frontiers | Frontiers in Sustainability

TYPE Original Research
PUBLISHED 09 August 2024
DOI 10.3389/frsus.2024.1390061



OPEN ACCESS

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RECEIVED 22 February 2024
ACCEPTED 22 July 2024
PUBLISHED 09 August 2024

CITATION
Thondhlana G and Nkosi B-S (2024) Campus sustainability at Rhodes University, South Africa: perceptions, awareness level, and potential interventions.
*Front. Sustain.* 5:1390061.
doi: 10.3389/frsus.2024.1390061



# Campus sustainability at Rhodes University, South Africa: perceptions, awareness level, and potential interventions

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With an increasing environmental footprint due to resource consumption by employees and students, universities have a moral responsibility to integrate sustainability principles in daily university operations as part of broader societal contributions. Understanding perceptions of sustainability and awareness level can inform universities about their performance on sustainability matters, and allocation of financial and human resources needed to help universities achieve their intended sustainability targets. However, studies on perceptions regarding campus daily sustainability practices, organizational culture and role of leadership are scarce. To address this gap, this study examined staff and students' perceptions of campus sustainability, including their views on daily operations, sustainability priorities, the organization's level of commitment toward sustainability goals and the role of top management in promoting sustainable practices at Rhodes University, South Africa. The findings show low and varied level of sustainability awareness between stakeholders and a disconnect between campus sustainability efforts and priorities, suggestive of a policy-implementation gap. The respondents cited lack of funding, cooperation, and commitment from top leadership as the key barriers to campus sustainability. The findings point to the need to rethink the sustainability challenges universities face and ways of addressing them. Possible strategies for improving perceptions include raising awareness on campus sustainability through engagements, engendering a sustainability culture, clearly defining responsibilities for overseeing sustainability matters, co-designing sustainability goals and implementation strategies, and the need to monitor and report progress made toward achieving sustainability goals.

KEYWORDS

**universities, perceptions, sustainability, barriers, leadership**

## 1 Introduction

The end of the twentieth century marked the beginning of massification of higher education institutions which resulted in the rapid expansion of student enrolment in universities worldwide (Scott, 1995; Tight, 2019), including in South Africa (Hornsby and Osman, 2014). The growing student population requires a corresponding growth in human resources and physical infrastructure needed to support the academic project, with huge implications on resource consumption such as energy and water (Almeida et al., 2021; Laporte and Cansino, 2024), food (Painter et al., 2016) and paper (Amutenya et al., 2009). It has been

argued that the combined consumption of resources in universities globally is substantial and comparable to commercial scales (Viebahn, 2002). Therefore, questions on the role of universities in shaping and leading pathways to sustainable futures are increasingly asked and debated (Lozano et al., 2015; Painter et al., 2016; Longoria et al., 2021; Aung and Hallinger, 2023; Laporte and Cansino, 2024).

The 1972 Stockholm Declaration marked one of the first significant shift in conceptualizing the role of universities in addressing environmental issues, with the inclusion of environmental education in the 24 principles proposed for achieving environmental sustainability (Wright, 2010). Perhaps, the Talloires Declaration in the 1990s marked the first serious commitment by universities, with university rectors and chancellors signing a declaration to embrace environmental sustainability in teaching, research and university operations. Correspondingly, the concept of campus sustainability has received traction and continues to develop as universities are increasingly responsive to sustainability concerns (Dawodu et al., 2022; Abo-Khalil, 2024), as part of broader transformation imperatives highlighting universities' societal responsibility and fitness for purpose (Evans et al., 2021). Mtutu and Thondhlana (2016: 149) argue that universities "as leaders in knowledge generation, should not only be measured by the amount of sustainability knowledge they produce but also by how successful they are in promoting pro-environmental behavior at their own doorsteps." This responsiveness is evident in initiatives predominantly focused on sustainable practices in areas such as transportation, energy, waste, food, water, and greening. Indeed, with the economy and environment in a state of crisis (Cebrián and Junyent, 2015), universities can be key role by acting as agents of change for a sustainable future (Lozano et al., 2015; Abo-Khalil, 2024). In many universities, commitment to sustainability is evidenced by signing of various sustainability declarations, charters and initiatives, and the drafting of various instruments including environmental sustainability policies and procedures (Shawe et al., 2019). However, there is growing evidence that sustainability intentions do not always translate into sustainable actions (Murga-Menoyo, 2014; Lozano et al., 2015). Campus sustainability covers a broad array of aspects including sustainability education and resource consumption but research on perceptions of stakeholders regarding daily sustainability activities and practices, significance of environmental sustainability policies and the role of top management in championing environmental sustainability activities and practices has comparatively received limited attention, especially in developing country contexts. Without this information, it is difficult to gauge universities' commitment to and performance regarding campus sustainability and the attitudes of its workforce, and in turn, devise the ethos and action objectives needed for promoting campus sustainability. Schermerhorn et al. (2000) define perceptions as processes "wherein people select, organise, interpret, retrieve, and respond to the information from the world around them" which produce mental constructions and expressions about a particular subject or phenomenon. Awareness refers to the state of being aware of, concerned about or well-informed interest in a particular situation or development.

## 1.1 Integrating sustainability in universities

Universities can promote processes of societal transformations through integration of sustainability goals into curricula (Lad and Akerlof, 2022), which can in turn, result in the production of a new generations of citizens and leaders. However, achieving campus sustainability goals requires universities to construct a new socio-cultural model where daily university operations are informed by sustainability principles (Major and Savin-Baden, 2011), environmental policies are designed to inform and align with daily practices and leadership is central to and active in promoting sustainability debates and practice. Beyond developing sustainability curricula there is a 'hidden curriculum' that relates to the unwritten, unspoken and implicit beliefs, perspectives, norms and values embraced and conveyed in university environments (Alsubaie, 2015). This means that embracing and making explicit sustainability values, norms and practices in universities' daily operations might foster a distinctive organizational culture (Hoover and Harder, 2015) that engenders and promotes campus sustainability. Alshuwaikhat and Abubakar (2008) argue that promoting sustainability in university campus is contingent upon developing a clear vision and an organizational culture supported by the provision of relevant resources to achieve the vision. Often this vision can be reflected in campus sustainability policies and initiatives and voluntary signing of declarations aimed at raising sustainability awareness. Raising awareness on sustainability can yield positive perceptions and pro-environmental actions (Venghaus et al., 2022). For example, the University of California's (Berkeley) commitment to reducing greenhouse gas emissions was achieved through awareness raising on energy efficiency projects and on-site renewables (World Sustainability Forum, 2016). These measures resulted in campus greenhouse emissions reductions amounting to 4.5%, reportedly the university lowest level since 2005.Therefore, assessing university stakeholders on their knowledge and perceptions of campus sustainability policies and priorities can provide insights into whether and how campus sustainability is understood and embraced.

Beyond statements of intent, Kurland (2011) argues that promoting change in universities is contingent on internalization of a culture of sustainability. Sustainability culture is conceptualized as including awareness, behavior and lifestyle choices informed by sustainability considerations across university stakeholders, including students and staff (Lad and Akerlof, 2022). Central to developing a sustainability ethos in any organization is visionary leadership (Alshuwaikhat and Abubakar, 2008; Ceulemans et al., 2015). Fien (2002) argues that leadership can be instrumental for organizational change through cultivating employee commitment to sustainability actions. From the ongoing discussion three important dimensions of organization culture as it relates to campus sustainability action can be gleaned. First, there should be leadership commitment seen through embracing, supporting of and promoting environmental sustainability as part of organizational culture (Lad and Akerlof, 2022; Rebich-Hespanha and Bales, 2023). While every stakeholder in the university has a role to play toward achieving sustainability, top management should provide leadership. Second, a sense of a collective goal is important. Organizations require a collective institutional identity that can enable every member to feel they are contributing to a collective goal. Leveraging responses on sustainability agendas can be enabled by a sense of shared goals, language, and effort. For example, Ulug et al. (2021) show that collective identity promoted sustainability transformations in ecovillages in the US. Last, and related to the preceding point organizations should have structures and platforms for sharing useful

sustainability knowledge and practices from individuals to collectives such as departments or institutes to make sure there is collective understanding of best practice, needed to engender collective efforts toward attaining campus sustainability (Alshuwaikhat and Abubakar, 2008).

Devising pathways toward sustainability requires adequate empirical evidence on the practice of universities regarding sustainability (Major and Savin-Baden, 2011). Thus, an examination of awareness and perceptions of diverse stakeholders can provide useful insights into the level of understanding of and commitments toward sustainability in universities (Blake and Sterling, 2011), and in turn identify any sustainability knowledge and commitment gaps (Emanuel and Adams, 2011). Further, an evaluation of perceptions can allow identification of problematic areas and mapping of pathways for achieving campus sustainability. Within this context, the purpose of this research was to examine stakeholders' awareness and perceptions on campus sustainability at Rhodes University, South Africa as a basis for appraising sustainability efforts, and crafting interventions for promoting campus sustainability. The specific questions that guided the study are:

1. What are stakeholders' awareness and perceptions of campus sustainability regarding daily operations?
2. What are stakeholder views on organizational culture and commitment toward campus sustainability?
3. What are stakeholders' perceptions on the role of top university management toward campus sustainability?

# 2 Materials and methods

## 2.1 Rhodes university

Rhodes University is located in a medium-sized town, Makhanda, in the Eastern Cape province of South Africa. There are about 8,500 students registered students and 1,300 support and academic staff at Rhodes University (2022). The university's commitment to the environmental sustainability is evident in various ways. First, it is a signatory to the Tailloires Declaration, the first declaration specifically focusing on the role of universities in responding to global environmental challenges. Second, Rhodes university has developed a comprehensive environmental policy that highlights the university's commitment to enhancing environmental sustainability via teaching and research, reduce its environmental footprint thorough sustainable travel, procurement, consumption of resources including energy, water and paper, and waste management and active engagement with its constituency (staff and students). The university embraces the principle of research-driven approaches to environmental management, and over the years research relating to paper recycling (Amutenya et al., 2009); food waste (Painter et al., 2016) and energy and water consumption and recycling behavior (Mtutu and Thondhlana, 2016; Bulunga and Thondhlana, 2018; Thondhlana and Hlatshwayo, 2018) has been undertaken. This research has generated useful insights on resource use practices on campus but the level of perceptions and awareness levels of campus sustainability among staff and students is little known. Further, there are assertions from different university communities (academic and support staff) on the incongruous nature of campus sustainability in the university, but these assertions have little empirical standing.

## 2.2 Sampling strategy

The study wanted to examine the perceptions of university stakeholders (students, academic staff and support staff) on campus sustainability at Rhodes University, South Africa. To ensure the sample represented all the university stakeholders a stratified convenience sampling approach was employed, based on the stakeholders' willingness to participate in the study. Students were invited to participate in the study at common meeting places such as cafes and the library. Support and academic staff were invited to interview through emails and upon receiving a favorable response, a questionnaire was handed to the respondent for self-completion. Completed questionnaires were collected at a time convenient to the respondents. A total of 159 stakeholders responded positively to the invitation to participate in the study.

## 2.3 Data collection

Data were collected through self-administrated questionnaires between July and August 2017. The questionnaire, with both open-ended and closed ended questions, was designed to get information on stakeholders' perceptions on the integration of sustainability principles in daily campus operations, knowledge of and significance of the environmental sustainability policy and the role of organizational culture and top university management in promoting campus sustainability. The questionnaire development process involved piloting, to pick up and address any concerns regarding clarity, language and length. The first section of the questionnaire collected the background information of the respondents, including gender, their position in the university (academic staff, support staff or student), work experience at Rhodes University, and home department. The second section of the questionnaire asked the respondents to indicate whether they thought campus sustainability was important and if in agreement, the primary reason for their response choice with respondents choosing one out of three given response options (saving the university money, reducing the environmental footprint of the university and moral reasons). Questions were designed to gauge respondents' perceptions on the level of mainstreaming of campus sustainability principles in their respective department's day to day activities. The respondents were asked to indicate how often they discussed sustainability topics within their departments or residences (for students) with respondents choosing one out of three given response options (Always, Sometimes and Never). The respondents were also asked to indicate any sustainability initiatives in their own departments such as back-to-back printing, recycling, water conservation and energy conservation, and whether these initiatives had improved their view of campus sustainability. To assess the respondents' views on the significance of environmental sustainability policies and initiatives, the questionnaire measured the respondents' awareness of the Rhodes University Environmental Policy and knowledge of any sustainability initiatives in the university. The respondents were asked to list all campus sustainability initiatives they were aware of, and if and what

information on campus sustainability they had received from the university or respective departments or units.

To assess the respondents' perceptions of the role of organizational culture and top management in championing environmental sustainability activities and practices, the respondents were asked about their views on whether campus sustainability was considered important by the university as an organization. Further, the respondents were also asked to indicate their level of agreement with the university's commitment to campus sustainability with responses on a five-point Lickert scale from strongly agree to strongly disagree. Questions also included those aimed at gauging the respondents' perceptions on the commitment of top university management toward campus sustainability, what they thought was the most pressing sustainability challenge in the university, the university's sustainability priorities, who should be responsible for driving campus sustainability and, barriers to campus sustainability. Ethical clearance for the study was granted by the Research Projects and Ethics Review Committee (RPERC) of the Psychology Department of Rhodes university on 14 June 2017 (Tracking Number PSY2017/31) before commencement of the study.

## 2.4 Data analyses

All the data provided by respondents were captured into an Excel Spreadsheet. Descriptive statistics, using frequency counts and proportions in the text, were used to show the distribution of data such as socio-demographics, perceptions and awareness levels of campus sustainability, motivations for sustainability actions, level of agreement with university's commitment to campus sustainability and reported barriers to campus sustainability. Chi-squared tests were used, where relevant, to test for association between responses and gender, student residence status and position of respondent (student, academic staff or support staff). One-way analysis of variance (ANOVA) and Tukey's *post hoc* tests were undertaken to determine whether mean duration of work or study at Rhodes university were significantly different between academic staff, support staff and students. All the statistical analyses in this study were performed using the statistical software TIBCO STATISTICA version 14.0.

## 2.5 Limitations of the study

The limitations of this study lie in that the different stakeholder groups were purposively selected based on availability and the willingness to participate in the study hence there is a risk of sample selection bias. Further, the sample size is small relative to the total student and staff population hence the findings cannot be generalized. However, the purpose of the study was not to generate generalizations but transferrable insights on a rather complex and subjective topic of campus sustainability. Another limitation is that the data used in this study are relatively dated (2017) and may have been influenced by the COVID-9 pandemic, climate change and other major events. For example, the Covid-19 pandemic may have influenced people's environmental awareness, consumption behavior and social responsibility as seen elsewhere (Ali et al., 2021; Severo et al., 2021). Further, findings show a positive relation between the increasing frequency of extreme weather events and environmental awareness but warn high levels of awareness do not always translate to immediate behavior change (Venghaus et al., 2022). Concerning economic events, South Africa is facing an energy crisis, with persistent power outages (Calitz and Wright, 2022; Inglesi-Lotz, 2023) and disruption to university business and people's lives, which might have changed people's awareness and perceptions of sustainability. Thus, the findings of this study should be interpreted with caution and similar comparative work on sustainability awareness levels should be done in future. However, the above-mentioned studies refer to broader community level sustainability awareness, which cannot "address the more nuanced and context specific sustainability requirements of campuses" (Dawodu et al., 2022). This study focused on campus sustainability shaped by specific institutional factors. Thus, recognizing the potential of the above-mentioned events in raising levels of sustainability awareness, perceptions of daily campus sustainability activities and practices, including the significance of environmental sustainability policies and initiatives and role of top management, university commitment in championing environmental sustainability activities and barriers to environmental sustainability remain important areas for systematic research.

# 3 Results

## 3.1 Socio-demographics of the respondents

Students constituted the biggest proportion (61%; $n = 97$) of the total sample, followed by academic staff (20%; $n = 32$) and support staff (19%; $n = 30$) (Table 1). There was a high female representation among the student (67%) and the support staff (73%) samples and a high male representation (63%) (Table 1) for the academic staff sample, mirroring gender distribution among registered students (60% females) and academic (>50% males) and support staff (59% females) at Rhodes University between 2017 and 2021 (Rhodes University,

TABLE 1 Socio-demographic profile of the respondents.

| Aspect | Value |
|---|---|
| Composition of respondents (%) | |
| Students | 61 |
| Academic Staff | 20 |
| Support Staff | 19 |
| Female representation by group (%) | |
| Students | 67 |
| Academic staff | 63 |
| Support staff | 73 |
| Residence status of students (%) | |
| Resident | 70 |
| Non-resident | 30 |
| Mean number of years at university | |
| Students | 2.65 ± 1.27 |
| Academic staff | 8.44 ± 4.28 |
| Support staff | 9.37 ± 5.85 |

TABLE 2 Reported primary motivation for campus sustainability.

| Motivation | Proportion (%) of respondents |
|---|---|
| Environmental concern | 70 |
| Financial savings | 28 |
| Moral considerations | 1 |

TABLE 3 Awareness level of campus sustainability initiatives.

| Campus sustainability initiative | Proportion (%) of respondents reporting awareness |
|---|---|
| Double-sided printing | 48 |
| Energy conservation | 32 |
| Recycling | 16 |
| Water conservation | 2 |
| Car pooling | 2 |

2022). Out of the student sample, about 70% were resident students and the remaining proportion was non-resident students (Table 1). Students from all the faculties (Commerce, Humanities, Science, Law, Education and Pharmacy) were fairly represented, though the biggest proportion (40%) was from the Humanities faculty. Similarly, academic and support staff from the various faculties and departments were fairly represented in the total sample. Overall, there was a significant difference in the number of years spent at Rhodes University between the three respondent groups ($F = 66.17$; $p < 0.001$). There was a slight difference in the mean number of work experience at Rhodes University between academic staff ($8.44 \pm 4.28$) and support staff ($9.37 \pm 5.85$) (Table 1). The average number of years spent at Rhodes University for students was, as expected, very low ($2.65 \pm 1.27$).

## 3.2 Respondents' perceptions of sustainability

Across the total sample, 80% perceived campus sustainability efforts such as water and energy conservation, food waste reduction and recycling as important considerations for the University. A higher proportion of females (58%) than males (37%) perceived that campus sustainability was important, but the difference was insignificant ($\chi^2 = 0.0371$, $p = 0.847$). Similarly, though a higher proportion of the students (56%) than academics (20%) and support staff (19%) viewed campus sustainability as important the differences were not statistically significant ($\chi^2 = 2.073$, $p = 0.355$). Similar trends were found when data were analyzed by the status of residence, i.e., residence (66%) versus non-residence students (30%) ($\chi^2 = 1.361$, $p = 0.243$), and by faculty of student respondent ($\chi^2 = 2.644$, $p = 0.755$). When asked about the primary motivation for campus sustainability more than two-thirds (71%) of the respondents cited environmental concerns, followed by financial savings (28%) and moral reasons (1%) (Table 2). Less than half (40%) of the respondents across the sample felt Rhodes University seriously considered sustainability goals, with a significantly higher proportion of female respondents (23%) than males (17%) saying so ($\chi^2 = 17.625$, $p = 0.001$). There were no significant differences between students (20%), academics (12%) and support staff (9%) ($\chi^2 = 8.515$, $p = 0.385$) and between residence (27%) and non-residence students (7%) ($\chi^2 = 4.706$, $p = 0.319$). When asked for their level of agreement with the university's efforts in improving sustainability matters on campus only 27% of the respondents agreed, while the rest were either ambivalent (52%) or in disagreement (21%).

## 3.3 Respondents' awareness of sustainability

The respondents were asked about their awareness of the Environmental Sustainability Policy of Rhodes University and less than half (41%) said they were aware. Further analysis showed that more students (15%) than academics (14%) and support staff (12%) knew about the sustainability policy ($\chi^2 = 27.714$, $p < 0.001$). When asked about the specific sustainability activities such as recycling, food waste reduction, energy conservation, water conservation and double-sided printing in the university, about 62% of the respondents indicated they had heard about them but only 6% could outline the focus of these initiatives. Analysis by gender shows that significantly more females (43%) than males (19%) said they had heard about sustainability initiatives in the university ($\chi^2 = 4.828$ $p = 0.028$). Further, significantly more students (46%) than academic (20%) and support staff (18%) ($\chi^2 = 9.193$; $p = 0.010$), and more residence (58%) than non-residence students (10%) ($\chi^2 = 5.781$; $p = 0.016$) were aware of specific sustainability initiatives in their departments or residence. Out of all the sustainability initiatives mentioned, double-sided printing was the most frequently cited (48%), followed by energy conservation (32%) and recycling (16%) (Table 3). Water conservation and carpooling was cited by a handful of respondents (2% each).

Comparison by sample group shows about 50% of students and 44% of academic staff cited double-sided printing as a key sustainability initiative. However, when asked for what they thought was the most pressing sustainability on campus, about 62% of all the respondents mentioned water conservation, with all the respondents citing lack of investment in water conservation measures. Other key sustainability issues cited by the respondents include food waste (25%), energy waste (12%) and recycling (1%). Out of the total sample, more students (72%) than academics (47%) and support staff (45%) cited water shortages. As expected, more residence students (78%) than non-residence students (57%) felt water shortages was a key sustainability issue though the difference was not significant ($\chi^2 = 5.006$, $p = 0.171$). In contrast, a higher proportion of support staff (45%) than students (18%) and academics (28%) felt that food waste was the pressing sustainability challenge.

When the staff and students were asked how often sustainability issues were discussed within their lines of duty and residences via platforms such as departmental and house meetings respectively, less than one-fifth (18%) of the respondents said they 'always' discussed it, with a slightly higher proportion of support staff (30%) than academics (20%) and students (13%). The remaining proportion of all the respondents said they 'sometimes' (64%) or 'never' (18%) discussed sustainability issues. There were marginal differences between residence students (13%) and non-residence students (10%) who reported 'always' discussing sustainability issues.

Concerning responsibility for achieving sustainability goals in the university, a substantial proportion of the respondents (93%) said that

all stakeholders (academic and support staff, students and top university management) were responsible. However, there was a unanimous agreement among all the respondents that top management was responsible for providing institutional direction and support for streamlining and cultivating commitment toward sustainability endeavors into the university's core business.

### 3.4 Perceived barriers to campus sustainability

Concerning barriers, approximately 61% of the respondents cited lack of funds to invest in suitability initiatives such as water conservation and renewable energy as the main barrier to achieving sustainability goals within the university. The other barrier mentioned was lack of cooperation among stakeholders which, in turn, resulted in failure to translate sustainability policies into practice.

## 4 Discussion

### 4.1 Awareness and perceptions of sustainability

A substantial proportion of the interviewed respondents perceived campus sustainability as a key pillar of the university, suggesting that there is willingness to engage in sustainability actions. Environmental concerns and financial benefits were cited by the respondents as the key reasons for the need to pursue campus sustainability. The reasons given for sustainability broadly mirrors the literature that highlights positive association between environmental concern and financial savings with sustainable behavior (Saari et al., 2021). However, less than half of the respondents felt the university embraced sustainability goals in practice, with most respondents feeling that sustainability efforts were in the infancy stage. This is consistent with findings that show statements of intent on environmental sustainability on university campuses illustrated by voluntary signing of declarations and treaties seldom translates into practice (Lozano et al., 2015). The fact that more females than males felt campus sustainability was embraced at Rhodes University can be explained by the notion females are generally more pro-environmental than males, and therefore can be more receptive to sustainability matters (Kawgan-Kagan, 2020). For example, Li et al. (2022) found that females in China were generally more geared toward environmentalism and green living as evidenced by support for plastic ban policies and more propensity to reduce plastic waste through reusing shopping bags. Given that there is a positive relationship between organizational values and people's perception and satisfaction (Tsai, 2011), it is plausible to argue that the low levels of positive perceptions on sustainability are explained by the university's current perceived 'low' standing on sustainability issues. Further, while a sizeable proportion of the respondents said they had heard about sustainability initiatives such as water conservation, recycling, double-sided printing, food waste reduction, very few of them could provide details about the specific initiatives, highlighting low level of awareness about sustainability concerns. Similar findings have been reported by Wright and Wilton (2012) who found that directors of facilities in Canadian universities had high levels of interest on sustainability but low awareness levels of sustainable practices and what a sustainable university looks. Further, less than half of the respondents were aware of the university's Environmental Sustainability Policy. Similar results have been found elsewhere. For example, Hoque et al. (2017) found that very few students in Bangladesh universities knew about sustainability initiatives such as recycling. Bawden (2004) suggests that the concept and practice of sustainability in higher education will develop when universities engage in micro efforts to educate and create distinctive awareness within their environments. The importance of knowledge-sharing platforms for promoting sustainability ethos and practice in universities was highlighted by students in Bangladesh universities (Hoque et al., 2017). Halmaghi et al. (2023) also found positive links between sustainability awareness raising through training and the practice of sustainability in Romanian universities. Similar linkages have been reported by Venghaus et al. (2022) who found that increased climate change awareness in Germany resulted in improved perceptions of sustainability and related behavior change. It is plausible to attribute the higher number of students than staff who were aware of the environmental policy and sustainability initiatives in this study to environmental programs in the university's residence system, which are championed by Environmental Representatives.

A key finding of this study consistent with findings elsewhere (Wright, 2010) is the disjuncture between what the respondents viewed as the key campus sustainability challenge the university should address and what was being addressed. On the one hand, the respondents felt that double-sided printing was the main campus sustainability challenge the university focused on while on the other hand they felt water conservation was supposed to be the focus. The respondents' view that campus sustainability should rather prioritize water conservation is perhaps explained by the persistent water shortages that started in 2016 due to persistent droughts and wasteful water use behavior, which resulted in water restrictions and calls for behavior change interventions for promoting sustainable water use (Pamla et al., 2021). Perhaps, the focus on double-sided printing could be explained by a comprehensive study by Amutenya et al. (2009) that detailed the potential financial and environmental benefits for reducing high paper procurement bills for the university. This culminated into the university's investment into common Xerox printers in all support and academic departments, with most printers already set to default double-sided printing. The high proportion of students who perceived double-sided printing should be the university's sustainability focus might be related to the need to reduce costs for the students rather than environmental concern as printing is linked to students' fees account and credit. Overall, the differences in the perceived importance of sustainability priorities illustrates a lack of collective understanding of campus sustainability goals and priorities, which can be attributed to a lack of coherence, dedicated leadership and collective strategic efforts regarding sustainability goals in the university, which has been previously reported by Thondhlana and Hlatshwayo (2018).

This incongruence between what is espoused and what happens in practice can constrain collective action and sustainability behavior because in general organizational development on any issue is contingent on alignment between management, structure, people, culture and policy (Ceulemans et al., 2015; Beer, 2022). For example, Halmaghi et al. (2023) found positive links between organizational culture in promoting change toward sustainable practices in Romanian universities, attributing this to the alignment between the environmental

sustainability imperatives and organizational values, rules and beliefs. Without congruence, progression on sustainable matters is impossible because it is difficult to engender commitment to campus sustainability and therefore a stark utopia (Hashim et al., 2012; Beer, 2022). Perhaps the challenges of embracing sustainability in universities can be explained by their business philosophies. Granados-Sánchez et al. (2012) argue that for as long as higher education institutions operate as profit making corporates, it will be difficult for internal stakeholders to even grasp anything on sustainability as the nature of such organizations and leadership models used make it impossible to respond to "societal issues." It is argued that the molding of university systems into neo-liberal systems might constraint responsiveness to campus sustainability concerns due to their profit-making mantra, where financial well-being is prioritized (Sherman, 2008; Granados-Sánchez et al., 2012) over sustainability concerns. This assertion is based on the notion that the nature and characteristics of profit-making institutions often emphasize financial well-being first before anything else.

Though nearly all respondents said that the responsibility for championing campus sustainability rested with everyone, they lamented the perceived lack of involvement and commitment by top leadership, mirroring the findings by Thondhlana and Hlatshwayo (2018). Epstein et al. (2008) argue sustainability within organizations starts with a clear desire by top leadership to promote sustainability ethos, culture and actions as one of its core values. Kotter (1998) suggests that a clear distinction between leadership and management can offer pathways to embracing campus sustainability. Leadership is conceptualized by Kotter (1998) as the process of influence at the center of relationships between leaders and workers involving the establishment of a sense of direction through a shared vision, alignment of resources, generation of motivation and provision of inspiration. Management is more concerned with running an organization efficiently while leadership assists with helping the organization grow, evolve and adapt to changing circumstances, such as the need for transition to sustainability. In the context of this conceptualization of leadership and management, it is plausible to argue that campus sustainability cannot not take off as expected or effectively if top level management is engaged simultaneously in a dual role of management and leadership. The findings of this study suggest the respondents expected top management (the Vice Chancellor, Deputy Vice Chancellors and Directors) to show leadership in promoting campus sustainability. Concerning the role of leadership in promoting campus sustainability, Shafait and Huang (2024) state that universities "can achieve long-term sustainability goals only if leadership plans, initiates, empowers, and sustains operational changes." Consistent with this mantra, we argue that leadership should transcend top university management to include Deans and Heads of Department, Hall Managers and Residence Managers which might offer better opportunities for integrating sustainability concerns in everyday practice because of the leadership positions they assume in their roles.

## 4.2 Perceived barriers to sustainability on campus

Concerning barriers respondents cited lack of funds for investing in sustainability infrastructure, research and implementation. For example, despite water shortage problems in the university and broader society, investment into water conservation technologies such as treatment for reuse and water harvesting tanks has been hampered by limited funds. Similarly, the university has not been able to invest in renewable energy despite frequent power cuts that threaten to jeopardize the academic project. South African universities face huge financial challenges owing to significant funding cuts by the state (du Plessis et al., 2022). This means that universities might get into of the 'fire-fighting' mode for short-term financial survival at the cost of investing in sustainable options whose benefits are not immediate but often long-term and hence largely unappreciated and not a top priority. The reported barrier related to non-implementation of policy was associated with and attributed to failure by top management to show commitment toward campus sustainability. This highly resonate with the assertions by Fien (2002) who highlights that leadership is instrumental in the process of organizational change especially on issues of sustainability and that it is only when management decides to holistically 'buy into the concept of sustainability' that green practices and improvement will be evident. Linnenlueske and Griffiths (2010) similarly posit that an organizational culture that supports sustainability can inspire and motivate employees to take sustainability obligations seriously as it will enable internal structures within the organization such as corporate strategy, human resources department and developmental practices to hold a morally obligated commitment.

## 4.3 Potential interventions

Addressing campus sustainability should be part of the university culture, and a collective effort evident in its explicit and implicit values, norms and perspectives and across different sectors. Rhodes University's residence system provides a huge opportunity for promoting sustainability. All residences have Environmental Representatives whose portfolios include raising awareness about environmental sustainability issues, including waste management, double-sided printing, food waste reduction, waste separation, energy conservation and water saving. In some cases, Environmental Representatives as elected members, are asked by residence members to indicate their mandate for the year and a termly review is held during house meetings. These processes can raise awareness of sustainability programs in the university. With about half of all students residing in university residences, the environmental footprint of the university is substantial, and this should be a key motivation for promoting campus sustainability.

While promoting campus sustainability is the responsibility of all staff and students, top university management is positioned to make available the core resources such as clear planning, implementable policy, clear strategies of implementation, action and funding needed for supporting campus sustainability as proposed by Shafait and Huang (2024). Sustainability efforts in the university will depend on the integration of a sustainability culture into the hidden curricula which can raise the level of engagement on and awareness of campus sustainability. In South Africa, the University of the Western Cape is considered as one of the greenest campus (Green Africa Directory, 2022), and this success is credited to awareness raising and making sure that there is congruence on sustainability goals among all stakeholders. This suggests that where there is collective understanding of sustainability issues and goals, it is possible to leverage positive responses from all stakeholders.

Perhaps mainstreaming sustainability issues through incentives such as awards and promotions can inculcate a sustainability culture. According to Kurland (2011) and Amutenya et al. (2009), efforts that promote change in university issues are effective when the change itself is incentivized and internalized into the distinctive culture of higher education whereby every single person is involved. Other potential opportunities for promoting campus sustainability lie in empowering university committees to make sustainability decisions. For example, the University's Environmental Committee, which currently does not have decision-making powers can be empowered to make sustainability decisions which can be recommended for approval by top university decision-making committees such as Senate and Council.

Concerning incentives, the university has a long tradition of highly recognized Vice Chancellor's awards related to distinguished contributions to research, teaching and community engagement. These awards, accompanied with a monetary incentive, are conferred to recipients at the universities graduation ceremonies and the recipients are expected to give a public talk on their work. Comparatively, the university's environmental award, awarded based on good sustainability practices, inspiration, innovation and continuity tends to be low key, evident in a separate celebratory Environmental Award Ceremony and a non-monetary incentive. Bringing the Environmental Award to the level of other awards and linking it up with promotion criteria can help infuse sustainability into everyday university business (support, research, teaching and administration). Leadership should be measured against contributions to campus sustainability efforts and rewarded as such. Overall, the results suggest the university should invest in efforts to address both a knowledge and commitment gap to integrate campus sustainability principles in daily university business, as suggested elsewhere (Emanuel and Adams, 2011).

## 5 Conclusion

This paper offers useful insights on stakeholder perceptions of campus sustainability within a university setting. The results show generally high levels of positive views but limited awareness of campus sustainability, showing a knowledge gap. Further, stakeholder perceptions of top sustainability priorities are not aligned with current sustainability practices, showing a lack of coherence in sustainability plans, priorities and practices. In addition, there seems to be a perceived lack of a sustainability culture at the organization's level and limited involvement of top management in sustainability engagements and practice, illustrating a commitment gap. Altogether, these views can seriously constrain affirmative qualities such as interest, enthusiasm or optimism about campus sustainability. There is a strong need to infuse sustainability knowledge, ethos and practices into the university culture through co-designing of sustainability values, norms, goals and priorities in the university's hidden curriculum. Making sustainability a lived value requires the integration of sustainability principles and actions into every aspect of university life from daily operations, residence life, social and sporting activities and academic life. The challenge lies in mainstreaming campus sustainability ethos and practice into the university's daily operations, and without that commitment campus sustainability principles cannot translate into daily practices. The commitment should not be indicated by intentions only, but also by provision of the human and financial resources required to implement sustainable practices. Identifying agents of change – small teams of dedicated individuals, commonly referred to as a task team, who should draw on available research to unpack the state of sustainability in respective universities, desired strategies, and pathways toward the desired sustainable future might help to provide dedicated leadership. Developing collective pathways to campus sustainability should be informed by systematic research in the areas of energy efficiency, water conservation, biodiversity conservation, green building, green programming, waste reduction and green leadership and innovation.

## Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Ethics statement

The studies involving humans were approved by Research Projects and Ethics Review Committee (RPERC) of the Psychology Department. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written and oral informed consent to participate in this study.

## Author contributions

GT: Conceptualization, Project administration, Supervision, Writing – review & editing. B-SN: Methodology, Writing – original draft.

## Funding

The author(s) declare that financial support was received for the research, authorship, and/or publication of this article. This work was funded by the National Research Foundation of South Africa under the Thuthuka Funding Instrument, Reference No. TTK150611119184, for which we are grateful. Any opinion, finding, conclusion, or recommendation expressed in this material is that of the authors and the NRF does not accept any liability in this regard.

## Acknowledgments

We thank the students and staff for participating in the study amidst very busy work schedules.

## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Publisher's note



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