies in the definitions of the concept of "bike tourism" as opposed to "cycle tourism" or "bicycle tourism".

Comparative research is necessary for understanding the impact of bike tourism in various social, economic, and geographical settings, specifically in Latin America, where its implementation could be an important tool for community tourism (Derman and Keleş, 2023; Ciascai et al., 2022). In addition, further research is necessary using life cycle assessment methods (De Oliveira and Oliveira, 2023), and models of circular economy in tourism (Primc et al., 2020) in order to develop reliable sustainability indicators.

As a result, the outcomes demonstrate that not only is bicycle tourism part of the field of recreation, but it is rather an instrument that contributes to the sustainability of a region. Bicycle tourism's contribution to sustainable mobility, biodiversity preservation, socioeconomic development, and integration make it an important tool in the development of new tourism models. Nevertheless, the full potential of the approach will be revealed if governments, societies, and the tourism sector are able to develop effective public policies in favor of the development of this model.

Conclusions

Through the literature review, it was found that bicycle tourism is one of the developing activities, which make great contributions towards sustainability. With regards to the environment, the activity shows its potential in reducing the carbon footprint, promoting clean transportation, conserving landscapes, and promoting environmental education and awareness.

Economically speaking, it was observed that bicycle tourism helps boost the local economy by generating employment, establishing business enterprises and developing value chains related to tourism services, culinary art and commerce. Moreover, it was also observed that its potential to bring about social inclusion through engagement of women, youth and rural populations in the management of sustainable initiatives exists.

It is evident from the study that the concept of bicycle tourism extends beyond the idea of an alternative kind of tourism into an effective mobility, development, and innovation model. The link with the Sustainable Development Goals makes it clear that bicycle tourism has the potential to be a tool for triggering changes in the approach to tourism and sustainability.

But, the review indicated the necessity of more studies in Latin American settings because bicycle tourism is a relatively new phenomenon there and there are no standardized measures that could be used to examine the effects of bicycle tourism on the environment and economy.

To conclude, bicycle tourism is a viable approach toward creating sustainable and resilient societies and communities. Nevertheless, for such an approach to be effective and yield the intended results, it is important for policies to converge alongside green infrastructure investments and participation from the community and other stakeholders in the tourism sector.

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