Geojournal of Tourism and Geosites
ISSN 2065-0817, E-ISSN 2065-1198

Year XVII, vol. 56, no. 4, 2024, p.1654-1660
DOI 10.30892/gtg.56421-1335

CARBON REDUCTION STRATEGIES BY THE HOSPITALITY SECTOR: A GLOBAL SOUTH PERSPECTIVE

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Citation: Shereni, N.C. (2024). CARBON REDUCTION STRATEGIES BY THE HOSPITALITY SECTOR: A GLOBAL SOUTH PERSPECTIVE. *Geojournal of Tourism and Geosites*, 56(4), 1654–1660. https://doi.org/10.30892/gtg.56421-1335

Abstract: Climate change is an imminent crisis faced by the global community and tourism is identified as a significant sectoral contributor. The purpose of this study, therefore, is to investigate the carbon reduction strategies of the hospitality sector in Zimbabwe. A survey was done with 165 randomly selected accommodation establishments in Zimbabwe. Descriptive analysis was done with the aid of SPSS version 29. The results reveal that the major source of GHG emissions comes from diesel/petrol-powered generators, transport and electricity usage. The findings also disclose that energy management strategies are seen as important in the reduction of GHG.

Keywords: climate change, carbon emissions, greenhouse gases (ghg), carbon reduction, hospitality sector, Zimbabwe

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INTRODUCTION

'The world is witnessing a disturbing acceleration in the number, speed and scale of broken climate records' (United Nations Environment Programme, 2023: 1). This has increased extreme events linked to climate change such as droughts, flooding, wildfires and rise in sea levels leading to the destruction of property and loss of lives (Goodwin, 2023; Gössling and Scott, 2024; Gössling and Hall, 2006; Sinclair-Maragh, 2016). Consequently, climate change debates have been dominating the global developmental discourse in the past two decades (Sharma et al., 2020). Recently, the Sustainable Development Goals (SDGs) and the Paris Agreement have increased attention on the need to reduce global carbon emissions and have set out ambitious targets to reduce global warming (Chong, 2018; Dube and Nhamo, 2021; Scott et al., 2016; United Nations World Tourism Organisation/Pacific Asia Travel Association, 2016). The 2022 IPCC report notes that global warming reaching 1.5^{o}c in the near term would result in unprecedented climate hazards to the ecosystem and humans (Intergovernmental Panel on Climate Change/IPCC, 2022). This has led a number of actors including governments and the business world to shift attention to climate change mitigation (UNWTO and ITF, 2019).

Arguably, the tourism industry is a significant contributor to global carbon emissions (Gössling et al., 2023; Reid et al., 2017; Rogerson, 2016). An estimated 8-10% of global carbon emissions emanate from tourism-related activities (Tourism Panel on Climate Change, 2023a). Therefore, there is increasing pressure on the industry and its sub-sectors to adopt carbon emissions reduction strategies (Gössling and Scott, 2024; Nhamo et al., 2020b). The hospitality sector is regarded as a significant emitter of tourism GHG (Dube, 2021; Manganari et al., 2016; Shereni and Rogerson, 2023a; Gössling and Lund-Durlacher, 2021). It contributes approximately 1% of global carbon emissions and about 20% of tourism carbon emissions (UNWTO and UNDP, 2017; Xu et al., 2022). Relatedly, it is estimated that globally, on average, a guest's stay at a hotel produces 13.8 kg of carbon dioxide emissions (Claudia et al., 2017). Mbasera et al. (2016) note that an average hotel is estimated to produce between 160 kg and 200 kg of CO_2 per square metre of room floor area per year. There is no doubt that the operations of the hospitality sector leave a significant carbon footprint (Shereni, 2022). In this regard, to keep pace with global targets aimed at reducing carbon emissions, the hospitality sector will need to reduce its carbon footprint emissions per room per year by 66% from 2010 levels by 2030, and 90% by 2050 (International Tourism Partnership, 2017).

Low levels of business during the COVID-19 pandemic have resulted in a decline in tourism carbon emissions (Chan, 2021b; Nhamo et al., 2020a; Rogerson and Baum, 2020). However, this status is temporary and will not be sustained in the long term (Shereni and Rogerson, 2023b). The United Nations Environmental Programme (2023) observes that all economic sectors globally, except for transport, have rebounded from the reduction in carbon emissions resultant from the COVID-19 pandemic downturn and now exceed 2019 levels. As tourism demand is set to escalate in the post-COVID-19 era, carbon emissions by the hospitality sector are also set to continue increasing (Shereni and Rogerson, 2023b). This necessitates the adoption of climate change mitigation strategies in order to reduce the carbon footprint of the hospitality sector.

It is evident that much of the impacts of global climate change will be felt by countries in the Global South that contribute the least to carbon emissions (Chong, 2018). In this regard, the sub-continent of Southern Africa is seen to be vulnerable to the long-term impacts of climate change because of its record of a weak adaptive capacity (Pandy, 2017).

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Research on tourism carbon footprint assessment in the Global South is still limited and mainly concentrated in Global North destinations (Abeydeera and Karunasena, 2019; Koiwanit and Filimonau, 2021; Scott and Gössling, 2022). It is against this backdrop that this study seeks to examine the climate change mitigation strategies pursued by the hospitality sector in Zimbabwe. This study contributes to the international body of knowledge on carbon mitigation strategies in tourism with a particular focus on the hospitality sector.

LITERATURE REVIEW

Sources of carbon emissions

The major sources of carbon emissions in the hospitality sector are as a result of energy consumption (Abeydeera and Karunasena, 2019). The hospitality sector is regarded as an energy-intensive sector that relies on energy sources mostly from fossil fuels (Gössling et al., 2023; Li et al., 2020; Shereni and Rogerson, 2024). The over-reliance on electricity generated from coal a fossil fuel is seen as problematic in the drive to achieve net zero targets (Dube and Nhamo, 2021). The nature of the hospitality sector requires establishments to operate on a 24/7 basis and include guest facilities such as swimming pools which increases energy consumption (Chan, 2021b; Koiwanit and Filimonau, 2021). In addition, energy demands in the sector are necessitated by the need to provide lighting, heating, ventilating and air conditioning as well as operating various equipment which boost carbon emissions (Gössling et al., 2023; Huang et al., 2015; Vourdoubas, 2018). There is, therefore, a need to pay critical attention to the energy sources as this strongly determines the carbon neutrality of the hospitality sector.

Hotels and other accommodation providers in destinations with a high frequency and intensity of extreme heat events have adopted air conditioning as an adaptation measure. However, this has seen an increase in electricity emissions leading to maladaptation (Tourism Panel on Climate Change, 2023b). In addition, old and inefficient equipment used in some hospitality establishments consumes more electricity which further adds to carbon emissions (Abeydeera and Karunasena, 2019). Vehicles used by hotels to transport guests, employees and for other daily hotel operations are another major source of GHG emissions (Dube and Nhamo, 2021). This said, few studies have focused on transport emissions and other sources in the hospitality sector, suggesting that the major source of GHG emissions is electricity use.

Carbon reduction strategies

The Paris Agreement's goal of keeping global temperature increase at 1.5^{o}-2^{o}C pre-industrial levels requires the tourism industry to halve current GHG emissions by 2030 and seek to reach net zero by 2050 (Gössling et al., 2023; Tourism Panel on Climate Change, 2023a). This makes significant carbon reduction integral if the targets are to be achieved. However, with a strong growth projection expected in the future, there is a need for commitment from the hospitality sector to implement measures such as the use of energy-efficient equipment, transitioning to low-carbon energy, sustainable procurement, use of renewable energy and waste reduction among other adaptive measures (Gössling et al., 2023; Shereni et al., 2022). Arguably, the phasing out of high energy-consuming and inefficient equipment, buying environmentally friendly supplies, providing low carbon transportation options to guests and employees and adopting emission reduction technologies are vital in reducing GHG emissions in the hospitality sector (Shanshan et al., 2023). The use of sustainable energy sources such as solar, wind and hydroelectricity is important in reducing carbon emissions emanating from energy consumption (Koiwanit and Filimonau, 2021; Vourdoubas, 2018). Indeed, as shown by several studies, effective energy management is crucial for reducing the carbon footprint of the hospitality sector considering its high energy intensity (Chan, 2021a).

One strand of research points to the vital role that technology can play in mitigating climate change. Youssef and Zeqiri (2022) propose different ways in which the hospitality sector can adopt Industry 4.0 technologies to reduce its carbon footprint. These strategies include leveraging on the Internet of Things (IoT) to achieve energy efficiency through the application of smart devices, the use of Artificial Intelligence (AI) and big data to manage waste in the kitchens and the use of Industry 4.0 technologies to promote a circular economy. Hospitality businesses also need to adopt pro-environmental technologies when installing guest amenities (Koiwanit and Filimonau, 2021). Other technologies that have helped to improve the carbon footprint in hotels encompass the installation of occupancy sensors, the use of energy-saving light bulbs as well as key cards to manage energy consumption in hotel rooms (Dube and Nhamo, 2021).

Regulatory and market-based approaches are also seen as critical for attaining net zero targets (Gössling et al., 2023). Chan (2021) observes that the existence of environmental laws and pressure from the market are key drivers for environmental awareness in the hospitality sector. In the Global South legitimation has been pinpointed as a strong driver for the adoption of sustainability practices in the hospitality sector as establishments comply with legislation in order to avoid lawsuits (Shereni, 2022; Shereni et al., 2023). Further, guests have a valuable contribution to make in mitigating carbon emissions and as such hospitality establishments need to inform them about the importance of engaging in climate-friendly behaviour (Koiwanit and Filimonau, 2021). For at least the past two decades the hospitality sector has been including guests in various initiatives that reduce hotel carbon footprint such as the linen reuse policy (Gössling and Lund-Durlacher, 2021; Shereni et al., 2022b). In addition, providing discounts to guests who exhibit carbon reduction behaviours is another way of involving guests in decarbonizing the hospitality sector (Dube and Nhamo, 2021; Koiwanit and Filimonau, 2021). Hospitality businesses can also encourage guests to use sustainable transportation through measures such as bicycle tourism and providing information concerning public transportation (Tourism Panel on Climate Change, 2023b).

Xu et al. (2022) maintain that employees' pro-environmental behaviours such as using less electricity, printing on double sides of paper and preference for reusable over disposable utensils can contribute to the reduction of the carbon footprint in hospitality enterprises. Indeed, employees have more control of carbon reduction activities in hospitality establishments through behavioural change than external guests (Li et al., 2020). Dube and Nhamo (2021) note carbon offsetting strategies

such as planting trees and purchasing locally to reduce emissions associated with transporting hotel supplies. Gössling and Lund-Durlacher (2021) also observe that environmental certification provides businesses with numerous economic advantages and at the same time helps them to achieve environmental goals. Other low-carbon practices that can be implemented by the hospitality sector include waste recycling, green training, and energy management (Li et al., 2020).

METHODOLOGY

This study utilized a quantitative approach to ascertain the carbon reduction strategies of the hospitality sector in a Global South setting. A survey was undertaken with 165 randomly sampled accommodation establishments located in Bulawayo and Victoria Falls tourism regions in Zimbabwe between May and June 2023. The sampling frame was obtained from the Zimbabwe Tourism Authority detailing registered designated tourism facilities. Respondents were drawn from a cross-section of hotels, guest houses, bed and breakfast and self-catering establishments.

A semi-structured questionnaire designed based on literature was developed to collect data with the aid of trained research assistants. The questionnaire asked respondents about sources of GHG as well as carbon reduction strategies implemented by the hospitality sector in Zimbabwe. The research instrument was pre-tested and a pilot study was carried out with a cross-section of the respondents. This pilot study helped to restructure the questionnaire, reword some questions and in some instances remove certain questions that were deemed ambiguous.

Authority was sought from the Hospitality Association of Zimbabwe to collect data from its members. Descriptive statistics were generated with the aid of SPSS version 29. The profile of the sampled establishments (Figure 1) shows that the majority were small establishments with between 1-50 rooms (64.2%) followed by 51-100 rooms (15.8%). Most of the establishments were hotels (34.4%), followed by lodges (32.5%) and guest houses (15.3%). The forms of ownership indicate that 75.6 % were individually owned and 18% were part of a chain group.

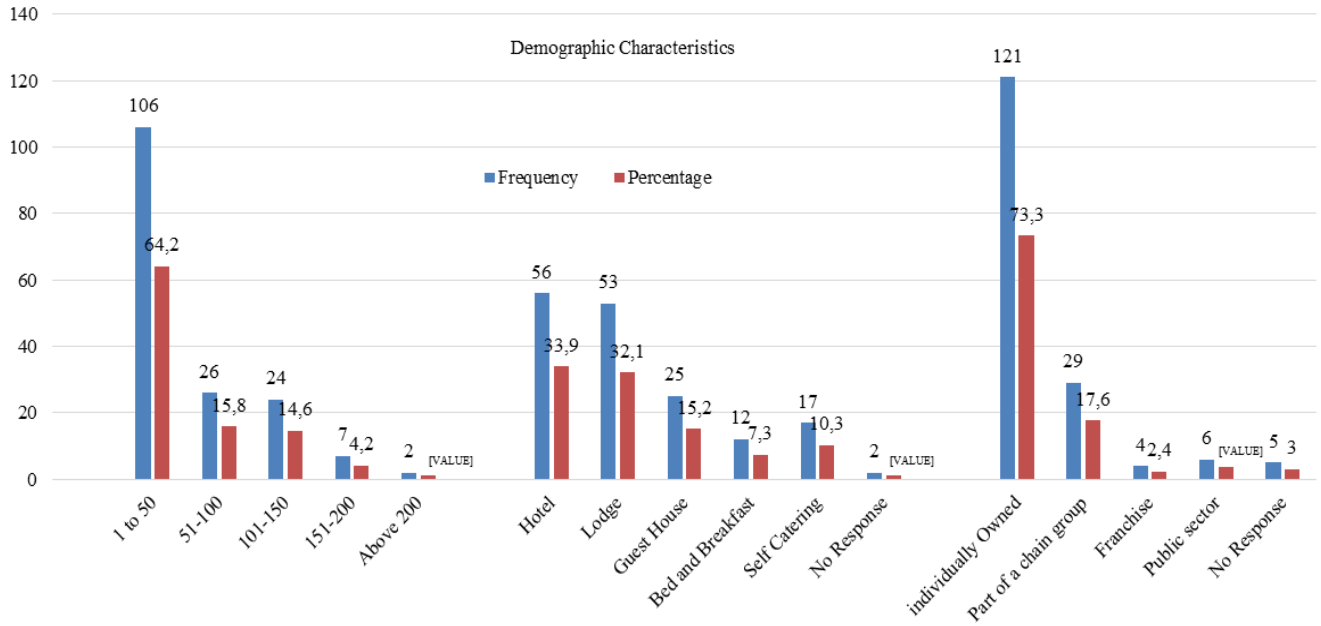

Figure 1. Profile of Establishments (n=165) (Source: Author survey)

Findings

Table 1 presents the results on the sources of GHG in the sampled establishments in the Zimbabwe hospitality sector. The overall findings reveal that petrol/diesel-powered generators are seen as a major source of GHG emissions in the sampled establishments with a mean score of M=3.65. This is attributed to the energy crisis facing the country which prompted businesses to resort to generators as an alternative power source. The country has been facing electricity shortages for the past two decades resulting in constant load shedding. In establishments with between 1-100 rooms issues such as vehicles used in business operations, shuttle vehicles used to carry guests, air conditioning, waste generated from business operations and laundry operations are not regarded as major sources based on the mean scores in the neither agree or disagree range. Nevertheless, it is evident that large establishments with above 100 rooms recognise such activities as major sources of GHG emissions. Of note is that electricity usage from air conditioning (M=417) and emissions from food waste generated in restaurants and kitchens (M=4.50) in 100-150 roomed establishments are considered high.

In establishments with above 200 rooms, the major sources of carbon emissions are indicated to be from transport carrying employees (M=4.25), electricity usage from energy consuming appliances (M=4.25), other waste generated in business operations (M=4.00), air conditioning (M=3.75) and coal-powered boilers (M=3.75). The respondents were also asked to identify the carbon reduction strategies being implemented in their different hospitality establishments. The results are presented in Table 2 which shows that the use of energy-saving light bulbs (M=4.13), clean energy sources (M=410), energy-efficient appliances in the kitchen (M=4.04), the adoption of renewable energy technologies (M4.02) and planting of trees (M=4.02) are prominent carbon reduction strategies in the sampled establishments.

Table 1. Sources of GHG Emissions (n=165) (Source: Author survey)
On a Likert Scale ranging from 1=Strongly Disagree to 5= Strongly Agree

	Total	1-50 rooms	51-100 rooms	101-150 rooms	151-200 rooms	Above 200 rooms
Sources of Carbon emissions	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Diesel/Petrol powered generator	3.65 (1.223)	3.62 (1.229)	3.50 (1.286)	4.33 (.816)	3.20 (1.304)	4.75 (.500)
Emissions from vehicles used in business operations	3.32 (1.324)	3.26 (1.360)	3.33 (1.047)	4.33 (1.211)	3.00 (1.225)	4.25 (.500)
Emissions from shuttle vehicles used for carrying guests	3.28 (1.264)	3.24 (1.286)	3.33 (1.047)	4.00 (1.549)	2.80 (1.304)	4.00 (0.000)
Electricity usage from air conditioning	3.24 1.302	3.19 1.313	2.87 .990	4.17 1.329	4.00 1.225	3.75 1.500
Emissions from transport carrying employees to and from work	3.21 (1.243)	3.14 (1.286)	3.13 (.834)	4.00 (1.225)	3.60 (1.140)	4.25 (.500)
Electricity usage from inefficient energy-consuming appliances	3.10 (1.286)	3.10 (1.295)	2.73 (1.100)	3.00 (1.265)	3.40 (1.342)	4.25 (1.500)
Emissions from other waste generated in business operations	3.09 (1.176)	3.05 (1.206)	2.93 (1.033)	3.83 (.753)	2.80 (1.304)	4.00 (0.000)
Emissions from food waste generated in restaurants and kitchens	3.06 (1.270)	2.97 (1.268)	3.14 (.949)	4.50 (.548)	3.20 (1.643)	3.50 (1.732)
Emissions from laundry operations	3.00 (1.231)	2.95 (1.229)	2.80 (1.082)	4.17 (1.169)	3.00 (1.581)	3.50 (1.000)
Coal powered boilers	2.82 (1.470)	2.83 (1.480)	3.00 (1.464)	1.50 (.837)	3.00 (1.225)	3.75 (1.500)

Table 2. Carbon reduction strategies (Source: Author survey)
On a Likert Scale ranging from 1=Strongly Disagree to 5= Strongly Agree

	Total	1-50 Rooms	51-100 Rooms	101-150 Rooms	151-200 Rooms	Above 200 Rooms
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Use of energy-saving light bulbs	4.13 (1.103)	4.16 (1.109)	4.20 (.775)	4.17 (1.329)	3.60 (1.517)	3.67 (1.528)
Use of clean energy sources	4.10 (.991)	4.17 (.947)	3.93 (.961)	3.50 (1.643)	3.40 (1.342)	4.50 (.577)
Use of energy-efficient appliances in the kitchen	4.04 (1.045)	4.09 (1.030)	3.93 (1.072)	3.00 (1.414)	4.00 (.707)	4.50 (.577)
Adoption of renewable energy technologies	4.02 (1.009)	4.03 (1.007)	3.87 (.834)	3.67 (1.751)	4.40 (.894)	4.25 (.500)
Planting of trees	4.02 (1.182)	4.01 (1.170)	4.13 (1.060)	3.83 (1.835)	3.80 (1.643)	4.50 (.577)
Purchasing locally made products to reduce transport emissions	3.88 (1.071)	3.87 (1.073)	3.53 (.915)	4.67 (.816)	3.80 (1.643)	4.50 (.577)
Raise awareness among guests	3.85 (1.151)	3.82 (1.178)	3.87 (.640)	3.83 (1.835)	4.00 (1.225)	4.50 (.577)
Waste separation and recycling	3.84 (1.179)	3.81 (1.180)	3.73 (1.100)	4.17 (1.329)	4.00 (1.732)	4.50 (.577)
Training staff on climate change issues	3.76 (1.191)	3.74 (1.225)	3.60 (1.121)	4.17 (.983)	3.80 (1.095)	4.50 (.577)
Installation of motion sensors	3.76 (1.241)	3.74 (1.267)	3.73 (1.100)	4.00 (1.265)	3.80 (1.095)	4.25 (1.500)
Green building designs	3.53 (1.223)	3.54 (1.202)	3.33 (1.113)	3.50 (1.517)	4.00 (1.732)	3.50 (1.732)
Green Certification	3.59 (1.143)	3.53 (1.163)	3.53 (.990)	4.50 (.837)	4.25 (.957)	3.75 (1.258)
Conducting periodic energy audits	3.57 (1.158)	3.53 (1.211)	3.53 (.743)	4.17 (1.169)	3.80 (1.095)	4.00 (0.000)
Climate change disclosures/ Reporting	3.50 (1.179)	3.49 (1.166)	3.13 (1.187)	4.00 (1.549)	4.40 (.894)	3.50 (1.000)
Use of room key cards to control energy use	3.55 (1.325)	3.48 (1.319)	3.43 (1.505)	4.17 (1.169)	4.20 (.837)	4.25 (1.500)
Charge guests a carbon footprint offsetting fee	3.04 (1.343)	3.10 (1.341)	2.67 (1.175)	2.17 (1.602)	4.00 (1.414)	3.00 (1.155)

The use of energy-saving light bulbs is a regulatory requirement and clean energy sources like solar have proved to be popular because of the energy crisis facing the country hence their high adoption in hospitality establishments. The findings also disclose that irrespective of size all establishments are engaged in decarbonisation efforts in some form.

Establishments with between 1-100 rooms were shown to be stronger in implementing strategies that require less resources and less commitment. These strategies include purchasing locally-made products, raising awareness among guests, waste separation and recycling, and training staff on climate change issues.

By contrast larger establishments with more than 100 rooms are strong on strategies such as installation of motion sensors, green building designs, green certification, conducting periodic energy audits, climate change disclosures, and use of room key cards to control energy use that requires huge capital investment. It is evident that charging guests a carbon footprint offsetting fee is not common in the context of the hospitality sector in Zimbabwe.

DISCUSSION

This research sought to examine the carbon emission strategies of the hospitality sector in a Global South environment. Firstly, it determined the main sources of GHG and then identified the current strategies used by businesses to reduce carbon emissions in the hospitality sector in Zimbabwe. The findings disclose that most emissions come from generators which are powered by fossil fuels. The country has been facing an energy crisis for over two decades now. This resulted in businesses experiencing long hours of load shedding and most hospitality establishments have invested in generators as an alternative. Unfortunately, the generators are powered by fossil fuels which makes them lead sources of carbon emissions. In addition, transport emissions from vehicles used in business operations, shuttles used to carry guests and transport used to carry workers to and from work are significant factors in establishments with more than 100 rooms.

This is because large establishments have the capacity and need to invest in a fleet of vehicles to sustain their operations. Similarly, electricity consumption is high in bigger establishments, especially in air-conditioning properties and also from inefficient electrical appliances. The excessive consumption of electricity by hospitality establishments results in an increase in GHG emissions mainly because the major source of electricity in Zimbabwe comes from coal-powered power stations. Also, waste generation is seen to be high in establishments with over 100 rooms leading to high carbon emissions. Overall, the results reveal that establishments with less than 100 rooms do not perceive that they have a significant carbon footprint as compared to those with above 100 rooms.

The findings of this study are comparable with the results of other studies, for example, in research done in Victoria Falls in Zimbabwe Dube and Nhamo (2021) concluded that the major source of GHG is electricity usage mainly generated from coal which is a fossil fuel. The study further noted that transport emissions from vehicles used in daily operations, for shuttling guests and carrying employees were also significant. Elsewhere in the Global South Abeydeera and Karunasena (2019) argue from work conducted in Sri Lanka that most of the emissions from hotels come from purchased electricity. The hospitality sector is energy-demanding and, therefore, would have a high electricity demand. Air conditioning is singled out as one of the activities that drives electricity usage, especially in tropical countries where there is a need to control temperatures for guest comfort (Chan, 2021b). In addition, old equipment such as refrigerators consumes more electricity adding to the carbon footprint of the hospitality sector (Abeydeera and Karunasena, 2019). That being said, the hospitality sector is considered highly wasteful when it comes to energy use because of its round-the-clock operations, available facilities and functions they offer which contribute significantly to their carbon footprint (Gössling and Lund-Durlacher, 2021; Huang et al., 2015). Also, in parallel to the results of this study, there are indications from other studies that large hospitality establishments produce more GHG emissions as compared to smaller establishments (Chan, 2021b; Gössling et al., 2024).

Regarding the strategies to reduce carbon emissions, energy-saving strategies are considered important for several reasons. First, the use of energy-saving lights is a regulatory requirement hence its huge adoption. Second the use of clean energy sources such as Liquid Petroleum Gas (LPG) and solar is common in hospitality establishments mainly because these are alternatives to electricity which is in short supply in the country and also because of its cost-saving implications. Third, energy-efficient appliances reduce the electricity bill and therefore cut electricity-induced emissions by the hospitality sector. Other important initiatives include planting trees, purchasing locally-made products to reduce transport emissions, raising awareness among guests, waste separation and recycling, and training staff on climate change issues. Carbon reduction strategies that require large capital investment such as green building designs, green certification and energy management systems are prominent in bigger establishments because they have the capacity to invest in such initiatives.

Previous studies note that the use of sustainable energy sources such as solar, wind and hydroelectricity is significant in reducing carbon emissions emanating from energy consumption in the hospitality sector (Koiwanit and Filimonau, 2021; Vourdoubas, 2018). Shanshan et al. (2023) emphasise the importance of phasing out high energy-consuming and inefficient types of equipment. In further studies, it was noted that the planting of trees, use of LED lights, sourcing local products and waste recycling are common carbon reduction strategies in the hospitality sector (Dube and Nhamo, 2021). Relatedly, the use of solar energy, installing energy-efficient lighting, investing in energy management systems, and charging guests a carbon footprint offsetting fee are regarded as additional measures that assist in carbon reduction (Chan, 2021b).

However, charging guests a carbon footprint offsetting fee has not been widely embraced in the context of Zimbabwe. Likewise, carbon disclosures have seen minimum adoption in the resource-scarce environments of the Global South (Shereni, 2023). As guest involvement is central to decarbonizing the hospitality sector Gössling and Lund-Durlacher (2021) point out that the linen reuse policy has received wide attention as one of the initiatives that involve guests in sustainability practices. Shanshan et al. (2023) argue that buying environmentally friendly supplies, providing low-carbon transportation options to guests and employees and adopting emission reduction technologies are vital for reducing GHG emissions in the hospitality sector.

Extant literature also concurs that environmental certification, energy management and waste recycling are critical in reducing the hospitality carbon footprint (Gössling and Lund-Durlacher, 2021; Li et al., 2020).

CONCLUSION

There is no doubt that the hospitality sector is a significant emitter of tourism GHG. Emissions are mainly from its energy-demanding operations such as heating and ventilation. In this era when attention is focused on climate change, the sector needs to play a big role in reducing its carbon footprint. The hospitality sector in the Global North already has started implementing various climate change mitigation strategies. In the resource-scarce context of the Global South progress has been noted to be slower albeit there are growing calls for the sector to green its operations.

The results of this study add to international scholarship and debates on the decarbonisation of the hospitality sector. Literature focusing on climate change mitigation in the hospitality sector in the Global South is still limited and this study provides insight into the major sources of carbon emissions and the current mitigation strategies under implementation. Furthermore, this study informs the hospitality sector in the Global South on various actions it can implement to contribute significantly to SDG 13 on climate action and the targets set out in the Paris Agreement. Arguably, the need exists for hospitality operators to adopt clean and renewable energy sources as an alternative to electricity which is generated from fossil fuels. Solar energy is a viable option in Zimbabwe considering that sunlight is available throughout the year. Further, to cut transport emissions the hospitality sector can consider the use of electric vehicles in business operations, to shuttle guests from one point to another and for transporting employees. Carbon disclosures are important in revealing climate action strategies implemented by businesses. They can be made mandatory to increase their uptake and also to encourage hospitality establishments to focus attention on climate change issues. Smaller hospitality establishments can invest in energy management systems, energy audits and environmental certification as these have proved to help in reducing the hospitality carbon footprint.

This study is limited in that it focuses on a specific context, the hospitality sector in Zimbabwe. Caution should be exercised in generalizing these findings in different situations as practices are context-specific. Further comparative research investigations are needed in different contexts both in Zimbabwe and in other resource-scarce contexts of the Global South. The results of this study signal that establishments with 1-50 rooms and 51-100 rooms consider themselves to have a low carbon footprint as compared to those with above 100 rooms. Comparable studies can be dedicated to ascertaining carbon mitigation strategies in hospitality establishments of different sizes.

Author Contributions: Conceptualization, N.C.S.; methodology, N.C.S.; software, N.C.S.; validation, N.C.S.; formal analysis, N.C.S.; investigation, N.C.S.; data curation, N.C.S.; writing - original draft preparation, N.C.S.; writing - review and editing, N.C.S.; visualization, N.C.S.; supervision, N.C.S.; project administration, N.C.S. The author has read and agreed to the published version of the manuscript.

Funding: Not applicable.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study may be obtained on request from the corresponding author.

Acknowledgements: Thankful to Professor Christian M. Rogerson for the valuable insights.

Conflicts of Interest: The authors declare no conflict of interest.

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Article history: Received: 26.06.2024 Revised: 21.09.2024 Accepted: 14.10.2024 Available online: 15.11.2024