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# University sport events and environmental management in the global south: Prospects and challenges for sustainability

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**Abstract:** There has been growing interest in the relationship between sporting events and the environment they are hosted in. Such discussions have sought to unpack the implications of sporting events on the environment as part of broader sustainable development concerns globally. However, many such studies have focused on large-scale sporting events, neglecting small-scale events, and especially annual events at universities. This is in spite of the popularity, and the large numbers associated with university sports. This study critically analyses the relationship between university sporting events and environmental management. The growing debates around sustainability in events management and tourism have gained significant focus in recent years, particularly in the Global North. Such contestations have largely been neglected in the Global South contexts, especially in smaller-scale events and university sporting events. A quantitative research design was adopted in collecting data from questionnaire surveys from event attendees at university sports events, using a spatially based systematic sampling technique. Findings revealed a lack of pro-environmental behaviour amongst the attendees, resulting in negative environmental impacts at the events. Furthermore, how these events were hosted suggests minimal implementation of proper environmental management, especially insofar as waste disposal, awareness raising about pollution, and encouraging pro-environmental behaviour. The study concludes that event managers at university sporting events ought to make environmental management

central to their events planning and management, and thus make deliberate efforts to enhance environmental education and pro-environmental behaviour amongst attendees.

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**Keywords:** environmental behaviour, environmental management, small-scale events, sport tourism, sustainable development

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## Introduction

In recent years, particularly in the past two decades, society has witnessed the exponential growth of the sports tourism sector, proving its major potential and benefits for the host destinations (Gibson et al., 2012; Nyikana and Tichaawa, 2024). Ma et al. (2023) explain that sport has proved its contribution to the tourism sector with several economic, cultural, political, and social benefits, amongst others. The scale of sporting events varies from international mega-events to small and local competitions (Mchunu et al., 2022). Fernández-Martinez et al. (2022) contend that sports tourism contributes significantly to a destination's social and economic development. Nyikana and Tichaawa (2020) explain that there is an interrelationship between sports and tourism, resulting in the formation and notable growth of sports tourism. The dynamic subsector of sports tourism has become an important economic activity in both developed and developing world contexts as they seek to advance to event-driven economies (Swart and Bob, 2007). Over the years, the sector has garnered attention from governments and policymakers for its ability to contribute to tourism's role in urban regeneration, job creation, infrastructural development and tourism promotion (Nyikana et al., 2014).

Several countries have noticed the significant growth of sports tourism over the years and have identified the potential benefits this industry can have on developing their economies, especially in developing countries (Bob and Swart, 2010; Bama and Tichaawa, 2020). According to Csoban and Serra (2014), the scale of sports tourism ranges from mega-events that attract millions of people to small-scale local events where the athletes may outnumber the spectators. Hall (2012) explains that mega-events take place once in a lifetime in the host country, while small-scale events are held regularly and are more influential in the community's life. Sports tourism as a phenomenon has gained traction over the past decades (Gibson et al., 2012), however, much of the research on sport tourism has been of the developed context where it is working and effectively leveraged. In recent times, the Global South has sought to focus on this sector because it presents many benefits, for example, infrastructure development and helping them to achieve their long-term goals in a short period of time (Nyikana and Tichaawa, 2024). However, the working definitions and experiences in the Global North are not necessarily compatible with the Global South, therefore the research on the specifics of what sport tourism is in the context of the Global South and Africa in particular becomes increasingly important.

In extant literature, much of the academic focus on sporting events has been biased towards the popular and highly impactful mega-events, while their small-scale counterparts are largely neglected in the analysis (Bazzanella et al., 2019). Such neglect has opened the research opportunity to compare the implications of small-scale events versus mega-events, with many studies suggesting that small-scale

events are the more sustainable event type (Gibson et al., 2012). The growing interest in small-scale events has been perpetuated by the observed number of benefits that small-scale sporting events bring to local communities and the economy (Gibson et al., 2012; Mchunu et al., 2022). Csoban and Serra (2014) assert that small-scale sports events have tourism potential and can have more benefits for the local economy than mega-events by providing additional income and raising local community pride.

Despite the recent interest in small-scale sporting events, much of the academic literature and analysis has been biased towards the Global North, especially on the economic and socio-cultural aspects of these events (Nyikana and Tichaawa, 2020). There is a dearth of research on the environmental implications of the events (Mchunu et al., 2021), thereby revealing a knowledge gap for this study. Sports tourism and the environment are directly interlinked, with numerous events fully dependent on the environment. According to Gibson et al. (2012), small-scale sporting events occur more regularly than their large-scale counterparts and as such, their relationship with the environment needs to be understood. In an earlier analysis by Higham (1999), it was revealed that small-scale sporting events may be an important sustainable form of tourism development for communities. This was later confirmed and strongly supported by scholars such as Gibson et al (2012) and Mchunu et al. (2021). Toscani et al. (2021) opine that environmentally responsible practices are becoming common in event planning and tourism. Event organizers are rethinking their operations and orienting them towards sustainability systems. Daddi et al. (2022) observe that in recent years there have been efforts made by sporting event organisers to fulfil environmental sustainability objectives. However, they caution that these efforts are not led by governance and are exclusively dictated by economic benefits. While there has been some progress made in analysing small-scale events and the environment, little attention has been paid to university sports as a form of small-scale recurring events. This study analyses environmental management within university sports events, unpacking the challenges and opportunities for sustainability accordingly. In terms of structural arrangement, the next section presents a literature review, followed by a description and justification for the research methodology and design adopted for this paper. Later, the discussion of the findings is presented, followed by the conclusion and suggested recommendations.

## **Literature review**

### ***Small-scale sports events in context***

Small-scale sports events have gained popularity due to their perceived minimal negative impacts on the local economy and environment (Tzetzis et al., 2013; Mchunu et al., 2021). According to Malchrowicz-Moško and Poczta (2018), small-scale sports events are events that take place during the regular season and/or off-season and on most occasions do not require exorbitant resources as most of the required resources are available in the host destination. Camacho et al. (2021) mention that these events positively impact the host destination, through sporting participation and the enhancement of the destination's image, social development, human capital, and economic development. Abdykadyrova (2022) adds that small-scale sports events have helped in the shaping of athletes', parents', and organizers'

meaning of place at a destination. They further provide the opportunity to preserve and conserve the environment, presenting an ideal platform for the communication and implementation of environmental management programmes (Mchunu et al., 2021). In addition, they aid in creating a platform for the natural environment to be showcased (Tichaawa et al., 2015). In as much as there is limited literature on the environmental impacts of small-scale sports events, Hritz and Cecil (2019) opine that small-scale sports events have been perceived to have positive environmental impacts on the local destination. Despite such positive associations, there have been suggestions that they are not entirely environmentally friendly either as they cause negative impacts such as noise pollution, littering, and degradation of public facilities like roads and bridges (Hritz and Cecil, 2019). Consequently, a debate arises as to the true environmental consequences of these events and their role in sustainable development.

### ***The link between small-scale sporting events and sustainability***

Small-scale sporting events occur more frequently than mega-events do, meaning that they are closely linked to the environment and its management (Gibson et al., 2012). Despite this link, academic literature has arguably neglected the analysis of the environmental impacts and strategies implemented at small-scale events (Getz, 2008; Han et al., 2015). Han et al. (2015) further explain that the study of small-scale sporting events is imperative as these events have an environmental responsibility in that they attract unexpected numbers into a confined space over a relatively short period. Gibson et al. (2012) argue that because of their size, small-scale sporting events can be used as a method for sustainable tourism development. This is because these events use existing infrastructure, require less public funding, and cause minimal disruptions to local communities at the destination (Higham, 1999). Mchunu et al. (2021) opine that such events can also be an effective means through which the challenge of seasonality can be overcome. In this regard, they argue that regularly hosting small-scale events in the periods when tourists are not coming to the destination can extend the traditional tourist season and help offset the losses that otherwise would be experienced by the tourism value chain.

Gibson et al. (2012) stress that the importance of small-scale events also lies in the fact that they tend to be compatible and consistent with the host community's infrastructure as well as human cultural capital, which makes them a viable form of sustainable tourism. They further contend that small-scale sporting events may lower the carbon footprint as the majority of the participants and attendees tend to be drawn from local and regional visitors. This is the case for university sports, as they tend to have a regional reach, thus attracting tourists with lower carbon footprints. Casper et al. (2020) postulate that the public nature of university sports events is important to promote environmental sustainability and encourage pro-environmental behaviour.

### ***Environmental behaviours of small-scale sporting attendees***

There has been an increase in analysis of the environmental and pro-environmental behaviour of event attendees (Paço and Lavrador, 2017; Achu, 2019;

Mchunu et al., 2021). Paço and Lavrador (2017) describe environmental behaviour as the adoption of attitudes and behaviours that aim to minimise any effects on the natural environment, whilst Mchunu (2021) defines it as the way that people behave in an environmental setting, either showcasing positive or negative behavioural traits. According to McCullough et al. (2019), there is a pressing need to consider the reverse relationship of how human behaviours affect the environment. Casper et al. (2017) suggest that to understand the effectiveness of any environmental initiative, there is a need for an assessment of fans' (attendees') environmental behaviours. However, there is a noticeable gap in the literature on the environmental behaviour of sports attendees (Mchunu, 2021). Han et al. (2015) concur that little research has been conducted on the environmental behaviour of sports event attendees globally as well as the environmental behaviour patterns of sports event attendees while at home and sporting events. Mchunu (2021) explains that the environmental behaviour of sports attendees is associated with several factors, such as attendees' environmental perceptions, socio-demographic profiles, and environmental awareness levels. Han et al. (2015) suggest that an attendee's environmental behaviour can differ between home and the sporting event due to numerous characteristics such as the event attendee's perceived destination, environmental responsibility, event attendee types, and experience-use history. In unpacking the environmental management within a university sporting event, this study takes into consideration all these factors and the unique context of where the study was conducted.

### **Methodology**

This study was conducted amongst sports event attendees in universities in Johannesburg, South Africa. Johannesburg has in recent years branded itself as a cosmopolitan city with a varied tourism offering but has close ties with sports (Hemmonsbe and Tichaawa, 2019; Mchunu, 2021). According to Nthangeni et al. (2021), universities provide a platform for different sporting competitions to take place, facilitating travel around the country for sporting codes such as soccer, hockey, rugby, cricket, and athletics among others. This study was grounded on the positivist research paradigm where a quantitative research approach was used for the collection and analysis of the data. Apuke (2017) states that quantitative research is a research method in which data is analysed by quantifying the given data to obtain results. It involves collecting and analysing numerical data to answer who, why, what, where, how, how much, and how many. The quantitative methods in collecting data include survey research, experimental research, correlation research, and causal-comparison research (Apuke, 2017). In this regard, a questionnaire survey (n=203) was used in which university sporting (University of Johannesburg) attendees were surveyed using a spatially based systematic sampling approach. Using previous attendance and stadium capacity, the first respondent was selected randomly, and thereafter an interval of every 5th respondent was chosen for inclusion in the study until the data collection was complete. The target population of the study were event attendees at university sporting events. The instrument used consisted of three main sections of focus. The first section of the survey sought to gain a background about the attendees, in relation to their group composition, their modes of transport used

to attend the event, as well as the frequency and regularity of attending such small-scale university sporting events. The second section of the survey sought to gauge environmental awareness and concern for the environment amongst the attendees. This section also measured the perceptions of pro-environmental practices at the event. The final section of the survey analysed the perceptions of environmental management as well as attendee attitudes towards the environmental impacts of university sporting events. The data was captured and analysed using the Statistical Package for Social Sciences (SPSS). The results are presented in the sections that follow.

## Results

### *Previous attendance at university games*

Getz and Andersson (2010) suggest that by their very nature, small-scale events lend themselves to more repeat attendance when compared to larger-scale events, linked to the fact that they occur frequently, and in most cases annually. According to Nyikana et al. (2014), previous attendance at an event is a very important determinant for repeat visitation, especially when the attendee was satisfied with their experience the previous time. In this respect, the respondents were asked how many times they had previously attended a university sports event as shown in Table 1 below. The findings reveal that while 13.8% of the respondents were first-time visitors, the overwhelming majority (86.2%) had been to a university sporting event either once or multiple times. From an environmental management awareness perspective, this would qualify many of them to have observed the current state of practices at these events and enable them to provide the information needed for this study. This is especially so when considering that Mchunu et al. (2021) posit that generally, small-scale sporting event attendees tend to be more environmentally conscious and are prone to act in more environmentally responsible ways than attendees at mega-events.

**Table 1.** Number of times respondents attended university sports events in the past (n=203, n%)

Number of university sports events attended	Total (n=203)
Never (This is my first time)	13.8
Once before	15.3
2-4 times	26.1
5-8 times	15.8
9-12	10.8
13>	18.2

### *Mode of transportation used by respondents*

The respondents were further asked what mode of transportation they had used to travel to the event on the day of data collection. This question is relevant because generally, tourism and sport as industries have been largely criticized for being some of the major contributors to climate change and pollution (Gibson, 2013; Mchunu, 2021). Mchunu (2021) reports that this criticism is a direct result of the mode of transport used by sports tourists, especially flights and cars, which worsens

carbon emissions. In this study, it was found that the majority of those surveyed (53.7%) had used school buses to get to the event venue (Table 2). This was not surprising as many universities tend to have free inter-campus bus and shuttle services for students to move around the different campuses. There were also a notable number of attendees (22.2%) who had walked to the event venue. The remaining sample was divided into those who used private cars (16.3%) and those who used public transport (7.4%). From this data, it can be deduced that the attendees sampled had, for the most part, made use of sustainable means of transportation as travelling in groups (bus/public transport) and walking are seen as such. Mchunu et al. (2021) have previously made the argument that public transportation, walking and cycling are some of the transport modes which contribute positively to environmental sustainability and the reduction of carbon emissions. Moreover, Dolf (2017) found that one of the ways or opportunities to reduce the carbon footprint at university sporting events was to increase the vehicle occupancy rate, which means increasing the number of seats in the transportation used for attendees. According to Cayolla et al. (2023), the modes of transportation that attendees use are a direct contributor to carbon emissions, and analysing this factor can help make sporting events more sustainable.

**Table 2.** Mode of transport used by respondents (n=203, n%)

Mode of transport	Total (n=203)
Private Car	16.3
Walked	22.2
School Bus	54.1
Public Transport	7.4

***Respondents' group composition***

Respondents were then requested to indicate their group composition in relation to the number of people travelling in their group. There were four categories from which they could choose to respond to this question. The majority of respondents (63.5%) attended a university sporting event with a group of friends, whilst other respondents indicated that they attended with family (2%) or a mixture of family and friends (4.9%) (Table 3). The findings suggest that most attendees travel in large groups rather than alone, which can be viewed as environmentally friendly behaviour as this practice reduces the contribution of carbon emissions emitted from transportation (Oliver, 2016). Finally, 21.7% of the respondents indicated travelling in a university group which may indicate using the university bus system.

**Table 3.** Respondent group composition (n=203, n%)

Description of the group composition	Total (n=203)
Friends	63.5
Family	2
Family and Friends	4.9
Tour Group	0.5
University Group	21.7
Not Applicable	7.4

## **Environmental behaviour and experiences at university sport games**

### ***Respondents' level of environmental concern***

To understand attendees' level of environmental concern, attendees were asked to indicate from a level of 1 to 5 what their level of concern for the environment is, with 1 being "extremely concerned" and 5 being "not concerned at all". The findings revealed that the majority of respondents (67%) were extremely concerned, while a notable number (34%) were not concerned at all. These were the two extremes in the findings, while the others ranged somewhere between. Although the vast majority of respondents were concerned, it was alarming that 34% indicated having no concern at all for the environment. This could potentially translate into careless behaviour where environmental management is concerned and is particularly true when considering arguments by some scholars that the level of interest or concern that event attendees have about the environment dictates their pro-environmental behaviour while at events (Kaplanidou and Vogt, 2007; Yuan, 2013; Kruger, 2015). Some studies suggest that sporting event organisers blame attendees, saying that in general, they have a bad attitude toward environmental sustainability and therefore show a lack of environmental concern (Yuan, 2013; Kruger, 2015; Vicente-Molina et al., 2018).

### **Pro-environmental measures implemented at university games**

According to Han et al. (2015), visitors' environmental behaviour can be influenced by the environmental measures that sports event organizers implement. Mchunu et al. (2021) stress that the failure of event organisers to create efficient waste management measures may encourage participants to litter. Against this background, the attendees were asked about their perceptions of the environmental measures that had been implemented for the university games at the stadium. It is crucial to remember that for spectators to act sustainably during sporting events, the event organizers must take environmental precautions. Respondents were asked to answer yes or no if they had seen any of the environmental behaviours listed in Table 4 below. As revealed in the table, many pro-environmental measures were part of the events and many were noticed by attendees. However, some items were flagged as being of concern. For example, attendees had not seen the messages encouraging the use of public transport, nor about restricting plastic, polystyrene and glass at the event. It was interesting to note that many (45.8%) of the attendees had not seen employees who walked around and picked up litter during the event. This could be because in many cases, the litter is picked up when everyone has left and the event has ended. It could be argued though that having people picking up the litter during the event could encourage and prompt attendees to be conscious about disposing of their litter in the correct rubbish bins.

**Table 4.** Environmental behaviour and experiences at university sports events

<b>Environmental measures implemented</b>	<b>Yes</b>	<b>No</b>
Rubbish bins	97%	3%
Recycle bins (paper, glass, plastic, food waste)	81.8%	18.2%
Reusable products (water bottles, plates, cups, garbage plastics)	72.9%	27.1%



Signage posts for rubbish bins	71.4%	28.6%
Signage posts for recycling bins	72.9%	27.1%
Signage posts that state "Do not litter/keep the area clean"	73.9%	26.1%
Signage posts that encourage the use of public transport	40.9%	59.1%
Signage posts that restrict attendees from bringing items such as plastic, polystyrene, and glass into the event	54.2%	45.8%
Event employees who pick up litter during the event	60.1%	39.9%
Other	48.3%	51.7%

The final section of the survey sought to determine respondents' perceptions of the impact of university sporting events on environmental sustainability. Respondents were asked to respond to statements using a Likert-type scale to rate whether they Strongly disagreed (SD), Disagreed (D), were Neutral (N), Agreed (A) or Strongly agreed (SA) with the given statement. For analysis, the SA and A scales were combined to make an agreement scale. The SD and D scales were also combined to make the disagreement scale. The results of this section are presented in Table 5 below.

Respondents were instructed to indicate the level at which they agreed or disagreed with the survey statement that university sports events maintain and preserve flora and fauna. The majority of respondents were neutral (42.9%) regarding the statement. This might be because respondents were unsure of this statement—flora and fauna in the context of a sporting event might not be significant as sporting events are held in a controlled environment (often stadiums with minimal natural plant and animal life). However, comparing the percentage of respondents who agreed (16.8%) and disagreed (40.4%), there was an overwhelming number who disagreed with the statement. The findings do not align with studies such as Perić et al. (2018) who report that in sports tourism, including small-scale sporting events (especially outdoor sporting events), there is a strong relationship between tourism development and the natural environment. This relationship shows that efforts to preserve flora and fauna are a priority.

Regarding university sports events promoting recycling, 37.4% of respondents disagreed, 36.5% agreed, and 26.1% remained neutral on this statement. Past studies have found that recycling waste was one of the most environmentally sustainable ways to manage a small-scale sporting event (Mchunu et al., 2021). Ma and Takeuchi (2020) believe that for a sporting event to be eco-friendly, practices such as recycling have to be implemented. The findings in Table 5 further indicate the different characteristics of attendees. This idea is supported by Han et al. (2015) who opine that the behaviours and perceptions of attendees at university sports events are for the most part dictated by the attendees' characteristics. Han et al. (2015) elaborate that attendees' recycling behaviour scores decrease significantly from their home recycling habits to those displayed at university sporting events.

The next statement sought to gauge if sporting events aided in raising awareness about environmentally responsible behaviour. Once more, there were mixed feelings regarding this item as many attendees (34.5%) agreed, while 36.9% disagreed. According to Mair and Laing (2013), attendees' pro-environmental behaviour is enhanced or apparent at small-scale events which are sustainability-

focused. Ramchandani and Coleman (2012) found that sporting events had the potential to inspire attendees to be more pro-environmentally responsible.

Respondents were next required to share their views on whether university sports events have transitioned from physical paper tickets to electronic tickets. 38.9% of respondents disagreed with the statement, 30.0% were neutral and 31% agreed. This divided spread of results may be because the events used both paper-based tickets and digital tickets (downloaded from the Web). Findings from Popp et al. (2021) show that 29.6% of the respondents surveyed in their study preferred traditional paper tickets whilst 48.3% preferred e-tickets. With respondents having the prerogative to choose which form of ticket they wanted to use, the findings in this study were unsurprising.

Respondents were then asked if they agreed with the statement that university sports events make provision for sustainable organising and breakdown of events. 29.6% of respondents disagreed with the statement, 32.5% agreed, while the rest of the respondents (37.9%) were neutral about the statement. Mombeuil (2020) mentions that for small-scale sporting events, sports event managers need to consider the venue to host the event, third-party service providers and a contingency plan, referring to the efforts rallied in organizing and planning a small-scale event.

The final statement required respondents to rate their level of agreement with the statement that university sports events have a waste management programme in place. 31.5% of respondents disagreed with the statement, 35.9% agreed and 32.5% took a neutral stance regarding the statement. This once again shows the mixed nature of the findings regarding environmental sustainability where university sports events are concerned.

**Table 5.** Attendees' perception of university sports events' impact on environmental sustainability (n=203, n%)

Statement	SD	D	N	A	SA
University sports events maintain and preserve flora and fauna.	11.82	28.57	42.86	11.33	5.42
University sports events promote recycling waste.	8.87	28.57	26.10	23.15	13.30
University sports events make attendees aware of environmentally responsible behaviour.	9.85	27.09	28.57	24.63	9.85
University sports events have transitioned from physical paper tickets to electronic tickets.	16.27	22.66	30.05	20.69	10.34
University sports events make provisions for sustainable organizing and breakdown of events.	12.31	17.24	37.93	23.64	8.87
University sports events have a waste management programme in place.	7.89	23.64	32.51	24.14	11.82

The findings collectively indicate a major gap in terms of environmental management and sustainability in the context of university sports games. While there are measures in place, much room exists for improvement where this is concerned.

### **Discussion**

According to Mchunu et al. (2021), the environmental impacts of small-scale sports events include waste generation, carbon emissions, and resource depletion. This is why it is important to consider these aspects when assessing the sustainability impacts of small-scale sporting events. The purpose of this study was to ascertain the impact of university sporting events on the environment. The findings of the study concur that certain environmental practices assist in reducing the environmental impact that university sports events have. Case in point, promoting sustainable transportation, such as cycling, walking, and public transport can significantly reduce the carbon footprint of small-scale sports events. Moreover, the use of renewable energy sources, such as solar and wind energy, could significantly reduce energy consumption and carbon emissions (Mchunu et al., 2021). The attendees of university sporting events have the perception that these events prioritize environmental sustainability, and in turn, the more sustainable the event is, the more pro-environmental their behaviour will be, a view previously highlighted by some researchers (see for example Ramichandani and Coleman, 2012; Mair and Laing, 2013; Han et al., 2015; Mombeuil, 2020; Popp et al., 2021). The findings further show that the majority of attendees view university sporting events as implementing environmental measures although the effectiveness of these is questionable, given the notable number of attendees who were unsure and remained neutral on this topic.

There were several issues identified in this study's findings that need to be addressed by event organisers at university sports events. Firstly, there were many repeat visitors, which opened up the opportunity to develop pro-environmental attitudes and reinforce these year in and year out. However, it seemed that this was not the case, as there were a lot of nuanced observations regarding some of the measures implemented at the events, as well as negative perceptions of some of the environmental management and sustainability measures seen. Secondly, the levels of concern about the environment seemed to suggest that much still needed to be done regarding educating and raising awareness of the need to preserve the environment. While many were extremely concerned about the environment, the numbers not concerned at all were alarming. Given that the environmental behaviour at the event may extend to home and other areas beyond the event, the need to educate and reinforce the need to take care of the environment cannot be understated.

It is clear that sports events have a great potential to contribute to environmental sustainability but this platform is not taken advantage of by event organisers and other authorities.

### **Conclusion**

This study focussed on university sporting events, which have been largely neglected in sports tourism literature, especially in the Global South. This is despite these events occurring annually in the physical or built environment. The findings

revealed that many attendees to university sporting events were repeat visitors. As such, they are in a position to analyse existing environmental management measures adopted at the events. Equally, their loyalty to these events presents an opportune platform to enhance their environmental consciousness and encourage environmentally responsible behaviour during events, and ultimately, in their homes and work places and beyond. It was also important to observe that many of these attendees made use of sustainable modes of transportation such as buses, shuttles and walking when going to the event. Such practices bode well for pro-environmental behaviour, reduced carbon emissions and sustainability generally linked to sporting events. Expectedly, many attendees were travelling in groups comprised of friends and family or tour groups. This finding also highlighted the important role of sporting events generally, but university sports as an important platform for social interaction. Besides, it has been argued that sporting events can offer a unique opportunity to spend time with family and friends.

While a majority of the attendees indicated having general concerns about the environment, it was alarming that a notable number of them (34%) suggested that they were not at all concerned for the environment. When analysed in line with the ever-increasing debates about the need to preserve the environment and move towards sustainable means of development, this finding was of great concern. Primarily, it implies that the lack of concern for the environment may also lead to negligent and/or careless behavior where environmental management is concerned. This highlights the need to double the efforts to communicate, educate, and raise awareness about pro-environmental behaviour amongst university sports event attendees. Doing so should reinforce the need to constantly behave in a pro-environmental manner whilst at the event and beyond. Despite this glaring need to raise awareness, and the ideal platform events provide to communicate environmental management messages, the event organisers of university sports are still failing to optimally maximise on this opportunity. In this study, it was found that many attendees had not seen any messages encouraging them to use public transport, nor about restricting plastic and polystyrene and glass at events. They also did not observe any staff or volunteers picking up litter on the ground, which was an opportunity missed to influence the responsible disposal of litter. The study concludes therefore that, while there were a lot of positive observations regarding environmental management in university sporting events, there were numerous missed opportunities. In order to make greater contributions to sustainable management of events in the global south, event managers need to increase the efforts to educate and raise awareness amongst event attendees, which in turn should lead to more pro-environmental behaviour by the attendees even beyond the event space. At a time when there is growing debate about sustainability, such platforms should be capitalised on and used optimally to ensure the communication of the relevant messages to people.

Therefore, this study makes a modest contribution to the literature on sport tourism and the environment, especially from a global south context. Lessons learned from this study can feed into future plans of environmental management linked to small-scale sporting events in the university setting and beyond. Some of the findings

could inform strategies and policies of sports events hosted within the university context.

### **Limitations and future works**

Finally, despite all the above, certain limitations were apparent in the study. Firstly, obtaining access to different universities was difficult, hence not all universities in Johannesburg were included in the study. A further limitation was the quantitative nature of the data collection, which excluded key insights and justifications for the environmental practices and behaviours depicted above. It is recommended that future research should include a greater number of universities and stakeholders within the university sports tourism network. Similarly, a mixed-method research design could be used, in order to gain in-depth insights and justification for some of the behaviour and impacts expressed in this quantitative study.

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