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Towards Net-Zero Emissions in the Global Tourism Industry

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Tourism is a major contributor to global greenhouse gas emissions, and while the tourist industry is seen to have an important role to play in addressing net-zero emissions, this role has received limited attention in the academic tourism literature. This paper looks to contribute to filling that gap by exploring how the tourism industry is addressing the challenge of net-zero emissions. The paper employs a qualitative evidence synthesis approach, which reveals that many tourism companies are looking to address the transition to net-zero emissions, and provides an outline of how some of the major players within the tourism industry are approaching this transition. By way of a reflective conclusion, the author raises four wider sets of issues, relating to the concept of net-zero emissions, the role of natural capital solutions and offsetting, technological solutions, and the relationship between the net-zero transition, growth, and sustainability.

Keywords: *climate change, net-zero emissions, greenhouse gases, carbon, tourism*

Introduction

Climate change poses two different sets of challenges for tourism. On the one hand, tourism is vulnerable to climate change in a variety of ways. Rises in sea levels will threaten coastal tourism resorts and infrastructure, rising temperatures will shorten the time span for the winter sports season and threaten the viability of winter sports resorts, while changes in biodiversity will affect eco-tourism. At the same time, Scott et al. (2012) argued that climate change would have profound implications for tourism in the twenty first century including consumer holiday choices, geographic patterns of tourism demand, and the competitiveness and sustainability of destinations. On the other hand, tourism is a major contributor to greenhouse gas (principally carbon dioxide, and to a lesser extent methane and nitrous oxides) emissions, and as such, many of the major players within the tourism industry are increasingly looking to take measures to cut their emission levels. This paper focuses on the second of these two sets of challenges, namely tourism greenhouse gas emissions, and more specifically how some of the major tourism companies, are addressing net-zero emissions, which is widely seen as offering the best way to tackle climate change.

While tourism is widely seen as a major contributor to greenhouse gas emissions, the 'The Glasgow Declaration on Climate Action in Tourism' (United Nations World Tourism Organisation 2021) was described as 'a catalyst for

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increased urgency about the need to accelerate climate action in tourism and to secure strong commitments to support the global goals to halve emissions over the next decade and reach net-zero emissions as soon as possible before 2050.' The signatories to this declaration include a variety of tourism stakeholders, but tourism companies were also seen to have a major role to play.

However, while the relationship between tourism and climate change, and the transition to net-zero emissions, have become an increasingly important issue within, and for, the tourism industry, the corporate dimension, namely the role of major tourism companies in tackling net-zero emissions, has attracted very limited attention in the tourism literature, and this represents a gap in that literature. This exploratory paper draws on two sources, namely, a report published by the World Travel and Tourism Council and three mini-case studies, in an attempt to contribute to filling this gap by addressing how the tourism industry is addressing the challenge of net-zero emissions. The paper includes a brief outline of the origin and characteristics of the net-zero concept, a literature review to provide an academic context, two perspectives on how the tourism industry, collectively, and individually, is addressing greenhouse gas emissions, and some reflections on these perspectives.

The Concept of Net-Zero Greenhouse Gas Emissions

In simple terms, the term net-zero greenhouse gas emissions refers to the balance between the amount of such gases produced in, and the amount removed from, the atmosphere, and net-zero is reached when the amount added is no more than the amount removed. Policies on greenhouse gas emissions are rooted in the Kyoto Protocol and the Paris Agreement. The Kyoto Protocol, which was adopted in 1997, but due to a complex ratification process, only came into force in 2005, committed industrialised countries and economies in transition to limit, and reduce, greenhouse gas emissions in accordance with agreed individual targets. The Paris Agreement, which came into force in 2016, looked to limit global warming, and the vast majority of the world's countries committed themselves to limit global warming to well below 2 degrees Centigrade, and to pursue efforts to limit the rise to 1.5 degrees Centigrade, which would effectively see greenhouse gas emissions fall to net-zero by 2050. The Kyoto Protocol required only developed countries to reduce emissions whereas the Paris Agreement effectively recognised that climate change was a shared global problem and called on all countries to set emissions targets.

Fankhauser et al. (2022) claimed that the 'scientific concept' of net-zero greenhouse gas emissions 'emerged in the late 2000s from understanding what it would take to halt the increase in global average surface temperature due to carbon dioxide emissions.' Hale et al. (2021) claimed 'in the five years since the Paris Agreement, achieving net-zero emissions has become a defining frame for climate action', and a growing number of national and local governments and business leaders are making commitments to reach net-zero targets. That said, Fankhauser et al. (2022) also argued that while 'the concept of net-zero carbon emissions has

emerged from physical climate science, it can only be 'operationalized through social, political and economic systems.' Further, Fankhauser et al. (2022) suggested that carbon dioxide removals should be used cautiously and the use of carbon offsets should be regulated effectively.

More generally, setting net-zero targets poses major economic, social and political challenges. Maintaining political commitment and consensus, in the face of other demands on resources poses a problem at both national and international levels, and governments may need to provide corporate incentives to encourage the transition to net-zero emissions. Economically, net-zero needs to be incorporated into market mechanism, and here the focus, in part at least, will need to be on investment in renewable and low carbon power generation. Socially, people will need to adopt modes of consumption that lead to a lower demand for energy. Moving to net-zero will require cutting greenhouse gas emissions across the economy, but the consensus is that in some industries, particularly aviation, it will be very complex, and /or very expensive, to completely cut emissions and here emissions will need to be removed from the atmosphere, either by changing how we use our land so it can absorb more carbon dioxide, or by carbon being extracted directly through technologies known as carbon capture.

At the same time, it is important to identify different types of emissions in that a distinction is made between scope 1, 2, and 3 emissions. In simple terms, scope 1 emissions, include direct emissions from a company's owned or controlled sources, while both scope 2 and 3 emissions are indirect emission that occur as a consequence of a company's activities, but which occur at sources owned or controlled by another company. Scope 2 emissions include greenhouse gas emissions from purchased or acquired energy, generated offsite, but consumed by a company. Scope 3 emissions include all indirect emissions that occur in a company's value chain.

Literature Review

Over a decade ago, Kajan and Saarinen (2012) suggested that the relationship between tourism and climate change had been studied for a relatively long time in tourism research, but in the same year, Pang et al. (2012) reported that 'research on the relationship between tourism and climate lagged significantly behind that of other studies on climate change', while Becken (2013) described the academic debate on tourism and climate change as an 'evolving knowledge domain.' During the last decade, research on the impact of climate change on tourism has grown rapidly, and a variety of research foci have emerged. Such research has, for example, included the challenge climate change poses for sustainable tourism (e.g., Scott 2021), the impacts of climate change on coastal tourism (e.g., Arabadzhyan et al. 2021), and on small islands in developing nations (e.g., Pedapalli et al. 2022), and the extent to which vulnerability and resilience to climate change affect tourism and the overall economy (e.g., Dogru et al. 2019).

Scott (2021), for example, claimed, that evidence of the damaging impact of climate change on tourism assets is already accumulating, and more worryingly

that the current impacts are 'but the tip of the iceberg versus what is anticipated in the decades ahead', and that 'sector harm will be much greater under high emission temperature increases.' Further, Scott (2021) argued such impacts are not being studied and that important learning opportunities are being missed, and in conclusion he argued that enhanced inter-and trans-disciplinary research on climate change is imperative if governments are to understand how global tourism is impacted by climate change, and not overlooked in the development of response strategies.

Research into the greenhouse gas emissions associated with tourism has embraced a variety of themes, but such research has an international or national, rather than a corporate, dimension. Khan et al. (2019), for example, explained the nexus of greenhouse gas emissions, with tourism, financial development, energy use and trade in 34 high income countries across three continents from 1995 to 2017. Their findings demonstrated the long-run co-integration of tourism's share of exports, energy use, renewable energy and per capita greenhouse gas emissions. Jones (2012) employed an extended tourism environmental satellite account methodology to examine the case of tourism in Wales, and demonstrated how an estimate of the emissions associated with trips to, and in, the region, from the rest of the UK, and from abroad, can contribute to regional aspirations to reduce greenhouse gas emissions. This analysis suggested that substantial emissions cuts are dependent upon technical developments outside of tourism itself.

Sun et al. (2022) looked to explore whether national tourism growth targets could be accommodated within Norway's national emission targets. Their findings suggested that the carbon intensity of tourism in Norway is twice the national average and more specifically, that aviation is a major barrier to emissions reductions as it accounts for some 17% of national tourism revenue, and that the extrapolation of current trends suggested that tourism will be the largest emissions sub-sector of the Norwegian economy by 2030. More generally, the authors concluded with a call for further work on policies and legislation, cost assessments, and technology upscaling, 'as well as the more challenging questions of changes in the tourism system that will economically affect specific sectors and businesses' (Sun et al. 2022).

Gossling (2013) compared and analysed existing inventories of national emissions from tourism, and despite the difficulties in making comparisons because such inventories use different system boundaries and allocation principles, he was able to estimate the contribution made by tourism to national emissions, and its greenhouse gas intensity in comparison to other economic sectors. The findings suggested that while emissions from tourism were significant in all the countries studied, they did, in some of the 22 countries studied, exceed official emissions as calculated on the basis of guidelines for national emission inventories under the Kyoto Protocol.

In charting the increase in tourism's global carbon footprint and in global greenhouse emissions between 2009 and 2013, Lenzen et al. (2018) revealed that the majority of this footprint is exerted by, and in, high-income countries. Further, the authors suggested that the rapid increase in tourism demand was outstripping the decarbonization of tourism related technology, and looking to the future, that

tourism would make up a growing part of the world's greenhouse gas emissions. More positively, though against the findings of many other studies, research by Banga et al. (2022) revealed that in the OECD (Organisation for Economic Cooperation and Development) countries, tourism did not have any significant link with greenhouse gas emissions. Banga et al (2022) argued that this was explained by the fact that these countries had long started a shift from the use of fossil fuels to renewable sources of energy.

The concept of net-zero emissions and tourism has received only limited attention in the academic tourism literature, and the current work is fragmented and it is not possible to identify specific research streams. Nevertheless, some work merits attention. Scott and Gossling (2021), for example, took the Glasgow Declaration as their starting point, but argued that it lacked specific actions by which a transition to net-zero might be achieved. Indeed, the authors argued that the climate change and tourism literature has predominantly focused on the impacts of changing climate on tourism assets, operations, and on demand, and that less work has been dedicated to assessing tourism sector emissions and strategies to decarbonize tourism operations and travel. At the same time, Scott and Gossling (2021) argued that tourism growth projections for the industry are not compatible with a net-zero scenario, that this poses increasingly vulnerability for the continuing development of tourism, and emphasised the need to develop a critical new research agenda to determine how a transition to net-zero might be achieved and how this would affect tourism development.

Vourdoubas (2018) looked to investigate the possibility of using various renewable energy technologies available in the Mediterranean region in zeroing their carbon footprint due to operational energy use, and to indicate a combination of renewable energy technologies which could be used in hotels to enable them to achieve net-zero carbon emissions. The author suggested that the use of renewable energy technologies was technically feasible in hotels to replace fossil fuels for heat and power generation in the Mediterranean region, and that it met the expectations of environmentally conscious tourists who wish to spend their holidays in green hotels. At the same time, the reduction of carbon emissions would result in environmental benefits mitigating climate change. However, Vourdoubas (2018) also argued that in order to employ renewable energy technologies in hotels in the region, a number of existing barriers, including the lack of hotel owners' awareness of the benefits of using renewable energy technologies and the lack of capital available for investment in such technologies, would have to be removed.

Method of Enquiry

This exploratory paper draws on secondary sources, and the method of enquiry deployed is essentially a qualitative evidence synthesis, which Grant and Booth (2009) described as a 'method for integrating or comparing the findings from qualitative studies' that 'looks for themes or constructs that lie in or across individual qualitative studies.' Fleming and Noyes (2021) suggested that this approach is particularly valuable where, as with the current topic, there is a lack of

primary qualitative research studies, in that it looks to establish a greater understanding of the major issues and a richer interpretation of group, and in this case corporate, experiences.

Two sets of information sources were employed in an attempt to obtain some insight into how companies within the tourism industry were addressing the transition to net-zero greenhouse gas emissions. The first draws on a recent report from the World Travel and Tourism Council (2021), entitled 'Net Zero Roadmap for Travel and Tourism.' The World Travel and Tourism Council, established in 1990, draws its Council Members from the Chairs, Presidents and Chief Executives of the world's leading private sector travel & tourism businesses. The second source is mini-case studies to outline how three leading tourism companies, namely Hilton, The Walt Disney Company and Marriott International, report approaching the transition to net-zero. The material for the mini-case studies is drawn from the three companies' latest sustainability/environmental, social and governance reports.

Findings

In collaboration with the United Nations Environment Programme and Accenture, the World Travel and Tourism Council published 'Net-Zero Roadmap for Travel and Tourism' (World Travel and Tourism Council 2021). This report recognised that travel and tourism is not only strongly affected by the impact of climate change but that as an important source of greenhouse gas emissions, it is actively contributing to such change, and therefore that it is of the upmost importance to decarbonise the sector as quickly as possible and reach net-zero by 2050. The report emphasised that businesses across the tourism sector, including tour operators, accommodation owners, cruise and travel agencies, along with aviation operators, had a crucial role to play in achieving a transition to net-zero greenhouse gas emissions. More specifically, the report looked to provide a current picture of climate action in selected businesses within the travel and tourism industries, an outline of needs, challenges and opportunities, and some insights into what net-zero journeys could look like for different types of businesses.

In recognising that some sectors within the travel and tourism industry had been able to make significant and speedy reductions to their carbon emissions, the report identified a number of companies where early progress has been made including the Accor Group, Bucuti and Tara Beach Resort in Aruba, Intrepid, and Carnival Corporation. The Accor Group, for example, had reported continuous greenhouse gas reductions since launching its first sustainability programme in 2006, and here reducing emissions has been focused upon food waste and buildings. More specifically, the Accor Group reported taking a range of initiatives to reduce food waste and to promote healthy and sustainable food, and that all its construction and its renovation work were low carbon projects. Carnival Corporation, the cruise operator with a fleet of over 100 vessels across ten brands, has set out its ambition to be carbon neutral by 2050, and its activities to reduce

emissions include optimising itinerary planning, utilising more liquefied natural gas, and looking to use cleaner shore power.

More generally, the World Travel and Tourism Council report claimed that the travel and tourism industry was committed to emission reduction targets, and that of a sample of 250 businesses across the industry, 42% had set climate targets. However, there were marked variations within the industry. Some 34% of the 17 hotel chains included in the sample had set a carbon reduction target and 4 were part of the Race to Zero campaign, a global campaign to rally leadership and support from a wide range of stakeholders for a zero-carbon emissions future. While 84% of cruise lines reported defining a decarbonisation target, the majority of these companies did not report their scope 3 emissions or only reported emissions related to employee commuting. Only 14% of the travel agencies reported having a sustainability target and none had a long-term emissions target.

Looking to the future the report identified a number of challenges faced by companies in moving to a net-zero future. Four common challenges, namely emission measurement and reporting; regulatory frameworks and government support; financing; and dependence on local infrastructure; were identified. More specific challenges were associated the different businesses within the tourist industry. Tour operators, for example, were seen to face challenges in addressing target setting, dependency on infrastructure and trip emission calculation, while cruise operators faced challenges posed by the availability, and prioritisation, of decarbonisation solutions, reporting scope 3 emissions, and the fragmented regulatory landscape.

The mini-case studies provided some specific insights into how three of the major players within the tourism industry have approached the transition to net-zero emissions. The Walt Disney Company (2022) emphasised its belief that business has an integral role to play in the transition to a low carbon future and emphasised its commitment 'to achieving net-zero greenhouse gas emissions by 2030.' More specifically, the company reported addressing its scope 2 and 3 emissions through a science-based reduction hierarchy, avoiding emissions through sustainable design, reducing emissions through efficiencies, replacing high carbon energy sources with lower carbon alternatives, and investing in natural climate solutions. The company also explicitly recognised that its extended value chain, including those associated with the production of consumer goods, also generated substantial scope 3 emissions, and claimed to be working to identify all the sources of these emissions.

In reporting its commitment to purchase, or produce, 100% zero carbon electricity by 2030, the company outlined details of some of its initiatives which were contributing to this goal. In 2021, for example, the company reported the completion of the installation of a solar array, which will supply 70% of the power for the Hong Kong Disneyland complex. In Florida, US, by 2023, 40% of the Disney theme parks electricity needs will be met by solar facilities. At the same time, the company, have also invested in energy efficiency projects, including the installation of Edison-style LED light bulbs that reduce energy consumption, utilising fuel efficiencies and low carbon fuels, and trialling low carbon shipping pilot schemes on its cruise vessels.

The Walt Disney Company also reported on its investment in natural climate solutions to 'provide immediate emission reductions until technological solutions are available and accessible' (The Walt Disney Company 2022). Here the company claimed to 'invest in high-quality, verified and rigorously vetted natural climate solutions that generate meaningful carbon reductions as well as positive social and economic impacts' (The Walt Disney Company 2022). In illustrating such investment, the company cited its work with the Wildlife Conservation Society in the conservation of the Keo Seima forest in Cambodia, where the sustainable use of land and resources protects habitats and prevents further release of carbon into the atmosphere from deforestation.

Under the banner 'Paving the Way to Net-Zero', Hilton (2022) outlined is plans to reduce its environmental footprint as part of its commitment to 'pave the way to a net-zero future for our company and the global travel and tourism industry.' Further, the company asserted its belief that it was in the long-term interests of its business to build and operate sustainable, efficient hotels, and that such a goal was consistent with the expectations of a growing number of consumers. Hilton claimed to be the first company in the industry to set science-based targets to reduce its greenhouse gas emissions and to be continually looking to 'promote best practice in emissions reductions and net-zero targets in line with climate science' (Hilton 2022).

The company's primary source of emissions comes from its hotels and the company reported that although hotel occupancy levels declined during the COVID-19 pandemic, 2021 saw an increase in energy consumption, across its global portfolio. However, the company claimed that the pandemic provided an opportunity to collect data to enable it to optimise the efficiency of its hotel operations in times of reduced occupancy, including partial building shutdowns, variable plant load operations and the implementation of enhanced building controls. At the same time, as part of Hilton's partnership commitment to the US Department of Energy's Better Climate Challenge-a national initiative committed to reducing greenhouse gas emissions-the company made a public commitment to a more than 50% reduction in greenhouse gas emissions across its managed hotel operations over the next 10 years.

Hilton partnered with South Pole, a Swiss carbon finance company, to purchase carbon credits, and the partnership has supported a number of projects. The credits supporting these projects were purchased to offset unavoidable emissions. The company is committed to develop mitigation plans for existing properties as well as for developments in high risk areas. The company has also worked with the World Wildlife Fund to identify important destinations that might be experiencing higher social and environmental stress to help prioritise its destination stewardship initiatives. Hilton also reported on a wind energy project in the Indian states of Rajasthan, Andhra Pradesh, Madhya Pradesh, and Telangana, which looks to tackle climate change by providing a renewable source of electricity to the Indian grid.

Marriott International (2022) emphasised that its approach to 'reducing greenhouse gas emissions is centred around the implementation of technologies to track energy consumption, investments in efficiency projects, and the increased

use of renewable energy.' In looking to manage the environmental footprint of its hotels, and to assist with the effective management of carbon emissions and energy consumption, the company's internal reporting platform supports the tracking and management of environmental data across the Marriott's portfolio of hotels. The company also reported regularly reviewing its performance against its carbon reduction and renewable energy goals. Here the company emphasised its commitment to 'a science-based emission reduction target in line with 1.5-degree centigrade emissions scenarios, and set a long-term science-based target to reach net-zero value chain greenhouse gas emissions by no later than 2050' (Marriott International 2022).

Marriott International (2022) reported on its '2025 Carbon Reduction Goal', and here the focus was 'to reduce carbon intensity per square metre of conditioned space by 30% from its 2016 baseline.' However, the company also reported that it expected to retire its 2025 carbon reduction goal and move to an absolute carbon reduction goal as part of its aim to reach net-zero greenhouse gas emissions by 2050, if not before. At the same time, the company also reported on moving towards 'improving energy efficiencies' (Marriott International 2022) and here it reported that it, and its ownership groups, looked to evaluate energy efficiency opportunities, including the implementation of energy and environmental action plans, retro-commissioning, lighting retrofits and building automation systems. In 2021, for example, the company reported that a number of its managed hotels had implemented energy efficiency projects.

Marriott International's '2025 Renewable Energy Goal' was focused on a commitment to 'source a minimum of 30% of its overall electricity from renewable energy by 2025' (Marriott International 2022). Here, the company emphasised that its company properties and its ownership groups, continued to invest in on-site renewable energy solutions, and reported that such investments were beneficial in delivering increased energy security and control over costs and supply. By way of illustrations of such benefits Marriott International cited the installation of a solar photovoltaic system at Wailea Beach Resort in Hawaii, US, the installation of over 400 thermal solar panel collectors at the Dead Sea Marriott Resort and Spa at Amman, Jordan, and the installation of over 2,000 solar panels at the Ritz-Carlton at Male, Maldives.

Reflective Discussion

The findings suggested that many tourism companies are looking to address the transition to net-zero emissions, and provided some illustrative outlines of how three major players within the tourism industry are approaching this transition. The World Travel and Tourism report reveals a mixed picture in that while many of the sampled companies claimed a commitment to emission reduction targets, the majority did not have such targets, and there was a marked variation in the commitment levels across the sectors of the travel and tourism industry. As such, this can be seen to call into some question the extent to which the transition to net-zero greenhouse gas emissions by the tourism industry by

2050 is a realistic goal. The three mini-case studies illustrated how the selected companies were approaching the transition to net-zero emissions, and here the focus was a range of initiatives including, improving energy efficiency, a switch to renewable energy sources, and investment in natural climate solutions. That said, the specific illustrative examples used to evidence some of the companies' commitments to transition, and to net-zero emissions, must be seen as just that, examples rather than universal practice.

While there is evidence that the tourism industry is making some progress in transitioning to net-zero emissions, four sets of more general issues merit reflective discussion. Firstly, the concept of net-zero is seen as flawed by some critics. Friends of the Earth Scotland (2022), for example, claimed that 'the concept of net-zero is increasingly used to disguise inaction', with 'companies and corporations adopting net-zero targets rather than real zero targets.' Further Friends of the Earth Scotland (2022) argued 'the problem with net-zero is that it leaves the door open to continue emitting greenhouse gases in the short term on the basis that one day they will be sequestrated or captured and stored', and that 'this kicks real action to reduce emissions into the long grass, by which time devastating climate impacts will be locked in if it turns out the technologies don't work.'

Secondly, while many companies within the tourism industry have emphasised the role of natural capital solutions and offsetting, for example by avoiding deforestation and sequestering emissions through tree planting and peatland restoration, this approach has its critics. Friends of the Earth (2021) argued that 'carbon and nature offsetting does not work', and that 'it cannot be made to work at scale, undermining the claims that offsets are a valid part of net-zero strategies.' More specifically, Friends of the Earth (2021) argued that 'carbon offsetting and nature offsets' are 'founded on assumptions of equivalence – that it is possible to trade off harm in one location with good intentions elsewhere. But it is clearly not the case for nature, if only because each habitat is unique and not replaceable.' Further, Friends of the Earth (2021) argued that 'burning fossil fuels releases geological carbon from what is essentially a permanent carbon store. But capturing carbon biologically in natural habitats and ecosystems – by tree planting, peatland restoration and so on – is very different because carbon is retained for a much shorter duration.'

Thirdly, some tourism companies, including the Walt Disney Company, as cited earlier, have reported employing natural climate solutions, until technological solutions are available, but visions of technological solutions promoting a transition to net-zero emissions have met a mixed reception. On the one hand, while McKinsey Company (2022), for example, argued that 'developing and deploying climate technologies is critical for the world's net-zero agenda', it also suggested that 'reaching net-zero emissions will require an immense effort to invent, refine, and deploy climate technologies.' Friends of the Earth Scotland (2022) argued many of the 'speculative negative emission technologies' are 'politically and practically unfeasible, and are also likely to cause wider environmental damage and human rights abuses.' More generally, Schor (2005) suggested that 'the popularity of technological solutions is also attributable to the

fact that they are apolitical and do not challenge the macrostructures of production and consumption.'

Finally, the tourism industry's vision for the transition to net-zero greenhouse gas emissions must also has to be seen within the idiom of the continuing growth of tourism, and this, in turn raises 'the growth paradox', namely 'can tourism ever be sustainable?' (World Economic Forum 2017). Here the World Travel and Tourism Council (2021) takes a positive position arguing that 'the adoption of sustainable practices can strengthen business performance through reduced energy consumption and costs, fuel efficiency improvements, waste reduction, increased risk preparedness, as well as increased brand awareness and revenue growth opportunities. These in turn can increase the competitive advantage of a business and make it more attractive for consumers, employees, and investors.' However, Fankhauser et al.'s (2022) argument that 'net-zero must be aligned with broader sustainable development objectives, which implies an equitable net-zero transition, socio-ecological sustainability and the pursuit of broad economic opportunities', would seem to pose daunting, and possibly intractable, challenges for the tourism industry.

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