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Higher Education and Sustainability

Opportunities and Challenges
for Achieving Sustainable
Development Goals

edited by

Ulisses Manuel de Miranda Azeiteiro

J. Paulo Davim



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Preface

Education and research in the context of the Sustainable Development Goals (SDGs) are current challenges facing Higher Education Institutions (HEIs). This book's primary goal is the description of experiences from research and field projects and the role HEIs can play together with contributions presenting a variety of initiatives showing how regions around the world are implementing SDGs.

The objective was to publish material that promotes innovation and enhances understanding on this thematic and to disseminate knowledge and enhance international research and cooperation. The contributions cover the topics of the role of SDGs in advancing implementation of sustainable development, sustainability in higher education, the role of universities in sustainable development, new paths towards sustainable development and e-learning contributions.

Chapters are from Europe, Asia, Latin America and Africa, from emerging and developing nations facing great sustainability research and educational challenges presenting case studies, technological developments, outputs of research/studies and examples of successful projects.

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chapter one

*The role of SDGs in
advancing implementation of
sustainable development*

*The case of University of
South Africa, South Africa*

Albert Mawonde and Muchaiteyi Togo
University of South Africa

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1.1 Introduction

Sustainable development is the moral imperative of satisfying needs, ensuring equity and respecting environmental limits (representing constraints on human activities) including efforts to maximise economic value (Holden et al., 2014). Robinson (2004) emphasised that sustainable development is a collective institutional response, efficiency gains and a social responsibility. The authors maintained that sustainability is a consistent set of concepts more usefully thought of as an approach or process of community-based thinking. Considering the university as a community, the term sustainability can be seen as anthropocentric where the

community gives it value through deciding the route to follow and policies to adopt and implement so that an institution can be regarded as sustainable. However, Sanchez et al. (2013) noted that, despite lack of agreement on an unequivocal interpretation of the concept of sustainable development, there is a general agreement that it involves simultaneous satisfaction of economic, environmental and social goals. The commonly used definition is the one proposed by the Brundtland Commission (1987) which states that sustainable development is a concept which allows economic development while considering environmental limits and equity. The chapter leans more towards the Brundtland Commission (1987) definition.

In 2008, in the South African context, the government developed a National Framework on Sustainable Development by listing specific strategies and critical areas aimed at guiding the country's development on a more sustainable path (DEAT, 2008). To accomplish these interventions, all stakeholders needed to fulfil their roles. One sector that can play an essential role in the education sector is the university; by providing training and role modelling. Universities can teach and demonstrate the theory and practice of sustainability by taking action to understand and reduce the negative environmental impacts of their activities (Lotz-Sisitka, 2014).

Following the Rio+20 Summit in Brazil (2012), 17 Sustainable Development Goals (SDGs) were adopted to address challenges resulting from environmental catastrophes (natural and anthropogenic). SDGs were adopted as a follow up to the just-ended Millennium Development Goals (MDGs) as a way of escalating sustainable development globally (Hak et al., 2016). University campus sustainability challenges identified by GUPES and other sustainability stakeholders; especially the United Nations; resulted in universities embracing SDGs. Out of the 17 SDGs, some of the goals naturally fit the purpose and missions of specific institutions, and in the case of universities, this happens to be SDG 4: to ensure inclusive and equitable education and to promote lifelong learning opportunities for all.

SDGs can be seen as an opportunity that can be and is being embraced by the higher education sector to further its quest to become more sustainable. According to Lozano (2006), implementing campus sustainability is not an easy task. Leal Filho (2011) supported this when he said that campus sustainability implementation is confusing, time-consuming and creates many uncertainties among various stakeholders. The promulgation of SDGs demystified the confusion surrounding campus sustainability implementation. The pre-existing lack of direction regarding the role of universities in sustainable development can be answered by embracing SDGs which are linked to the mission statement of the institution.

The role of the university in addressing global challenges of sustainability has been cross-examined by several authors (Cortese, 2003; Moore, 2005; Edelstein, 2009; Lozano et al., 2015). Tilbury (2011) argued that universities can change the world through training and expanding

young minds, researching answers to challenges and informing public policy by demonstrating their understanding and commitment through careful campus management. Stephens et al. (2008) claimed that the role of a university is pivotal in society since universities are manifestations of longevity and social stability with a non-profit focus. Universities can foster long-term thinking, which is critical for sustainability planning and policy review; which in turn is critical for sustainability.

Policy aims proposed by the United Nations General Assembly in education and lifelong learning gave impetus to reflections on the role of universities and their potential contribution in moving towards a low carbon and resource efficient economy. According to the 2012 UNCSO outcome document (resolution 234), universities were strongly encouraged to consider adopting good practices in sustainability management on their campuses and surrounding communities, with the active participation of students, teachers and local partners.

Many declarations challenged universities to embrace campus sustainability. Some of these were the Talloires Declaration (1990), the Halifax Declaration (1991), the Kyoto Declaration (2000) and the Turin Declaration (2009). The United Nations Decade of Education for Sustainable Development (2005–2014) was proposed to promote sustainability mainstreaming, and it culminated in the UNESCO World Conference on Education for Sustainable Development (2014). The Global Action Programme (2015) also promoted the same agenda. These declarations and fora have one significant similarity, a call for higher education to utilise the weapon of education, research and training in tackling environmental “wicked problems” (Dentoni and Bitzer, 2015: p. 2).

Velazquez et al. (2006) defined a sustainable university as a higher education institution as a whole or as a part, which addresses, involves and minimises adverse environmental, economic and health effects generated in the use of its resources. Universities fulfil its function of teaching, research, outreach, partnership and stewardship in ways which help society make a transition to sustainable lifestyles. Cole (2003) also defined a sustainable campus community as one that acts upon its local and global responsibility to protect and enhance the health and well-being of humans and ecosystems. It actively engages the knowledge of the university community to address the ecological and social challenges which we face currently and in the future.

SDG 4 which focusses on ‘promoting inclusive and equitable quality education and lifelong learning opportunities for all’ can be realised through students’ involvement in campus greening initiatives. Regarding sustainable development, educational quality is promoted through provisioning of relevant curricula which address current and topical environmental and sustainable development issues. Through learning about sustainable development, students are equipped with lifelong learning

skills applicable not only for examination purposes but also for their entire life, especially at home, in their communities and at workplaces.

Several other campus greening initiatives were implemented worldwide by various institutions with the goal of promoting equitable quality education and lifelong opportunities for all. Examples are listed and briefly discussed below:

- Oberlin College promoted lifelong learning and quality education using green campus initiatives (Orr, 2011). It had green energy supply initiatives, green procurement, carbon sequestration and sustainability alliances. In these initiatives, equity, an integral part of sustainable development, was realised through the college partnerships with students, community members and the City of Oberlin in tackling green energy and carbon offsetting Projects. Irrespective of gender, creed, occupation and status in society, the project involved all stakeholders in finding lasting solutions to environmental challenges. Lifelong learning was enhanced since these skills were imparted to all the people involved, and they used them as part of their daily lives; not only for the project.
- The partnership of Lund University, Malmo University and Swedish university of Agricultural Sciences is another example which showed how universities were embracing SDGs (Trencher et al., 2016). The partnership saw an opportunity to involve various stakeholders in re-orienting the university operations division. Quality education and lifelong learning were promoted through the exchange of ideas and sharing of different experiences by each institution. Staff members, students and sustainability champions all benefited from putting their minds together to find lasting solutions to environmental challenges.
- Rhodes University, through community participation, involved staff members, students, councillors and the local people in an HIV-AIDS Resistance Campaign (Togo, 2009). The community benefited immensely through relevant information, which enhanced their awareness of HIV-AIDS infections and how to practice home-based care of infected patients. The process of gaining knowledge on how to treat and take care of infected patients and to prevent stigma was part of the learning process and plays a pivotal role in reducing HIV-AIDS infections and early demise of infected patients. The campaign was open to the community members of Makana District in Grahamstown and reached people with diverse backgrounds (equity).
- According to Govender (2005), at the University of KwaZulu Natal (UKZN), the Faculty of Engineering implemented an Energy Management Programme to improve energy efficiency. The energy

saving programme served as an excellent example of how sustainable campus greening initiatives can be implemented (Smit, 2009). According to Knox (2013), the estimated amount of money UKZN saved through energy retrofitting reached almost 4 million rands per year which is approximately equivalent to US\$300,000.

Analysing the aforementioned literature on campus sustainability as well as how various institutions implemented campus greening initiatives aligned with SDGs, one can conclude that most of the institutions which are at the forefront of campus sustainability initiatives are traditional universities where students reside on campus. Almost all reviewed universities have initiatives which address aspects of goal number 4 (inclusivity, lifelong learning and quality education). The question that arises in this chapter pertains to how Unisa, an Open Distance Education university with students who do not frequent the campus is promoting inclusivity, lifelong learning and quality education through campus greening initiatives.

To provide a brief background, Unisa was founded in 1873 as the University of the Cape of Good Hope situated in Gauteng province, South Africa. It was formed through the merger of the old Unisa, Technikon Southern Africa and the Vista University. Unisa boasts a student enrolment of about 400,000 which represents over a third of South Africa's tertiary students which stands at 1,200,000 (Unisa, 2015). In 2008, Unisa became a member of the United Nations Global Compact (UNGC) which is the most extensive corporate citizen network that draws participants from business, national and civil fraternities (Unisa, 2015).

By becoming a member and a signatory of the UNGC, Unisa committed to contribute towards sustainable development since principles 7–9 of the UNGC promotes sustainable utilisation of resources and sound sustainable management of organisations. The UNGC is a principle-based framework for business, stating ten principles in the areas of human rights, labour, the environment and anti-corruption (Unisa, 2015).

Unisa has made significant success in making sure that its academic program qualification mix promotes sustainable development values underscored by the UNGC. The university takes pride in a myriad of programmes that drive sustainable development in the education sector in Southern Africa such as The Chancellor's Sustainability Programme spearheading most of Unisa's sustainability initiatives namely: The Green Economy Campus Initiatives (GECI) and the Green Economy Sustainability Engagement Model (GESEM). According to Unisa (2015), the GESEM model integrates policy development focussing on various areas of environmental sustainability, for example, carbon footprint, energy and carbon policy, pollution and wastewater policy, ISO 14001 certification and waste control policy.

It is, however, vital to note that sustainability is not a one-size-fits-all framework (Barkemeyer et al., 2011). The principal focus of the chapter is to establish how Unisa, an ODeL institution, is involved in the implementation of SDG 4. A review of other literature sources has been explored, and it outlined how various universities are embracing sustainability and SDG 4 in their contexts. In the next section, a brief overview of the research methods is provided. Results and discussion follow the methods section. The final section is a conclusion to the chapter.

1.2 Methodology

The research was informed by a mixed methods design and was based on a case study of Unisa. According to Yin (2003), case studies allow the use of multiple data sources which enhance validation of results, credibility and dependability. Data was collected through questionnaires, interviews, document analyses and campus observations (Creswell et al., 2003) between March 2017 and September 2017.

Telephonic interviews and face-to-face interviews were conducted. Semi-structured interviews (Alverson, 2003) were employed to interrogate the Unisa Florida Campus Director, the Waste Controller, Sustainability Champions, the Campus Operations Manager and the Student Representative Council President on how the institution is embracing SDGs. BSc Honours Environmental Management students responded to an online questionnaire. Interview questions asked varied across respondents. The Sustainability Office members were asked questions related to Unisa Sustainability Policies and their implementation, sustainability planning and projects. Interview questions for Unisa Operations Manager and Campus Director were on sustainability projects present at the campus, for example, recycling, which were aligned to the SDGs and how the projects were involving students. The Student Representative Council interview guide interrogated how students were involved in sustainability initiatives and SDGs at Unisa. The respondents were selected purposively. The Campus Director, Sustainability Office Personnel and Operations Manager were interviewed because they have the technical knowledge of campus sustainability initiatives and SDGs as campus sustainability is part of their work. The questionnaire for BSc Honours Environmental Management and BSc Honours Environmental Monitoring and Modelling students was meant to solicit information on how their programme curriculum is contributing to SDG 4. During campus observations (discussed later), ten students were informally engaged to establish their involvement in greening practices on campus (Table 1.1).

A variety of documents were analysed including the Unisa Environmental Sustainability Policy of 2012, Unisa Waste Management Policy

Table 1.1 Methods which involved human participants and their roles

Method	Participant(s)	Socio-demographics of the participant	Participant role at the university
Interview	Campus Director	Male aged 40 years + PhD holder	Oversees university functioning and planning of physical infrastructure, technological resources and facilities management of the university.
Interview	Sustainability Office Manager	Female aged 40 years + PhD holder	Oversees university sustainability policy formulation, planning and implementation of campus greening initiatives in partnership with all universities departments and external stakeholders.
Interview	Operations Manager	Male aged 35 years + MSc holders	The university core which plans facilities management, procurement, estates and gardens section, physical planning and university green development.
Informal interviews	Unisa students engaged informally during campus observations	Six females and four male students doing BSc Honours Environmental Monitoring and Modelling	Students studying various programmes at Unisa Florida Campus
Questionnaire	CAES BSc Honours Environmental Management and BSc Honours Environmental Monitoring and Modelling students (n = 114)	79 female and 35 male students doing BSc Honours Environmental Management	Students studying in the College of Agriculture and Environmental Sciences at Florida campus.

of 2017, Unisa Energy and Carbon Policy of 2016, *Younisa* 2018 Magazine, 2015, 2017 and 2018 Unisa Annual reports, Unisa website and the UnisaWise magazine of summer 2011. These documents were selected because they have information, which addresses the research questions.

Campus observations provided a means for methodological triangulation to enhance the quality of the collected data (Patton, 2002: p. 247). They, however, resulted in incorporation of new data which had not been revealed through the other methods. Trustworthiness was enhanced through member checking (Johnson and Waterfield, 2004). Content and thematic analysis were used to analyse documents, interview transcripts and campus observation notes (Braun and Clarke, 2006: p. 79).

1.3 Results

This section presents data and analyses and discusses the findings of the study. The findings were discussed within the context of literature on past studies for convergence and corroboration. Lifelong learning themes and quality education themes were discussed simultaneously in brief paragraphs.

1.3.1 *Unisa campus energy greening initiatives*

Unisa hosted a Zero Carbon Emissions Electric Cars roadshow in 2011. This is an annual meant event to increase sustainability awareness at the campus and the surrounding communities. The roadshow was hosted in partnership with the Department of Environmental Affairs and Nissan Clover Leaf which supplied electric vehicles. The event involved all stakeholders including Unisa teaching staff, students, government officials and members of the community and all these stakeholders benefited from the knowledge gathered. Based on BSc Honours Environmental Management students' data, 75 students out of 114 (66%) respondents are aware of the Unisa energy initiatives. According to the Unisa Sustainability Manager, further education and awareness campaigns were carried out to empower the local community and students on the benefits of adopting green energy.

According to Trencher et al. (2016), knowledge co-creation through university partnerships is a way of generating new knowledge and escalating sustainability solutions and awareness. In this context, new knowledge generated is equated to quality education. The lessons drawn by the stakeholders is applied at various levels ranging from household level to multinational level. Electric vehicles help to tackle climate change impacts through reducing carbon dioxide emissions produced by vehicles. Lessons drawn from this initiative supports SDG 13 (take urgent action to combat

climate change and its impact). Electric vehicles are considered “green vehicles” with less environmental impacts compared to the traditional vehicles.

According to the Unisa Environmental Sustainability Policy of 2012, the university has an Energy and Carbon Policy Masterplan. Under section 4.1 a of the master plan, Unisa advocates for the significant reduction of electricity consumption using alternatives energy sources. Out of 114 students interviewed, 20 students (18%) knew about the master plan. Below is one of the responses from the Sustainability Manager:

Unisa has a solar installation program in place and a solar-powered car charging station for its staff members and students. However, the solar project is very successful in cutting down energy costs, but the solar car charging initiative is not fully used to its capacity due to the high prices of solar-powered cars.....,

Sustainability Office Manager, Unisa (2018).

Use of solar energy as an alternative source of energy is in line with Unisa Energy Policy and South Africa's National Climate Change Response White Paper (2011) which pledged the reduction of carbon emissions by 34% by 2020 and 42% by 2025. Through the solar initiative, lifelong learning is enhanced through lessons learnt from adopting cleaner energy sources (SDG 13). Quality education (SDG 4) is enhanced when stakeholders like students and the greater community surrounding the university get an opportunity to understand the rationale behind cleaner sources of energy. In the long run, communities will adopt these strategies in their own lives. The solar car charging project serves to demonstrate the need for innovation and awareness (SDG 9, industry, innovation and infrastructure) of the necessity of renewable energy. Initiatives like the solar energy installation contribute towards lifelong learning in sustainable development from benefits accrued and lessons drawn.

Evidence gathered from the UnisaWise (Unisa 2011) through content analysis shows that Unisa adopted a vehicle fleet management system in 2011 as a way of carbon offsetting and saving fuel costs. A Global Positioning System tracks staff vehicles to cut down on unnecessary trips and fuel expenses. The initiative resulted in 17% savings on fuel expenses in the 2012 financial year, and it also led to a reduction in carbon emissions. It was estimated that approximately 3,400 tonnes of carbon dioxide equivalence (CO₂-eq) were offset by the project (Nhamo and Ntombela, 2014). Unisa outsourced buses for staff transportation between Johannesburg and Pretoria which is cheaper and is a way to offset carbon emissions. From 10% users of public staff transport, the percentage increased to approximately 30% due to the efficiency and strategic pick

and drop off points which were introduced. Following the introduction of the “Gautrain” in Johannesburg, Unisa linked its shuttle services to the Gautrain pickup points which increased the number of staff who uses public transport. Gautrain is equivalent to electric trains found in most developed countries, and it has a high standard service and good security (Unisa, 2015). This initiative complimented South Africa’s adoption of the Bus Rapid Transport system which is considered a greener mode of transport. Nhamo and Mjimba (2014) noted that the Gauteng province where Unisa is located is a heavily polluted province with the highest greenhouse gas emissions in South Africa due to a high concentration of vehicles and industries. The use of public transport and cutting off of unnecessary trips by Unisa’s transport department served as a lifelong learning lesson to Unisa staff, students and community members. Vehicle tracking is a powerful way institutions are adopting to minimise unnecessary fuel costs and carbon pollution.

A new theme emerged from the “Younisa Issue 1 of 2018” document through content analysis. It was found that Unisa implemented its energy policy outside its campus in Melane, a rural community in the Eastern Cape Province in July 2016 as part of its community engagement. A biogas digester project was implemented through a partnership of the Unisa College of Agriculture and Environmental Sciences; College of Economic and Management Sciences and College of Science, Engineering and Technology as a transdisciplinary research programme. The programme witnessed the installation of a 10m³ biogas digester which has potential to generate 4.3 kg of liquified petroleum gas (LPG) per day for the vulnerable rural populace. Waste from cattle, goats and pigs is being used as feedstock while the by-product (digestate slurry) is used as a source of fertiliser for growing crops. Like the Oberlin College partnership which exhibited specific knowledge generation (Trencher et al., 2016), the project aligns with the SDG 4 theme of lifelong learning. The community taps into the project using animal waste to solve their challenges of electricity shortages in rural areas and high fertiliser costs. Besides the socio-economic benefits of the project, communities gained crucial and relevant knowledge and practical skills applicable in life beyond the project.

In addition to the Unisa biogas project, the Unisa Sustainability Office stated that Unisa is in partnership with the South African Medical Research Council (SAMRC) to research and provide clean sources of energy. The energy is in the form of solar energy, biogas and cool coating to reduce health risks and deaths in informal settlements around Gauteng in which people rely on kerosene and paraffin. These energy sources are a fire hazard and can cause respiratory diseases. Figure 1.1 shows the Unisa demonstration site for clean energy solutions.



Figure 1.1 Unisa demonstration site for three clean-energy solutions for households: solar, biogas and cool coatings. (Source: Kimemia, 2019.)

1.3.2 *Unisa campus recycling and conservation initiatives*

Content analysis of the Unisa Annual Report (Unisa, 2015) revealed that the Ethiopian Graduate Office (EGO), under Unisa College of Graduate Studies, held a tree planting event on 29 August 2014 on the premises of the Ethio-Japan Primary School, which is located at the front of the EGO campus at Akaki in Ethiopia. Together with the Department of Geography, the EGO responded to SGD 4 by developing a community engagement project entitled ‘Ethiopian Children Embracing Green Living’ (Unisa, 2015). Children were taught sustainability initiatives such as recycling, tree planting, water harvesting, organic farming, healthy living and climate literacy. Such activities promote lifelong learning for sustainability especially in desert-prone areas of Ethiopia where desertification is threatening to decimate the populace. The Ethiopian school together with the local community had an opportunity to learn about strategies for averting the impacts of desertification and climate change. The project is most likely going to grow in scale as the community can implement the same initiatives at different levels, for example, their households and farms. The project involved a diversity of people including males and females, different age groups as well as people from different religions and creed, hence, it addressed equity of access to information. There could be a multiplier effect as well whereby those involved in the project can teach others, hence, more community members will also learn to solve environmental challenges.

Thematic analyses of campus observation notes and data gathered from other sources revealed that Unisa has operational practices to plant and promote indigenous plants as part of its landscaping. Indigenous

plants, due to their better adaptation to local environmental conditions, tend to utilise less water. They do not disrupt normal ecosystem dynamics compared to alien plants which tend to have characteristics of a different climate. They also provide a natural habitat for various animal species. These plants use less water compared to alien plants and they promote ecosystem balance. Through this initiative, many sustainability lessons were learnt, and these could be adopted by university students, staff and surrounding communities for implementation in other contexts. Many BSc Honours Environmental Management and BSc Honours Environmental Monitoring and Modelling students (60% of respondents) were engaged in off-campus sustainability initiatives (recycling, water harvesting, eco-schools' gardens) at workplaces, in the community or at home. Due to the nature of distance education, Unisa students are not that involved in practices that respond to SDGs on campus, although 50% indicated a willingness to participate. University students are doing research on the importance of indigenous trees and the role they play in the ecosystem and the environment. Unisa Annual Report (Unisa, 2017) revealed an increase in student funding in research from 42,200 to 43,500 students valued at R540 million rand which is equivalent to approximately US\$38 million. The number of Unisa students' research projects on sustainability/sustainable development was 101 in total (Unisa, 2017). Unisa Press published 45 journal articles on campus, community and sustainability-related research. Such research reaches out to the entire university and beyond when it results in publications – carrying with it important lifelong lessons.

UnisaWise (Unisa, 2011) revealed that the Sunnyside North aloe garden located at Unisa Sunnyside Campus in Pretoria is the most prolific, unique aloe garden with 15 species of aloes which flower at different times in the year. The Grounds and Gardens Section of the university is looking for innovative ways to weave teaching and learning into the garden and use it for research purposes. The garden is meant to increase the knowledge and understanding of aloes as they have potential in medicinal use, and this is linked to knowledge creation and lifelong learning. Through research there is potential for more discoveries where various uses of aloe plants are concerned. This means the learning process will continue, and the vital knowledge regarding how the plants are used to better lives will continue to be generated. From the aloe project, Unisa staff members, students and the surrounding community are now aware that aloe cures numerous diseases including dermatitis, and it lowers blood pressure among others. According to the Department of Agriculture, Forestry and Fisheries (2015), South Africa increased the growth of aloe for export purposes. Below is a quote from the Department of Agriculture, Forestry and Fisheries about the importance of aloe for South Africa:

Aloe industry arose from the need to explore new opportunities for the agricultural sector that could lead growth and exports. For the future, industries are required to manufacture more complex tradable goods, provide multiple high-value product opportunities, provide decent jobs and match the natural resource environment. Aloe was found to suit many of the challenges for future growth.

Job creation, poverty alleviation and industrial innovation are part and parcel of the agenda 2030 SDGs. Aloe research at Unisa is contributing to the much needed data and innovation by South African aloe farmers to grow their aloe industries and export markets. The Unisa aloe gardens are small, but the initiative set a baseline for learning opportunities at the university.

The Unisa Estates division partnered with the College of Agriculture and Environmental Sciences (CAES) to undertake the rehabilitation of the Cycad Garden. All plants were labelled in 2014 to add knowledge to the enjoyment of the visitors. This was done to make the garden a place of botanical interest, with the vegetation serving as a valuable educational and research tool. The Unisa Cycad collection at Muckleneuk campus is internationally renowned for the number and variety of South African *Encephalartos* species which opens the door for quality learning and life-long learning. The Cycad Garden offers the visitor a unique opportunity to learn about the 28 cycad species of South Africa, growing among other indigenous trees, shrubs and bulbous plants. Figure 1.2 is an image of one of the gardens with labelled tree species at Unisa.

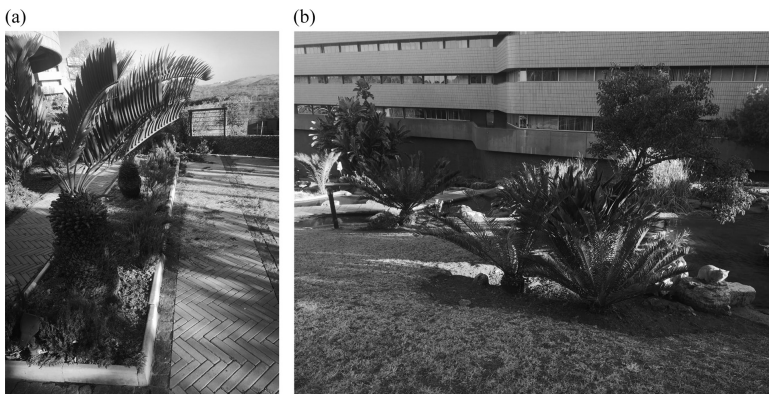


Figure 1.2 Labelled Unisa Garden, Muckleneuk campus. (Source: Sbahle Landscapes, undated.)

Content analysis of the Unisa Waste Management Policy of 2017 revealed that Unisa has a sound and functional recycling policy. Unisa approved the Bokhasi wet waste recycling programme as part of its Environmental Sustainability Plan (2012) and Solid Waste Management Plan (2017). The project is housed at Florida Campus in Johannesburg and Muckleneuk Campus in Pretoria and is managed by Earth Probiotic Recycling Solutions. The Bokhasi wet waste recycling process stabilises waste by eliminating pathogens while prohibiting the production of greenhouse gases like methane which is 25 times more toxic than carbon dioxide. The waste is in turn used as organic matter for the gardens and estates section. It is estimated that the project diverted 8,500 kg and 3,480 kg food waste from Muckleneuk and Florida campus respectively, from landfill disposal per month (Unisa, 2015). One interviewee had this to say about the project:

Bokhasi is still operational at Florida, and Muckleneuk campuses and the project has been very successful...

Sustainability Office Manager, Unisa (2018)

Brinkhurst et al. (2011) posit that universities have already engaged themselves in restructuring their curriculum, the research agenda and community services to focus more on sustainable development as well as incorporating sustainability into campus development and daily operations. In line with Brinkhurst's observations, Unisa practises dry waste recycling and the separation of waste at source. This is in tandem with its Waste Management Policy hinged in the National Environmental Management Waste Act, 59 of 2008. Unisa utilises the services of Oricol environmental services and Nampak for removal and recycling of waste-paper since 2011. These initiatives offer an opportunity for lifelong learning among Unisa staff and students as well as the community through research and publications. Figure 1.3 shows labelled igloo bins at Unisa Florida campus for separating waste at source.

1.3.3 Student involvement in campus greening initiatives that address SDG 4

Unisa also responds to SDGs through research and the curriculum. Unisa being a distance education learning institution which uses computers and the internet, creates opportunities for students' involvement in sustainability learning and research. While in traditional universities only those students who can study fulltime have an opportunity to access certain degrees or programs, with ODeL anyone, anywhere who



Figure 1.3 Labelled igloo bins for waste separation at sources Unisa Florida Campus.

qualifies can study. Furthermore, the programmes are relatively more affordable over and above most regular programmes offered by traditional universities.

Based on a student survey ($n = 114$), 77 students (68%) were aware of sustainability initiatives at Unisa. Out of the 77, 44 students (58%) noted involvement in sustainability initiatives through projects at work and at home. Recycling of waste, composting, water harvesting, planting of trees for medicinal use and energy saving projects are some of the initiatives these students were practising off-campus. Through work integrated learning, two students from those interviewed informally, are involved in a solar project at Greenpeace, in Gauteng, a non-governmental organisation which advocates for cleaner, cheaper energy supply to save resources and to avert impacts of climate change.

The Unisa Student Representative Council was involved in HIV-AIDS projects through raising HIV-AIDS awareness on the need for abstinence, the use of protection during sexual intercourse or HIV testing before indulging with a partner and encouraged students and the community to avoid promiscuity (Unisa, 2018). The students together with Unisa staff observed the World AIDS Day on 1st December 2017 by offering free HIV-AIDS testing for students, staff members and the community. They celebrated the day under the banner of ending infections, stigma and isolation of HIV-AIDS patients. Through this project, many people were taught how to take care of patients affected with HIV-AIDS (home-based care initiatives). All this is in observation of the

principle of quality education and lifelong learning as encapsulated in SDG 4; through knowledge sharing and community consultations with professional HIV-AIDS counsellors. This also aligns with SDG 3 (ensure healthy lives and promote well-being for all at all ages).

There was no direct link or synergy between Unisa Operations Management projects and student involvement in campus greening initiatives. From the survey of 114 students, 77 (68%) students were involved in sustainability initiatives through research at the workplace or through individual research projects aligned with the Unisa programme qualification mix. There are opportunities for students to be involved in sustainability initiatives and implementation of SDGs within the operations and management section of the university. Many operational projects can be done with students to equip them with valuable skills to apply at future workplaces, homes, communities and in their lives. However, distance is barrier as students do not attend classes on campus. It is important to note that SDG 4 influences all other 16 SDGs because education makes all other SDGs more feasible to implement (El-Jardali et al., 2018).

1.3.4 Challenges

Evidence gathered from interview data suggested that Unisa is struggling to involve students in practices which respond to SDGs, the reason being that it is a distance education institution. The institution as a whole, is not providing opportunities for students to get more exposure to SDGs initiatives on campus. From the sample of students surveyed ($n = 114$), 58% of them portrayed interest to participate in SDGs implementation at the campus, but they cited lack of such opportunities due to the distance mode of learning.

Through the questionnaire, students cited financial challenges to travel to the campus to attend sustainability awareness workshops, seminars and symposia. Sixty-six percent of the students further cited the unavailability of internet services and the high cost of data as prohibiting them from participating in campus sustainability initiatives. Lack of funding of most sustainability initiatives and green projects at Unisa were cited by 40% of the students as a significant setback to their involvement in SDG implementation.

Eighty percent of the students pointed out that there is lack of a sustainability framework to expose students to greening practices especially in such faculties where sustainability and SDGs are not a prerequisite of their learning programmes. In addition, 20% of the students viewed Unisa as an institution that does not recognise students as essential stakeholders;

hence, they felt left out in the SDG's matrix and campus sustainability initiatives.

There is controversy and confusion about what constitutes sustainability among students, and 58% of those surveyed are failing to appreciate SDGs. In addition, 40% of the students argued that they could not participate in concepts they do not understand. Lozano et al. (2015) argued that most universities are engaged in sustainable development, but there is still much confusion about the concept and how universities must embrace it. The main barriers identified by Leal Filho (2011) including limited resources, lack of student participation and misconceptions of the sustainable development concept seem to apply in the context of Unisa.

Unisa is putting much effort towards addressing operations to meet most environmental management standards. However, it does not have many opportunities for directly involving students in SDG initiatives unlike in tertiary institutions in developed countries. In October 2016, for example, at Monash University, the Monash Sustainable Development Institute undertook an initiative which brought together student leaders and key staff members in deliberating student actions towards SDGs (SDSN Australia/Pacific, 2017).

1.4 Conclusion

At Unisa, there is evidence of the adoption of SDG 4 especially in campus operations and estates division. The adoption of UNGC principles and their operationalisation at Unisa paved way for a greener campus. However, student involvement in sustainability initiatives is still a matter of concern. Unisa is struggling to maximise on available opportunities to involve students in campus environmental management. The distance between Unisa and its students is the main barrier hindering involvement of students in practices which respond to SDGs. Most students graduate without having visited the Unisa campuses even once.

Unisa is applauded for its programme qualification mix which is reaching out to a broad range of students irrespective of age, providing them with a chance to learn and appreciate sustainable development and SDGs. Distance education caters for thousands of students who access study material via the internet and courier services, thereby facilitating and breaking the boundaries of traditional institutions which enrol fewer students who can stay and attend classes on campus. The affordability of Unisa tuition fees compared to fulltime universities is another factor attracting more students, thus providing more students an opportunity for lifelong learning.

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