

CLIMATE ADAPTATION IN URBAN TOURISM DESTINATIONS: INSIGHTS FROM BULAWAYO, ZIMBABWE

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Abstract : Climate change is one of the leading challenges confronting urban tourism destinations in the Global South. Nevertheless, this issue is relatively neglected in existing scholarship and most especially in sub-Saharan Africa. Climate change is an integral part of the 'risky landscape' of contemporary urban Africa. The novel contribution of this article is to investigate climate change adaptation by urban tourism businesses in the setting of Bulawayo, Zimbabwe's second-largest city. The research uses a quantitative research design to investigate climate adaptation and mitigation of the tourism industry in Bulawayo. In total, 160 responses were obtained using a stratified random sampling technique to ensure representation from the different sub-sectors of the tourism industry. Key findings reveal leading initiatives as the adoption of energy-efficient technologies, the use of renewable energy, training employees in sustainable and green practices, the installation of water-saving systems, climate emergency response systems, collaboration with other stakeholders on climate action, and efforts to integrate climate risks in strategic planning. Overall, the study adds to the limited existing literature in the African context concerning urban tourism and climate adaptation strategies and their challenges.

Key words: urban tourism, climate change adaptation, Global South, African cities, Zimbabwe

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INTRODUCTION

Urban areas have become important and vibrant tourism spaces with diverse attractions and the ability to cater for people visiting for a range of different reasons (Morrison and Coca-Stefaniak, 2021; Morrison and Maxim, 2022). Visits to urban areas can be undertaken for purposes that include

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business, visiting friends and relatives (VFR), health, leisure and entertainment (Law, 1993, 1996). Urban tourism is now acknowledged as a major subsector of the tourism industry and a vital contribution to city economic development (Kálmán et al., 2024; Shereni and Ndhlovu, 2024). The past few decades have seen research on urban tourism grow in an exponential manner. The literature focuses on various issues that include pro-poor tourism, overtourism, sustainable tourism, tourism impacts in urban environments, slum tourism and residents' perception, among others (Aall and Koens, 2019; Rogerson and Rogerson, 2019; Page and Duignan, 2023; Gómez-Bruna et al., 2024; Koens and Milano, 2024; Maxim, 2024; Makoni and Mearns, 2025). Although most of the existing scholarship continues to be about urban tourism in the Global North, in recent years a considerable amount of research has emerged concerning important urban tourism destinations in the Global South, including in sub-Saharan Africa (Rogerson and Rogerson, 2021a; Horn and Visser, 2023; Makoni and Rogerson, 2023; Rogerson et al., 2024; Drummond, 2024; Makoni and Rogerson, 2024; Jessa and Rogerson, 2025a, 2025b; Rogerson, 2025; Rogerson and Rogerson, 2025a, 2025b).

Arguably, the issue of climate change is humanity's biggest challenge, with the imperative for the enactment of mitigation and adaptation strategies by multiple actors (Dodman et al., 2019; Birchall et al., 2023; S20, 2025). Scott and Gössling (2025) report that 2024 was recorded as the warmest year to date, exceeding the 1.5°C thresholds set out in the Paris agreement and further increasing global climate risks. During recent years, the matter of climate-responsive local economic development has gained traction as a strategic approach towards sustainable development (Nor, 2025). The concept of climate-responsive or climate-smart development "integrates climate adaptation and mitigation strategies with economic development initiatives, aiming to increase the resilience of local economies to climate change impacts" (Nor, 2025, p. 1). Not surprisingly, therefore, within the framing of sustainable tourism discussions, climate change issues have gained considerable attention in urban destinations (Pandy and Rogerson, 2019). This is because climate change and variability are becoming a common phenomenon in urban environments, including many tourism destinations across the world (Lin et al., 2021; Gössling and Scott, 2025). Furthermore, climate change impacts pose an existential threat to natural and human systems (Nguyen et al., 2025).

As documented by Carmody et al. (2024, p. 155), "many African cities are especially vulnerable to the uneven impacts of climate change through heatwaves, sea-level rise, coastal erosion, flooding and droughts". African urban settings are characterised by a diversity in climate hazards, urban vulnerability and governance structures, which necessitate adaptation strategies suited to the local context (Cobbinah and Finn, 2023). Climate change compounds several existing challenges that confront urban tourist destinations in sub-Saharan Africa. Among these challenges are weak governance, inequalities, poor service provision, unplanned urban growth and unemployment (Leonard et al., 2020; Musavengane et al., 2020). Many African cities are considered to face immediate and imminent risks from climate change, raising the urgency for mitigation and adaptation strategies (Pandy and Rogerson, 2019). Urban tourism is still, however, underrepresented in the burgeoning African scholarship around climate change (Fitchett, 2021; Saarinen et al., 2022).

This article, therefore, adds to the limited body of writings and debates in the African context concerning urban tourism and climate adaptation strategies. The novel contribution of the paper is to examine climate change adaptation and mitigation in the context of Zimbabwean urban tourism. Tourism scholarship in Zimbabwe is mostly rural-biased, a trend observed with regard to African tourism research as a whole (Rogerson and Rogerson, 2021b). The Zimbabwean urban landscape is a suitable setting to examine questions about climate adaptation and mitigation from a tourism lens.

LITERATURE REVIEW

As Broto (2017) stresses, urban areas as a whole and cities in particular can be critical strategic arenas for climate change action. For example, with visions for climate neutrality, European cities are considered as unique spaces for the implementation of smart initiatives for climate adaptation and mitigation (Kilkiş et al., 2024; Ulpiani et al., 2025a, 2025b). Climate change has evolved from being a phenomenon imagined in the future to a dynamic business and policy reality severely impacting the tourism industry (Gössling and Scott, 2025). The increased intensity and frequency of extreme weather events disrupt the functioning of the urban ecosystem and change the climatic suitability for tourism in cities (Fitchett, 2021; Pandey and Ghosh, 2023). The high concentration of energy-consuming activities in urban areas is considered one of the major contributing factors to GHG emissions (Salvia et al., 2023). This increases climate risks for urban tourism destinations not only in Africa but globally. In response, cities are necessarily developing adaptation and mitigation strategies that cushion the urban ecosystem from the impacts of climate change (Pandey and Ghosh, 2023).

Regardless of Africa contributing less to global carbon emissions, the continent faces the highest threats of climate change in large measure due to inadequate adaptive capacities (Saarinen et al., 2022; Carmody et al., 2024; Dube et al., 2024). Across sub-Saharan Africa, many cities have already started experiencing the impacts of climate change, with frequent flooding, heat waves and droughts increasing in intensity (Carmody et al., 2024). This raises the importance of integrating climate change issues in urban planning and creating sustainable cities and communities, as is emphasised by the United Nations Sustainable Development Goal (SDG)11 (Teller and Saarinen, 2024). It is important to note that urban areas are a major part of climate change discussions because of their significant contributions to greenhouse gas emissions and at the same time, because they are vulnerable to climate change (Aall and Koens, 2019). In support, Salvia et al. (2023) observe that urban areas are responsible for 70 percent of global greenhouse gas emissions, making them highly exposed to climate change impacts.

Arguably, despite growing awareness of the challenges concerning climate change across much of sub-Saharan Africa, there is limited capacity to undertake certain climate adaptation practices and as well to integrate climate adaptation with local economic strategies. This minimal capacity for implementation “is hindered by weak infrastructure, governance and financial constraints” (Nor, 2025, p. 1). For other observers, the limits and ineffectiveness of adaptation policies require a political economy base to climate change in order to understand the hegemony of neoliberal approaches toward climate risk management (Chakraborty et al., 2025).

Fitchett (2021) maintains that adaptation and mitigation measures depend largely on the already existing climate challenges, the context-specific climate hazards, as well as the demographics of the city's tourism sector. The study further notes that measures such as installation of sustainable urban drainage systems, low flow taps, installation of fans and air conditioning, green building designs and the use of dollozes in coastal cities have been adopted largely depending on the nature of the tourism hazards facing a particular city (Fitchett, 2021). In addition, Lin et al. (2021) point out the effectiveness of a balanced integration of technological as well as urban nature-based and social solutions to adequately adapt cities to climate change.

Phasing out fossil energy from transport, heating and cooling, among other energy uses, is critical in reducing carbon emissions in urban areas (Pan et al., 2023). Vehicle use in urban tourism is high and includes airport transfers as well as moving tourists from one attraction to another. This increases GHG emissions because most of the transport options available in the African context utilise fossil fuels like petrol and diesel. Balaban and de Oliveira (2022) propose smart mobility, which entails introducing innovative solutions in urban mobility aimed at reducing the carbon footprint in the way tourists move from one place to another in urban spaces. Although this is still limited in the African urban context, it remains a viable option to adapt and mitigate climate change. While innovations such as the adoption of electric vehicles and sustainable fuels have gained popularity, especially in the global north urban destinations, their uptake in the global south is still limited (Balaban and de Oliveira, 2022).

Tang et al. (2023) argue that promoting green consumption among tourists can effectively reduce the negative impacts of tourism. In line with this, pro-environmental behaviours such as walking and cycling can significantly reduce carbon emissions from motor vehicle use (Pan et al., 2023). Reducing vehicle use is one critical way of cutting carbon emissions, considering that transport is responsible for about half of tourism's contributions to climate change (Gössling et al., 2024). This can be achieved by encouraging the use of public transport over personal vehicles (Lin et al., 2021). In line with this, the growth of ride sharing in urban environments is also acknowledged for its role in cutting carbon footprint per person because of its ability to allow people to share one vehicle (Giddy, 2019; Perkumienė et al., 2021).

Green infrastructures are now widely considered critical in achieving carbon neutrality in cities (Barreira et al., 2023). This includes interventions like creating urban parks, community gardens and green roofs (Pandey and Ghosh, 2023). Complementing green infrastructure with green building designs, including green roofs, reduces heating and cooling demands in residential and industrial areas, which ultimately reduces energy use (Rogerson, 2014; Pan et al., 2023). Considering that the energy mix for most African countries is still dominated by energy produced from coal-powered plants, reducing energy use ultimately results in a reduction in GHG from energy production. Moreover, urban areas are mainly associated with the urban heat island, which increases the intensity of climate change-induced heatwaves. Investment in green infrastructure and green building designs provides the cooling effect, cushioning tourists from the resultant severe impacts of heatwaves (Fitchett, 2021).

The adoption of green and renewable energy is a common initiative adopted in the tourism industry, as it helps to cut carbon emissions (Dube and

Nhamo, 2021). Shereni (2022) confirms that clean energy sources like solar, LEP gas and hydroelectricity are valuable pathways for reducing carbon emissions in the tourism industry. Other climate adaptation measures that have been widely adopted in different contexts, albeit not limited to urban tourism destinations, include rainwater harvesting and water saving strategies, air conditioning, and diversification of tourism activities away from climate-dependent offerings (Saarinen et al., 2022).

Nieuwland & Nieuwland (2024) identified several external barriers faced by the tourism industry in transitioning to sustainability. These include the existence of weak regulatory frameworks, the unavailability of infrastructure, as well as the belief that others are not willing to cooperate with a perception that different actors are responsible for the transition to sustainability. Nieuwland & Nieuwland (2024) further isolated internal barriers as a lack of knowledge, a lack of time and resources as well. Fitchett (2021) argues that one of the major challenges in adapting to climate change is the attitude of tourism operators who are quite often reluctant to invest in infrastructural and managerial change because of the belief that climate change will be a challenge only in the distant future.

Financial restrictions present limitations for small, medium and micro tourism enterprises as they may fail to meet the capital requirements for climate adaptation and mitigation (Fitchett, 2021). Investment in solar and green building designs demands huge capital investments, which may not be readily available, especially in smaller tourism establishments (Shereni, 2022). Saarinen et al. (2022) mention that large-scale infrastructure adjustment is required to adapt to climate change effectively, however, this strategy remains difficult to adapt and implement in the African context due to huge capital requirements. Lin et al. (2021) identified several other challenges that limit adaptation capacities in urban areas, including competing priorities, limited space for green strategies and retrofitting, as well as uncertainties around timing and impact of climate change. Saarinen et al. (2022) further contend that the major challenge facing African tourism in adapting to climate change is the failure to prepare for and invest in a climate future and lack of knowledge on climate scenarios by the non-scientific community.

METHODOLOGY

The research was undertaken in the city of Bulawayo, which is in the national urban settlement system of Zimbabwe. After Harare, the national capital, Bulawayo is Zimbabwe's second largest city. Historically, in the colonial period and early independence years, Bulawayo was a significant industrial centre of Zimbabwe. In recent years, however, the city has experienced economic decline, which has been exacerbated by recurrent droughts and water shortages (Maphosa, 2025). Indeed, Nyathi et al. (2025, p. 13) show that the impacts of climate change in the city and surrounds "are progressively apparent".

Geographically, Bulawayo is situated in a semi-arid region, and thus the challenge of climate change becomes a local imperative (Maphosa & Moyo, 2024). Indeed, Kurehwatira et al. (2025, p. 1) assert that "Zimbabwe's urban centres are confronted by poly-crises, including climate challenges". Nevertheless, Nyathi et al. (2025, p. 2) highlight that "existing literature lacks sufficient focus on direct actions toward climate risk and adaptation in Bulawayo". In terms of tourism, Bulawayo is the cultural hub of Zimbabwe. Indeed, Matura and Mapira (2018, p. 134) assert that Bulawayo "is the hub of

history, culture and heritage” and “the best place to visit and appreciate” the heritage of Zimbabwe. Cultural tourism thus, is a well-developed niche as part of local urban tourism and alongside business tourism, both formal and informal. The city of Bulawayo is also important as a gateway to other tourism attractions in Zimbabwe, such as Matobo National Park, Hwange National Park and the iconic attraction of Victoria Falls.

The study adopted a quantitative research design to investigate climate adaptation and mitigation of the tourism industry in the urban environment of Bulawayo. A stratified random sampling technique was adopted to ensure representation from the different sub-sectors of the tourism industry. The population of the study was drawn from the list of registered tourism operators provided by the Zimbabwe Tourism Authority (ZTA). It comprised tourism businesses operating in Bulawayo that include guest houses, lodges, hunting operators, hotels, restaurants, travel agents, car rentals, tour operators, safari operators and visitor activities. These businesses constituted the sampling strata for the study because their vulnerability, exposure and response to climate change are variable. Random sampling was further done in each stratum to establish climate adaptation and mitigation practices by tourism businesses. The sample size reached up to 160 respondents spread across different subsectors of the tourism industry operating in the city of Bulawayo.

A semi-structured questionnaire was designed to collect data from the respondents. The questionnaire included information on the demographic profile of the respondents, the climate adaptation and mitigation initiatives pursued by the tourism businesses and the challenges faced in adapting and mitigating to climate change. The questionnaire was administered online using the Google Forms platform. Respondents were first contacted by telephone to ask for their consent to participate in the study, and the link to the questionnaire was shared with the respondents who accepted to participate. The questionnaire was administered to supervisors, departmental managers, general managers, travel consultants, camp managers and owners in tourism establishments. These were considered to be knowledgeable about climate action activities in their organisations because of their strategic positions.

Data analysis was done using the Statistical Package for the Social Sciences (SPSS version 29). Frequency distribution was computed for the demographic characteristics of the respondents. This was followed by the computation of the mean scores across the different sub-sectors of the tourism industry to establish their climate adaptation and mitigation practices, as well as the challenges they face. One-way Analysis of Variance (ANOVA) was carried out to determine if there were significant differences in the mean scores across the sampled sub-sectors of the tourism industry.

RESULTS

Table 1 presents the demographic characteristics of the respondents, highlighting that the majority were in the 31-40 years age group (49%), with more males (53%) than females (47%) and 48% of the respondents holding a bachelor's degree. The results reveal that most respondents were from guest houses (38%), followed by hunting operators (16%) and hotels (14%). More than 90% of the respondents revealed that they are involved in climate change activities within their organisations and also that their establishments are

experiencing climate-related impacts. Overall, the results reflect that the respondents are knowledgeable about climate change issues facing their organisations because of their involvement in climate change and environmental initiatives, making them suitable participants for this study.

Table 1. Demographic Characteristics of the Respondents (n=160)

	Variable	Frequency	Percentage
Age of Respondents	18-30 Years	49	30.6
	31-40 Years	79	49.4
	41-50 Years	31	19.4
	51 Years and Above	1	0.6
Gender	Male	85	53.1
	Female	75	46.9
Highest Educational Qualification	Bachelor's Degree	77	48.1
	Diploma	49	30.6
	Postgraduate Qualification	19	11.9
	High School	15	9.4
Sector of the Tourism Industry	Guest house/Lodge	61	38.1
	Hunting Operator	26	16.3
	Hotel	22	13.8
	Restaurant	20	12.5
	Travel Agent	11	6.9
	Car Rental	8	5.0
	Tour Operator	5	3.1
	Safari Operator	4	2.5
	Visitor Activity	3	1.9
Involvement in climate change and environmental initiatives	Yes	146	91.2
	No	14	8.8
Experience of climate-related impacts	Yes	133	83.1
	No	27	16.9

The respondents were asked to identify climate change adaptation and mitigation strategies which had been adopted by their relevant organisations. The findings are presented in Table 2. These show that the respondents agree on the presence of several initiatives in their organisations based on the mean scores within the 3.41-4.20 range. Some of the leading initiatives identified include the adoption of energy-efficient technologies, the use of renewable energy, training employees in sustainable and green practices, the installation of water-saving systems, a climate emergency response system in place, collaborating with other stakeholders on climate action, as well as integrating climate risks in strategic planning.

The overall results indicate that climate emission reporting, investment in climate resilient infrastructure and environmental certification are not established initiatives in the Bulawayo tourism industry based on the mean scores that fall in the neither agree nor disagree range. One-way ANOVA was done to examine if there is a statistically significant difference in climate adaptation and mitigation initiatives across the sectors of the tourism industry at $p < 0.05$. The strategies with a significant difference are as follows: "Our organisation encourages tourists to use soft modes to visit the destination" and "My organisation engages in carbon emission reporting". Post hoc procedure using Tukey's HSD on the item "Our organisation encourages tourists to use soft modes to visit the destination", Tukey's HSD post hoc follow up procedure revealed a statistically significant difference between restaurants and most of the

sectors of the tourism industry [Hotels ($p<0.05=0.001$), guest houses, ($p<0.05=0.001$), tour operators ($p<0.05=0.043$) travel agents ($p<0.05=0.001$), hunting operators ($p<0.05=0.001$), car rentals ($p<0.05=0.001$) and safari operators ($p<0.05=0.029$). Respondents from restaurants disagree that they encourage tourists to use soft modes of transport, contrary to the other sectors of the tourism industry. Further, there is disclosed a statistical difference between travel agents and guest houses ($p<0.05=0.043$).

Table 2. Climate change adaptation and mitigation initiatives (n=160)

Initiatives	Total Sample	Guest houses/ Lodges	Hotels	Hunting operators	Restaurants	Travel Agents	Car Rentals	Tour Operators	Safari Operators	Visitor Activity	ANOVA	
	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	F-value	P-value
We have adopted energy-efficient technologies (e.g., solar, LED, etc).	3.93 0.55	3.95 0.59	3.64 0.72	3.81 0.491	4.1 0.31	4.09 0.302	4.13 0.35	4.20 0.84	4.00 0.00	4.00 0.00	1.65	0.115
We prioritise the use of renewable energy in our organisation.	3.84 0.59	3.89 0.66	3.68 0.78	3.81 0.491	3.9 0.31	3.91 0.30	3.63 0.74	4.00 0.71	3.75 0.50	4.00 0.00	0.50	0.856
Our employees are trained in sustainable or green practices.	3.83 0.60	3.79 0.66	3.86 0.71	3.73 0.533	4.00 0.46	3.82 0.41	3.75 0.46	3.80 1.01	4.00 0.00	4.00 0.00	0.42	0.911
We engage in environmental awareness or education campaigns.	3.79 0.62	3.74 0.73	3.55 0.67	3.85 0.543	4.00 0.32	3.82 0.40	3.63 0.52	4.00 0.71	4.25 0.50	4.00 0.00	1.28	0.256
We have installed water-saving systems or policies.	3.76 0.63	3.8 0.65	3.45 0.74	3.73 0.53	4.05 0.22	3.82 0.75	3.5 0.76	3.6 0.89	3.75 0.50	4.00 0.00	1.53	0.153
We have climate emergency response plans for extreme weather.	3.75 0.68	3.73 0.71	3.59 0.85	3.77 0.587	3.80 0.41	4.00 0.63	3.63 0.74	3.6 1.14	4.25 0.50	4.00 0.00	0.73	0.667
Our organisation has taken steps to adapt to climate risks.	3.73 0.65	3.69 0.73	3.50 0.74	3.81 0.567	3.95 0.22	3.91 0.70	3.38 0.74	3.8 0.45	3.75 0.50	4.00 0.00	1.21	0.300
We collaborate with the government or civil society on climate actions.	3.59 0.68	3.60 0.69	3.68 0.84	3.48 0.51	3.6 0.68	3.82 0.60	3.13 0.35	3.60 0.51	4.00 1.16	3.33 0.33	0.99	0.441
Our organisation includes climate risks in strategic planning.	3.58 0.70	3.56 0.79	3.64 0.66	3.65 0.629	3.53 0.77	3.55 0.52	3.25 0.71	4.00 0.71	3.50 0.58	4.00 0.00	0.65	0.739
We monitor climate-related changes affecting tourism.	3.48 0.75	3.44 0.85	3.64 0.66	3.68 0.476	3.00 0.86	3.55 0.52	3.25 0.71	4.00 0.71	3.50 0.58	4.00 0.00	2.06	0.043*
Our organisation encourages tourists to use soft modes to visit the destination.	3.41 0.75	3.31 0.72	3.59 0.67	3.73 0.533	2.55 0.69	4.00 0.45	3.50 0.76	3.60 0.55	3.75 0.50	3.67 0.58	6.82	0.000*
Our organisation invest in environmental certification.	3.38 0.77	3.49 0.77	3.36 0.79	3.31 0.736	3.35 0.88	3.20 0.63	3.13 0.64	3.20 1.30	3.50 0.58	3.67 0.58	0.46	0.884
We have invested in climate-resilient infrastructure.	3.35 0.76	3.43 0.76	3.50 0.67	3.36 0.7	3.40 0.75	3.27 1.00	3.00 0.51	2.80 0.84	2.50 0.58	3.67 0.58	1.49	0.165
My organisation engages in carbon emission reporting.	2.91 0.86	2.87 0.87	3.41 0.80	3.00 0.913	2.20 0.52	3.09 0.83	3.13 0.64	2.60 0.89	2.75 0.96	3.33 0.58	3.33	0.002*

Note: Responses based on a 5-point Likert scale range from 1 (Strongly Disagree) to 5 (Strongly Agree); *One-way ANOVA is significant at $p<0.05$ (Source: Author Survey)

The results of Tukey's HSD post hoc test on "My organisation engages in carbon emission reporting" demonstrate that statistically significant differences exist between the restaurant sector and other sectors of the tourism industry [Hotel ($p<0.05=0.001$), guest houses ($p<0.05=0.045$), travel agents ($p<0.05=0.095$), and hunting operators ($p<0.05=0.035$)]. While only hotels show a weak agree score in carbon emission reporting, the rest of the sub-sectors of

the tourism industry were either in the neutral or disagree score, with restaurants gravitating further towards the score of strongly disagree. Overall, the findings disclosed the existence of several challenges faced by the Bulawayo tourism industry in mitigating and adapting to climate change. These are indicated in Table 3. The respondents agree to the following as their major challenges, namely, low prioritisation of climate change issues by the tourism industry, lack of coordination among tourism operators, inadequate government support, lack of technical expertise to support climate action, as well as limited information on climate risks. It is evident that our respondents neither disagree nor agree that stakeholders lack awareness of climate mitigation benefits and policies on climate and tourism are not well integrated are challenges faced by the tourism industry. This may be interpreted to mean that the respondents did not have a strong opinion on these two as challenges. Surprisingly, lack of funding was not considered to be a major issue in climate action, as this is usually a challenge for most tourism enterprises operating in the resource-scarce environments of the Global South.

Table 3. Climate adaptation and mitigation challenges (n=160)

Challenges	Total Sample	Guest houses/ Lodges	Hotels	Hunting operators	Restaurants	Travel Agents	Car Rentals	Tour Operators	Safari Operators	Visitor Activity	ANOVA	
	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	F- Valu	P- valu
Tourism businesses do not prioritise climate action.	3.90 1.18	3.86 1.33	3.95 1.25	4.32 0.80	3.89 0.88	3.90 1.45	3.38 1.19	3.60 0.90	4.00 0.82	2.67 1.53	1.05 8	0.39
There is a lack of coordination among tourism operators in climate action.	3.75 1.16	3.77 1.34	3.68 1.29	3.96 0.94	3.89 0.96	3.20 1.14	3.38 0.74	3.80 0.84	3.75 1.50	4.00 1.73	0.52 3	0.83 8
Government support for urban tourism adaptation is inadequate.	3.73 1.13	3.84 1.11	3.73 1.24	3.80 1.26	3.84 0.83	3.70 1.06	3.13 0.84	4.20 0.84	2.50 1.29	3.00 1.73	1.28 1	0.25 8
There is insufficient technical expertise to address climate risks.	3.69 1.21	3.71 1.29	3.77 1.11	3.96 0.94	3.32 1.16	3.80 1.40	3.63 1.41	3.80 1.10	3.50 1.29	2.67 2.08	0.68 7	0.70 3
There is limited access to climate risk information.	3.69 1.16	3.78 1.13	3.68 1.13	3.96 1.17	3.61 1.15	3.40 1.27	3.13 1.13	3.20 1.30	4.25 0.96	2.67 1.53	1.06 7	0.39 0
Urban tourism infrastructure is not designed for climate resilience.	3.59 1.20	3.58 1.16	3.73 1.16	3.80 1.26	3.47 1.22	3.60 1.35	3.00 0.93	3.80 1.10	4.25 0.96	2.00 1.73	1.24 2	0.27 9
Climate adaptation is viewed as too costly by most tourism operators.	3.55 1.17	3.56 1.28	3.52 1.21	3.72 1.10	3.79 0.98	3.50 1.35	2.75 0.71	3.40 1.14	3.75 0.96	2.67 1.16	0.86 5	0.54 8
Climate adaptation strategies are too complex or difficult to implement.	3.53 1.14	3.53 1.20	3.18 1.22	4.00 0.87	3.61 1.03	3.20 1.40	3.25 1.28	3.75 0.96	3.75 0.96	3.00 1.00	1.07 9	0.38 1
Coordination between the public and private sectors is weak.	3.48 1.30	3.45 1.31	3.73 1.32	3.60 1.26	3.37 1.30	3.60 1.43	3.13 1.13	3.80 1.31	3.25 1.71	2.33 1.53	0.56 6	0.80 5
Lack of funding is a major barrier to implementing carbon reduction measures.	3.47 1.11	3.44 1.25	3.43 1.08	3.52 0.96	3.53 0.96	3.50 1.35	3.63 0.97	3.80 0.45	3.25 1.26	3.00 1.73	0.17 6	0.99 4
Stakeholders lack awareness of climate mitigation benefits.	3.31 1.27	3.28 1.40	3.27 1.28	3.64 1.04	3.21 1.18	3.50 1.43	2.75 1.04	3.80 1.10	3.25 0.96	2.33 1.53	0.76 7	0.63 2
Policies on climate and tourism are not well integrated.	3.22 1.18	3.26 1.13	2.82 1.14	3.48 1.26	3.26 1.24	3.40 1.27	2.75 1.04	3.80 0.84	2.50 0.58	3.00 2.08	1.02 1	0.42 3

Note: Responses based on a 5-point Likert scale range from 1 (Strongly Disagree) to 5 (Strongly Agree); *One-way ANOVA is significant at $p < 0.05$; Source: Author Survey

One-way ANOVA tests on all items did not show any statistically significant difference in climate change mitigation and adaptation challenges across the different sectors of the tourism industry based on the F values and P values observed. This indicates that all the sub-sectors of the tourism industry face more or less similar challenges in adapting and mitigating the challenges of climate change.

DISCUSSION

The results of this study reveal a high interest in climate change issues by the sampled Bulawayo tourism businesses based on the number of respondents involved in climate action initiatives in their organisations. The research further evidences that respondents consider that their enterprises are already experiencing climate-related impacts. This confirms that in Zimbabwe, climate change is a phenomenon that urban tourist destinations are facing, and there is already action from the tourism businesses in terms of adaptation. Resultantly, there are several initiatives highlighted in this study that are being adopted in urban tourist destinations. For example, the adoption of energy-efficient technologies such as LED lighting, albeit driven by legal requirements, is a widespread climate mitigation measure (Shereni et al., 2022).

In addition, the use of renewable technologies in the sampled organisations was cited to be high. In the context of Zimbabwe, this can be linked to the country's erratic electricity supply, which has forced tourism businesses to look for alternative sources of energy (Mushawemhuka et al., 2024; Shereni, 2024). Most Bulawayo businesses (and even households) have shifted to the use of solar energy and LP gas in the kitchen as an alternative to grid electricity. This transition has not only resulted in a reliable energy supply for the tourism business but also helped to cut carbon emissions by reducing an over-reliance on electricity, much of which in Zimbabwe is produced from coal-powered plants (Dube and Nhamo, 2019). Also, the results reveal that there is high employee involvement in climate change through training on sustainability and green practices across all the subsectors of the tourism industry. Training is an important element for improving the green performance of tourism companies as it raises awareness of green practices and increases the environmental behaviour of employees (Vakira and Shereni, 2025). Similarly, engagement in environmental and educational campaigns targeted at tourists, employees and the general public is regarded as an effective way of reducing the carbon footprint of tourism businesses.

Other initiatives have shown variable applications such as environmental certification, investment in climate-resilient infrastructure, and carbon emission reporting. Previous research has demonstrated that environmental certification and carbon emission reporting only have low uptake in the tourism industry within the context of sub-Saharan Africa (Motsaathebe and Hambira, 2022; Spenceley, 2019). Investment in resilient infrastructure is consistently low among the different sub-sectors of the tourism industry, an observation which can be accounted for by the huge capital investment required (Saarinen et al., 2022). As shown in South African research, the making of resilient infrastructure requires retrofitting as well as changing building designs (Rogerson, 2014; Ismail and Rogerson, 2016).

Several challenges exist that limit the adoption of climate mitigation and adaptation measures by tourism businesses in Bulawayo. Regardless of the sampled establishments indicating that they are involved in climate action, the results show that there is a perception that tourism businesses do not prioritise climate action. Competing business interests may limit the prioritisation of climate change issues, resulting in only those practices that make a business case being pursued (Shereni et al., 2023). Further, this causes a lack of coordination among local tourism businesses as each operator pursues what serves their best interests. Indeed, without proper coordination between the public and private sectors, climate action becomes disjointed. Another major challenge that emerged from the study is the perception that climate adaptation strategies are too complex or difficult to implement. Arguably, this is linked to insufficient local technical expertise to address climate risks (Shereni et al., 2023). In turn, this reduces the capacity of urban tourism businesses to implement adaptation and mitigation strategies that are technical in nature. Another challenge is that urban tourism infrastructure in Zimbabwe is not designed for climate resilience. In the case of Bulawayo, this is compounded by the fact that many buildings in the city are historical and were constructed in the colonial period before climate change was recognised as an issue. Such buildings are protected under the municipality's by-laws, which limit the flexibility of tourism businesses to climate-proof their infrastructure. Lastly, climate adaptation is viewed as expensive by most tourism operators in an environment wherein funding at the national scale is considered a major barrier to the implementation of carbon reduction measures (Mzembe, 2021)

CONCLUSION

The challenges of climate change for urban tourism destinations represent an important and emerging international knowledge domain. Climate change is part of the 'riskscapes' of African cities (Carmody et al., 2024). Unquestionably, climate change adaptation must be an essential element for the sustainability of expanding urban tourism destinations of sub-Saharan Africa (Coghlan, 2024). Using the case of Bulawayo in Zimbabwe, this research has established the main climate adaptation and mitigation measures by tourism businesses within urban destinations, as well as pinpointing the multiple challenges they face in implementing these measures.

As climate change and tourism research are underrepresented within the urban context, this study is a modest contribution to closing this gap in Global South environments. Arguably, this research has several practical and management implications for urban planners, DMOs, policy makers, as well as tourism stakeholders in urban Zimbabwe. For DMOs and tourism stakeholders, it is important to ensure a coordinated approach in the fight against climate change and also to strengthen collaboration between the private and public sectors. Further, there is a need for policymakers to ensure access to information to reduce information asymmetry and the belief that climate action is complex and costly to implement. Finally, urban planners, particularly municipalities in cities like Bulawayo, need to devise appropriate guidelines for the building and maintenance of climate-resilient urban infrastructures.

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