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Research Article

The potential use of green bonds and carbon credits in tourism: A SWOT analysis within a conceptual framework

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Abstract

Purpose: This study aims to evaluate the potential use of green bonds and carbon credits in the tourism sector through a conceptual SWOT analysis. It examines the advantages, limitations, opportunities, and risks associated with these financial instruments and considers their potential contribution to the transition toward low-carbon and resource-efficient tourism.

Design/methodology/approach: The study employs a narrative literature review and a conceptual SWOT analysis. Academic publications, institutional reports, and documented case studies published primarily between 2010 and 2025 were examined through searches conducted in Scopus and Web of Science. The identified findings were classified as strengths, weaknesses, opportunities, and threats according to the financial, environmental, managerial, market, and regulatory characteristics of green bonds and carbon credits.

Results: The findings indicate that green bonds have the potential to direct capital toward energy-efficient accommodation facilities, renewable energy systems, low-carbon transportation infrastructure, and destination-level environmental investments. Carbon credits offer greater flexibility in addressing residual emissions, particularly in aviation, cruise tourism, accommodation, and tourism events. However, green bonds involve issuance, certification, and reporting costs, while carbon credits face concerns related to additionality, verification, price volatility, credibility, and greenwashing.

Discussion: Green bonds and carbon credits should be regarded as complementary rather than interchangeable instruments. Green bonds are more suitable for long-term and capital-intensive structural investments, whereas carbon credits may serve as a transitional mechanism for emissions that cannot be immediately eliminated. Their effective use requires tourism organizations to measure and reduce emissions at source, finance structural improvements, and use independently verified carbon credits only for unavoidable residual emissions. The study provides a tourism-focused conceptual synthesis and practical guidance for policymakers, investors, destination managers, and tourism operators.

Keywords: Green Finance, Green Bonds, Carbon Credits, Sustainable Tourism, SWOT Analysis

Introduction

Tourism is among the fastest-growing global industries, generating substantial economic value while exerting considerable environmental pressures through high-carbon activities such as air transport, cruise operations, and energy-intensive accommodation facilities (Gössling & Peeters, 2015; UNWTO, 2021). These impacts have intensified the need for financing mechanisms that simultaneously support economic performance and advance environmental sustainability. In this regard, green finance—encompassing instruments such as green bonds and carbon credits—has emerged as a strategic means of directing capital toward low-carbon, resource-efficient, and socially responsible projects (Zhang et al., 2019; Wang et al., 2022). Green bonds allocate proceeds exclusively to environmentally beneficial initiatives, including renewable energy deployment, sustainable mobility, and eco-certified infrastructure (Flammer, 2021), while carbon credits enable organizations to offset residual emissions through certified reduction or removal projects (World Bank, 2023). Although these instruments have been increasingly applied in sectors such as energy, transport, and urban infrastructure, their systematic integration into the tourism sector remains limited (Chen et al., 2025). Existing studies tend to address green bonds and carbon credits separately, often without a comparative framework capable of identifying their complementary roles, strategic advantages, and sector-specific constraints. This gap restricts the development of coherent financing strategies that could align tourism with global climate

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targets and the United Nations Sustainable Development Goals (European Commission, 2020; UNFCCC, 2022).

In response to this gap, the present study conducts a conceptual SWOT analysis to evaluate the potential of green bonds and carbon credits in advancing sustainable tourism development. Drawing on peer-reviewed literature, institutional reports, and selected case studies, the research examines their strengths, weaknesses, opportunities, and threats within the tourism context. The study contributes to the literature by bringing green bonds and carbon credits together within a comparative tourism-focused framework. Rather than proposing a new theoretical model, it offers a conceptual synthesis that clarifies the complementary roles, sector-specific applications, and strategic limitations of these instruments. From a practical perspective, it provides insights for policymakers, investors, destination managers, and tourism operators seeking to integrate green finance into tourism decarbonization strategies (OECD, 2020; Manta et al., 2024).

Conceptual Framework

Definition and Components of Green Finance

Green finance refers to a financing model that prioritizes the allocation of capital to projects aimed at strengthening environmental sustainability, mitigating ecological risks, and addressing climate change (Wang et al., 2022). In this approach, investment decisions consider not only financial returns but also environmental value, thereby directing resources toward low-carbon and resource-efficient initiatives (Fu et al., 2023; Zhang et al., 2019). Key instruments within this framework include green bonds, carbon credits, and other sustainability-focused financial mechanisms. Green bonds are debt instruments issued with the explicit commitment that the proceeds will be invested solely in projects delivering measurable environmental benefits (Chang et al., 2022). Typical areas of application include renewable energy deployment, energy efficiency improvements, sustainable transportation systems, waste management infrastructure, and ecosystem restoration programs (Bhutta et al., 2022; Flammer, 2021). The credibility of green bonds is reinforced through independent verification processes, which confirm that funds are allocated to eligible projects in accordance with established international standards (Petucco et al., 2025). Carbon credits, on the other hand, are tradable certificates representing the reduction, prevention, or elimination of a specific amount of greenhouse gas emissions (Burke and Gambhir, 2022). They serve to encourage investment in low-carbon technologies and meet compliance program requirements stipulated by international climate agreements (Pande, 2024). They can be considered market-based incentives to encourage emissions reductions within voluntary markets, where organizations and individuals offset emissions beyond legal requirements (Chen et al., 2022; World Bank, 2023). The global integrity and standardization of green finance are supported by a range of international frameworks (Singh, 2022). The International Capital Market Association (ICMA) has issued the "Green Bond Principles", which promote transparency, accountability, and consistency in the issuance of green bonds (ICMA, 2021). The European Union's Green Taxonomy establishes detailed technical screening criteria for classifying economic activities as environmentally sustainable (European Commission, 2020). Similarly, the United Nations Framework Convention on Climate Change (UNFCCC) defines the operational structures of carbon markets and provides governance for both compliance and voluntary mechanisms at the global level (UNFCCC, 2022).

In the context of tourism, these financial instruments are increasingly recognized as essential enablers of sustainable transformation (Chen et al., 2025). By providing a reliable source of funding for reducing tourism's carbon footprint, expanding renewable energy use, and fostering the development of environmentally responsible infrastructure, green bonds and carbon credits can facilitate the sector's alignment with global climate objectives (Manta et al., 2024).

The Need for Sustainable Financing in the Tourism Sector

While the tourism sector generates significant economic value, it also has substantial environmental impacts that require careful consideration (Tisdell and Tisdell, 2001). High-carbon activities, such as air transportation, cruise tourism, energy-intensive accommodation facilities, and fossil fuel-dependent transport systems, constitute some of the primary sources of tourism-related greenhouse gas emissions (Gössling and Peeters, 2015). These environmental pressures highlight the urgent need for innovative financing mechanisms aimed at improving the sector's environmental performance and reducing its carbon intensity (Issa, 2024). Achieving sustainable transformation in tourism requires comprehensive financial mechanisms that prioritize green infrastructure investments. Key areas include the widespread adoption of renewable energy technologies in tourism facilities, the integration of energy efficiency measures, the development of wastewater treatment and

recycling systems, and the promotion of low-carbon mobility solutions (UNWTO, 2021). However, such investments often involve high upfront costs, making it essential to mobilize long-term, cost-effective financing instruments supported by strong public–private partnerships (Vassileva, 2022). The green transition of tourism aims not only to reduce environmental impacts but also to enhance destination competitiveness and strengthen the sector's long-term resilience (Faisal, 2024; Kolisnichenko, 2025). When supported by instruments such as green bonds, carbon credits, sustainable investment funds, and international climate finance schemes, this transition can accelerate the integration of tourism into a low-carbon economy (Dill, 2024; OECD, 2020). Sustainable financing should be regarded as a cornerstone for restructuring tourism in alignment with global climate objectives, ensuring that the sector contributes to both environmental sustainability and economic vitality (Hsiao et al., 2024; Talukder, 2025)

The Potential Use of Green Bonds in Tourism

Green bonds have emerged as a strategic financial instrument for mobilizing capital toward environmentally sustainable projects in the tourism sector (Kumar et al., 2025). These bonds channel investment into initiatives that not only reduce environmental impacts but also enhance the sector's long-term competitiveness and resilience. In tourism, green bonds can serve as a critical enabler for projects such as eco-hotel developments, LEED-certified buildings, renewable energy integration, sustainable transportation, and low-carbon infrastructure upgrades (Flammer, 2021; İlban et al., 2022). Eco-hotel projects, which are designed to minimize energy consumption, reduce waste, and integrate sustainable resource management, represent one of the most promising areas for green bond financing (Babaremu et al., 2022; Legrand et al., 2022). Such facilities can incorporate advanced energy efficiency systems, water-saving technologies, and eco-certified construction materials, thereby meeting both environmental and market-driven sustainability criteria (Prud'homme and Raymond, 2013). In regions where tourism is a significant economic driver, the issuance of green bonds for eco-hotel developments could attract environmentally conscious investors while signaling a commitment to global climate goals (Dolnicar et al., 2019; Saiz, 2024). Another key application lies in the integration of renewable energy into tourism operations (Chen et al., 2024). Green bonds can finance the installation of solar panels, wind turbines, and geothermal systems in hotels, resorts, and tourism facilities, thereby reducing dependency on fossil fuels and lowering operational carbon footprints (IEA, 2022; Shang et al., 2023). Such initiatives not only support environmental sustainability but also provide long-term cost savings and energy security for tourism operators (Pace, 2016). In the domain of transportation and infrastructure, green bonds can be leveraged to fund low-carbon mobility solutions, such as electric vehicle charging networks, sustainable public transport systems, and energy-efficient port and airport upgrades (Avesh et al., 2024). These investments are particularly relevant in destinations where tourism-related transport accounts for a significant share of greenhouse gas emissions (Hall et al., 2012). Green bonds provide a scalable and market-oriented financing solution to align tourism development with sustainability objectives. By targeting eco-hotels, renewable energy integration, and low-carbon transport infrastructure, the tourism sector can harness this instrument to transition toward a more sustainable and climate-resilient model (Kumareswaran and Jayasinghe, 2023).

Applicability of Carbon Credits in Tourism

In tourism, carbon credits offer a flexible means of addressing the emissions that cannot be eliminated through direct mitigation (Scott et al., 2016). Air travel, often the most carbon-intensive component of a trip, has prompted many airlines to introduce voluntary offset options. Through these schemes, passengers contribute to certified initiatives—such as reforestation, renewable energy deployment, or biodiversity restoration—that reduce or remove greenhouse gases equivalent to those produced during their flights (Gössling et al., 2007). The hospitality sector has followed a similar path, with hotels and resorts increasingly calculating the carbon footprint of guest stays and purchasing offsets from accredited programs like the Verified Carbon Standard or the Gold Standard (Velaoras et al., 2025). When such programs are transparently documented and independently verified, they may support carbon-neutral positioning; however, insufficient disclosure can expose hospitality firms to greenwashing concerns (Dhanda, 2014; Velaoras et al., 2025). Large-scale tourism events, including conferences, festivals, and sports gatherings, are adopting comparable strategies by measuring their overall emissions—from attendee travel to venue energy use—and neutralizing them through high-quality, verified projects (UNFCCC, 2022). Carbon credit use is expanding beyond individual enterprises to encompass destination-level strategies. Certain destinations are now pursuing carbon-neutral positioning by combining emissions reductions with offset investments that support both environmental and local development goals (Hatamifar et al., 2025; Faisal, 2024). Certain destinations are pursuing carbon-neutral strategies by combining direct emissions reductions with carefully verified offset investments (Gössling and

Schumacher, 2010; Hatamifar et al., 2025). Palau provides a destination-level example through an initiative designed to reduce tourism's carbon footprint by promoting local food production and developing a carbon-management platform for visitors (Sustainable Travel International, 2020). These activities take place within two distinct market structures. Compliance markets, established under mechanisms such as the Kyoto Protocol's Clean Development Mechanism, require regulated entities to meet legal emissions targets, sometimes incorporating tourism-linked projects. Voluntary markets, by contrast, are driven by corporate responsibility initiatives and growing consumer demand for climate-conscious travel products (World Bank, 2023). When implemented transparently and in line with credible standards, carbon credits can serve as an effective transitional instrument—allowing the tourism sector to take immediate climate action while working toward long-term decarbonization (Zovko, 2024).

Methodology

This study adopts a narrative review methodology to examine the potential use of green bonds and carbon credits in the tourism sector through a conceptual SWOT analysis. The purpose of the review is to synthesize academic and institutional literature and to evaluate the possible contribution of these financial instruments to sustainable tourism strategies. A narrative review was considered appropriate because studies examining green bonds and carbon credits specifically within tourism remain limited and are distributed across the fields of tourism, finance, sustainability, energy, and environmental policy. The literature review was conducted in August 2025 using the Scopus and Web of Science databases. The review primarily covered publications issued between 2010 and 2025. Earlier studies were also included when they provided an important conceptual foundation for tourism-related carbon emissions, carbon offsetting, or sustainable tourism development.

The main search terms included "green bonds," "carbon credits," "green finance," "sustainable finance," "carbon offsets," "carbon markets," "sustainable tourism," "tourism investment," "hospitality," "hotels," "resorts," "airlines," "cruise tourism," "tourism events," and "destination management." These terms were searched in different combinations to identify studies addressing the financial, environmental, managerial, and regulatory dimensions of green bonds and carbon credits in tourism. Additional searches were conducted using terms such as "carbon-neutral tourism," "tourism decarbonization," "green hotel investment," "renewable energy in tourism," and "low-carbon tourism infrastructure." Peer-reviewed journal articles, scholarly books and book chapters, reports published by recognized international institutions, and documented case studies were considered for inclusion. Sources were included when they directly examined green bonds or carbon credits in tourism or when their findings had clear implications for tourism enterprises, tourism infrastructure, transportation, accommodation, events, or destination management. Studies from finance, energy, transportation, and environmental policy were included only when a clear connection with tourism applications could be established. Duplicate publications, sources without a clear relationship to the research objective, promotional materials, unsupported opinion pieces, and publications lacking sufficient academic or institutional credibility were excluded. The selection of sources was based on their relevance to the study, credibility, methodological clarity, and contribution to understanding the tourism-related use of the two financial instruments.

The selected sources were examined according to the financial instrument discussed, the tourism activity or subsector concerned, the proposed area of application, the reported benefits and limitations, and the relevant market, regulatory, environmental, and policy conditions. Tourism-related applications were evaluated within the contexts of accommodation establishments, resorts, aviation and transportation, cruise tourism, tourism events, tourism infrastructure, and destination-level sustainability initiatives. The SWOT framework was used to categorize and interpret the findings. Strengths were defined as the inherent advantages offered by green bonds or carbon credits within tourism, including financing capacity, flexibility, reputational value, and environmental or socio-economic benefits. Weaknesses referred to the internal limitations of these instruments, such as issuance costs, accessibility barriers, verification problems, limited environmental additionality, and dependence on offsetting. Opportunities included favorable external conditions, such as increasing investor interest, growing demand for sustainable tourism products, supportive public policies, and the expansion of sustainable finance markets. Threats included external risks arising from regulatory changes, macroeconomic instability, tourism crises, market volatility, credibility concerns, changing consumer expectations, and the physical impacts of climate change. Green bonds and carbon credits were first evaluated separately because they differ in terms of their financial structure, intended use, and environmental function. The findings were then compared to identify their complementary roles, tourism-specific areas of applicability, and strategic limitations. In this way, the SWOT analysis was used not merely to list findings from previous

studies, but to explain why each identified factor constitutes a strength, weakness, opportunity, or threat within the tourism sector.

Results

The findings obtained from the reviewed sources are presented under the four dimensions of the SWOT framework. Green bonds and carbon credits are first assessed separately and are subsequently compared in terms of their tourism-specific applications and strategic implications.

Strengths

Green bonds are debt instruments in which the proceeds are exclusively allocated to projects that deliver measurable environmental benefits. In recent years, their use in financing sustainable tourism projects has grown steadily, with literature highlighting their potential to channel private sector investment into environmental initiatives such as energy efficiency and renewable energy integration (Shang et al., 2023). In the tourism context, green bonds offer a dual advantage: they not only finance low-carbon infrastructure but also enhance the sector's competitiveness and resilience in the long term. From a reputational perspective, issuing green bonds positions tourism enterprises as environmentally responsible actors, thereby increasing brand value. Tourism-specific cases demonstrate that green bonds can be used to finance large-scale sustainability investments in hospitality. Host Hotels and Resorts issued a USD 450 million green bond in 2021 to finance eligible green projects involving green building certification, hotel renovation, and improvements in energy and water efficiency (Host Hotels and Resorts, 2022). Such investments may support the modernization of lighting and HVAC systems, renewable energy integration, water conservation, waste reduction, and environmentally certified renovations. Their strategic value lies in connecting long-term capital expenditure with measurable environmental improvements and potential operational savings. Consequently, green bonds represent a strategic financial instrument that integrates environmental sustainability with tangible economic benefits in the tourism sector.

Carbon credits are tradable certificates representing the reduction, avoidance, or removal of a specific quantity of greenhouse gas emissions. In the tourism sector, they play a pivotal role in enabling businesses to achieve carbon neutrality and align with global climate targets. Tourism-related activities—particularly transport and accommodation—account for approximately 8% of global greenhouse gas emissions, with projections suggesting a potential increase of up to 152% by 2035 if current practices persist (Gössling and Peeters, 2015). In response, international agreements such as the Glasgow Declaration (2021) have set ambitious targets to halve tourism-related emissions by 2030 and achieve net-zero by 2050. Carbon credits and offsetting mechanisms are seen as essential tools in meeting these targets. Empirical evidence suggests that well-designed carbon offset programs can effectively reduce tourism-related emissions when stakeholders—local governments, tourism enterprises, and travelers—collaborate under balanced incentive and regulatory frameworks (Li et al., 2024). These mechanisms offer market-based flexibility: unavoidable emissions from tourism operations can be offset by investing in emission reduction projects elsewhere, such as reforestation, renewable energy installations, or energy efficiency programs. One of the key strengths of carbon credits lies in their potential to deliver co-benefits beyond emission reductions. For example, when a tourism enterprise purchases credits from a forest conservation project, the benefits extend to biodiversity preservation, local employment, and community development. Similarly, investing in renewable energy projects can lower local energy costs and promote sustainable livelihoods. Moreover, achieving carbon-neutral certification can enhance the competitive positioning of tourism businesses among environmentally conscious travelers. In this sense, carbon credits are not merely a compliance mechanism but a versatile, multi-dimensional instrument that combines environmental responsibility with social and economic value creation in the tourism sector.

Weaknesses

Despite their potential, the application of green bonds in tourism investments faces several challenges. First, the issuance process is often more complex and costly compared to conventional bonds. Issuers are required to comply with recognized standards such as the Green Bond Principles established by the International Capital Market Association (ICMA), which mandate transparent allocation of proceeds, independent verification of eligible projects, and ongoing reporting (ICMA, 2021). These requirements impose additional administrative and certification costs, making green bond issuance less accessible for small and medium-sized tourism enterprises. Another concern relates to the actual environmental effectiveness of green bonds. Recent research by the Bank for International Settlements (BIS) suggests that companies issuing green bonds do not exhibit statistically significant improvements in their emissions performance (BIS, 2021). Many issuers are already

low-carbon firms, while major polluters often avoid green bond markets due to potential accusations of greenwashing or exclusion from green investment portfolios. This limits the instrument's transformative potential and raises questions about its contribution to climate change mitigation. From a financial perspective, empirical studies indicate that green bonds rarely provide a substantial cost advantage over conventional bonds. The so-called "greenium" — a lower yield demanded by investors for green bonds — is often negligible, meaning issuers may not achieve significant reductions in borrowing costs (Flammer, 2021). These limitations suggest that while green bonds are an important financing tool, their impact depends on rigorous project selection, credible verification, and stronger market incentives.

Carbon credits in tourism investments are subject to several well-documented criticisms. A primary concern is that offsets do not directly reduce emissions at their source; instead, they compensate for emissions by financing reductions elsewhere. This approach can delay the adoption of permanent mitigation strategies within tourism operations, creating a risk that businesses use offsets as a substitute for genuine decarbonization (Scott et al., 2012). Equity concerns also arise, as carbon credit projects are often implemented in developing countries while the credits are purchased by companies in wealthier nations. This dynamic has been criticized for potentially constraining the development rights of host communities and raising questions of climate justice (Lyon and Montgomery, 2015). Transparency and credibility are further challenges. Studies in the hospitality sector have found that many hotels claiming carbon neutrality through offsets provide insufficient evidence to substantiate their claims (Dhanda, 2014). This raises the risk of greenwashing, where carbon credits are used more for marketing purposes than for measurable climate benefits. Moreover, the voluntary carbon market remains fragmented, with varying quality standards (e.g., Gold Standard, Verra) and inconsistent verification procedures. This creates the possibility of purchasing low-quality credits that deliver limited environmental value. Finally, the volatility of carbon credit prices complicates long-term financial planning; for instance, the price of voluntary credits can fluctuate significantly within a few years due to changes in supply-demand dynamics, creating uncertainty for tourism investors relying heavily on this mechanism.

Opportunities

The global sustainable finance market has expanded rapidly over the past decade, creating favorable conditions for the use of green bonds in the tourism sector. The annual issuance of sustainable debt instruments—including green, social, and sustainability-linked bonds—grew from USD 28.7 billion in 2013 to USD 1.64 trillion in 2021 (OECD, 2020). This surge reflects a growing investor appetite for environmentally responsible projects, a trend that the tourism industry is well-positioned to leverage. Green bonds present a strategic opportunity for tourism enterprises to align with evolving consumer preferences. Increasing numbers of travelers are seeking environmentally certified accommodations, low-carbon destinations, and sustainable mobility options. By financing eco-hotels, renewable energy integration, and low-carbon transport infrastructure, green bonds can help tourism operators meet this demand and secure competitive advantage. Policy support further enhances the opportunity landscape. Initiatives from international organizations—such as the joint UNWTO and IFC capacity-building programs—have been launched to facilitate green investment in tourism, particularly in developing economies (UNWTO, 2021). Governments in some regions are also offering tax incentives, guarantees, or subsidies for tourism projects financed through green bonds. In addition, the adoption of frameworks like the EU Green Taxonomy provides clarity for investors and issuers, reinforcing market confidence and encouraging more tourism-related green bond issuance. Ultimately, the combination of strong market growth, shifting consumer behavior, and supportive policy environments positions green bonds as a high-potential financing tool for accelerating the tourism sector's transition toward sustainability.

Carbon credits offer a growing set of opportunities for tourism stakeholders as voluntary carbon markets expand and climate consciousness among travelers increases. The rising prevalence of corporate net-zero commitments has fueled demand for high-quality offsets, opening a window for tourism enterprises to differentiate themselves through verified carbon-neutral offerings. Recent surveys indicate that over 60% of travelers are willing to pay more for carbon-neutral travel options, signaling a viable revenue stream for operators who integrate offset programs into their business models (Booking.com, 2023). The mechanism also creates avenues for innovation and partnership. Tourism companies can collaborate with environmental organizations, renewable energy developers, or forestry projects to co-create offset initiatives that generate both climate benefits and local socio-economic value. For example, an eco-resort partnering with a mangrove restoration project not only offsets emissions but also enhances biodiversity, supports fisheries, and strengthens coastal resilience. Government incentives and international climate finance mechanisms add further momentum. Some countries provide tax reductions, marketing benefits, or certification advantages to businesses achieving carbon neutrality through credible offset programs. Additionally, global funds such as

the Green Climate Fund can co-finance tourism-related low-carbon infrastructure projects, with carbon credits serving as an added revenue stream to sustain such investments. In this way, carbon credits offer tourism stakeholders an adaptable tool for meeting climate goals while simultaneously creating market differentiation, enhancing brand reputation, and fostering positive community and environmental impacts.

Threats

The deployment of green bonds in tourism investments faces several external threats. Macroeconomic conditions, such as rising global interest rates, can dampen investor demand if green bonds fail to offer competitive yields compared to conventional instruments. In such an environment, tourism-related green bond projects—often perceived as niche or higher risk—may struggle to attract sufficient capital. Tourism's inherent vulnerability to external shocks further compounds this risk. Crises such as pandemics, geopolitical conflicts, or extreme weather events can sharply reduce tourism revenues, affecting the cash flows of projects financed by green bonds and potentially undermining repayment capacity. The COVID-19 pandemic, which caused unprecedented disruptions to international tourism in 2020, serves as a stark example of such sectoral fragility.

Regulatory changes also pose potential threats. As green bond markets mature, regulators are likely to introduce stricter definitions, eligibility criteria, and reporting requirements. The EU Green Taxonomy, for instance, imposes detailed environmental performance thresholds for qualifying investments. If tourism-specific criteria become more stringent, issuers may face increased compliance costs or risk being excluded from green finance eligibility. Reputational risk linked to greenwashing remains significant. If high-profile cases emerge where green bond proceeds are found to have financed projects with limited or no environmental benefit, investor trust in the broader green finance market could erode. Such a loss of confidence would make it more challenging for tourism operators to leverage green bonds as a viable financing tool.

The carbon credit market also faces potential threats that could limit its effectiveness in tourism. One critical risk is the erosion of trust in voluntary carbon markets due to credibility concerns. Investigations have revealed instances of overestimated emission reductions, double counting of credits, and projects failing to deliver their promised climate benefits. If such cases proliferate, public perception of carbon offsets could shift from being a positive climate action to a form of corporate greenwashing, particularly in sectors like tourism that are under increasing environmental scrutiny. Regulatory developments could also change the landscape. As countries implement binding emission reduction targets under the Paris Agreement, voluntary offset mechanisms may be deprioritized in favor of mandatory reductions at the source. Tourism businesses relying heavily on offsets without substantive internal mitigation measures could find themselves unprepared for such regulatory shifts. Evolving consumer expectations present another challenge. As climate awareness deepens, travelers may increasingly demand verifiable low-carbon operations rather than offset-based claims of carbon neutrality. In this scenario, operators depending primarily on credits to meet climate goals could lose market competitiveness to those investing directly in emission reductions. The intensifying physical impacts of climate change—such as rising sea levels, extreme weather events, and biodiversity loss—may overshadow the perceived adequacy of carbon credits as a mitigation strategy. If offsets are seen as insufficient to address escalating climate risks, both investors and consumers may push for more direct and transformative interventions, reducing the long-term role of carbon credits in tourism sustainability strategies.

Table 1. SWOT Analysis of Green Bonds and Carbon Credits in Tourism Investments

Dimension	Green Bonds	Carbon Credits
Strengths	• Allocates capital exclusively to environmentally beneficial tourism projects (eco-hotels, renewable energy, low-carbon transport). • Enhances brand reputation and investor confidence through certified sustainability commitments. • Provides long-term operational savings via energy efficiency and resource management improvements. • Demonstrated scalability with high-profile case studies in hospitality and tourism infrastructure.	• Enables tourism enterprises to achieve carbon neutrality and align with global climate targets. • Offers market-based flexibility by offsetting unavoidable emissions through verified projects. • Delivers co-benefits such as biodiversity protection, community development, and local employment. • Strengthens competitive positioning among environmentally conscious travelers.

Dimension	Green Bonds	Carbon Credits
Weaknesses	• Higher complexity and costs compared to conventional bonds due to compliance with certification standards (ICMA, 2021). • Limited impact on actual emissions reductions in some cases (BIS, 2021). • "Greenium" effect often negligible, reducing financial incentives for issuers. • May be less accessible to small and medium-sized tourism enterprises.	• Offsets do not reduce emissions at source, potentially delaying structural mitigation measures. • Equity concerns regarding project location and climate justice. • Transparency and verification challenges, risk of greenwashing. • Fragmented voluntary markets with variable credit quality and price volatility.
Opportunities	• Rapid growth of global sustainable finance markets, creating favorable conditions for tourism-related issuance. • Increasing consumer demand for sustainable travel and certified accommodations. • Policy support from international organizations and national governments. • EU Green Taxonomy and similar frameworks provide market clarity and investor confidence.	• Expanding voluntary carbon markets and rising corporate net-zero commitments. • Consumer willingness to pay premium for carbon-neutral travel options. • Potential for innovative partnerships with environmental and community projects. • Supportive government incentives and international climate finance opportunities.
Threats	• Vulnerability to macroeconomic conditions and rising interest rates. • Sensitivity to tourism sector shocks (e.g., pandemics, geopolitical crises). • Increasing regulatory stringency and compliance costs. • Reputational risks if proceeds fund projects with limited environmental impact.	• Credibility concerns in voluntary carbon markets (overestimated reductions, double counting). • Potential shift toward mandatory source reductions under future regulations. • Evolving consumer expectations demanding direct emission cuts over offsets. • Physical climate impacts potentially diminishing the perceived adequacy of offsets.

The SWOT findings indicate that green bonds and carbon credits serve different but complementary functions in tourism. Green bonds are primarily suitable for financing long-term and capital-intensive investments, including energy-efficient accommodation facilities, renewable energy systems, low-carbon transportation infrastructure, sustainable ports and airports, and destination-level environmental projects. Carbon credits, in contrast, provide greater flexibility in addressing residual emissions that cannot be eliminated immediately, particularly in aviation, cruise tourism, accommodation operations, and tourism events. The suitability of these instruments also differs across tourism subsectors. In the accommodation sector, green bonds may support building renovation, renewable energy integration, water-saving systems, and environmentally certified infrastructure. However, their issuance costs and reporting requirements may limit their accessibility for small and medium-sized tourism enterprises. Carbon credits are more accessible and may help hotels and resorts compensate for unavoidable emissions, but their use should not replace direct investments in energy efficiency and emissions reduction. In aviation and cruise tourism, carbon credits may function as a transitional instrument because technological alternatives remain limited, while green bonds can finance cleaner airport, port, and transportation infrastructure. At the destination level, green bonds can support integrated projects involving public transportation, renewable energy, ecosystem restoration, and waste or water management, whereas locally based carbon-credit projects may generate additional environmental and community benefits.

The relationships among the SWOT dimensions further demonstrate that the advantages of these instruments may also create risks. The reputational benefits associated with green finance can become a threat when environmental claims are not supported by transparent reporting and independent verification. Similarly, the flexibility of carbon credits constitutes a strength, but excessive reliance on offsetting may delay direct emission reductions. The growth of sustainable finance markets creates new investment opportunities, while simultaneously increasing regulatory scrutiny and compliance requirements. Green bonds therefore appear more appropriate for structural and long-term transformation, whereas carbon credits are more suitable for managing residual emissions during the transition process. Their most effective use requires a sequential approach in which tourism organizations first measure emissions, prioritize direct reductions, finance structural improvements, and use verified carbon credits only for emissions that remain unavoidable.

Conclusion

The findings of this conceptual SWOT analysis highlight that both green bonds and carbon credits have substantial potential to drive the tourism sector's transition toward environmental sustainability, yet their impact is shaped by structural, market, and regulatory conditions. Consistent with prior studies (Flammer, 2021; Gössling and Peeters, 2015; Shang et al., 2023), green bonds are found to be effective in mobilizing capital for eco-friendly infrastructure, renewable energy integration, and low-carbon transport, while simultaneously enhancing brand reputation and investor confidence. However, aligning with critiques in the literature (BIS, 2021; Petucco et al., 2025), their measurable impact on actual emission reductions remains inconsistent, and high compliance costs can hinder adoption, particularly among smaller tourism enterprises. Carbon credits, as echoed in previous research (Scott et al., 2012; Lyon and Montgomery, 2015), offer flexible, market-based mechanisms for offsetting unavoidable emissions and can generate socio-economic co-benefits. Nonetheless, persistent concerns regarding credibility, transparency, and reliance on offsets over direct mitigation underscore the importance of quality assurance and complementary decarbonization strategies. Overall, the comparative analysis reinforces the need for a balanced approach where both instruments operate in synergy with broader climate action measures. The analysis shows that green bonds and carbon credits should be treated as complementary rather than interchangeable instruments. Green bonds are more suitable for long-term and capital-intensive investments in accommodation, transportation infrastructure, and destinations, whereas carbon credits are more appropriate for addressing residual emissions in aviation, cruise tourism, events, and hospitality operations. The effectiveness of both instruments depends on transparent reporting, independent verification, credible standards, and the prioritization of direct emissions reductions. Tourism organizations should therefore follow a sequential approach: measure emissions, reduce them at source, finance structural improvements, and use verified carbon credits only for emissions that remain unavoidable. This tourism-specific hierarchy provides a practical basis for aligning green finance with decarbonization goals while limiting credibility, greenwashing, and regulatory risks.

Theoretical Implications

This study contributes to sustainable tourism finance literature by jointly examining green bonds and carbon credits within a comparative SWOT framework. Its primary contribution lies in conceptually synthesizing two financial instruments that have frequently been discussed separately across tourism, finance, and sustainability research. The analysis clarifies their distinct but complementary functions: green bonds mainly support long-term structural investments, whereas carbon credits provide greater flexibility in managing residual emissions. By relating these differences to tourism subsectors and strategic conditions, the study offers an organizing framework for future research rather than proposing a new theory. This framework may support subsequent empirical studies examining how organizational scale, subsector characteristics, regulatory conditions, and verification quality influence the adoption and effectiveness of green finance instruments in tourism.

Practical Implications

From a managerial and policy perspective, the study offers actionable insights for tourism stakeholders seeking to leverage green finance mechanisms. For practitioners, the results underscore the strategic value of aligning financing choices with evolving market demand for sustainable travel products and services. For example, hospitality operators can explore green bond financing for capital-intensive sustainability upgrades, while integrating carbon credit programs to address residual emissions in a transparent and verifiable manner. Policymakers can use the identified opportunities to design targeted incentives, certification schemes, and regulatory frameworks that lower entry barriers for small and medium-sized enterprises. Furthermore, the dual-instrument perspective can guide destination management organizations in structuring comprehensive financing portfolios that balance immediate emission offsets with long-term emission reductions.

Limitations and Future Research

This research is conceptual in nature, relying on secondary data and literature synthesis rather than empirical measurement, which limits the ability to quantify the direct environmental and financial impacts of the instruments discussed. The SWOT framework, while effective for strategic analysis, inherently simplifies complex market and policy dynamics and may not capture the full spectrum of interdependencies. Future studies should adopt mixed-method or longitudinal approaches to assess the actual performance of green bond– and carbon credit–financed tourism projects, including their measurable contributions to emission reduction targets. Comparative case studies across different geographic and regulatory contexts could deepen understanding of contextual drivers and barriers. Additionally, exploring hybrid financing models that

integrate green bonds, carbon credits, and other sustainability-linked instruments could yield valuable insights for both theory and practice.

Ethical Statement: Ethics committee approval was not required for this study because it was based solely on archival research and document analysis and did not involve the collection of data from human participants or animals (e.g., surveys, interviews, focus group discussions, or experimental studies involving humans or animals).

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Kaynakça

Avesh, M., Hossain, I., & Sharma, R. C. (2024). Revolutionizing transportation: The future impact of green energy. In *Dynamics of transportation ecosystem, modeling, and control* (pp. 261-293). Singapore: Springer Nature Singapore.

Babaremu, K., Olumba, N., Chris-Okoro, I., Chuckwuma, K., Jen, T. C., Oladijo, O., & Akinlabi, E. (2022). Overview of solar–wind hybrid products: Prominent challenges and possible solutions. *Energies*, *15*(16), 6014.

Bhutta, U. S., Tariq, A., Farrukh, M., Raza, A., & Iqbal, M. K. (2022). Green bonds for sustainable development: Review of literature on development and impact of green bonds. Technological Forecasting and Social Change, 175, 121378. doi:10.1016/j.techfore.2021.121378

BIS. (2021). Green bonds and the future of sustainable finance. Bank for International Settlements.

Booking.com. (2023). Sustainable travel report 2023. https://www.booking.com/

Burke, J., & Gambhir, A. (2022). Policy incentives for greenhouse gas removal techniques: The risks of premature inclusion in carbon markets and the need for a multi-pronged policy framework. *Energy and Climate Change*, *3*, 100074.

Chang, L., Taghizadeh-Hesary, F., Chen, H., & Mohsin, M. (2022). Do green bonds have environmental benefits?. *Energy Economics*, *115*, 106356.

Chen, S., Paramaiah, C., Kumar, P., Khan, S., & Haomu, Q. (2025). Toward sustainable tourism: Insights from green financing and renewable energy. *Energy Strategy Reviews*, *57*, 101618.

Chen, T., Liu, G., & Ahmed, S. (2024). Exploring challenges in implementing sustainable energy solutions and green tourism for eco-industrial parks in China. *Journal of Renewable and Sustainable Energy*, *16*(6).

Chen, Z., Zhang, Y., Wang, H., Ouyang, X., & Xie, Y. (2022). Can green credit policy promote low-carbon technology innovation?. *Journal of Cleaner Production*, *359*, 132061.

Dhanda, K. K. (2014). Measuring the impact of "carbon neutral" initiatives in the hospitality industry. Cornell Hospitality Quarterly, 55(4), 334–346. https://doi.org/10.1177/1938965514536189

Dill, H. (2024). Carbon pricing initiatives and green bonds: are they contributing to the transition to a low-carbon economy?. *Climate Policy*, *24*(4), 529-544.

Dolnicar, S., Knezevic Cvelbar, L., & Grün, B. (2019). A sharing-based approach to enticing tourists to behave more environmentally friendly. *Journal of Travel Research*, *58*(2), 241-252.

European Commission. (2020). *EU taxonomy for sustainable activities*. Publications Office of the European Union.

Faisal, S. M. (2024). Green tourism promotes sustainable development and combats climate change. *Clinical Medicine and Health Research Journal*, *11*(12), 70-89.

Flammer, C. (2021). Corporate green bonds. *Journal of Financial Economics*, *142*(2), 499–516.

Fu, C., Lu, L., & Pirabi, M. (2023). Advancing green finance: a review of sustainable development. *Digital Economy and Sustainable Development*, *1*(1), 20.

Gössling, S., & Peeters, P. (2015). Assessing tourism's global environmental impact 1900–2050. *Journal of Sustainable Tourism, 23*(5), 639–659.

Gössling, S., Broderick, J., Upham, P., Ceron, J.-P., Dubois, G., Peeters, P., & Strasdas, W. (2007). Voluntary carbon offsetting schemes for aviation: Efficiency, credibility and sustainable tourism. Journal of Sustainable Tourism, 15(3), 223–248. doi:10.2167/jost758.0

Hall, C. M., Gössling, S., & Scott, D. J. (2012). *Tourism and Climate Change: Impacts, Adaptation & Mitigation*. Routledge.

Hatamifar, P., Esfandiar, K., & Ghaderi, Z. (2025). Towards carbon neutrality in tourism: pathways and future research directions. *Asia Pacific Journal of Tourism Research*, 1-24.

Host Hotels & Resorts. (2021). 2021 Corporate responsibility report. https://www.hosthotels.com/

Hsiao, T. Y., Sung, P. L., & Yeh, Y. C. (2024). Resetting sustainable tourism policy amid climate change: the role of green perceived value, trust, satisfaction, and purchase intention from civil servants' perspective. *Journal of Policy Research in Tourism, Leisure and Events*, 1-18.

ICMA. (2021). *Green Bond Principles*. International Capital Market Association.

IEA. (2022). *Renewable energy market update*. International Energy Agency.

Issa, A. (2024). Do emissions reduction initiatives improve financial performance? Empirical analysis of moderating factors. *International Journal of Accounting & Information Management*, *32*(2), 228-257.

İlban, M. O., Bayar, S. B., & Kaya, B. (2022). Çevrimiçi turist yorumlarında yeşil algı: Leed sertifikalı konaklama işletmelerinin incelenmesi. *Pamukkale Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, (53), 349-365.

Kolisnichenko, P., Gorska, M., Dykha, M., & Bondarenko, M. (2025). Resilience and Green Transformation of the EU Tourism Sector Amid the Energy Crisis: Economic Security and Strategic Adaptation. *Economics, Finance and Management Review*, (2 (22)), 42-56.

Kumar, P., Taneja, S., & Ozen, E. (2025). Exploring the influence of green bonds on sustainable development through low-carbon financing mobilization. *International Journal of Law and Management*, *67*(2), 249-270.

Kumareswaran, K., & Jayasinghe, G. Y. (2023). *Green infrastructure and urban climate resilience*. Springer, Cham.

Legrand, W., Chen, J. S., & Laeis, G. C. (2022). *Sustainability in the hospitality industry: Principles of sustainable operations*. Routledge.

Li, Q., Wang, Y., & Zhang, J. (2024). Offsetting tourism emissions: Stakeholder collaboration and policy implications. Journal of Cleaner Production, 412, 137287. https://doi.org/10.1016/j.jclepro.2023.137287

Lyon, T. P., & Montgomery, A. W. (2015). The means and end of greenwash. Organization & Environment, 28(2), 223–249. https://doi.org/10.1177/1086026615575332

Manta, O., Folcut, O., Militaru, I., & Edu, T. (2024). Digitization and green finance, tools for sustainable tourism. In *Contemporary marketing and consumer behaviour in sustainable tourism* (pp. 9-27). Routledge.

OECD. (2020). *Financing sustainable tourism development*. Organisation for Economic Co-operation and Development.

Pace, L. A. (2016). How do tourism firms innovate for sustainable energy consumption? A capabilities perspective on the adoption of energy efficiency in tourism accommodation establishments. *Journal of cleaner production*, *111*, 409-420.

Pande, R. (2024). Can the market in voluntary carbon credits help reduce global emissions in line with Paris Agreement targets?. *Science*, eadp5223.

Petucco, C., Schaubroeck, T., Gibon, T., Popescu, I. S., & Benetto, E. (2025). On the validity of corporate green bonds' environmental claims: is the environmental reporting of corporate green bonds reliable?. *Environmental Research Letters*, *20*(6), 064007.

Prud'homme, B., & Raymond, L. (2013). Sustainable development practices in the hospitality industry: An empirical study of their impact on customer satisfaction and intentions. *International Journal of Hospitality Management, 34*, 116–126.

Saiz, A. (2024). *Negotiating ROI (Return on Investment) for ROI (Return on Impact) A Pre-Feasibility Study of Socio-Eco Resort Development in Eastern Indonesia* (Doctoral dissertation, Massachusetts Institute of Technology).

Scott, D., Gössling, S., Hall, C. M., & Peeters, P. (2016). Can tourism be part of the decarbonized global economy? The costs and risks of alternate carbon reduction policy pathways. *Journal of Sustainable Tourism*, *24*(1), 52-72.

Scott, D., Peeters, P., & Gössling, S. (2012). Can tourism deliver its "aspirational" greenhouse gas emission reduction targets? Journal of Sustainable Tourism, 20(1), 17–37. https://doi.org/10.1080/09669582.2011.617827

Shang, Y., Zhu, L., Qian, F., & Xie, Y. (2023). Role of green finance in renewable energy development in the tourism sector. *Renewable Energy*, *206*, 890-896.

Singh, V. K. (2022). Regulatory and legal framework for promoting green digital finance. In *Green digital finance and sustainable development goals* (pp. 3-27). Singapore: Springer Nature Singapore.

Sustainable Travel International. (2020). Project to make Palau a carbon neutral destination launched.

Talukder, M. B. (2025). Exploring the intersections of tourism with urban and regional planning: strategies for sustainable development and community integration. *Acta Scientiarum Polonorum Administratio Locorum*, *24*(2), 285-298.

Tisdell, C. A., & Tisdell, C. A. (2001). *Tourism economics, the environment and development: analysis and policy* (pp. 371-pp). Cheltenham: Edward Elgar.

UNFCCC. (2022). *Annual report of the UNFCCC secretariat*. United Nations.

UNWTO. (2021). *Tourism and green investment: Promoting sustainability in tourism*. United Nations World Tourism Organization.

UNWTO. (2021). The Glasgow Declaration on Climate Action in Tourism.

Vassileva, A. G. (2022). Green public-private partnerships (PPPs) as an instrument for sustainable development. *Journal of World Economy Transformations & Transitions*, *2*(5).

Velaoras, K., Menegaki, A. N., Polyzos, S., & Gotzamani, K. (2025). The role of environmental certification in the hospitality industry: Assessing sustainability, consumer preferences, and the economic impact. *Sustainability*, *17*(2), 650.

Wang, K. H., Zhao, Y. X., Jiang, C. F., & Li, Z. Z. (2022). Does green finance inspire sustainable development? Evidence from a global perspective. *Economic Analysis and Policy*, *75*, 412-426.

World Bank. (2023). *State and trends of carbon pricing 2023*. World Bank Group.

Zhang, D., Zhang, Z., & Managi, S. (2019). A bibliometric analysis on green finance: Current status, development, and future directions. *Finance Research Letters*, *29*, 425–430.

Zovko, M. (2024). The role of public policy in accelerating the decarbonisation of the tourism industry. In *Handbook on Managing Nature-Based Tourism Destinations Amid Climate Change* (pp. 102-120). Edward Elgar Publishing.