



**ENVIRONMENTAL  
SUSTAINABILITY  
REPORT 2024**

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## FOREWARD MESSAGE

As the Director of Safety, Health, and Environment at North-West University (NWU), it is both an honour and a responsibility to address the critical topic of environmental sustainability in this report. At NWU, we recognize that our commitment to sustainability is not just an obligation but a profound opportunity to contribute to a healthier planet for current and future generations.

Environmental sustainability lies at the heart of our mission to create a positive impact through education, research, and community engagement. It is a continuous journey that requires collaboration, innovation, and dedication across all levels of our institution. This report reflects our progress, challenges, and aspirations as we strive to embed sustainability into every aspect of our operations and culture.

Our approach focuses on reducing our carbon footprint, conserving natural resources, enhancing biodiversity at the NWU, and fostering a culture of environmental stewardship among students, staff, and stakeholders. By setting ambitious goals, such as transitioning to renewable energy sources, minimizing waste through circular practices, and integrating sustainability into our curriculum, NWU aims to lead by example in addressing global environmental challenges.

Achieving true sustainability requires more than isolated efforts; it demands collective action. I encourage every member of the NWU community to embrace this vision by actively participating in environmentally sustainable initiatives. As we move forward on this journey, let us inspire change not only within our university but also in the broader communities we serve. Together, we can build a legacy of sustainability that will benefit generations to come.

Thank you for your continued support and dedication to advancing environmental sustainability at NWU.

Sincerely,

**Leslie Barends**

Director: Safety, Health & Environment (NWU)



## EXECUTIVE SUMMARY

The North-West University (NWU) has three (3) campuses namely, Potchefstroom, Mahikeng and Vanderbijlpark. Through its comprehensive Environmental Sustainability Policy, the NWU is committed to reducing its carbon footprint and actively promotes environmental sustainability, adhering to international best practices.

This commitment is particularly crucial in addressing pressing global issues like climate change, resource scarcity, and environmental decline. Through targeted initiatives, the university showcases its commitment to sustainability by minimizing its ecological impact.

Furthermore, NWU's efforts have positioned it amongst the top South African universities for social and environmental impact. While specific rankings may vary depending on criteria used (e.g., QS Sustainability Rankings), NWU's continuous improvement reflects its commitment to sustainability goals aligned with global standards like those set by the United Nations' Sustainable Development Goals (SDGs).





## MISSION

The mission of the NWU is to integrate sustainable practices across all operations, education, and research activities, fostering a culture of environmental responsibility and innovation.



## VISION

The vision of the NWU is to become a leader in environmental sustainability within the higher education sector, promoting sustainable development and preparing our students to address global environmental challenges. This statement aligns with the NWU's dream to be an internationally recognised university in Africa, distinguished for engaged scholarship, social responsiveness and an ethic of care.



# THE SUSTAINABLE DEVELOPMENT GOALS (SDG'S) FOR TERTIARY INSTITUTIONS

The United Nations' sustainable development goals are based on three core elements which include economic growth, social inclusion and environmental protection. These elements are integral to achieving sustainable development, which is a cornerstone of the SDGs. The SDGs comprise 17 goals, with 12 being particularly relevant to South African higher education institutions. In terms of environmental sustainability, the NWU has made notable strides in SDG 6 (Clean water and sanitation), SDG 7 (Affordable and clean energy), SDG 11 (Sustainable cities and communities), SDG 12 (Responsible consumption and production), SDG 13 (Climate action) and SDG 15 (Life on land).



Figure 1: The United Nations Sustainable Development Goals (image adapted from the United Nations website)



## NWU ENVIRONMENTAL SUSTAINABILITY STRATEGY

The United Nations' sustainable development goals are based on three core elements which include economic growth, social inclusion and environmental protection. These elements are integral to achieving sustainable development, which is a cornerstone of the SDGs. The SDGs comprise 17 goals, with 12 being particularly relevant to South African higher education institutions. In terms of environmental sustainability, the NWU has made notable strides in SDG 6 (Clean water and sanitation), SDG 7 (Affordable and clean energy), SDG 11 (Sustainable cities and communities), SDG 12 (Responsible consumption and production), SDG 13 (Climate action) and SDG 15 (Life on land).







Figure 2: The NWU Environmental Sustainability Strategy





## AFFORDABLE AND CLEAN ENERGY (SDG 7)

South Africa is experiencing an ongoing energy crisis that has resulted in widespread blackouts of electricity supply. The NWU has put in place mechanisms to monitor energy usage, promote energy-saving initiatives, and integrate renewable energy solutions to alleviate the strain on the grid.

NWU has a central energy metering system consisting of more than 1,700 energy meters. This data is used for energy control, carbon footprint calculations, capacity calculations, utility bill verification and energy reporting. The maximum (Peak) Electricity Usage per campus for 2024 gives off figures for the following campuses: MC 4,848kW, Generator capacity 3,600 kW, PC 7,882 kW, Generator capacity 6,400 kW, VC 1,550 kW, Generator capacity 1,700 kW.

### Achievements for 2023

Recent upgrades in lighting infrastructure have been implemented across various residences and office buildings to enhance energy efficiency and ensure continuous illumination during power outages. These improvements include the installation of emergency lighting systems, distribution of handheld lights, replacement of streetlights with solar-powered units, upgrading sports field lights to LED technology, and the integration of energy-efficient LED tubes.

Below are the improvements for Power Outages and Energy Efficiency for the University

- 420 emergency light packs were installed in residences and buildings. These lights turn on automatically during power outages, providing light 24/7.
- Students were given battery-powered handheld lights to use during power outages.
- 150 streetlights were replaced with solar/battery units. These lights provide illumination for frequently used walkways.
- Most sports field lights, like those for hockey and rugby practice fields, were upgraded to LED lights. This reduces electricity usage and allows them to turn on quickly after a power outage.
- 4,718 LED tubes with dimming capabilities were installed in areas like bathrooms, kitchens, parking lots, and hallways. These lights reduce energy usage by dimming when no movement is detected.

## Renewable Energy Solutions

NWU is implementing a five-phase installation of solar photovoltaic (PV) systems across its three campuses: Mahikeng Campus: 1,000 kWp, Potchefstroom Campus: 2,000 kWp, Vanderbijlpark Campus: 385 kWp. These installations aim to alleviate energy supply challenges while reducing the university's carbon footprint. The project provides dual benefits by operating alongside normal power and emergency generators. The university utilizes sophisticated energy management software, such as Schneider Electric Power Monitoring Expert, to optimize energy usage and monitor consumption effectively. This initiative is part of a broader strategy to reduce reliance on traditional energy sources and lower operational costs.

A 100 kWp Solar plant has been installed on the Library of Potchefstroom Campus, the system does operate with the generators as well which is a great benefit as it reduces the requirement for emergency power. The solar plant at the library generated 640 000kWh relating to a saving of R2,11 million at an Effective cost saving of R3,3 per kWh.



*Figure 3: 100 kWp solar panel installed on the Library of the Potchefstroom campus (image captured by NWU engineering compliance, 2024)*

A 100 kWp Solar plant has been installed on the Library of Mahikeng Campus. These panels contribute to the reduction in utility consumption as well as the reduction on the NWU carbon footprint.





*Figure 4: 100 kWp solar panel installed on the Library of the Mahikeng campus (image captured by NWU engineering compliance, 2024)*

A 385 kWp Solar plant has been installed on the carport roof of Vanderbijlpark Campus. These panels have generated a total of 108 169 kWh from March – August 2024.



*Figure 5: 385 kWp solar panel installed on the carport of the Vanderbijlpark campus (image captured by NWU engineering compliance, 2024)*

## New and future solar initiatives

There will be an installation of two new emergency generators at Mahikeng campus, 1,000 kVA emergency generator plus 500 kWp solar system at K-blocks Potchefstroom campus, an installation of 1,000 kWp solar systems on Mahikeng Campus and an installation of 1,000 kWp phase 2 solar systems on Potchefstroom Campus.

Lights will be replaced with energy efficient products. Emergency generator plants will be improved to enable prolonged usage times during stage 4 – 6 load shedding with the use of thermal cladding. Metering systems will be expanded, and energy control will be improved allowing the control of equipment such as office air conditioning, hydro-boils and geysers using IOT (Internet Of Things) devices through IT networks and WIFI.

## The status of the NWU Carbon footprint in terms of energy

The NWU has seen a significant decrease in its energy consumption from municipal electricity in 2023. This reduction is largely due to the use of renewable energy sources, such as solar power. NWU mainly relies on electricity from the grid, which was about

61,437,159 kWh. By investing more in solar power, NWU can reduce its dependence on grid electricity and lower its carbon footprint. Currently, grid electricity is a major contributor to NWU's carbon emissions.

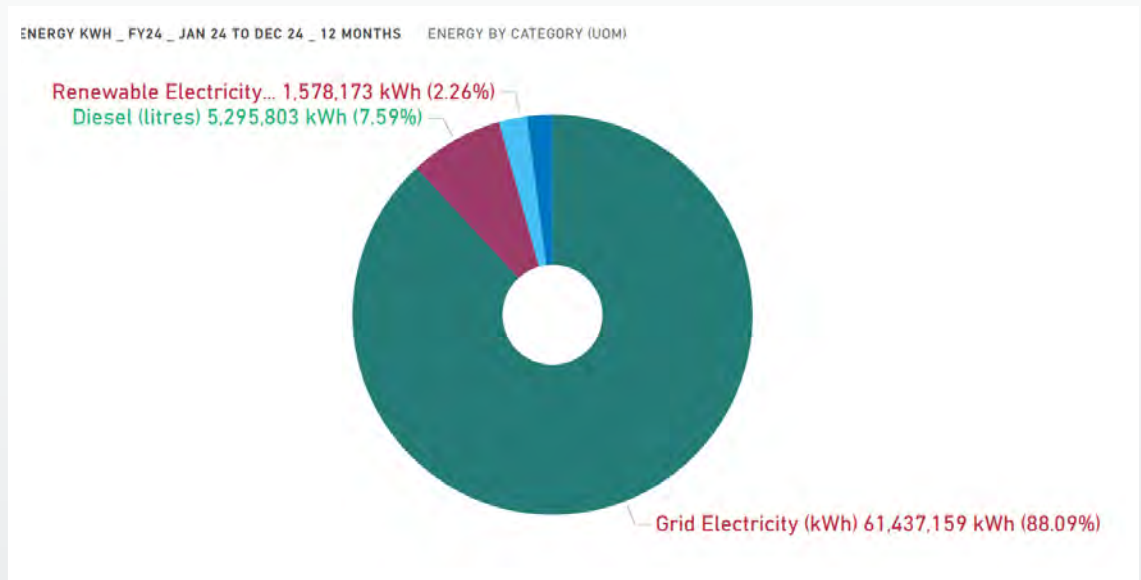


Figure 6: Energy consumption at the NWU from Jan 2024 - Dec 2024 (image adapted from GCX analytics dash, 2024)



## PROMOTING WATER CONSERVATION (SDG 6)

As part of the United Nations' goal to ensure everyone has clean water and sanitation. The NWU has put measures in place to save water and manage the environment. The following is what the NWU has put in place to save water:

### Water Saving Devices:

NWU has installed special water-saving taps and showerheads in student residences and in bathrooms in office spaces across campuses. These devices help reduce water use by 40% for taps and 50% for showerheads. The installation started with three residences, Veritas and Eikenhof in Potchefstroom and Lost City in Mahikeng, in July 2024.

Since the installation, NWU has saved 4461 kiloliters of water over five months (July – December 2024). This is a big step towards reducing water waste and helping the environment.

Refer to the table below indicating on how much water was saved per residence and pictures of the water saving taps and shower roses installed.

Table 1: Water consumption at the chosen residences after installation of the water saving taps and shower roses

2024						
Months	Veritas	Water reduction compared to previous months	Eikenhof	Water reduction compared to previous months	Lost City	Water reduction compared to previous months
July	1371	N/A	1274	N/A	-	N/A
August	1022	↓ 349KL	1209	↓ 65KL	3142	N/A
September	914	↓ 108KL	1062	↓ 147KL	2618	↓ 524KL
October	1093	↑ 179KL	1144	↑ 82KL	2470	↓ 148KL
November	484	↓ 609KL	335	↓ 809KL	1645	↓ 825KL
December	196	↓ 288KL	464	↑ 129KL	666	↓ 979KL





*Figure 7: Water saving taps and showerheads installed at residences and office space bathrooms (images taken at NWU residences and office bathrooms)*

## New and future initiatives

NWU is also planning more projects, like installing central water treatment plants on its campuses, to continue saving water and reducing its carbon footprint.



## INTRODUCING THE NOTION OF ZERO WASTE TO LANDFILL (SDG 12)

Waste management is a concern globally, especially in countries like South Africa. The NWU aims to promote the principles of waste management which is reduce, reuse, re-cycle and dispose of responsibly by implementing recycling initiatives to reduce waste sent to landfill sites.

Therefore, the university has launched a recycling program across its three campuses, demonstrating its commitment to environmental stewardship and sustainability. This initiative is part of the university's broader commitment to promoting environmental sustainability and reducing the amount of waste sent to landfill sites. By diverting waste from landfills, the university significantly decreases methane emissions that would typically result from organic waste decomposition.

The waste is collected by NWU's service providers and taken to Eco-eye waste management sites instead of going straight to the local landfill. Eco-eye sorts the waste, re-cycles it, and provides reports to the university's Safety, Health, and Environment (SHE) department.

Over the past four months, from **October 2024 to February 2025**, the NWU has achieved significant milestones in its sustainability efforts.

### Waste Management:

The NWU successfully recycled 119.26 tons of waste, which accounts for 40% of its total general waste generated during this period. Conversely, 176.935 tons of waste were diverted to landfills, constituting 60% of the general waste generated.

### Greenhouse Gas Emissions Reduction:

The university managed to reduce its greenhouse gas emissions by 46.74 tons, contributing to a more environmentally friendly campus.

## Environmental Conservation:

Through these efforts, NWU has saved 467 trees, highlighting its commitment to preserving natural resources and promoting sustainability.

**Below are the pictures of our waste recycling facilities**



*Figure 8: Waste before sorting at the Eco-eye premises in Potchefstroom (images taken at Eco-eye facilities, 2024)*



*Figure 9: Eco-eye waste management facility*

The university's commitment to measuring and monitoring these reductions helps quantify the environmental impact and sets benchmarks for continuous improvement in its carbon footprint.

What can you see at the NWU 2025/2026 in terms of waste management?

1. Pilot Studies will be established by placing waste bins at residences and monitoring the recycling outcomes.
2. Recycling Bins will be placed around campuses.
3. Digital Awareness Campaigns and Competitions on recycling.

## The treatment and disposal of hazardous waste

A-Thermal is a service provider which manage and dispose of hazardous waste on behalf of the NWU. They specialize in treating waste from industries like pharmaceuticals and chemicals.

In 2024, A-Thermal successfully managed and disposed of 56,520 kg of hazardous waste.

## Radioactive Waste

The North-West University (NWU) Safety, Health, and Environment (SHE) department recently identified storage areas on the Potchefstroom campus containing tritium, a radioactive isotope used in various applications. Recognizing the radioactive nature of this waste, NWU promptly informed the South African Nuclear Energy Corporation (NECSA), which was tasked with assessing, packaging, and safely removing the tritiated waste from the campus for proper disposal.

NECSA, through its Nuclear Liability Management division, operates in accordance with South African national regulations and strategies on radioactive waste management, ensuring that such waste is handled with the utmost care to protect human health and the environment both presently and in the future. The safe disposal of radioactive waste, including tritium-containing materials, is a critical component of the national radioactive waste management framework.

By collaborating with NECSA, NWU demonstrates responsible stewardship in managing radioactive waste, aligning with national policies and contributing to the safe and environmentally sound disposal of tritium waste from its campus.





*Figure 10: Bins used by South African Nuclear Energy Corporation (NECSA) to remove Radioactive waste from the NWU premises (image taken by NWU SHE department, 2024)*

## Food waste

In South Africa, feeding food waste to pigs is a recognized and practical waste management strategy that aligns with sustainability and circular economy principles. This practice is employed by the NWU, where pig farmers collect food waste from campuses to feed their pigs.



## BIODIVERSITY MONITORING AND CONSERVATION (SDG 15)

The NWU has a rich biodiversity and prides itself in their conservation measures on all three campuses. The university owns and manages several properties in the towns where these campuses are located.

### Wildlife at the NWU

South Africa has legislation which governs protection, conservation, and the ethical treatment of animals. NWU ensures that the wildlife present on their premises is protected and conserved to ensure that their populations remain sustainable. This includes implementing strategies that encourage habitat enhancement, such as planting native vegetation, maintaining water features and installing artificial nesting sites where appropriate. The university has a wildlife management plan in place which takes into consideration the presence of species like Spotted Thick-Knees, Lapwings, Springboks, Fallow Deer, and other fauna.

In July to December 2024, a comprehensive biodiversity assessment was done across all NWU campuses and properties to see what wildlife was present. The assessment found a wide variety of animals. Vervet monkeys were often seen on the Vanderbijlpark and Potchefstroom campuses. Cats and yellow mongooses were common across all locations. On the Vanderbijlpark campus, animals like springbok, fallow deer, and peacocks were also found, adding to the campus's biodiversity. Many bird species, including Spotted Thick-Knees, Lapwings, swallows, doves, and other birds, nest on campus.

NWU makes sure its animal management practices follow both national and local conservation laws. These laws regulate activities like hunting, trapping, and disturbing wild-life habitats, which are important for managing wildlife on campus.

Below are some of the animals which were spotted on our campuses





*Figure 11: Springbok on the NWU Vanderbijlpark Campus (adapted from the NWU Biodiversity assessment, 2024)*



*Figure 12: Vervet Monkey on the Potchefstroom campus (adapted from the NWU Biodiversity assessment, 2024)*



*Figure 13: Peacock on the NWU Vanderbijlpark Campus (adapted from the NWU Biodiversity assessment, 2024)*



*Figure 14: Wattled Lapwing present on all NWU Campuses (adapted from the NWU Biodiversity assessment, 2024)*

## Floral invasive species

The NWU has Alien and invasive species which need to be managed according to the National Environmental Management Biodiversity Act, 10 of 2004 (NEMBA). The objectives of alien invasive species management plan include the control of alien invasive species on site, preventing the invasion of new species and those that have been successfully controlled, develop and implement a monitoring program to ensure invasive species are controlled before they become a threat to the indigenous species and species of conservation importance present on site.

Plant species are classified into different categories namely:

- **Category 1a:** must be completely removed and destroyed. No species were identified on the properties of the NWU under this category.
- **Category 1b:** Must be controlled as part of management programs; eligible for government support. Twenty-eight (28) species were identified on the properties of the NWU
- **Category 2:** Regulated by area; need a permit to import, grow, sell, etc. Seven (7) species were identified on the properties of the NWU.
- **Category 3:** Regulated by activity; need a permit for each. Thirteen (13) species were identified on the properties of the NWU.

The Madagascar periwinkle (*Catharanthus roseus*) is a species found on NWU premises that invades riverbanks, rocky outcrops, roadsides and waste places. This species is a known category 1b invader that requires mandatory control and eradication due to its poisonous nature and fatalities in sheep.



Figure 15: Madagascar periwinkle (*Catharanthus roseus*) (adapted from the NWU Biodiversity assessment, 2024)

The Canary Island Ivy (*Hedera canariensis*) an evergreen perennial climbing to 10 m by means of rootlets on the stems or spreading over the ground to form carpets. These plants are found on the premises of the NWU and invade urban open spaces, stream-



banks and wooded areas. They are classified as Category 3 invaders and an individual plant permit is required to import, grow, breed, possess, sell, buy or move the species. This species is a known irritant to skin



Figure 16: Canary Island Ivy (*Hedera canariensis*) (adapted from the NWU Biodiversity assessment, 2024)

The castor oil plant (*Ricinus communis*) is a soft woody shrub or small tree (4m high). These plants are commonly found near rivers, roadsides and wastelands. They are cultivated for castor-oil or can be kept as ornaments. These plants fall under category 2 invaders and a demarcation permit is required to import, grow, breed, sell, buy or accept as gifts. The whole plant and seeds are known to be highly toxic and lethal.



Figure 17: Castor oil plant (*Ricinus communis*) (adapted from the NWU Biodiversity assessment, 2024)

## Protected species

Any protected species or plants found on NWU campuses, if listed under Convention on International Trade in Endangered Species (CITES), must be managed in a way that complies with international agreements. This would typically apply to endangered flora and fauna if the university becomes involved in research or handling of such species, even if there is no trade involved.

The North-West University (NWU) has identified several protected species on its properties:

- **Protected Plant Species:** There are 34 protected plant species. Some of these include *Podocarpus* spp. (Yellowwoods), *Afrocarpus* spp., *Clivia* spp. (Bush lilies), *Vachellia* spp., *Aloidendron* spp., *Boscia* spp., and *Pittosporum* spp.. *Podocarpus* and *Clivia* are particularly important for conservation.
- **Protected Mammal Species:** There are 29 protected mammal species.
- **Protected Herpetofauna Species:** There are 9 protected species.

## Invasive Species:

- At the NWU Nooitgedacht property, there is a Sable antelope (*Hippotragus niger*), which is considered a Category 2 invasive species.
- The NWU Vanderbijlpark Campus has Fallow Deer (*Dama dama*), also a Category 2 invasive species.

**Invasive Bird Species:** These can be seen moving freely between NWU sites and surrounding areas, but they are not directly managed by NWU.



Figure 18: *Podocarpus* spp. (Yellowwoods)  
(adapted from the NWU Biodiversity assessment, 2024)



Figure 19: *Clivia* spp. (Bush lilies) (adapted from the NWU Biodiversity assessment, 2024)



## Wetlands

A wetland is a transitional land between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water and in normal circumstances supports or would support vegetation typically adapted to life in natural soil. The NWU has identified 4 wetlands on various premises. Pienaarskamp is an unchannelled valley bottom wetland where water is supplied by rainfall and runoff within the wetland and upstream catchment. Water is still standing, there is slight flow during wetter conditions. It is primarily composed of species adapted to shallow water such as frogs, water birds, dragonflies and water beetles. There are limited fish presence due to water levels. The wetland consists of some invasive Verbenas.



*Figure 20: Wetland on Pienaarskamp (adapted from the NWU Biodiversity assessment, 2024)*

The floodplain wetland near the Mooirivier's catchment area runs through the Fanie du Toit sportsground and consists of short vegetation and numerous residential houses along the banks of the river. The catchment area consists of dense vegetation dominated by invasive species, namely *Arundo donax* and Willows. There are native species present like reeds and rushes. The dominance of invasive species reduces ecological diversity and alters riparian functions. Water in this area flows continuously and at a fast pace. It supports a range of aquatic fauna including fish species, amphibians, water birds, dragonflies and water beetles. The catchment area is susceptible to anthropogenic disturbances such as plastic accumulation within the wetland.



*Figure 21: Mooirivier on Fanie Du Toit (adapted from the NWU Biodiversity assessment, 2024)*

The Nooitgedacht catchment area is mostly natural with the exception of a berm that transects the drainage line and creates a pond. It was constructed to retain water in the area. The area consists of minimal vegetation and holds a small amount of water supporting frogs and some water birds. There are water beetles and dragonflies providing a vital role in the ecosystem providing food for amphibian and bird populations. The water depth is less than 50cm and is muddy and turbid.



*Figure 22: Unvegetated permanent zone of the Nooitgedacht depression wetland. Vegetated berm is responsible for catching water in the background. (adapted from the NWU Biodiversity assessment, 2024)*

The Mahikeng Campus has a highveld bioregion depression wetland that consists of invasive weeds and minor dumping excavations. The pan holds water that supports frogs, dragonflies, water beetles and water birds when full.



*Figure 23: Large Mahikeng Grassy pan wetland (adapted from the NWU Biodiversity assessment, 2024)*



## **Wetland management practices**

The management practices taken to maintain the ecological health of these wetlands include:

- The control of the invasive *Verbena* species by active monitoring and removal to prevent further spread.
- Minimizing anthropogenic impacts by maintaining and managing road crossings, dirt roads and vegetation near the wetland.
- Water quality protection by continuous monitoring to detect early signs of contamination.
- Conservation of biodiversity, particularly for species adapted to shallow water environments such as frogs and water birds.
- Rubbish and litter control
- Education and community involvement



## ENVIRONMENTALLY SUSTAINABLE BUILDINGS (SDG 11)

Green Buildings refers to the structure and application of processes that are environmentally responsible and resource-efficient throughout a building's lifecycle. The key goal of a Green Building is the efficient use of energy, water, and other resources; protecting occupant health and improving productivity; reducing waste, pollution, and environmental degradation. A green building is a building that, in its design, construction, or operation, reduces or eliminates negative impacts on the climate and natural environment.

The NWU has existing buildings that are eligible for Green Star ratings. These buildings take into consideration the following aspects to ensure environmental sustainability:

- Adoption of energy savings initiatives as per the SANS 10400-XA-2021
- Installation of energy efficient products and equipment in buildings
- Alternative energy and cooling solutions
- Building designs that support energy and water efficiency
- Design and construct buildings to use natural ventilation to reduce energy consumption of mechanical ventilation systems.

The designs employed by the university take into count climate consideration. Some examples are as follows:

### Mahikeng Campus - Health science building

The Psychosocial Health building on the Mahikeng campus of the North-West University (NWU) is designed with climate considerations in mind. Here are some key architectural features:

- **Orientation:** The building faces north to maximize natural light inside.
- **Natural Ventilation and Lighting:** Large windows with openers are used to reduce the need for mechanical ventilation and artificial lighting, which helps save energy costs.
- **Window Design:** Although Low-E glass is recommended for energy efficiency, it's not typically used by the university due to higher costs.
- **Shading Devices:** Fixed shading devices are installed above and in front of windows to block direct sunlight during summer, when the sun is high. In winter, when the sun is lower, these devices allow sunlight to warm the rooms.

These features help maintain a comfortable indoor environment while reducing energy consumption



Figure 24: The Psychosocial Health Sciences Building at the Mahikeng Campus

### Vanderbijlpark campus - Administrative building

The new administrative building at the NWU Vanderbijlpark campus serves as a central identity and entry point for the expanding campus. It is part of a multi-phase development project and is designed to be the main anchor of the campus. The building features two asymmetrical wings:

- Public Wing: This section houses student administration offices and related services, making it accessible and functional for students.
- Private Wing: This area is reserved for the office of the deputy vice-chancellor and staff, ensuring privacy.

The building's asymmetrical design breaks away from traditional, classical university architecture in South Africa. Its elongated, narrow wings maximize natural light and ventilation for all offices. Additionally, its horizontal layout helps optimize shading around the structure, contributing to energy efficiency.



Figure 25: The Vanderbijlpark campus administration building



## RAISING ENVIRONMENTAL AWARENESS ON CLIMATE CHANGE (SDG 13)

### World Water Week

World Water Week is an annual global event focused on addressing water related challenges and solutions typically held in the last week of August. The event was a collaborative effort initiated and organized by the WRG, the NWU Green Team Society, Safety Health and Environment department (SHE), and the Faculty of Natural and Agri-cultural Sciences. A river cleanup was held to remove trash and debris from a section of the Mooi River near the Potchefstroom campus. Over 40 volunteers from various faculties and departments collected litter such as plastic, glass, and metal from the riverbanks near Trim Park.

Approximately, 100 bags of trash were collected, including larger items like a plastic chair and an old TV, from a 400-meter stretch of the river. Volunteers were thanked for their efforts at the end of the event with refreshments and reusable water bottles sponsored by SHE. This cleanup marked the beginning of broader environmental conservation efforts aimed at restoring the river's ecosystem and preventing further degradation.

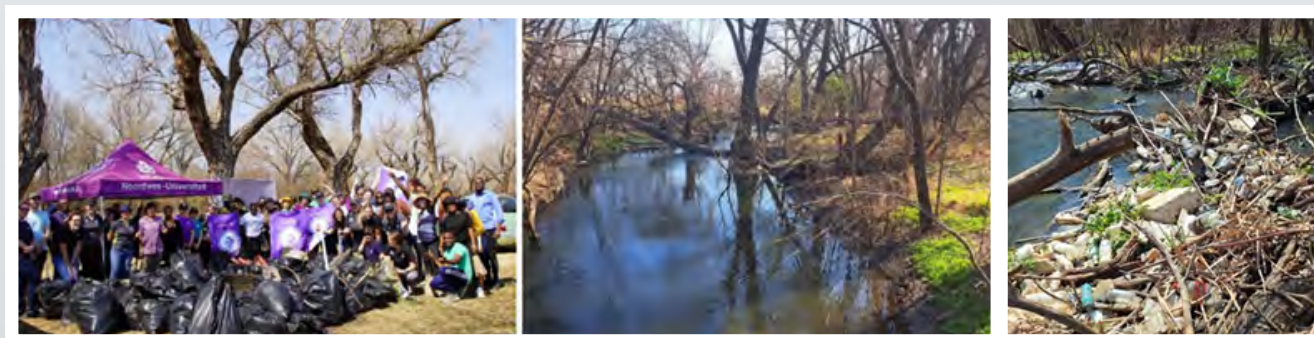


Figure 26: Mooi river after the clean-up initiative



## Water bottle initiative

The Vice Chancellor has challenged the NWU staff and students to beat plastic pollution. The water bottle initiative has been a project managed by the Safety, Health and Environment (SHE) department aimed at minimizing the use of plastic bottles and using more sustainable sources.

In so doing, staff members were given an opportunity to register and receive a stainless-steel bottle. These stainless-steel bottles have been distributed across the three campuses. This initiative supports the goal of the NWU in terms of climate action to reduce plastic waste, minimize the university's carbon footprint and foster a culture of reduction, recycling and re-use.



Figure 27: Water bottle distribution to staff members held on each Campus on the 4th October 2024 (Image taken by SHE department on each campus, 2024)

# FUTURE GOALS AND STRATEGIES

## Polystyrene campaign

The NWU makes use of polystyrene take-away containers at the dining halls. Polystyrene poses significant environmental challenges as they are non-biodegradable, difficult to recycle and rely on fossil fuels. The NWU would like to transition into promoting environmental sustainability.

<b>Bagasse containers</b>	Made from the fibrous residue of sugarcane after juice extraction, bagasse containers are compostable and provide a sturdy alternative to polystyrene.	Ideal for hot and cold food items, including takeout and catering services.
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Switching to biodegradable options can greatly reduce the environmental impact of dining services. Polystyrene does not break down naturally and causes long-term pollution, while biodegradable materials decompose quickly and can be composted, supporting sustainability goals.

Biodegradable containers break down faster and can often be composted, reducing land-fill waste. Using agricultural waste to make bio plastics not only reduces plastic waste but can also lower greenhouse gas emissions through composting or anaerobic digestion.

Tertiary institutions should assess their readiness to use biodegradable options by considering:

- **Consumer Acceptance:** Students and staff may need education on the benefits of biodegradable products.
- **Operational Adjustments:** Dining facilities may need to change how they store and serve food to use biodegradable materials.
- **Institutional Policies:** Promoting sustainability can help transition to biodegradable options.
- **Operational Changes:** Implementing composting systems and educating people on proper disposal.
- **Financial Implications:** Biodegradable containers are initially more expensive (20-30% more than polystyrene).
- **Reputation Benefits:** Adopting greener practices can improve an institution's reputation and attract environmentally conscious students.





Figure 28: Examples of food packaging alternatives to polystyrene

### Energy saving strategy

According to the latest GCX report, the increase in the university's carbon footprint is due to the increased energy consumption. The University is working to save energy and reduce its impact on the environment. They want students and staff to help by changing some habits:

- **Think before turning things on:** Only use lights, air conditioning, and devices when needed
- **Use natural light:** Open curtains and use sunlight instead of turning on lights when possible
- **Unplug devices:** At the end of the day, unplug devices that aren't being used
- **Be smart about cooling:** Only use air conditioning when it's really hot and open windows for fresh air when possible

NWU wants everyone to work together to use less energy. They have big plans to make the university more environmentally friendly.

### University Ranking

The NWU ranks prominently in sustainability compared to other universities in South Africa, reflecting its commitment to environmental and social issues. It is among the top eight universities in Africa for environmental and social impact, according to the QS Sustainability Rankings. NWU ranks between 281 and 300 globally out of 700 institutions evaluated for sustainability.

#### Key Factors Contributing to NWU's Sustainability Success:

- **Environmental Research:** NWU excels in studying climate change, biodiversity, and sustainable practices, contributing to solving environmental challenges.
- **Sustainability Policy:** The university has a strong policy to reduce its ecological footprint and promote sustainable practices in teaching and research.
- **Sustainable Education:** NWU integrates sustainability into its courses, preparing students for careers focused on environmental care.
- **Innovative Technologies:** NWU uses renewable energy like solar power and energy-saving measures to reduce carbon emissions.
- **Strong Governance:** The university has effective management systems to support sustainability goals.
- **Community Engagement:** NWU shares knowledge with local communities to promote environmental awareness.

#### Other notable universities in South Africa include:

- University of Cape Town (UCT): Known for leading in sustainability through research and education.
- University of Pretoria (UP): Focuses on sustainable education and strategic operations for an environmentally sustainable future.
- University of Witwatersrand: Achieves high scores in educating for societal impact aligned with sustainable development goals.



## OPPORTUNITIES AND CHALLENGES

The University faces several challenges as it works to maintain its sustainability ranking and align with global sustainability goals. Below is a simplified summary of the key challenges:

1. **Energy Supply and Load-Shedding**
  - South Africa's frequent power outages (load-shedding) disrupt NWU's operations and increase costs.
  - The university aims to source 30% of its energy from renewables by 2025, but this requires large investments in infrastructure and balancing rising fuel costs for generators.
2. **Water Scarcity**
  - Clean water is becoming scarcer, with a crisis projected by 2030.
  - NWU is planning water-saving initiatives but needs urgent action to prevent future shortages.
3. **Behavioral Change**
  - NWU targets a 10% reduction in energy use by 2024, which depends on students and staff adopting energy-saving habits.
  - Changing behavior across a diverse community requires continuous education and engagement.
4. **Sustainability Goals Compliance**
  - Meeting the United Nations' Sustainable Development Goals (SDGs) needs regular monitoring and adapting strategies.
  - Tracking progress is resource-intensive and requires efficient systems for reporting and evaluation.

Despite these challenges, NWU remains one of Africa's top universities for environmental sustainability, showcasing strong efforts in research, education, and governance related to sustainability





## CONCLUSION

NWU's approach to environmental sustainability is multifaceted, involving policy implementation, research initiatives, and community engagement. The university aims not only to reduce its own environmental impact but also to educate future leaders equipped to tackle global sustainability challenges effectively.

While NWU has made significant strides in sustainability, these challenges highlight the complexities involved in maintaining its high ranking. Addressing energy supply issues, promoting behavioral changes, ensuring financial viability, and aligning with global sustainability goals are essential for NWU to sustain its leadership in environmental sustainability within higher education.

Overall, NWU's sustainability ranking reflects a strong commitment to addressing environmental challenges, placing it among the leading universities in South Africa and Africa as a whole. Its focus on renewable energy projects, behavioral change initiatives, and integration of sustainability into education positions the NWU favourably compared to other institutions.

