

Growing

possibilities

in sustainability

Rounding Up 2024

Delivering Sustainability, Together



ENVIRONMENTAL DISCLOSURES



About NUS
Campus
Sustainability
Roadmap 2030

About

The environmental disclosures begin with the highlights of key achievements for the year, along with an overview of NUS Sustainable Campus Development Framework. The subsequent sections delve into our key programmes that support the pillars of the Singapore Green Plan 2030—starting with the context and programme strategy, followed by a review of the year’s performance and updates on our progress, and concludes with our environmental data. These detailed disclosures complement the [NUS Sustainability Report](#), which provides a qualitative overview of the University’s contributions to sustainability in education, research, campus and leadership, and the [NUS Impact Report](#).

They are prepared with reference to the Global Reporting Initiative (GRI) Universal Standards 2021, especially on the Topic Standards related to environmental sustainability. We also align our emissions calculation methodology to the Greenhouse Gas Protocol. It provides details about our progress in campus sustainability and climate action, our targets and plans to achieve them, and next steps. In addition to our top-line indicators, we share the energy performance of our net-zero energy and top energy-intensive buildings, our evidence-based approach to mitigate rising temperatures and how we manage and close waste loops.

The disclosures are for Financial Year (FY¹) 2024, spanning 1 April 2024 to 31 March 2025 (denoted as “2024”).

For feedback or comments, contact campus_sustainability@nus.edu.sg.

¹Financial Year (FY) for Year N is defined in this document for the period of April in Year N to March in Year N+1. All years in this report are Financial Years unless otherwise stated.

Campus Sustainability at NUS & 2024 Highlights

Margaritaria indica, a Heritage Tree, was discovered near NUS College and was the first known specimen in Singapore. Learn more about the heritage trees on NUS campus below.





▲ Our nature ways across campus have flourished, such as the area near Central Library as shown in the images above. We are planning to further green our campus, improving accessibility to greenery while defending against rising temperatures.

DESIGN
Supporting all SGP 2030 Pillars

Refreshing campus masterplan for a climate-responsive, nature-connected campus

Our refreshed masterplan will include expanded green spaces to connect our community to nature, while harnessing prevailing wind flow to enhance ventilation based on localised Computational Fluid Dynamics studies derived from campus sensor network.



▲ In conjunction with Clean & Green Singapore Day 2024, we were joined by various distinguished guests – including Deputy Prime Minister Mr Heng Swee Keat and Minister for Sustainability and the Environment Ms Grace Fu – in a campus tree planting event that marked our mid-way tree planting milestone of 50,000 trees.

DEFEND AGAINST CLIMATE CHANGE
Supporting Resilient Future Pillar

Grew campus tree canopy to 60% from 36% in 2019

With microclimate data from our dense campus sensor network, we established that the campus tree canopy increase avoided up to 1°C increase in ambient air temperature. We will be developing a campus greenery plan to manage rising temperatures by 2025.

DECARBONISE
Supporting Energy Reset Pillar

Developed 3-year decarbonisation plan

Delivering projects contributing 2.8 ktCO₂e reductions in 2024, equivalent to the annual electricity consumption of 870 4-room HDB flats and \$830,000 in electricity cost savings. Working with faculties in the coming year to co-develop energy reduction action plans, including testing dynamic ventilation technologies for cooling spaces.



▲ With energy profiles of top energy-intensive buildings completed in 2024, we are partnering faculties to reduce energy consumption. This includes testing dynamic air change rates in MD6 labs with potential to achieve up to 15% energy reduction.

Highlights

Rounding up 2024

DIALOGUE
Supporting Sustainable Living Pillar

Delivering retrofitted net-zero energy Yusof Ishak House with users to set new energy conservation norms

Working closely with staff and student community in Yusof Ishak House (YIH) to adapt to a cooling system designed for comfort instead of cold and manage “energy budgets”.



▲ University Campus Infrastructure staff educating the student community on YIH's new building design features contributing towards net-zero energy performance, such as more daylight and natural ventilation, and hybrid cooling systems.

DEMATERIALISE
Supporting Sustainable Living Pillar

Closed PET-1 waste loop responsibly

Enhancing efforts to instill a resource sorting campus culture, including preparing a Bring-Your-Own campaign in 2025.



▲ PET-1 bottles collected on campus are turned into food grade recycled PET-1 resins

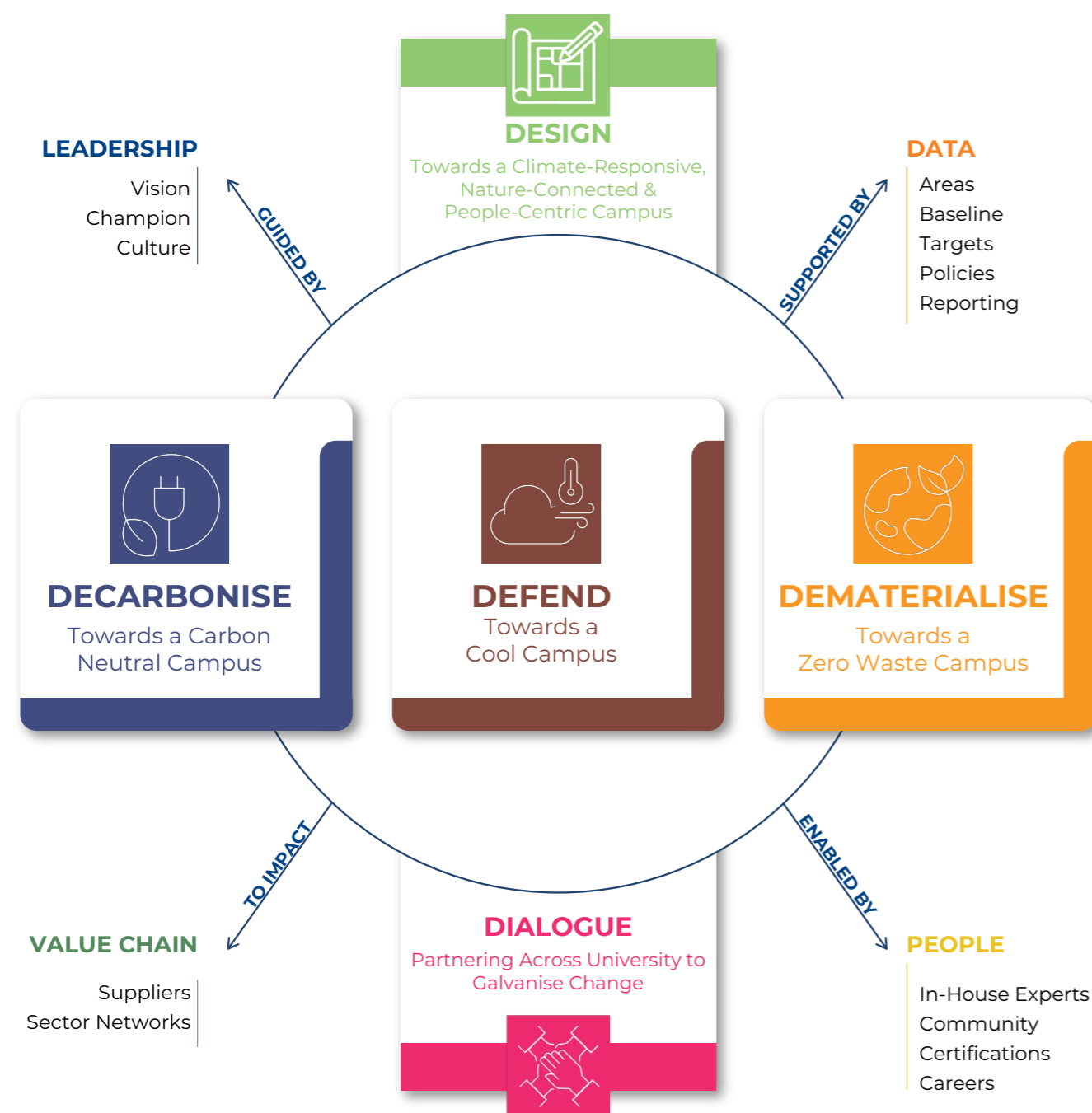


Mr Clarence Ti
Deputy President (Administration)

“NUS' transition to be a resilient, nature-connected and resource efficient campus is not only a technical endeavour – it is a cultural one. It calls on all of us to make day-to-day workplace decisions that reflect our collective drive to champion emissions and resource footprint reduction. In doing so, we will model the right practices and serve as positive role models for our students.”

NUS Sustainable Campus Development Framework

Vision: A resilient campus, connected to nature, shaping sustainability together



Embedding Sustainability in Our Work

Envisioning a resilient campus connected to nature our sustainability framework encompasses organisational planning strategies of **Leadership, Data, People and Value Chain**, and environmental strategies under the Campus Sustainability Roadmap 2030 of **Design, Decarbonise, Defend, Dematerialise and Dialogue**.

Organisational planning strategies focus on **leadership** in campus sustainability practices, backed by a **data**-centric approach in setting ambitious targets, monitoring and reporting progress aligned with international standards, enabled by growth in **people** capabilities and expertise in sustainability, and augmenting impact within higher education sector network and influencing its **value chain** to be more sustainable.

The Campus Sustainability Roadmap 2030 outlines our environmental strategies and key sustainability targets:

- **Design** the campus masterplan for a climate-responsive, nature-connected campus by harnessing prevailing winds and intensifying greenery, as well as planning for more net-zero energy precincts.
- **Decarbonise:** A carbon mitigation programme with a priority to reduce 30% of its Scope 1 and 2 emissions by 2030 below 2019 baseline before counterbalancing with carbon removals to achieve carbon neutrality as a last resort.
- **Defend against climate change:** A living lab research collaboration focused on managing outdoor thermal comfort by taking an evidence-based approach in implementing mitigation measures.
- **Dematerialise:** A programme that takes a materials lifecycle approach to reduce waste disposed per capita by 30% across procurement, administration and operation functions and achieve a high recycling rate of 50%.
- **Dialogue** across all levels of our organisation to establish collaborative sustainability goals co-owned by leadership, management and units and to nurture staff to exemplify role in public service to reduce wastages and model green behaviour for our students.



Mr Koh Yan Leng
Vice President, University Campus Infrastructure

"Sustainability is at the heart of what we do across campus infrastructure, operations and services. Together with our staff and student community, we will advance our campus sustainability goals to shape a more resilient and sustainable campus for future generations."

Decarbonise

Towards Carbon
Neutrality –
Reductions First



Mr Lincoln Teo

Senior Director, Division of Campus Asset
Management, University Campus Infrastructure

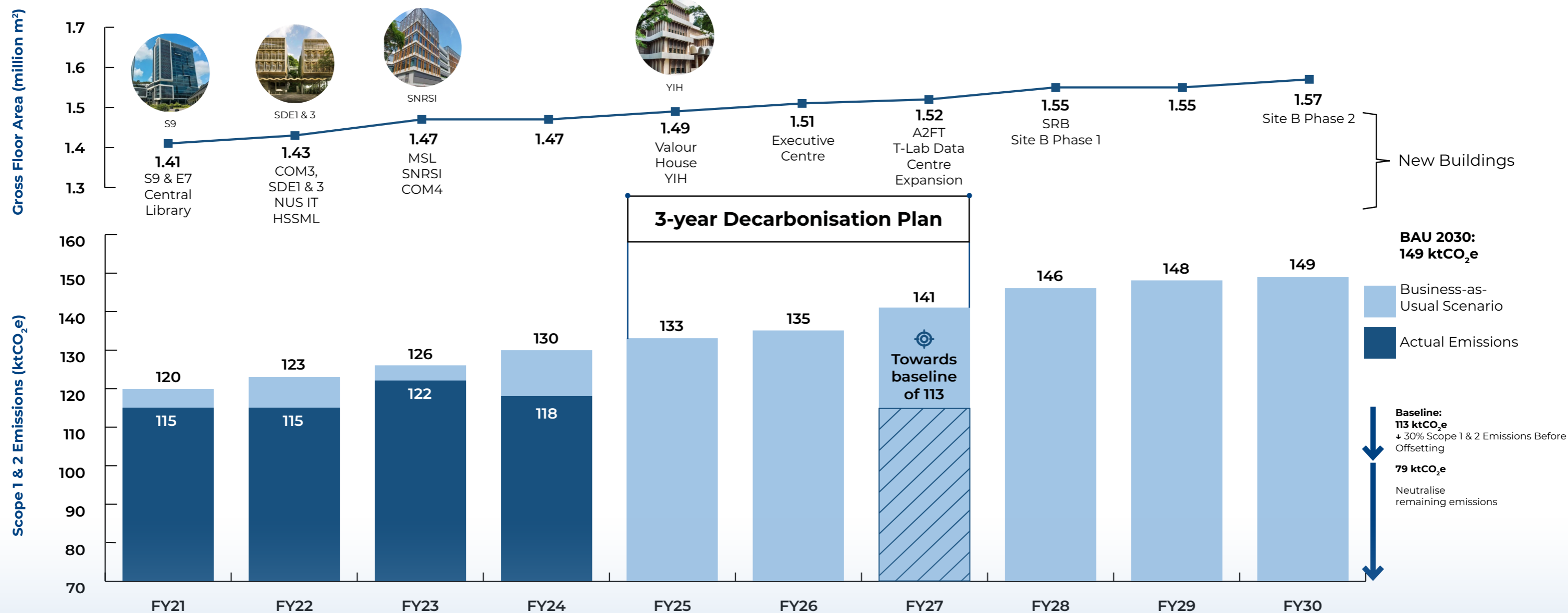
“Decarbonising our campus involves designing new and retrofitted buildings upfront with enhanced energy performance and continues through close collaboration with building occupants towards realising this in operation.”

▲ Yusof Ishak House has been retrofitted to net-zero energy performance, and a first for a student-centric facility in Singapore.

Managing Emissions from Campus Growth with 3-year Decarbonisation Plan

Our Scope 1 and 2 emissions are expected to rise to 149 ktCO₂e by 2030, with our gross floor area increasing from 1.41 million m² in 2021 to 1.57 million m² in 2030. This increase is driven by the development of new buildings to support research needs, rising demand for Continuing Education and Training programmes, more student hostels and the need for more computing power to support generative artificial intelligence.

In 2024, we have developed a 3-year Decarbonisation plan (2025 – 2027) to manage our emissions growth with an aim to reduce our emissions towards baseline levels. We have also delivered Valour House (Green Mark Platinum) – a new hostel, and retrofitted Yusof Ishak House (YIH) – a student hub, targeting Green Mark Platinum Zero Energy. These buildings will be launched in 2025.



2024 Performance

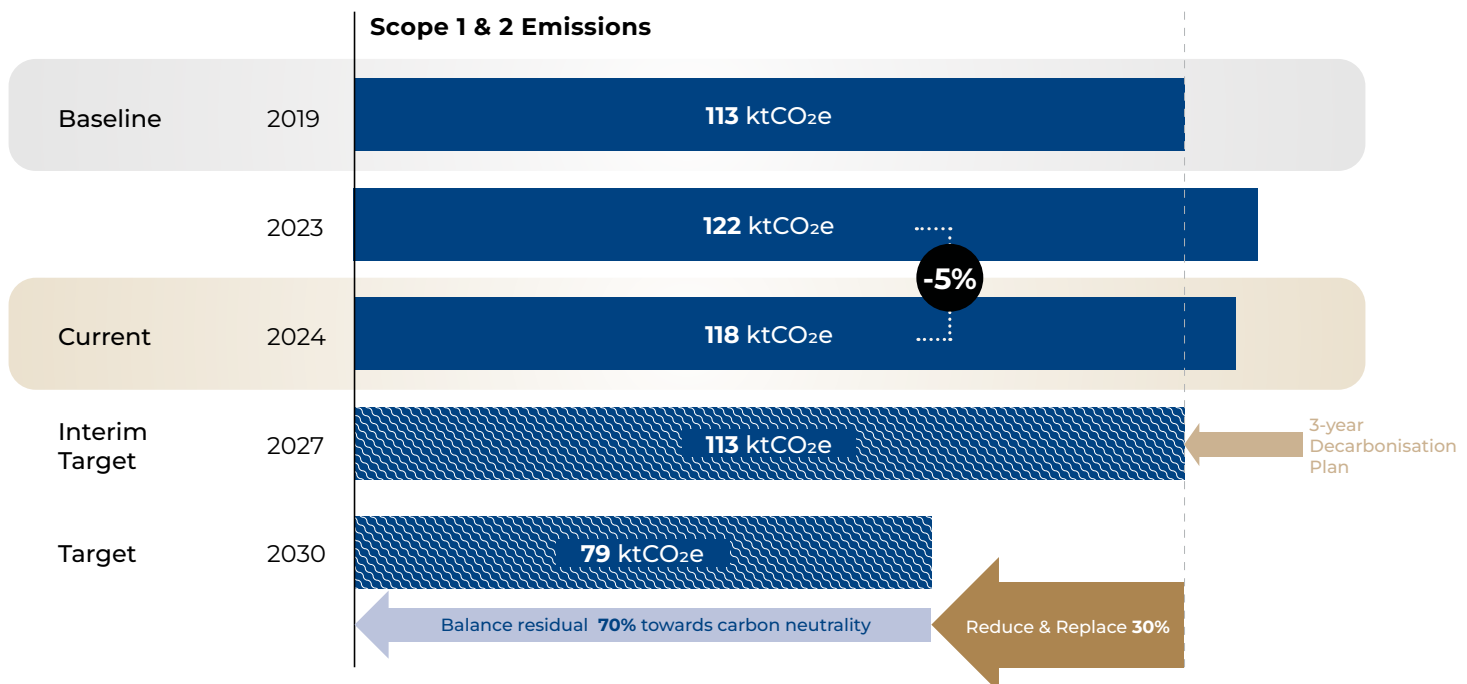
Delivered 2.8 ktCO₂e of Reductions, Embarking on 3-Year Decarbonisation Plan

In 2024, our Scope 1 and 2 emissions were 118 ktCO₂e. The change compared to 122 ktCO₂e in 2023 can be attributed to: (1) exclusion of NSCC's i4.0 data centre that is not operated by NUS (2.7 ktCO₂e), and (2) a reduction in Singapore's average grid emission factor – the average emissions emitted per unit of electricity generation (1.4 ktCO₂e). Hence, the overall net effect is that emissions were comparable to that in 2023.

Building on our multi-year efforts, we have implemented energy reduction projects in 2024 that will provide 3.8 GWh (2.8 ktCO₂e) of annual savings, including completing the campus-wide switch out to energy-efficient deep freezers (2.2 GWh; 1.0 ktCO₂e), and the first-tranche of building-level LED replacements (1.6 GWh; 0.6 ktCO₂e). This saves us

about \$830,000 in energy costs annually, equivalent to the annual electricity consumption of 870 4-room HDB flats. We have also commissioned 9.2 MWp of solar photovoltaic systems, providing 1.2 ktCO₂e in emissions savings and exploring generation of Renewable Energy Certifications (RECs) for the rest towards funding campus energy conservation projects.

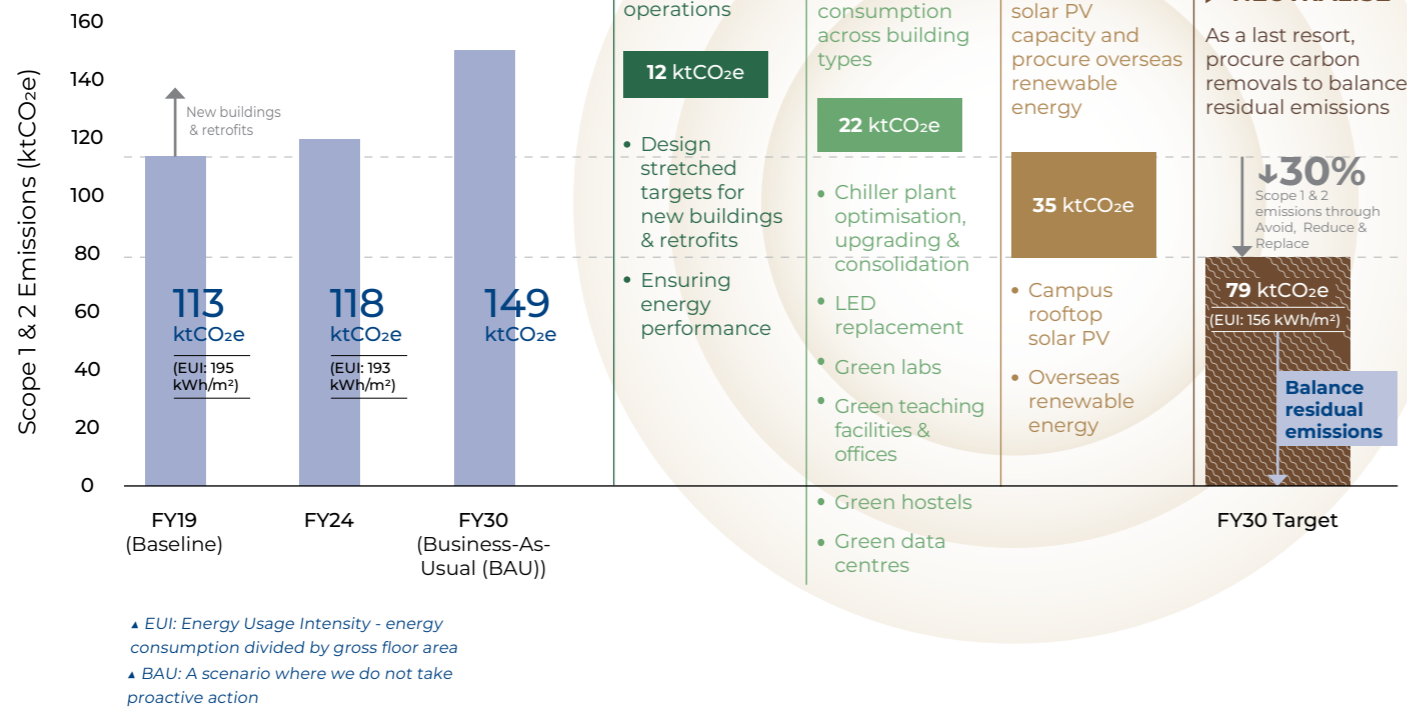
We have updated our interim emissions target towards achieving baseline emissions by 2027. To get there, we have developed a 3-year Decarbonisation plan (2025 – 2027), that includes campus-wide and building-level reduction approaches, such as operationalising dynamic ventilation technologies for air-conditioning in labs and teaching facilities.



Our Strategy

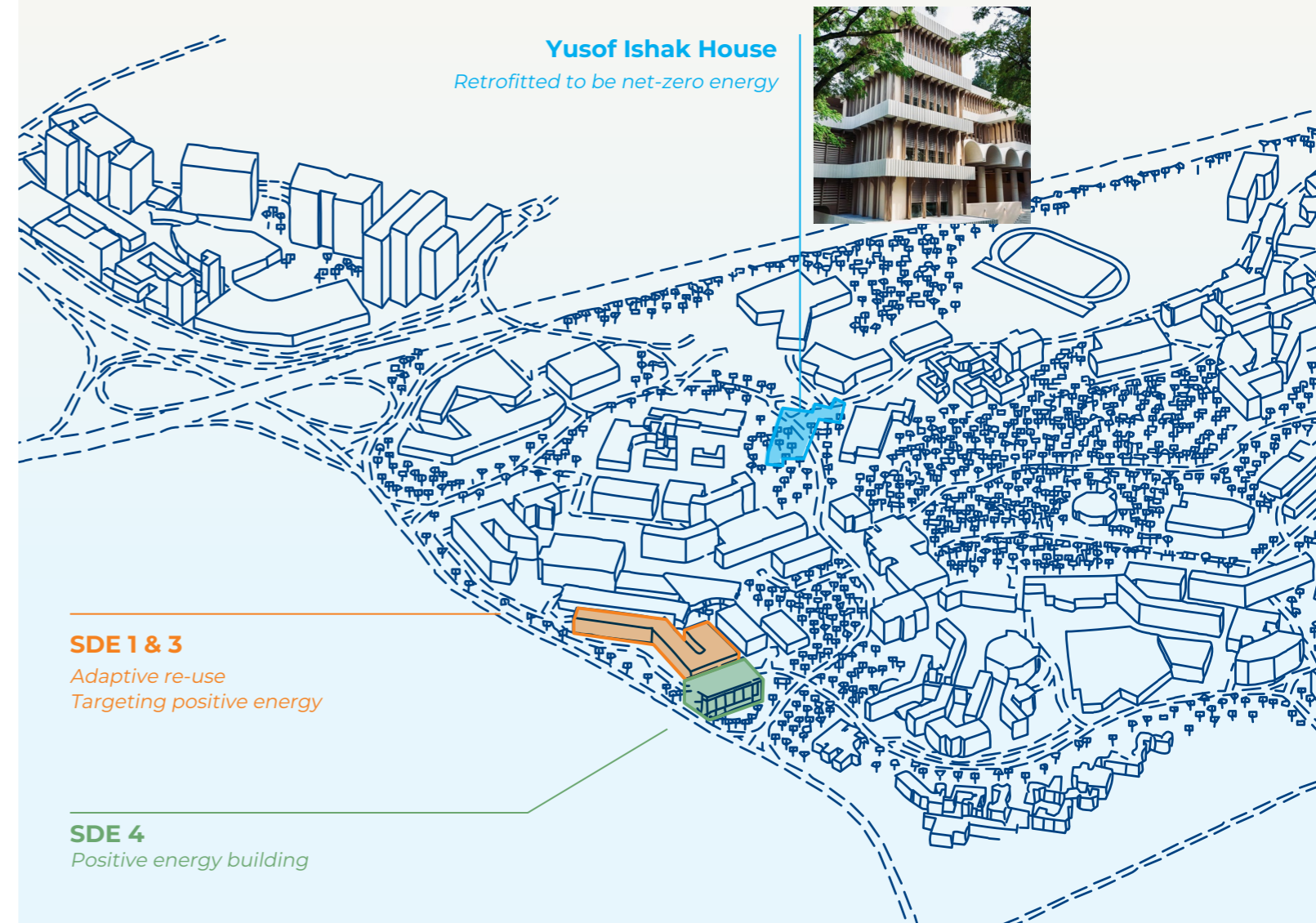
Avoid, Reduce, Replace First

To reduce Scope 1 and 2 emissions by 30% from our 2019 baseline, we have a four-pronged decarbonisation strategy – Avoid, Reduce, Replace and Neutralise. Our priority is on avoiding and reducing energy consumption and maximising our campus solar rooftop PV capacity.



► AVOID

Delivering Net-Zero Energy for YIH Student Hub

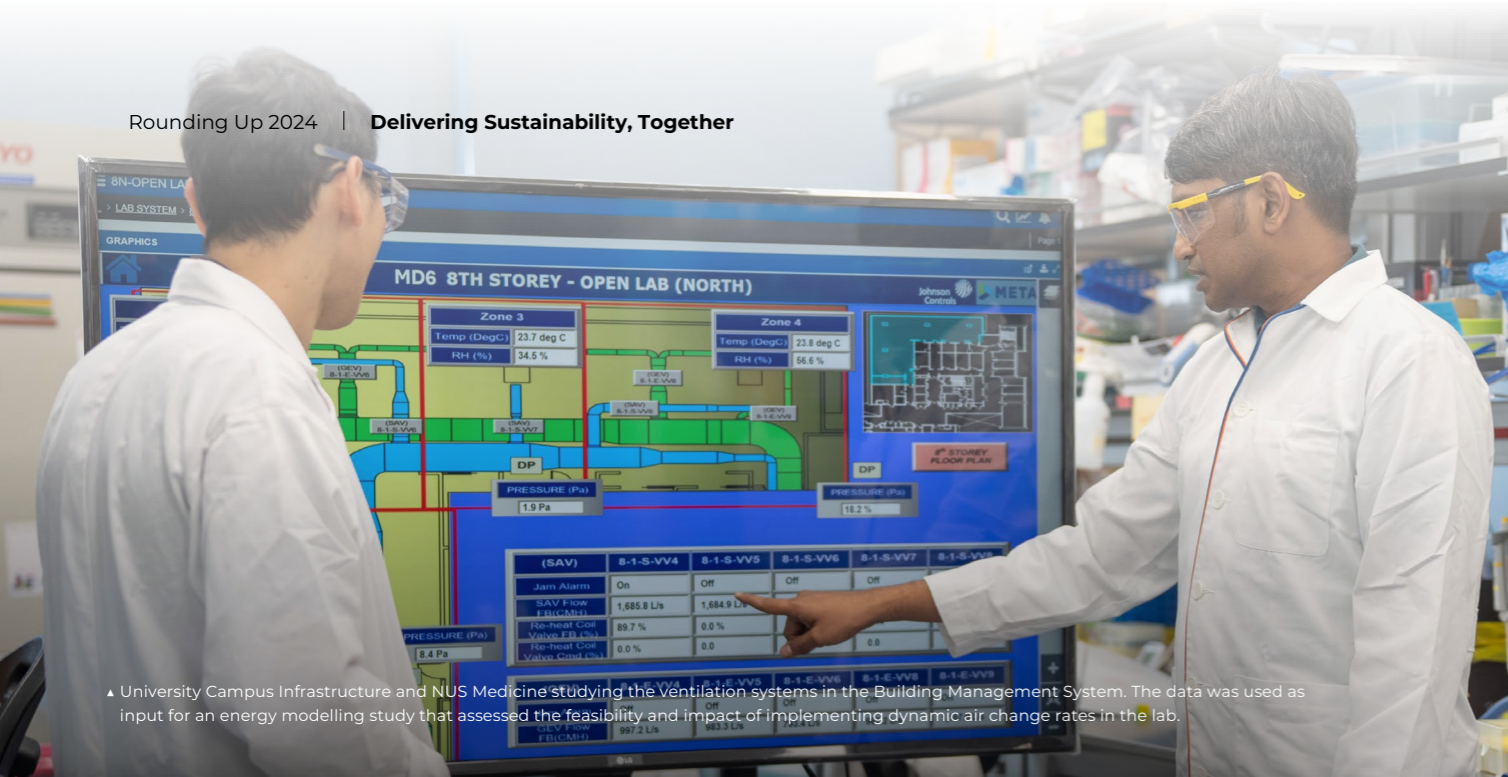


We have retrofitted Yusof Ishak House (YIH) to be a net-zero energy building, designed to reduce its energy use by 72 percent compared to pre-renovation consumption of 2.2 GWh to 0.6 GWh. We strive to achieve an Energy Usage Intensity (EUI) of 47 kWh/m², nearly half that of the Building Construction Authority's benchmark for Institute of Higher Learning buildings. Its design features a highly efficient hybrid cooling system with temperature setpoints at 26.5°C coupled with elevated fan speeds, and more spaces that allow natural light and ventilation.



Associate Professor Ho Han Kiat
Dean of Students

“Student life is synonymous with sustainability as both elements are honed to support a better future. We hope that YIH will create greater momentum for vibrant student life and sustainable practices across NUS.”



▲ University Campus Infrastructure and NUS Medicine studying the Ventilation systems in the Building Management System. The data was used as input for an energy modelling study that assessed the feasibility and impact of implementing dynamic air change rates in the lab.

► REDUCE: GREEN LABS, TEACHING FACILITIES & OFFICES

Trialing Dynamic Ventilation Technologies in Laboratories & Teaching Spaces

We have completed a campus-wide switch to energy-efficient ultra-low temperature freezers, saving 2.2 GWh (1.0 ktCO₂e) and \$460,000 in annual energy costs. The energy load profiling for the top 9 energy-intensive buildings was also completed, with action plans in development with faculties in 2025. We have begun piloting dynamic air-conditioning control based on real-time occupancy in lecture theatres.

In MD6, we achieved an 8.5% energy savings compared to the 2022 baseline in 2024 and are on track to achieve 20% savings by 2026. To achieve this, we will trial dynamic air change rates in one lab in 2025, where an energy modelling study showed that the system has potential to significantly save up to 15% in energy usage, before scaling up to the rest of the building.



Professor Chong Yap Seng
Dean of NUS Medicine

“Following successful energy reductions in MD6, we look forward to working closely with UCI to co-develop energy reduction action plans for the rest of the building spaces under NUS Medicine, informed by building energy profiles.”

Enabling Transparency in Green Building Performance with Tokenisation



▲ Senior Vice President and Chief Finance Officer at NUS Mr Tan Kian Woo (left) with Head of Southeast Asia at Northern Trust Ms Ong Yen Leng (middle) and Head of Digital Assets Innovation for Asia Pacific at Northern Trust Mr Alvin Chia (right) with the Digital Assets/DLT Initiative of the Year award from the Global Custodian Leaders in Custody Asia Awards 2025.

In collaboration with Northern Trust and UOB, we have launched a first-in-market green bond reporting tokenisation initiative. Part of MAS' Project Guardian, this green bond reporting token will securely hold the environmental impact data from our third green bond issued in 2023.

Leveraging blockchain technology, it enhances transparency, demonstrating that our buildings are green both in design and operations, while reinforcing our commitment to maintaining their high energy performance.



▲ Solar panels on the rooftop of University Sports Centre (USC)

► REPLACE: CAMPUS ROOFTOP SOLAR PV Commissioned Campus-Wide Solar PV

We have implemented 9.2 MWp of solar photovoltaic (PV) capacity on campus rooftops, generating up to 11 GWh (4.3 ktCO₂e) annually. We are exploring to use the systems to generate Renewable Energy Certifications (RECs) towards funding energy conservation projects. In 2025, we will install very high efficiency solar PV systems of 22-24% on the rooftop of SDE3 in partnership with Solar Energy Research Institute of Singapore (SERIS), targeting to achieve Positive Energy for SDE1, SDE3 and SDE4 building cluster.

Our 3-Year Plan

We aim to reduce our emissions towards baseline levels by 2027. This table summarises the projects that we have in place to achieve this and the estimated annual reductions between 2025 to 2027. The progress of these projects will be tracked under the Energy Management Working Group.

Approach	Measures	Project Description	Project's Estimated Cumulative Annual ktCO ₂ e Savings by 2027
Reduce (campus-wide)	Chiller Plant Optimisation, Upgrading & Consolidation	<ul style="list-style-type: none">▶ Ongoing optimisations of existing chiller plants▶ Upgrade chiller plant at University Cultural Centre by 2025	2 ktCO ₂ e
	Campus Wide LED Replacement	<ul style="list-style-type: none">▶ Invested \$3 million for the first batch of buildings, i.e. Ventus, MD6, University Hall, Sport Facilities and BIZ 1 by 2025▶ Ongoing replacement efforts in hostels▶ Developing a proposal to efficiently change out the most common lights campus-wide to LED	3 ktCO ₂ e
Reduce (building type)	Green Labs <i>Reducing from airside (e.g. air change rates), cooling and equipment & lighting.</i>	<ul style="list-style-type: none">▶ Completed campus-wide replacement of deep freezers, investing around \$3.5 million▶ Trialling dynamic air change rates in a lab in MD6, where energy modelling study estimated 15% energy savings, before scaling up within MD6 and to more lab buildings▶ Ongoing manual optimisations of setpoints and air changes rates in the top 10 energy-intensive buildings▶ Embarking on studies of alternative dehumidification and ventilation technologies to assess suitability for trial and implementation on campus	6 ktCO ₂ e
	Green Teaching Facilities & Offices <i>Reducing from ventilation, lighting and BMS optimisations, dynamic control of lecture theatres</i>	<ul style="list-style-type: none">▶ Ongoing manual optimisations of setpoints and lighting▶ Piloting dynamic control of air-conditioning in lecture theatres and seminar rooms by testing a system that combines AI-enabled video analytics and booking system to determine real-time occupancy	2 ktCO ₂ e
	Green Hostels <i>Reducing from air-conditioning (e.g. operating hours) and lighting; behaviour change</i>	<ul style="list-style-type: none">▶ Ongoing engagement with Hall Masters and hostelites on the amount of energy consumption in hostels▶ Conducting dialogues with hostelites to encourage energy saving behaviours	1 ktCO ₂ e
	Green Data Centres	<ul style="list-style-type: none">▶ Completed data centre modernisation by replacing and upgrading infrastructure like in-row cooling systems and uninterruptible power supplies▶ Targeting to achieve BCA-IMDA Green Mark (Platinum) for T-Lab data centre by Q2 2025▶ Targeting an overall Power Usage Effectiveness (PUE) of 1.3	2 ktCO ₂ e
Replace	Campus Rooftop Solar PV	<ul style="list-style-type: none">▶ Invested \$16 million for 9.2 MWp of solar PV capacity, operationalised in 2024 and exploring to generate Renewable Energy Certifications (RECs) towards funding campus energy conservation projects▶ Installing very high efficiency solar photovoltaic panels of 22-24% on SDE3 rooftop by 2025▶ Embarking on studies for the next phase to maximise total capacity to 14 MWp by 2030	4 ktCO ₂ e
TOTAL EMISSIONS REDUCED BY 2027			20 ktCO ₂ e

Scope 3 Emissions: Priority to Reduce Embodied Carbon in Capital Projects

Upstream Fuel & Energy Emissions

Category 3 – Fuel- and Energy-Related Activities
(Dependent on Scope 1 fuel and Scope 2 electricity emissions)

Commuting

Category 7 – Employee Commuting

Electrified campus shuttle buses in 2022

Exploring mobility hubs in refreshed campus masterplan to enhance connectivity

Tenants' Electricity Consumption

Category 13 – Downstream Leased Assets

Introduce green lease for food & beverage tenants by setting energy and waste reduction targets by 2026

Air Travel

Category 6 – Business Travel

Encourage switch from business / first class to economy class for staff travel by 2026

Waste

Category 5 – Waste in Operations

Reducing material wastage in our value chain towards closing waste loops (e.g. food) by 2026

Purchased Goods & Services

Category 1

Launched Sustainable Procurement Framework with 10% in Quality Scoring allocated for sustainability criteria in 2023



Upstream Transport & Distribution Emissions for Purchased Goods

Category 4 – Downstream Transportation and Distribution
(Dependent on purchased goods emissions)

SCOPE 1

0.8%
► 2.7 ktCO₂e



Fuel from Campus-owned Vehicle Fleet & Chiller Refrigerant

Electrifying ~30 campus-owned fleet by 2030 (7 vehicles electrified to-date)

Switch to lower global warming potential refrigerant when older chiller plants are upgraded



Electricity

Putting in place 3-year decarbonisation plan

SCOPE 2

35.0%
► 115 ktCO₂e

SCOPE 3

64.2%
► 211 ktCO₂e

2024 EMISSIONS
► 329 ktCO₂e

New Buildings and Retrofits

Category 2 – Capital Goods

Reduce embodied carbon by adopting adaptive reuse methods and incorporating low-carbon construction materials (e.g. concrete, steel) requirements into procurement specifications and quality scoring as part of Sustainable Procurement Framework by 2025

Note: Percentage numbers under the different categories of Scope 3 may not add up due to rounding.

Incorporating Low Carbon Materials in Construction Projects

In 2024, we conducted a market study with Surbana Jurong on low embodied carbon construction materials to assess their potential to reduce emissions, their market availability and their cost-effectiveness in reducing emissions compared to existing energy reduction initiatives. The study revealed that using low embodied carbon concrete (e.g. carbon mineralised concrete) and steel rebar (e.g. recycled steel manufactured using electric arc furnace) offer significant reductions, and are readily available including locally.

Insights from this study will be used to refine the sustainability scoring criteria for capital goods (Category 2) under the Sustainable Procurement Framework launched in 2023, which included a 10% quality scoring on sustainability criteria.

Defend Against Climate Change

Towards a
Cool NUS

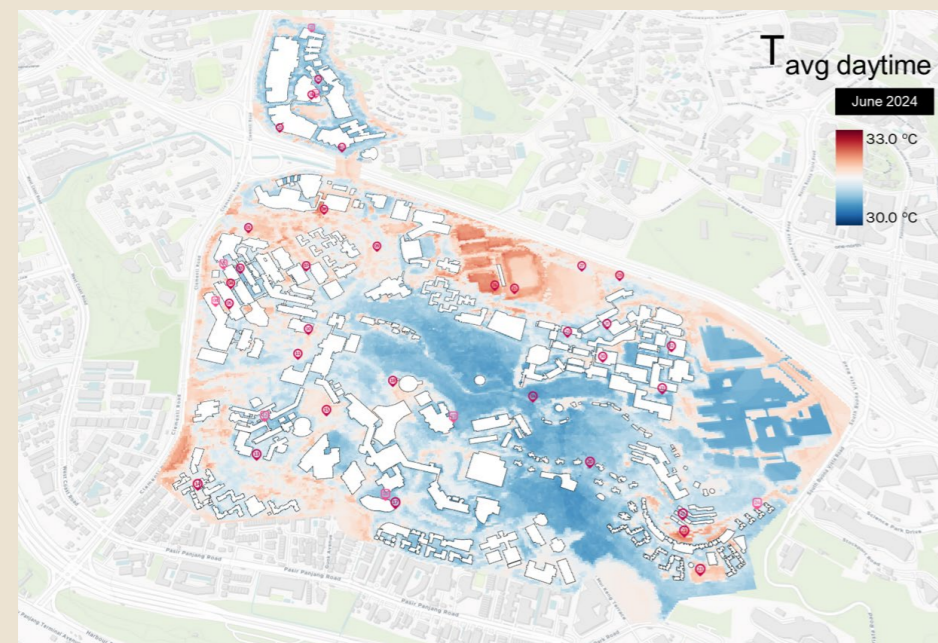


Professor Wong Nyuk Hien
*Principal Investigator of Cool NUS - BEAM
project, College of Design and Engineering*

“With the first campus-wide array of microclimate sensors, we are able to use an evidence-based approach to evaluate mitigation measures in the context of our campus.”

▲ Dr Marcel Ignatius, a Co-Principal Investigator of the Cool NUS-BEAM project, explaining how campus greening has contributed to localised reductions in ambient air temperature on campus

First Campus with Densest Microclimate Sensor Network



Data from weather stations on campus showed an average increase in overall temperatures of about 0.7 deg C from 2020 to 2024. To adapt to rising temperatures because of climate change, we use an evidence-based approach to ensure outdoor areas remain thermally comfortable.

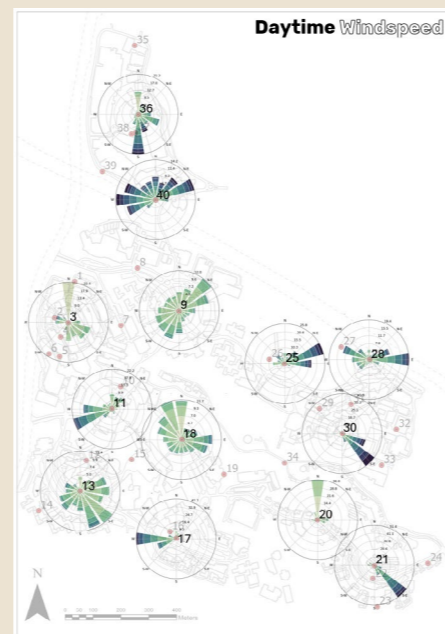
In partnership with researchers from the College of Design & Engineering, we completed the installation of 49 high-resolution sensors around the Kent Ridge campus in 2023, marking the densest deployment of a sensor network—and the first for any campus—in Singapore.

These sensors measure our Kent Ridge campus' microclimatic conditions across various urban

environments and heights. The microclimate data (including temperature, wind speed and direction, solar radiation) enabled us to establish our outdoor thermal comfort map in 2024.

To manage outdoor thermal comfort, we focus on improving both temperature and wind parameters. For temperature, this includes enhancing greenery along streets to provide more shade and greening hard surfaces to reduce the heat retained. For wind, this includes redesigning our campus to better harness prevailing natural wind flow through more open green spaces, informed by ongoing campus-wide Computational Fluid Dynamics (CFD) study that uses data from our sensor network.

▼ Our dense sensor network collects microclimate data that measures two key parameters of outdoor thermal comfort – temperature (left), and wind speed and direction (right).



Our Strategy

Minimise, Reduce & Cope



Minimise At Campus-Level

A campus-wide analysis of data from the sensor network showed that the increased greenery density between 2019 and 2024 avoided up to 1°C rise in ambient air temperature. As part of the refresh of the campus masterplan, we will launch a campus greenery plan by 2025 that aims to provide more shade, green hard surfaces, and increase natural ventilation by harnessing prevailing wind flow.

Reduce at Building-Level

A trial of cool paint with higher solar reflectivity on building façades in the College of Design and Environment precinct found that it was effective in reducing up to 1°C in localised ambient air temperature. We will expand the use of cool paint across campus, by applying it on suitable façades during facade renewal works.

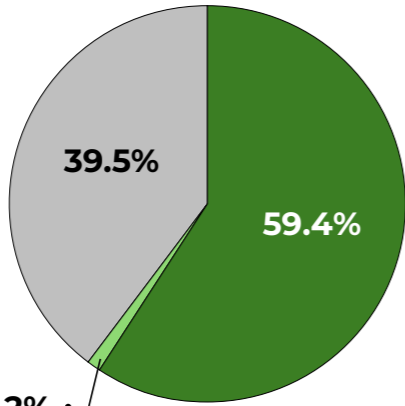
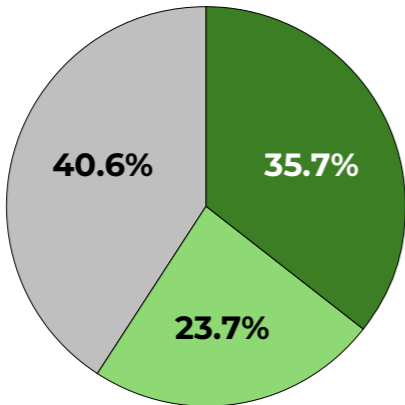
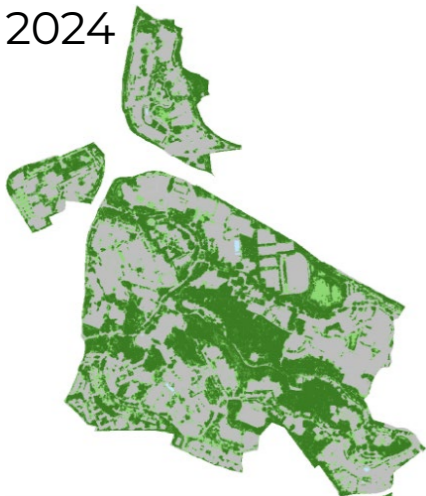
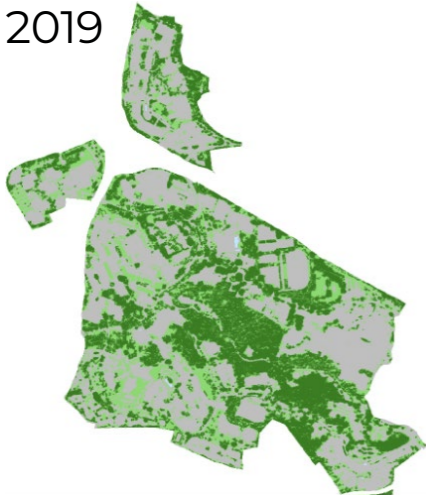


Cope At Individual-Level

Facilitate our community to adapt to the outdoor temperatures and slightly higher indoor temperatures. For example, we have a Yellow Ceiling Network that provides seamless sheltered pathways across campus buildings. Our staff dress code policy encourages staff to dress light. We set the air-conditioning temperature setpoint at 25°C where feasible, in support of the Go 25 movement.

► MINIMISE

Over Half of the Campus Shaded by Tree Canopy



We have planted 55,221 trees to-date, the halfway milestone towards our target of 100,000 trees by 2030. These efforts have expanded our tree canopy area from 35.7% in 2019 to 59.4% in 2024. This means that over half the campus is covered with trees today, providing shade across the campus. This intensification of greenery has avoided up to 1°C rise in ambient air temperature in the same period.

By 2025, we will launch a campus greenery plan that contributes to managing the outdoor thermal comfort, aiming to increase shade, green hardscapes, and enhance natural ventilation with more open green spaces that also connect our community to nature.

- Non-green Area
- Grass/Shrub Area
- Tree Canopy Area



► REDUCE

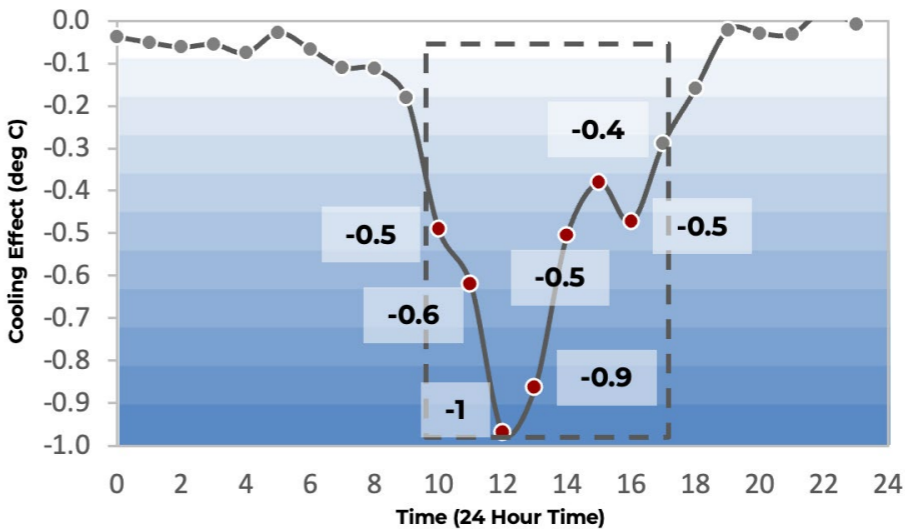
Cool Paint on Facades Lowered Localised Temperatures



We conducted a cool paint trial at the College of Design and Engineering and compared the ambient air temperature on the west-facing facades of two buildings. One building was painted with cool paint, which resulted in twice the solar reflectance by the surface, while the other was untouched, coated with its standard paint. The trial found that cool paint contributed up to 1°C reduction in the localised ambient air temperature between 10am to 5pm.

Moving forward, cool paint will be used on campus building facades, including the repainting works of existing buildings.

Impact of Cool Paint on Building Facade



Cool paint of higher solar reflectance was applied to the west-facing façade of E1A (top), increasing the proportion of solar radiation reflected away from 31% to 62%. Statistical analysis showed that cool paint was effective in lowering ambient temperatures by 0.4 – 1.0 deg C, between 10am to 5pm (bottom).



Mr Melvin Tan
Director, Asset Enhancement,
University Campus Infrastructure

“By integrating research insights from the Cool NUS-BEAM project into our operational practices, we take a long-term view in shaping our campus that is not only well-managed, but also sustainable and resilient to the challenges of a warming world.”



Dematerialise

Towards Zero Waste



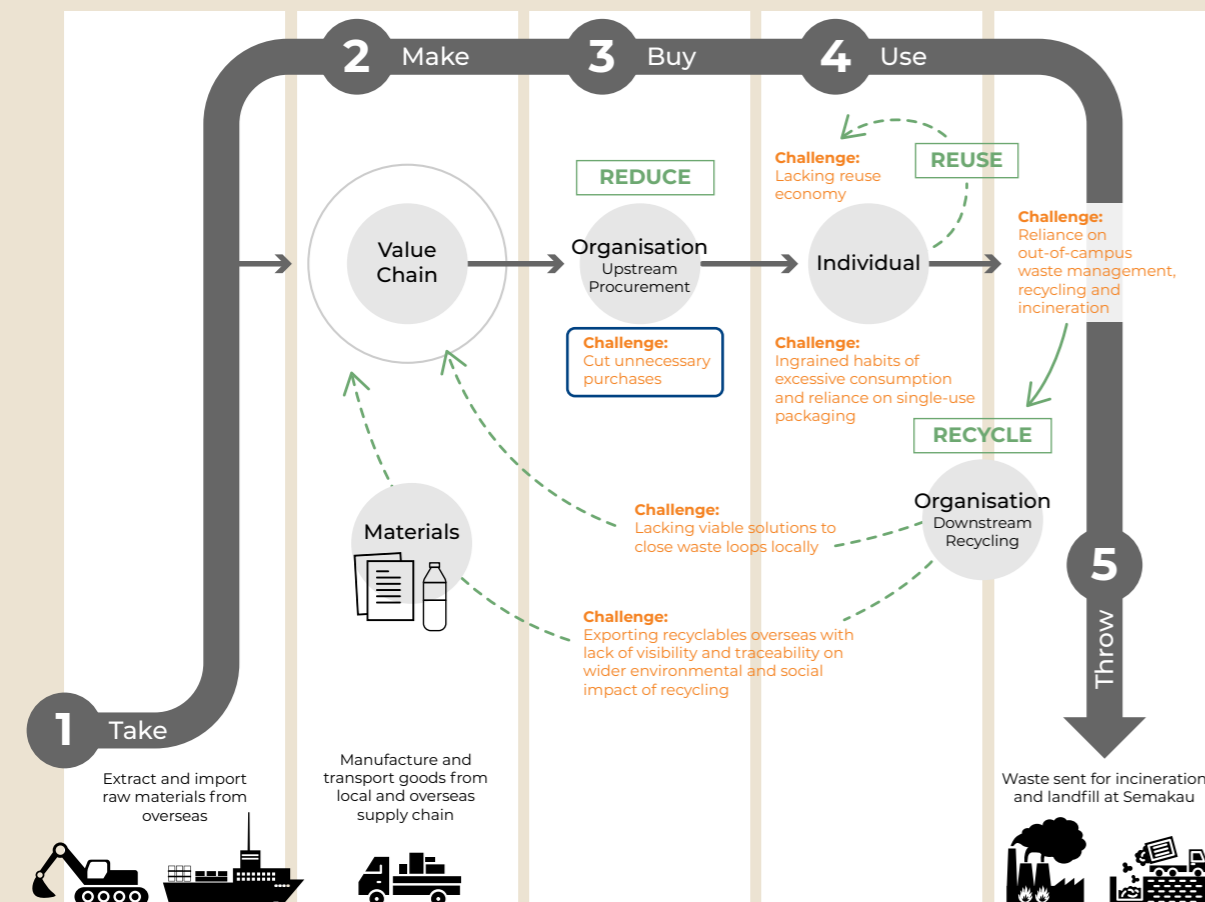
Mr Loo Deliang

Head, Sustainability Strategy Unit,
University Campus Infrastructure

“Reducing wastage in the procurement of goods and materials in university operations, while still fulfilling needs, will be a key priority in our pursuit of a Zero Waste campus.”

▲ Students from Ridge View Residential College (RVRC) conducting a waste composition study as part of their module. The contamination rate of the Recycle Right bins were generally 20-30%, an acceptable level for our recycling vendor to collect and process them further.

Doing More with Less: Developing Dematerialisation Strategy



The environmental and social impacts of material extraction, production and consumption are extensive and extends beyond our shores. Like decarbonisation, there is a need for dematerialisation – improvement in material efficiency and reduction in materials demand.

The challenges of going Zero Waste involve systemic value chain, organisational, and individual factors. As a system, we operate within a linear economy (take-make-buy-use-throw) where waste (e.g. food waste, plastics) is not viewed as a resource and is hence disposed of.

As a large organisation, we will develop a dematerialisation strategy to minimise waste generation at source, other than ensuring our recyclables are managed responsibly by our contractors. Focusing on reduction will not only reduce the environmental impact of the university's purchasing decisions but also save costs.

As staff in an education institution, we have a public service duty to role model positive behaviours for our students- adopting 3Rs (Reduce, Reuse, Recycle) practices and reducing the heavily reliance on disposables for our daily needs.

2024 Performance

Expanding Efforts in Building a Resource Conscious Culture

Our targets are to establish Zero Waste precincts where we shape positive norms and practices of Reduce, Reuse and Recycle (3Rs), aiming for a 50% recycling rate and 30% reduction in daily waste disposed per capita by 2030. As these are challenging targets to achieve, we will take a holistic upstream and downstream approach to manage waste, shifting our focus to cutting wastages in addition to enhancing recycling.

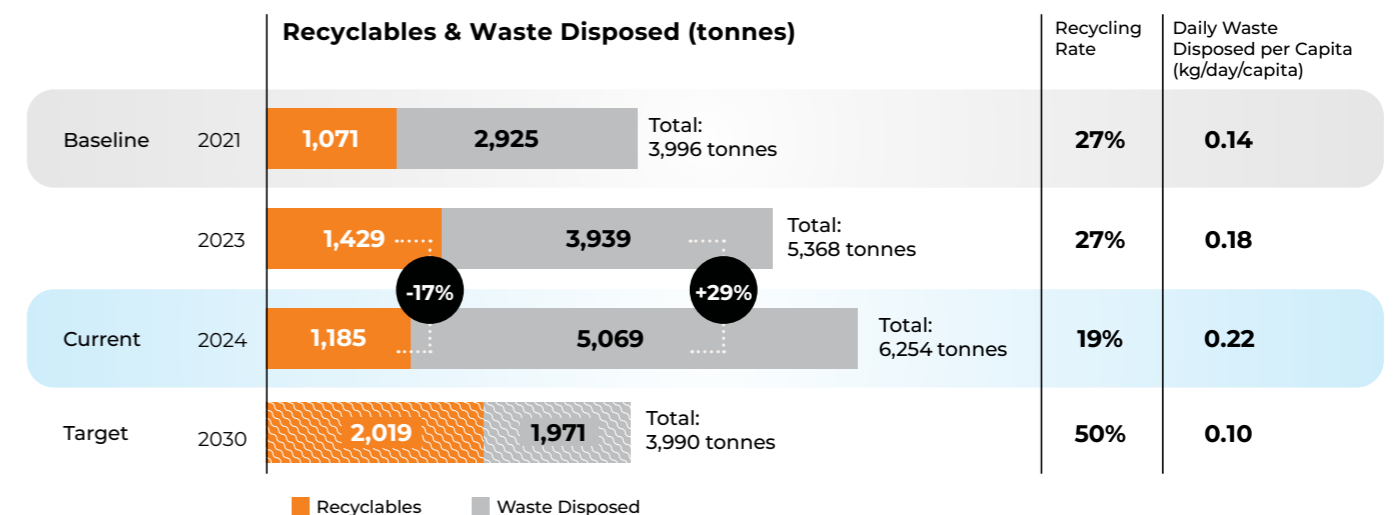
In 2024, our recycling rate dropped to 19% from 27% in 2023, while daily waste disposed per capita increased from 0.18 kg/day/capita in 2023 to 0.22 kg/day/capita.

Recycling tonnage dropped from 1,429 tonnes to 1,185 tonnes, mainly due to two reasons. Firstly, there was a 90-tonne reduction in food waste recycling following the closure of NEA's Ulu Pandan co-digestion plant in September 2023. In reponse, we have instead implemented a hub-and-spoke model to transport preparatory food waste from canteens to be treated at two aerobic digesters and one valoriser on campus. Secondly, there was a 152-tonne decrease in horticultural waste, which was unusually high in 2023 due to the removal of several Khaya trees that posed a risk of falling.

Waste disposed increased from 3,939 tonnes to 5,069 tonnes, driven by more food waste sent for disposal, a larger campus population, and more food catering activities.

We have begun preparations for 2025 to add more refreshed Recycle Right bins across the campus, new smart Resource Sorting Stations in hostels, and launch a new campus sorting guide to provide our community with clear, detailed information on how to properly recycle on campus and how the recyclables are processed. These efforts contribute towards the long-term goal of building a campus sorting culture.

Beyond recycling, we will also roll out a Bring-Your-Own campaign to cut down on takeaway disposables, which make up 13% of our waste. We have also formed a Zero Waste Working Group to coordinate across departments (e.g. University Campus Infrastructure, Central Procurement Office) and develop plans to better track and manage major waste streams such as food waste.



Our Strategy

Material Lifecycle Management

We will take a material lifecycle approach to waste reduction, addressing wastages in procurement decisions, administrative services to responsible downstream waste management operations.



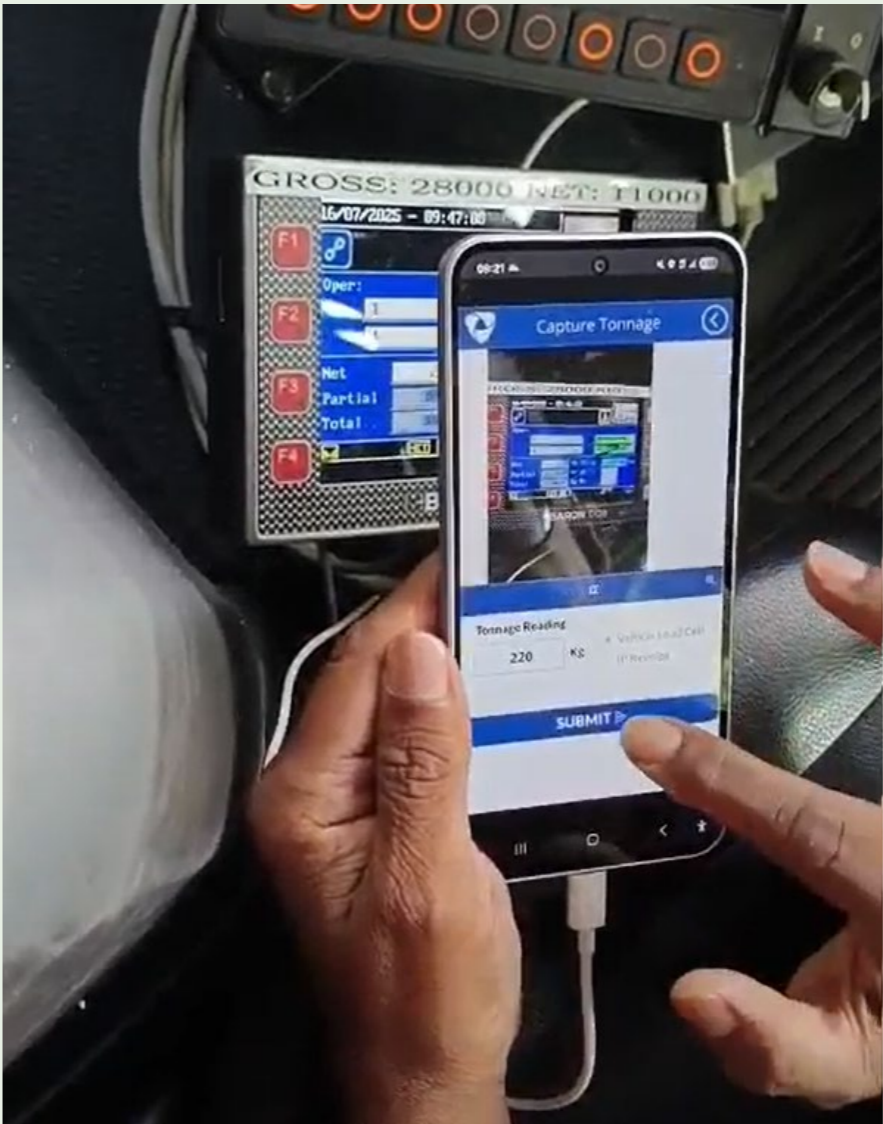
NUS Sustainable Procurement Framework Highlights

- Say "NO" to unnecessary purchases**
 - Reduce food waste from the growing demand for catering services in 2025
- Consider total cost of ownership**
- Source sustainable products**
 - Sustainable procurement guidelines, e.g. green labels, introduced in 2023
- Source for sustainable suppliers**
 - 10% scoring on sustainable procurement criteria introduced in 2023

Zero Waste Roadmap 2030

- Employ smart systems for evidence based programme review**
 - Enhancing data reliability of bin centre level waste & recyclables tonnage with optical character recognition technology in 2024-2025
- Create campus waste sorting culture**
 - Introduce refreshed Recycle Right bins campus-wide and launch campus sorting guide in 2025
- Phase out key takeaway disposables**
 - Launch annual campus-wide Bring-Your-Own reusable container campaign in 2025
- Adopt responsible procurement and technology to close waste loops, e.g. food and plastic**
 - Contracted established industry player to close plastic PET-1 waste loop in 2024
 - Introduced hub and spoke model of food waste collection with food waste valorisation in 2024

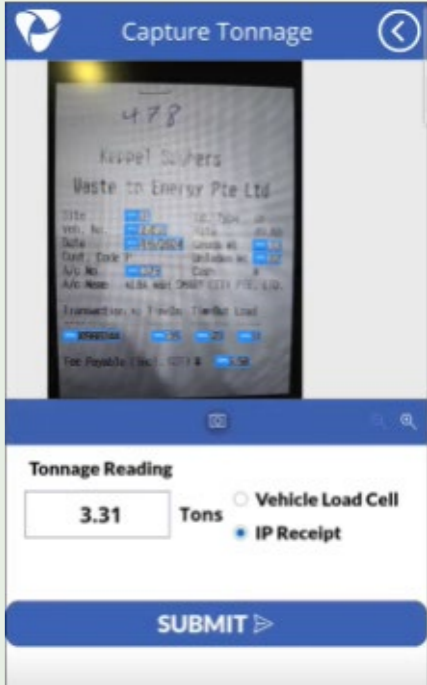
Enhancing Data Reliability, Supporting Waste Industry Digitalisation



▲ A truck driver using the app to take a photo of the weight display (above) that captures the tonnage reading without needing manual input. The same app is also used by the vendor for receipts at incineration plants (right).

Occasional variances in waste weight data are likely due to human error, as truck drivers manually input data into an app at over 40 collection points on campus each day. To address this, a prototype originally developed by students from the Faculty of Science in 2023 has since been expanded and will be integrated into the operational workflows of our waste collection vendor.

By 2025, truck drivers will simply photograph the weight display, and a trained optical character recognition (OCR) model will automatically convert the image into numeric data with high accuracy. This initiative not only enhances our waste data reliability but also supports the broader digitalisation efforts of the waste industry—our vendor has adopted the same technology to accurately extract waste weight from receipts at incineration plants.



Reinforcing Campus Resource Sorting Culture With Redesigned Touchpoints



▲ Recycle Right bins, available campus wide, mainly collect PET-1 plastic bottles (green), cans (yellow) and paper & cardboard (blue). These bins have shown to significantly reduce recycling contamination.



▲ A recycling hub located in University Town, comprising (from left to right) a textile recycling bin, an e-waste recycling bin and a Recycle Right bin set that also collects HDPE-2 plastics (dark green) which include shampoo and soap bottles and glass (orange).



▲ During hostel check-out periods, large reuse bins are provided to facilitate hostelites to sort and deposit their reusables (e.g. clothes, electronics) instead of throwing them away, together with large bins for bulky waste.

COMING IN 2025



▲ An artist impression of the refreshed version of the Recycle Right bins that are made of plastic instead of galvanised steel, making it more cost-effective and lighter for operations. New recycling streams for LDPE-4 (e.g. bubble wrap) and PP-5 plastics (e.g. lab pipette boxes) will also be introduced.

COMING IN 2025



◀ The campus sorting guide contains detailed information about NUS' segregated clean stream recycling in the context of the University, including information on how our recyclables are processed responsibly overseas beyond campus.

1 Campus Collection

Consolidation at recycling points



2 Vendor Collection

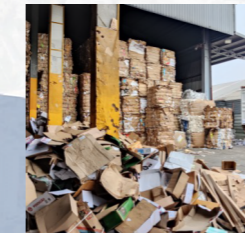
General waste

Recycling



3 Recycling Aggregation

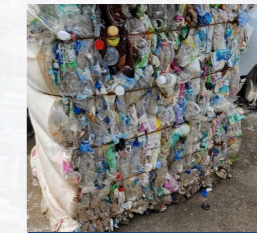
Recycling Traders



Clean paper & cardboard



Metal cans



Baled PET 1 bottles



Closed PET-1 Waste Loop Responsibly

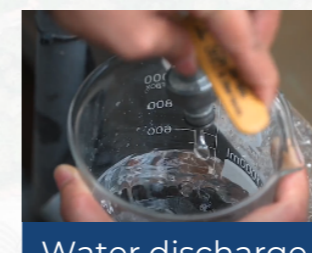
PET-1 bottles collected on campus are now turned into food-grade recycled PET-1 (rPET-1) resins, which are used to manufacture new bottles. We will continue to place strong emphasis on the traceability of all our recycling streams to promote responsible end-of-life management of recyclables in our value chain.

Beyond responsible recycling, we will also engage our community to reduce the consumption of PET-1 beverages on campus.

4 Responsible Recycling Process (PET-1 to rPET-1)



Exported to Malaysia



Water discharge quality checks
pollution controls



Food-grade recycled PET-1 resins



Dialogue:

Galvanising Change



▲ In conjunction with Clean & Green Singapore Day 2024, we were joined by various distinguished guests – including Deputy Prime Minister Mr Heng Swee Keat and Minister for Sustainability and the Environment Ms Grace Fu – in a campus tree planting event that marked our mid-way tree planting milestone of 50,000 trees.

Building Communities to Reduce Wastage

To realise our collective sustainability vision, we are embedding sustainability goals and actions across all levels of the organisation. We aim to build sustainable communities rooted in a shared culture of waste reduction, with staff leading by example. Harnessing the campus as a living laboratory, we tap into our researchers' expertise to drive innovation, engage administrative and professional staff to apply best practices, empower faculty to shape future changemakers, and inspire students to champion behavioural shifts among their peers.

In 2024, we issued 6 university-wide circulars by Deputy President of Administration that highlighted campus sustainability progress and launched the inaugural Iceberg Series in conjunction with Clean & Green Singapore Day 2024, which deep dived into responsible end-of-life plastic recycling and the role of campus greening in climate mitigation.

To promote shared accountability of sustainability goals, we have set up cross-departmental working groups tasked with delivering key sustainability projects (e.g. relating to the 3-year Decarbonisation Plan) with building stakeholders to manage building energy consumption, such as in Yusof Ishak House that is targeting net-zero energy performance and faculties for the top energy-intensive buildings.

Beyond NUS, we have supported sustainability education in the wider community by contributing to the South West Community Development Council's review of the Green Schools @ South West Programme, aimed at nurturing young sustainability champions.

Platforms	Frequency	Stakeholder Groups	Details
Digital Campus Sustainability website	Ongoing	All staff and students, public	Updates on campus sustainability efforts, including Campus Sustainability Roundup annual disclosures since 2021
Digital Environmental Disclosures	Annually	All staff and students	Annual environmental disclosures on campus sustainability progress since 2021
Digital Internal circulars/letters by Deputy President of Administration	5-6 times a year	All staff	Sharing on the state of campus sustainability progress, e.g. DPA circular, 'Greening NUS' (Oct 2024) updated staff on achieving tree canopy of over half the campus and the vision to connect the community with nature
Digital University-published reports	Annually	All staff and students, public	University-level sharing on sustainability efforts across Education, Research and Administration clusters (i.e. including NUS Sustainability Report and NUS Impact Report)
Digital NUS Sustainability Feature e-newsletters Live Green@NUS	As and when	All staff and students	To raise visibility on campus sustainability efforts e.g. Campus Sustainability Roadmap 2030 (Apr-May 2023), President Award for Environment 2023 (Oct-Dec 2023), ERC Rooftop Edible Garden managed by NUS SAVE (Mar-Apr 2024)
Media NUS News	As and when	All staff and students, public	News update (e.g., planting 50,000th tree on campus in conjunction with national Clean & Green Singapore 2024 Day in UTown)
Physical Publicity e.g., large wall displays and internal shuttle bus advertisements	Ongoing	All staff and students, public	Raise awareness on Campus Sustainability Roadmap 2030 and supporting national campaign e.g. NEA Say Yes To waste Less
Face-to-face Staff orientation briefing	Monthly	New professional and administrative staff across all levels and departments in university	Sharing on NUS Campus Sustainability Roadmap 2030, with plans to expand this into sustainability literacy training for staff to understand the lifecycle environmental impact of daily workplace decisions and activities
Face-to-Face Meetings	As and when	Global universities and public agencies	Hosted global stakeholders on campus to share NUS Campus Sustainability Roadmap 2030, exchange ideas and learnings, and support capacity-building as a leading university. Institutions hosted this year include University of Copenhagen (Feb 2025), Imperial college of London (April 2024), and Institute Teknologi Bandung (June 2024)
Face-to-Face Iceberg Series Deep Dive Panel Discussion	Annually	All staff and students, public	Sharing on sustainability-related issues (Panel discussion on "Where Do our Recyclables end up? Closing the Plastic Loop" and "Campus as a Real-World Living Lab to Tackle Climate Change" (Nov 2024))
Face-to-Face Clean & Green Singapore Day	As and when	Multiple government agencies (e.g. National Environment Agency, South West Community Development Council), all staff and students, public	Hosted Clean & Green Singapore Day in 2024, where we hosted a campus tree planting event to mark our mid-way planting milestone and shared NUS Campus Sustainability Roadmap 2030

Platforms	Frequency	Stakeholder Groups	Details
University Level University Sustainability and Climate Action Council	Quarterly	NUS President and senior leadership across Education, Research, Campus Operations and Administration and Community Engagement	Update progress of Campus Sustainability Roadmap and identify opportunities for collaboration across clusters
Cluster Level Briefing to Deputy President of Administration (DPA)	Quarterly	DPA and key representatives across management and Admin cluster	Update on cross divisional projects under Campus Sustainability Roadmap 2030
Division Level University Campus Infrastructure (UCI) Sustainability Roundtable	Quarterly	UCI management across divisions and units	Update on cross divisional projects under Campus Sustainability Roadmap 2030
Division Level Meetings with presidential cells of key student groups	Annually	Key student group representatives from National University of Singapore Students' Union (NUSSU), Graduate Student Society (GSS), NUS Students' Association for Visions of the Earth (SAVE)	Share campus sustainability priorities and opportunities for student involvement
Unit/Project Level Energy Management Working Group	Quarterly	University Campus Infrastructure (UCI) divisions and units	Develop, track and deliver the 3-year decarbonisation plan
Unit/Project Level Design Review for New Buildings and Retrofits	As and when	Faculty staff with green building expertise	Stretch the carbon, energy and sustainability targets of new buildings and retrofits (e.g. Site B new hostel housing)
Unit/Project Level Zero Waste Working Group	Quarterly	University Campus Infrastructure (UCI) divisions and units	Develop, track and deliver a workplan that contribute to dematerialisation and waste reduction
Unit/Project Level Cool NUS Living Laboratory meetings	Bi-weekly	CDE Researchers and University Campus Infrastructure (UCI) divisions and units	Discuss and update on the application of research insights to develop and trial mitigation measures
Unit/Project Level Expert advisory	As and when	Researchers	Seek advice on emerging issues, technology and solutions

	Platforms	Frequency	Stakeholder Groups	Details
Decarbonise: Carbon Neutral	Green laboratory initiative	Ongoing	NUS Medicine Dean's Office and labs	MD6 flagship energy saving project at energy-intensive buildings
	Yusof Ishak House NZEB	Ongoing	Staff and student groups	Managing energy budget towards NZE in operation
Defend Against Climate: Cool NUS	Living labs collaborations	Ongoing	Researchers, industry partners and UCI divisions	Synergise expertise to testbed projects (e.g. Cool NUS projects such as evaluating cool paint and campus greenery)
	100,000 tree planting project	As and when	RVRC, Toddycats	Reforestation efforts at the Ridge
Dematerialise: Zero Waste	Green Schools Programme	As and when	South West Community Development Council	Contributed to the review of the Green Schools @ South West Programme and launched a Sustainability Resource Pack, targeting to reach 40 schools
	Sustainable Living Testbed Initiative	Annually	South West Community Development Council, National Environment Agency (NEA), students	Provide funding and mentorship for students to testbed project ideas on campus
Dialogue: Galvanising Change	Events and activities by key student environmental groups	Ongoing	NUS Students' Association for Visions of the Earth (SAVE)	Provide mentorship and guidance to the students as staff advisors. Projects include the launch and management of Sustainability Fund, that provides up to \$3,000 to support student-led sustainability projects.
	Sustainability education modules	Annually	Lecturers (e.g. Ridge View Residential College) and students	Started in August 2021, co-create education modules with experiential learning on campus including learning journeys, problem statement for projects and case studies (e.g. Module RVN2000,2024) Provided design brief for DID Platform project on designing hostel experience to encourage sorting
	National Environment Agency's YES Leaders' Programme	Ongoing	National Environment Agency, students	Provide mentorship and training to develop student leaders for sustainability. Nominated 17 student leaders since 2023.

Consult

Engage & Partner

Partnering the Community in Realising YIH's Net-Zero Energy Goal

Through sustained engagement efforts, students and staff in Yusof Ishak House (YIH) are empowered with the responsibility to manage “energy budgets”. This includes deciding on air-conditioning operating hours and taking ownership of everyday actions to avoid energy wastage, like switching off lights and equipment when not in use.



Mr Sean Pang

President of the 46th NUSSU Executive Committee

“The NUS Students’ Union (NUSSU) is committed to manage our energy budget to contribute to YIH’s net-zero energy performance and in engaging other student committees to adopt sustainability within their events and activities.”



▲ NUS, in collaboration with South West Community Development Council, curated a Green Schools Programme Sustainability Resource Package. It built on a resource pack on Zero Waste that was first developed by NUS and piloted in Blangah Rise Primary School.



▲ Launched the inaugural Iceberg Series in conjunction with Clean & Green Singapore Day 2024, bringing together researchers, experts, and policymakers to discuss responsible management of the end-of-life of plastic recyclables, and the role of our campus greening efforts in addressing climate change.



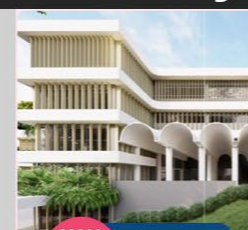
▲ Building on monthly talks for new staff, University Campus Infrastructure, Office of Human Resources and NUS Sustainability Academy will be working together to curate a new sustainability literacy course for staff.

2024 Sustainability Circulares by Deputy President (Administration)



APR 19 Apr

Every day an earth day -
shaping a culture of reducing wastage



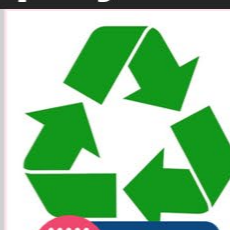
AUG 8 Aug

#1 Pledge To Practice
Decarbonising a growing campus
even as we build and rebuild buildings



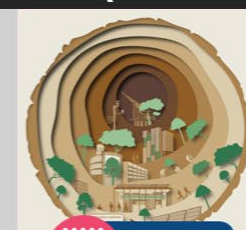
AUG 16 Aug

#2 Pledge To Practice
Defending against a hotter climate
with rising global temperatures



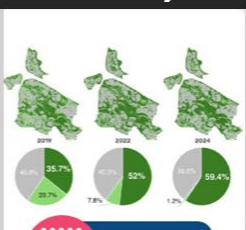
AUG 23 Aug

#3 Pledge To Practice
Dematerialise through a culture of reducing wastage
in organisational activities



SEP 10 Sep

#4 Pledge To Practice
People behind the action
+ Release of 2023 environmental disclosures



OCT 30 Oct

Greening NUS
in support of Clean & Green Singapore

▲ Six circulars relating to campus sustainability were sent to staff in 2024, highlighting our progress and encouraging staff to reflect on how they could participate and contribute.

Strengthening Ownership Over Sustainability KPIs

The sustainability governance structure at NUS ensures a comprehensive approach to environmental responsibility across its functions. At the apex of this governance is the University Sustainability and Climate Action Council (USCAC), chaired by NUS President Professor Tan Eng Chye. This council, comprising faculty with sustainability expertise and senior leaders, integrates activities across Education, Research, Innovation and Enterprise, Campus Operations and Administration, and Community Engagement. It guides sustainability policies and programs. The USCAC convenes quarterly and is briefed at least once a year on updates relating to campus sustainability.

The USCAC is supported by dedicated platforms which includes updates to Deputy President of Administration (DPA) twice a year and the University Campus

Infrastructure (UCI) Sustainability Roundtable, chaired by Vice President (Campus Infrastructure) that convenes twice a year that enables UCI divisions' collective ownership of and contribution to campus sustainability efforts.

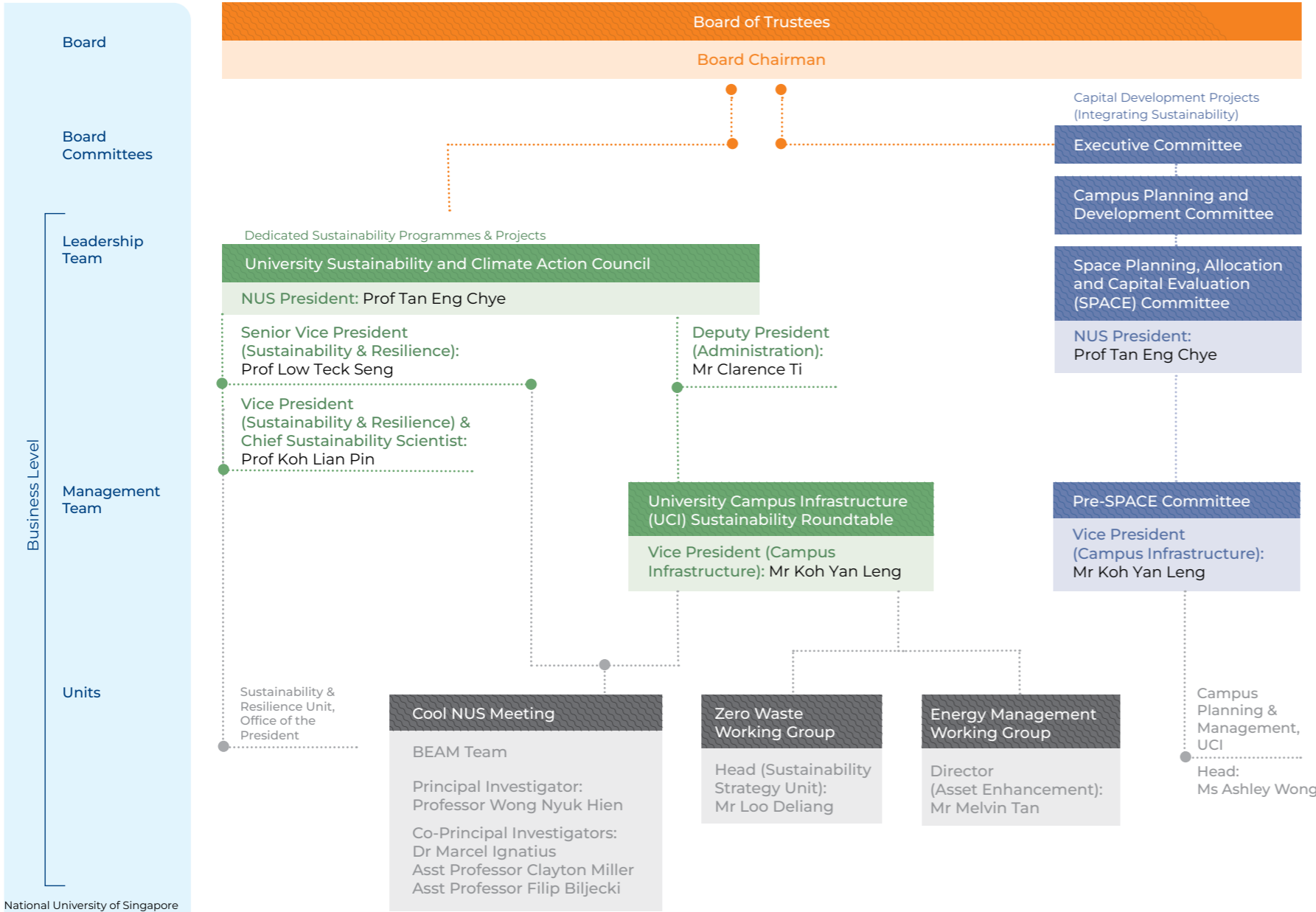
Recognising the important role of management in meeting sustainability targets, a new **decarbonisation-related key performance indicator** has been added to the balanced scorecards of selected management members to enhance decarbonisation accountability in 2024. In line with this, the **Energy Management Working Group**—convening quarterly—was established to develop, implement and track a 3-year Decarbonisation Plan.

As dematerialisation requires reducing material wastage across administrative and operational processes, we will establish the **Zero Waste Working Group** in 2025. Meeting quarterly, it includes representatives from various administrative (e.g. Central Procurement Office) and operational (e.g. UCI) departments who will develop and implement projects addressing waste across the entire lifecycle.

Sustainability considerations are also integrated into capital development projects through oversight from two Board committees: the Executive Committee (Exco) and the Campus Planning and Development Committee. These committees oversee strategic planning, development, and implementation procedures. Supporting this are the Space Planning, Allocation and Capital Evaluation (SPACE) Committee, chaired by the NUS President and Pre-SPACE Committee chaired by Vice President (Campus Infrastructure) which convenes about six times a year. These committees oversee capital projects, including evaluating the need to rejuvenate or build new spaces by reviewing existing space banks and utilisation. They also consider the potential operational carbon impact of the proposed projects and explore ways to manage it upfront in design.

Unit-Level Organisation to Deliver Campus Sustainability

Beyond the leadership and management roles in sustainability, we have established working groups driven by both administrative and research units for collective ownership and accountability. This brings together multiple units to clarify their roles by aligning their scopes of work with campus sustainability outcomes, and to collaboratively develop and implement annual workplans in support of the Campus Sustainability Roadmap 2030. Below are the working groups and their primary objectives.



Energy Management Working Group. To deliver the 3-year decarbonisation plan, with projects ranging from key infrastructure upgrades & optimisations, monitoring & optimisations in energy-intensive buildings and technology pilots.



Zero Waste Working Group. To deliver resource wastage reduction projects in key waste streams, including food catering and disposable takeaways. To also foster resource conscious behaviours in the community, such as enhancing sorting norms in the hostel community.



Cool NUS Meeting. To apply research insights to campus planning and development by using data to regularly monitor the campus' outdoor thermal comfort and translating them – including mitigation insights – into practical implementation on campus (e.g. campus masterplan).



Important Details

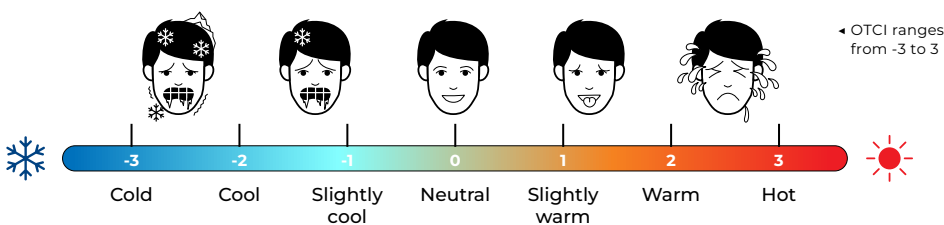
Annex

► Glossary of Our Indicators

► Decarbonise

SCOPE 1 & 2 ABSOLUTE EMISSIONS (ktCO ₂ e) ¹	Greenhouse Gas (GHG) emissions ² from activities we have control over - Scope 1 emissions are from our usage of fuel & refrigerants in chiller plants; Scope 2 emissions are from the production of grid electricity that we use.
ELECTRICITY CONSUMPTION (GWh) ³	Total amount of electricity that we use from the grid and renewables.
ENERGY USAGE INTENSITY (EUI) (kWh/m ²)	Total amount of electricity that we use from the grid and renewables per metre square. Tracking per metre square allows us to monitor our consumption as the campus grows.
SCOPE 3 ABSOLUTE EMISSIONS (ktCO ₂ e)	Indirect GHG emissions from sources not owned or directly controlled by NUS but related to NUS activities including the goods and services we purchase, the waste we generate, how we commute & travel, and the grid electricity that our tenants use.

► Defend Against Climate Change

OUTDOOR THERMAL COMFORT INDEX (OTCI)	 <p>Measures the level of thermal comfort (a state of mind whether they feel hot or cold) a person experiences when outdoors. Its computation accounts for both temperature, solar radiation, and wind speed.</p>
PREDICTIVE PERCENTAGE DISSATISFIED (PPD)	The percentage of occupants that would feel dissatisfied in a given outdoor space. It is mathematically converted from OTCI for easier interpretation.

► Dematerialise

RECYCLING RATE	Amount of waste sent for recycling, instead of being sent to incineration plants, compared to total amount of waste generated on campus.
DAILY WASTE DISPOSED PER CAPITA	Amount of waste a person throws into the rubbish bin every day on campus that is sent for incineration. Tracking per capita allows us to monitor the waste disposed as our campus population grows.

¹ ktCO₂e refers to the unit of measurement that accounts for all greenhouse gas (GHG) emissions. As different GHGs have different global warming potentials (i.e. heat absorbed in the atmosphere), this reflects the number of kilotons of carbon dioxide (CO₂) emissions with the same global warming potential as one kiloton of another GHG, where 1 kiloton (kt) = 1,000,000 kilograms (kg). This allows us to evaluate all emissions in a single metric.

² Greenhouse gases (GHG) are gases that trap heat from the sun in the Earth's atmosphere, leading to an overall warming of the Earth. The three key GHGs accounted for in NUS are carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O).

³ GWh refers to a unit of measurement for electrical energy. Mathematically, it refers to the amount of power (gigawatts or GW) that appliances consume over a time period (hour or h), where one gigawatt (GW) = 1,000,000 kilowatt (kW) = 1,000,000,000 watts (W).

► Our Environmental Data

	2019	2021	2022	2023	2024
► Decarbonise					
Total GHG Emissions (ktCO ₂ e)	353	324	334	331	329
(i) Scope 1	2.8	2.6	2.2	1.4	2.7
Fuel Combustion	0.3	0.3	0.3	0.3	0.3
Fugitive Emissions from Refrigerants	2.5	2.3	1.9	1.1	2.4
(ii) Scope 2	110	112	113	121	115
Scope 2 Gross Carbon Emissions Intensity (kgCO ₂ e/m ²)	79	79	79	82	78
(iii) Scope 3	240	209	219	209	211
Category 1 – Purchased goods and services	57	52	49	41	39
Category 2 – Capital goods	85	73	63	54	63
Category 3 – Fuel and energy related activities	22	32	33	34	33
Category 4 – Upstream transportation and distribution	2	2	2	8	5
Category 5 – Waste generated in operations	5	3	4	5	6
Category 6 – Business travel	34	7	30	32	34
Category 7 – Employee commuting	9	9	9	9	9
Category 13 – Downstream leased assets	25	30	29	27	23
Total Electricity Consumption (GWh)	271	276	280	290	283 ¹
(i) Grid Electricity (GWh)	270	276	279	290	276
(ii) Campus Solar Energy (GWh)	0.6	0.6	0.5	0.6	7
Energy Usage Intensity (EUI) (kWh/m ²)	195	195	195	198	193
1 st Building Cluster Targeting Net Zero Energy – SDE4, SDE1, SDE3					
SDE4 – Awarded Green Mark (GM) 2021 in Operation Platinum Positive Energy in 2022					
Solar Energy Generated (GWh)	0.6	0.6	0.5	0.4	0.5
Electricity Consumption (GWh)	0.5	0.4	0.4	0.4	0.4
EUI (kWh/m ²)	55	46	44	44	43
SDE1 – Targeting Recertification to Green Mark (GM) 2021 in Operation Platinum Zero Energy in 2025/2026 ²					
Solar Energy Generated (GWh)	–	–	–	–	0.2
Electricity Consumption (GWh)	–	0.4	0.4	0.4	0.4
EUI (kWh/m ²)	–	44	43	47	50
SDE3 – Awarded Green Mark (GM) 2021 in Operation Platinum Super Low Energy in 2024					
Solar Energy Generated (GWh)	–	–	–	–	–
Electricity Consumption (GWh)	–	–	0.08	0.6	0.6
EUI (kWh/m ²)	–	–	–	38	42

		2019	2021	2022	2023	2024
Top Energy-Intensive Buildings (Labs)						
MD6	Electricity Consumption (GWh)	18.8	19.3	19.3	17.5	17.7
	EUI (kWh/m ²)	462	474	474	428	434
CeLS	Electricity Consumption (GWh)	–	6.7	9.8	8.5	7.6
	EUI (kWh/m ²)	–	333	487	424	379
E3A	Electricity Consumption (GWh)	–	7.6	8.8	9.3	7.9
	EUI (kWh/m ²)	–	626	723	769	652
E6	Electricity Consumption (GWh)	–	7.0	6.7	6.9	6.4
	EUI (kWh/m ²)	–	570	552	565	527
E8	Electricity Consumption (GWh)	–	6.2	6.1	6.1	6.6
	EUI (kWh/m ²)	–	395	385	388	417
MD1	Electricity Consumption (GWh)	–	9.0	8.7	8.0	8.1
	EUI (kWh/m ²)	–	250	225	224	226
MD2	Electricity Consumption (GWh)	–	6.5	6.8	7.1	7.3
	EUI (kWh/m ²)	–	652	688	721	742
S1A	Electricity Consumption (GWh)	–	6.9	5.8	6.6	7.0
	EUI (kWh/m ²)	–	653	551	631	660
S9	Electricity Consumption (GWh)	–	16.6	16.9	18.1	20
	EUI (kWh/m ²)	–	449	456	488	538
T-Lab	Electricity Consumption (GWh)	–	11.5	11.1	11.1	11.1
	EUI (kWh/m ²)	–	470	454	454	456

¹ Following a review of NUS' organisational boundary in FY2024, electricity consumption from the NSCC i4.0 Data Centre (8.0 GWh) has been excluded, as the space is sub-leased from NUS.

² The recertification of SDE1 in 2025/2026 will be based on solar energy generated by the solar photovoltaic panels on SDE1's rooftop.

	2019	2021	2022	2023	2024
► Defend Against Climate Change					
Outdoor Thermal Comfort Index (OTCI)	<ul style="list-style-type: none">Updated & validated 2019 outdoor thermal comfort mapEstablished 2024 outdoor thermal comfort map				
Predictive Percentage Dissatisfied (PPD)					
► Dematerialise ⁸					
Total Waste Generated (tonnes)	5,921	3,996	5,031	5,368	6,254
(i) Incinerated / Waste directed to disposal by disposal operation	4,416	2,925	3,426	3,939	5,069
(ii) Recycled / Waste diverted from disposal by recycling operation	1,505	1,071	1,605	1,429	1,185
Paper, Plastic, Metal, Glass	81	109	135	138	152
Food	209	282	367	110	20
Horticulture	1,130	633	1,043	1,105	953
Electronic Waste (E-waste)	84	46	54	65	52
Textile	–	1	6	12	8
Recycling Rate	25%	27%	32%	27%	19%
Daily Waste Disposed per Capita (kg/day/capita)	0.22	0.14	0.16	0.18	0.22

► Dematerialise	
OUR RECYCLABLES	
Recyclable Type	Source of Recyclables and How They Are Currently Recycled
Electronic Waste	IT equipment from faculties and electronic waste contributed via the bins located in Central Library Forum, outside LT27 and UTown are collected by Alba E-Waste Smart Recycling Pte Ltd. These items are transported to Alba's Material Recovery Facility for further sorting and subsequent export to neighbouring countries for recycling.
Food	Food waste generated by stallholders during food preparation and leftovers collected from our community at canteen tray return points and are transported through our hub-and-spoke model to composters located in Techno Edge, Stephen Riady Centre and Terrace that produce compost used in campus landscaping works, and a valoriser in MD1 that produces a substrate for potential aquaculture feed testing.
Glass	Accumulated glass (e.g. drink bottles) from F&B outlets and residences are collected by P&R Resource Management Pte Ltd and transported to their facility to be crushed and packed in containers for subsequent export to Malaysia for recycling.
Horticulture	Plant matter collected from regular tree pruning works are transported by our landscaping contractor to a biomass waste-to-energy plants by 800 Super Holdings Ltd and Kim Hock Corporation Ltd where it is used to generate steam for energy production. Approximately 10% of our horticulture waste which comes from fallen leaves and minor pruning works are transported to a local nursery to be turned into mulch, which is used for landscaping works back on campus.
Paper	These items are collected from Recycle Right bins across our campus by Asia Recycling Resources Pte Ltd and transported to their material recovery facility, where they are baled and then exported to neighbouring countries for recycling.
Plastic (HDPE2)	
Metal	
Plastic (PET1)	PET-1 bottles collected from Recycle Right bins across our campus by Cora Environment Pte Ltd are transported to their material recovery facility, where they are baled and then exported to Hiroyuki Industries (M) Sdn Bhd where they are processed into food grade recycled PET-1 resins.
Textiles	Apparel and other textiles like pillows are collected by Cloop who will pack them into bags and export them to Malaysia for further sorting and recirculation.

Other Environmental Data					
Gross Floor Area (million m ²)	1.39	1.41	1.43	1.47	1.47
Campus Fleet Vehicles Electrified (%)	0%	11%	17%	25%	25%
No. of Trees Planted (Cumulative)	5,915	22,087	35,100	47,552	55,221
Water Consumption (million m ³)	2.02	1.73	1.78	1.89	1.76
Water Efficiency Index (WEI) (m ³ /m ²)	1.41	1.22	1.24	1.29	1.20

► Information on Baseline Years

For our emissions and electricity targets, our baseline year is 2019 – the most recent year before the COVID-19 pandemic.

For our waste targets, 2021 was selected as the baseline year as we have bin centre-level waste data from 2021, arising from the implementation of the smart waste and recycling collection system. 2019 and 2020 data were previously derived from the following: waste weight estimations based on number of bulk bins, actual waste weight from mobile compactors and campus-level aggregated weight of recyclables collected by the previous vendor. We are continuously enhancing our waste data collection approach to ensure reliability, such as using optical character recognition technology to read data from photos taken of the load cell readings.

► Emission Factors

For Scope 2 indirect emissions, the equivalent CO2 emissions for electricity used are calculated based on the updated average operating margin grid emission factor from the Energy Market Authority for the relevant time period – for 2024, the value used was 0.412 kgCO2/kWh. Scope 1 direct emissions and Scope 3 indirect emissions are calculated using: IPCC (the United Nations Intergovernmental Panel on Climate Change): AR6 Synthesis Report, Guidelines for National Greenhouse Gas Inventories, BEIS (Department for Business, Energy & Industrial Strategy) Greenhouse Gas reporting: conversion factors, EPA (U.S. Environmental Protection Agency): emission factors hub, the National Environment Agency: Greenhouse Gas (GHG) Emissions Measurement and Reporting Guidelines, Waste Statistics and Overall Recycling, the World Bank: Electric power transmission and distribution losses, and Singapore’s Fifth Biennial Update Report. Relevant emission factors were sourced from: Linde plc gases and equipment information, Monetary Authority of Singapore exchange rates, US Bureau of Statistics CPI inflation calculator. For spend based category data, Monetary Authority of Singapore, Supply Chain GHG Emission Factors for US Commodities and Industries from the EPA were applied by economic sectors to calculate the Scope 3 indirect emissions.

► Description of Inventory Boundary

GHG emissions are derived in accordance with the requirements of the “GHG Protocol Corporate Accounting and Reporting Standard” (GHG Protocol). GHG Protocol’s ‘Operational Control’ approach was used to set NUS’ organisational boundary. This covers NUS’ three main campuses – Kent Ridge (including University Town, Yale-NUS College), Bukit Timah and Outram (Duke-NUS Medical School) and the Data Centre at NUS High School & Tropical Marine Science Institute at St John’s Island; and excludes the following: A*STAR and other non-NUS research institutes and centres located on any of the above-mentioned premises (e.g. Brenner Centre for Molecular Medicine, Temasek Life-science Lab, Defence Science Organization, CREATE, Singapore Wind Tunnel Facility, TCOMS, Institute of South Asian Studies, Middle East Institute, Energy Studies Institute), Kent Ridge Guild House, Residential Tenants (Kent Vale Residences, Pandan Valley, College Green), NSCC i4.0 Data Centre; and retail and dining tenants (e.g. canteens). From August 2025, the NUS Faculty of Law will move from its current location at Bukit Timah campus to Kent Ridge campus.

► Information on Emissions Metrics

NUS has reported our GHG emissions for Scope 1, Scope 2 and relevant Scope 3 categories. Specifically, Scope 3 Categories 8, 9, 10, 11, 12 and 14 are not applicable as NUS does not produce or manufacture any products or operate any franchises. Scope 3 Category 15 is currently not reported due to data unavailability. NUS adopts a responsible investment strategy with a focus on ensuring that its investments generate income to support our activities while closely aligning to principles of environmental sustainability and social responsibility.

► GRI Content Index

Statement of use

National University of Singapore (NUS) has reported with reference to the GRI Standards for the period 1 April 2024 to 31 March 2025.

GRI 1 used

GRI 1: Foundation 2021

GRI Standards	Disclosure Number	Disclosure Title	Page
General Disclosures			
GRI 2 (2021): General Disclosures	2-1	Organisational details	Annual Report Page 46
	2-2	Entities included in the organisation’s sustainability reporting	2
	2-3	Reporting period, frequency and contact point	2
	2-9	Governance structure and composition	45-46
	2-29	Approach to stakeholder engagement	39-40
Decarbonise			
GRI 3 (2021): Material Topics	3-3	Management of material topics	10-11
GRI 305 (2016): Emissions	305-1	Direct (Scope 1) GHG emissions	12-13, 19-20, 49-50
	305-2	Energy indirect (Scope 2) GHG emissions	12-13, 19-20, 49-50
	305-3	Other indirect (Scope 3) GHG emissions	19-20, 49-50
	305-4	GHG emissions intensity	50
	305-5	Reduction of GHG emissions	13, 17-18
GRI 302 (2016): Energy	302-1	Energy consumption within the organisation	14-16, 50-51
	302-3	Energy intensity	14-16, 50-51
	302-4	Reduction of energy consumption	17-18
Defend Against Climate Change			
GRI 3 (2021): Material Topics	3-3	Management of material topics	23-24
Dematerialise			
GRI 3 (2021): Material Topics	3-3	Management of material topics	29
GRI 306 (2020): Waste	306-1	Waste generation and significant waste-related impacts	29
	306-2	Management of significant waste-related impacts	30-36
	306-3	Waste generated	30-36, 52-53
	306-4	Waste directed to disposal	30-36, 52-53
	306-5	Waste directed from disposal	30-36, 52-53
Water Consumption			
GRI 303 (2018): Water	303-5	Water consumption	53



▲ Valour House (Green Mark Platinum) is our latest hostel building.

Produced by:

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