

Climate Change Impacts on Destination Choices: Shifts in Tourism Patterns and Hospitality Responses

Marcus T. Adedara
Department of Tourism and
Events Management
College of Social and
Management Sciences
Afe Babalola University, Ado
Ekiti, Ekiti State, Nigeria
mactaiwo@abuad.edu.ng

Samuel Obinna Nwankwo
Department of
Mechanical/Mechatronics
Engineering
College of Engineering
Afe Babalola University, Ado
Ekiti, Ekiti State, Nigeria
nwankwoso@abuad.edu.ng

Olayinka Aina Christopher
Department of Tourism and
Events Management
College of Social and
Management Sciences
Afe Babalola University, Ado
Ekiti, Ekiti State, Nigeria
christopheraina01@gmail.com

Ajayi Oluwale
Department of Tourism and
Events Management
College of Social and
Management Sciences
Afe Babalola University, Ado
Ekiti, Ekiti State, Nigeria
oluwolea@abuad.edu.ng

Adeyemi J Ademowo
Department of Sociology
College of Social and
Management Sciences
Afe Babalola University, Ado
Ekiti, Ekiti State, Nigeria
yemi.ademowo@abuad.edu.ng

Abstract—Climate change is a pressing global issue that has multifaceted implications for various sectors, including the tourism and hospitality industry. This article examines the profound effects of climate change on destination choices, the shifting patterns of tourism, and the evolving responses of the hospitality sector. The study is rooted in a comprehensive analysis of existing literature, emphasizing empirical findings and policy developments. It elucidates the mechanisms through which climate change influences destination choices, discusses emerging tourism patterns, and delineates the adaptation and mitigation strategies adopted by the hospitality industry. The article underscores the urgent need for sustainable practices and robust policies to address the consequences of climate change on tourism and hospitality.

Keywords—Climate Change Impacts, Tourism Patterns, Hospitality Responses, Sustainable Tourism, Climate Resilience

I. INTRODUCTION

Tourism, as a vital global industry, plays a pivotal role in economic growth and development across numerous regions worldwide. Its contributions encompass a wide spectrum, from generating employment opportunities and foreign exchange earnings to supporting local businesses and infrastructure development [1]. However, the dynamism of the tourism sector renders it highly sensitive to various environmental factors, with climate change emerging as a potent influence in recent years. Climate change, characterized by the long-term alteration of global and regional weather patterns, is driven primarily by anthropogenic factors, particularly the emission of greenhouse gases. This article looks into the intricate relationship between climate change and tourism, illuminating how the changing climate has become an increasingly significant factor in travelers' destination choices. Consequently, it also examines the far-reaching impacts of these shifts on the hospitality sector, which has been compelled to respond to these evolving dynamics [2].

The nexus between tourism and climate change is an intersection of profound importance. Tourists' choices

regarding where they travel and how they engage with destinations are intrinsically linked to the climate[3]. Weather patterns, scenic beauty, and climate-related risks significantly influence the destinations travelers opt for. As climate change manifests through an array of alterations, including shifting weather patterns and extreme events, it affects the desirability and suitability of particular destinations[4]. For instance, traditionally popular winter sports destinations may face reduced visitor numbers due to decreased snowfall, shortened winter seasons, and milder temperatures. These changes can disrupt the economic activities and livelihoods dependent on such tourism [5].

Equally significant are the alterations in landscapes and natural environments brought about by climate change. Melting glaciers, rising sea levels, and habitat disruptions have the potential to reshape tourists' perceptions of scenic beauty [6]. What was once considered an idyllic landscape may undergo profound transformations due to climate-induced alterations. Tourists, drawn to pristine natural environments, may reconsider their choices as the face of these places changes [7]. Furthermore, as climate change contributes to an escalation in extreme weather events, tourists are becoming increasingly mindful of climate-related risks when making their travel decisions[8]. The perception that certain destinations are vulnerable to natural disasters or other weather extremes can act as a deterrent, resulting in a decline in tourist numbers and revenues for affected areas [9].

Beyond these environmental factors, climate change exerts cultural and economic impacts that ripple through tourism. Local communities and economies are vulnerable to the disruption caused by climate change, impacting cultural practices, traditions, and the broader tourism infrastructure[10]. As tourists become more aware of these challenges, they may seek out destinations that are perceived as more resilient and less susceptible to these disruptions, causing a shift in travel patterns and preferences[10], [11].

The consequence of these influences is an evolving tourism landscape marked by shifting patterns and a realignment of priorities. As climate change awareness grows, a discernible trend emerges in the form of emerging

sustainable tourism [12]. Travelers are increasingly seeking eco-friendly destinations, accommodations, and experiences. They are drawn to locations that offer low-carbon footprint travel, eco-lodges, and opportunities to engage with and contribute to conservation efforts. As sustainability becomes a more prominent consideration, tourists are gravitating towards destinations that adhere to environmentally responsible practices and principles [13].

Another noticeable change in tourism patterns is the rise of off-peak travel. Travelers are endeavoring to avoid extreme weather conditions and overcrowding during the traditional peak seasons [14]. This trend has the potential to balance tourism demand throughout the year, benefiting both tourists, who can enjoy a more relaxed experience, and local economies, which can mitigate the negative effects of seasonality. Furthermore, there is a resurgence of interest in proximity tourism. Concerns regarding the environmental impact of long-haul flights, compounded by the pandemic's impact on international travel, have prompted a preference for destinations closer to home [15]. This shift is leading to increased domestic and regional tourism, thereby supporting local economies and reducing the ecological footprint of travel [16].

The hospitality industry, acutely aware of these shifts in tourism patterns driven by climate change, has been compelled to respond proactively. The hospitality sector's adaptation and mitigation strategies are geared toward ensuring its resilience and sustainability in the face of changing customer demands and environmental challenges. These responses include adopting sustainable initiatives, embracing climate adaptation strategies, and integrating green design and infrastructure practices [17].

In sum, this article seeks to unravel the intricate relationship between climate change and the tourism and hospitality sectors, offering insights into the ways in which climate change is fundamentally reshaping the industry. By understanding these dynamics, it becomes evident that climate change is a central factor that necessitates a paradigm shift in the way the tourism and hospitality industries operate. The combined efforts of governments, industry stakeholders, and tourists themselves are essential in crafting a sustainable future that can withstand the challenges of a changing climate while maintaining the economic and cultural benefits of tourism.

II. CLIMATE CHANGE AND DESTINATION CHOICES

Climate change, as an omnipresent global phenomenon, reverberates throughout various facets of human society. In the context of tourism, the influence of climate change on travelers' destination choices is a multifaceted interplay of direct and indirect impacts, necessitating comprehensive examination. This section delves into the primary mechanisms through which climate change influences tourists' destination choices, emphasizing its profound implications on the tourism sector.

2.1. Changing Weather Patterns

Climate change fundamentally manifests through a suite of altering weather patterns, encompassing increased temperatures, more frequent extreme weather events, and shifting seasons. These perturbations are instrumental in reshaping tourists' preferences for destinations[18].

Destinations once celebrated for their winter sports appeal are now confronted with declining visitor numbers due to conspicuous transformations in weather conditions. Reduced snowfall and abbreviated winter seasons are the consequences of warming temperatures, leading to a pronounced impact on these destinations. Travelers, in search of snowy slopes and crisp, cold weather, are increasingly dissuaded from visiting regions where these experiences are becoming increasingly elusive[19].

The effects of changing weather patterns, however, extend beyond winter sports destinations. Rising temperatures can render previously temperate climates uncomfortably hot during peak summer months, prompting tourists to seek out cooler alternatives. Conversely, those regions experiencing milder winters may observe an increase in winter tourism, driven by a desire for more agreeable temperatures. This shift in destination preferences underscores the dynamism of tourism and the necessity for destinations to adapt to these evolving climatic dynamics[20].

2.2. Altered Scenic Landscapes

Climate change ushers in a second pivotal mechanism that influences destination choices—the transformation of scenic landscapes. Environmental changes, such as melting glaciers, rising sea levels, and alterations in topography, have the potential to profoundly reshape tourists' perceptions of scenic beauty [21]. Destinations once celebrated for their pristine natural environments may undergo dramatic alterations that challenge their allure[22]. The majestic sight of a glacier gradually receding due to rising temperatures can evoke a sense of loss and dismay in tourists who had sought to witness such marvels. Similarly, coastal regions experiencing sea-level rise may find their once-pristine beaches threatened, with the potential loss of their natural beauty [23].

In light of these transformations, tourists may gravitate toward destinations that have managed to preserve their unspoiled natural environments. Such locales can become increasingly attractive as travelers seek to engage with nature in its most pristine form. The dynamics of this shift may include a preference for national parks, protected reserves, and destinations that have prioritized environmental conservation. This adaptation in destination choices underscores the responsiveness of tourists to the evolving landscape and highlights the necessity for destinations to prioritize conservation efforts to maintain their allure [24].

2.3. Climate-Related Risks

One of the most tangible and immediate impacts of climate change on destination choices is the heightened consideration of climate-related risks [25]. As the world grapples with a surge in extreme weather events, tourists are becoming increasingly discerning in evaluating the vulnerability of their chosen destination to such events. The perception that a destination is prone to natural disasters, including hurricanes, wildfires, flooding, or heatwaves, can act as a potent deterrent for travelers. This apprehension can lead to a pronounced decline in tourism revenues, as visitors opt for destinations perceived as more secure [26].

The consideration of climate-related risks extends to various aspects of travel, from the choice of accommodation to the selection of activities[27]. Tourists may scrutinize whether a hotel or resort has the infrastructure to withstand

extreme weather events, or they may seek destinations that offer a diverse array of activities, which can be modified or adapted in the event of unfavorable weather conditions [28]. This heightened awareness of climate-related risks represents a critical shift in tourists' perception of safety and necessitates innovative approaches by destinations to enhance their resilience.

2.4. Cultural and Economic Impacts

Beyond the tangible environmental effects of climate change, this phenomenon engenders a suite of cultural and economic impacts with ripple effects for tourism. Climate change can precipitate adverse effects on local communities and economies, consequently affecting cultural practices and traditions [29]. For instance, communities reliant on agriculture may experience altered planting and harvest seasons due to changing weather patterns, resulting in shifts in local traditions and livelihoods. In some regions, traditional festivals may be disrupted due to unfavorable weather conditions, potentially deterring tourists seeking authentic cultural experiences [30].

Moreover, economic impacts play a vital role in influencing travel patterns. Destinations highly dependent on tourism revenues may experience economic turbulence if climate change adversely affects their appeal. These shifts can trigger a ripple effect through the tourism industry, influencing everything from job availability to local business viability. Tourists, increasingly aware of these cultural and economic disruptions, may opt for destinations considered less vulnerable to these challenges. As a result, there is a discernible shift in travel patterns and preferences, with tourists favoring destinations where cultural and economic stability is perceived to be better preserved.

Climate change represents a dynamic force in shaping tourists' destination choices, exerting both direct and indirect impacts[31]. As weather patterns evolve, scenic landscapes transform, and climate-related risks become more salient, the tourism sector is compelled to adapt and innovate to remain competitive. The recognition of these mechanisms is instrumental in formulating strategies for tourism destinations and hospitality providers to navigate the ever-evolving landscape influenced by the challenges of climate change[32].

III. EMERGING SUSTAINABLE TOURISM

The influence of climate change on destination choices has engendered a series of discernible shifts in tourism patterns, each marked by its response to the intricate interplay between climate change awareness and evolving traveler preferences. These shifts not only reflect a growing concern for the environment but also highlight the adaptability of the tourism industry in the face of changing dynamics[33].

3.1. Emerging Sustainable Tourism

Amidst the backdrop of increasing climate change awareness, one of the most conspicuous shifts in tourism patterns is the surge in demand for sustainable tourism options [34]. This paradigm shift is emblematic of a growing consciousness among travelers regarding their environmental footprint. As a result, tourists are not merely seeking destinations, but rather experiences that align with their ecological values. The emergence of sustainable tourism encompasses various

dimensions, each contributing to a broader trend [35]. Travelers are progressively seeking out destinations that are environmentally responsible in their practices [36]. These destinations prioritize conservation efforts, minimize waste generation, and advocate for responsible interactions with local ecosystems. The lure of such destinations is the promise of authentic, low-impact experiences where nature remains unspoiled, and ecosystems flourish [37]. Parallel to the demand for eco-friendly destinations is the growing interest in eco-lodges and environmentally conscious accommodations [38]. Tourists seek accommodations that incorporate sustainable design, resource conservation, and green energy solutions. The prospect of staying in lodgings that exemplify these principles enhances the overall travel experience, as tourists feel they are contributing to responsible tourism[39]. In the quest for sustainable tourism, travelers are actively searching for experiences that minimize their carbon footprint. This has led to the rise of low-carbon travel options, including cycling tours, hiking trips, and eco-friendly transportation methods. By participating in such experiences, tourists reduce their environmental impact and immerse themselves more intimately in their chosen destination[40]. This profound shift toward sustainable tourism is not just a response to climate change but also a reflection of the evolving values of modern travelers. Destinations that can align with these sustainability principles are poised to reap the benefits of this growing demand and support the preservation of their natural and cultural assets [41].

3.2. Off-Peak Tourism

In response to climate change-induced extreme weather and the desire to avoid overcrowded peak seasons, tourists have increasingly gravitated toward off-peak travel times. This strategic shift in tourism patterns is not only beneficial to the travelers themselves but also presents opportunities for local economies and tourism destinations [42]. One of the primary motivations for off-peak tourism is the desire to avoid extreme weather conditions. Travelers, motivated by the pursuit of climate comfort, opt for destinations during periods when weather conditions are more moderate and predictable. In this way, they circumvent the discomfort of sweltering summers or harsh winters, which can be exacerbated by climate change[35], [43]. Another driving factor for off-peak tourism is the avoidance of crowded destinations. Many tourists seek a more serene and intimate experience, which is often elusive during peak seasons [36], [39]. Off-peak travel allows for a more relaxed and authentic engagement with destinations, as the influx of visitors is more manageable, and key attractions are less crowded[44]. From the perspective of destinations, off-peak tourism has the potential to balance tourism demand throughout the year. This can be a boon for destinations that traditionally experienced significant fluctuations in visitation based on seasonality. The benefits include a steadier stream of revenue, reduced wear and tear on attractions, and more stable employment opportunities [45].

3.3. Proximity Tourism

The environmental concerns associated with long-haul flights have given rise to a preference for destinations closer to home, giving impetus to what is often termed "proximity tourism"[46]. The resurgence of domestic and regional tourism is one of the noteworthy outcomes of this

trend, and it carries various implications for both travelers and local economies. Concerns about the environmental impact of long-haul flights, including their contribution to greenhouse gas emissions, have led to the reevaluation of travel choices [47]. Travelers are now opting for destinations that can be reached through shorter and more sustainable modes of transportation, such as train or car. By selecting closer destinations, tourists reduce their overall carbon footprint. The resurgence of domestic and regional tourism augments the economic prospects of local communities. It bolsters local businesses, supports small-scale enterprises, and strengthens regional economies. Tourism establishments that cater to proximity tourism can see an upswing in business, offering tailored experiences to residents who are eager to explore nearby destinations [48]. Proximity tourism often entails a rediscovery of local culture and heritage. Travelers become more attuned to the cultural and historical richness of their own regions, which may have been previously overlooked in favor of far-flung destinations. As travelers gain a deeper appreciation for local attractions, a renewed sense of pride in their own heritage may emerge [49]. Climate change has prompted notable shifts in tourism patterns, driven by the rising awareness of environmental concerns and travelers' evolving values. Sustainable tourism, off-peak travel, and proximity tourism are the notable responses to the challenges posed by climate change, demonstrating the adaptability of both the industry and tourists themselves. Understanding and capitalizing on these shifts can foster a more sustainable and resilient tourism sector while supporting local economies and the preservation of natural and cultural assets.

IV. HOSPITALITY RESPONSES

The hospitality industry, as a fundamental component of the tourism sector, has recognized the pressing need to adapt to the challenges posed by climate change to ensure its long-term competitiveness and sustainability. These responses are pivotal in addressing the consequences of a changing climate, fostering eco-conscious practices, and enhancing the resilience of hospitality establishments to climatic risks. The key initiatives encompassed in these responses underscore the industry's commitment to environmental responsibility [50].

4.1. Sustainable Initiatives

A salient and discernible response from the hospitality sector to the specter of climate change is the widespread adoption of sustainable initiatives. This approach represents a shift in perspective from merely providing accommodation to embracing an ethos of environmental stewardship. Hotels and resorts are increasingly incorporating energy-efficient technologies into their operational frameworks. This encompasses the installation of LED lighting, advanced climate control systems, and energy management systems that optimize energy consumption. By reducing energy demand, hospitality establishments not only lower their operational costs but also curtail their carbon footprint [51].

Sustainable water use has emerged as a central focus for the hospitality industry. Establishments are implementing water-saving technologies such as low-flow fixtures, rainwater harvesting, and greywater recycling systems. These measures are not only ecologically sound but also contribute

to substantial savings in water bills [52]. Hotels and resorts have intensified their efforts to minimize waste production through comprehensive waste reduction and recycling programs. This includes the adoption of recycling bins in guest rooms, a reduction in single-use plastics, and the separation of organic waste for composting. These initiatives serve to alleviate the strain on local waste management systems and reduce the carbon footprint of the establishment [53]. Hospitality establishments are increasingly focusing on sourcing products that adhere to sustainability standards. This extends to amenities such as toiletries, linens, and food and beverage items. By engaging in sustainable procurement, hotels and resorts support environmentally conscious suppliers, bolstering the broader sustainability chain [54]. These sustainable initiatives are pivotal not only in reducing the environmental impact of hospitality establishments but also in attracting a growing demographic of eco-conscious travelers. Sustainable accommodations are often seen as more attractive and responsible choices, appealing to a market segment that places a premium on environmental stewardship [55].

4.2. Climate Adaptation Strategies

The heightened incidence of extreme weather events and climatic risks has led the hospitality sector to proactively invest in climate adaptation strategies. This proactive stance aims to mitigate the vulnerabilities associated with such risks and is instrumental in safeguarding the safety and well-being of guests and staff [56]. Hotels and resorts located in regions prone to natural disasters are taking concrete steps to enhance the resilience of their physical infrastructure. This includes constructing buildings that can withstand strong winds, earthquakes, and flooding. Moreover, investments are made in emergency power systems and comprehensive evacuation plans to ensure the safety of guests and staff in the event of a disaster [57]. The hospitality sector has become increasingly adept at developing crisis management plans that outline the responses to various contingencies, including extreme weather events, pandemics, and other emergencies. These plans are pivotal in coordinating a swift and effective response to crises, reducing potential harm and disruption to guests [58]. Hotels and resorts are conducting comprehensive climate risk assessments to identify and mitigate potential vulnerabilities. These assessments evaluate the risks posed by climate-related events, assess the adaptive capacity of the establishment, and develop strategies for addressing these risks [59].

4.3. Sustainable Design and Infrastructure

New hospitality properties are increasingly being designed with sustainability at the forefront. The principles of green building are applied to reduce energy consumption, minimize environmental impacts, and create eco-friendly spaces that enhance the guest experience. The construction of new hospitality properties often adheres to green building practices that emphasize the use of sustainable building materials, efficient insulation, and natural ventilation. These practices not only reduce energy consumption but also contribute to the long-term durability and resilience of the structure [60]. The design of new hotels and resorts incorporates energy-efficient systems, including state-of-the-art HVAC systems, intelligent lighting solutions, and passive solar design. These systems aim to lower energy demand while maintaining guest comfort [61]. The external

environment of hospitality properties is also designed with sustainability in mind. Sustainable landscaping includes the use of native plants, rain gardens, and efficient irrigation systems. Such landscaping not only minimizes water use but also fosters a welcoming and eco-conscious ambiance[61]. The hospitality sector's responses to climate change are emblematic of its proactive stance in the face of environmental challenges. The industry has evolved from being a passive consumer of resources to an active agent of sustainability, seeking to reduce its ecological footprint and ensure the safety and well-being of its guests. These responses reflect the hospitality sector's commitment to preserving the environment, enhancing the guest experience, and maintaining its competitive edge in an increasingly eco-conscious market[62].

V. POLICY IMPLICATIONS

The multifaceted impacts of climate change on the tourism and hospitality sector underscore the imperative need for robust policy responses. Climate change, with its far-reaching consequences on destination choices and tourism patterns, requires a proactive and coordinated approach from governments, industry associations, and stakeholders. These entities must collaborate to develop and implement policies that foster sustainability, climate resilience, and climate education within the tourism and hospitality industry.

5.1. Promote Sustainable Tourism

One of the core policy imperatives in addressing the climate change challenges facing the tourism and hospitality sector is the promotion of sustainable tourism practices. Such policies serve as a catalyst for shifting the industry toward a more environmentally responsible and ecologically conscious trajectory [63]. Government and industry associations should encourage and incentivize the adoption of certification programs for eco-friendly accommodations and tourism service providers. Such certification programs, such as Green Key or EarthCheck, are instrumental in validating the sustainability initiatives of establishments. They provide a recognizable and credible framework for travelers to identify and select environmentally responsible options[64]. Policies aimed at promoting low-carbon transportation options are pivotal in addressing the carbon footprint of tourism[65]. Governments can offer tax incentives for businesses that invest in electric or hybrid vehicle fleets for airport transfers, tours, and transportation services. The development of efficient and eco-friendly public transportation networks to popular tourist destinations can further reduce reliance on fossil fuels and lessen the environmental impact of travel[51].

5.2. Encourage Climate Resilience

To safeguard the sustainability of the hospitality industry, climate resilience must be at the core of policy development. These policies are crucial in ensuring that hospitality establishments can withstand the challenges posed by climate change, such as extreme weather events and disruptions to travel[66]. Government policies should provide financial incentives and support for hospitality establishments to invest in climate-resilient infrastructure. This may encompass grants or tax deductions for the installation of technologies that can withstand extreme weather, such as hurricane-resistant windows or flood protection measures [52]. Governments can offer grants to hospitality establishments, especially those in disaster-prone regions, to develop and

implement climate adaptation measures. Such measures may include constructing elevated buildings, strengthening existing structures, or building coastal defenses to protect against rising sea levels and storm surges [67]. Policies that mandate hospitality establishments to secure climate-specific insurance coverage can be instrumental in managing risks associated with extreme weather events. Such requirements can ensure that establishments have the financial means to recover and rebuild in the aftermath of a disaster, protecting both the industry and travelers[68].

5.3. Foster Climate Education

An essential aspect of policy development is the fostering of climate education, targeting both tourists and industry professionals. Climate education not only increases awareness of climate change but also motivates action toward more responsible travel and operations. Governments and industry associations can collaborate to develop climate literacy programs aimed at educating tourists about the implications of climate change on their travel choices[69]. These programs can be integrated into school curricula, travel agency training, and promotional materials. Climate literacy programs can enable travelers to make informed and sustainable decisions when selecting destinations and accommodations. Policy initiatives should include support for professional development and training within the tourism and hospitality industry[70]. This includes training programs for industry professionals that focus on climate resilience, sustainability, and environmentally responsible practices. Such training equips industry personnel with the knowledge and skills required to operate sustainably, providing added value to eco-conscious travelers[71]. Governments can initiate public awareness campaigns that emphasize the importance of climate change mitigation and adaptation. These campaigns can target both tourists and industry stakeholders, fostering a shared understanding of the challenges posed by climate change and the necessity of proactive measures. The policy implications surrounding climate change and its impacts on tourism and hospitality are instrumental in addressing the complexities of this multifaceted challenge. By promoting sustainable tourism practices, encouraging climate resilience, and fostering climate education, governments, industry associations, and stakeholders can collectively contribute to a more sustainable, resilient, and eco-conscious future for the tourism and hospitality sector[72], [73]. These policies not only mitigate the impacts of climate change but also align the industry with the evolving values of responsible travelers, ultimately fostering a more sustainable and resilient tourism sector.

VI. CONCLUSION

Climate change stands as an undeniable force reshaping the global tourism industry, demanding significant adjustments in destination choices and garnering proactive responses from the hospitality sector. The implications of climate change for tourism and hospitality are vast and multifaceted, necessitating an in-depth reevaluation of strategies to ensure long-term sustainability in an environment defined by

evolving climatic conditions. This conclusion serves to encapsulate the key findings and underscore the importance of understanding the intricate relationship between climate change and the tourism and hospitality industries. The influence of climate change on destination choices, as elucidated in this article, is grounded in a series of interconnected mechanisms. These mechanisms—changing weather patterns, altered scenic landscapes, climate-related risks, and cultural and economic impacts—directly and indirectly affect travelers' preferences. The once seemingly immutable appeal of winter sports destinations is waning due to declining snowfall and shorter seasons, while the allure of destinations is shifting as scenic landscapes transform and cultural and economic disruptions unfold. In response to these transformative forces, tourism patterns are undergoing a fundamental realignment. Sustainable tourism is on the rise, driven by climate change awareness and the preferences of eco-conscious travelers. Off-peak travel is increasingly favored as a means of avoiding extreme weather conditions and overcrowding during peak seasons, ushering in a more balanced demand throughout the year. Proximity tourism has also emerged, motivated by environmental concerns and a renewed focus on destinations closer to home, supported by domestic and regional tourism growth. The hospitality sector, cognizant of these shifting patterns, has proactively responded to the challenges of climate change. Sustainable initiatives have been widely embraced, with hotels and resorts adopting energy-efficient technologies, water conservation measures, waste reduction practices, and sustainable sourcing of products. Climate adaptation strategies are being incorporated, with investments in resilient infrastructure and crisis management plans to protect against extreme weather events. Sustainable design and infrastructure are guiding the construction of new properties, promoting green building principles to reduce energy consumption and minimize environmental impacts. The policy implications highlighted in this article underscore the role of governments, industry associations, and stakeholders in shaping a more sustainable future for tourism and hospitality. Policies promoting sustainable tourism, encouraging climate resilience, and fostering climate education are instrumental in addressing the complex challenges posed by climate change. It is evident that climate change has emerged as a critical factor influencing the tourism and hospitality industries. The effects of climate change necessitate a comprehensive reevaluation of strategies and operations in order to secure the long-term sustainability of the sector. By understanding the intricate mechanisms through which climate change influences destination choices, recognizing the shifts in tourism patterns, and adopting adaptive and mitigation strategies, stakeholders can collaboratively work towards a more resilient, eco-conscious, and sustainable future for the tourism and hospitality industry. The global community's commitment to addressing climate change is essential in preserving the beauty, culture, and economic vitality of destinations while mitigating the sector's environmental impact.

REFERENCES

- [1] A. F. Lutz, H. W. ter Maat, H. Biemans, A. B. Shrestha, P. Wester, and W. W. Immerzeel, "Selecting representative climate models for climate change impact studies: an advanced envelope-based selection approach," *International Journal of Climatology*, vol. 36, no. 12, 2016, doi: 10.1002/joc.4608.
- [2] J. Lawrence, P. Blackett, and N. A. Cradock-Henry, "Cascading climate change impacts and implications," *Clim Risk Manag*, vol. 29, 2020, doi: 10.1016/j.crm.2020.100234.
- [3] X. Ma, Z. Yang, and J. Zheng, "Analysis of spatial patterns and driving factors of provincial tourism demand in China," *Sci Rep*, vol. 12, no. 1, 2022, doi: 10.1038/s41598-022-04895-8.
- [4] F. Batista e Silva, M. A. Marín Herrera, K. Rosina, R. Ribeiro Barranco, S. Freire, and M. Schiavina, "Analysing spatiotemporal patterns of tourism in Europe at high-resolution with conventional and big data sources," *Tour Manag*, vol. 68, 2018, doi: 10.1016/j.tourman.2018.02.020.
- [5] L. Warlina and L. E. D. Damayanty, "The expansion and spatial pattern of shopping and tourism services facilities in north bandung region, indonesia," *Indonesian Journal of Science and Technology*, vol. 6, no. 2, 2021, doi: 10.17509/ijost.v6i2.35105.
- [6] S. Zhang, L. Zhong, H. Ju, and Y. Wang, "Land border tourism resources in China: Spatial patterns and tourism management," *Sustainability (Switzerland)*, vol. 11, no. 1, 2019, doi: 10.3390/su11010236.
- [7] S. Zhang, L. Chi, T. Zhang, and Y. Wang, "Spatial Pattern and Influencing Factors of Tourism Resources in Northwestern Ethnic Areas in China—A Case Study of Longde County," *Int J Environ Res Public Health*, vol. 19, no. 24, 2022, doi: 10.3390/ijerph192416684.
- [8] Q. Xu, "Evaluation of Rural Tourism Spatial Pattern Based on Multifactor-Weighted Neural Network Algorithm Model in Big Data Era," *Sci Program*, vol. 2021, 2021, doi: 10.1155/2021/8108287.
- [9] J. M. Hamilton, D. J. Maddison, and R. S. J. Tol, "Climate change and international tourism: A simulation study," *Global Environmental Change*, vol. 15, no. 3, 2005, doi: 10.1016/j.gloenvcha.2004.12.009.
- [10] J. D'Souza, J. Dawson, and M. Groulx, "Last chance tourism: a decade review of a case study on Churchill, Manitoba's polar bear viewing industry," *Journal of Sustainable Tourism*, vol. 31, no. 1, 2023, doi: 10.1080/09669582.2021.1910828.
- [11] C. Zhang *et al.*, "Human-induced behavioural changes of global threatened terrestrial mammals," *Global Ecology and Biogeography*, vol. 32, no. 9, 2023, doi: 10.1111/geb.13710.
- [12] D. Avasiloei (Muscal), "Reinventing the Business Model in the Tourism Industry based on Sustainable Circular Economy and Innovation," *ENTRENOVA - ENTERprise REsearch InNOVation*, vol. 8, no. 1, 2022, doi: 10.54820/entrenova-2022-0036.
- [13] D. Lund-Durlacher and S. Gössling, "An analysis of Austria's food service sector in the context of climate change," *Journal of Outdoor Recreation and Tourism*, vol. 34, 2021, doi: 10.1016/j.jort.2020.100342.
- [14] Z. Sibitane, K. Dube, and L. Lekaota, "Global Warming and Its Implications on Nature Tourism at Phinda Private Game Reserve, South Africa," *Int J Environ Res Public Health*, vol. 19, no. 9, 2022, doi: 10.3390/ijerph19095487.
- [15] D. F. Cotterill, J. O. Pope, and P. A. Stott, "Future extension of the UK summer and its impact on autumn precipitation," *Clim Dyn*, vol. 60, no. 5–6, 2023, doi: 10.1007/s00382-022-06403-0.
- [16] R. Steiger, E. Posch, G. Tappeiner, and J. Walde, "Seasonality matters: simulating the impacts of climate

change on winter tourism demand,” *Current Issues in Tourism*, vol. 26, no. 17, 2023, doi: 10.1080/13683500.2022.2097861.

- [17] A. Nuwagaba and L. K. Namateefu, “Climatic Change, Land Use and Food Security in Uganda: A Survey of Western Uganda,” *Journal of Earth Sciences and Geotechnical Engineering*, vol. 3, no. 2, 2013.
- [18] R. B. Zougmore, S. T. Partey, M. Ouédraogo, E. Torquebiau, and B. M. Campbell, “Facing climate variability in sub-saharan africa: Analysis of climate-smart agriculture opportunities to manage climate-related risks,” *Cahiers Agricultures*, vol. 27, no. 3, 2018. doi: 10.1051/cagri/2018019.
- [19] R. B. Wakweya, “Challenges and prospects of adopting climate-smart agricultural practices and technologies: Implications for food security,” *Journal of Agriculture and Food Research*, vol. 14, 2023. doi: 10.1016/j.jafr.2023.100698.
- [20] S. N. Jahromi, A. Vadiée, and M. Yaghoubi, “Exergy and Economic Evaluation of a Commercially Available PV/T Collector for Different Climates in Iran,” in *Energy Procedia*, 2015. doi: 10.1016/j.egypro.2015.07.416.
- [21] R. W. Gorte, “Forest management for resilience and adaptation,” in *Forest Certification and Sustainable Management: Programs, Standards and Techniques*, 2012.
- [22] R. W. Gorte, “Forest management for resilience and adaptation,” in *Forest Management for Resilience, Adaptation and Watershed Protection*, 2012.
- [23] K. A. Tariq, “Why do birds matter to us-a perspective from Kashmir valley, India in light of declaration of 2018 as the year of birds?,” *Natural Resources Conservation and Research*, vol. 1, no. 4, 2018, doi: 10.24294/nrcr.v1i3.421.
- [24] J. E. Halofsky, D. L. Peterson, and R. A. Gravenmier, “Climate Change Vulnerability and Adaptation in the Columbia River Gorge National Scenic Area, Mount Hood National Forest, and Willamette National Forest,” *USDA Forest Service General Technical Report PNW-GTR - Pacific Northwest Research Station*, 2022.
- [25] J. Milloy *et al.*, “NATIONALISM, GEOPOLITICS, AND NAVAL EXPANSIONISM: From the Nineteenth Century to the Rise of China,” *Geopolitics*, vol. 23, no. 1, 2022.
- [26] T. H. Aas *et al.*, “From the Editor,” *Service Industries Journal*, vol. 29, no. 1, 2015.
- [27] R. Steiger, A. Damm, F. Pretenthaler, and U. Pröbstl-Haider, “Climate change and winter outdoor activities in Austria,” *Journal of Outdoor Recreation and Tourism*, vol. 34, 2021, doi: 10.1016/j.jort.2020.100330.
- [28] M. Olefs, H. Formayer, A. Gobiet, T. Marke, W. Schöner, and M. Revesz, “Past and future changes of the Austrian climate – Importance for tourism,” *Journal of Outdoor Recreation and Tourism*, vol. 34, 2021, doi: 10.1016/j.jort.2021.100395.
- [29] F. Willibald *et al.*, “Vulnerability of ski tourism towards internal climate variability and climate change in the Swiss Alps,” *Science of the Total Environment*, vol. 784, 2021, doi: 10.1016/j.scitotenv.2021.147054.
- [30] J. L. Hsu and P. Sharma, “Disaster and risk management in outdoor recreation and tourism in the context of climate change,” *Int J Clim Chang Strateg Manag*, 2023, doi: 10.1108/IJCCSM-10-2021-0118.
- [31] D. Kapetanakis, E. Georgopoulou, S. Mirasgedis, and Y. Sarafidis, “Weather Preferences for Ski Tourism: An Empirical Study on the Largest Ski Resort in Greece,” *Atmosphere (Basel)*, vol. 13, no. 10, 2022, doi: 10.3390/atmos13101569.
- [32] T. ben Brahim, F. Wiese, and M. Münster, “Pathways to climate-neutral shipping: A Danish case study,” *Energy*, vol. 188, 2019, doi: 10.1016/j.energy.2019.116009.
- [33] S. M. C. Loureiro and J. Nascimento, “Shaping a view on the influence of technologies on sustainable tourism,” *Sustainability (Switzerland)*, vol. 13, no. 22, 2021, doi: 10.3390/su132212691.
- [34] H. Han, B. Meng, B. L. Chua, and H. B. Ryu, “Hedonic and utilitarian performances as determinants of mental health and pro-social behaviors among volunteer tourists,” *Int J Environ Res Public Health*, vol. 17, no. 18, 2020, doi: 10.3390/ijerph17186594.
- [35] A. Duarte Alonso, A. Bressan, S. Kiat Kok, and S. O’Brien, “Filling up the sustainability glass: wineries’ initiatives towards sustainable wine tourism,” *Tourism Recreation Research*, vol. 47, no. 5–6, 2022, doi: 10.1080/02508281.2021.1885801.
- [36] L. Santoso, A. Triyanta, and J. Thontowy, “Halal tourism regulations in Indonesia: trends and dynamics in the digital era,” *Ijtihad: Jurnal Wacana Hukum Islam dan Kemanusiaan*, vol. 22, no. 1, 2022, doi: 10.18326/ijtihad.v22i1.73-94.
- [37] J. He, Z. Huang, A. R. Mishra, and M. Alrasheedi, “Developing a new framework for conceptualizing the emerging sustainable community-based tourism using an extended interval-valued Pythagorean fuzzy SWARA-MULTIMOORA,” *Technol Forecast Soc Change*, vol. 171, 2021, doi: 10.1016/j.techfore.2021.120955.
- [38] Q. Zhang, J. Chen, W. Guan, Y. Wang, and M. Ahmed, “Asymmetric impacts of technology innovation and environmental quality on tourism development in emerging economies,” *Economic Research-Ekonomska Istrazivanja*, vol. 35, no. 1, 2022, doi: 10.1080/1331677X.2021.2023027.
- [39] W. Chen, “Developing a Sustainable Business Model of Ecotourism in Ethnic-Minority Regions Guided by the Green Economy Concept,” *Sustainability (Switzerland)*, vol. 15, no. 2, 2023, doi: 10.3390/su15021400.
- [40] T. Fatima and S. Elbanna, “Balanced scorecard in the hospitality and tourism industry: Past, present and future,” *Int J Hosp Manag*, vol. 91, 2020, doi: 10.1016/j.ijhm.2020.102656.
- [41] L. Dwyer, “Emerging ocean industries: Implications for sustainable tourism development,” *Tourism in Marine Environments*, vol. 13, no. 1, 2018, doi: 10.3727/154427317X15018194204029.
- [42] Association of Southeast Asian Nations, “JOINT MEDIA STATEMENT OF THE ASEAN TOURISM MINISTERS ON THE POST-COVID-19 RECOVERY PLAN FOR ASEAN TOURISM,” *Front Neurosci*, vol. 14, no. 1, 2021.
- [43] C. Yoopetch and S. Nimsai, “Science mapping the knowledge base on sustainable tourism development, 1990-2018,” *Sustainability (Switzerland)*, vol. 11, no. 13, 2019. doi: 10.3390/su11133631.
- [44] W. Marek, “Will the consequences of covid-19 trigger a redefining of the role of transport in the development of sustainable tourism?,” *Sustainability (Switzerland)*, vol. 13, no. 4, 2021, doi: 10.3390/su13041887.
- [45] H. Han, T. Eom, A. Al-Ansi, H. B. Ryu, and W. Kim, “Community-based tourism as a sustainable direction in destination development: An empirical examination of visitor behaviors,” *Sustainability (Switzerland)*, vol. 11, no. 10, 2019, doi: 10.3390/su11102864.
- [46] J. Jeuring and I. Diaz-Soria, “Introduction: proximity and intraregional aspects of tourism,” *Tourism Geographies*, vol. 19, no. 1, 2017, doi: 10.1080/14616688.2016.1233290.
- [47] D. A. Howard, Z. Ma, C. Veje, A. Clausen, J. M. Aaslyng, and B. N. Jørgensen, “Greenhouse industry 4.0 – digital twin technology for commercial greenhouses,” *Energy Informatics*, vol. 4, 2021, doi: 10.1186/s42162-021-00161-9.
- [48] J. H. G. Jeuring and T. Haartsen, “The challenge of

- proximity: the (un)attractiveness of near-home tourism destinations,” *Tourism Geographies*, vol. 19, no. 1, 2017, doi: 10.1080/14616688.2016.1175024.
- [49] T. Salmela, H. Nevala, M. Nousiainen, and O. Rantala, “Proximity tourism: A thematic literature review,” *Matkailututkimus*, vol. 17, no. 1, 2021, doi: 10.33351/mt.107997.
- [50] E. Bertacchini, M. Nuccio, and A. Durio, “Proximity tourism and cultural amenities: Evidence from a regional museum card,” *Tourism Economics*, vol. 27, no. 1, 2021, doi: 10.1177/1354816619890230.
- [51] A. Samal, B. B. Pradhan, K. Kachhawa, D. Agrawal, and S. Kumar, “A study on the perspectives of hospitality industry with emphasis on private hospitals and tertiary teaching medical facilities in India,” *Res J Pharm Technol*, vol. 10, no. 12, 2017, doi: 10.5958/0974-360X.2017.00805.8.
- [52] S. O. José-Luis, S. C. Francisco, S. R. G. Javier, and P. R. G. D. Maria, “Energy efficiency in tourism sector: Eco-innovation measures and energy,” in *Energy Services Fundamentals and Financing*, 2020. doi: 10.1016/B978-0-12-820592-1.00010-5.
- [53] W. K. Loke, B. Nader, and M. H. Lin, “The Power of Knowledge: Driving Sustainable Hotel Choices Through Decision Trade-Offs: An Abstract,” in *Developments in Marketing Science: Proceedings of the Academy of Marketing Science*, 2022. doi: 10.1007/978-3-030-89883-0_91.
- [54] R. Dodds, “Anatolia An International Journal of Tourism and Hospitality Research Sustainable Tourism Policy—Rejuvenation or a Critical Strategic Initiative Sustainable Tourism Policy -Rejuvenation or a Critical Strategic Initiative,” *An International Journal of Tourism and Hospitality Research*, vol. 18, no. 2, 2007.
- [55] R. Semwal and A. Singh, “HARNESSING HOMESTAYS: A PROMISING APPROACH TO SAFEGUARDING CULTURAL HERITAGE,” 2023.
- [56] A. Oluwatoyin and A. Oluseun, “Total Quality Management: A Test of the Effect of TQM on Performance and Stakeholder Satisfaction,” *J Clin Nurs*, vol. 5, no. 1, 2014.
- [57] M. ; Battiste, M. ; Gacioch, M. ; Gross, and S. ; Rahman, “Specialty coffee farmers’ climate change concern and perceived ability to adapt,” 2016.
- [58] S. Shukla, “COVID-19 and Globalization, An Analysis,” *An International Multidisciplinary Double-Blind Peer-reviewed Research Journal*, vol. 136, no. May, 2020.
- [59] C. N. Madu and C.-H. Kuei, *Handbook of Disaster Risk Reduction & Management*. 2017. doi: 10.1142/10392.
- [60] A. S. Barau, “Heritage Landscapes and Challenges of Climate Change: An Example of Kano City, Nigeria,” in *First International Urban Heritage Conference*, 2014.
- [61] A. R. Szromek, D. Puciato, J. I. Markiewicz-Patkowska, and N. Colmekcioglu, “Health tourism enterprises and adaptation for sustainable development,” *International Journal of Contemporary Hospitality Management*, vol. 35, no. 1, 2023, doi: 10.1108/IJCHM-01-2022-0060.
- [62] D. Dowell, R. Bowen, and W. Morris, “Hospitality SME innovation: responses to multifaceted crises,” *British Food Journal*, 2023, doi: 10.1108/BFJ-11-2022-0982.
- [63] T. J. Mahat, L. Bláha, B. Upreti, and M. Bittner, “Climate finance and green growth: reconsidering climate-related institutions, investments, and priorities in Nepal,” *Environmental Sciences Europe*, vol. 31, no. 1. 2019. doi: 10.1186/s12302-019-0222-0.
- [64] S. Nosratabadi, A. Mosavi, S. Shamshirband, E. K. Zavadskas, A. Rakotonirainy, and K. W. Chau, “Sustainable business models: A review,” *Sustainability (Switzerland)*, vol. 11, no. 6. 2019. doi: 10.3390/su11061663.
- [65] N. Balan and B. Bordelon, “The Role of Water and Tourism Management in Venice and New Orleans,” *Shima: The International Journal of Research into Island Cultures*, vol. 15, no. 1, 2021, doi: 10.21463/shima.120.
- [66] M. Fatma, “The impact of CSR on consumer responses in the hospitality industry: CSR and consumer responses,” in *Corporate Social Responsibility: Concepts, Methodologies, Tools, and Applications*, 2018. doi: 10.4018/978-1-5225-6192-7.ch046.
- [67] I. Masood and N. T. B. Nguyen, “A Community Response to Tourism, Focusing on the Home-stay Program in Khurpatal Village in Nainital, Uttarakhand, India,” *Journal of Urban and Regional Studies on Contemporary India*, vol. 4, no. 2, 2018.
- [68] K. Dube, “South African Hotels and Hospitality Industry Response to Climate Change-Induced Water Insecurity Under the Sustainable Development Goals Banner,” in *Advances in Science, Technology and Innovation*, 2022. doi: 10.1007/978-3-031-00808-5_57.
- [69] V. A. Storey and R. Fletcher, “A Framework for Addressing Foster Care Trauma in the Public Education System: Perceptions and Implications,” *Journal of School Health*, vol. 93, no. 7, 2023, doi: 10.1111/josh.13281.
- [70] M. Alhashmi, N. Bakali, and R. Baroud, “Tolerance in uae islamic education textbooks,” *Religions (Basel)*, vol. 11, no. 8, 2020, doi: 10.3390/rel11080377.
- [71] P. Iglesias-Díaz and C. Romero-Pérez, “Emotional and inclusive classrooms and adolescent well-being: A systematic review,” *Educacion XXI*, vol. 24, no. 2, 2021, doi: 10.5944/educxx1.28705.
- [72] L. Demant-Poort and P. Berger, “‘It is not something that has been discussed’: Climate change in teacher education in Greenland and Canada,” *Journal of Geoscience Education*, vol. 69, no. 2, 2021, doi: 10.1080/10899995.2020.1858265.
- [73] C. R. Valdez, N. Herrera, K. M. Wagner, and A. Ables, “Mexican immigrant parents’ hopes for their children and parenting strategies in different immigration climates,” *Fam Process*, vol. 61, no. 3, 2022, doi: 10.1111/famp.12724.