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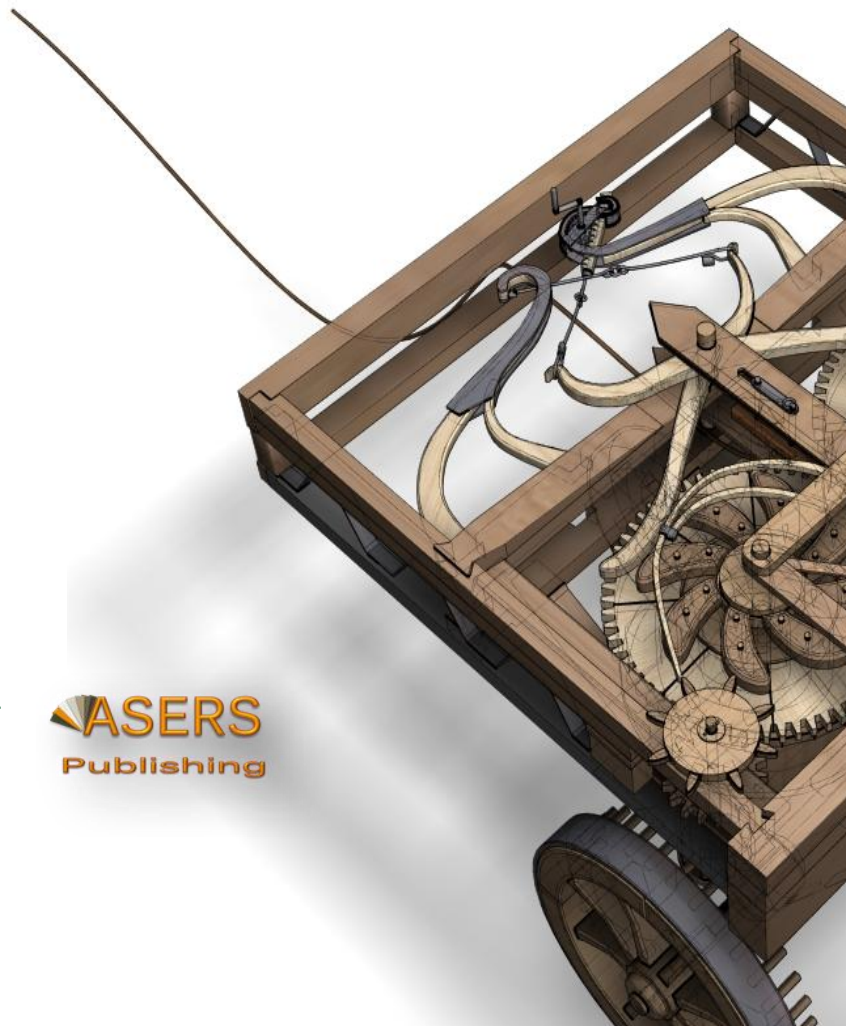
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# Call for Papers Fall Issue 2025

## Journal of Environmental Management and Tourism

**Journal of Environmental Management and Tourism** is an open access, peer-reviewed interdisciplinary research journal, aimed to publish articles and original research papers that contribute to the development of both experimental and theoretical nature in the field of Environmental Management and Tourism Sciences. The Journal publishes original research and seeks to cover a wide range of topics regarding environmental management and engineering, environmental management and health, environmental chemistry, environmental protection technologies (water, air, soil), pollution reduction at source and waste minimization, energy and environment, modelling, simulation and optimization for environmental protection; environmental biotechnology, environmental education and sustainable development, environmental strategies and policies.

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The journal takes an interdisciplinary approach and includes planning and policy aspects of international, national and regional tourism as well as specific management studies. Case studies are welcomed when the authors indicate the wider applications of their insights or techniques, emphasizing the global perspective of the problem they address.

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## Green Financing for Sustainable Development in Saudi Arabia

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**Abstract:** In my paper, I explore the critical role of green financing in promoting sustainable development within Saudi Arabia. I begin by defining green financing and its significance in facilitating investments in projects that yield environmental benefits while driving economic growth. The paper highlights how green financing aligns with Saudi Arabia's Vision 2030 agenda, essential for the nation's economic diversification and ecological sustainability. I present a comprehensive analysis of the historical context and evolution of green financing, followed by an examination of its economic and environmental implications, including its capacity to create jobs and reduce carbon emissions. Case studies of successful initiatives, such as the Sakaka Solar Power Project and the Red Sea Project, illustrate the practical benefits of green financing in achieving sustainable development goals. Ultimately, I conclude that green financing is indispensable for Saudi Arabia's future, advocating for enhanced collaboration between the public and private sectors to foster a sustainable and economically viable future.

**Keywords:** green financing; sustainable development; Saudi Arabia; Vision 2030; renewable energy.

**JEL Classification:** G20; O44; Q42; Q58; O53; R11.

### Introduction

In the rapidly changing landscape of global economies, the concept of green financing has emerged as a vital component in the quest for sustainable development. This paper examines the role of green financing in promoting sustainable development in Saudi Arabia, a country that is renowned for its vast oil reserves and traditional reliance on fossil fuels. However, as the world grapples with the pressing challenges of climate change and environmental degradation, Saudi Arabia finds itself at a crossroads. This paper seeks to explore how the infusion of green financing can catalyze a transformation towards a more sustainable economic model, one that not only prioritizes environmental benefits but also stimulates economic growth.

Green financing refers to the allocation of financial resources to projects that yield positive environmental impacts. This can encompass a broad range of initiatives, including investments in renewable energy, energy efficiency improvements, sustainable agriculture, and other eco-friendly ventures. The significance of this topic is profound, as it holds the potential to drive Saudi Arabia's economic diversification and environmental sustainability, which are critical objectives outlined in the Kingdom's Vision 2030 agenda. Vision 2030 is a comprehensive framework that seeks to reduce the country's dependence on oil, diversify its economy, and promote sustainable development across various sectors. By embracing green financing, Saudi Arabia can align its economic objectives with the urgent need for environmental stewardship, thereby fostering a more resilient and sustainable future for its citizens.

The thesis statement of this paper posits that green financing is essential for Saudi Arabia to achieve sustainable development. This study contributes significantly to the existing literature by providing a timely and comprehensive analysis of green financing's role specifically within Saudi Arabia's rapidly evolving sustainable development landscape. Its novelty lies in synthesizing the most recent policy frameworks, including the 2024 Green Financing Framework and subsequent initiatives, with empirical evidence from key projects like Sakaka Solar and the Red Sea Project, and assessing their combined economic and environmental implications. The

importance of this research stems from its focus on a major energy-exporting nation navigating a critical transition towards sustainability under the ambitious Vision 2030 agenda, offering crucial insights for policymakers, investors, and researchers engaged in green transitions within resource-dependent economies. This assertion is supported by its capacity to foster environmentally sustainable economic growth (Abro *et al.* 2023) and mitigate climate change through sustainable urban planning (Abubakar & Dano, 2020), both critical for the Kingdom's future. Firstly, green financing facilitates investments in renewable energy, which is crucial for reducing the Kingdom's carbon emissions and transitioning away from fossil fuels. As the effects of climate change become increasingly evident, the need for a sustainable energy transition is more urgent than ever. Secondly, green financing plays a pivotal role in promoting eco-friendly innovations, which can lead to the development of new technologies and practices that enhance resource efficiency and reduce environmental impact. By fostering a culture of innovation, Saudi Arabia can position itself as a leader in sustainable technologies and practices, thus enhancing its global competitiveness.

Moreover, the importance of green financing extends beyond environmental benefits; it also encompasses significant economic implications. The transition to a green economy can create new job opportunities, stimulate foreign direct investment, and foster technological advancements. As the world shifts towards sustainable practices, countries that prioritize green financing will be better positioned to attract investment and talent. This is particularly relevant for Saudi Arabia, which is seeking to diversify its economy and create a more vibrant job market for its growing population.

Additionally, the paper will explore the historical context of green financing in Saudi Arabia, tracing its evolution from fossil-fuel-based investments to sustainable practices, supported by institutional frameworks at Saudi universities (Abubakar *et al.* 2020) and efforts to overcome investment barriers to sustainability (Alshubiri, 2021). The shift towards green financing is not merely a response to external pressures; it is also a reflection of a changing mindset within the Kingdom. As awareness of environmental issues grows, so too does the recognition of the need for a diversified and sustainable economy. This historical perspective will provide valuable insights into the challenges and opportunities that lie ahead for Saudi Arabia in its pursuit of sustainable development.

The exploration of green financing in Saudi Arabia is of paramount importance in the context of sustainable development. This paper aims to provide a comprehensive analysis of the role of green financing in promoting environmental sustainability and economic diversification within the Kingdom. Through a detailed examination of historical trends, economic and environmental implications, and successful case studies, the paper will demonstrate the transformative potential of green financing in shaping a sustainable future for Saudi Arabia. Ultimately, this research seeks to contribute to a deeper understanding of how green financing can serve as a cornerstone for achieving the ambitious goals outlined in Vision 2030 and fostering a more sustainable and prosperous society for generations to come.

## 1. Methodology

This study employs a mixed-method approach to assess green financing's impact in Saudi Arabia:

1. Literature Review: A systematic review of peer-reviewed articles, government reports, and organizational data (e.g., IRENA, SAMA) was conducted to establish the theoretical and empirical foundation. Sources were selected based on relevance to green financing, renewable energy, and Saudi Arabia's sustainability goals.

2. Case Study Analysis: Two projects—the Sakaka Solar Power Project and the Red Sea Project—were analyzed using primary data from the Saudi Ministry of Energy (n.d.), Red Sea Global (n.d.), and supporting documents (e.g., ACWA Power reports). Metrics like capacity, emissions reductions, and socioeconomic benefits were extracted.

3. Data Synthesis: Quantitative data (e.g., MW capacity, CO<sub>2</sub> reductions) were cross-verified with official announcements and secondary sources (e.g., Saudi Press Agency), while qualitative insights on policy and innovation were drawn from Vision 2030 and SGI frameworks.

4. Limitations: The study relies on publicly available data, potentially underrepresenting internal financial or operational details.

## 2. Findings

### 2.1 Historical Context and Evolution of Green Financing

Green financing is a critical component in the global effort to achieve sustainable development. It encompasses the allocation of financial resources to projects and initiatives that provide environmental benefits, such as investments in renewable energy, energy efficiency, and other sustainable practices. In Saudi Arabia, the concept

of green financing has evolved significantly over the years, reflecting a broader shift in national priorities towards sustainability and economic diversification, particularly as articulated in the Vision 2030 agenda. This comprehensive framework envisions a future where the Saudi economy is not only resilient and diversified but also environmentally sustainable (AlArjani, Modibbo, Ali, & Sarkar, 2021).

Green financing refers to the funding of projects that yield environmental benefits, such as reduced carbon emissions, enhanced energy efficiency, and increased use of renewable energy sources. The main components of green financing include investments in renewable energy projects, energy-efficient technologies, and sustainable infrastructure development (Anser *et al.* 2020). These components not only aim to mitigate environmental impacts but also drive economic growth by fostering technological innovations and creating new job opportunities (Ronaldo & Suryanto, 2022). In Saudi Arabia, green financing is increasingly recognized as a vital tool for achieving the nation's sustainable development goals, as it supports the transition from a fossil-fuel-dependent economy to one that embraces sustainable practices.

Historically, Saudi Arabia's economy has depended heavily on fossil fuels, with oil and gas as its economic foundation, intensifying energy consumption (Mahalik *et al.* 2017) and exposing the Kingdom to stranded asset risks amid global shifts to greener economies (Ansari & Holz, 2020). However, this reliance posed significant challenges, including environmental degradation and vulnerability to global oil market fluctuations (Kahia *et al.* 2020). In response to these challenges, Saudi Arabia has embarked on a journey towards economic diversification and sustainability, with green financing playing a pivotal role in this transition.

The evolution of green financing in Saudi Arabia can be traced back to the early 2000s when the Kingdom began to explore alternative energy sources and sustainable practices. Initial efforts focused on research and development in renewable energy technologies, as well as pilot projects in solar and wind energy (Saleem, Khan, & Mahdavian, 2022). Over time, these efforts have expanded to include large-scale investments in renewable energy infrastructure, supported by both public and private sector initiatives.

One of the key milestones in the evolution of green financing in Saudi Arabia was the launch of Vision 2030 in 2016. This ambitious strategic framework aims to transform the Saudi economy by reducing its dependence on oil, diversifying its economic activities, and promoting environmental sustainability (Alshuwaikhat & Mohammed, 2017). Vision 2030 explicitly emphasizes the importance of green financing in achieving these goals, calling for increased investment in renewable energy, energy efficiency, and other sustainable projects.

Vision 2030 has been instrumental in driving the evolution of green financing in Saudi Arabia. The framework outlines specific targets for renewable energy capacity, energy efficiency improvements, and carbon emissions reductions, all of which require substantial financial investments (AlArjani *et al.* 2021). To meet these targets, the Saudi government has introduced a range of policies and initiatives designed to attract both domestic and international investment in green projects.

One of the key initiatives under Vision 2030 is the National Renewable Energy Program (NREP), which aims to increase the share of renewable energy in the Kingdom's energy mix. The NREP has set ambitious targets for the deployment of solar, wind, and other renewable energy sources, with green financing serving as a critical enabler of these projects (Islam & Ali, 2024). By providing financial incentives and support for renewable energy projects, the NREP has helped to catalyze the growth of the green finance sector in Saudi Arabia.

In addition to the NREP, Vision 2030 has also spurred the development of new financial instruments and mechanisms to support green projects. These include green bonds, green sukuk, and other forms of sustainable finance that facilitate investment in environmentally beneficial projects (Khalil *et al.* 2023). By expanding the range of financing options available for green initiatives, Vision 2030 has helped to create a more conducive environment for the growth of green financing in Saudi Arabia.

Despite the progress made in promoting green financing in Saudi Arabia, several challenges remain. One of the primary obstacles is the need to overcome the entrenched reliance on fossil fuels and traditional energy sources. This requires not only significant financial investments but also a cultural and institutional shift towards embracing sustainable practices (Sharif *et al.* 2022). Additionally, the development of green financing mechanisms and instruments is still in its early stages, necessitating further innovation and capacity-building efforts.

However, these challenges also present opportunities for growth and development. By leveraging its vast natural resources, such as solar and wind energy, Saudi Arabia has the potential to become a global leader in renewable energy production (Kahia *et al.* 2024). Green financing can play a crucial role in realizing this potential by attracting investment, fostering technological innovation, and creating new economic opportunities.

Furthermore, the growth of green financing in Saudi Arabia benefits from a supportive policy environment and firm government commitment to sustainability, reinforced by regional renewable energy policies (Malik *et al.*

2019) and the adoption of green sukuk inspired by models like Malaysia's (Liu & Lai, 2021). The Kingdom's strategic initiatives under Vision 2030 provide a clear roadmap for the development of the green finance sector, with specific targets and measures designed to promote investment in sustainable projects (Alshuwaikhat & Mohammed, 2017). In 2025, Saudi Arabia launched a green financing initiative worth SR1 billion (US\$266.6 million) to boost private investment in sustainable ventures focusing on renewable energy, circular economy practices, and green technologies (Middle East Briefing 2025). This commitment is further reinforced by the increasing recognition of the economic and environmental benefits of green financing, both within Saudi Arabia and globally.

Green financing has the potential to significantly impact Saudi Arabia's economic diversification and sustainability efforts. By channeling financial resources towards renewable energy projects, energy efficiency improvements, and sustainable infrastructure development, green financing can help to reduce the Kingdom's dependence on oil and foster the growth of new economic sectors (Anser *et al.* 2020). This diversification is essential for ensuring long-term economic resilience and stability, particularly in the face of global energy market volatility.

Moreover, green financing contributes to environmental sustainability by supporting projects that reduce carbon emissions, enhance energy efficiency, and promote the use of renewable energy sources (Ronaldo & Suryanto, 2022). These efforts are critical for addressing the environmental challenges facing Saudi Arabia, such as air pollution, water scarcity, and climate change. By investing in sustainable projects, green financing can help to mitigate these challenges and create a more sustainable and livable environment for future generations.

In conclusion, the historical context and evolution of green financing in Saudi Arabia reflect a broader shift towards sustainability and economic diversification, driven by the Vision 2030 agenda. While challenges remain, the progress made in developing green financing mechanisms and promoting investment in sustainable projects is a testament to the Kingdom's commitment to achieving its sustainable development goals. As Saudi Arabia continues to evolve its green finance sector, it has the potential to become a global leader in sustainable development, setting an example for other nations to follow.

## 2.2. Economic and Environmental Implications

This section examines the economic and environmental impacts of green financing in Saudi Arabia, which is pivotal in transforming the nation's approach to development. Green financing, which refers to funding directed toward projects that have positive environmental impacts, plays a crucial role in the broader context of sustainable development. The Kingdom of Saudi Arabia, heavily reliant on its oil-based economy, is recognizing the need to diversify its economic base while simultaneously addressing environmental concerns. This dual focus is essential as the world shifts towards more sustainable practices and as climate change becomes an increasingly pressing issue.

A key economic implication of green financing is its capacity to generate jobs, supported by Vision 2030-aligned sustainable growth strategies (Sarwar, 2022) and amplified by international trade's role in sustainable development (Belloumi & Alshehry, 2020). The renewable energy sector, for instance, is labor-intensive and requires a variety of skills, from engineering and construction to project management and maintenance. According to the International Renewable Energy Agency (IRENA), the global renewable energy sector had created approximately 11 million jobs by 2018, with continued growth projected, and in Saudi Arabia, similar job growth is anticipated as the nation invests in renewable energy projects like solar and wind farms (International Renewable Energy Agency, 2019). The government's goal to generate 58.7 GW of renewable energy by 2030 is expected to create thousands of jobs across various sectors (Islam & Ali, 2024).

Moreover, green financing can attract foreign investments, which are crucial for economic growth. Investors are increasingly looking for sustainable investment opportunities as environmental, social, and governance (ESG) criteria become more important in investment decisions. The Saudi government has recognized this shift and is actively seeking to position the country as a leader in green investments. For instance, the launch of the Saudi Green Initiative signals the Kingdom's commitment to attracting both local and foreign investments in sustainable projects.

Data from the Saudi Arabian Monetary Authority (SAMA) indicates that the total value of green bonds issued by Saudi entities has been steadily rising, with Saudi Arabia issuing its first green bond in 2020, raising \$1.5 billion to fund renewable energy projects (Saudi Arabian Monetary Authority, 2021). The renewable energy sector, particularly solar and wind energy, requires ongoing advancements in technology to increase efficiency and reduce costs. Companies involved in green financing often engage in research and development (R&D) to innovate new technologies that can be employed in sustainable projects. For instance, the King Abdulaziz City for

Science and Technology (KACST) is playing a pivotal role in developing solar energy technologies in Saudi Arabia. By investing in R&D, Saudi Arabia can not only improve its energy efficiency but also create a competitive edge in the global market.

From an environmental perspective, green financing is vital for reducing carbon emissions in Saudi Arabia, crucial for meeting international climate commitments, with renewable energy and financial innovation playing key roles (Ben Belgacem *et al.* 2023) alongside efforts to adopt low-carbon technologies and reform fossil fuel subsidies (Matsuo & Schmidt, 2017). The Kingdom has pledged to reduce its carbon emissions by 130 million tons annually by 2030 under the Paris Agreement (Kingdom of Saudi Arabia, 2021). Achieving this goal requires significant investments in renewable energy sources and other sustainable practices.

Green financing can facilitate the transition from fossil fuels to renewable energy. This shift is vital, given that Saudi Arabia has one of the highest per capita rates of carbon emissions in the world, largely due to its heavy reliance on oil. By investing in renewable energy projects, Saudi Arabia can significantly decrease its carbon footprint. For example, the Sakaka Solar Power Plant, which has a capacity of 300 MW, is expected to reduce carbon emissions by approximately 430,000 tons annually (Saudi Ministry of Energy, n.d.). This project exemplifies how green financing can lead to tangible environmental benefits while also aligning with the nation's economic goals.

In addition to promoting renewable energy, green financing also supports sustainable resource management. This is particularly important in a country like Saudi Arabia, where water scarcity is a pressing issue. Investments in technologies for efficient water management, such as desalination and wastewater treatment, can help conserve water resources. For instance, the National Water Company has implemented several projects funded through green financing to improve water treatment and distribution systems across the Kingdom. These projects not only ensure sustainable water management but also contribute to the overall environmental goals of the country.

Furthermore, green financing can promote biodiversity and ecosystem conservation. The Red Sea Project, which aims to create a luxury tourism destination while preserving the natural environment, is an example of how sustainable projects can be funded through green financing. By integrating environmental considerations into economic development, Saudi Arabia can promote a more sustainable approach that balances economic growth with ecological preservation.

Sustainable resource management is integral to economic and environmental sustainability, advanced by circular economy principles (Almulhim & Al-Saidi, 2023) and energy efficiency gains in buildings that cut consumption significantly (Al-Tamimi, 2017). Green financing can support various initiatives aimed at resource conservation and efficiency. For example, investments in energy efficiency improvements in buildings and industries can significantly reduce energy consumption and lower operating costs. According to the Saudi Energy Efficiency Program, improving energy efficiency in buildings could reduce energy consumption by up to 30% by 2030. This not only translates to cost savings but also contributes to lower carbon emissions, helping the Kingdom achieve its sustainability goals.

Moreover, green financing can facilitate the development of sustainable agricultural practices, which are essential in a country where agriculture is a vital sector. Investments in technologies such as precision agriculture, which utilizes data and technology to optimize farming practices, can lead to more efficient resource use and reduced environmental impact. Green financing initiatives that support sustainable farming can help increase food security while minimizing the ecological footprint of agricultural activities.

In conclusion, the economic and environmental implications of green financing in Saudi Arabia are profound and multifaceted. By investing in renewable energy projects, the Kingdom can create jobs, attract foreign investments, and foster technological innovations, all of which contribute to economic growth. Simultaneously, green financing plays a crucial role in reducing carbon emissions, promoting sustainable resource management, and supporting biodiversity.

As Saudi Arabia continues its journey toward a more sustainable future, green financing will be integral to achieving the dual goals of economic prosperity and environmental sustainability. The Kingdom's commitment to green financing not only aligns with its Vision 2030 agenda but also positions it as a leader in the global transition towards a more sustainable economy. As the world increasingly prioritizes sustainability, Saudi Arabia's proactive approach to green financing will be essential in ensuring its long-term economic resilience and environmental health.

To further enhance the impact of green financing in Saudi Arabia, it is vital for the government to foster collaboration between public and private sectors, encourage innovation, and support research initiatives. By

creating an enabling environment for green financing, the Kingdom can unlock the full potential of sustainable development, paving the way for a prosperous and environmentally responsible future.

### 3. Case Studies of Green Financing Initiatives

In recent years, Saudi Arabia has embarked on a transformative journey towards sustainable development, with green financing serving as a crucial catalyst in this endeavor. This section delves into specific case studies of successful green financing projects within the kingdom, highlighting their contributions to increasing renewable energy capacity, reducing carbon footprints, and benefitting local communities. The case studies selected for analysis are the Sakaka Solar Power Project and the Red Sea Project. These projects not only reflect the commitment of Saudi Arabia towards a greener future but also demonstrate the potential of green financing to achieve sustainable development goals in the region.

The Sakaka Solar Power Project stands out as a major renewable energy initiative in Saudi Arabia, reflecting Vision 2030's renewable energy prospects (Amran *et al.* 2020) and showcasing green entrepreneurship's role in sustainable development (Alwakid *et al.* 2021). Launched in 2019, this project is a key component of the National Renewable Energy Program, which aims to diversify the energy mix of the kingdom and reduce its dependence on fossil fuels. The project was developed by a consortium that included the Saudi public investment fund and international partners, showcasing the collaborative efforts between the government and private sector in promoting green financing.

The Sakaka Solar Power Project has a total capacity of 300 megawatts (MW), generating an estimated 500,000 megawatt-hours (MWh) of electricity annually, sufficient to power approximately 45,000 homes and significantly contributing to the energy needs of local communities (Saudi Ministry of Energy, n.d.). The project has been designed to utilize advanced photovoltaic technology, which increases efficiency and reduces the overall cost of electricity production. This is particularly relevant in the context of Saudi Arabia, where the cost of electricity generation from solar sources has plummeted in recent years, making it a more attractive option compared to traditional fossil fuels.

From an environmental perspective, the Sakaka Solar Power Project plays a vital role in reducing carbon emissions. According to estimates, the project is expected to displace around 400,000 tons of carbon dioxide (CO<sub>2</sub>) emissions annually. This reduction is crucial, especially considering the kingdom's commitment to the Paris Agreement and its efforts to combat climate change. By investing in solar energy, Saudi Arabia is taking meaningful steps towards achieving its greenhouse gas reduction targets and promoting a more sustainable energy future.

Furthermore, the Sakaka project has generated numerous job opportunities for local residents. During the construction phase, it was reported that more than 1,000 jobs were created, contributing to the local economy and providing training and skill development for the workforce. The project also includes provisions for local content, ensuring that a significant portion of the materials and services required for the project is sourced from local suppliers. This approach not only fosters economic growth but also empowers local communities by enhancing their capacity to participate in the renewable energy sector.

In terms of financing, the Sakaka Solar Power Project was made possible through a mix of equity and debt financing, with a significant portion of the funds coming from green bonds. These bonds are specifically designed to finance projects that have positive environmental impacts, and they have become increasingly popular among investors looking to support sustainable initiatives. The success of the Sakaka project serves as a model for future green financing endeavors in Saudi Arabia, demonstrating how financial instruments can be leveraged to support the transition to renewable energy.

Red Sea Project exemplifies another pioneering green financing initiative in Saudi Arabia, creating a luxury tourism destination with a focus on environmental sustainability, backed by policies promoting climate action and diversification (Al-Sarihi, 2019) and advanced by green sukuk's role in Vision 2030 (Shalhoob, 2023). The project is part of the country's broader Vision 2030 strategy, which seeks to diversify the economy and promote tourism as a key sector for growth. The Red Sea Project encompasses a vast area of pristine coastline, islands, and marine ecosystems, making it a prime location for eco-tourism.

One of the standout features of the Red Sea Project is its commitment to sustainability and conservation, with the project aiming to be powered entirely by renewable energy and targeting a 100% reliance on clean energy sources for its operations (Red Sea Global, n.d.). This ambitious goal is expected to be achieved through a combination of solar, wind, and other renewable energy technologies. By utilizing advanced energy management systems, the project will minimize energy consumption and maximize efficiency, setting a new standard for sustainable tourism developments worldwide.

The Red Sea Project has also integrated environmental conservation into its design and planning processes. A significant portion of the project area is designated as protected marine and terrestrial environments, ensuring that biodiversity is preserved and natural habitats are safeguarded. Moreover, the project incorporates sustainable practices in construction and operation, including waste management, water conservation, and sustainable sourcing of materials. This holistic approach to sustainability not only enhances the project's appeal to eco-conscious travelers but also reinforces Saudi Arabia's commitment to environmental stewardship.

Economically, the Red Sea Project is expected to create thousands of jobs and attract significant foreign investment. The development is projected to generate approximately 70,000 jobs, providing employment opportunities for local residents and contributing to the overall economic growth of the region (Red Sea Global, n.d.). The project aims to draw international tourists, which will further boost the local economy through spending on services, hospitality, and recreational activities. By fostering a sustainable tourism sector, the Red Sea Project aligns with the kingdom's vision of diversifying its economy away from oil dependency.

In terms of financing, the Red Sea Project has attracted substantial investments from both local and international sources. The project has issued green bonds to raise capital, signaling a strong commitment to environmental responsibility. These bonds have garnered interest from socially conscious investors seeking to support projects that promote sustainability. The financing model employed by the Red Sea Project exemplifies how green financing can be effectively utilized to fund large-scale developments with positive environmental impacts.

Both the Sakaka Solar Power Project and the Red Sea Project serve as prime examples of how green financing can drive sustainable development in Saudi Arabia. These case studies highlight the multifaceted benefits of investing in renewable energy and environmentally friendly initiatives. By enhancing renewable energy capacity, reducing carbon footprints, and supporting local communities, these projects contribute significantly to the kingdom's sustainability goals.

The success of these initiatives also underscores the importance of collaboration between the public and private sectors in advancing green financing. Government support, in the form of favorable policies and regulations, plays a crucial role in creating an enabling environment for green investments. Additionally, partnerships with private companies and financial institutions help to leverage resources and expertise, ensuring the successful implementation of sustainable projects.

Moreover, these case studies illustrate the potential for green financing to attract foreign investment and stimulate economic growth. As the global demand for sustainable solutions continues to rise, investors are increasingly looking to support projects that align with their environmental, social, and governance (ESG) criteria. By positioning itself as a leader in green financing, Saudi Arabia can capitalize on this trend and enhance its attractiveness as an investment destination.

In conclusion, the Sakaka Solar Power Project and the Red Sea Project exemplify the transformative potential of green financing in promoting sustainable development in Saudi Arabia. By enhancing renewable energy capacity, reducing carbon emissions, and supporting local communities, these initiatives contribute to the kingdom's broader sustainability agenda. As Saudi Arabia continues its journey towards a more sustainable future, the lessons learned from these case studies can inform future green financing efforts and guide the development of innovative financing mechanisms that support sustainable projects across the region. Through continued investment in green initiatives, Saudi Arabia can pave the way for a cleaner, more sustainable future while achieving its economic diversification goals outlined in Vision 2030.

## Conclusion

In conclusion, this paper has articulated the essential role that green financing plays in the pursuit of sustainable development in Saudi Arabia. Throughout the discussion, we have explored various facets of green financing, demonstrating how it underpins not only economic growth but also environmental preservation. The core thesis has been clearly established: green financing is critical for Saudi Arabia's transition toward sustainable development, particularly in the context of the Vision 2030 agenda. This conclusion will encapsulate the key points raised in the paper, including the historical evolution of green financing, its economic and environmental implications, and the case studies that exemplify its success in the region.

The historical context of green financing in Saudi Arabia shows a marked shift in investment strategies over recent decades, propelled by rising environmental awareness (Khayat *et al.* 2023) and reflected in the Kingdom's advancing green economy (Chaaben *et al.* 2024). Initially, the Saudi economy relied heavily on fossil fuels, with investments directed towards traditional energy sources. However, as global awareness of climate

change and environmental degradation increased, there was a palpable shift in focus toward renewable energy and sustainability. This evolution reflects not only a response to international pressure but also a recognition of the finite nature of fossil fuels and the necessity for a diversified economy. The Vision 2030 initiative has been a pivotal driver in this transition, promoting the idea that sustainability is not merely an environmental concern but a fundamental component of economic resilience and growth. As a result, green financing has emerged as a strategic tool to support this vision, facilitating investments in projects that yield both economic returns and environmental benefits.

Analysis of green financing's economic implications reveals its role in fostering job creation, attracting foreign investment, and driving technological innovation, bolstered by FinTech's impact on energy efficiency in the region (Al-Kasasbeh *et al.* 2024) and sustained by education and training (Singh *et al.* 2022). For instance, the renewable energy sector has the potential to create thousands of jobs across various skill levels, from skilled labor in solar panel installation to research and development roles in innovative technologies. According to the International Renewable Energy Agency (IRENA), the renewable energy sector employed approximately 11 million people globally in 2018, with significant growth anticipated as more countries, including Saudi Arabia, embrace green initiatives. In Saudi Arabia, the National Renewable Energy Program (NREP) aims to generate 9.5 GW of renewable energy by 2030, which is projected to create thousands of jobs and attract substantial foreign direct investment (FDI) into the country. This aligns perfectly with the goals outlined in Vision 2030, which seeks to diversify the economy and reduce dependence on oil revenues.

Environmentally, green financing is crucial for cutting carbon emissions and advancing sustainable resource management, enhanced by initiatives like the Green Middle East Initiative (Ghanem & Alamri, 2023) and supported by finance's role in aligning policies for carbon control (Shi *et al.* 2023). Projects funded through green financing typically focus on renewable energy, energy efficiency, and sustainable land use practices. For example, the implementation of solar energy projects not only contributes to energy diversification but also significantly reduces greenhouse gas emissions. According to a report by the Saudi Ministry of Energy, the Sakaka Solar Power Project alone is expected to displace approximately 300,000 tons of carbon dioxide annually, demonstrating the tangible environmental benefits that can arise from such investments. Furthermore, green financing encourages responsible resource management, ensuring that natural resources are utilized in a manner that does not compromise future generations' ability to meet their own needs.

The successful case studies presented in this paper further illustrate the effectiveness of green financing initiatives in advancing Saudi Arabia's sustainability agenda. The Sakaka Solar Power Project, for instance, has set a precedent for large-scale renewable energy projects in the country. This project not only enhances the renewable energy capacity of Saudi Arabia but also showcases the potential for public-private partnerships in financing sustainable initiatives. Additionally, the Red Sea Project represents another significant milestone, emphasizing eco-tourism and sustainable development while preserving the region's unique biodiversity. These case studies highlight that through strategic investments in green projects, Saudi Arabia can achieve its sustainability goals while simultaneously promoting economic growth and social development.

Reflecting on the significance of green financing in supporting Vision 2030, it is clear that achieving the ambitious targets set forth in this strategic plan requires a concerted effort from all stakeholders involved. Green financing is not just a financial mechanism; it represents a holistic approach to development that integrates economic, environmental, and social considerations. As Saudi Arabia seeks to transform its economy, it must prioritize green financing as a cornerstone of its development strategy. This necessitates fostering an environment where innovative financing mechanisms can flourish, enabling access to capital for sustainable projects across various sectors.

Moreover, the conclusion highlights the urgent need for research into innovative financing mechanisms, such as financial inclusion and green innovation, to strengthen green financing in Saudi Arabia (Singh *et al.* 2023), necessitating a shift in public financing from fossil fuels (Skovgaard *et al.* 2023). While significant progress has been made, there remain challenges that must be addressed to fully realize the potential of green financing. This includes exploring new financial instruments such as green bonds, which have gained popularity in international markets as a means to raise capital for environmentally beneficial projects. The introduction of such instruments in Saudi Arabia could provide additional funding sources for renewable energy projects and other sustainable initiatives. Moreover, understanding the intricacies of risk management and developing appropriate regulatory frameworks will be crucial in attracting private sector investments in green financing.

Achieving a sustainable future for Saudi Arabia requires robust public-private collaboration, leveraging energy and green factors to lower carbon intensity (Waheed, 2022) and utilizing public spending to foster green economic growth (Zhang *et al.* 2021). The government must play a proactive role in creating a conducive

environment for green investments, including establishing clear policies, offering incentives, and fostering partnerships with private entities. On the other hand, the private sector should actively engage in sustainable practices and seek out opportunities for innovation within the realm of green financing. By working together, these stakeholders can leverage their respective strengths to expand the reach of green financing, ultimately contributing to the achievement of Saudi Arabia's sustainable development goals.

To sum up, green financing offers a critical pathway for Saudi Arabia to address sustainable development challenges, underscored by empirical evidence on energy and green factors (Waheed *et al.* 2023) and strengthened by improved energy efficiency via green finance (Yu *et al.* 2022). It offers a promising framework for aligning economic growth with environmental stewardship, supporting the nation's efforts to diversify its economy while addressing pressing environmental concerns. As we move forward, it is imperative that Saudi Arabia continues to embrace green financing as a strategic priority, fostering an integrated approach that encompasses economic, social, and environmental dimensions of sustainability. By doing so, the Kingdom can pave the way for a resilient and sustainable future, fulfilling its aspirations under Vision 2030 and establishing itself as a leader in sustainable development in the region and beyond.

### Declaration of Use of Generative AI and AI-Assisted Technologies

The author declares that he has not used generative AI and AI-assisted technologies during the preparation of this work.

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## Residents' Perceptions of the Benefits of Visitation to a Botanical Garden in South Africa

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**Abstract:** The purpose of this study was to compare the perceived benefits of users and non-users of the Lowveld National Botanical Garden (LNBG) in South Africa; more specifically, users and non-users who are residents living in proximity to the Garden. The study was quantitative, descriptive, and exploratory and employed a survey research design. A structured questionnaire was used to collect data from a sample of 500 residents (including users and non-users). The results of a principal components analysis for users and non-users revealed shared factors (*i.e.* benefits) between the two groups, including socio-cultural, mental well-being, leisure, and biodiversity benefits. The benefit of escapism was an additional factor elicited for the non-users. Understanding the perceived benefits has practical value in that it may serve as a foundation to develop the product offering of the LNBG and tailor the marketing communication. In this regard, repeat visitation is promoted for users, and non-users may be converted into active users. In turn, this promotes the sustainability of the Garden in an era where visitation needs to be maximized to generate tourist income to supplement limited government funds. The study is considered novel in that it has explored an under-researched population (*i.e.* residents as users and non-users of a botanical garden) and an under-researched topic in a specific context, *i.e.* perceived benefits of botanical garden visitation in South Africa.

**Key words:** botanical gardens; resident perceptions; garden tourism; garden visitation; benefits.

**JEL Classification:** I12; Q26; Z32; R11.

### Introduction

Botanical gardens have played a fundamental role in the history of humanity for centuries (Wassenberg, Goldenberg and Soule 2015). According to Botanic Gardens Conservation International (BGCI), botanical gardens are believed to date around 3000 years ago in ancient Egypt and Mesopotamia (BGCI 2024). Botanical gardens have evolved over time. Historically, they were established to study plants' medicinal properties and cultivate and display exotic plants from newly discovered countries (BGCI 2024; Giovanetti *et al.* 2020). Today's botanical gardens perform multiple roles, including the re-connection of humans with flora and fauna (Dodd and Jones 2010), biodiversity conservation and research (Powledge 2011), meeting human needs and improving

physical and mental well-being (Chen and Sun 2018) and education and recreation (BGCI 2024; Krishnan and Novy 2016; Moskwa and Crilley 2012).

According to Ren *et al.* (2022), there are approximately 4500 botanical gardens worldwide. In South Africa, there are currently ten official national botanical gardens that are state-funded and solely managed by the South African National Biodiversity Institute (SANBI). But, as with many government-funded nature-based sites, alternative revenue sources must be generated to promote the sustainability of such gardens; such income could be generated through increased visitation.

Given that many botanical gardens are located within, or on the outskirts of, cities and towns, they are accessible to a large urban population. Hence, as highlighted by Hermann and Bouwer (2023), they offer visitation opportunities for residents living near the garden. However, little is known about the perceptions of the benefits of visiting urban nature-based sites such as botanical gardens (Wassenberg *et al.* 2015), particularly residents' perceptions. More specifically, there appears to be an apparent absence of literature on the perceptions of residents who have not previously visited a botanical garden, thus an untapped market.

The primary aim of the study was, therefore, to elicit the perceptions of the benefits of visiting the LNBG as held by a sample of residents living in proximity to the Garden; more specifically, a comparison of residents who have previously visited the Garden (*i.e.* users) to those that have not (*i.e.* non-users). Eliciting such perceptions not only contributes to the body of knowledge on botanical gardens as visitor attractions but may also have practical implications for garden management in terms of informing product development and tailoring the marketing messages to a local audience to promote visitation. Furthermore, given the prevalence of visiting family and friends (VFR) as a tourism trend, residents who have visited the Garden could also serve as advocates by encouraging friends and family to visit.

This paper provides a background to botanical gardens as a product of garden tourism and briefly highlights literature concerning residents' perceptions in a tourism context. The methodology is subsequently explicated and findings concerning users and non-users are presented, compared and discussed in relation to existing literature. Conclusions are then drawn and practical implications for managing the Garden are suggested. Finally, the study's limitations are acknowledged, and opportunities for future research are proposed.

## 1. Literature Review

Garden tourism is a form of niche tourism that, according to Benfield (2013,15) refers to "travel to view, or spend reflective or educational time in an area of horticultural creation". A growth sector globally (Benfield 2021), garden tourism is based on several products including famous gardens, UNESCO heritage gardens and gardening events, expositions, festivals, botanical museums, and botanical gardens (Marin *et al.* 2021). Regarding the latter, botanical gardens are defined by BGCI as establishments that hold "documented collections of living plants for the use in scientific research, conservation, display and education" (BGCI 2024). The Botanic Garden of Padua in Italy and the Royal Botanic Garden of Kew in the United Kingdom are considered the first scientific-based gardens (BGCI 2024). Over the years, botanical gardens have proliferated and are now found in 148 countries worldwide (Williams *et al.* 2015), attracting over 500 million visitors annually (BGCI 2024).

In South Africa, there are several botanical gardens, ten of which are official national botanical gardens that are managed by the SANBI, including the Free State, Karoo Desert, Harold Porter, Hantam, Kirstenbosch, KwaZulu-Natal, Pretoria, Lowveld, Walter Sisulu and Kwelera. Collectively, these national gardens receive over one million visitors annually, generating an annual income of over R60 million (\$ 3,327,990) just through admission fees (SANBI 2023). Other notable botanical gardens in South Africa include the Durban Botanical Garden (the oldest surviving botanical garden in Africa (est. 1849) and university gardens such as the Manie van der Schijff Botanical Garden of the University of Pretoria and the University of Stellenbosch Botanical Garden. In August 2024, South Africa's first desert botanical garden (Richtersveld Desert Botanical Garden) was officially opened and is a partnership between the SANBI and South African National Parks (SANParks).

The proliferation and evolution of botanical gardens as key garden tourism products have captured the interest of tourism researchers keen to understand visitation determinants and characteristics. Studies have centered on motivations to visit and, to a lesser extent, perceived benefits of visitation. Within many of these studies, visitor socio-demographic profiles have also been generated.

### 1.1 Visitor Motivations

In an early study by Bennett and Swasey (1996) in the United States of America (USA), the motivations for visiting the New York Botanical Garden and the Brooklyn Botanic Garden were elicited. Results indicated that urban residents may visit botanical gardens to reduce the stress of urban life. Key motivations were finding peace

and tranquility, relaxing mentally, and social interaction with friends and family. Later, Ballantyne, Packer and Hughes (2008) conducted research at the Mt Coot-tha Botanic Gardens in Brisbane, Queensland (Australia) and found the most significant motives for visiting the botanical gardens were to enjoy oneself, to admire the garden's scenery, to spend quality time with family or friends, and to enjoy being outdoors/in nature. Of the 150 respondents in the study, most were female, resided in the city where the garden was based and were repeat visitors. The most common age group was 30 – 39-year-olds. Studying five botanical gardens in China, He and Chen (2011) found the common motivations were to get close to nature, to relax, and to enjoy the beautiful scenery.

In South Africa, notable research by Ward, Parker and Shackleton (2010) was undertaken at six national botanical gardens (Pretoria, Harold Porter, Free State Kirstenbosch, Karoo Desert & Walter Sisulu). Most respondents were Caucasian, between 30 and 59 years old, and most had a post-secondary education qualification. In terms of the level of income, most respondents were in the higher income bracket of over R307 200 per annum (\$ 17,204). The dominant home language was English followed by Afrikaans. Most respondents resided in urban areas in proximity to the gardens. Regarding motivations to visit, the study found that most users chose to visit the gardens for recreation and psychological reasons rather than educational reasons. Primary motives reported for visiting the gardens included appreciating the garden's natural beauty, exercising, and getting fresh air. More recently, a study on visitation to the Pretoria National Botanical Garden by Hermann and Bouwer (2023) found marginally more female respondents than males in their sample. Most respondents were born in the 1980s (aged 35–44). The dominant home language was Afrikaans and most respondents were married. Most visited the Garden in groups of two adults, had post-high school education and lived in Pretoria where the garden is situated. Key motivations for visiting included hedonism, social dynamics, escape, and health, thereby supporting the findings of Bennet and Swasey (1996) and Ward, Parker and Shackleton (2010). Other key findings included learning about fauna and flora, novelty, and convenience.

Commonalities in the motivations elicited within the above studies include nature appreciation, the wellness benefits of being in nature and the social element of garden visitation. Learning and education, however, only appeared to be identified as a key motivation for visitation in the study by Hermann and Bouwer (2023). This is noteworthy given that the BGCI (2024) advocates education as a significant role of botanical gardens.

## 1.2 Perceived Benefits of Garden Visitation

Visitors may choose to visit a botanical garden because of the anticipated benefits that may be obtained. Whilst motivations and benefits are closely linked, benefits are concerned with the 'outcomes' of visitation. Such benefits include physical and mental health, educational, economic, and social benefits.

Botanical gardens are favourable environments for physical activity (and thus, physical benefits), such as jogging, cycling, walking, tai chi, and yoga (Krishnan and Novy 2016; Maller *et al.* 2009). In addition, Kohlleppel, Bradley and Jacob (2002) suggest that botanical gardens may help visitors reduce stress and improve emotional well-being. Stress relief and relaxation was also a key benefit echoed by Wassenberg *et al.* (2015) in the Leaning Pine Arboretum in California, USA. Similarly, Carrus *et al.* (2017) posit that botanical gardens offer urban residents a chance to reconnect with nature and escape stressful aspects of city life, such as heat, noise, air pollution, and crowded conditions. Moreover, Mock *et al.* (2016) assert that due to the human evolutionary history with nature, people may experience emotional healing in natural settings which botanical gardens provide.

With respect to educational benefits, Wassenberg *et al.* (2015) identified new experiences and learning as key benefits. Sanders, Ryken and Stewart (2018) further suggest that educational initiatives within urban ecological settings can expose the visitor to the impacts of humans on the environment and the species within. Indeed, Dodd and Jones (2010) assert that botanical gardens may provide opportunities to educate the public on conservation to mitigate the environmental concerns surrounding climate change, pollution and natural resource depletion.

Economically, benefits may be either direct, indirect or induced and may accrue for the visitor, the business and the wider society. For example, Aldous (2007) asserts that botanical gardens offer various economic contributions in terms of employment opportunities and revenue derived from entry charges, coffee shops, restaurants and the sale of merchandise. In South Africa, many national botanical gardens commit to employing from the immediate community and, as previously highlighted, generate considerable revenue from entrance fees.

Finally, regarding social benefits, interacting with nature in gardens provides a chance to socialize with other community members. This benefits the community by fostering stronger social cohesiveness and understanding among its members (Maller *et al.* 2005; Moyle and Weiler 2017). According to Dodd and Jones

(2010), urbanisation has caused many people to grow estranged from nature. Today, botanical gardens play a vital role in society by educating the public, re-establishing connections with the natural world, and showcasing sustainable living practices.

In summary, although investigations into visitor motivations and perceived benefits of botanical garden visitation have gained momentum over the past two decades, academic contributions remain somewhat scant given the proliferation of botanical gardens worldwide and the social, economic and environmental roles that they can play. More specifically, there is limited attention given to the understanding of the perceived benefits of garden visitation in a South African context. Furthermore, there is an apparent absence of literature concerning the perceptions of residents living near a botanical garden. Indeed, in the context of tourism, local resident perception studies are commonplace but have tended to centre on tourism impacts and development, such as studies by Abdollahzadeh and Sharifzadeh (2014), Caro-Carretero and Monroy-Rodríguez (2025), Deery, Jago and Fredline (2012), Gannon, Rasoolimanesh and Taheri (2021) and Tam, Lei and Zhai (2022). Other areas of focus have been on residents' perceptions and place/place attachment (e.g. Chen, Hall and Pryag 2021; Chen, Dwyer and Firth 2014; Pai, Chen, Lee, Hyun, Liu and Zheng 2023; Ryan and Aicken 2010; Stylidis, 2018) and residents' perceptions and destination branding (e.g. Chen and Segota 2015; Ruiz, de la Cruz and Vázquez 2018; Wassler, Wang and Hung 2019). Hence, the focus has been on residents as either observers, beneficiaries or victims of tourism, or informers of destination marketing, rather than as tourism participants (i.e., visitors or tourists themselves). Residents can (and should) be a key target market for botanical gardens; therefore, understanding their perceived benefits of visitation is important. Moreover, understanding non-visitation represents opportunities for potential growth in the market (Baur, Tynon and Gómez 2013).

### 1.3 Study Site

The LNBG is one of the national botanical gardens managed by the SANBI. It is situated at the confluence of the Crocodile and Nels Rivers in Mbombela (formerly Nelspruit) in Mpumalanga, South Africa. Established in 1969, the Garden spans 195 hectares of which 65 hectares are landscaped and accessible to visitors. Its natural vegetation is savanna and is home to various mammals (including hippopotamuses), reptiles and birds. In addition, it boasts cascading waterfalls in summer and holds one of the largest collections of South African trees and cycads (SANBI 2024).

The LNBG's product offering has evolved since its inception. A conference space, restaurant, suspension bridge, environmental centre, braille trail, medicinal trail, children's play area, and aerial walk through a man-made rainforest are just a few examples of the infrastructure developments. A labyrinth is the most recent addition, and the Garden plans to develop a geological trail, according to the curator of the Garden, C. Mathipa (personal communication July 11, 2024). The Garden also hosts various musical, cultural and recreational events, festivals, and children's holiday programmes. It can also be rented out for exhibitions, birthday celebrations, picnics, and weddings. However, despite such innovations, visitor numbers in 2023 were only 58 570 compared to 73 730 visitors recorded during the 2013/2014 financial year (SANBI 2023). Although it is acknowledged that the decline can be attributed to the COVID-19 pandemic, there were only 43 275 visitors reported in the financial year before the pandemic (2019/2020), according to C. Willis (personal communication, August 12, 2024). Hence, there was already a decline before the pandemic. Low visitor numbers are detrimental to the sustainability of the Garden given the necessity to generate income from visitation to supplement the limited government funds. Thus, measures must be considered to bolster visitation and visitor spend.

## 2. Methodology and Methods

Employing a survey research design, the research was quantitative, exploratory, and descriptive. A structured questionnaire was employed for the collection of the data. The questionnaire design drew from previous studies on garden visitation benefits and motivations, including Ballantyne *et al.* (2007) and Ward *et al.* (2010). The questionnaire comprised two sections. The first section elicited demographic information, and the second section was designed to gather residents' perceptions of the benefits of visiting the Garden. Statements about the possible benefits of visiting the LNBG were presented, requiring respondents to indicate, on a five-point Likert scale (1 – strongly disagree to 5 – strongly agree), the degree to which they agreed with the statements.

The study included two parallel target populations: users and non-users of the LNBG residing in the Mbombela municipality area. The questionnaire was administered at different sites within the municipality area (including retail centers, business centers and town high streets) between August 2022 and March 2023. Convenience sampling was used but efforts were made to ensure representativeness by inviting people of various ages, genders, and ethnicities to participate. As the study aimed to compare user and non-user

perceptions held by a sample of residents living in proximity to the Garden, two initial filter questions were posed concerning the respondent's place of residence, and previous visitation to the Garden, respectively. Thereafter, the purpose of the study and the respondents' rights concerning voluntary participation, anonymity, and confidentiality were explained. Once informed consent had been given, the questionnaire was administered by the researcher. In addition, the questionnaire was also made available online.

The STATA version 17 software was used to perform statistical analyses. For the first sample (users) descriptive statistics were drawn in the form of raw count frequencies and raw count percentages for the demographic variables. For the benefits analysis, the mean and standard deviation were drawn. Next, a principal component factor (PCF) analysis with an orthogonal varimax rotation of 23 of the 25 Likert scale items was conducted. The Kaiser-Meyer-Olkin (KMO) criterion was used to determine factors; only factors with Eigenvalues greater than 1.0 were retained. A Cronbach's alpha test was used to test the data for internal reliability. The same analyses were subsequently conducted for the sample of non-users. Results of the factor analyses were then compared to establish any notable differences between the perceived benefits for users and non-users.

### 3. Results and Discussion

The questionnaire elicited 500 usable responses; 377 respondents were users, and 123 were non-users of the Garden.

#### 3.1 Respondent Profiles

Table 1 compares the demographic profile of the respondents who were users and those who were non-users. Both sample groups had a similar respondent profile in that most respondents were female, with the dominant age category being between 25 and 34 years. The most widely spoken language was siSwati. The most prevalent responses regarding marital status and employment were single and full-time employment, respectively. Most respondents preferred not to divulge their income level. The key difference between the groups was that most non-users were only educated to Grade 12 (78%), whereas 52% of users had obtained a diploma or higher. In addition, 52% of non-users were employed full-time/self-employed compared to 73% of users. Hence, non-users were generally 'less educated' and less likely to be in employment than users. This suggests that lack of exposure and financial constraints could be possible reasons for non-visitation.

Compared to extant literature, the user profile generally mirrors that of previous studies with respect to residency in terms of proximity to the gardens (e.g. Ballantyne *et al.* 2008; Hermann and Bouwer 2023; Ward *et al.* 2010). However, the prominent age category for users was somewhat younger than most previous studies. Unsurprisingly, there were home language differences which could be attributed to the geographical context of the study. With regard to non-users, the apparent absence of extant literature meant that comparisons were not permissible.

Table 1. Demographic profile of respondents (Users v Non-users)

Variable	Description	Users		Non-users	
		Frequency	Percentage	Frequency	Percentage
Gender	Female	232	61.54	67	54.47
	Male	144	38.20	53	43.09
	Other	1	0.27	2	1.63
	Prefer not to say	0	0	1	0.81
Age	18-24	66	17.51	35	28.46
	25-34	129	34.22	42	34.15
	35-44	51	13.53	22	17.89
	45-54	101	26.79	17	13.82
	55-70	29	7.69	6	4.88
	above 70	1	0.27	1	0.81
Language	Siswati	161	42.18	57	46.34
	Tsonga	14	3.71	28	22.76
	English	42	10.88	12	9.76
	Zulu	26	6.90	8	6.50

Variable	Description	Users		Non-users	
		Frequency	Percentage	Frequency	Percentage
	Xhosa	11	2.92	6	4.88
	Tshivenda	1	0.27	3	2.44
	Northern Sotho	10	2.65	3	2.44
	South Sotho	6	1.59	2	1.63
	Ndebele	5	1.33	2	1.63
	Afrikaans	98	25.73	1	0.81
	Tswana	6	1.59	0	0
	Other	1	0.25	1	0.25
<b>Marital status</b>	Single	150	39.79	67	54.47
	Married	134	35.54	24	19.51
	Co-habiting	44	11.67	23	18.70
	Prefer not to say	30	7.96	7	5.69
	Divorced	13	3.45	1	0.81
	Widow/er	6	1.59	1	0.81
<b>Employment status</b>	Full-time	234	62.23	54	44.26
	Part-time	32	8.51	21	17.21
	Student	39	10.37	21	17.21
	Unemployed	26	6.91	14	11.48
	Self-employed	39	10.37	10	8.20
	Retired	6	1.60	2	1.64
<b>Level of education</b>	Grd12	179	47.86	95	77.87
	N-diploma	80	21.39	13	10.66
	B-degree	64	17.11	8	6.56
	Honours	38	10.16	3	2.46
	M-degree	13	3.48	1	0.82
	Doctorate	0	0	2	1.64
<b>Net Annual Income ZAR</b>	PNTS	143	38.03	69	56.10
	below 50 000	96	25.53	41	33.33
	50 001 - 100 000	24	6.38	4	3.25
	100 001 - 200 000	35	9.31	1	0.81
	200 001 - 400 000	38	10.11	4	3.25
	above 400 000	40	10.64	4	3.25

The elicitation and comparison of socio-demographic profiles of respondents may have practical implications for garden management in terms of marketing. For example, discounts could be offered to pensioners for every weekday (not just Tuesdays) to encourage visitation for this under-represented age group. This could be combined with providing wellness activities within the Garden, e.g. themed walks. In targeting the non-users who are perhaps not visiting because of financial constraints, 'free access' days could be scheduled (similar to the SANParks free access week initiative). Although not generating income, this would promote biodiversity exposure hence, education and encouragement of environmental stewardship. Regarding language, the dominant language for both groups was siSwati, given the location of the Garden in the province of Mpumalanga, which is predominately a Swati region. Whilst signage and interpretation already exist in this language, the non-users may not know this and hence, promotional efforts could be expanded in this regard.

### 3.2 Perceived Benefits of Garden Visitation

A Bartlett's test of sphericity indicated a value of 0.000, confirming that a factor analysis could be employed. A principal component factor (PCF) analysis with an orthogonal varimax rotation of 23 of the 25 Likert scale

questions pertaining to the benefits was performed on each sample group. The Kaiser-Meyer-Olkin (KMO) criterion was used to determine factors and only factors with Eigenvalues greater than 1.0 were retained. Table 2 shows a comparison of the perceived benefits. Five factors were retained for the users, with the internal reliability of the five factors checked by conducting a Cronbach Alpha test. All five factors had an Alpha value higher than 0.7 which, according to Bryman (2012), is a satisfactory level of internal reliability. For the non-users, six factors were retained; five of the six factors had an Alpha to a value higher than 0.7, and the 6th factor scored a value of 0.6042, which, according to Taber (2018), is satisfactory and, hence, was retained. A comparison of the results shows a high degree of similarity between the two groups.

Table 2. Comparison of perceived benefits of garden visitation

USERS				NON-USERS			
Factor	Mean	Factor Loading	Reliability Co-efficient	Factor	Mean	Factor Loading	Reliability Co-efficient
<b>User F1: Socio-cultural benefits</b>	<b>3.78</b>		<b>0.8671</b>	<b>Non-user F2: Socio-cultural benefits</b>	<b>3.70</b>		<b>0.8254</b>
The opportunity to strengthen social networks	3.82	0.5178	0.8595	The opportunity to strengthen social networks	3.68	0.4817	0.8025
The opportunity to buy a book, souvenirs or plants	3.55	0.7574	0.8466	The opportunity to strengthen family ties	3.89	0.4035	0.8091
The opportunity to attend a concert or function	4.05	0.5276	0.8662	The opportunity to buy a book, souvenirs or plants	3.62	0.4290	0.8136
The opportunity to connect with heritage	3.79	0.867	0.8255	The opportunity to connect with heritage	3.75	0.7987	0.7863
The opportunity to connect with culture	3.60	0.8959	0.8232	The opportunity to connect with culture	3.74	0.8759	0.7792
The opportunity to connect with one's spiritual side	3.85	0.7045	0.8420	The opportunity to connect with one's spiritual side	3.50	0.7629	0.7921
<b>User F2: Stress relief and relaxation benefits</b>	<b>4.52</b>		<b>0.8612</b>	<b>Non-user F5: Recreation benefits</b>	<b>3.94</b>		<b>0.8094</b>
Relief from stress	4.35	0.6143	0.8304	An opportunity for emotional and physical rejuvenation	3.93	0.5089	0.7686
An opportunity to relax	4.50	0.7540	0.8084	An opportunity to participate in recreational activities	3.97	0.4317	0.7582
A sense of peace and tranquility	4.47	0.5168	0.8557	A sense of peace and tranquility	4.01	0.5411	0.7373
The opportunity to enjoy natural beauty	4.68	0.8341	0.8279	The opportunity to give children a chance to play outdoors	3.84	0.7252	0.7789
An opportunity to get a breath of fresh air	4.61	0.7847	0.8366	The opportunity to eat at the restaurant	3.73	0.4995	0.7172
<b>User F3: Mental well-being benefits</b>	<b>4.26</b>		<b>0.7681</b>	<b>Non-user F1: Mental well-being benefits</b>	<b>4.10</b>		<b>0.8958</b>
Relief from crowded urban lifestyles	4.36	0.6997	0.6718	Improvement of psychological health	3.86	0.5145	0.8861
Improvement of psychological health	4.20	0.7343	0.6756	Relief from stress	4.03	0.7315	0.8765
The opportunity for emotional and physical rejuvenation	4.22	0.5598	0.7174	An opportunity to relax	4.19	0.8320	0.8799
				An opportunity for emotional and physical rejuvenation	3.93	0.5445	0.8872

USERS				NON-USERS			
				A sense of peace and tranquillity.	4.01	0.5602	0.8830
				The opportunity to enjoy natural beauty.	4.33	0.8389	0.8748
				The opportunity to get a breath of fresh air	4.35	0.7983	0.8754
User F4: Leisure benefits	4.18		0.7829	Non-user F3: Leisure benefits	3.85		0.7516
The opportunity to give children a chance to play outdoors	4.28	0.5818	0.7561	The opportunity to strengthen family ties	3.89	0.7141	0.6688
The opportunity to strengthen family ties	4.07	0.4368	0.7494	The opportunity to exercise	3.76	0.7263	0.7031
The opportunity to exercise	3.92	0.5347	0.7384	The opportunity to have a picnic	4.24	0.6188	0.7196
The opportunity to have a picnic	4.52	0.6499	0.7521	The opportunity to buy a book, souvenirs or plants	3.62	0.4457	0.7266
The opportunity to eat at the restaurant	3.85	0.5684	0.7687				
The opportunity to have a family outing	4.43	0.6060	0.7378				
User F5: Biodiversity exposure benefits	4.43		0.7695	Non-user F4: Biodiversity exposure benefits	4.14		0.7737
The opportunity to learn something about fauna or flora	4.32	0.8006	0.6465	The opportunity to learn something about fauna or flora	4	0.7185	0.7469
The opportunity to appreciate biodiversity	4.40	0.7249	0.6013	The opportunity to appreciate biodiversity.	4.08	0.7705	0.6387
The opportunity to connect with nature	4.56	0.5984	0.7868	The opportunity to connect with nature	4.35	0.6283	0.6959
				Non-user F6: Escapism benefits	3.89		0.6042
				Relief from crowded urban lifestyles	3.77	0.6879	0.5300
				The opportunity to get away from the busy town	4.04	0.6055	0.3143
				The opportunity to attend a concert or function	3.85	0.4122	0.6388

### 3.2.1 Similarities between Users and Non-Users

Four factors shared the common labels of socio-cultural, leisure, mental well-being, and biodiversity exposure benefits.

#### 3.2.1.1 Socio-Cultural Benefits

The common items that loaded onto the socio-cultural benefits factor included the opportunity to strengthen social networks, the opportunity to buy a book, souvenirs or plants, the opportunity to connect with heritage, the opportunity to connect with culture, and the opportunity to connect with one's spiritual side. For the users, this factor is consistent with earlier research findings, especially those of Maller *et al.* (2005) and Moyle and Weiler (2017) who also found that interacting with nature in gardens offers opportunities for social interaction with other community members, thereby promoting social cohesion and mutual understanding among residents. However, the factor had the lowest mean score for both the users (3.78) and non-users (3.7) suggesting opportunities for product enhancement to change this perception. The Garden could, for example, expand the provision of cultural

and heritage events such as the inclusion of theatrical performances. The LNBG may also be an ideal location for constructing a botanical art gallery or museum, further enhancing the cultural and heritage offerings.

Increasing retail opportunities at the Garden could also increase visitor spend. For example, providing more opportunities for visitors to purchase 'garden-related' products in an onsite retail outlet such as biodiversity-related books and souvenirs. In terms of increasing plant sales, there is an opportunity for improved plant interpretation throughout the Garden. This may encourage visitors to purchase such plants from the nursery for their own domestic gardens. Promotional efforts centred on the Garden's distinctive spiritual feature (*i.e.* the labyrinth) for individuals looking for spiritual benefits could also be improved.

### 3.2.1.2 Mental Well-Being Benefits

Common items loading onto the factor of mental well-being benefits included improvement of psychological health and an opportunity for emotional and physical rejuvenation with mean scores of 4.26 and 4.10 for users and non-users, respectively. This finding reiterates the importance of botanical gardens providing an 'escape' from urban living with an opportunity to rejuvenate in a nature-based environment, thereby supporting the findings of Carrus *et al.* (2017) and Kohlleppel *et al.* (2002). To this end, the LNBG could heighten its promotional efforts to reinforce this message. The management of the LNBG may also liaise with medical professionals who operate in the emotional and psychological health field to motivate them to actively promote visitation to the Garden.

### 3.2.1.3 Leisure Benefits

Three common items loaded onto this factor: the opportunity to strengthen family ties, the opportunity to exercise, and the opportunity to have a picnic. This factor highlights how a botanical garden has evolved beyond a site for biodiversity conservation and education, to one of leisure pursuits. In this regard, it echoes the assertion made by Moskwa and Crilley (2012). In response, more family-orientated and exercise-based events could be explored.

### 3.2.1.4 Biodiversity Exposure Benefits

Regarding biodiversity exposure benefits, three shared items loaded onto this factor, including the opportunity to learn about fauna or flora, appreciate biodiversity and connect with nature. This discovery is perhaps not surprising considering the nature-based experience offered by botanical gardens, enabling people to connect with and enjoy nature; in this regard, the user findings reflect previous studies such as Hermann and Bouwer (2023) and Wassenberg *et al.* (2015), for example. It, therefore, supports the commonly cited botanical garden role of 'education'.

However, there was a difference in the mean scores for the users (4.43) and non-users (4.14) for this factor. This suggests a need for marketing communication to non-users that specifically focuses on the value of learning or product diversification that encourages visitation and, hence, biodiversity exposure. Practically, this could involve dedicating a section of the Garden to an interactive display on the impacts of humans on the environment and climate change and the role of plants in mitigating climate change. Special commemorative days, such as World Environmental Education Day (26 January), could be celebrated and actively promoted. Guided walks could also be expanded to focus on specific themes such as birds, frogs, and medicinal plants, for example, through partnerships with local guides and public sector partners such as the Mpumalanga Tourism and Parks Agency.

## 3.2.2 Differences between Users and Non-Users

The main differences between the two groups were that users perceived a factor relating to stress relief and relaxation benefits while non-users perceived a factor relating to recreation benefits, and a sixth factor that pertained to the notion of escapism.

For the users, six items were loaded onto the stress relief and relaxation benefits factor. Scoring the highest mean (4.52), these six items included relief from stress, a sense of peace and tranquility, an opportunity to relax, an opportunity to get a breath of fresh air, and the opportunity to enjoy the natural beauty. This factor reflects research by Carrus *et al.* (2017), Kohlleppel *et al.* (2002), Wassenberg *et al.* (2015) and Bennett and Swasey (1996) who reported the perceived reduction of stress as a motivation/benefit of visitation.

For the sample of non-users, the factor pertaining to recreation benefits included the opportunity for emotional and physical rejuvenation, an opportunity to participate in recreational activities, a sense of peace and tranquility, the opportunity to give children a chance to play outdoors, and the opportunity to eat at the restaurant. Items that loaded onto the escapism factor (Factor 6) included relief from crowded urban lifestyles, the opportunity to get away from the busy town, and the opportunity to attend a concert or function; in essence, the

need to escape from crowded spaces. This finding reiterates the importance of botanical gardens considering increasing urbanisation and the 'living' challenges that it creates. In this regard, the Garden could reinforce the recreational and escapism opportunities in its marketing communication.

## Conclusion

Botanical gardens are a key product of garden tourism – a growing niche tourism activity globally. In South Africa, the national botanical gardens are managed and funded by the SANBI but, as with many government-funded nature-based sites, alternative revenue sources must be generated to promote the sustainability of such gardens. In many instances, the opportunities for additional income generation are from visitors, generally through entrance fees and secondary spending (e.g. retail).

Since botanical gardens are often based in, or on the periphery of, cities, they are accessible to large population centers and, as such, a potential local market. Visitation by such residents can result in various benefits being accrued for both the individual and the wider society. Notably, the income generated from increased visitation can assist in improving the financial stability of the botanical garden. However, in South Africa, the perceived benefits of botanical garden visitation held by residents in the surrounding communities are largely unknown. More specifically, there is an apparent absence of literature on the perceptions of residents who have not previously visited a botanical garden. Therefore, this study aimed to understand and compare the perceived benefits of users and non-users to inform marketing.

Using PCF analysis as a data reduction technique, five key factors (*i.e.* benefits) were retained for the users and six for the non-users. Four factors were common across each group: socio-cultural, leisure, mental well-being, and biodiversity exposure benefits. Escapism was an additional sixth factor generated for the non-users. In general, the results for the users are consistent with previous studies. A comparison of the results for the non-users was not permissible given the apparent absence of literature in this regard.

Overall, a noteworthy finding is that there are considerable similarities between the perceptions of users and non-users. This suggests that marketing does not necessarily need to be vastly differentiated between the two groups but rather more *engaging*, to reinforce the benefits to encourage repeat visitation and convert non-users into users. Ultimately, residents become advocates of the Garden and, in turn, promote the attraction to a broader domestic and international audience (particularly the VFR market), thereby promoting the sustainability of the Garden in an era where visitation needs to be maximized to generate tourist income to supplement dwindling government funds.

In conclusion, it is suggested that this study contributes to the extant literature on botanical garden visitation by exploring a previously under-researched population in tourism (*i.e.* non-users of tourism products) and the under-researched perceptions of residents as *consumers* of tourism products as opposed to being observers, beneficiaries or victims of tourism. In this regard, the study is novel and could also be replicated at other botanical gardens in South Africa and beyond. Furthermore, there is potential for a study that employs a qualitative methodology to gain a deeper insight into the benefits of visiting a botanical garden. Given that non-users' perceived benefits of garden visitation did not differ significantly from users, this may call for further research to understand why residents are not visiting the Garden. It may also be of value to investigate how the non-users' perceptions have been informed.

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## Credit Authorship Contribution Statement

**Izak J. Middel:** Conceptualization, Investigation, Methodology, Formal Analysis, Writing – original draft, Data curation, Validation, Visualization.

**Samantha C. Bouwer:** Conceptualisation, Supervision, Validation, Writing – review and editing.

**Uwe P. Hermann:** Supervision, Validation, Writing – review and editing.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Declaration of Use of Generative AI and AI-Assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

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## Environmental Aspects of Participatory Budgeting in Selected Cities in Europe

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**Abstract:** This paper explores the integration of environmental priorities into participatory budgeting (PB) processes in selected European cities, with a focus on Poland, Spain, and Portugal. Participatory budgeting enables citizens to directly influence how municipal funds are allocated, providing a democratic platform for the development of sustainable urban projects. Through a review of literature and case studies, the paper examines how PB contributes to environmental initiatives such as green infrastructure, waste management, energy efficiency, sustainable transport, and climate resilience. Case studies from Warsaw and Gdańsk in Poland, Barcelona and Valencia in Spain, and Lisbon and Porto in Portugal illustrate the diverse ways cities have used PB to fund projects like community gardens, green roofs, riverbank restoration, and bike infrastructure. These initiatives not only address local ecological challenges but also promote civic engagement, environmental justice, and long-term sustainability. The findings highlight the transformative potential of participatory budgeting as a tool for inclusive urban governance and environmental planning in selected European cities.

The main objective is to examine how PB can serve as a democratic tool for environmental governance, promoting sustainability, resilience, and citizen engagement.

The study adopts a qualitative case study approach supported by literature review and document analysis. It evaluates municipal participatory budgeting initiatives with a specific focus on green infrastructure, waste management, energy efficiency, sustainable mobility, and climate adaptation. Academic sources, city budget reports, and environmental planning documents were analyzed to identify the environmental impact and governance models of PB in each city.

Participatory budgeting in European cities increasingly funds environmental projects, such as green roofs, urban gardens, tree planting, sustainable transport, and flood prevention. The active involvement of citizens in decision-making ensures that environmental solutions are locally relevant, socially inclusive, and ecologically impactful. Results show that PB contributes to improved urban resilience, environmental justice, and long-term sustainability by aligning ecological goals with democratic processes.

This study is among the first to comparatively examine environmental projects under PB frameworks in Eastern and Southern Europe. It offers new insights into how participatory governance mechanisms can shape urban environmental policy and increase community ownership of green transitions.

Policymakers and city planners can use participatory budgeting as a strategic instrument for environmental planning, ensuring that public investments are both citizen-driven and environmentally sound. The paper provides examples and recommendations for replicating successful PB-based environmental initiatives across diverse urban contexts.

**Keywords:** environmental sustainability; participatory budgeting; urban governance; green infrastructure; climate resilience; citizen engagement; Poland; Spain; Portugal.

**JEL Classification:** H72; Q56; R58; D72; Q01.

## Introduction

Participatory budgeting (PB) allows residents of the cities to directly influence how municipal budgets are allocated, including how funds are spent on environmental projects and sustainability efforts, as highlighted by Bernaciak, Arnold, Rzeńca, and Sobol (2017). By integrating environmental aspects into the PB process, cities not only empower their citizens but also advance their environmental and climate resilience goals. This participatory model supports transparency, civic engagement, and more inclusive decision-making, all while addressing pressing ecological challenges.

Environmental initiatives within PB often focus on green infrastructure, which uses natural systems to manage urban challenges such as stormwater runoff, urban flooding, air pollution, and rising urban temperatures. Green infrastructure can be a central theme of participatory budgeting efforts, as it contributes significantly to both environmental health and social well-being.

## 1. Literature Review

One example of this is the funding of green roofs and living walls on public buildings, schools, and community centers. These installations help reduce the urban heat island effect, retain stormwater, enhance insulation in buildings, and improve air quality. Liberalesso, Cruz, Silva, and Manso (2020) discuss how green roofs have been incentivized worldwide and can be successfully incorporated into PB projects that aim to make public buildings more sustainable.

Another form of green infrastructure that aligns with PB priorities is the creation of rain gardens and bioswales. These are landscaped elements that capture and filter stormwater, reducing runoff and preventing pollution from entering water systems. Sharma and Malaviya emphasized the role of such installations in urban stormwater management, making them ideal candidates for PB proposals in flood-prone or highly paved neighborhoods (Sharma, Malaviya 2021).

Urban forestry projects also find strong support in participatory budgeting processes. Citizens often propose tree planting in streets, parks, and around public institutions such as schools and hospitals. This contributes to biodiversity, improves air quality, provides shade, and fosters a stronger connection between urban residents and the natural environment. In research conducted by Miller, Hauer, and Werner (2015), the benefits of urban trees are well-documented, and involving communities in selecting planting locations through PB ensures that projects align with local needs (Miler *et al.* 2015).

As Shane Epting (2020) notes, participatory budgeting can also play a crucial role in environmental justice by directing resources to underserved areas that are often more vulnerable to environmental degradation. Through PB, residents in these communities can propose and vote for green projects that directly improve their quality of life, such as converting vacant lots into community gardens, establishing small green parks, or installing solar panels on public housing. In this way, environmental participatory budgeting not only contributes to sustainability and resilience but also ensures a more equitable distribution of environmental benefits across the urban population.

Waste management and recycling are critical urban challenges that participatory budgeting can help address by empowering residents to shape sustainable and community-centered solutions. Through PB, cities can direct funds toward practical, grassroots waste initiatives that promote circular economy principles and reduce environmental impact.

One effective approach is the development of community composting programs. These initiatives allow neighborhoods to process organic waste locally, transforming food scraps and garden waste into nutrient-rich compost for gardens and green spaces. According to Lunag Jr and Elauria (2024), community-based composting systems have measurable environmental and economic benefits, including reduced landfill dependency and lower greenhouse gas emissions. When supported by PB, these programs can be tailored to local needs, encouraging resident involvement and environmental stewardship.

Another area where PB can make a significant impact is in the installation of public recycling stations. Accessible recycling bins placed in high-traffic areas like parks, transit hubs, and commercial streets make it easier for residents and visitors to separate waste properly. Doris Knickmeyer (2020) notes that the visibility and accessibility of recycling infrastructure are key factors in improving recycling behaviors. PB allows citizens to decide where these bins are most needed, increasing both usage and awareness.

Participatory budgeting can also support more technologically advanced solutions such as small-scale waste-to-energy initiatives. These projects involve converting non-recyclable waste into usable energy, such as electricity or heat, thus reducing landfill use while contributing to local energy needs. Cucchiella, D'Adamo, and Rosa (2016) highlight the social and environmental benefits of urban waste-to-energy systems, particularly when

communities are involved in their planning and oversight. Funding such projects through PB ensures public acceptance and integrates them into broader sustainability strategies.

By involving residents directly in decisions about how to manage waste and recycle more effectively, participatory budgeting fosters a sense of ownership and responsibility, making cities cleaner, greener, and more resilient.

Energy efficiency is a key environmental concern in urban areas and participatory budgeting offers a democratic avenue for residents to fund and prioritize energy-saving initiatives that align with both climate goals and local needs. By investing in energy efficiency through PB, cities can reduce emissions, lower operational costs, and increase energy resilience.

One impactful approach is upgrading public buildings such as libraries, schools, and community centers with energy-efficient systems. These upgrades might include LED lighting, improved insulation, smart energy management systems, or the integration of renewable energy sources like solar panels. Cano and others discovered that they emphasize that strategic investment in energy efficiency for public infrastructure not only cuts emissions but also improves cost-efficiency and risk management in public sector planning. When residents decide on such upgrades through PB, the projects often reflect shared priorities and provide direct benefits to the community (Cano, *et al.* 2014).

Community solar power is another area where participatory budgeting can drive change. By funding the installation of solar panels on public rooftops or developing shared solar farms, communities can generate clean, renewable energy while decreasing reliance on fossil fuels. Luke and Heynen (2020) frame community solar not only as an environmental solution but also as a form of energy justice, particularly in underserved communities where energy costs can be a burden. Through PB, residents can propose and support solar projects that make clean energy accessible to all, especially those historically excluded from green infrastructure investments.

Promoting green building standards is another crucial way PB can be used to enhance urban energy performance. Funds can be directed toward encouraging or incentivizing construction and renovation that meets environmentally friendly certifications such as LEED or BREEAM. Huang *et al.* (2021) discuss how adopting green standards and using tools like Building Information Modeling (BIM) contributes significantly to energy conservation and sustainability in construction. Participatory budgeting allows communities to support programs that offer guidance, training, or financial incentives for sustainable building practices, fostering long-term environmental and economic benefits.

By involving residents in energy efficiency planning through participatory budgeting, cities not only accelerate their transition to low-carbon futures but also cultivate a sense of ownership and environmental responsibility among the public. This bottom-up approach ensures that energy solutions are inclusive, equitable, and grounded in the real needs of local communities.

Sustainable transportation is a crucial focus for urban environmental policy, as cities around the world grapple with high levels of carbon emissions and air pollution generated by car-centric infrastructure. Participatory budgeting offers residents a direct voice in shaping more sustainable and equitable transportation systems by allocating funds to projects that prioritize clean, accessible, and safe mobility options.

One of the most effective uses of PB in this area is improving public transit. Citizens can propose funding for initiatives that expand bus networks, enhance subway services, or make transit more accessible and affordable for marginalized groups. These improvements not only reduce car dependency but also support social inclusion by making mobility easier for people with lower incomes or limited access to private vehicles. Wretstrand, Svensson, Fristedt, and Falkmer (2009) highlighted the benefits that come from improving accessibility in public transport systems, particularly for older adults and individuals with mobility challenges.

Cycling infrastructure is another popular area for PB-supported investment. Residents often advocate for safer bike lanes, public bike-sharing programs, and secure bike parking to encourage cycling as a daily mode of transport. Such projects not only reduce emissions and traffic congestion but also promote healthier lifestyles and foster a sense of community. According to Deenihan and Caulfield (2015), both locals and visitors value quality cycling infrastructure, which can enhance urban appeal while supporting environmental goals.

PB also empowers communities to design streets that are more pedestrian-friendly. This might involve transforming car-dominated roads into walkable public spaces, creating pedestrian-only zones, or improving sidewalks and street crossings. These changes increase safety, encourage active transportation, and contribute to more vibrant urban life. Research conducted by Tawil and others demonstrated how pedestrian-centered urban design revitalizes streets, making them more inclusive and livable for all age groups (Tawil, *et al.* 2014).

By incorporating sustainable transportation priorities into participatory budgeting, cities can develop mobility systems that are greener, more equitable, and more responsive to the needs of their residents. This

bottom-up approach ensures that transportation policies reflect real-world concerns and promotes long-term shifts toward sustainability and environmental justice.

Climate resilience and adaptation are increasingly vital priorities for cities facing the intensifying impacts of climate change, including extreme weather events, heatwaves, and flooding. Participatory budgeting offers a platform for residents to shape how their communities prepare for and respond to these challenges by funding projects that build local resilience and protect the most vulnerable populations.

Flood prevention infrastructure is a key area where PB can make a tangible difference. Residents living in flood-prone neighborhoods can propose investments in protective measures such as flood barriers, upgraded drainage systems, permeable pavements, and flood-resistant landscaping. These localized interventions help reduce the risk of property damage and displacement during heavy rainfall or storm events. Fekete (2019) emphasizes the importance of integrating local knowledge into critical infrastructure planning, as reflected in global frameworks like the United Nations Sendai Framework, the Making Cities Resilient campaign, and climate adaptation goals under the Paris Agreement and IPCC process.

Heat resilience strategies are another essential focus for urban adaptation. Through PB, communities can prioritize projects that mitigate the urban heat island effect, such as planting heat-tolerant trees, expanding green cover in dense neighborhoods, installing cool roofs on public buildings, and creating shaded gathering spaces. These actions not only provide relief during heatwaves but also improve public health and comfort for vulnerable populations including the elderly, children, and low-income residents.

Participatory budgeting can also fund public awareness campaigns that educate residents about the local effects of climate change and how to adapt. These campaigns may include community workshops, informational materials, school programs, or digital platforms that share practical tips on energy saving, water conservation, or emergency preparedness. By raising awareness and promoting proactive behavior, PB-funded initiatives build collective capacity for climate resilience and foster a culture of environmental responsibility.

When residents are given a voice in shaping climate adaptation strategies through participatory budgeting, cities benefit from more context-specific, inclusive, and sustainable solutions. This democratic approach ensures that adaptation efforts reflect the needs and knowledge of local communities, making cities more resilient, equitable, and prepared for the future.

Ronda and Gil-Jaurena analyzed in their work 38 Big cities which, in the 2015-2019 legislature, introduced Participatory Budgeting. The results of this study show that in 2019 Participatory Budgeting had been implemented by more than 60% of the analyzed cities (Ronda, Gil Jaurena 2021).

## 2. Method

The study adopts a qualitative case study approach supported by literature review and document analysis. It evaluates municipal participatory budgeting initiatives with a specific focus on green infrastructure, waste management, energy efficiency, sustainable mobility, and climate adaptation. Academic sources, city budget reports, and environmental planning documents were analyzed to identify the environmental impact and governance models of participatory budgeting in selected cities in Poland, Spain and Portugal.

## 3. Case Study

Participatory budgeting (PB) is a process where citizens are directly involved in decision-making about how public funds are allocated. This approach has been gaining traction across Europe, including in Poland, Spain, and Portugal, particularly for environmental projects. Specific examples of environmental projects funded through participatory budgeting in three countries - Poland, Spain and Portugal – will be presented.

The participatory budget was first applied in Poland in 2011 in Sopot. It quickly became one of the most popular local initiatives aimed at engaging citizens in city management within selected projects (Siemionek-Ruskań, Siemionek- Lepczyńska. 2024).

In Warsaw participatory budgeting has played a key role in advancing environmental projects with a particular emphasis on the development and maintenance of green urban spaces. One notable initiative focused on transforming underutilized or neglected public areas into vibrant green zones filled with trees shrubs and community gardens. Residents were actively involved in the decision-making process voting on the locations and designs of the new green areas to ensure that these improvements were made in neighbourhoods that lacked access to quality public parks. This approach not only enhanced local biodiversity and urban aesthetics but also promoted social cohesion by providing spaces for community gatherings and leisure activities. The project reflects the broader goal of reclaiming neglected blue and green spaces for public benefit as explored by Wilczyńska,

Myszka, Bell, Słapińska, Janatian and Schwerk in their study on spatial potential in Warsaw (Wilczyńska *et al.* 2021).

In Gdańsk participatory budgeting has supported a variety of urban gardening initiatives aimed at revitalizing public land and promoting sustainable urban living. One key component has been the establishment of community gardens on previously unused or underutilized plots. These gardens not only contribute to local food production but also enhance biodiversity and foster a sense of community among residents. They serve as spaces for education relaxation and intergenerational exchange while helping to manage stormwater and improve urban microclimates. As noted by Kasprzyk, Szpakowski, Poznańska, Boogaard, Bobkowska and Gajewska (2022) the integration of green infrastructure solutions such as rain gardens in Gdańsk demonstrates how participatory approaches can effectively combine ecological benefits with community development.

In Barcelona participatory budgeting has supported a range of environmental projects including the creation of green roofs and urban gardening spaces on rooftops. These initiatives were designed to address environmental challenges such as the urban heat island effect and air pollution while also promoting sustainability and food sovereignty. Through the participatory process residents voted to allocate funds for the installation of green roofs on public buildings and the development of rooftop gardens in areas with limited green space. These projects not only improve the city's microclimate but also enhance urban biodiversity and provide opportunities for community engagement in sustainable food practices. As highlighted by Langemeyer, Wedgwood, McPhearson, Baró, Madsen and Barton the spatial planning of green roofs in Barcelona was guided by ecosystem service-based decision-making to ensure that these green infrastructures were developed where they were most needed (Langemeyer *et al.* 2020).

In Valencia participatory budgeting played a significant role in promoting green mobility by funding projects focused on expanding cycling infrastructure and supporting sustainable transportation. The city allocated PB funds to build new bike lanes enhance connectivity between different parts of the urban area and install bike-sharing stations to encourage non-motorized commuting. These efforts aimed to reduce the reliance on cars lower greenhouse gas emissions and improve air quality while also making the city more pedestrian and cyclist friendly. As noted by Feldman (2023) this approach to financing sustainable transport through local engagement represents an innovative model for urban mobility planning that aligns with broader climate goals and community needs.

In Lisbon participatory budgeting has been a key tool for advancing environmental sustainability through the development of community gardens urban reforestation projects and the creation of new green public spaces. These initiatives were designed to improve urban living by increasing access to fresh locally grown food, mitigating the urban heat island effect and enhancing the city's biodiversity. Citizens played an active role in identifying priority areas and selecting projects through a democratic voting process ensuring that the green infrastructure developments reflected local needs and preferences. As highlighted by van der Jagt Szaraz Delshammar Cvejić Santos Goodness and Buijs (2017) these types of nature-based solutions rely on inclusive governance and community participation to be successful and sustainable.

In Porto participatory budgeting was used to support riverbank restoration and broader sustainability projects aimed at revitalizing the ecological integrity of the Douro River. The funded initiatives included erosion control efforts improvements in water quality and the transformation of degraded riverbank areas into accessible recreational spaces for the public. A key component of the restoration involved planting native vegetation along the river to stabilize the soil support local wildlife and strengthen natural ecosystems. This approach not only addressed environmental challenges but also fostered stronger connections between urban residents and natural landscapes as discussed by D'Orey de Sousa Aragão Costa and Duarte (2023) in their review of urban river restoration practices.

#### 4. Research Results

Incorporating environmental aspects into participatory budgeting offers cities a powerful tool to foster inclusive, sustainable urban development while empowering residents to actively shape their communities. This process strengthens democratic engagement and enables citizens to directly influence how public resources are used to address pressing environmental challenges.

One of the key benefits of environmental participatory budgeting is increased civic engagement. When residents are given the opportunity to propose and vote on sustainability-focused projects, they become more invested in the future of their neighbourhoods. This active involvement helps align local sustainability initiatives with community needs and values, creating a sense of ownership and responsibility among citizens. As highlighted by Bartlett and Schugurensky, participatory budgeting also serves as a form of civic education,

especially when integrated into schools and local institutions, fostering democratic values and environmental awareness from a young age.

Environmental projects funded through participatory budgeting can have significant social and ecological impacts. These projects often address climate change mitigation and adaptation while simultaneously improving the quality of urban life. Whether through the expansion of green spaces, improved waste management systems, or renewable energy initiatives, PB enables communities to implement solutions that restore local ecosystems and promote public health. According to Sintomer and others (2013), the participatory process brings visibility and legitimacy to environmental concerns that might otherwise be marginalized in traditional budget planning.

Beyond immediate impacts, environmental PB contributes to long-term sustainability by embedding ecological thinking into the financial and planning practices of cities. When public funds are directed toward reducing emissions, conserving resources, and building climate resilience, cities strengthen their ability to adapt to future environmental pressures. The process encourages a shift from reactive to proactive governance, where citizens and policymakers collaborate to create enduring solutions for both people and the planet.

As Wampler, McNulty, and Touchton suggest, the global expansion of participatory budgeting reflects its transformative potential. By weaving environmental priorities into the fabric of participatory decision-making, cities can make green investments that not only enhance urban resilience and equity but also inspire a culture of collective responsibility for sustainable development (Wampler *et al.* 2021).

The main benefits of applying environmental aspects in participatory budgets in selected cities in Poland, Portugal and Spain were presented in table 1.

Table 1. Main benefits of applying environmental aspects in participatory budgets in cities

Poland	Spain	Portugal
transforming underutilized or neglected public areas into vibrant green zones	improving air quality	advancing environmental sustainability
providing spaces for community gatherings and leisure activities	reducing the reliance on cars and choosing bikes	supporting riverbank restoration
the founding of community gardens to enhance city's biodiversity	mitigating the urban heat island effect	support local wildlife
improving urban microclimate	promoting sustainability	increasing access to fresh locally grown food
creating spaces for education and relaxation	creating green roofs	enhancing the city's biodiversity
Creating "Gdańsk Charter for Trees" and "Charter for Trees" in Warsaw		

Source: Authors own research based on: <https://www.gdansk.pl/budzet-obywatelski>, access date 13.04.2025, <https://um.warszawa.pl/waw/bo>, access date 13.04.2025; <https://www.decidim.barcelona/processes/pressupostos2024>, access date 13.04.2025; Falanga.2024.

## 6. Discussions

The selected cities for this study from Europe show how participatory budgeting can directly fund environmental projects that improve urban living conditions, promote sustainability, and help cities adapt to climate change. The success of these projects mainly depends on the active participation of residents, who help shape their city's environmental future by prioritizing and voting on initiatives that directly impact their quality of life.

Participatory budgeting can serve as a valuable tool for policymakers and urban planners to support environmentally conscious planning, making sure that public expenditures reflect community input and supports sustainability. This paper highlights case studies and offers guidance for applying successful PB-focused environmental projects in a variety of urban settings.

## Conclusions and Further Research

Warsaw, like many large cities in Europe, faces urban challenges such as air pollution, limited green spaces, and the "urban heat island" effect, where the temperature in the city is significantly higher than in surrounding rural areas due to extensive concrete and asphalt surfaces. In response to these issues, the city's participatory budgeting system has provided residents with the opportunity to propose and vote on projects that can address such challenges.

Gdańsk introduced in February 2025 "Gdańsk Charter for Trees". The order highlights that the process of investment planning, the maximum preservation of existing tree canopies, including trees from self-sowing,

should be sought in each case. In justified cases, such as valuable tree canopies, avenues, trees of monumental dimensions, aged and veteran trees, it is necessary to provide investor supervision in the field of greenery protection for the commissioned works. This plays a vital role in city planning as Gdańsk is a rapidly growing agglomeration with numerous numbers of new investments from year to year. What is worth mentioning, is also the fact charging financial penalties in contracts involving construction work, for deterioration of tree habitat, damage or destruction of greenery and soil in areas to be developed in the form of greenery.

Across Poland, Spain, and Portugal, participatory budgeting has allowed citizens to directly influence environmental projects, with many initiatives focusing on urban green spaces, sustainability, and the promotion of green infrastructure. These projects not only improve the local environment but also engage communities in the decision-making process, ensuring that the projects meet the needs and desires of the residents.

#### Credit Authorship Contribution Statement

**Małgorzata Siemionek-Ruskań:** Conceptualization, Investigation, Methodology, Project administration, Software, Formal analysis, Writing – original draft, Supervision, Data curation, Validation, Writing – review and editing, Visualization, Funding acquisition;

**Anna Siemionek-Lepczyńska:** Conceptualization, Investigation, Methodology, Project administration, Software, Formal analysis, Writing – original draft, Supervision, Data curation, Validation, Writing – review and editing, Visualization, Funding acquisition.

#### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

#### Declaration of Use of Generative AI and AI-Assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

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## Tourism in Sri Lanka during Political, Economic, and Environmental Crises: A Qualitative Analysis

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**Abstract:** This article examines the impact of interconnected political, economic, and environmental crises on Sri Lanka's tourism sector, analyzing their effects on tourism strategies.

Employing a qualitative research design, this study uses framework analysis to analyze data collected from semi-structured interviews with tourism stakeholders (for example, hotel managers, tour guides, and government officials) and secondary sources (for example, government reports and policy documents).

The study highlights Sri Lanka's tourism industry's vulnerability to political instability, economic downturns, and environmental issues. It emphasizes the need for adaptive strategies like diversifying offerings and targeting new markets. The study underscores the importance of resilience and flexibility in the sector to mitigate future crises.

This study fills a gap in literature by conducting a comprehensive analysis of the interconnected challenges confronting Sri Lanka's tourism sector, as well as providing context-specific resilience-building measures tailored to a multifaceted crisis environment.

The findings indicate that policymakers should enact specific policies to promote sustainable tourist development, encompassing crisis management, infrastructure enhancement, and environmental preservation. Emphasizing legal systems and advancing sustainable practices will reinstate global confidence in the business.

**Keywords:** tourism crisis management; sustainable tourism development; qualitative framework analysis; Sri Lanka tourism.

**JEL Classification:** L83; O11; Q56; R11.

### Introduction

Tourism serves as a cornerstone of Sri Lanka's economy, contributing significantly to the nation's Gross Domestic Product and providing direct and indirect employment to millions across the island (Galdolage *et al.* 2024, Ranasinghe *et al.* 2020). The country's rich cultural heritage, diverse ecosystems, and scenic landscapes make it an attractive destination for global travellers (Pathirana *et al.* 2024). However, the tourism industry is highly sensitive to external shocks and crises (Duan, Xie, and Morrison 2022), making it susceptible to fluctuations caused by political instability (Sönmez 1998, Eugenio-Martin and Campos-Soria 2014), economic downturns (Henderson 2007, Eugenio-Martin and Campos-Soria 2014), and environmental degradation (Gössling 2002, Ali *et al.* 2024). In recent years, Sri Lanka has experienced an unprecedented confluence of crises that have severely destabilised its tourism sector, including the devastating 2019 Easter Sunday terrorist attacks, the global COVID-19 pandemic, and a protracted economic crisis marked by soaring inflation, currency depreciation, foreign exchange shortages, and sovereign debt defaults (Withers 2024, Wettimuny 2021). The consecutive difficulties have resulted in a sharp decrease in foreign tourist arrivals, a downturn in tourism-related investment, and extensive economic distress for persons and communities dependent on the business (Fernando and Carr 2024).

The cumulative impact of these crises has underscored the vulnerabilities inherent in Sri Lanka's tourism sector and highlighted the urgent need for strategic interventions aimed at fostering resilience and sustainable development. This study seeks to conduct a thorough analysis of the obstacles facing Sri Lanka's tourist sector, emphasising the interaction among political instability, economic hardship, and environmental issues. This paper

examines the socio-economic impacts of these crises, focusing on how communities reliant on tourism have been disproportionately affected and assessing the wider implications for national economic stability. Overall, this study seeks to pinpoint policy interventions and strategic actions that can facilitate the recovery, enhance resilience, and ensure the long-term sustainability of Sri Lanka's tourism sector.

This research is crucial as it transcends mere analysis of crisis effects to offer tangible, evidence-based remedies that might strengthen Sri Lanka's tourism economy against future interruptions. The results aim to aid policymakers in developing effective recovery frameworks, assist industry stakeholders in adjusting business strategies, and offer scholars empirical insights that enhance the broader discussion on crisis resilience and sustainable tourism development.

While there is a lot of literature on tourist crises, most current research focuses on individual events rather than the interconnected challenges faced by Sri Lanka currently. The complex interdependencies between political, economic, and environmental dimensions remain underexplored, leaving a crucial gap in understanding how multi-faceted crises can be effectively managed within a tourism-dependent economy. This study fills a crucial gap in academic research and policy development by offering a detailed perspective on resilience-building measures tailored to Sri Lanka's circumstances. Given the vital role tourism plays in Sri Lanka's economic fabric, the findings of this study hold significant implications for shaping evidence-based strategies that can revitalise the sector and position it as a key driver of national recovery and growth.

## 1. Literature Review

The tourism industry's vulnerability to crises is well-established, arising from its dependence on human interaction, service perishability, and unpredictable demand (Kandampully and Solnet 2024, Santana 2004). Political instability and environmental challenges increase these vulnerabilities (Ivanov *et al.* 2020, Hall 2010). Aydogan *et al.* (2024) identified that service quality, customer satisfaction, resilient branding, and market diversification are essential attributes of crisis-resilient tourism organisations. Effective crisis management necessitates both proactive and reactive measures (Vašičková 2019, Pforr and Hosie 2008), cultivating resilience to sustain operations during disruptions (Jiang, Ritchie, and Verreyne 2019). To make the tourism industry better prepared for future problems, future research should take a more in-depth look at both the pre- and post-crisis stages as well as the resilience of organisations (Pekdemir and Küçükaltan 2024).

Political instability, including terrorism and civil disturbance, significantly jeopardises tourism, resulting in decreased tourist arrivals due to safety apprehensions (Sönmez 1998). Incidents like the 2019 Easter Sunday attacks in Sri Lanka highlight this effect, requiring rehabilitation methods (Jayasinghe, Fernando, and Surangi 2023). Travel advisories produced by foreign governments can exacerbate these consequences (Beirman 2006, Lepp and Gibson 2003). Effective crisis communication can alleviate these adverse effects by reinstating confidence (Liu-Lastres 2022). Confidence in government influences locals' endorsement of tourism, although this may be adversely impacted in politically unstable areas (Henderson 2007).

Economic crises profoundly affect the tourist industry, frequently diminishing demand due to decreased disposable income and currency changes that modify affordability (Kaar 2009, Song, Li, and Cao 2018). Sri Lanka's recent financial crisis illustrates these issues, characterised by inflation, currency devaluation, and diminished consumer expenditure, resulting in a significant decrease in tourist arrivals (Wickramasinghe 2024). Destinations may have varied responses during periods of economic expansion compared to downturn (Perles-Ribes, Ramón-Rodríguez, Rubia-Serrano, *et al.* 2016). Notwithstanding these challenges, Sri Lanka's tourism industry has demonstrated resilience by advocating for domestic tourism and providing incentives to local travellers, thereby alleviating losses during the crisis (Jayasinghe *et al.* 2022). Worldwide economic crises compel destinations to diversify and enhance their offerings to sustain competitiveness (Henderson 2007). Maintaining pricing competitiveness and attracting foreign direct investment might enhance tourist competitiveness during economic downturns (Dwyer and Kim 2003, Perles-Ribes, Ramón-Rodríguez, Sevilla-Jiménez, *et al.* 2016).

Tourism significantly promotes economic development while concurrently exacerbating environmental challenges, such as carbon emissions, resource depletion, and habitat deterioration (Baloch *et al.* 2023). Measures for sustainable tourism, including green technology, ecotourism, and community-based initiatives, are crucial for mitigating these effects (Kumar *et al.* 2023). In Sri Lanka, primary environmental issues encompass waste management, deforestation, coral reef degradation, and water pollution, alongside the preservation of wildlife habitats and endangered species, as well as the overall integrity of ecosystems (Ayyam, Palanivel, and Chandrakasan 2019). This situation demands the implementation of more robust environmental policies and climate resilience strategies to guarantee long-term sustainability (Zhang, Lv, and Sarker 2024).

Tourism crisis management emphasises proactive preparation, stakeholder involvement, and sustainability (Ritchie 2004, Chau *et al.* 2023). Zhang, Lv, and Sarker (2024) underscore the importance of communication in post-disaster rehabilitation, whereas Gani and Singh (2019) advocate for organised research agendas, Artificial Intelligence forecasting (Kumar, Misra, and Chan 2022), and disaster models (Aldao *et al.* 2021) augment resilience. Sigala (2020) and Komasi *et al.* (2025) emphasise the ramifications of the COVID-19 pandemic, promoting adaptive methods. Sri Lanka's recovery entailed stringent border regulations (Wickramasinghe 2024). Praptika, Yusuf, and Heslinga (2024) emphasises sustainability, highlighting the necessity of diminished dependence on tourism revenues for enduring resilience and proficient crisis management.

Political unrest (such as Easter Sunday attacks), economic upheaval (such as the 2022 financial crisis), and environmental issues like coastline erosion have all had a negative impact on Sri Lanka's tourism industry (Fernando *et al.* 2023), which contributed around 5% of the country's Gross Domestic Product prior to the crisis. Recovery initiatives encompass the promotion of domestic tourism via incentives (Wickramasinghe and Naranpanawa 2023), diversification of offerings to attract affluent tourists (Pathirana *et al.* 2024), fortification of public-private partnerships for infrastructure enhancement (Rathnasiri, Dewasiri, and Kumar 2024), and the establishment of risk management frameworks to improve readiness for future disruptions (Rathnasiri, Dewasiri, and Kumar 2024, Jayasinghe *et al.* 2022). In December 2023, tourism arrivals increased significantly (Jayasinghe *et al.* 2022), facilitating economic growth, supported by IMF-backed stabilisation measures.

## 2. Method

This study utilises a qualitative research design to thoroughly investigate the difficulties confronting Sri Lanka's tourist sector. Qualitative research is ideally suited for this study as it facilitates a comprehensive knowledge of intricate processes, captures subtle views, and produces detailed descriptive data. The study employed an exploratory methodology to uncover the underlying reasons and mechanisms that make Sri Lanka's tourist sector vulnerable to crises. This method involves a flexible process of collecting and analysing data, allowing the researcher to adjust research questions and methods based on new insights.

The primary data collection included semi-structured interviews with a varied array of stakeholders, including tourism operators, including hotel managers, tour guides, and travel agencies, alongside government officials involved in tourism planning and policy development. Furthermore, interviews were carried out with community members reliant on tourism for their livelihoods, professors and researchers focused on tourism and development, and recent international tourists who visited Sri Lanka. The interviews sought to deliver comprehensive insights into the issues confronting the tourism sector, the repercussions of previous crises, and prospective options for recovery and sustainable development.

Alongside primary data gathering, secondary sources were thoroughly analysed to contextualise and enhance the conclusions derived from the interviews. The materials included government reports, policy documents on tourism, tourist arrival statistics, market research studies, and scholarly articles on tourism in Sri Lanka. Additionally, news stories and media coverage about tourism-related matters were examined to comprehend public debate and current trends impacting the sector. The study took a comprehensive approach, integrating data from primary and secondary sources to assess the challenges and opportunities in Sri Lanka's tourist sector.

A purposive sampling method was employed to choose participants for the semi-structured interviews. This technique entailed the selection of participants based on their knowledge, experience, and expertise pertinent to the tourist sector in Sri Lanka. The sample comprised individuals from various backgrounds and viewpoints to guarantee a thorough comprehension of the research subject.

The researcher used framework analysis to analyse qualitative data from interviews and documents. This method facilitated organised data reduction and synthesis, making it easier to identify and compare patterns across different cases. The data analysis process included reviewing all transcripts and documents, followed by the development of a thematic framework based on research questions, literature review, and initial data exploration. The framework included key themes and sub-themes related to political, economic, and environmental concerns. Subsequently, the data was coded based on the framework and consolidated into a matrix format for analysis. This allowed for a logical comparison of data across cases, identifying common patterns and divergent perspectives. The data in the matrix was analysed to identify connections between themes, draw conclusions, and generate insights to answer the research questions.

Ethical considerations were paramount throughout the research process. Measures were taken to protect participants and ensure the integrity of the research. Before conducting interviews, we obtained everyone's

informed consent, and we anonymized the data to maintain confidentiality. The study adhered to ethical guidelines for qualitative research, ensuring transparency and respect for participants' contributions.

### 3. Research Results

To offer a comprehensive illustration of the Framework Analysis process, an expanded example of the matrix is presented in Table 1. This expanded illustration includes additional interview data from the text, enhancing the clarity and depth of the themes identified. It is expanded to include more interview facts based on the provided text, which provides a better perspective and clarity to understand the themes. (Note that this is a simplified version for demonstration purposes). This matrix illustrates how data from different sources were organised and compared to identify key themes and patterns.

Table 1. The Matrix of Illustration of the Framework Analysis process

Theme	Sub-theme	Hotel Managers	Tour Operators	Government Officials	Tourism Reports
Political Crisis	Travel Advisories	"Bookings drop immediately after advisories. Tourists fear violent events; they want unpretentious vacations, not war zones. Adventure tourists are a niche, not the majority."	"Political instability means constant tour adjustments. Tourists are wary of unauthorized protests and violence; it's hard to guarantee their safety."	"Government is trying to reassure tourists, but political legitimacy is threatened. We're using media to counter the negative image, but it's an uphill battle."	Notes that a "decrease in tourism can be directly related to foreign governments issuing a travel advisory or a travel ban. In January 2022, Sri Lanka experienced political unrest, which included but was not limited to civil unrest as well as rolling power outages."
	Government Instability	"Uncertainty in government policy is hurting long-term planning. The government chastises protestors but offers no solutions which makes it difficult to invest in renovations or sustainable practices."	"The two major parties are deadlocked. The negative impacts affect tourists. A civil political movement is fighting against the entire government which makes the environment unsafe. I'm constantly worried about their safety."	"Political deadlock slows down support for tourism. Systemic failures in government investments means we can't effectively promote long-term growth."	"Reports a decline in foreign investment due to policy paralysis. There is political unrest which has resulted in a removal of the country's president, but the legislative solutions have not made any preventative actions."

Theme	Sub-theme	Hotel Managers	Tour Operators	Government Officials	Tourism Reports
Economic Crisis	Hyperinflation	"The rising costs make it hard to maintain services. Tourists are sensitive; every price hike drives them away and they choose other, more affordable countries."	"Tourists are spending less. High prices are forcing them to cut activities, shortening their stays or traveling to see different cities, and changing their experience. They may also be discouraged from going to certain tourist destinations, but are instead going elsewhere because of lower prices."	"Controlling inflation is slow. The government is limited by global commodity prices and the current depreciation but is starting to monetize the economic deficit".	Notes that an "increase in prices for tourists during their visit causes their budget to increase, leading them to seek more money, to leave because they must now scale back on their travels, or by controlling their finances more strictly."
	Fuel & Food Scarcity	"We struggle to get fuel to run generators; inconsistent food supplies mean we can't reliably offer international cuisine which makes Sri Lanka a less desirable country to visit".	"Fuel shortages limit travel. Tourists can't explore; those who visit are here to explore and have fun. They are missing cultural sites because it makes long travel within Sri Lanka difficult."	"We're securing fuel and food, but local needs come first. Some foreign food items must be imported for dietary preferences to satisfy and appease the foreign community, but this costs extra money we don't have in the current environment. We will not import these goods anytime soon."	States that "one of the main reasons for limiting travel within the country is because of the lack of fuel availability. This affects the tourism industry by making it difficult to travel to more tourist destinations. The tourists can travel in a vehicle, in a train, or by using public transportation." The report also mentions that the importation of foods has ceased."
	Deforestation & Habitat Loss	"Deforestation is making landscapes less appealing. Eco-tourism is suffering; the lack of biodiversity means Tourists cannot enjoy or visit wildlife."	"We're seeing fewer animals. I'm often asked to take my tour group to a different environment, but those destinations are overbooked. Loss of natural habitats reduce sightings, disappointing the visiting population."	"Replanting initiatives need more support. We need more funding and support, but economic issues limit what is possible".	Says that "the political choices that have resulted in the degradation of the environment have also caused a loss of biodiversity, as well as a diminishing of ecosystems which also impacts revenue."

Theme	Sub-theme	Hotel Managers	Tour Operators	Government Officials	Tourism Reports
Environmental Concerns	Pollution	"Garbage on beaches is a disaster. A constant source of complaints and negative reviews."	"Tourists hesitate to swim in polluted waters. They are afraid of getting sick."	"Initiatives exist, but progress is slow. The lack of money and political power makes for a loss of effort and focus."	-
	Climate Change	"Extreme weather disrupts everything. These changes damage infrastructure and limit long term stability. The tourism industry benefits from the infrastructure as well."	"Rising sea levels threaten coastal resorts. This endangers all Sri Lanka revenue streams, along with hotels and tourism as a whole."	"We're developing adaptation strategies but need international support. Climate changes will require a costly reaction, which is not feasible".	"Coastal and marine tourism makes important contributions to Sri Lanka's national economy. If these areas are threatened with sea level and natural occurrences, those are directly at risk."
	Unsustainable Tourism Practices	"Waste overwhelms local systems, damaging the perception of the industry. The local waste management sector is not evolved enough to handle a heavy waste environment."	"Unregulated activities damage ecosystems which discourages tourists who seek ethical travels. All the natural attractions must be available for viewing to tourists in the future."	"We need regulations, but enforcement is weak which makes Sri Lanka a less desirable country than before."	States that "the rapid growth of the tourism industry when not managed in a sustainable pattern contributes to environmental degradation."

Source: Analysis of interview data collected for this study.

### Political Crisis: Erosion of Trust and Governance Deficits

Deep-seated mistrust between political factions, widespread polarisation within the populace, and a pervasive lack of confidence in governing institutions characterise Sri Lanka's political landscape, which is currently unstable. This prolonged period of political uncertainty has had profound implications for the stability of the country, not only in terms of its internal security but also in terms of its international reputation as a safe and attractive tourist destination.

- **Historical Impacts:** Sri Lanka has experienced several political crises in the past, which have invariably had a negative impact on the tourism sector. For example, between 1983 and 1989, the Sri Lankan crisis reduced inbound tourism arrivals by about 10% on an annual basis.

- **Recent Political Turmoil:** The political crisis in Sri Lanka has intensified in recent years, culminating in a period of unprecedented turmoil in 2022, with fuel lines and rolling power outages.

- **Impact on Tourism:** The political unrest and instability have had a direct and tangible impact on the tourism industry. As a hotel manager revealed, "The travel advisories are a major concern. Tourists fear violent events; they want unpretentious vacations, not war zones. Adventure tourists are a niche, not the majority." (Case 1, Political Crisis Theme). This aligns with the findings from Document 1, a tourism report, which noted a significant decrease in tourist arrivals following travel advisories and states that "a decrease in tourism can be directly related to foreign governments issuing a travel advisory or a travel ban."

- **Civil Unrest and Protests:** The political crisis has also sparked widespread civil unrest and protests. Politicians frequently ignored the tourism sector's sensitivity and susceptibility to these crises and instead used it as a pretext to blame protesters for the sector's demise rather than addressing the underlying problems. As a tour

guide noted, "Political instability means constant tour adjustments. Tourists are wary of unauthorised protests and violence; it's hard to guarantee their safety." (Case 2, Political Crisis Theme).

- **Systemic Failures:** Moreover, these protests have highlighted a systemic failure of the Sri Lankan government to properly invest in the tourism industry, both financially and logistically. A government official admitted, "Government is trying to reassure tourists, but political legitimacy is threatened. We're using media to counter the negative image, but it's an uphill battle." (Case 3, Political Crisis Theme).

#### **Economic Crisis: Hyperinflation and Scarcity**

Hyperinflation, currency depreciation, and an increasing debt load characterise the severe crisis that Sri Lanka's economy is currently experiencing. This economic turmoil has had a far-reaching impact on the tourism sector, posing significant challenges for businesses, workers, and travellers alike. According to the provided text, nearly every sector in Sri Lanka has recently experienced negative shifts. The text points to increased economic inequality, a political crisis that began in 2015, and environmental damage as a result of some political decisions in recent years.

- **Economic Downturn and Recession:** A tourism crisis can be caused by an economic downturn or recession, fluctuating exchange rates, a loss of market confidence, hyperinflation, or the withdrawal of investment funds.

- **Challenges for the Tourism Industry:** The hospitality and tourism industries are facing numerous challenges. As one local hotelier stated, "The rising costs make it hard to maintain services. Tourists are sensitive; every price hike drives them away, and they choose other, more affordable countries." (Case 1, Economic Crisis Theme).

- **Debt Crisis and Balance of Payments:** Sri Lanka's economic outlook is clouded by factors including the country's unsteady political climate and growing fiscal, external, and financial sector imbalances.

- **Inflation and Cost of Living:** In August 2022, the inflation rate in Sri Lanka hit a record high of 64.3%, driven primarily by food price increases of 93.73%. A tourist observed, "Tourists are spending less. High prices are forcing them to cut activities, shortening their stays, and changing their experience." (Tourist, Economic Crisis Theme).

- **Food Scarcity and Fuel Shortages:** Food scarcity and fuel shortages are major deterrents. The text highlights that if Sri Lanka wants to grow its tourism industry, it must first ensure that tourists' basic needs are met without difficulty.

#### **Environmental Concerns: Degradation and Climate Change Vulnerability**

Sri Lanka, renowned for its biodiversity and natural landscapes, is increasingly vulnerable to environmental degradation and the impacts of climate change. These environmental challenges pose a significant threat to the tourism industry, potentially undermining the attractiveness of the country as a tourist destination.

- **Deforestation and Habitat Loss:** Deforestation, driven by agricultural expansion, logging, and urbanisation, has led to significant habitat loss. This reduces the appeal of ecotourism destinations as the landscapes become less pristine and wildlife sightings become rarer. A tour guide specialising in ecotourism stated, "We're seeing fewer animals on our tours because their habitats are disappearing. Loss of natural habitats reduces sightings, disappointing the visiting population." (Case 2, Environmental Concerns Theme). The text also confirms the political choices that have resulted in the degradation of the environment, the loss of biodiversity, and the diminishment of ecosystems.

- **Pollution and Waste Management:** Pollution, including air and water pollution, is another major environmental concern in Sri Lanka. Untreated sewage, industrial effluents, and agricultural runoff contaminate water sources, posing a threat to human health and damaging aquatic ecosystems. Poor waste management practices also contribute to pollution, with overflowing landfills and improper disposal of solid waste creating unsightly conditions and releasing harmful pollutants into the environment. A hotel manager noted, "Garbage on beaches is a disaster. A constant source of complaints and negative reviews." (Case 1, Environmental Concerns Theme). The unsustainable tourism practices increase the waste from tourists, overwhelming local waste management systems.

- **Climate Change Impacts:** Climate change is exacerbating environmental challenges in Sri Lanka, with rising sea levels, more frequent and intense extreme weather events, and changes in precipitation patterns. Coastal erosion, flooding, and droughts are becoming increasingly common, threatening coastal communities and tourism infrastructure. A government official involved in tourism planning noted, "We're developing adaptation strategies but need international support. Climate changes will require a costly reaction, which is not feasible." (Case 3, Environmental Concerns Theme). Document 1, a tourism report, highlighted the risk of climate change to coastal tourism.

- **Unsustainable Tourism Practices:** The rapid growth of tourism, when not managed sustainably, contributes to environmental degradation. Overcrowding at popular sites, the irresponsible disposal of waste, and the depletion of natural resources such as water contribute to long-term environmental damage. According to a local environmental activist, "Waste overwhelms local systems, damaging the perception of the industry."

#### 4. Discussions

This study highlights the complex issues facing Sri Lanka's tourism sector, exposing its susceptibility to a combination of political, economic, and environmental crises. The findings enhance current understanding of tourism crisis management and provide detailed insights into the particular situation of Sri Lanka, a country significantly dependent on tourism revenue. This research highlights the interrelatedness of crises and their cumulative effects on the tourism industry, a perspective generally overlooked in the literature.

The study indicates that political instability, marked by distrust among political groups and societal division, substantially undermines confidence in Sri Lanka as a secure and stable tourist destination. This corroborates the conclusions of Sönmez (1998), which illustrates the clear correlation between political upheaval and diminished tourist arrivals owing to safety apprehensions. The 2019 Easter Sunday attacks highlight this vulnerability, resulting in enduring effects on tourist impressions and travel choices. This study contributes to the existing literature by underscoring the significance of governance and political stability as essential components for a flourishing tourism industry.

The study corroborates the significant effect of economic crises on tourism demand, consistent with Perles-Ribes, Ramón-Rodríguez, Rubia-Serrano, *et al.* (2016), who observed that economic downturns result in less disposable income and modified affordability. Sri Lanka's recent economic crisis, characterised by rampant inflation and currency depreciation, illustrates this phenomenon, leading to a significant decline in tourist numbers. The report highlights the resiliency of the tourist sector through the promotion of domestic tourism, reflecting the measures proposed by Fernando *et al.* (2023). This adaptation technique illustrates the capacity of local initiatives to mitigate the effects of global crises.

Furthermore, the research underscores the growing significance of environmental sustainability in tourism, along with the wider conversation on responsible tourism practices. Environmental degradation, encompassing waste management challenges and ecosystem decline, presents a substantial threat to Sri Lanka's natural assets. The results highlight the necessity for sustainable tourism activities, as noted by Chau *et al.* (2023) and Ritchie (2004) to alleviate negative environmental effects and maintain the destination's attractiveness. This underscores the notion that enduring sustainability necessitates coordinated efforts to harmonise economic development with environmental conservation.

The study recognises the limits inherent in its qualitative methodology, which may restrict the generalisability of the findings to other contexts. The comprehensive examination of stakeholder viewpoints offers significant understanding of the intricacies of crisis management in the Sri Lankan tourism industry. Future research may examine the enduring impacts of established resilience techniques and analyse the contribution of digital technology to improving crisis preparedness.

This research enhances our comprehension of tourist crisis management by demonstrating the interrelation of political, economic, and environmental issues in a vulnerable, tourism-reliant economy. The results indicate that effective recovery necessitates a comprehensive strategy that tackles these interrelated issues, encourages sustainability, and cultivates collaboration among stakeholders. The research enhances the current scholarly discourse on crisis resilience and offers pragmatic recommendations for policymakers and industry executives aiming to rejuvenate Sri Lanka's tourism industry.

#### Conclusions and Further Research

The findings of this study highlight the critical challenges faced by Sri Lanka's tourism industry in the wake of political instability, economic downturns, and environmental concerns. Despite its significant potential to drive economic recovery, job creation, and sustainable development, the sector requires a comprehensive and coordinated approach to overcome its current difficulties. Through the application of framework analysis, this study has revealed the complex and interconnected nature of these challenges, emphasising the necessity for strategic interventions at both policy and operational levels.

The policy implications of these findings are substantial. Addressing the barriers to sustainable tourism development requires the implementation of targeted policies that support crisis management, infrastructure development, and environmental conservation. Policymakers must prioritise regulatory frameworks that enhance the resilience of the tourism sector while ensuring equitable benefits for local communities. Furthermore, the

integration of sustainable practices and the promotion of Sri Lanka as a safe and attractive destination will be crucial for restoring international confidence in the industry.

Future research should focus on the long-term impacts of these crises on Sri Lanka's tourism industry. Longitudinal studies tracking the recovery of tourism-dependent communities can provide valuable insights into the effectiveness of policy measures and resilience-building strategies. Comparative analyses of different crisis management approaches across countries could offer lessons for Sri Lanka's recovery. Additionally, qualitative research exploring tourist experiences and perceptions will be instrumental in shaping marketing and development strategies. Investigating the broader economic implications of tourism disruptions, particularly their effects on ancillary sectors, will further inform sustainable development efforts.

This study thoroughly examined the challenges in Sri Lanka's tourism sector, emphasizing the need for resilience and sustainable development strategies. The results highlight the tourism sector's vulnerabilities to political instability, economic downturns, and environmental issues, offering actionable insights crucial for policymakers and industry stakeholders. This research distinguishes itself through a thorough examination of how political, economic, and environmental crises collectively impact Sri Lanka's tourism industry, backed by detailed case studies and statistical analysis. This research pioneers by filling the gap in comprehensive analysis of interconnected crises in previous studies and suggests tailored strategies to enhance resilience in addressing Sri Lanka's complex challenges. The study's findings are pivotal in shaping evidence-based policies and strategic initiatives to revive the tourism sector, bolster resilience, and propel Sri Lanka's economic recovery and sustainable development endeavours. In conclusion, through proactive strategies, stakeholder collaboration, and sustainable measures like infrastructure development and targeted marketing, Sri Lanka can transform its tourism industry into a resilient, inclusive, and prosperous sector. An organised strategy for recovery will not only reinstate the industry's viability but also substantially aid the nation's overall economic resurgence and long-term advancement.

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### Credit Authorship Contribution Statement

**W.M. Rohan Laksiri** is the sole author of this article and is responsible for all aspects of the research, including conceptualization, methodology, data collection, analysis, and writing of the manuscript.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Declaration of Use of Generative AI and AI-Assisted technologies

The author declares that he has used generative AI and AI-assisted technologies in the writing process before submission, but only to improve the language and readability of their paper and with the appropriate disclosure.

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## Examining the Contribution of Protected Area-Based Tourism to Sustainable Development Goals

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**Abstract:** This paper examines the contribution of protected area-based tourism to Sustainable Development Goals (SDGs) at Lake Malawi National Park in Malawi, focusing on environmental, economic, and social sustainability. Adopting a qualitative exploratory cross-sectional design within an interpretive paradigm, the research engaged diverse stakeholders to explore tourism's contribution to SDGs 1 (No Poverty), 8 (Decent Work and Economic Growth), 14 (Life Below Water), and 15 (Life on Land). The findings reveal that protected area-based tourism enhances local livelihoods by creating employment and entrepreneurship opportunities, facilitates biodiversity conservation through tourism operators and community-led initiatives, and supports the ecological health of Lake Malawi through sustainable tourism practices. Moreover, the study underscores the critical role of local community participation in tourism development and conservation, reinforcing the interconnectedness of social, economic, and environmental sustainability. By integrating these dimensions, Lake Malawi National Park serves as a model for leveraging tourism as a tool for sustainable development. The study calls for sustained investment in protected area-based tourism to maximize its benefits and ensure equitable distribution of tourism-generated resources, ultimately driving progress towards the SDGs and fostering long-term conservation and community resilience.

**Keywords:** protected area-based tourism; Sustainable Development Goals (SDGs); community participation; Lake Malawi National Park.

**Jel Classification:** L83; Q01; Z32; R11.

### Introduction

The 2030 Agenda for Sustainable Development, a key framework for international development, was adopted by 193 United Nations (UN) member states in September 2015. It underscores a coordinated plan to improve global

conditions by 2030 (UNWTO, 2023). The UNWTO highlights the critical role of tourism in achieving the Sustainable Development Goals (SDGs) and integrating these goals into the tourism sector (Recchin, 2022). Boluk and Rasoolimanesh (2022) note that sustainable tourism development significantly supports global sustainability efforts, with the potential to impact all 17 SDGs directly or indirectly. Similarly, Pratt (2022) emphasises that tourism contributes to every SDG through its multifaceted activities.

Tourism has become a vital instrument for socio-economic development, particularly within the alternative development paradigm in developing countries (Lekaota & Ngidi, 2024; Wondirad & Ewnetu, 2019). In the post-COVID-19 era, the industry has shown strong recovery and growth (Dube *et al.* 2023; Kupika & Dube, 2023; Nyikana & Bama, 2023), with increasing international visitor trips (Statista, 2024). Projections from the World Travel and Tourism Council (WTTC) indicate that the tourism sector is expected to generate USD 10,986.5 billion by 2026, contributing 10.8% to global GDP (Khizar *et al.* 2023). This growth aligns with a rising interest in natural and cultural tourism, particularly in protected areas. However, there is limited research on how the SDG framework can be leveraged to enhance sustainability within these contexts (Boluk & Rasoolimanesh, 2022).

Protected areas are formally recognised and responsibly managed regions aimed at conserving nature and cultural heritage for the long term (IUCN, 2019; Liu *et al.* 2023). They play a fundamental role in achieving the SDGs by preserving ecosystems and promoting community development (Liu *et al.* 2023). Protected Areas (PAs) stand at a critical crossroads as natural landscapes face mounting pressures from both conservation needs and tourism demands (KC & Kusi, 2025). Tourism within the protected areas directly supports SDG 1 (poverty reduction) and SDG 5 (gender equality). For example, studies by Connell (2020) and Trupp and Dolezal (2020) highlight significant female employment in tourism-related roles. It also advances SDG 8 (inclusive economic growth) and SDG 12 (sustainable consumption and production) through eco-friendly practices that reduce environmental impact (Dobrea *et al.* 2023). Moreover, tourism's contributions to SDG 14 (marine conservation) and SDG 15 (land resource protection) demonstrate its ecological importance (Rasoolimanesh *et al.* 2023).

The expansion of tourism has paralleled neoliberal trends such as marketisation, deregulation, and privatisation (Fletcher, 2023). While globalisation has delivered material benefits, including substantial gains in the tourism sector, it has also presented challenges in balancing economic development with socio-cultural and ecological conservation (Wearing *et al.* 2019; Wondirad & Ewnetu, 2019). In this regard, proper planning and inclusive community involvement are essential for achieving equitable and sustainable outcomes (Liu *et al.* 2023). In Malawi, limited research has been conducted on the contributions of protected area-based tourism to the SDGs, particularly in the post-COVID-19 context. This study focuses on Lake Malawi National Park (LMNP) and explores how tourism linked to protected areas and biodiversity conservation supports SDGs 1 (poverty eradication), 8 (decent work and economic growth), 14 (life below water), and 15 (life on land). The study is guided by the Sustainable Development (SD) theory, which emphasises meeting present needs without compromising the ability of future generations to meet theirs (Steer & Wade-Grey, 1993). Therefore, the study seeks to analyse the positive impacts of protected area-based tourism in relation to the SDGs and examine the nature of local community participation in protected area-based tourism and conservation initiatives.

This study enriches the tourism and sustainable development literature by providing empirical evidence from Lake Malawi. This study advances tourism and sustainable development scholarship by unveiling how protected area-based tourism in Lake Malawi National Park drives progress toward SDGs 1, 8, 14, and 15 in the post-COVID-19 era. It offers critical insights into the dynamics of community participation and inclusive planning, illuminating pathways to harmonise economic growth with socio-cultural resilience and ecological integrity in sub-Saharan Africa.

## 1. Literature Review

### 1.1 Protected Area-Based Tourism

Africa is endowed with a wealth of biological diversity, and sub-Saharan Africa features a wide array of ecological communities across its eight terrestrial biomes, which include forests, savannahs, woodlands, grasslands, scrublands, deserts, and mangroves (Imboma, 2022). Protected area-based tourism serves as a crucial link connecting biodiversity conservation with community development (Bello, 2021; Gidebo, 2023). The academic field of tourism recognises the well-established correlation between tourism and sustainability, supported by a substantial body of literature exploring this relationship (Boluk & Rasoolimanesh, 2022; Lambulira & Bello, 2022). Globally, there is consensus on the potential of protected areas to conserve biodiversity effectively, provided they receive adequate funding, political support, competent management, and community engagement, regardless of their governance structure (Chardonnet, 2019).

The sub-Saharan Africa views tourism as an accessible tool for economic development and diversification (Lambulira & Bello, 2022). In 2019, the travel and tourism industry contributed up to 7.7% of Malawi's GDP (World Bank, 2020). Bello (2021) argues that effective protected area-based tourism requires the participation of local communities in the planning and development of tourism. Abukari & Mwalyosi (2020) agree, noting that community involvement in natural resource management initiatives gives residents a sense of representation in the governance and management of their local resources. Proper management of protected area-based tourism yields mutual benefits for a wide range of stakeholders. For example, studies in Ethiopia on Bale Mountain National Park have demonstrated economic benefits through tourism activities, as tourists were willing to pay for the protection of the Ethiopian wolf (Estifanos *et al.* 2021). However, the sub-Saharan Africa region faces numerous obstacles to tourism development, including poverty, inadequate marketing and information dissemination about tourist destinations, a lack of essential services such as healthcare, education, and labour mobility, insufficient transportation and infrastructure, a shortage of domestic investment, and a political environment often marked by civil conflicts and insufficient political support for tourism (Lambulira & Bello, 2022).

## 1.2 Sustainable Development Goals and Protected Areas

The Sustainable Development Goals (SDGs) are a central component of the United Nations' 2030 Agenda. This agenda promotes sustainable development by advocating for the responsible use of natural resources, supporting conservation efforts, creating employment opportunities for local communities, preserving local cultures and products, and sustainably utilizing marine resources to enhance economic benefits for small island developing states and underdeveloped countries (Rasoolimanesh *et al.* 2023). The SDGs are essential for eliminating poverty, reducing hunger, improving health and education, preserving the environment, and promoting social equity, serving as a global guide for achieving sustainable development by 2030 (Liu *et al.* 2023). However, since the SDGs were introduced in 2015, limited research has been conducted on how the tourism industry can effectively use these goals to promote sustainability within the sector (Boluk & Rasoolimanesh, 2022).

SDG 1 (No Poverty) aims to eradicate extreme poverty, currently defined as living on less than \$1.25 a day, by 2030, and to halve the percentage of people living in poverty in all its forms by that year. This goal also promotes equal access to financial services, technology, land ownership, and basic amenities, with a focus on the impoverished and vulnerable. Additionally, it advocates for policy frameworks that support pro-poor and gender-sensitive development at national, regional, and global levels to increase funding for poverty reduction (UNWTO, 2023). Protected area-based tourism aligns closely with SDG 1 due to its intrinsic ecological value and its role in providing ecosystem services. These services, including nature-based tourism, enhance human well-being, alleviate poverty, and provide economic incentives for local communities to conserve biodiversity (Gupta *et al.* 2023).

SDG 8 (Decent Work and Economic Growth) calls for policies that support sustainable tourism, generating employment, and celebrating local culture and products. It also emphasizes eliminating forced labour, human trafficking, and child labour, promoting labour rights, and ensuring safe working conditions. Additionally, it advocates for development-oriented policies that create decent jobs, foster entrepreneurship and innovation, and help formalise small and medium-sized enterprises by improving access to financial services. Countries are also encouraged to aim for full and productive employment and equal pay for equal work, including opportunities for youth and individuals with disabilities (Dobrea *et al.* 2023; UNWTO, 2023). Protected areas provide significant social and environmental benefits, including job creation (Castro, 2024; Liu *et al.* 2023). Tourism to these areas stimulates local economies by increasing demand for goods and services, supporting local businesses, and contributing to the economy through visitor spending on park fees, accommodations, transportation, leisure, and recreation (Gupta *et al.* 2023). Job creation in tourism-related sectors, such as agriculture and education, fosters local economic growth and helps reduce poverty (Liu *et al.* 2023).

SDG 12 (Sustainable Consumption and Production) promotes sustainable consumption and production through policies, laws, regulations, and international agreements on managing toxic materials. By 2030, it aims to halve per capita global food waste at the retail and consumer levels and reduce food losses throughout production and supply chains, including post-harvest losses (UNWTO, 2021). Strengthening the link between tourism, food sourcing, and production processes, including agriculture and fishing, is crucial for sustainable development (Pratt, 2022). Scheyvens & Laeis (2021) identified various obstacles in food-tourism systems, particularly in sourcing diverse food types for resort menus in their study of multinational holiday resorts in Fiji. Other challenges included tourists' limited interest in local cuisine and the difficulty of incorporating local produce into menus favoured by international guests (Movono & Hughes, 2022).

SDG 14 (Life Below Water) aims to prevent and reduce marine pollution from land-based activities, such as debris and nutrient runoff, by 2025. Additionally, it seeks to enhance economic benefits for Small Island Developing States and least developed countries by promoting sustainable use of marine resources, including fisheries, aquaculture, and tourism. The goal also prioritises access for small-scale artisanal fishers to resources and markets and emphasizes sustainable management and protection of marine and coastal ecosystems to improve resilience and support restoration efforts, achieving healthy, productive oceans (UNWTO, 2021). Tourism places considerable pressure on fragile marine ecosystems, including coral reefs, mangroves, and intertidal zones (Tolkach & Pratt, 2022). A study in Fiji by Singh *et al.* (2021) found that tourism had negative impacts on marine environments, including habitat destruction, over-fishing, coral souvenir collection, and noise pollution.

SDG 15 (Life on Land) advocates for urgent measures to reduce habitat degradation, halt biodiversity loss, and prevent the extinction of endangered species by 2030 (Pratt, 2022). It also supports equitable sharing and access to genetic resources following international agreements. Additionally, the goal calls for actions to combat poaching and trafficking of protected species, targeting both the supply and demand of illegal wildlife products (UNWTO, 2021). Protected areas are essential to achieving the SDGs by conserving biodiversity, fostering community development, and building resilience and sustainability (Liu *et al.* 2023). Biodiversity is currently in crisis, with extinction rates estimated to be 1,000 times higher than natural background levels. The international community has responded by prioritising biodiversity protection and expanding protected areas through various international frameworks, including the Aichi Biodiversity Targets and the SDGs (Palfrey *et al.* 2020).

### 1.3 Theoretical Framework

Sustainable Development theory emphasizes that the endeavours to meet present needs should not compromise the ability of future generations to meet their own needs (Steer & Wade-Grey, 1993). The theory stresses the interconnectedness of economic, social, and environmental domains, asserting that sustainable progress requires a holistic approach that addresses all three aspects in tandem (Newell *et al.* 2019). While sustainable development has gained traction as a guiding principle for global socio-economic transformation, its implementation faces challenges due to misinterpretations of its theoretical foundations (Shi *et al.* 2019). For example, economic sustainability within sustainable development can be advanced through initiatives like ecotourism, which promotes responsible tourism that supports conservation and benefits local communities economically without degrading the environment (Hutchison *et al.* 2021). The scope of sustainable development has evolved to incorporate not just sustainable resource use but also the broader objectives outlined by the SDGs (Shi *et al.* 2019).

Therefore, the theoretical framework of this study is rooted in sustainable development, with a focus on socio-economic sustainability factors such as employment generation, local business growth, and women's empowerment. These elements are crucial in understanding how tourism enterprises can provide economic benefits to local communities, as highlighted by Rasoolimanesh *et al.* (2023). The sustainable development theory also guides the study's exploration of environmental sustainability within protected areas, encompassing ecosystem and biodiversity preservation alongside wildlife protection measures. This aligns closely with Goal 15, which advocates for the sustainable management of terrestrial ecosystems and halting biodiversity loss (Rasoolimanesh *et al.* 2023).

An integral aspect of the theory is the fair distribution of social costs and benefits associated with conservation among various stakeholders. Ensuring equitable benefit-sharing can foster positive community attitudes toward conservation initiatives, thereby increasing support and reducing resistance. Conversely, if conservation activities are perceived as infringing on local communities' socio-economic or cultural rights, it may lead to resentment and hinder support for these efforts (Abukari & Mwalyosi, 2020). Hutchison *et al.* (2021) argue that decision-makers must ensure that development benefits are equitably shared across society, considering both current and future generations. They also advocate for precautionary measures to avoid irreversible environmental or social harm, especially in the face of uncertainty. Singh *et al.* (2021) echo this sentiment, recommending that sustainability considerations be integrated into all levels of decision-making, including policy development, planning, and implementation, to foster lasting positive outcomes.

## 2. Methodology

This study utilised a qualitative exploratory cross-sectional design and adopted an interpretive paradigm, allowing for the subjective interpretation of protected area-based tourism's contributions to specific SDGs (Mbanaso *et al.* 2023). Thanh & Thanh (2015) note that interpretivism accommodates diverse perspectives on complex

phenomena, which was essential for this study, as different stakeholder groups may have understood the contributions of protected area-based tourism differently. This approach enabled stakeholders to express their viewpoints in their terms.

The population for this study consisted of Department of National Parks and Wildlife (DNPW) staff, tourism operators, and local communities in and around LMNP. The study employed non-probability purposive sampling and snowball sampling techniques to select participants presumed to be experts, experienced, and knowledgeable about tourism and conservation initiatives. Purposive sampling targeted respondents likely to provide valuable and relevant information (Campbell *et al.* 2020). Snowball sampling utilised networking and referrals (Parker *et al.* 2019). Bhardwaj (2019) indicated that purposive sampling is suitable when specific individuals possess essential knowledge about the phenomenon under study. The sample size for the study was 30. It assumed that after 30 interviews, data saturation would be reached. Cobern & Adams (2020) suggested that 11 or 12 interviews achieve 95% saturation, while Hennink & Kaiser (2022) recommended 9 to 17 interviews for data saturation.

Two sets of interview guides were developed, one for DNPW staff and tourism operators, and the other for local communities. The interview guides were structured into three distinct sections for comprehensive data collection. The first section focused on demographics. The second section examined the relationship between local communities in and around Lake Malawi National Park (LMNP) and the Department of National Parks and Wildlife (DNPW), exploring DNPW's role in tourism development and conservation and identifying how protected area-based tourism contributes to poverty reduction, socio-economic development, and ecosystem conservation in relation to the SDGs. The third section delved into local community participation, exploring respondents' involvement in community activities, engagement with DNPW, and participation in decision-making processes, probing the economic, environmental, and socio-cultural benefits of tourism in relation to the SDGs.

The researchers obtained permission from DNPW to conduct the study at Lake Malawi National Park. An introductory and consent letter was also used to secure informed consent from prospective interviewees. Each prospective participant was briefed about the study. Upon receiving formal consent, participants were asked for permission to digitally record the interview to ensure that the researcher did not miss any information provided. The digital recording was only done with the interviewee's consent. Interviews were conducted face-to-face with all participants, and each interview lasted no more than 45 minutes.

The data were analysed using a 6-stage thematic analysis process, as proposed by Attri & Ganesh (2023). In Stage 1, the researchers familiarized themselves with the data collected from both groups of respondents to develop appropriate codes for each research objective (Stage 2). Audio data were also transcribed during this preliminary stage. In Stage 2, initial codes for each research objective were created. Stage 3 involved searching for and identifying codes within the narrative datasets. In Stage 4, the researcher reviewed emerging themes, while Stage 5 entailed defining themes, subthemes, and relevant labels to facilitate the grouping of related data. The final stage involved writing the research report and interpreting themes in relation to the literature to derive meanings from the findings.

### 3. Findings and Discussion

#### 3.1 Participant Demographic Information

As illustrated in Table 1 below, all the targeted 30 people participated in the study representing a 100% response rate. Fourteen participants were female while sixteen were male.

Table 1. Profile of study participants

Participants' code	Gender	Stakeholder group
1	Female	Local community
2	Male	DNPW
3	Male	Local community
4	Female	DNPW
5	Male	Local community
6	Female	Local community

Participants' code	Gender	Stakeholder group
7	Female	Tourism operator
8	Male	Tourism operator
9	Male	Tourism operator
10	Female	Local community
11	Male	Local community
12	Female	Tourism operator
13	Male	Local community
14	Male	Local community
15	Female	Local community
16	Male	DNPW
17	Female	Local community
18	Female	Local community
19	Male	Local community
20	Male	Local community
21	Male	Local community
22	Female	Local community
23	Male	Local community
24	Female	Local community
25	Female	Local community
26	Male	Local community
27	Male	Local community
28	Male	Tourism operator
29	Female	Tourism operator
30	Female	Local community

### 3.2 Contribution of Protected Area-Based Tourism to SDGs

Protected area-based tourism, as exemplified by destinations like LMNP, plays an instrumental role in advancing the SDGs. By integrating environmental preservation, economic growth, and social equity, this form of tourism can serve as a vital mechanism for driving sustainable development. The findings highlight LMNP's contribution to the SDGs through protected area-based tourism. Results indicate that protected area-based tourism is making meaningful contributions toward the SDGs by promoting environmental conservation, historical preservation, cultural heritage preservation, and community engagement. It fosters a collaborative approach to environmental management boosting economic growth and creating employment opportunities. Additionally, it contributes to social services support such as infrastructure development and healthcare improvements.

#### **SDG 1 (No poverty)**

The findings from the study underscore the profound socio-economic impact of protected area-based tourism in and around the park. Tourism has emerged as a pivotal driver of socio-economic development, delivering substantial benefits to local communities through revenue generation and infrastructural advancements. Its

multifaceted impact extends to funding essential social services, enhancing living standards, empowering local populations, and fostering sustainable economic practices, underscoring its critical role in advancing development and poverty alleviation.

Tourism revenue is essential for funding social services, including infrastructure, education, and healthcare in areas around LMNP. The DNPW allocates 25% of park fees and concession fees to local communities through the Mangochi–Salima Lake Park Association (MASALAPA). MASALAPA is a local community organisation that helps manage how revenues from Lake Malawi National Park are shared with local communities. The organisation then supports projects such as school and bridge construction, road repairs, and medical supplies in communities within and around the park. The construction of a bituminous road to the park and the electrification of Chembe Village (an enclave village in the park) have greatly improved living conditions and accessibility, supporting economic activities by enhancing access to markets, healthcare, and education. Educational sponsorships for underprivileged students, including higher education and study abroad opportunities funded by international visitors through various trust funds, also empower locals with skills for better employment, contributing to long-term poverty reduction.

Tourism brings economic benefits to local farmers and fishermen by providing new income opportunities. Farmers supply produce to restaurants and lodges, while fishermen sell fish locally and to broader markets. Sustainable Cape Maclear, a local organisation in Chembe Village introduced a revenue-sharing model, allowing glass cutters, designers, and arts and craft sellers to form groups and share profits from their sales. This model also applies to village and fishing tours, where local tour guides share proceeds with participating farmers, fishermen, and community members. Sourcing of supplies from local businesses lodges in the park boosts suppliers' incomes and strengthens the local economy, creating a positive multiplier effect for the community.

*...as an association, our role is to help allocate the 25% revenue share we receive from the DNPW to community projects. VNRCs [Village Natural Resource Committees] develop project proposals for their villages and submit them to MASALAPA for consideration. (Participant 10)*

*...we source all our food items from local shops, ... the vegetable seller, being invaluable to us. I also support local fishermen by purchasing fish from them. (Participant 12)*

The findings show that protected area-based tourism in LMNP is contributing towards the attainment of SDG 1. Protected area-based tourism is generating both direct and indirect employment and supporting local entrepreneurship, thereby creating economic opportunities and improving local livelihood. As noted by UNWTO (2023) and Mabibibi *et al.* (2021), tourism contributes indirectly to SDG 1 through park fees, tax revenue, voluntary poverty-reduction contributions, and infrastructure investments. However, studies show that the establishment of protected areas often imposes opportunity costs on local communities, such as displacement and restricted access to natural resources, potentially exacerbating poverty and causing resentment (Anaya & Espírito-Santo, 2018). But with LMNP, Chembe Village residents were not displaced as the village remains an enclave village and residents are still allowed to access natural resources such as fish within the confines of park regulations.

In contrast with Moyo & Cele (2021), who argue that strict protectionist policies in protected areas marginalize indigenous communities, the study findings from LMNP highlight the importance of balancing conservation efforts with inclusive governance and equitable resource access to effectively alleviate poverty and promote sustainable development. The positive economic impacts of tourism position LMNP as a powerful tool for breaking the cycle of poverty and promoting sustainable development.

### **SDG 8 (Economic growth, employment, and decent work for all)**

The findings from the study highlight the significant role tourism plays in enhancing economic contributions and increasing employment opportunities in and around the park. It was established that tourism in LMNP significantly contributes to the attainment of SDG 8 by fostering employment opportunities and generating income through various entrepreneurial ventures. Participants acknowledged that tourism has created a diverse range of employment opportunities for locals, particularly in the hospitality sector. Roles such as lodge managers, accounts staff, waiters, bartenders, housekeepers, chefs, gardeners, security guards, lifeguards, and tour guides are now accessible to community members. Currently, LMNP boasts nearly 30 hospitality facilities (most of which are in Chembe Village), with additional lodges under construction, indicating a growing demand for local labour and skills. This influx of employment opportunities not only provides individuals with a source of income but also contributes to the overall economic development of the area.

Other activities and initiatives undertaken by the local communities include homestays, village walks, organised fishing tours with local fishermen, traditional dining in local restaurants, and the sale of art and crafts, offering visitors an authentic experience of Malawian culture and traditional life in Chembe Village. Cultural dance performances and live music by local bands are also effectively organised by locals. These initiatives not only generate income for the locals but also play a vital role in preserving the cultural heritage of the area.

*...as tourism operators, our presence in LMNP has provided the local community with opportunities to secure jobs at lodges. (Participant 7)*

*... our relationship with the local community is very good. Whenever we have visitors, we hire local tour guides to lead them on sightseeing tours. These guides possess deep knowledge of the area, as they are native to Chembe Village. Their ancestors were the original inhabitants, and they [themselves] were born and raised here. They serve as excellent sources of information about the village and its history. (Participant 8)*

The findings highlight tourism's significant contribution to economic growth and job creation in and around the park, directly supporting SDG 8, which aims for inclusive and sustainable economic growth, full employment, and decent work for all as noted by Dobrea *et al.* (2023) and UNWTO (2023). The expansion of protected area-based tourism in the park creates diverse job opportunities, boosts local businesses, and stimulates a cycle of economic activity that benefits the entire community. As tourism grows, it enhances residents' livelihoods and strengthens the village's economic resilience. By integrating local culture and traditions into tourism experiences, the community preserves its heritage while enriching the visitor experience (Movono & Hughes, 2020). This approach fosters pride and identity among residents, empowering them to take ownership of their cultural assets and contribute to the local economy. However, challenges remain, as many locals around protected areas in Malawi face low-paying jobs due to limited education as they lack the requisite qualifications and skills for most of the senior jobs in the sector. This lack of educational attainment and skills affects their ability to engage with new initiatives, including ecotourism, potentially limiting the achievement of SDG 8's employment goals (Bello & Lambulira, 2024; Bello *et al.* 2016). Collaborative efforts between local communities and tourism operators, however, can benefit both visitors and residents while supporting the sustainability of the environment and economy. Continued support for protected area-based tourism is therefore crucial for advancing sustainable development, showcasing tourism's role as a catalyst for inclusive prosperity aligned with SDG 8.

#### **SDG 14 (Life below water)**

The findings underscore the substantial role, protected area-based tourism plays in conservation efforts within LMNP, particularly through the efforts of the DNPW and VNRCs. The VNRCs with the support of tourism operators and in partnership with the DNPW, conduct patrols in the lake and across the islands within LMNP to combat illegal activities. Protected area-based tourism has been instrumental in protecting cichlid (Mbuna) fish species in Lake Malawi and curbing unauthorized tree-cutting by fishermen and the community, which poses a threat to the ecological balance of the islands within Lake Malawi National Park.

Sustainable Cape Maclear collaborates with stakeholders including tourism operators and local communities on waste management strategies to prevent water pollution, promote reduce, reuse, and recycle practices, and organize beach clean-ups. These initiatives help preserve the lake's cleanliness and ecological health, benefiting both the environment and tourism. Additionally, Sustainable Cape Maclear partners with VNRCs to establish artificial breeding sanctuaries for cichlid fish, supporting population growth. The organization also trains tour guides as divers to remove underwater waste, contributing to the conservation of aquatic ecosystems.

*...one of the mandates of the DNPW is to protect the cichlid fish, an endemic species found only in Lake Malawi National Park, which attracts tourists from around the world. (Participant 4)*

*...with the support of NGOs, our organization has trained seven women tour guides to be divers to assist with underwater waste collection and disposal. (Participant 5)*

*...Sustainable Cape Maclear helped us set up cichlid fish sanctuaries to boost the population of these unique fish species, a major attraction for tourists at LMNP. (Participant 6)*

Marine resources are essential for global well-being and economic progress, with conservation being particularly crucial for coastal communities, which comprised 37% of the global population in 2017 (UNWTO, 2023). Tourism in LMNP supports SDG 14 by advancing conservation and cultural preservation. Initiatives to prevent illegal practices align with SDG 14, target 4 on sustainable marine management, while beach clean-ups

to reduce pollution, directly support SDG 14, target 1. Furthermore, breeding sanctuaries help boost biodiversity and attract tourists, contributing to sustainable tourism. As noted by Bello *et al.* (2023) and Kuseni *et al.* (2024), conservation-focused tourism provides significant benefits to biodiversity and local economies.

### **SDG 15 (Life on land)**

The findings indicate that tourism in the park significantly enhances ecosystem conservation, restoration, and sustainable management, including forest preservation, desertification prevention, and biodiversity protection. In each village within the park's catchment area, the DNPW has assisted in forming Village Natural Resources Committees (VNRCs) to strengthen conservation efforts and local communities' involvement in tourism. VNRCs work alongside DNPW in joint patrols to monitor and protect the park, actively discouraging illegal activities and promoting sustainable practices, such as planting household woodlots. This initiative reduces local dependence on park resources, fostering ecological preservation within LMNP and contributing to broader environmental sustainability across the community. Tourism also supports cultural heritage preservation within LMNP by safeguarding cultural sites, including rock paintings at *Mwala wa Mphini* and *Mwala wa Ntanda* and missionary graveyards. The local communities, with support from the tourism operators and Sustainable Cape Maclear, a conservation community organization, are involved in conservation efforts through waste management initiatives to reduce park pollution and recycling projects, such as converting glass bottles into functional items and producing organic manure from waste. Additionally, local community-based tourism and conservation organizations, like the Beach Village Committees in collaboration with Sustainable Cape Maclear, have improved hygiene by constructing restrooms along the beaches, benefiting both community well-being and destination cleanliness.

*...as the VNRCs, we establish tree nurseries and distribute seedlings to households, enabling each family to plant its woodlot. This effort helps to reduce reliance on natural resources instead locals use trees from their woodlots for both household use and smoking fish, ensuring that visitors to the park can continue to experience the unique natural beauty of our community and our children should enjoy the same resources in the future. (Participant 1)*

*...as a local community conservation committee, together with Sustainable Cape Maclear, we constructed restrooms for fishermen and residents, helping to reduce water and beach pollution from human waste. (Participant 3)*

SDG 15 promotes sustainable forest management, reversing land degradation, combating desertification, and preventing biodiversity loss to secure ecosystem benefits and sustainable livelihoods (UNWTO, 2023). The findings have revealed that tourism operators and other organisations support local communities to have household woodlots thereby reducing reliance on natural resources. This initiative aligns with SDG 15, target 1 on ecosystem management, and benefits both the environment and tourism. Protecting cultural sites, such as rock paintings and ancestral graves, preserves the heritage and aligns with SDG 15, Target 4, while waste management and recycling, including alternative livelihoods like vegetable farming, also support the goal. However, as Loos (2021) points out, the effectiveness of protected areas in conserving biodiversity is often limited due to factors like inadequate funding, staffing, and management capacity, compounded by human pressures and poor spatial representativeness. These issues are especially pronounced in the Global South, where socioeconomic constraints hinder protected area management. In LMNP, sustainable resource use is strengthened by local organizations, which attract diverse stakeholders and foster key conservation principles, as noted by Campos-Silva *et al.* (2021). This highlights the importance of integrating ecological, socio-economic, and cultural factors for effective conservation.

### **3.3 Local Community Participation in Protected Area-Based Tourism and Conservation**

The involvement of local communities in protected area tourism and conservation efforts is both diverse and impactful, as evidenced by their active participation in various initiatives. From guiding tourists and hosting homestays to promoting cultural heritage and sustainable practices, the community plays a vital role in enriching the tourism experience while contributing to the preservation of the protected area. Community involvement in tourism within the protected area is multi-dimensional. Local tour guides facilitate visitor experiences by leading excursions from lodges to islands within the park, providing valuable employment opportunities while sharing their in-depth knowledge of the protected area. Additionally, the community engages in homestays, offering visitors an authentic immersion into traditional life in Chembe Village, thereby enabling direct economic benefits for local residents. Cultural contributions, including art, crafts, and performances organised by community members,

further enhance the tourist experience by showcasing and preserving traditional practices, while simultaneously promoting local heritage.

Community involvement in conservation within Lake Malawi National Park (LMNP) exemplifies a collaborative and proactive approach to sustainable resource management. Village Natural Resources Committee (VNRC) members work alongside Department of National Parks and Wildlife (DNPW) rangers to conduct joint patrols, effectively deterring illegal activities and reinforcing local stewardship. As noted earlier, to reduce reliance on park resources, residents are encouraged to establish household woodlots, which help mitigate illegal tree cutting. Regular clean-up campaigns further underscore the community's dedication to maintaining the park's cleanliness and appeal for tourism. VNRC women members play a critical role in resource management by effectively making use of regulated permits for firewood collection, and ensuring sustainable access twice weekly. Conservation awareness initiatives, led by the community, foster greater understanding and appreciation of both conservation and tourism among local residents. Additionally, the integration of indigenous knowledge and adaptive skills strengthens conservation efforts, promoting effective and culturally relevant natural resource management practices.

*...as local communities, we participate in offering tourism activities that are uniquely provided by locals, including homestays, learning about arts and crafts, traditional dances, fishing tours, and more. These experiences allow tourists to immerse themselves in our authentic lifestyle and learn about our traditions, culture, and beliefs. (Participant 13)*

*...as tour guides, we create memorable experiences for our guests by engaging them in a variety of activities, including hiking, boat cruises, kayaking, snorkelling, diving, village walks, farm tours, fishing tours, and much more. (Participant 14)*

The findings on community involvement in tourism emphasize its significant and positive impact on both local communities and the long-term sustainability of tourism. By engaging in roles such as tour guiding and conservation patrols, local residents play a pivotal role in preserving cultural heritage and natural resources, fostering a deep sense of ownership essential for successful conservation outcomes. Local guides, through the sharing of traditional knowledge, contribute to cultural preservation, while community members aid in biodiversity conservation and economic growth by participating in wildlife monitoring and anti-poaching initiatives. The forms and levels of local involvement at LMNP are consistent with those observed at Liwonde National Park and Majete Wildlife Reserve, as noted by Bello & Lambulira (2024) and Bello *et al.* (2018), despite the differences in management structures, LMNP being a government-managed UNESCO World Heritage Site, while Liwonde and Majete operate under public-private partnerships (PPP). This alignment further underscores the broader importance of community engagement in conservation across various protected areas in Malawi. Such collective involvement not only bolsters conservation efforts but also creates economic opportunities, positioning local communities as key stakeholders in both the ecological and economic success of tourism initiatives.

## Conclusion

This study has examined the significant contribution of protected area-based tourism to the achievement of the SDGs at Lake Malawi National Park, with a focus on environmental, economic, and social sustainability. The findings reveal that protected area-based tourism at LMNP plays an essential role in advancing several SDGs, particularly SDGs 1, 8, 14, and 15, by fostering sustainable tourism practices that benefit both the environment and local communities. In terms of SDG 15 (Life on land), tourism has significantly contributed to ecosystem conservation, forest preservation, and the protection of biodiversity. Through initiatives like tree planting and other community-driven conservation efforts, the local population plays a critical role in reducing pressure on natural resources and promoting sustainable practices. Similarly, tourism has also contributed to SDG 14 (Life below water), with activities aimed at preserving Lake Malawi's unique aquatic biodiversity, including cichlid fish conservation and waste management practices that safeguard the lake's ecological health.

The positive economic impacts of protected area-based tourism align with SDG 8 (Economic growth, employment, and decent work for all), as tourism creates numerous entrepreneurship opportunities, job opportunities in the hospitality services, and guiding, thereby supporting the local economy and enhancing the livelihoods of residents. Additionally, tourism revenue supports essential social services, such as infrastructure, education, and healthcare, contributing to SDG 1 (No poverty). Local communities benefit from improved living standards, access to markets, and employment, with sustainable initiatives like revenue-sharing models ensuring that the economic benefits are widely distributed.

Lake Malawi National Park exemplifies how protected area-based tourism can serve as a powerful tool for advancing sustainable development. By integrating environmental, economic, and social dimensions, tourism at LMNP not only contributes to the conservation of biodiversity and cultural heritage but also generates economic opportunities and enhances community well-being. The study highlights the need for continued investment in protected area-based tourism to ensure that its benefits are maximized and shared equitably, driving progress towards the SDGs and ensuring the sustainability of both tourism and conservation efforts.

Stakeholders in protected area-based tourism should leverage partnerships that foster collective efforts among the government, the private sector, NGOs, and local communities to create synergies in achieving the SDGs. Local communities need to be supported to ensure that they maximise their benefits from tourism. Collaborative efforts can enhance resource mobilization, knowledge sharing, and capacity building. In collaboration with local community committees, the protected area management authority should conduct awareness campaigns to educate local communities about the SDGs and the role of tourism in achieving them. Empowering communities with knowledge can inspire collective action toward sustainable development. There is a need for increased awareness and education about the benefits of tourism within local communities. As noted by Lambulira & Bello (2022), effective communication strategies can help inform community members about opportunities in tourism and encourage their participation.

Tourism industry managers should also develop objective indicators to evaluate sustainable tourism practices. Engaging multiple stakeholders in the indicator development process is crucial for creating a comprehensive understanding of tourism's impact on local communities and the environment. Additionally, integrating tourists as key stakeholders in sustainable tourism initiatives can enhance the effectiveness of these practices, as tourists can contribute to the conservation of resources and support local economies.

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### Credit Authorship Contribution Statement

**Mercy Phiri:** Conceptualization, Investigation, Methodology, Formal analysis, Writing – original draft, Validation, Writing – review and editing, Visualization, Funding acquisition.

**Felix G. Bello:** Conceptualization, Investigation, Methodology, Project administration, Formal analysis, Writing – original draft, Supervision, Validation, Writing – review and editing, Visualization, Funding acquisition.

**Mathews Lambulira:** Conceptualization, Methodology, Formal analysis, Validation, Writing – review and editing, Visualization, Funding acquisition.

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### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Declaration of Use of Generative AI and AI-Assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

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## A Bibliometric Review of Sustainable Development in the Hospitality Sector

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**Abstract:** The hospitality industry essentially provides accommodation and lodging facilities to its guests. This industry generates significant revenue for many countries. Sustainable development depicts the current generation's responsible usage of valuable items, so that future generations can have access and explore the items. Data for this research was collected from Scopus repository. The time range for the data collected is between 2015-2025. It is notable that the search for the data on Scopus identified a total of 717 documents, but 710 documents were found to be eligible for this study, as shown in the Prisma flow chart. The data collected was analysed with biblioshiny package in R studio. The result revealed that the Journal of Sustainability (Switzerland) had done significantly well by leading other journals with respect to a number of publications on sustainable development. Na Na is the most prolific scholar with twenty-four articles. The scholarly output with the most influence vis-à-vis total citations is in the Journal of Sustainable Tourism, published by Han H., 2021, with a total of 440 citations and a total of citations per year of 88.0. The result was underpinned with Sustainable Development Goal (SDG) 6 and 12.

**Keywords:** sustainable development; hospitality industry; Scopus database.

**JEL Classification:** Q01; Z31; C89.

### Introduction

The hospitality industry is important to the economic growth of different countries. It generates significant revenue and plays a key role in attracting tourists, which further boosts local economies. There is a plethora of hotels in Africa, although, many do not have high standards, however, they are notable for providing employment opportunities (Olawuyi and Adedara, 2015). Beyond financial benefits, the industry creates jobs, supports cultural exchange, and helps strengthen a nation's global connections. In many ways, hospitality is an essential part of both national and international development. The hospitality sector that is inclusive of hotels as well as eateries, are specifically important to tourism and indigenous economies, as they provide basic services capable of attracting guests as well as enhancing prosperous regions (Thommandru *et al.* 2023). Zazilah *et al.* (2025) noted that the hospitality sector's contribution to the national revenue is pretty high, similarly, it is essentially a major unit that a typical tourist needs while engaging tourism activities.

Sustainable development practices ensure valuable assets are protected and maintained so that present and future generation can explore/enjoy similar opportunities. Olawuyi (2023) opined that sustainable development is premised on the practices associated with preserving as well as passing down heritage assets, attributes, belief system and ethics from the present generation to the incoming generation. Olawuyi and Posun (2021) noted that sustainable development equates to engagements capable of maintaining the structure and components of resources by protecting them from being destroyed usually by reconstructing them.

Laranja-Ribeiro *et al.* (2021) asserted that sustainability developments depict ensuring that contemporary needs are met in the absence of the establishment of issues that can stall the capacity of incoming generation to meet their peculiar needs. This is underscored by sustainable exploration of different valuable assets. Such engagements target the utilization of resources on a sustainable basis as well as mitigation of the destruction of the environment from industrial procedures (Ahmad, 2015). It depicts actions and procedures that could ensure longevity of resources, materials and amenities (Olawuyi and Babawale, 2024). Sustainable development practices anchor the pillars of the economy, social and environment. Pooja and Bhavani (2025) noted that it is made up of three main pillars, namely, ecology, economy as well as social, hence, the ecological pillar of sustainable development concentrates on the preservation of the environment as well as its assets, while the economy targets the promotion of growth via the development of technologies as well as enhanced efficiencies of resource usage, while, the social pillar of sustainable development targets the enhancement of living situations and safety for everyone. It depicts that financial gains are prioritized without destroying the environment, while concurrently meeting social needs.

It is very important to consider the hospitality sector with respect to the dynamics of sustainable development premised on the waste produced by the hospitality sector, similarly, the construction/renovation of hospitality facilities/structures is capable of disrupting/destroying the ecosystem. Sun and Nasrullah (2024) noted that in terms of depleting the environment, hotel sector contributes significantly. Arun *et al.* (2021) noted that the hospitality industry deploys great quantity of assets for operating (for instance, energy as well as water) and generating enormous amounts of waste. The constant flow of people to the hospitality industry implies that more materials/items will be used and more waste will be generated in the hospitality industry. However, such wastes can be recycled or managed appropriately, for entrenching concepts of sustainability. Zazilah *et al.* (2025) noted that wastes that are made from different engagements in the hotel could then be broken into wastes, which could be a merchandise in waste banks, or organically produced wastes, which would be transformed to composts.

This study is novel premised on the fact that it essentially explored literature on sustainable development in the hospitality sector (2015-2025), as against, the foci of other researches, for instance, Sharma *et al.* (2024) that explored research engagement on the impact of sustainable practices in tourism and hospitality industry (2013-2023), Legendre *et al.* (2024) that explored a bibliometric analysis of the hospitality and tourism environmental, social and governance literature, Pilelienė *et al.* (2024) that explored a bibliometric review of innovations in sustainable tourism research: current trends and future research agenda, amongst other studies. This study is therefore important because it shows the trends and emerging trends of research vis-à-vis the keywords underpinning the focus of the study. It also shows this study's social structure of collaboration.

## 1. Literature Review

### 1.1 Sustainable Development and Hospitality Industry

Popşa (2023) noted that in contemporary times, sustainable development is very topical in different Nations, inclusive of the hospitality sector, based on the fact that it is highly important for development in the long run as well as the performance associated with accommodation components. The consideration and engagement of sustainability procedures in the hotel sector could yield efficiency, effectiveness and productivity in the long run. This is very important because of the enormous waste generated from the hospitality industry that could predict unhealthy impacts on environmental ecology and human lives. Sun and Nasrullah (2024) noted that, as is also evident in other industries, the hospitality sector exudes many negative environmental impacts, especially through the usage and exploitation of natural resources. Popşa (2023) opined that there is a consideration of the hospitality sector is part of highly harmful sectors to the environment, as well as different industries; hence, challenges associated with the environment have far-reaching importance for the present as well as the future. Therefore, it is pertinent for owners of hotels to engage procedures which limit environmentally harmful impacts of their hotels to the barest minimum, at least from the sight of their guests. Sakshi *et al.* (2020) asserted that a typical hotel that is surrounded by sustainability issues could frequently be subjected to criticism by hotel guests, especially with respect to the depletion of the environment as well as sustainable engagements.

Although, it may be a tall order for some hotel owners to ensure that the economy is not prioritized over the environment. Blanco-Moreno (2025) opined that creating a balance between the growth of the economy and the environment as well as social responsibilities depicts a substantive problem for a typical hotel/restaurant and important stakeholders in this industry that is underscored by dynamism. This essentially is a result of the fact that a typical hotelier will only focus on generating profits at all cost and by all means. Although, it is notable that some hotel owners prioritize the social dimension of sustainable development over the economy and environment. The research revealed that hotel owners assign marginal concentration to social sustainability over

the initiatives of environment's sustainable development, maybe as a result of more hotels in the research focus being sited very close to the middle of an urban-based area, hence it becomes pretty easier to implement socially sustainable development initiatives over the environment's sustainable development initiatives (Rodríguez-Antón *et al.* 2012). Such hotels focus more on beautiful infrastructural development that could endear more people without considering that the ecosystem could be impaired negatively.

Meanwhile, some hoteliers are aware of how waste from their hotels can destroy the environment when not well managed; hence, such hoteliers have adopted and operationalized specific measures to manage their waste properly and protect the ecosystem as much as possible. Environmental depletion has resulted in hotels working towards protecting the ecology (Sun and Nasrullah, 2024). While it is good that hoteliers engage in the practices that ensure the protection, maintenance and protection of the environment, most hoteliers engage in such practices to solidify their increased customer patronage, productivity and efficiency. Iddawala (2018) opined that the motive of adopting sustainable engagements on the environment, for instance, renewable energy adoption as well as growing of specified floral species, were done with secondary motives, for instance, the achievement of cost efficiencies as well as attracting competitive advantage via making hotels beautiful. Hence, the benefits associated with the adoption and operationalization of sustainable development, precisely, about the environment of the hospitality sector, are numerous. Sustainable development is a business method premised on intelligence capable of providing hotel owners with different benefits, inclusive of cost reduction, efficiency in operations, stimulating creative organizational creative procedures, enhancement of brand image and prestige, long-run benefits, optimized supply chains, enhanced staff engagements, adherence to regulations (Sarode, 2022).

It is pertinent to note that the waste from the hotels when not well managed would not only negatively affect the immediate environment of the hotel, but it is capable of even affecting the global climate negatively. The hotel industry's substantive concentration on sustainable development basically emanates from the fact that it is susceptible to global challenges for instance climate change as well as its deep financial influence on Nations that engage tourism (Kandler-Rodríguez, 2020). Hence, hoteliers are expected to adopt transformational changes that are underscored by sustainable development practices so as to have far reaching positive effects on the environment. Jayawardena (2023) noted that in the contemporary digitalized period, the concept of sustainability has reconstructed the hotel sector, thereby calling it to adopt transformational change which has deep consequences for global business engagements. Popşa (2023) noted that the consciousness associated with the fast development of the hospitality sector poses unhealthy influence on the global environment, as well as has resulted into managers adopting various levels of ideas for the expression of their desires to align with sustainable development via the creation of ecology tags, implementation of procedures connected with sustainable behaviors as well as the adoption of a system of managing the environment. Therefore, it is pertinent for those with stakes in the hospitality sector to operationalize sustainability procedures with respect to various tasks as well as engagements. While also discussing tourism on a global scale, sustainable development can be considered as a developing issue, that results in industry's practitioners infusing sustainable development engagements in their regular operations (Jones *et al.* 2014).

## 1.2 Theoretical Background

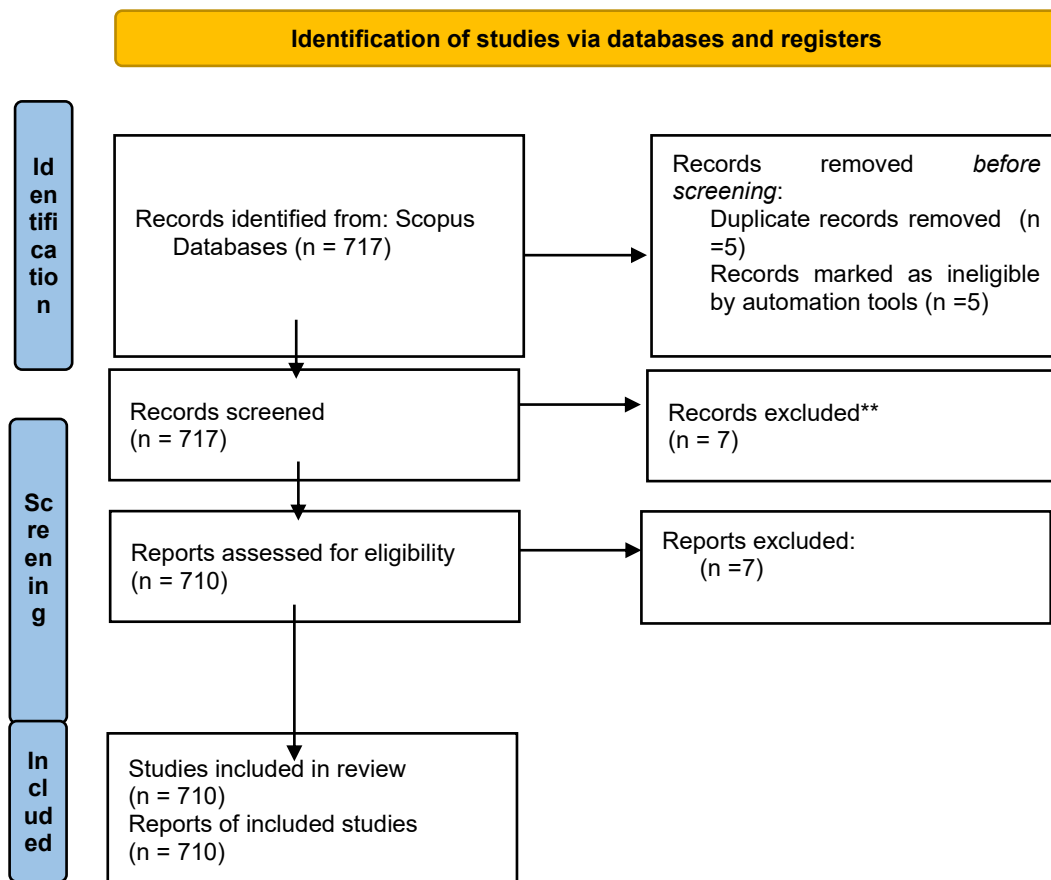
This study adopts a triple bottom-line theoretical framework, which is premised on three dimensions; economic, social and environmental that relate to the concept of sustainable development. Zaharia and Zaharia (2021) simply noted that triple bottom line is a theory used in measuring organizational performance as well as business successes through explicit integration of the economy, social and environment's bottom lines. Premised on the equal conceptualization of all three dimensions of sustainable development, the triple bottom line concept has received applause from academia as well as engaged industrial players in different settings to use formal measurement and reports for sustainable development commitment of business entities (Sánchez-Chaparro *et al.* 2022). The hospitality industry produces a lot of waste. Hence, hoteliers who are environmentally conscious have started prioritizing waste management through green initiatives. Jabbour (2012) revealed that essentially when business entities make attempts at green engagements, they could attain a TBL performance. Olawuyi and Babawale (2024) noted that the triple bottom theory depicts the exploitation and usage of the environment with the utmost level of responsibility and concurrently making enough revenue.

Context of your research paper the literature review should be a critical synthesis of previous research in the subject field. The evaluation of the literature leads logically to the research question. Who is doing what? Who has done what? Who first did it or published it? Taken from published papers, research monographs, catalogues etc. based on primary sources. Offering a, probably new, structured view of the field of study.

## 2. Research Methodology

This research's focus was on the scientific study of sustainable development in the hospitality industry premised on published research outputs. This is important because there is a literature gap for a robust literature review on sustainable development as well as the hospitality sector, especially, in the last one decade. Peng *et al.* (2024) asserted that the spread of studies on hospitality innovation could determine the importance of a robust literature review. There are different repositories for data on research publications in the past. Bibliometric studies could depend on data from repositories, for instance, Web of Science, Scopus, Google Scholar, PubMed, Dimensions, SpringerLink, and so on (Cobo *et al.* 2011). Saber and Kamaruddin (2025) asserted that the method in bibliometric research essentially includes a profound search of academic repositories, specifically, Scopus or web of science, concentrating on keywords connected to training, competence, job willingness, hospitality, as well as tourism. However, this research's data was retrieved from the Scopus repository because of the impressive number of high-ranking journals in Scopus. Saber and Kamaruddin (2025) asserted that the Scopus repository, known for its profound retrieval of peer-reviewed literature, is the source of data based on its expansive spread as well as reliability. Pooja and Bhavani (2025) noted that bibliometric data from the repository of Scopus was collected in Comma Separated values (SCV) format, which provides important metadata for well-explained analysis. The data collected is on publications between the year 2015 through 2025. The Boolean operators used to search for the literature are "AND" and "OR". Firstly, while searching the Scopus repository, for the filter category of 'author name format,' the option chosen was 'surname and initials'. Secondly, for the 'search within category,' the 'article title, abstract and keywords' option were selected. Hence, under the 'search documents' category, the following were evident; sustainable AND development AND in AND the AND hospitality AND industry AND sustainable OR development AND sustainable OR hospitality AND industry. It is notable that the search identified a total of 717 documents, but 710 documents were eligible for this study, as shown in the Prisma flow chart below.

Figure 1. Prisma Flow Chart



The data collected for the 710 documents were analysed using bibliometric analysis. Bibliometric analysis is a very important tool for scholars to analyse as well as rate researchers, journal outlets, subjects, and countries (Rejeb *et al.* 2023). The bibliometric analysis was done with a biblioshiny application through R studio. This study

essentially engages quantitative bibliometric applications, for instance VOSviewer that has the capacity of being efficient for the evaluation and analysis of bibliometric data; similarly, additional applications, specifically, EndNote and Excel were used for data analysis (Donthu *et al.* 2021). Although there are other apps for bibliometric analysis, biblioshiny through R studio is indeed engaging and requires very little computer code. Pooja and Bhavani (2025) noted that Biblioshiny, found in the Bibliometrix of R package, was engaged for the analysis and visualization of data. Biblioshiny produces robust and clear analysis showing the co-authorship network, co-citation, citation sources and so on. Johnson *et al.* (2022) noted that bibliometric analysis usually is inclusive of citation analysis, co-citation, bibliographic coupling as well as co-authorship network analyses for mapping industrial intellectual structures. Blanco-Moreno (2025) opined that the major benefit of bibliometric analysis is that it essentially gives room for the development of academia to be examined from two trajectories. It is very apt to use bibliometric analysis in the literature review for tourism and hospitality because it makes it easy to focus on any or all aspects of the tourism and hospitality industry. Blanco-Moreno (2025) opined that the research engages the bibliometric method for the analysis of 837 publications from the hotel industry by concentrating on hotels as well as eateries. Oztürk *et al.* (2024) emphasized importance of bibliometric analysis in sectors that are witnessing development, for instance, tourism sustainability, for the delineation of the theory as well as practical development within its field. It is pertinent to note that the data collected was analysed to proffer solutions to the following research questions;

Q1: What are the most relevant sources, sources' production and annual scientific production for sustainable development in the hospitality industry within 2015-2025?

Q2: What is the interconnection between leading authors and annual citation indices of the research on sustainable development in the hospitality industry within 2015-2025?

Q3: what are the most cited studies on sustainable development in the hospitality industry within 2015-2025?

Q4: What are the thematic dimensions that underpin studies on sustainable development in the hospitality industry within 2015-2025

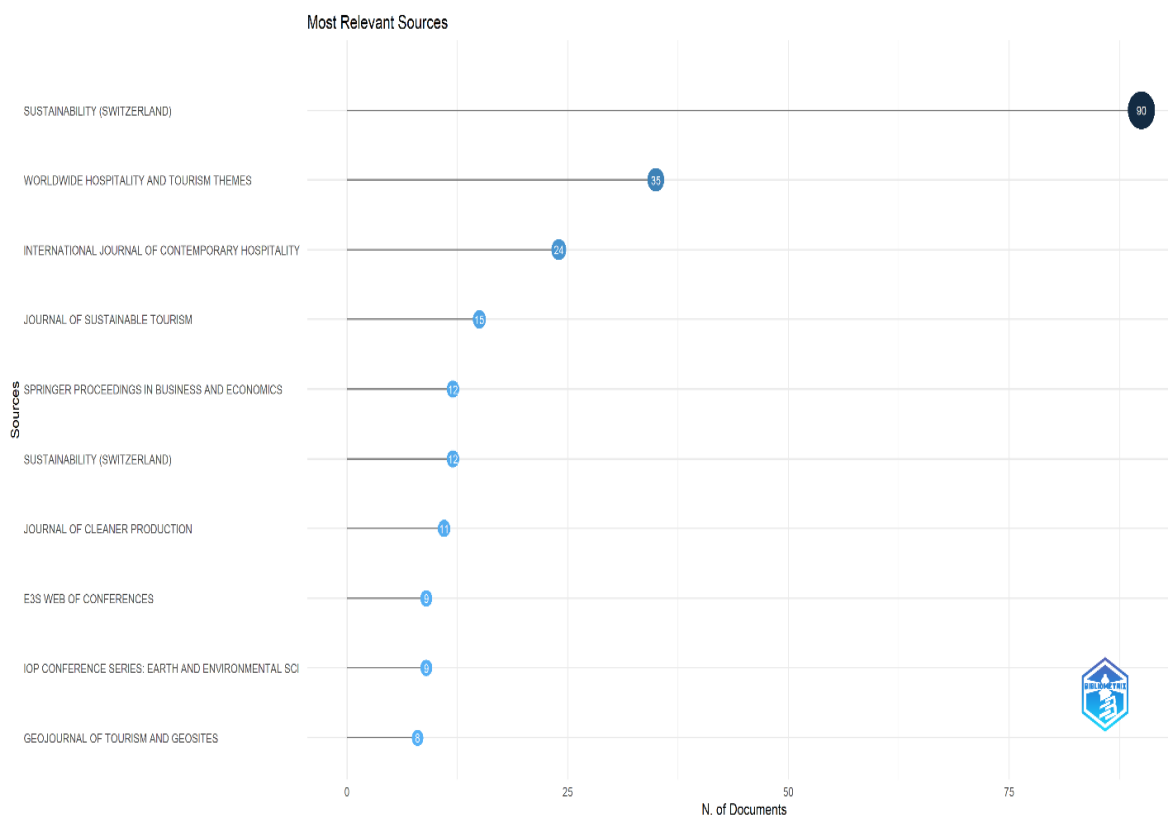
Q5: What is the dimension of the collaborative network of the studies that underpin sustainable development in the hospitality industry within 2015-2025

### 3. Research Results

The document types in the 710 documents analysed are essentially articles, book chapters, conference papers, reviews and books. It is notable that there are four hundred and fifty-one (451) articles, ninety (90) book chapters, seventy-seven (77), forty-one (41) reviews and twenty-nine (29) books. The keywords distributions are; two hundred and twenty-four (224) 'sustainable development', two hundred and twenty-three (223) 'hospitality industry', one hundred and sixty-nine (169) 'sustainability', one hundred and forty-six (146) 'tourism' and ninety-six (96) 'hospitality'.

The figure below shows a sequence of the most relevant sources. It is pertinent to note that the most relevant sources for the publications and their corresponding numbers are; sustainability (Switzerland) with ninety (90) documents, worldwide hospitality and tourism studies with thirty-five (35) documents, international Journal of Contemporary Hospitality with twenty four (24) documents, journal of sustainable tourism with fifteen (15) documents, springer proceedings in business and economics with twelve (12) documents, sustainability (Switzerland) with twelve (12) documents, Journal of Cleaner Production with eleven (11) documents, E3S web of conferences with nine (9) documents, IOP conference series earth and environmental sciences with nine (9) documents and Geojournal of Tourism and Geosites with eight (8) documents.

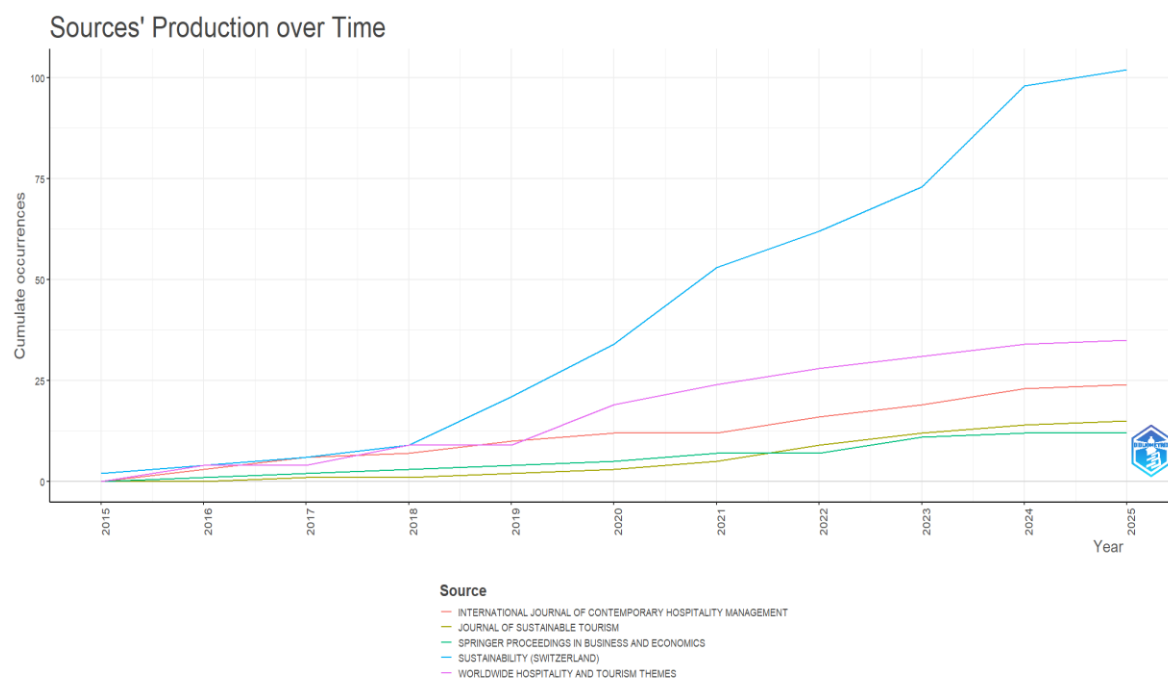
Figure 2. Most Relevant Sources



Source: Authors' creation (2025)

Figure 3 reveals sources' production over time. It is noteworthy that there was an upward spike in sources' production overtime in 2018. The upward spike is evident in the Journal of Sustainability (Switzerland), followed by Worldwide Hospitality and Tourism Studies and the International Journal of Contemporary Hospitality, amongst others. These are highly rated journals with impressive citation indices in the Scopus database.

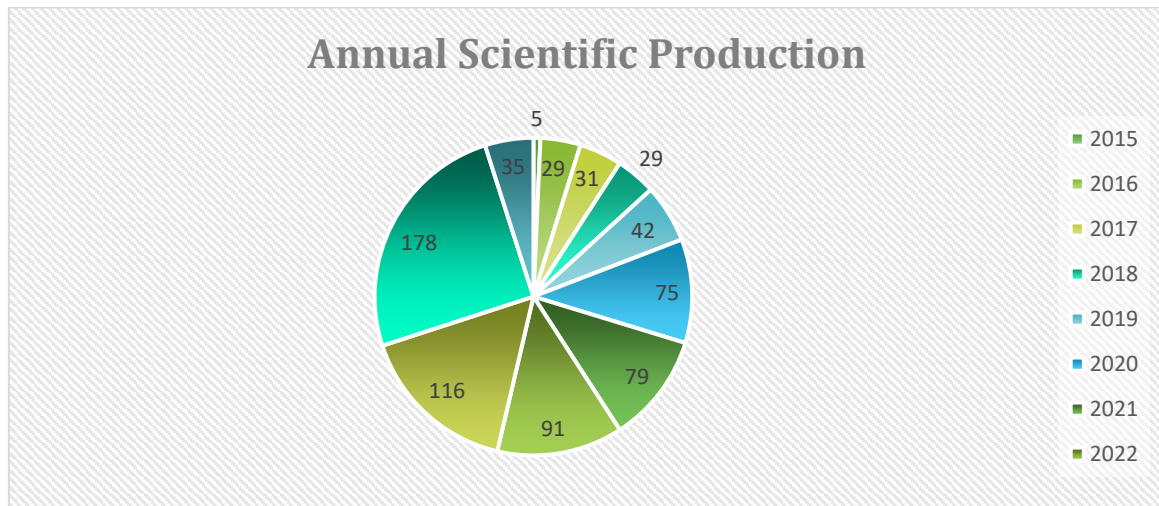
Figure 3. Source's Production over Time



Source: Authors' creation (2025)

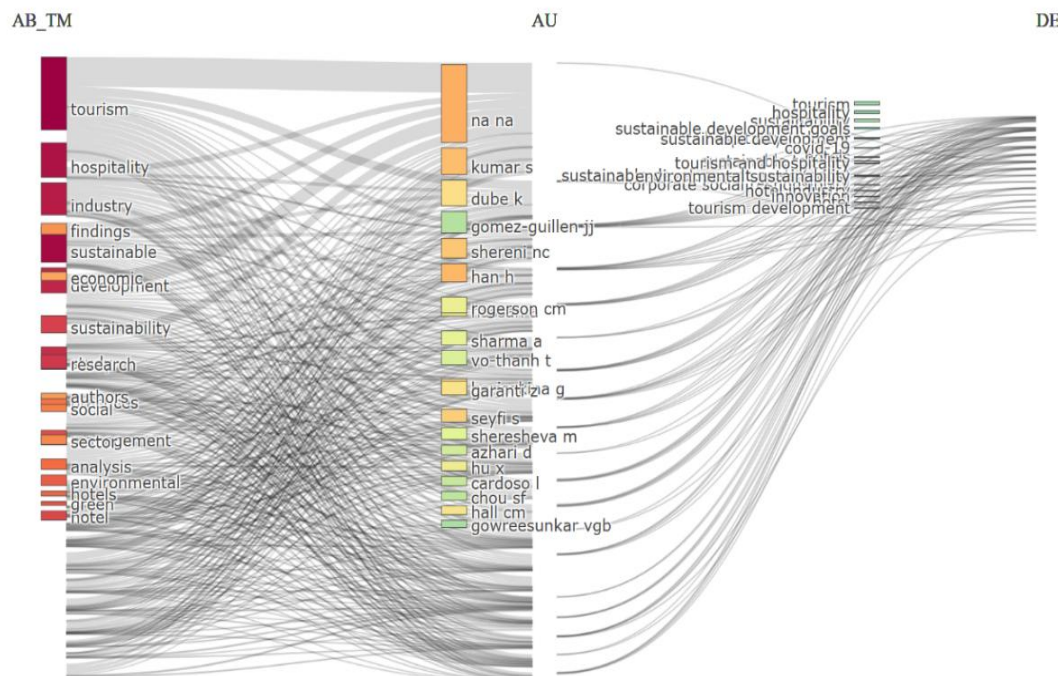
The chart below shows the annual scientific production of the articles published. It is apparent that most of the articles were published in 2024, with one hundred and seventy-eight (178) published articles and the least number of the articles five (5) were published in 2015. This shows that there has been an increasing yearly increase in published articles published by different authors. As of 12 March 2025, when the data for bibliometric analysis were fetched from Scopus, a total of 35 published articles on sustainability in the hospitality industry. The fact that there is a yearly increase in numbers published in 2019 points to the fact that the total number of articles on sustainability in hospitality by the end of 2025 will be more than the numbers published in 2024.

Figure 4. Annual Scientific Production



Source: Authors' creation (2025)

Figure 5. Three-fields Plot



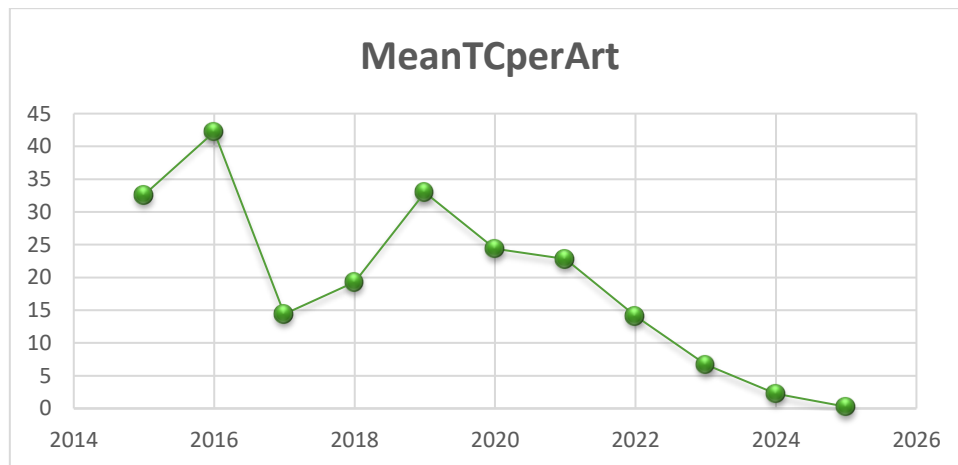
Source: Authors' creation (2025)

The three-fields plot premised on the Sankey diagram below shows the interconnection between leading authors (AU), author keywords (DE) and title (AB\_TM). It is notable that the keyword that had the highest frequency is tourism. Similarly, the word in the title with the highest frequency is tourism. In the same vein, the first three words that are apparent in the titles of the leading scholars are tourism, hospitality and industry. However, the least three keywords that are apparent in the research output of the leading scholars are hotel industry, innovation and tourism development. Similarly, the least three words that are apparent in the titles of the leading scholars are hotels, green, hotel.

### Average Citations per Year

The chart below reveals the three years with the highest mean total citations per article (MeanTCPerArt) as well as their corresponding mean figures in descending order are 2016 with MeanTCPerArt of 42.21, 2019 with MeanTCPerArt of 32.98 and 2015 with MeanTCPerArt of 32.6.

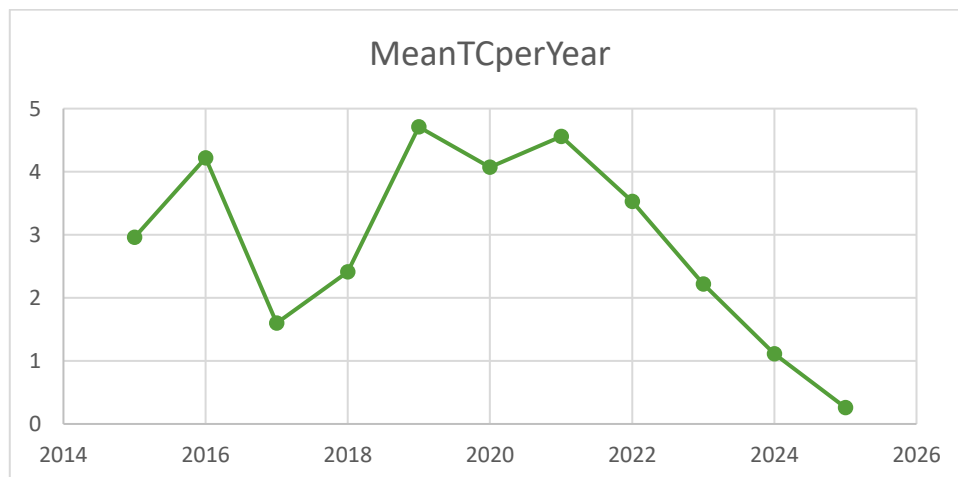
Figure 6. Mean Total Citation per Article



Source: Authors' creation (2025)

Figure 7 shows that the three years with the highest mean total citations per year (MeanTCperYear) as well as their corresponding mean values in descending order are 2019 with MeanTCperYear of 4.71, 2021 with MeanTCperYear of 4.56 and 2016 with MeanTCperYear of 4.22.

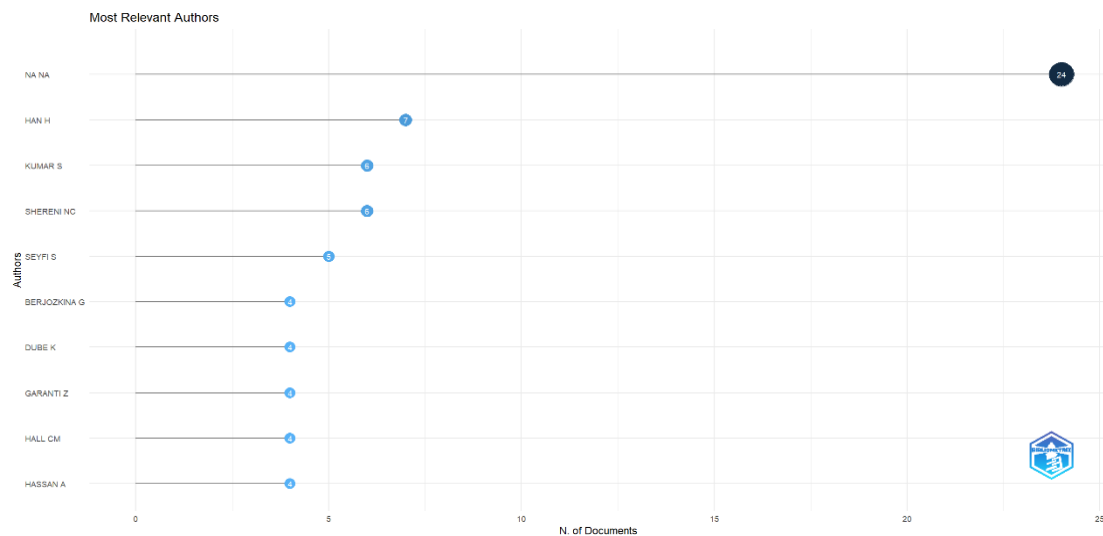
Figure 7. Mean Total Citation per Year



Source: Authors' creation (2025)

The chart below shows that the Na Na is the most relevant author under the review year with twenty-four (24) articles, followed by Han H with seven (7) articles, Kumar S. and Shereni NC with six (6) articles each, Seyfi S., with five (5) articles, Berjozkina G., Dube K, Garanti Z., Hall C., Hu X., Rogerson C., Sharma A., Sheresheva M., and Vo-Thanh T. with four (4) articles each, amongst other authors.

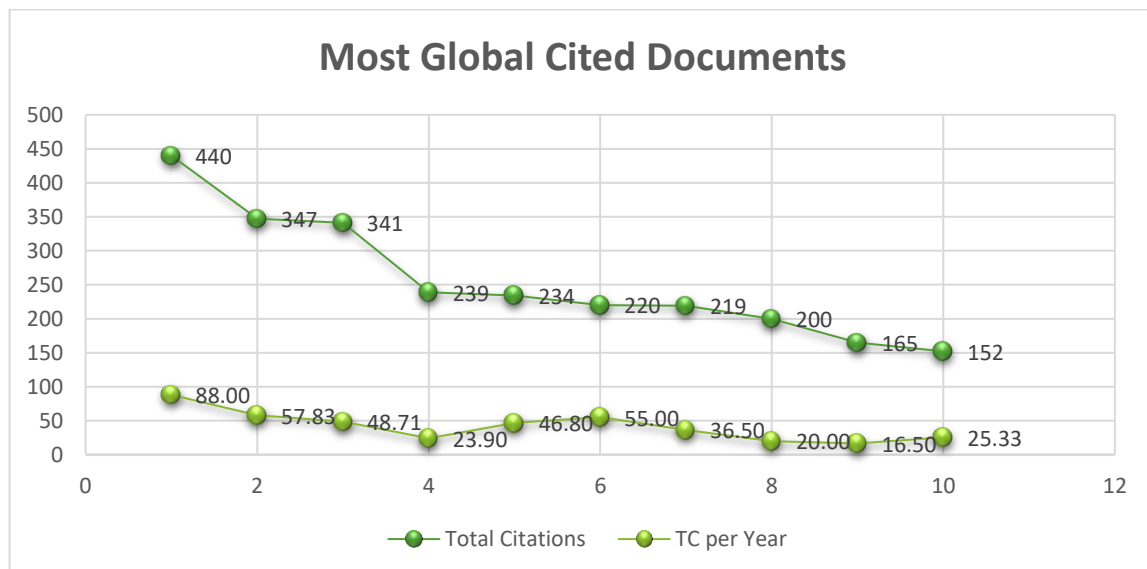
Figure 8. Most Relevant Authors



Source: Authors' creation (2025)

Figure 9 shows the most global cited world documents with respect to the author's name(s), year of publication, name of journal, overall total citations and total citations per year. The information about the most global cited documents is presented in descending order as follows; Han H, 2021 in the Journal of Sustainable Tourism with overall citation index of 440 and total citations per year's index of 88.0; Asadi S, 2020 in the Journal of Cleaner Production, with overall citation index of 347 and total citations per year of 57.83; Nosratabadi S, 2019 in the Journal of Sustainability with overall citation index of 341 and total citations per year of 48.71; Pirani Si, 2016 in the Journal of Cleaner Production with overall citation index of 239 and total citations per year of 23.90, amongst others.

Figure 9. Most Global Cited Documents



Source: Authors' creation (2025)

The various colors in figure 10 depicts co-occurred thematic keywords underpinned by different research trajectories. The cluster in green color has the following co-occurred words; sustainable development, environmental sustainability, tourism, energy efficiency, leisure industry, carbon footprint, decision making amongst others. The most prominent keyword in the green color is 'sustainable development'. However, the cluster in red has the following co-occurred words; hospitality industry, sustainability, tourism development, innovation, ecotourism, climate change, tourism market, amongst others. The most prominent keyword in red color hospitality industry. The cluster in blue color has the following co-occurred words; human, industry, article, female, male and adult.



Figure 12 shows the research's collaboration network, while figure 13 shows the Country collaboration map. It is notable that there were significant collaborative efforts between different authors in the same regions and authors in different regions before a lot of the articles were published. It is noteworthy that in terms of spatial location, there were intercontinental and intercountry collaborations, for instance, there were collaborations between authors in Australia and Egypt, collaboration between Argentina and Kenya, collaborations between authors in China and Japan and so on. Specific collaborations authors that collaborated were also pointed out in the figure below.

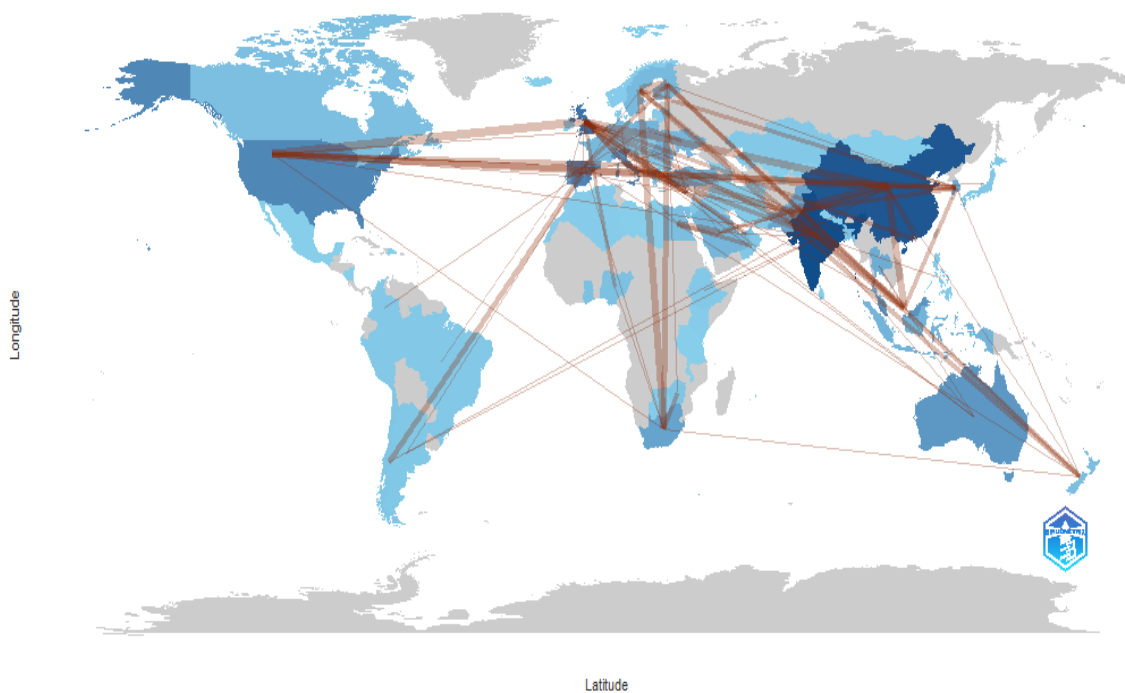
Figure 12. Collaboration network



Source: Authors' creation (2025)

Figure 13. Country Collaboration Map

## Country Collaboration Map



Source: Authors' creation (2025)

#### 4. Discussions

The Journal of Sustainability (Switzerland) is notable for publishing an impressively high number of articles on the sustainable development and hospitality industry. Pileliene *et al.* (2024) asserted that with respect to the most prolific journal outlets, the journal that leads others in the sector of innovation in sustainable tourism is the Journal of Sustainability (Switzerland) by the Multidisciplinary Digital Publishing Institute (MDPI) that has fifty-eight publications as well as one thousand, one hundred and fifteen citations, and it is a journal that does not essentially represents tourism. This impressive high number of publications might be premised on the name of 'sustainability' that is evident in the name of the journal. Despite the fact that this journal has published a lot of articles on sustainable development and the hospitality industry, they are high-quality publications, especially with their research aims, objectives, methodologies, analyses, discussions and conclusions. This is one of the major reasons the journal has high impact factor index. Meanwhile, other journals (Worldwide Hospitality and Tourism Studies, International Journal of Contemporary Hospitality, and journal of Sustainable Tourism, amongst others) depict a multidisciplinary approach that underpins research into sustainable development and the hospitality industry.

The obvious increase in articles published in the hospitality and tourism industry in 2018, depicts increased concentration of the academia as well as industry stakeholders in sustainable development. This increase across the globe implies the narrative of protecting the environment while generating income has percolated through the hospitality industry in recent times. Blanco-Moreno (2025) opined that the conceptualization of such ever-changing dynamism is very crucial because the hotel industry is operating as an intersection of the environment, society as well as economic importance. Iddawala *et al.* (2024) asserted that the studies similarly found out that the majority of hotel owners connect sustainable development by basically focusing on the environmental dimension. Kostić *et al.* (2019) noted that it is therefore very important to establish highly efficient methods for the environment, ecology tags, green certificate programs, as well as predictors of performance capable of ensuring reduced carbon footprints and cost of operating accommodation components, as well as offering visitors better experiences.

This could also be premised on the gamut of policy frameworks and regulations set by different organizations to promote sustainable development amongst various stakeholders. Such policy frameworks and regulations are sometimes driven by the feedback of guests at the hotels. Sun and Nasrullah (2024) noted that in the hotel industry, the standpoints of hotel guests could guide the hotel to concentrate on better procedures and service quality, hence, it is apparent that the hospitality industry has contended with serious competition that is premised on the enhanced pressure of digitalized engagements, which has in turn compelled hotels to establish sustainable targets. This has compelled some hotels to embrace green initiatives. In the hospitality business, hotel guests being conscious of their options as well as their influence on the environment can lead to pressure on business enterprises with respect to production designs, sales as well as production items (Huang and Chen, 2022). Barakagira and Paapa (2023) asserted that the various green practices engaged by the hospitality industry usually result in a competitive edge to the organizations premised on costs as well as materials saved and customers retained. This simply accounts for a yearly growth in numbers of published articles on the hospitality industry as well as sustainable development by different authors. The annual scientific report that is deeply rooted in academic publications shows a significant elevation in 2024's publications.

The highest frequency associated with 'tourism' reinforces that it is the fulcrum of academic narrative in the field of hospitality and tourism, based on the three-field plot in the Sankey diagram. Pooja and Bhavani (2025) noted that three field-plot in the Sankey diagram implies the connectivity between any of the three major dimensions, such as sources, authors, nations, affiliations, keyword and so on. This might be because tourism is the basis upon which the concept of hospitality sits. The fact that the first three words apparent in the research outputs of leading scholars are tourism, hospitality and industry. This simply means that tourism and hospitality are of the same industry, hence, their dominance in academic discourse. This dominance reinforces the fact they constitute a research fulcrum that has received immense attention and search in academia. Meanwhile, the words with the least frequency are 'innovation' and 'green hotel', which depict areas that beg for research attention of scholars. It is evident that the three years with the highest mean total citations per article (MeanTCPerArt) and their corresponding mean figures in descending order are 2016 with MeanTCPerArt of 42.21, 2019 with MeanTCPerArt of 32.98 and 2015 with MeanTCPerArt of 32.6, which simply depicts that there was a major policy focus as well as enhanced consciousness of sustainability practices during the years cited.

The year 2019 with the highest mean total citations per year means that many researchers read and cited articles published on sustainable development and hospitality. There is a strong connection between the mean

total citations per year for the years 2019 and 2021. This is based on the fact that COVID-19 started in 2019 and it has subsided a great deal in 2021, perhaps, this surge in total citations per year might be as a result of the lock-down. Various scholars might have published the articles they wrote during the ravaging lock-down of 2020 in the year 2021. This spike might have been a result of the impact of the pandemic on research and scholarly outputs. Pileliene *et al.* (2024) asserted that the major gap in number of publications was registered in 2021 consequent upon the global pandemic of COVID-19. Similarly, collaboration trajectory amongst the most-cited Nations was revealed.

Na Na is a very prolific contributor to the discourse on sustainable development and the hospitality industry with twenty-four articles. It is notable that other prolific authors also have good numbers of publications, for instance, Han H has seven (7) articles, Kumar S. and Shereni NC with six (6) articles each, Seyfi S., with five (5) articles, Berjozkina G., Dube K, Garanti Z., Hall C., Hu X., Rogerson C., Sharma A., Sheresheva M., and Vo-Thanh T. with four (4) articles each, amongst other authors. This depicts robust research narratives on sustainable tourism strategies, the hospitality environment, eco-friendly ideas, sustainability in consumer behavior, climate change and so on. The scholarly outputs of the most prolific scholars indicate interdisciplinarity of research, especially with regard to blending studies on the environment, business models, customer's buying behaviors in sustainable development of the hospitality sector. Iddawala *et al.* (2024) asserted that, very prolific people in the tourism academic space have submitted different frameworks as well as methods to use systematical engagement and measurement in sustainable development commitment of tourism and hospitality industries in the past decades.

The scholarly output with the most influence with regards to total citations is in the Journal of Sustainable Tourism published by Han H., 2021 with a total of 440 citations and total citations per year of 88.0, followed by the scholarly output of Asadi S., 2020 in the journal of cleaner production, with overall citation index of 347 and total citations per year of 57.83, and Nosratabadi S., 2019 in the journal of sustainability with overall citations index of 341 and total citations per year of 48.71, among others. The impressive total number of 440 citations of the article of Han H., implies that the article is indeed of high quality and it has delved into different topical issues bordering on sustainable development and hospitality. Similarly, the fact that the article was published in the Journal of Sustainable Tourism will make it easy for the internet to push it up to authors searching for such articles, especially with respect to the algorithm that easily connects with the name of the journal with the search words (sustainable development).

Blanco-Moreno (2025) opined that scientific mapping creates a visual component as well as the development of thematic areas. Density, which represents the vertical axis, and centrality, which represents the horizontal axis, are defining characteristics defining chosen titles (Pooja and Bhavani, 2025). The various colors in the chart for the co-occurrence network have different meanings. Green color has the following co-occurred words; sustainable development, environmental sustainability, tourism, energy efficiency, leisure industry, amongst others; with 'sustainable development' being the most prominent. The red color cluster has the hospitality industry, sustainability, tourism development, and innovation, amongst others, with the 'the hospitality industry' being the most prominent. The blue color cluster has human, industry, article, female, male and adult. The two prominent keywords in this co-occurred network are sustainable development and the hospitality industry, which are the main thrust of this study. Pooja and Bhavani (2025) noted that the thematic analysis creates themes via the usage of author keyword clusters as well as their connectivity amongst them.

The motor themes and emerging or declining themes are essentially blank. Niche themes contain humans, articles and hospitality, while the basic themes contain the hospitality industry, sustainable development and sustainability. This implies that the hospitality industry has essentially started engaging in the practices of sustainability and sustainable development. Authors in different parts of the world collaborated to produce articles on sustainable development and the hospitality industry, for instance, there were collaborations between authors in Australia and Egypt, collaboration between Argentina and Kenya, collaborations between authors in China and Japan and so on. The collaborating clusters are basically underpinned by the network of collaborations of different Nations (Abdi-Khalife, 2020). The result of the study showed that "inter-nation collaboration gives room for the publication of studies with impressive quality that is received by a larger audience of researchers in the globe (Pileliene and Jucevicius, 2023).

## Conclusions and Further Research

It is notable that there has been a systematic growth of studies and knowledge outputs of sustainable development in the hospitality industry from 2015-2025. The Journal of Sustainability (Switzerland) has done significantly well by leading other journals with respect to the number of publications on sustainable development.

The high standards maintained by the journal and the 'sustainability' in the name of the journal have attracted many prolific scholars to the journal. Journal of Sustainability also attracted the most prolific scholar Na Na that has published twenty-four articles, among other prolific scholars. 2019 has the highest mean total citations per year index, which implies that scholars in diverse fields cited studies on sustainable development in 2019. However, the scholarly output with the most influence vis-à-vis total citations is in the Journal of Sustainable Tourism, published by Han H., 2021 with a total of 440 citations and a total of citations per year of 88.0. The two prominent keywords in the co-occurring network are sustainable development and the hospitality industry, which are the main thrust of this study. This simply means that the data retrieved from Scopus is reliable. It is indeed worth noting that many investors of hospitality businesses have started deploying sustainable initiatives, because the niche themes contain human, article and hospitality, while the basic themes contain hospitality industry, sustainable development and sustainability. The content of the basic theme underscores the connectivity between sustainable development, sustainability and the hospitality industry. The fact that sustainable development is indeed a topical issue has resulted in authors in different parts of the collaborating, especially deciphering its affinity with the hospitality industry in different parts of the world.

### Theoretical implications

The triple bottom theory that encompasses environmental, economic and social dynamics of sustainable development was deployed. It is evident that environmental dynamics are prominent in this study, especially premised on the hospitality sector being known to produce enormous quantities of waste. Therefore, there is a call for the hospitality industry to embrace green initiatives with respect to the management of their waste. There is no gainsaying that hospitality businesses are established to generate profits, however, a balance must be established between profit making and management of the environment.

### Implication for SDG

The result of this study is underpinned by sustainable development goal (SDG) 12 (responsible consumption and production) and SDG 6 (clean water and sanitation). This depicts that it is expected of the hospitality industry to be responsible with respect to the consumption of materials and production of goods (especially food and drinks) for guests. The responsible production of goods and services is connected to responsible management of the wastes from such goods and services. Apparently, responsible management of waste will yield clean water and sanitation.

### Credit Authorship Contribution Statement

**Dr Olakunle S. OLAWUYI:** Conceptualization, Methodology, Project administration, Software, Formal analysis, Writing – original draft

**Professor Carina Kleynhans:** Conceptualization, Methodology, Writing – original draft, Supervision, Validation, review and editing

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Declaration of Use of Generative AI and AI-Assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

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## Greenwashing and Consumer Green Perceived Value: The Mediation Mechanism of Green Consumer Confusion and Green Perceived Risk

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**Abstract:** Amid rising consumer awareness and regulatory scrutiny of corporate sustainability claims, greenwashing has become a pressing concern in green marketing. This study investigates the impact of greenwashing on consumer perceptions by examining its influence on green perceived value, consumer confusion, and green perceived risk. Specifically, it explores the mediating roles of consumer confusion and green perceived risk in the relationship between greenwashing and green perceived value. Using structural equation modeling (SEM) and a dataset of 299 responses from green product consumers in China, the findings indicate that greenwashing significantly diminishes green perceived value. Notably, consumer confusion emerges as a critical mediator, amplifying the negative effect of greenwashing by leading to flawed purchasing decisions. However, contrary to expectations, green perceived risk does not mediate this relationship, suggesting the presence of cognitive biases or other unexamined factors influencing consumer decision-making. These findings contribute to the literature on green marketing by revealing the nuanced mechanisms through which greenwashing affects consumer evaluations. They also highlight the need for businesses to implement transparent and authentic green marketing strategies to preserve consumer trust and perceived value. Furthermore, this study provides novel insights into the complex interplay between green perceived risk and consumer judgment, paving the way for future research on sustainable marketing practices.

**Keywords:** greenwashing; green perceived value; green consumer confusion; green perceived risk.

**JEL Classification:** Q01; D91; Q51; R11.

### Introduction

In the modern environmental era, firms increasingly adopt green marketing strategies to differentiate their products, reflecting a growing emphasis on sustainability. Green marketing aligns a company's offerings with environmentally and socially re-sponsible practices, making terms like "eco," "green," and "sustainability" common-place in advertising. However, despite their intention to communicate corporate commitments to sustainability, many green claims are vague or misleading, giving rise to greenwashing. Greenwashing, as described by Huang et al. (2025), involves deceiving consumers regarding a company's environmental initiatives or the ecological ad-vantages of its offerings. Studies reveal that many products with environmental claims fall into at least one of the "seven sins of greenwashing" (TerraChoice, 2009). Companies often selectively highlight

positive environmental attributes while downplaying negative aspects, shaping a deceptively favorable corporate image (Lyon & Maxwell, 2011; Yang, 2020 ; Forliano et al., 2025).

Existing research indicates that greenwashing exacerbates consumer confusion and perceived risk associated with green products, thereby undermining trust in corporate environmental claims (Chen & Chang, 2013; Tarabieh, 2021). As consumers increasingly rely on corporate advertising to guide sustainable choices, misleading claims erode trust in such advertisements and create uncertainty about which firms' environmental assertions (Hamann & Kapelus, 2004). Greenwashing diminishes trust in two ways: directly, by reducing consumer confidence in corporate environmental practices, and in-directly, by increasing confusion and perceived risk regarding green products (Chen & Chang, 2013). This finding was corroborated by Tarabieh (2021), who emphasized the need for businesses to address greenwashing to sustain consumer trust in their green initiatives.

Recently, Petticrew et al. (2020) found that greenwashing exploits cognitive biases by emphasizing selective claims and manipulating messages, creating green consumer confusion that prevents consumers from distinguishing genuine sustainability from misleading claims. Such confusion inflates perceived green value, leading consumers to overestimate a product's sustainability (Azzopardi, 2021).

On the other hand, Roh et al. (2022) argued that green perceived value reflects consumers' evaluation of a product's environmental benefits based on their sustainability expectations. However, when companies misrepresent their environmental claims, consumer skepticism increases, and perceived risk rises, negatively affecting perceived value (Roh et al., 2022).

Although prior studies have examined the impact of greenwashing on consumer behaviour, few have empirically investigated the transmission mechanisms through which greenwashing influences green perceived value. In particular, there is a notable gap in understanding how green consumer confusion and perceived risk mediate this relationship. To address this gap, the present study proposes a conceptual model that explores the indirect effects of greenwashing on green perceived value, with a specific focus on the dual mediating roles of consumer confusion and perceived risk. The novelty of this research lies in its integration of psychological mediators into the greenwashing framework, offering a more nuanced explanation of how greenwashing affects consumer perceptions.

This paper makes the following academic contributions:

First, this study advances the understanding of the psychological mechanisms underlying the relationship between greenwashing and green perceived value by empirically validating the mediating role of consumer confusion. While prior research has extensively highlighted the detrimental impacts of greenwashing, limited attention has been directed toward the cognitive and affective processes that drive these effects. By uncovering how deceptive green claims lead to consumer confusion and, in turn, undermine the perceived value of green products, this research fills a critical gap in the literature. It provides valuable insights into the cognitive distortions caused by green-washing practices.

Second, this study is the first to introduce green perceived risk as a mediating variable in the relationship between greenwashing and green perceived value. While existing studies have revealed the multifaceted negative impacts of greenwashing, they have never paid insufficient attention to the role of consumers' perceived risk as in this process. Green perceived risk reflects consumers' skepticism about the credibility and effectiveness of green claims. This study highlights how such skepticism exacerbates the negative effects of greenwashing on perceived value. By incorporating the green perceived risk into the research framework, this study not only deepens the understanding of the detrimental consequences of greenwashing but also innovatively uncovers the critical role of risk perception in shaping trust and market acceptance of green products. It provides a fresh theoretical perspective for research in the green marketing domain.

Third, the innovation of this study lies in its construction of a dual-mediation mechanism that systematically reveals the interactive roles of consumer confusion and green perceived risk in the relationship between greenwashing and green perceived value. Unlike previous studies that primarily focused on single psychological mechanisms, this research provides a more comprehensive and detailed theoretical framework by examining the mediating pathways of both variables. The framework not only broadens the existing literature's understanding of the psychological effects of green-washing but also underscores the compound impact of these dual mechanisms on consumer decision-making. By emphasizing the synergistic effects of these psychological processes, the study offers significant theoretical contributions to the greenwashing literature, and delivers actionable insights to guide future research and practical efforts toward the standardization of green marketing practices. This integrative perspective represents a critical theoretical innovation, opening new avenues for academic exploration.

## 1. Literature Review and Hypotheses Development

### 1.1 Theory Mechanism

Greenwashing involves the misleading promotion of products or services as environmentally sustainable, despite their failure to genuinely meet such standards. This practice erodes consumer confidence and disrupts fair market dynamics (Forlano et al., 2025). By manipulating environmental claims, companies overwhelm consumers with excessive, often conflicting information, making it difficult for them to accurately assess a product's ecological qualities (Walsh et al., 2007; Chen & Chang, 2012; Hung & Chang, 2024). The theory of information overload explains this phenomenon, suggesting that when individuals are exposed to too much complex or contradictory information, their cognitive capacity is exceeded, leading to confusion and poor decision-making (Chen & Chang, 2012). In the case of greenwashing, companies deliberately flood consumers with misleading information, exaggerating, or selectively emphasizing certain claims while omitting or conflicting with other details, thereby deepening confusion. Bounded rationality theory further elaborates how consumers cope with such confusion. It posits that individuals, constrained by cognitive limitations, time, and information, often rely on heuristics, or mental shortcuts, to simplify decisions (De Clippel & Rozen, 2021; Mohammed et al., 2025). However, these shortcuts can lead to cognitive biases and errors in judgment. In greenwashing, businesses exploit these biases by selectively emphasizing certain environmental attributes and omitting critical details, manipulating the presentation of information to mislead consumers into overestimating a product's sustainability. This manipulation exacerbates confusion, leading consumers to inflate the product's perceived green value.

Perceived risk theory asserts that consumers evaluate the potential negative consequences of a purchase based on their subjective perceptions, where an increase in uncertainty amplifies perceived risk and subsequently influences decision-making (Peter & Ryan, 1976). In the context of ecofriendly products, the phenomenon of "greenwashing" - the misrepresentation of environmental benefits - has become a key concern. This practice not only heightens consumer uncertainty but also undermines trust, leading to increased skepticism about the authenticity of environmental claims (Chen et al., 2016). As such, the perceived risk surrounding eco-friendly purchases intensifies, particularly with regard to the credibility of environmental assertions, which ultimately influences eco-conscious purchasing behaviour (Tarabieh, 2021). Building on this, the risk-value model theory further establishes a direct relationship between perceived risk and the perceived value of a product, suggesting that higher levels of perceived risk correspond to a diminished overall product value (Dorfleitner, 2022). In the case of "greenwashing," this misalignment between environmental claims and actual product benefits magnifies consumer uncertainty, which in turn erodes trust in these claims and, by extension, reduces the perceived value of eco-friendly products (Font et al., 2025). These dynamic underscores the critical role of credibility in shaping consumer evaluations: as the perceived risk associated with environmental claims rises, consumers' assessment of green products is negatively impacted, reinforcing the importance of authenticity in fostering consumer trust and value perception in the marketplace.

### 1.2 The Positive Influence of Greenwashing on Green Consumer Confusion

Greenwashing, which involves falsely marketing products or services as environmentally friendly, undermines consumer trust and disrupts market dynamics. When consumers encounter misleading or inconsistent environmental claims, their confidence in these products diminishes, often resulting in reduced purchases (Pomeroy & Johnson, 2009). This skepticism arises from the perception that green marketing is often more about image than actual sustainability (Lyon & Maxwell, 2011). Such negative perceptions not only erode consumer trust but also adversely affect their attitudes towards brands promoting environmental initiatives (Peattie et al., 2009). Over time, this distrust harms the green product market by fostering consumer suspicion and hesitation.

According to Walsh and Yamin (2005), green consumer confusion can be categorized into three types: unclarity confusion, similarity confusion, and overload confusion. Unclarity confusion occurs when consumers struggle to understand a product due to factors such as conflicting information or dubious claims. Similarity confusion arises when products appear similar, leading to difficulty distinguishing between them. Overload confusion results from an overwhelming amount of information, making it harder for consumers to focus on key aspects when making decisions. These forms of confusion highlight the challenges faced by consumers when navigating green product claims. Based on the information overload theory, it describes the difficulty individuals face in processing and making decisions when the amount or complexity of information surpasses their cognitive limits. Such an overload often results in reduced effectiveness, impaired judgment, and a tendency to depend on

mental shortcuts (Hung & Chang, 2024). Greenwashing can overwhelm consumers with excessive information, complicating their ability to assess a product effectively (Walsh et al., 2007 ; Chen & Chang, 2012; Kim et al., 2025). Additionally, unclear or misleading environmental claims may lead to uncertainty about the product's ecological attributes (Chen & Chang, 2012). Based on this, we propose the following hypothesis:

H1: Greenwashing is positively associated with green consumer confusion.

### 1.3 The Positive Influence of Green Consumer Confusion on Green Perceived Value

Bounded rationality theory highlights that individual, limited by cognitive capacity, time, and available information, often use heuristics to make decisions. However, these mental shortcuts frequently lead to cognitive biases, causing systematic errors in judgment (De Clippel & Rozen, 2021). Cognitive biases are systematic deviations in thinking that lead to errors in judgment, deviating from rational decision-making models (Tversky & Kahneman, 1974; Tversky & Kahneman, 1992; Bartucz et al., 2025). These biases impact how consumers interpret information, especially during information overload or scarcity. Azzopardi (2021) suggests that cognitive biases are exacerbated by information overload. In such cases, consumers may (i) rely on memory or repeated details, as seen in availability bias, and (ii) favor information that confirms existing beliefs, as in anchoring and confirmation biases. In contrast, information scarcity leads consumers to use heuristics, such as (i) stereotyping, (ii) favoring familiar information, and (iii) simplifying complex data to aid decision-making.

In greenwashing, companies exploit these biases by presenting misleading environmental claims (Forlano et al., 2025). They (1) selectively emphasize certain claims while omitting key details, and (2) manipulate message sequencing or wording to confuse consumers, making it harder to evaluate a product's true environmental impact. This manipulation leads to green consumer confusion, where consumers find it difficult to differentiate between genuine and misleading environmental claims (Kim et al., 2025). As a result, the green perceived value is inflated, causing consumers to perceive the product as more sustainable than it actually is (Azzopardi, 2021). This confusion hampers informed, rational decision-making, supporting the hypothesis that green washing not only increases consumer confusion but also distorts their perceptions of sustainability. Based on this, we propose the following hypothesis:

H2: Confusion is positively associated with green perceived value.

### 1.4 The Negative Influence of Greenwashing on Green Perceived Value

Perceived value reflects consumers' overall assessment of the benefits of a product or service (Punyatoya, 2015). In the context of sustainability, green perceived value captures consumers' evaluation of the environmental benefits a product or service provides, aligning with their sustainability expectations and needs (Chen & Chang, 2012). Based on the consumer trust theory, it emphasizes that trust forms the basis of the relationship between consumers and brands, relying on perceptions of the brand's credibility and consistency (Gong et al., 2021). When a brand is recognized as environmentally friendly, it fosters consumer trust in its environmental commitments, thereby enhancing the perceived value of the brand (Zhang et al., 2018). To capitalize on this, enterprises adopt green marketing strategies, which emphasize environmental benefits to attract consumers and secure competitive advantages. However, the practice of greenwashing - where environmental claims lack genuine action - undermines this trust. Greenwashing increases consumer skepticism about environmental claims, thereby diminishing green perceived value (Chen & Chang, 2013; Nyilasy et al., 2014; Szabo & Webster, 2021; Chen et al., 2022). Furthermore, it leads to negative word-of-mouth about green products and brands, amplifying its detrimental effects (Afianto & Waskito, 2025). Ultimately, perceived greenwashing erodes consumers' trust and significantly reduces the perceived value of green initiatives. Based on this, we propose the following hypothesis:

H3: Greenwashing is negatively associated with green perceived value.

### 1.5 The Positive Influence of Greenwashing on Green Perceived Risk

Perceived risk theory posits that consumers evaluate the possible negative out-comes of a purchase based on their personal perceptions. Greater uncertainty tends to amplify perceived risk, shaping how consumers make decisions (Peter & Ryan, 1976). Perceived risk can manifest in various forms, including psychological, physical, financial, social, and performance-related risks (Kaplan et al., 1974).

- Financial risk: The likelihood of a consumer experiencing a loss based on how the cost of a product aligns with their available disposable income;
- Social risk: The chance that a purchase may not satisfy the standards or preferences of an influential social group;

- Psychological risk: The emotional unease or a potential decline in self-esteem when consumers sense they have made an unfavorable purchasing decision;
- Performance risk: The probability that the product will not function as anticipated;
- Physical risk: The possibility of physical injury caused by the product's use or performance.

As perceived risk is primarily driven by uncertainty, it has a significant impact on consumer decision-making processes (Chernev, 2025). Recently, the rise in demand for eco-friendly products has been countered by concerns over "greenwashing," where companies misrepresent the environmental benefits of their products. This misleading practice increases consumers' uncertainty and distrust, heightening their concerns about the authenticity of environmental claims (Chen et al., 2016). Consequently, consumers may become more skeptical about the environmental credentials of products, amplifying their perceived risk when making eco-conscious purchasing decisions (Chen & Chang, 2012; Tarabieh, 2021; Mohammed et al., 2025). Based on this, we propose the following hypothesis:

H4: Greenwashing is positively associated with green perceived risk.

### 1.6 The Negative Influence of Green Perceived Risk on Green Perceived Value

Zeithaml (1988) proposed that perceived value refers to how consumers assess the worth of a product or service, based on their perception of the benefits they gain in relation to what they have to pay. where consumers compare the 'get' (benefits) and 'give' (costs) components of a product or service. In the context of sustainability, green perceived value specifically refers to consumers' evaluation of the environmental benefits of a product or service, aligned with their sustainability expectations and needs (Chen & Chang, 2012; Roh et al., 2022). Sweeney and Soutar (2001) identified four key dimensions of consumer perceived value: emotional, social, quality/performance, and price/value for money. Consumers evaluate products not only for their practical features, cost-effectiveness, and adaptability but also for the emotional satisfaction they provide and the social benefits they offer. The emotional dimension reflects the satisfaction or pleasure derived from the product, while the social dimension relates to how the product is perceived by others (Sweeney & Soutar, 2001).

Based on the risk-value model theory, it links perceived risk with perceived value, suggesting that the value of a product is shaped by the balance between its perceived benefits and the risks associated with it. When perceived risks rise, the overall perceived value of the product tends to decline (Dorffleitner, 2022). The rising demand for eco-friendly products has been accompanied by concerns over "greenwashing" - a practice where companies misrepresent the environmental benefits of their products (Forlano et al., 2025). This deceptive behavior increases consumer uncertainty and distrust, leading to heightened concerns about the authenticity of environmental claims (Huang et al., 2025). As a result, consumers may grow more skeptical of the environmental credentials of products, amplifying their perceived risk when making eco-conscious purchasing decisions. In this context, the perceived risk associated with a product - especially regarding the credibility of its environmental claims - can negatively affect consumers' perception of its green value. When consumers perceive higher risks in the environmental claims (such as doubts about the authenticity of eco-friendly features), their assessment of the product's green perceived value tends to decrease (Roh et al., 2022). Based on this, we propose the following hypothesis:

H5: Green perceived risk is negatively associated with green perceived value.

## 2. Methodology and Measurement

### 2.1 Data Collection and Sample

This study adopts a quantitative approach to explore participants' perceptions of purchasing green products in China, addressing gaps identified in the literature. A survey was used, and the questionnaire was first translated from English to Chinese. To ensure accuracy and cultural relevance, several professors specializing in this field re-viewed the translation and provided feedback, which was incorporated into the Chinese version. The translated questionnaire was then back-translated into English to verify consistency between the two versions. Then, a pre-test was conducted with 50 randomly selected undergraduate students from a university in Shanghai to further refine the instrument. The questionnaire items were measured using a 7-point Likert scale, ranging from "1 strongly disagree" to "7 strongly agree."

To ensure randomness in the sample, this study randomly selects customers who have previously made purchases at online supermarkets selling green products nationwide as the research participants. These supermarkets have a customer base that spans across various regions of China, ensuring a high level of representativeness and diversity.

A total of 500 questionnaires were distributed randomly via email over two weeks, resulting in 408 responses. After data cleaning, 299 valid surveys were retained, yielding a response rate of 58.8%. Details of the respondents are presented in Table 1.

Table 1. Summary of participants' profiles

Variable	Category	Percentage (%)
gender	male	41
	female	59
Age	18-30	73
	31-40	15
	41-50	7
	Above 50	5
education	senior high school (or under)	9
	university/college	79
	graduated school (or above)	12
annual purchasing frequency	1~3 times	38
	4~6 times	25
	7~9 times	6
	10 times above	31

N=299. Source: compiled by authors

## 2.2 The Measurement of the Constructs

This study uses a survey questionnaire to examine the hypotheses and test the proposed research framework. The consumer serves as the unit of analysis, with a focus on Chinese customers who have experience purchasing green products. The questionnaire design draws on established measurement scales from prior studies. Responses are recorded on a seven-point Likert scale, with 1 indicating strong disagreement and 7 indicating strong agreement. The research explores four primary constructs: green-washing, green consumer confusion, green perceived risk, and green perceived value, all of which are informed by previous scholarly findings. The detail is showed in table 2.

Table 2. The items used for measurements of the constructs

Items		References
Greenwashing (GW)		Chen & Chang (2012); Tarabieh (2021); Chen et al. (2022)
GW1	This advertisement uses misleading phrasing to enhance its perceived eco-friendliness.	
GW2	The visual elements in this advertisement create a distorted impression of environmental benefits.	
GW3	The green claim presented in this advertisement appears vague or lacks verification.	
GW4	This advertisement exaggerates the scope and impact of its sustainability features.	
GW5	Important information is omitted in this advertisement, making its environmental claims seem overly favorable.	
Green consumer confusion (GCC)		Chen & Chan (2012); Tarabieh (2021)
GC1	The eco-friendly aspects of this item are challenging to recognize.	
GC2	It is not easy to understand the differences in environmental attributes between these goods.	
GC3	I find it difficult to decide which sustainable product to purchase.	
Green perceived risk (GPR)		Chen & Chan (2012); Tarabieh (2021)
GPR1	Choosing this item might expose me to environmental fines or consequences.	
GPR2	Utilizing this commodity could negatively affect the environment.	
GPR3	This product's use might tarnish my eco-friendly reputation.	
Green perceived value (GPV)		Chen et al. (2022)
GPV1	I chose this product because it demonstrates greater ecological awareness compared to others.	
GPV2	I opted for this product due to its eco-friendly nature.	
GPV3	I decided to buy this product as it offers superior environmental advantages over similar items.	

Source: compiled by authors

### 3. Empirical Results

This research utilizes Structural Equation Modeling (SEM), executed using AMOS 28, to rigorously test and validate the proposed hypotheses and conceptual framework. The analysis is conducted in two distinct phases. In the first phase, the focus is on evaluating the measurement model to ensure the constructs are both reliable and valid. This involves assessing aspects like internal consistency, convergent validity, and discriminant validity to confirm that the measurement instruments accurately capture the intended theoretical constructs. In the second phase, the structural model is tested to explore the relationships among the constructs. This involves analyzing the significance, strength of the hypothesized direct, indirect, and total effects, robust test, and heterogeneity test. Detailed findings for both phases, including fit indices, path coefficients, and their theoretical and practical implications, will be presented in the following discussion.

#### 3.1 The Results of the Measurement Model

Table 3 demonstrates that for each construct, the square root of its average variance extracted surpasses its correlations with other constructs, aligning with the recommendations of Hair et al. (2010). This result reinforces the discriminant validity of the constructs, ensuring that each construct measures a distinct concept. Moreover, all inter-construct correlations remain below the widely accepted threshold of 0.85, further confirming the robustness of the measurement model in distinguishing between different latent variables (Kline, 2015).

In addition to affirming the distinctiveness of the constructs, Table 3 offers descriptive statistics that provide a more nuanced understanding of consumer perceptions. Notably, green perceived risk demonstrates the lowest mean, suggesting that, on average, consumers do not associate significant risks with green products. In contrast, green perceived value exhibits the highest mean, indicating that consumers generally recognize substantial benefits in purchasing environmentally friendly products. This phenomenon can be examined through the lens of

information over-load theory, which posits that an overwhelming volume of ambiguous or excessive green marketing claims can exceed consumers' cognitive processing capacity, making it challenging for them to critically evaluate product attributes (Hung & Chang, 2024). This information overload induces decision fatigue and cognitive strain, as outlined in bounded rationality theory, which asserts that individuals, facing such cognitive limitations, tend to rely on mental shortcuts and heuristics to simplify decision-making (Bartucz et al., 2025). In this context, the interplay between green-washing-induced information overload and consumer judgment leads to a distortion in the perception of green products. Specifically, the perceived value of green products is often amplified, overshadowing any perceived risks.

Table 3. Descriptive Statistics and Discriminant Validity

	Mean	Std.ed	GW	GCC	GPR	GPV
Greenwashing (GW)	3.964	1.458	<b>0.817</b>			
Green consumer confusion (GCC)	4.454	1.419	0.725	<b>0.802</b>		
Green perceived risk (GPR)	3.079	1.365	0.433	0.314	<b>0.776</b>	
Green perceived value (GPV)	5.219	1.232	-0.200	0.013	-0.127	<b>0.832</b>

Note: Diagonals represent the square root of the average variance extracted while the other entries represent the square correlation. Source: compiled by authors

The observed variability in responses reveals that the perceived value of green initiatives exhibits the smallest standard deviation, indicating a relatively uniform perception among respondents. In contrast, the standard deviation for greenwashing is notably larger, suggesting a significant divergence in consumer opinions regarding corporate greenwashing practices. This discrepancy likely reflects differences in consumer awareness and skepticism towards environmental marketing claims, with some individuals being more discerning of the authenticity of such claims than others. From a managerial standpoint, these findings highlight the critical importance for firms to establish and maintain credibility in their sustainability efforts. The inconsistency in consumer perceptions of greenwashing poses a potential risk to consumer trust, which could undermine the effectiveness of environmental marketing strategies. Therefore, it is imperative for companies to adopt transparent, substantiated, and verifiable environmental claims in order to mitigate skepticism, build credibility, and ultimately foster long-term customer loyalty.

Table 4. Internal Reliability and Convergent Validity

Constructs	Items	$\lambda$	Cronbach's $\alpha$	AVE	CR
Greenwashing (GW)	GW1	0.685***	0.907	0.667	0.909
	GW2	0.809***			
	GW3	0.870***			
	GW4	0.875***			
	GW5	0.830***			
Green consumer confusion (GCC)	GC1	0.835***	0.840	0.644	0.844
	GC2	0.859***			
	GC3	0.705***			
Green perceived risk (GPR)	GPR1	0.668***	0.812	0.602	0.818
	GPR2	0.844***			
	GPR3	0.805***			
Green perceived value (GPV)	GPV1	0.743***	0.866	0.692	0.870
	GPV2	0.906***			
	GPV3	0.839***			

Note. \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ . Source: compiled by authors

To evaluate the reliability of the measurement model, multiple approaches were employed. First, the individual item loadings ( $\lambda$ ) for each construct, as presented in Table 4, were found to be statistically significant, underscoring the strength of the measurement model. The composite reliability (CR) values, which reflect the consistency of the indicators within each construct, ranged from 0.818 to 0.909, surpassing the established

threshold of 0.6 (Hair et al., 2006; Shrestha, 2021). This indicates a high level of internal consistency across all constructs. In addition, the Cronbach's alpha ( $\alpha$ ) values for the constructs were as follows: "greenwashing" (0.907), "green consumer confusion" (0.840), "green perceived risk" (0.812), and "green perceived value" (0.866), all exceeding the commonly accepted minimum of 0.7 (Hair et al., 2006). These findings reinforce the reliability of the constructs.

Furthermore, the validity of the measurement model was rigorously assessed by examining discriminant validity through the average variance extracted (AVE) method, as recommended by Fornell and Larcker (1981). AVE quantifies the proportion of variance a construct accounts for relative to its measurement error, with a value greater than 0.5 signifying adequate convergent validity (Hair et al., 2006). As presented in Table 4, the AVE values for the four constructs - 0.667, 0.644, 0.602, and 0.692 - exceeded this threshold, further validating the convergent validity of the model.

Taken together, these comprehensive reliability and validity assessments confirm that the measurement model employed in this study not only meets but exceeds the recommended standards, making it both robust and well-suited for the intended analysis.

### 3.2 The Results of the Structural Model

Table 5 presents the hypothesis testing results, indicating that four of the five proposed hypotheses (H1, H2, H3, and H4) are supported, with path coefficients aligning with theoretical predictions. The findings demonstrate that greenwashing has a significant positive effect on consumer confusion (H1), which, in turn, enhances green perceived value (H2). This suggests that while greenwashing may mislead consumers, it can also inadvertently create an illusion of environmental commitment, thereby increasing the perceived value of green products. Moreover, greenwashing is negatively associated with green perceived value (H3), indicating that once consumers recognize deceptive sustainability claims, their evaluation of a product's actual environmental value declines. Additionally, greenwashing exhibits a positive relationship with green perceived risk (H4), suggesting that misleading environmental claims heighten consumer skepticism and concerns regarding the authenticity of a brand's sustainability efforts. These findings highlight the dual effects of greenwashing: while it reinforces perceived value through confusion, it simultaneously undermines consumer trust and increases perceived risk, which may have long-term negative implications for brand credibility.

Table 5. The results of the structural model

Hypothesis	Proposed effect	Path coefficient	Results
H1	+	0.744***	supported
H2	+	0.257**	supported
H3	-	-0.333***	supported
H4	+	0.403***	supported
H5	-	-0.043	not supported

Note. \*p < 0.05. \*\*p < 0.01. \*\*\*p < 0.001. Source: compiled by authors

Conversely, H5, which posits a negative association between green perceived risk and green perceived value, is not supported, as its path coefficient fails to reach statistical significance. This suggests that the relationship between perceived risk and perceived value may be more complex than initially theorized, potentially influenced by moderating factors such as consumer trust, environmental awareness, and brand reputation. It is possible that consumers with strong trust in a brand may discount the negative effects of perceived risk, thereby weakening the expected relationship. Alternatively, consumers who are highly committed to sustainability may be willing to tolerate a certain level of perceived risk if they believe a product aligns with their environmental values. The lack of empirical support for H5 underscores the nuanced nature of consumer perceptions in the green marketplace and highlights the need for further research to explore the conditions under which green perceived risk influences perceived value. Future studies could investigate potential mediating or moderating mechanisms that shape this relationship, offering a more comprehensive understanding of how consumers evaluate green products in the presence of perceived risk.

### 3.3 Mediation Effect

To investigate the effects of greenwashing (GW) on green perceived value (GPV) through green consumer confusion (GC) and green perceived risk (GPR), we conducted a bias-corrected bootstrapping analysis with 2,000 bootstrap samples at a 95% confidence interval. The results, summarized in Table 6, reveal significant and nuanced findings. Specifically, green consumer confusion (GC) demonstrates a significant mediating effect in the relationship between greenwashing and green perceived value, as indicated by the indirect effect estimate of 0.187 ( $p = 0.003$ ) with a confidence interval [0.083, 0.281], which does not cross zero. This suggests that green consumer confusion partially mediates the impact of greenwashing on green perceived value. This finding aligns with the theoretical mechanism that greenwashing, by contributing to information overload, induces consumer confusion. Given consumers' bounded rationality and cognitive biases, they may find it challenging to process and differentiate genuine environmental claims from misleading ones, leading to an inflated perception of green product value in the short term. However, in the long run, once consumers recognize the deceptive nature of greenwashing, their perceived value of green products is likely to decline, reinforcing the detrimental impact of misleading sustainability claims on consumer trust and brand credibility.

Table 6. Bootstrap mediation effects

	Estimate	P	BootLLCI	BootULCI
Indirect effect				
GW-GC-GPV	0.187	0.003**	0.083	0.281
GW-GPR-GPV	-0.015	0.659	-0.065	0.033
Indirect effect				
GW-GPV	-0.333	0.001***	-0.472	-0.173

Note. \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ . Source: compiled by authors

In contrast, green perceived risk (GPR) does not exhibit a significant mediating effect in the same relationship. The indirect effect estimate for the GW-GPR-GPV pathway is -0.015 ( $p = 0.659$ ) with a confidence interval [-0.065, 0.033], which includes zero, indicating the absence of mediation. This finding is consistent with the theoretical frame-work, suggesting that while greenwashing increases consumer perceived risk, the relationship between perceived risk and value perception is more nuanced and contingent upon various moderating factors, such as consumer trust, environmental awareness, and brand reputation. Specifically, consumers who place high trust in a brand may downplay the perceived risk, thereby reducing its impact on their evaluation of the product's value. This complexity in the relationship underscores the absence of a significant mediating effect of perceived risk, highlighting the need for further empirical investigation into the contextual factors that govern how perceived risk influences consumers' valuation of green products.

### 3.4 Robust Test

To ensure the robustness of the empirical results, this study conducts several tests by goodness of fit indicators and deleting insignificant paths.

Table 7 presents the goodness-of-fit indices for the structural equation model, providing a thorough evaluation of both the model's alignment with the empirical data and the robustness of the experimental results. The overall fit indices suggest that the model demonstrates an adequate fit. Specifically, the Goodness-of-Fit Index (GFI) is 0.920, surpassing the commonly accepted threshold of 0.90, which implies that the model captures the relationships between the variables effectively. The Root Mean Square Error of Approximation (RMSEA) is 0.072, remaining below the conventional cut-off of 0.08, which indicates that the model provides a reasonable approximation of the population covariance matrix.

The chi-square to degrees of freedom ratio ( $\chi^2/df$ ) is 2.542, falling within the recommended range of less than 3.0, suggesting that the model strikes an appropriate balance between complexity and fit. Furthermore, the Comparative Fit Index (CFI) is 0.954, exceeding the benchmark of 0.90, reinforcing the adequacy of the model fit. Taken together, these indices demonstrate that the proposed structural model offers a robust and reliable representation of the hypothesized relationships.

Table 7. Goodness of Fit

Model	CMIN	df	p-value	$\chi^2/df \leq 3.00$	GFI $\geq 0.90$	AGFI $\geq 0.90$	CFI $\geq 0.90$	TLI $\geq 0.90$	IFI $\geq 0.90$	RMSEA $\leq 0.08$
Measurement	183.036	72	0.000	2.542	0.920	0.884	0.954	0.942	0.955	0.072

Note. GFI = Goodness-Of-Fit statistic; AGFI = Adjusted Goodness-Of-Fit statistic; CFI = comparative fit index; TLI = Tucker-Lewis index; IFI = Incremental Fit Index; RMSEA = Root Mean Square Error of Approximation. Source: compiled by authors

Table 8. The results of the structural model

Hypothesis	Proposed effect	Path coefficient	Results
H1	+	0.744***	supported
H2	+	0.259**	supported
H3	-	-0.353***	supported
H4	+	0.403***	supported

Note. \*p < 0.05. \*\*p < 0.01. \*\*\*p < 0.001. Source: compiled by authors

Table 8 presents the refined structural model results after eliminating non-significant paths. The retained paths remain statistically significant, with H1 ( $\beta = 0.744$ ,  $p < 0.001$ ), H2 ( $\beta = 0.259$ ,  $p < 0.01$ ), H3 ( $\beta = -0.353$ ,  $p < 0.001$ ), and H4 ( $\beta = 0.403$ ,  $p < 0.001$ ), all of which align with theoretical expectations and show no significant differences from the results in table 5. By removing paths that lack statistical support, the model achieves greater simplicity while reinforcing the validity of the observed relationships. This refinement not only strengthens the reliability of the findings but also offers a more precise depiction of the underlying mechanisms, ensuring that the conclusions drawn are both theoretically and empirically robust.

### 3.5 Further Discussion

To examine the moderating effect of demographic characteristics on the relation-ship between greenwashing and green perceived value, we segment the sample based on gender (male and female) and age (individuals under 40 and those over 40) in Table 9.

Table 9. The results of the structural model

	Subgroup	Proposed effect	Path coefficient	Results
GW- GPV	(1) Female	-	-0.328***	supported
	Male	-	-0.374*	supported
	(2) Young people under 40	-	-0.358***	supported
	People aged over 40	-	-0.301	not supported

Note. \*p < 0.05. \*\*p < 0.01. \*\*\*p < 0.001. Source: compiled by authors

The heterogeneity test for group (1) in table 9 shows that the negative impact of greenwashing on green perceived value is significant in both gender groups, but the degree of impact varies. Specifically, the path coefficient of greenwashing on female consumers is -0.328, lower than the -0.374 for male consumers, with both coefficients being significantly negative. This suggests that when both male and female consumers perceive

greenwashing behaviors by a company, their perception of the company's green value decreases significantly. However, the path coefficient for the male group (0.374) is slightly higher than that for females (0.328), indicating that male consumers may be more sensitive to the negative effects of greenwashing. This gender difference can be explained through the affective-cognitive model of decision making. According to the affective-cognitive model of decision making, consumers' decision-making processes are driven by both rational analysis and emotional responses (Cristofaro et al., 2022). Research indicates that men tend to adopt a more rational and analytical approach in their consumption decisions, focusing on product authenticity and consistency. When a brand engages in greenwashing, male consumers are more likely to quickly identify false or exaggerated environmental claims through cognitive evaluation. This inconsistency in information typically triggers negative emotional reactions, leading to a significant decrease in their perceived green value of the brand (Pilcher & Smith, 2024). In contrast, women are more likely to rely on emotional drivers when making decisions, placing greater emphasis on brand image and social responsibility rather than purely rational analysis. As a result, they are less sensitive to greenwashing and may be more influenced by emotional identification with the brand rather than a strict evaluation of information consistency (Pilcher & Smith, 2024).

The heterogeneity test for group (2) in Table 9 shows that the negative impact of greenwashing on green perceived value is significant in both age groups, but the degree of impact varies. Specifically, the path coefficient of greenwashing for young consumers under 40 is -0.358, which is higher than 0.301 for consumers aged over 40, with both coefficients being significantly negative. This suggests that when both groups perceive a company's greenwashing behavior, their perception of the company's green value declines significantly. However, the higher path coefficient for the younger consumer group indicates that they may be more sensitive to the negative effects of greenwashing. This age-based difference in sensitivity can be explained through information processing theory, which posits that individuals differ in how they process and evaluate information (Swanson, 1987). Younger consumers, who have grown up in a digitalized information environment, tend to engage in more systematic and critical processing of marketing claims. Their higher familiarity with digital platforms and exposure to diverse sources of information enable them to scrutinize corporate environmental claims more rigorously (Li, 2021). Consequently, when they detect inconsistencies between a brand's green marketing and its actual practices, they are more likely to perceive greenwashing and react negatively, leading to a greater decline in green perceived value. In contrast, older consumers are more inclined toward heuristic, relying on established brand reputation and long-term trust rather than actively verifying specific environmental claims (Wickens & Carswell, 2021). As a result, while they still experience a decrease in green perceived value when exposed to greenwashing, the magnitude of their reaction is relatively smaller compared to younger consumers.

## Conclusions and Implications

This study investigates the effect mechanism of greenwashing on consumer perceptions, specifically focusing on green perceived value, consumer confusion, and green perceived risk, with particular attention given to the mediating mechanism of consumer confusion and green perceived risk. The results show that greenwashing substantially erodes green perceived value. A notable contribution of this research is the identification of consumer confusion as a critical mediator, amplifying the negative effects of greenwashing by causing consumers to make irrational purchase choices. However, green perceived risk does not serve as a mediator in this context. This finding suggests that there may be cognitive biases and other unexplored factors influencing the relationship between green perceived risk and green perceived value, offering potential directions for future research in green marketing. The study highlights the importance for businesses to implement transparent and authentic green marketing strategies to protect perceived value. Additionally, it provides valuable insights into the complex relationship between green perceived risk and consumer evaluations, offering practical guidance for developing sustainable and effective marketing strategies.

From the perspective of literature contributions, this study offers three key insights:

First, it enhances our understanding of the mediating mechanism that consumer confusion plays in the relationship between greenwashing and green perceived value. While previous research has extensively discussed the negative impacts of greenwashing, this study is the first to validate the mediating role that consumer confusion plays in the relationship between greenwashing and green perceived value. By empirically testing the mediating role of consumer confusion, this research sheds light on how misleading environmental claims create confusion, which in turn reduces consumers' perceived value of green products.

Second, this study contributes by examining the role of green perceived risk as a mediator in the greenwashing-green perceived value relationship, an area that has been less explored in prior research. The findings suggest that green perceived risk - representing consumers' concerns about the authenticity and

effectiveness of green claims - magnifies the negative consequences of greenwashing. By incorporating this factor into the analysis, the study offers a deeper understanding of how deceptive environmental marketing not only leads to confusion but also heightens perceptions of risk, further eroding trust in green products.

Third, the novel aspect of this research lies in its integrative approach, considering both consumer confusion and green perceived risk as dual mediators in the green-washing-green perceived value relationship. This dual-mediation approach provides a more holistic view of the psychological processes that influence consumer perceptions of green products. By exploring the interaction between confusion and perceived risk, the study contributes to the literature by offering a more detailed understanding of the compounded effects of greenwashing on consumer decision-making.

From the perspective of practical contributions, this study offers two key insights:

First, it demonstrates that greenwashing not only increases green consumer confusion and green perceived risk but also decreases green perceived value. To enhance consumers' green perceived value, companies should focus on reducing greenwashing, consumer confusion, and perceived risk associated with their products.

Second, for policymakers, it is crucial to recognize that companies may exploit consumer cognitive biases through greenwashing to artificially boost green perceived value. This manipulation can mislead consumers into making purchasing decisions that do not accurately reflect the true environmental impact of the products. To address this, policymakers should implement measures to combat greenwashing, ensuring that companies provide transparent and truthful environmental claims. This would empower consumers to make informed, responsible choices based on accurate information.

The study has three primary limitations. First, the research sample is limited to Chinese consumers, and the findings reflect the context of developing countries. As a result, the conclusions may not be directly applicable to developed countries. Future research could expand the sample to include consumers from developed nations for comparative analysis. Second, the impact of green perceived risk on green perceived value was found to be insignificant, and green perceived risk did not mediate the relationship between greenwashing and green perceived value. This suggests that future studies should explore this relationship further. Third, another potential avenue for future research is to extend the study to other areas, such as exploring potential mediators or moderators within the framework, including factors like culture or green advertising.

### Credit Authorship Contribution Statement

**Yaru Liang:** conceptualization, methodology, software, writing - original draft preparation, supervision.

**Cheng Cheng:** conceptualization, software, writing - review and editing, supervision.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Declaration of Use of Generative AI and AI-Assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

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## **Sustainable Ecotourism Communication Framework Based on Social and Cultural Capital to Build Community Engagement in Ecotourism Practices Rutong Tourism Village, Indonesia**

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**Abstract:** Rutong Tourism Village in Ambon has rich cultural and natural tourism potential, but its management is traditional and pays little attention to sustainable ecotourism. Sustainability communication practices, which leverage social and cultural capital, are essential to building community involvement in sustainable ecotourism in Rutong tourism village. This research will examine community and culture-based sustainable tourism communications to build involvement in sustainable ecotourism practices in Rutong village. The study uses qualitative methods to analyze community-based and culturally sustainable tourism communication in Rutong. The results of the study show that Rutong tourist village development is based on customary and traditional values, with community participation through social networks, trust and cooperation. Traditional values are guidelines in community life and tourism development, such as the Sasi traditional system of managing seas and forests implementation of Saniri for joint decision-making. Masohi's value is to build togetherness and cooperation. Tourist activities showcase Rutong cultural authenticity, starting from staying in a homestay, traditional welcoming, cultural attractions in dance, music, and games, traditional sago processing, and traditional food and drink preparations. Sustainability efforts are carried out through community-based waste management, environmental education, Integrating environmental education into the school curriculum, alternative energy development, plastic reduction campaigns, and tumbler use. Communication is carried out in an informative, transparent, and persuasive manner through dialogue, training, awards, and cooperation with NGOs and universities. This Communication is effective in creating community awareness and participation in sustainable tourism development.

**Keywords:** sustainability communication; ecotourism; social capital; cultural capital; community involvement.

**JEL Classification:** Q01; Z32; R11.

### **Introduction**

Developing tourist villages according to tourism objectives in Law No. 10 of 2009 concerning tourism aims to increase economic growth and people's welfare, eradicate poverty, and overcome unemployment. Preserving nature, the environment, resources, and advancing culture. Encouraging social, cultural, and economic transformation of villages. Each region develops its potential to provide benefits and increase community

productivity (Badan Pariwisata dan Ekonomi Kreatif, Rencana Strategis Kementerian Pariwisata dan Ekonomi Kreatif, 2020). A healthy and strong village economy will be achieved if public awareness grows to develop their village. Villages as a base for tourism must be made into good and attractive tourist destinations.

Rutong Village offers natural tourism in the form of white sandy beaches with pebbles, clear water with coral reefs inhabited by various types of marine biota, hills, and mountains with sago and fruit trees, food, and horticultural gardens. Rutong tourist village develops sago forest ecotourism (Leitimur Selatan Ambon Pemerintah Negeri Rutong, 2023). The obstacle to developing tourist villages is the lack of coordination between stakeholders. Communication determines the success of developing tourist destinations. Tourism communication requires an active role from the community (Yasir 2021).

Community support is important in developing the tourism industry. Communities supported by leadership, innovation, and social capital are important in building smart tourist destinations (Boes 2016). The community is a mayor stakeholder in sustainable tourism development (Lundberg 2017). The development of tourism communication must be based on local culture and wisdom supported by environmental conservation and sustainable development (Bakti *et al.* 2018). Local wisdom provides an alternative in choosing destinations that tourists will visit (Nugraha *et al.* 2017).

Tourist villages must be developed through innovative communication to win the hearts of tourists because tourist demand is increasingly varied from year to year (Genç, E.A. & Genç, R. 2017). The new trends for tourists today are tourism and the creative industry. Sustainable tourism communication is needed in the development of cultural tourism destinations (Swift 2024). Sustainable communication involves the dissemination of information and strategic actions related to sustainability, goals, initiatives, and performance of tourist destination (Purvis & Mao 2019, Tiago *et al.* 2021).

The development of culture and community-based tourism still experiences obstacles, including inadequate infrastructure and unskilled tourism workforce, limited capital, and conflict within the community (Wang *et al.* 2009). Coordination between stakeholders such as government, managers, and communities is weak (Sumarjiyanto 2020). Building a sustainable tourism communication model based on community and local knowledge is important to develop tourist villages. Research that has been widely studied is community-based tourism communication (Widaningsih & Diana 2020), local wisdom (Rahayunianto *et al.* 2019), and culture (Murtiningsih & Putranto 2019). Development of tourism based on local knowledge (Tanjung & Tanjung 2021). Tourism communication and the development of ecotourism (Bogren and Sörensson 2021). This research will examine sustainable tourism communication based on social and cultural capital to build community engagement in Ecotourism practices in Rutong Tourism Village, Ambon, Maluku.

## 1. Literature Review

Sustainable development aims to ensure that the benefits of natural resources are maintained so that future generations do not face scarcity and extinction of natural resources. An important principle for achieving sustainability goals is to integrate three pillars, namely economic, social, and environmental (Purvis 2019). The tourism development that has been carried out has increased the number of tourist arrivals. Local communities will react according to their ability to adapt in the economic, social, and cultural fields (Pitana and Diarta 2019).

Sustainable development includes three pillars that mutually support each other, namely improving the economic welfare of the surrounding community, and maintaining the sustainability of the social and cultural life of the community. Maintaining the sustainability of the community's environment (Erviyanto 2019). Sustainable tourism development is not only ecological and economic but also culturally sustainable because culture is an important resource in tourism development (Suwena 2010). The sustainable tourism model integrates the physical environment (place), cultural environment (host community), and tourists (visitors) (Burn & Holden 1997).

Sustainable tourism must be formed based on three dimensions to be long-term sustainable: utilizing environmental resources. Respect the socio-cultural and host community authenticity. Provides long-term economic benefits. Environmental aspects are highly prioritized and are an important pillar of sustainable tourism (Gunawan and Ortis 2012).

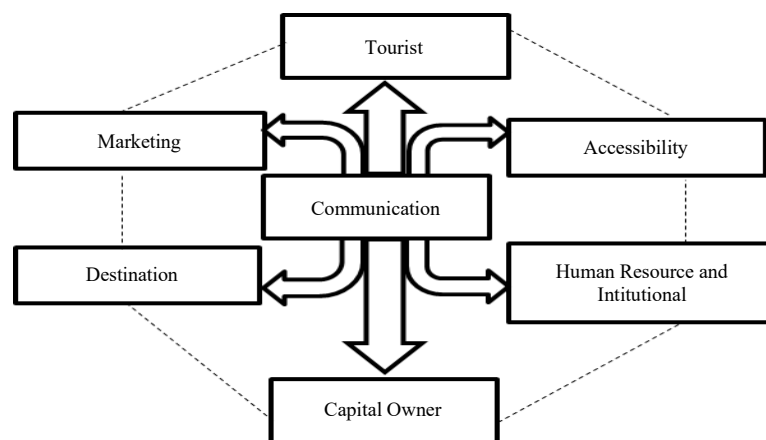
**Social capital** is a way that society is structured which is characterized by networks, norms, and social trust that facilitate coordination and cooperation to achieve certain goals (Putnam 2000). Social capital refers to the characteristics of social organizations such as networks, norms, and trust that facilitate coordination and performance for mutual benefit. Social capital is a capability that arises from general beliefs or certain parts of a society and can be institutionalized within social groups. Important concepts in social capital (1) values and norms as the background for the formation of trust. (2) trust which functions as a tool to measure social capital. (3) social

networks which function to create trust through interaction and sharing information among members of community groups (Fukuyama 1996).

**Cultural capital** includes knowledge, values, norms, customs, language, and local traditions that are shared by society or embedded in the community. Cultural capital can be a unique attraction for tourists such as cultural heritage, local wisdom, traditions, and art. Cultural tourism is the traditions and culture passed down from generation to generation and are marketed to tourists (Smith 2012). Cultural tourism focuses on cultural identity heritage whose uniqueness is sold to tourists (Smith & Robinson 2006).

**Tourism communication** is the process of sending or transferring meaning from the sender to the receiver, which occurs when carrying out tourism activities. There are seven components of tourism communication, namely communication, tourists, marketing, accessibility, destinations, capital owners, and institutional Human Resources (HR). Tourism communication can be interpreted as the exchange of messages and meanings carried out by institutions with capital owners, managers, and tourist awareness groups in marketing destinations to tourists.

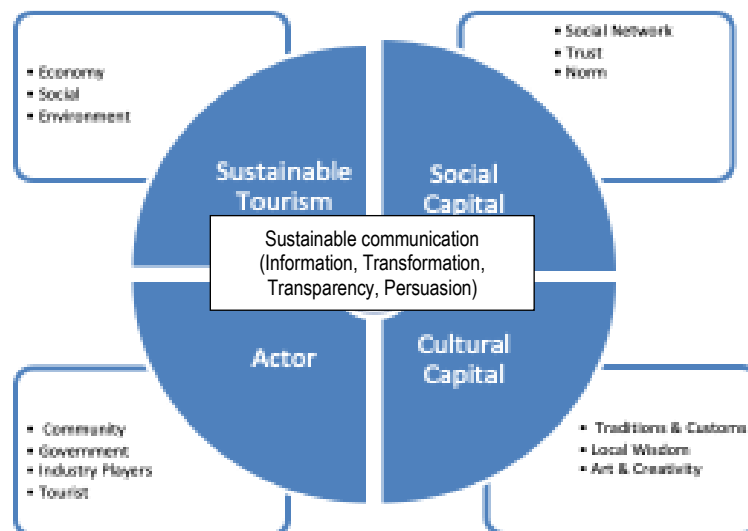
Figure 1. Tourism Communication Components



Source: Bungin 2015

Ecotourism is sustainable nature-based tourism with a focus on experiences and education about nature, managed with a certain management system and has the lowest negative impact on the environment, is non-consumptive and locally oriented. The community can take control and benefit from tourism business activities. Sustainable tourism focuses on helping increase understanding, appreciation, and conservation of the environment and culture (Moore and Drumm 2005).

Figure 2. Framework of Thought



**Sustainability communication** encompasses a variety of communication media, ranging from formal sustainability reports and environmental, social, and governance communications to social media messages that

emphasize clear objectives regarding sustainability commitments and social engagement (Swift 2023). Sustainability communication helps tourism managers with the proactive steps they are taking. Dispel prejudices and myths, clarify environmental claims, and help achieve sustainable development goals. An analysis of research related to sustainable communication, identifying sustainability communication (SC), namely the transmission of information about sustainability, deliberative communication, and critical transformation. Openness of information, honest and non-misleading communication, and persuasive communication (Golob, Podnar and Zabkar 2023).

The research is based on the idea that building sustainable tourism (Purvis & Mao 2019) based on social capital (Fukuyama 2012) and cultural capital (Smith 1989) to encourage community participation (Bungin 2017) can be done through sustainable tourism communication (Golob, Podnar, and Zabkar 2023).

## 2. Research Method

This research uses qualitative methods. Qualitative research is naturalistic research because the research is carried out in natural conditions. The implementation of research occurs naturally, as it is, in normal situations, without being manipulated by circumstances and conditions, emphasizing natural descriptions (Creswell 2018). Research is carried out by exploring and photographing social situations in a comprehensive, broad, and in-depth manner. Data analysis is carried out to organize, sort, group, code mark, and categorize so that findings are obtained based on the focus and research problems. Data analysis was carried out with stages of data reduction, data presentation, data collection, verification, and conclusions.

## 3. Studies

Research by collecting and studying various to compile a research proposal. Continued by compiling research instruments including observation forms, FGD instruments, coding tables, and various forms for data recording and interview guidance. Determining informants involved in the development of Rutong tourism village. Consisting of various elements including local government, tourism office, tourism village managers, village communities, cultural actors and business actors, and tourism. Collecting data by observation, interviewing the head of the tourism office and secretary of the Ambon tourism office, the king of Rutong village, the head of tourism, the village secretary, village manager, homestay managers, tourism awareness group, education and family welfare group, and youth group leaders. Conducting FGDs with various elements of village government, tourism village managers, students, academics, and the community.

The result of data collection conducted by interview, FGD, audio, and video recordings are made in the form of transcripts. In the form of text. Then content analysis is carried out, to analyse the text and identify patterns and themes. The steps taken are to code each part of the data to facilitate analysis. Data is selected that is relevant and summarizes complex data. Then coding with keywords. Dodes are grouped into categories. Data is visualized in table form. The data found is presented by creating a descriptive narrative and providing an interpretation that describes the themes that emerge from the data. Discussion of data findings with research questions and theoretical frameworks. Ensuring validity and reliability is done with data triangulation.

## 4. Research Results

Rutong Village is a traditional village located in South Leitimur District, Ambon City.

Figure 3. Rutong Village



Foundation for developing a country and society based on love. Three pillars of development in Rutong Village, namely traditional customs, religion, social life, and technology. Three pillars of social and cultural capital are used as the basis of ecotourism practices. Rutong Village's vision is to become a Village and Society that is a blessing to others. The mission is to carry out the physical, mental, and spiritual development of the community. The strategy for development is to empower the country's children to be *Masohi*.

#### 4.1. Social Capital for Sustainable Tourism Development

Social network development was carried out, including establishing a Joint Business Group (JBG). JBG consists of several individuals who work together to achieve common goals. This group is related to agricultural activities such as sago farmers, fisheries, and other small businesses. JBG was formed to strengthen community solidarity. Profit sharing is arranged to avoid conflict.

The development of women's networks is carried out through Family Welfare Education (FEW) and several groups. The group was formed to empower women. FEW and the Rutong state government collaborate to create prosperity in the main program, "Family Resilience". Through the family, a society that is faithful, responsible, and full of love will be created and become a channel of blessings for others.

Youth group called Jojaro Mongare. Plays a role in promoting tourism by creating creative content in the form of short videos and photos to promote the natural beauty and culture of Rutong. Participation in various tourism activities and events to introduce the Rutong tourist village. Creating new tour package developments by creating unique and attractive tour packages. Get involved in campaigns to preserve the environment, such as reducing the use of plastic by bringing tumblers. Conduct cultural arts training such as dance, singing, and games and make it a tourist attraction.

Sago forest management is carried out by groups of sago farmers, carried out through cooperation. The process starts from planting, and crop rotation with other crops. Prune regularly to stimulate shoot growth. The traditional harvesting technique uses a traditional tool called a Nani or Pangkur tool. In principle, sago processing is carried out using a conservative or traditional pattern.

Sago forests are considered shared property of all village communities. The customary system used in managing sago forests is sasi. Sasi is a prohibition or limitation on the use of forest resources. Sasi aims to preserve the sago forest. Increasing productivity, preserving biodiversity and strengthening social values, strengthening the values of cooperation and community concern for the environment.

A group of craftsmen or sago processors was formed. Then this group was developed into a micro, small, and medium enterprise (MSME) group. The Rutong government is a catalyst in improving the economy of sago craftsmen by providing support through training programs, access to capital, and product promotion. Government support can improve the quality of sago products, production efficiency, and product diversification which can increase people's income and profitability.

Figure 4. Ecotourism Sagu



Tourism awareness groups (Pokdarwis) as the spearheads in tourism development at the village level. Pokdarwis play a role in maximizing local tourism potential and actively involving the community. Pokdarwis as community mobilizers and facilitators through community mobilization, training, and capacity development as well as community empowerment. Pokdarwis play a role in managing tourist destinations through destination maintenance by maintaining the cleanliness and beauty of the destination as well as preserving nature and culture. Pokdarwis plays a role in preserving the environment and culture by educating the community. Pokdarwis involve and empower village communities as a source of labor. Community involvement in tour guides, homestay

managers, sellers of typical Rutong food and drinks, providing transportation services, and making and selling souvenirs. Tourist attraction with dances, and music and is involved in tourist events and traditional ceremonies.

#### 4.2. Cultural Capital for Sustainable Tourism Development

Local culture is the main key to developing tourist villages. Uniqueness is one thing that attracts tourists to visit tourist villages by promising authentic and interesting experiences. Showing the authenticity of local culture is done through tourists' stay experience through homestays. The homestay location is in the middle of a tourist village making it easier for visitors to interact with residents—homestay manager for residents with a local food menu.

Through a local guide who can tell you the history and culture of Rutong Village. Holding cultural festivals such as traditional festivals, art performances, and cultural competitions. Develop cultural tourism such as history, religion, and culinary. The dance performances shown include the Tali dance and Katerji dance. These traditional dances are performed in school art performances. Opening traditional food cooking classes, holding weaving competitions, learning the process of making sago flour, and various other cultural activities. By showing its authenticity, Rutong is not only an attractive tourist destination but also one that maintains and preserves culture.

Figure 5. Musical Attraction



Welcoming guests traditionally with the Chicken Feather Cakalele dance. The welcoming continued with the giving of gandong cloth by Mama Mata Ina to take the guests to the traditional house accompanied by the singing of traditional songs. Elders welcome guests using traditional language and perform traditional rituals as a sign of introduction. Guests will be treated to traditional drinks as a sign that visitors are part of Rutong Village.

Figure 6. Guest Welcome Ceremony



The efforts made to preserve the environment are by conducting environmental education Carrying out waste processing, saving energy, and preserving nature. Integrating environmental education into the school curriculum. Campaigning to reduce the use of single-use plastic with the "bring your own tumbler" campaign. Create small gardens around the village using local plants. Organize a competition to make handicrafts from recycled materials. Holding regular beach and river clean-up activities every Saturday. Create environmentally friendly tracking routes. Developing alternative energy sources. Maintaining clean water resources is also done by regulating the flow of water to residents' homes.

Baileo is a traditional house used for Village activities in the form of the Saniri Besar Negeri, the King's Inauguration ceremony, and a place for deliberation for the Village community. Baileo has an emotional value, a symbol of community pride. Built by the people who are Soa children from Soa Makatita, Soa Maspaitella, Soa Lawalata, and Soa Talahatu. There is a value of togetherness in this Baileo.

Each Soa has a teong stone. Teong stone symbolizes each existing Soa and a gathering place for the people of each Soa when traditional activities are carried out. Each Soa highly respects Teong Stone and has sacred value for Soa children who will go abroad. The King's inauguration ceremony has an important value for society, recognition as a power respected by society, and is a symbol of the King being recognized and accepted by the Ancestors.

The decision-making system is carried out by Forum or Discussion through Saniri. Saniri is a people's representative body at the state level, whose task is to assist the king of the country in running the government and making important decisions concerning the interests of the community. Rutong has a Saniri, institutionally, in the government structure, Rutong village has a Village Consultative Body (VCB). The VCB plays an active role in drafting village regulations relating to tourism development in Rutong village. Apart from drafting regulations, the VCB also supervises the implementation of tourism activities and development in Rutong village. Saniri explained that the community was invited to consult in determining the direction of tourism development, the attractions to be offered, and the management of tourism products.

Sasi is a traditional natural resource management system. This system regulates the use of certain natural resources within a certain period for conservation purposes. Sasi is a traditional rule that is respected by the people of Rutong Village. Violations of sasi can bring social consequences such as fines, excommunication, and cancellation of rights. The spiritual sanction is in the form of a curse and a cleansing ceremony must be carried out. Customary legal sanctions include being removed from the village or losing one's social status. Sanctions given to violators are adjusted to the level of the violation committed. and decisions with the community.

#### 4.3. Sustainable Ecotourism Communication

Sustainable tourism communication requires the active participation of local communities in creating authentic and sustainable tourism narratives. Local communities have in-depth knowledge of the history, culture, and tourism potential of their area. Community involvement will make tourism promotions more authentic and attractive to tourists.

The #CintaNegeriRutong campaign is one of the tourism communications that involves the community to encourage people to create creative content about Rutong Village and share it on social media using the hashtag #LoveNegeriRutong. Holding an annual cultural festival involving the entire community.

The traditional media used is face-to-face such as deliberation to convey information and make joint decisions. Through Morinyo to convey decisions. The slap or gong is a traditional communication tool used to gather people or convey important messages via loudspeakers from churches or placed on tall trees. The language used is a regional language.

The modern media used is cell phones. Applications used are short messages (SMS), and instant applications such as WhatsApp, Telegram, and Line for personal and group communication. The social media used are Facebook, Instagram and TikTok. The digital platform developed by the Rutong tourist village is Rutong.id. Radio communication is an important source of information for the community. The village government uses village digital platforms, social media, social media Instagram, Facebook, TikTok, and YouTube, and the village website is used to promote the tourism potential of Rutong Village to domestic and foreign tourists. Promotion is carried out through printed brochures, pamphlets, and promotional videos.

A volunteer network was built with a spirit of togetherness and concern for the development of Rutong Village tourism. Activities carried out by volunteers are creating creative content, sharing interesting content, and participating in tourist events. Get involved in protecting the coastal ecosystem by planting mangroves and taking part in campaigns to protect the environment in the community.

The development of the Rutong tourist village impacts the physical landscape of the village and transformation occurs in changes in mindset and attitudes. People are increasingly becoming aware of the tourism potential their villages have, from natural beauty, and cultural riches to local products. There has been a shift in orientation from the traditional sector to the tourism sector. Socio-cultural changes occur with society becoming increasingly concerned about preserving nature and culture.

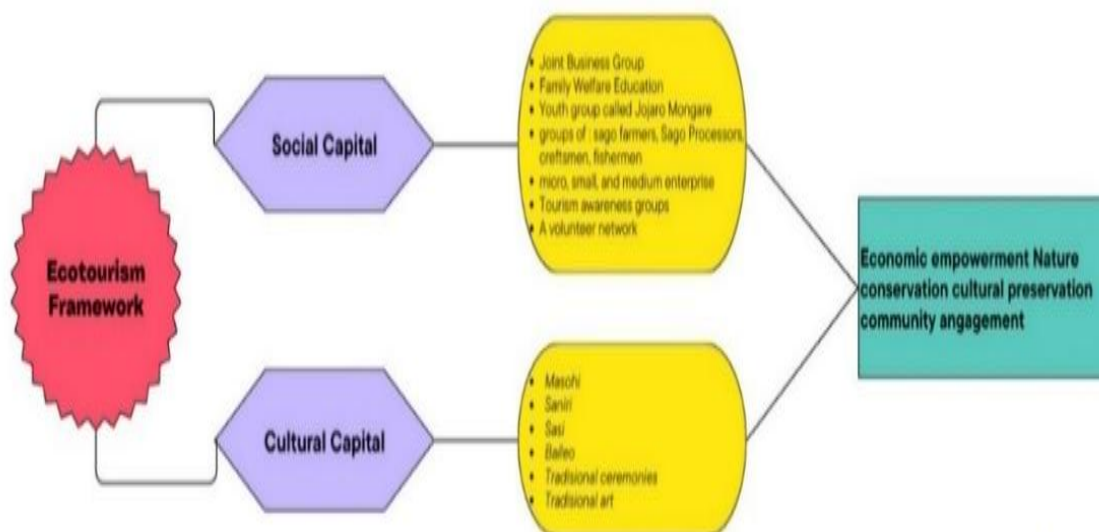
Financial management is carried out transparently. Financial reports are made in detail and can be understood by the public. Conduct regular financial audits to ensure good and accountable financial management. The funds obtained from tourism are used effectively following the stated objectives. Innovation is encouraged to develop new ideas in developing tourist villages. The distribution of benefits is carried out fairly and does not favor certain groups. The development of tourist villages can improve the economic and social welfare of the community.

Transparency is the key to success in tourism development. Community involvement and openness in Rutong village occur at every stage of development. The process of making important decisions must be taken through village deliberations and meetings of the entire community. The community participates actively and is allowed to provide input and suggestions in every decision-making. Transparency increases trust in village institutions and tourism village managers. Prevents corruption and abuse of authority, and the community participates more actively in the development of tourist villages. Improves the quality of tourism, management of tourist villages becomes better and more sustainable. Transparency is the foundation for building a successful and sustainable tourist village.

Persuasive communication is the main key to encouraging active community participation and can convince the public of the benefits of developing a tourist village. Persuasive communication is carried out through regular meetings. Information is conveyed in clear language using the local language. Communication channels other than meetings also utilize traditional and modern communication media. Traditional communication through Saniri, three-burner worship, and village meetings. Traditional media uses loudspeakers through churches, loudspeakers placed on trees, and community radio. Print media for banners, leaflets, and posters. Modern media such as social media, and websites.

Conduct comparative studies of other tourist villages and provide testimonials from village residents who have experienced the benefits of developing tourist villages. If a conflict occurs, immediately carry out mediation to find a joint solution. Involving community and religious leaders to resolve problems and build consensus. Persuasive communication aims to build consensus and create a shared understanding of the vision and mission of developing the tourist village. Encourage the community to be active in developing tourist villages. Changing people's perception of tourism from just a side activity to a promising economic opportunity. Strengthening the sense of togetherness and cooperation among the community. The research results can be briefly described as follows.

Figure 6. Results of research in Rutong Village



## 5. Discussions

The development of the Rutong Village is carried out based on three pillars, namely customary order, religion, social life, and technology. Three pillars help Rutong Village achieve prosperity for its people (Dumalang 2022). The three pillars are social and cultural capital in developing sustainable tourism. Social capital is developed through networks with the formation of Pokdarwis, MSME, sago farmer groups, and various other groups that support tourism development and improve the community's economy. Social capital can facilitate problem-solving and solutions as well as achieve common goals (Coleman 2021).

The life of the Rutong community is based on masochistic life and Christian religious values. Village development that adheres to the norms that apply in society can foster community trust (Field 2010). Community relations based on trust, networks, values, and norms make it easier to achieve goals (Vipriyanti 2011). The readiness of tourist villages to respond to changes in tourism activities needs to be encouraged by identifying problems in developing tourism potential (Verawati, Achsa and Novitaningtyas 2022). Optimizing tourism excellence is carried out by improving services through the cleanliness and beauty of the tourist environment (Bagus and Rujito 2019).

Tourism management is carried out using local culture and local wisdom. Natural resource management using sasi. Sasi is a controller of community behavior in preserving the environment (Karepesina, Susilo and Indrayani 2013). The application of sasi is appropriate as a means of managing natural resources, both land and sea. Traditional institutions have the authority to implement sasi. Saniri Negeri is a traditional institution that has the authority to make decisions and carry out supervision.

The head of the Soa is the leader or representative of a Soa whose function is to accommodate and channel the aspirations of the Soa he leads. Kewang is a representative of each Soa and has the function of state police because it has the duty and authority to guard and supervise the sasi area, prevent people from committing violations, and destroy natural resources. Marinyo has the task and authority to convey news from the king or traditional leaders and other institutions to the community. Information is conveyed both verbally and in writing. Sasi as local wisdom becomes capital and a model for environmental management and protection where the use of natural resources must pay attention to sustainability (Nurfani *et al.* 2021). The development of culture-based tourism has the potential to support sustainable tourism by promoting environmentally friendly activities and sustainable products (Prasetyo 2023). Sustainable tourism development in Rutong village is carried out to ensure the sustainability of natural and cultural resources as well as socio-economic sustainability. Sustainable tourism development has an impact on economic growth, environmental preservation, and natural resources as well as the social life of local communities (Meutia, Yulianti and Tryatmaja 2019).

Community-based tourism is more effective in developing small-scale tourist objects and attractions with community management and local entrepreneurs so that the social and cultural impact is small (Utami 2023). Sustainable tourism development indicates a commitment to maintaining natural harmony, preserving cultural wisdom, and developing the local economy in a balanced way (Hastuti *et al.* 2024). Sustainable tourism village development is needed to improve the performance of tourist villages and be able to compete with other tourist villages (Verawati and Suharnomo 2023). Sustainable tourism village development is carried out with professional management, determining destination excellence, good human resource management, involving the community, and collaboration between various stakeholders (Hutajulu and Verawati 2024). The application of sustainable tourism principles not only increases economic growth but also environmental sustainability and community welfare (Widiati 2022).

Development communication involves the role of all parties in tourism development. The aim is to improve the welfare of the community and society as tourism actors (Daud and Novrimansyah 2022). Collaboration is very important in the development of sustainable tourism, communication helps create dialogue and cooperation (Newig *et al.* 2018). Communication channels used in Rutong Village are mass media, social media, public campaigns, formal and informal education, and traditional media. Informative, attention-grabbing messages. accurate and easy to understand. The use of good communication channels can increase public awareness to take real action to protect the environment.

Communication plays a role in encouraging changes in people's values and behavior, increasing people's understanding of complex environmental issues. Forming sustainable habits so that they have a significant impact on environmental protection by saving energy, reducing water and plastic use, and processing waste. Mobilize joint action and encourage the community to participate in cleaning the environment, and planting trees. The application of sustainable communication in tourist villages can lead to positive changes in people's understanding and awareness regarding the concept of sustainable tourism (Juliana 2023). Effective

communication ensures that relevant and correct information is available for decision-making. Creative and innovative communication campaigns can encourage behavior change (Nasution 2024).

### Conclusions and Further Research

Rutong Village is one of the old villages in the city of Ambon. The customary system is implemented in the management of natural resources and other ecosystems. Customary systems are also used in managing local economic resources. Village governance is carried out using a three-hearth system, namely state government, church and educators, and Saniri institutions which color and shape the social system and characteristics of Rutong Village.

Social network development is carried out by establishing a Joint Business Group. Establishment of Family Welfare Education, Small Micro and Medium Enterprise Groups. Jojaro Mongare youth network, sago farmer groups, fishermen groups, sago craftsmen groups, tourism awareness groups, and other groups. Group formation fosters a spirit of togetherness, trust, and solidarity.

Traditional values are used as guidelines in the lives of the Rutong people. The Sasi customary system is used in marine and forest management. Masohi or the spirit of cooperation and innovation can encourage economic growth and preserve Rutong culture. The Saniri Institution, the Rutong King, and the village secretary regulate the running of the Rutong country government. Assisted by the head of Soa as a channel for Soa's aspirations. Kewang acts as a guard or policeman and Morinyo is a transmitter of information.

Tourist activities showcase the uniqueness of Rutong culture through the experience of staying at a homestay. The Baileo or traditional house carries out the traditional welcoming ceremony for guests. Traditional dances, songs, and games. Cultural events such as the inauguration of the King, Saniri, or State Conference, cultural festivals, and various events were created to attract tourists. Offering tourism by opening traditional food cooking classes, weaving competitions, learning to make sago flour, and various other cultural activities. Tourists can also get food, processed food, and traditional Rutong drinks which can be enjoyed in Rutong village or taken home as souvenirs.

Rutong Village makes various efforts to preserve the environment, by conducting environmental education, and outreach to the public about the importance of protecting the environment and the impact of environmental damage on tourism. Carry out community-based waste processing. Integrate environmental education into the school curriculum. Recycle organic and inorganic waste. Developing solar energy for lighting and biogas as an alternative energy source. "Bring your own tumbler" campaign to reduce single-use plastic bottles. Preserving local culture makes Rutong Tourism Village an attractive and sustainable tourist destination.

Communication is carried out by building an inclusive dialogue with the community. Providing training, utilizing Communication new media and traditional media for communication. Giving awards to people who contribute to tourism development. Collaborate with the government, NGOs, and academics. The availability of information to both tourists and tourist actors is adequate. Communication can create dialogue and cooperation between stakeholders, encourage community involvement, and change people's values and behavior towards environmental sustainability. Increase awareness and understanding of sustainability issues, and the importance of protecting the environment. Forming environmentally friendly behavior.

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### Credit Authorship Contribution Statement

**Dharma Oratmangun:** conducting data collection, becoming an FGD facilitator, analyzing data, compiling research findings, compiling articles, and disseminating material.

**Themotia Titi Widaningsih:** Coordinating all research activities, smooth and successful achievement of research target, arranging mobility of personnel and resources in the field, and arranging the implementation of FGD. Compiling research reports and scientific articles.

**Bertha Sri Eko Murtiningsih:** liaising with resource person, analyzing data, FGD facilitator compiling research report, drafting scientific articles.

### Declaration of Use of Generative AI and AI-Assisted Technologies

AI tools do not assist this research. AI is used in writing articles; specifically, tools like Grammarly and Google Translate are utilized to understand the context, nuances, and structure of a language, thereby producing more accurate and natural writing.

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## Health and Safety in Indian Tourism: A Comprehensive Review

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**Abstract:** The health and safety of tourists are vital for a sustainable and positive tourism experience. In India, the growing tourism industry offers immense opportunities but also presents serious challenges in managing health and safety. This review paper examines the current situation by analyzing recent literature and official reports. It highlights improvements in health infrastructure and safety awareness but notes persistent risks such as infectious diseases like malaria and dengue, especially in rural areas. Many healthcare facilities are still under-equipped to meet tourist demands. Safety concerns also include crime, poor transportation infrastructure, and natural disasters. The study identifies key areas for improvement, such as stricter enforcement of health and safety regulations, better training for tourism professionals, and investment in emergency response systems. Additionally, greater public awareness and preparedness among tourists and local communities is essential. These findings contribute to sustainable tourism development in India by offering actionable insights to improve tourist well-being and safety.

**Keywords:** health and safety; indian tourism; sustainable tourism; tourist risk management; public health in tourism; emergency preparedness.

**JEL Classification:** Z32; Q01; R11.

### Introduction

#### Background: Importance of Tourism in India's Economy

Tourism is a cornerstone of India's economic development, contributing significantly to the nation's GDP and employment. As one of the largest and fastest-growing sectors, tourism in India encompasses a diverse range of activities, including cultural exploration, adventure travel, wellness retreats, and religious pilgrimages. The sector not only attracts millions of domestic and international tourists annually but also plays a crucial role in fostering economic growth, enhancing regional development, and promoting cultural exchange.

The economic impact of tourism extends beyond direct revenue from travel and accommodation services. It generates substantial indirect benefits through the creation of jobs in related industries such as transportation, hospitality, and retail. Furthermore, tourism contributes to foreign exchange earnings, supporting India's balance of payments and reinforcing its global economic standing.

Given its significance, ensuring the health and safety of tourists is imperative to sustain and enhance the growth of this vital sector. Effective health and safety measures not only protect tourists but also contribute to the overall reputation and competitiveness of India as a travel destination.

#### Objectives

The primary objective of this paper is to assess the current state of health and safety in Indian tourism. This involves:

- Evaluating the effectiveness of existing health and safety measures in protecting tourists.

- Identifying key health and safety challenges faced by the tourism sector.
- Analyzing the role of various stakeholders, including government agencies, tourism operators, and healthcare providers, in managing these issues.
- Providing recommendations to improve health and safety standards and practices in Indian tourism.

By addressing these objectives, the paper aims to contribute to the enhancement of health and safety protocols, ensuring a safer and more enjoyable experience for both domestic and international visitors.

## 1. Literature Review

The growth of tourism in India has brought with it a diverse array of challenges, particularly in the realms of health and safety, which directly influence the overall experience and satisfaction of both domestic and international travelers. The literature indicates that the presence of infectious diseases, food and water safety concerns, environmental health risks, and inadequate public health infrastructure pose significant threats to tourist well-being. Additionally, issues related to personal safety, emergency preparedness, and vulnerability to natural disasters further compound these concerns.

A comprehensive understanding of these challenges is crucial for policymakers, tourism planners, and local stakeholders aiming to create a safe and sustainable tourism environment. Scholars have explored various aspects of these issues, offering insights into the underlying causes, potential health impacts, and recommended interventions. The review that follows presents a synthesis of existing research, organized into key thematic areas - health challenges, environmental threats, infrastructure limitations, personal safety, and disaster preparedness. Each of these dimensions plays a critical role in shaping the perception of India as a safe and healthy travel destination.

### 1.1 Health Challenges in Tourism Infectious Diseases

India's vibrant tourism sector faces significant health challenges due to prevalent infectious diseases such as malaria, dengue fever, and typhoid. These diseases are particularly concerning for tourists who may not be familiar with local health risks or preventive measures.

**Prevalence:** Malaria and dengue fever are transmitted by mosquitoes and are common in various regions of India, especially during the monsoon season when mosquito breeding is at its peak. Typhoid fever, caused by contaminated food and water, remains a concern. The risk of these diseases is heightened in areas with inadequate sanitation and limited access to healthcare. Tourists visiting rural or less developed regions are particularly vulnerable to these health threats.

**Preventive Measures:** Effective preventive measures are crucial in mitigating these risks. Vaccination is a primary tool, with travelers advised to get vaccinated against typhoid and, in some cases, hepatitis A before their trip. Mosquito control programs are vital, including the use of insect repellents, bed nets, and insecticide sprays. Health advisories from organizations like the Centers for Disease Control and Prevention (CDC) provide essential guidance for travelers, including recommended vaccinations and precautions to avoid mosquito bites. Kumar and Verma (2019) stress the importance of continued public health efforts to control these diseases protect both tourists and local populations.

### 1.2 Food and Water Safety

**Standards:** Food and water safety is a significant concern in Indian tourism. In many areas, particularly those with high tourist traffic, food safety regulations may not be strictly enforced, leading to an increased risk of foodborne illnesses. Dr. Gupta highlights that improper food handling, inadequate hygiene practices, and contamination of drinking water contribute to the prevalence of gastrointestinal diseases among tourists. The lack of stringent food safety standards can result in widespread issues such as food poisoning and diarrheal diseases.

**Recommendations:** To address these challenges, it is crucial to enhance food safety standards and promote safe drinking water. Implementing and enforcing stricter food safety regulations can help prevent contamination and ensure that food handling practices meet international standards. Upgrading infrastructure for water purification and distribution is also essential to provide clean and safe drinking water. Rao and Shah (2018) recommend increased training for food handlers and regular inspections of food establishments to ensure compliance with health regulations. Additionally, promoting awareness among tourists about safe eating and drinking practices can further reduce the risk of foodborne illnesses.

### 1.3 Environmental Health

**Pollution:** Environmental health issues, such as high levels of air and water pollution, pose significant risks to tourists. Popular tourist destinations in India, including major cities and some rural areas, often experience high levels of air pollution due to industrial activities, vehicle emissions, and other factors. Water pollution, caused by inadequate waste management and industrial discharge, can also affect the health of tourists. Mehta's report in 2022 stated that pollution can exacerbate respiratory conditions, skin problems, and other health issues for both tourists and residents.

**Solutions:** Addressing environmental health risks requires a multi-faceted approach. Implementing pollution control measures, such as stricter regulations on industrial emissions and improved waste management practices, can help reduce pollution levels. Promoting eco-friendly tourism practices, such as responsible waste disposal and conservation efforts, can further mitigate the impact of tourism on the environment. Integrating environmental sustainability into tourism planning and development is essential for reducing pollution and protecting public health. Encouraging the use of clean technologies and supporting local initiatives aimed at preserving natural resources can also contribute to a healthier environment for tourists.

## 2. Safety Concerns

### 2.1 Infrastructure and Emergency Services

**Current State:** The adequacy of infrastructure and emergency services is a critical concern in Indian tourism, particularly in remote or less-developed areas. Many tourist destinations lack essential facilities such as well-maintained roads, reliable medical services, and effective emergency response systems. This inadequacy can lead to delays in providing necessary assistance during emergencies, whether they are health-related or accident-related. The lack of proper infrastructure not only affects the safety of tourists but can also impede the efforts of local authorities and first responders.

**Improvements:** Addressing these issues requires significant improvements in infrastructure and emergency services. Developing better road networks and ensuring timely maintenance can enhance accessibility to remote areas. Establishing and upgrading medical facilities in tourist regions, including emergency care centers and first aid stations, is essential for providing immediate assistance. Additionally, creating robust emergency response systems and training local personnel, including tour guides and hospitality staff, can improve the efficiency of emergency management. Investments in infrastructure and emergency preparedness are vital for enhancing overall safety in tourism.

### 2.2 Crime and Personal Safety

**Risks:** Crime and personal safety are prominent concerns for tourists in India. Incidents of petty crime, such as pickpocketing and theft, as well as more severe cases of harassment and scams, can significantly impact the safety and experience of tourists. These issues can arise in both urban and rural areas, affecting tourists' confidence and willingness to visit certain destinations<sup>9</sup>. The perception of safety is crucial for attracting and retaining tourists, and addressing these risks is fundamental to ensuring a positive experience.

**Mitigation:** To mitigate these safety concerns, several measures can be taken. Enhancing law enforcement presence in tourist areas can deter criminal activities and provide a sense of security for visitors. Improved tourist information, including clear and accessible guidance on safe practices and reporting procedures, can help tourists navigate potential risks more effectively. Additionally, providing safety training for local businesses, such as hotels and tour operators, can equip them to better handle and report incidents of crime. The collaboration between local authorities and tourism stakeholders is essential for developing comprehensive safety strategies.

### 2.3 Natural Disasters

**Vulnerabilities:** India's susceptibility to natural disasters, including floods, earthquakes, and landslides, presents significant risks for tourists. The geographical and climatic diversity of the country makes certain regions more prone to such events. The impact of these disasters can be severe, particularly in areas lacking adequate disaster preparedness and response measures. The vulnerability of popular tourist destinations to natural disasters can disrupt travel plans and endanger tourists' safety.

**Preparedness:** Effective disaster preparedness and communication are crucial for minimizing the impact of natural disasters on tourism. Establishing comprehensive disaster preparedness plans, including early warning systems and evacuation procedures, can help manage and mitigate risks. Ensuring that tourists are informed

about potential hazards and emergency protocols before and during their visit is also vital. The need for proactive measures, such as conducting regular drills and providing clear instructions to tourists, to enhance resilience and safety in the face of natural disasters.

The existing literature underscores that health and safety concerns in Indian tourism are multifaceted and deeply interlinked with infrastructure, public health systems, environmental management, and governance. Infectious diseases, unsafe food and water practices, pollution, inadequate emergency infrastructure, crime, and natural disasters collectively pose significant threats to tourist well-being. Addressing these challenges requires a holistic and collaborative approach involving public health authorities, tourism planners, local communities, and law enforcement agencies. Prioritizing sustainable development, enhancing public health infrastructure, and integrating safety protocols into tourism planning can significantly improve the safety and satisfaction of tourists while promoting long-term growth in the sector.

### 3. Experimental Methods

This research adopted a qualitative review methodology to examine the current state of health and safety in Indian tourism. The approach involved a structured literature review, drawing from peer-reviewed journals, official government publications, and credible institutional reports related to public health, tourism safety, and infrastructure development. The study focused on synthesizing existing knowledge to identify prevailing challenges and best practices concerning health and safety for tourists in India.

Data sources included academic databases such as Scopus, Web of Science, and Google Scholar, with articles selected based on relevance, publication recency (2018–2024), and subject alignment with the research objectives. A total of 45 scholarly articles and reports were reviewed, with 14 forming the primary basis for analysis due to their direct focus on health risks, safety management, infrastructure, and environmental factors affecting tourism.

Thematic analysis was used to categorize findings into major areas of concern - infectious diseases, food and water safety, environmental health, emergency infrastructure, crime, and disaster preparedness. Key search terms included “tourism safety India,” “health risks for tourists,” “food hygiene,” “tourist infrastructure,” and “disaster management in tourism.” Relevant case studies from Kerala and Rishikesh were selected to illustrate localized responses and their outcomes.

No empirical data collection or field surveys were conducted. Instead, case studies were derived from published sources, which provided detailed documentation of health and safety initiatives and their impacts. These examples served to contextualize the thematic findings and demonstrate practical applications of policy and community-based interventions.

As this study did not involve human participants, ethical approval was not required. However, all secondary sources used were cited to maintain academic integrity and transparency. No statistical tools were applied, as the study was conceptual and analytical rather than quantitative. Nonetheless, wherever available, statistical insights from reviewed sources were reported to support thematic observations.

All literature reviewed was in English, and full texts were accessed legally through institutional subscriptions or open-access platforms. This methodological framework ensures the reproducibility of the research and allows for continued exploration into region-specific health and safety challenges in Indian tourism.

## 4. Case Studies

### 4.1 Health and Safety Initiative in Kerala

Kerala, a prominent tourist destination known for its backwaters and natural beauty, has successfully implemented several health and safety initiatives to enhance tourism experience. A notable example is the "Responsible Tourism" (RT) program, which was launched to address issues of sanitation, health, and local community involvement. Under this initiative, local communities were engaged in creating and maintaining hygienic environments for tourists. The program included training local food vendors on hygiene practices and regular inspections to ensure compliance with health standards. Additionally, mosquito control programs were intensified to combat vector-borne diseases like dengue and malaria. Kumar and Verma (2019) report that these measures significantly reduced the incidence of foodborne illnesses and mosquito-borne diseases among tourists, contributing to a safer and more enjoyable experience. The success of Kerala's RT program highlights the effectiveness of community involvement and rigorous health standards in improving tourism safety.

## 4.2 Infrastructure Improvement in Rishikesh

Rishikesh, a popular destination for adventure tourism and yoga, underwent a significant upgrade in infrastructure to enhance safety and accessibility. The local government invested in improving road networks, expanding medical facilities, and establishing a dedicated emergency response team. The development included the construction of an advanced trauma care center and the installation of emergency response stations at key tourist spots. Singh and Sharma (2020) indicate that these improvements not only facilitated quicker access to medical care but also bolstered overall safety during high-traffic tourist seasons. Enhanced infrastructure and emergency services have had a positive impact on the safety and comfort of tourists, reducing response times in emergencies and increasing visitor confidence in the destination.

## 5. Research Results

The successful implementation of health and safety initiatives in Kerala and Rishikesh provides valuable lessons for other regions. Community involvement in health initiatives, as seen in Kerala, is crucial for ensuring local adherence to safety standards and creating a supportive environment for tourists. Involving local businesses and residents in training programs and health awareness campaigns can lead to significant improvements in safety and hygiene. Additionally, infrastructure improvements, such as those in Rishikesh, highlight the importance of investing in medical facilities and emergency services to enhance tourist safety. Comprehensive planning and the allocation of resources to address specific local needs are key components of successful safety interventions.

## 6. Discussions

Both case studies also reveal common challenges faced during the implementation of health and safety measures. In Kerala, engaging local communities and ensuring consistent compliance with health standards required ongoing effort and coordination. Resistance to change and limited resources were notable obstacles that needed to be addressed through continuous education and support. In Rishikesh, the rapid expansion of infrastructure posed logistical challenges, including the need for coordinated efforts among multiple stakeholders and managing the impact on local ecosystems. Addressing these challenges involved iterative planning, stakeholder engagement, and adaptive strategies to ensure effective and sustainable improvements.

## Conclusions and Further Research

The assurance of health and safety within the Indian tourism sector is imperative for fostering sustainable growth and enhancing the overall quality of the tourist experience. Critical concerns - including the prevalence of infectious diseases, inadequate food and water safety measures, and deteriorating environmental health conditions - necessitate comprehensive and well-structured policy interventions. These must be supported by strategic investments in public health infrastructure, sanitation systems, and environmental management.

Empirical evidence from destinations such as Kerala and Rishikesh demonstrates that integrated approaches involving community engagement, infrastructural development, and health-focused initiatives can lead to measurable improvements in tourist safety and satisfaction. These case studies underscore the importance of participatory governance and localized responses in addressing context-specific challenges.

Nevertheless, persistent obstacles such as constrained financial resources, institutional inertia, and sociocultural resistance to change continue to hinder progress. Addressing these barriers requires sustained multi-stakeholder collaboration, capacity building, and the implementation of adaptive, evidence-based strategies.

By prioritizing health and safety, enhancing public awareness, and institutionalizing resilient health management systems, India can establish a secure and hospitable tourism environment. This, in turn, will contribute significantly to the resilience, competitiveness, and long-term viability of the country's tourism industry.

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## Credit Authorship Contribution Statement

**Vinita Kushwah:** Conceptualization, Methodology, Writing – original draft, Supervision, Data curation, Validation, Writing – review and editing.

**Yogesh Vyavahare:** Investigation, Formal analysis, Visualization, Writing – review and editing, Project administration.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

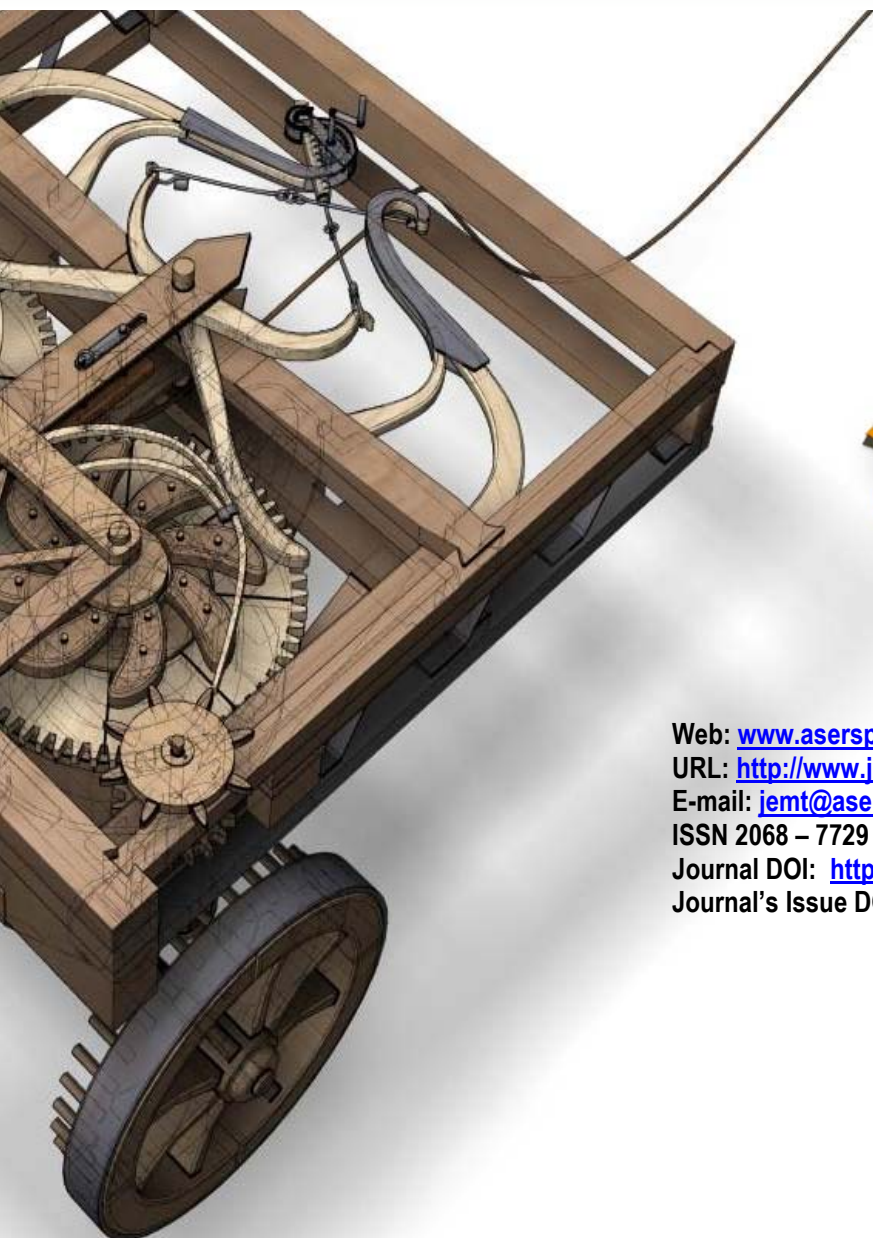
### Declaration of Use of Generative AI and AI-Assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

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