# Sustainability Report

2022


"Sustainability continues to play a central role in the university's identity and direction."

Andrew Parfitt,
Vice-Chancellor and President

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**Indigenous acknowledgement**

We acknowledge the traditional owners of the lands on which our city campus now stands, the Gadigal people of the Eora Nation. Paying respect to Elders both past and present, we acknowledge them as the traditional custodians of knowledge for this land.

# Statement from the Vice-Chancellor

**Andrew Parfitt**
Vice-Chancellor and President

I am pleased to present the 2022 Sustainability Report.

Sustainability continues to play a central role in the university's identity and direction. This year our researchers achieved recognition on the world stage. Distinguished Professor Huu Hao Ngo and Professor Wenshan Guo appeared on the acclaimed international Highly Cited Researchers list for their work on water and sanitation. The list also recognised Distinguished Professor Guoxiu Wang for his work on clean energy and fuel cells and Professor John Zhou for his contributions to vehicle emissions, environmental sampling and analysis.

Closer to home, early career atmospheric scientist Dr Peter Irga was celebrated at the NSW Tall Poppy awards for his world-leading research reducing indoor air pollution with plants and botanical systems. This year saw the establishment of two new research initiatives: the ARC Research Hub for Nutrients in a Circular Economy (NiCE), which uses new membrane technology to harvest nutrients from wastewater, and the multi-disciplinary Climate Change and Health Research Collaborative (CCHRC) that explores the impacts of climate change on health and wellbeing. Both initiatives demonstrate the breadth and scope of our sustainability contributions.

Our collaboration with community and industry partners is vital, leveraging our research and teaching to address sustainability challenges in the real world. The Centre for Technology in Water and Wastewater, in collaboration with seven other universities and 22 commercial partners, developed two new fertiliser products from human urine, Ugold and Uval, with field trials now underway.

Our teaching was also recognised, with UTS rising ten places in the Times Higher Education (THE) rankings to 133rd in the world. UTS also placed 8th in the Young University Rankings (universities under 50 years old). In the 2022 THE Impact rankings, which measures contributions to the UN Sustainable Development Goals (SDGs), UTS was named the 15th-best performing university in the world and the second in Australia, achieving 2nd globally for SDG 6 Clean Water and Sanitation and 3rd for SDG 12 Responsible Consumption and Production.

UTS Startups recently celebrated their 1000th startup since the program's launch in 2018. Several projects at this year's UTS Startup Awards focused on sustainability solutions, including one project that empowered people to grow their own food using innovative hydroponic smart gardens, and one that used native Australian plants and food waste to dye clothing. Our students are transforming their ideas into incredible technology-enabled startups that are changing the world.

While we have had many success stories this year, we remain committed to advancing our sustainability agenda . The world's big problems need big thinkers. In 2023 and beyond, we will continue working in collaboration with industry and government, educating young professionals and engaging with the wider community on how to build a more sustainable future.

I thank our UTS community for your efforts, leadership and passion for sustaining and improving our communities and environment in 2022.

# Statement from the Head of Sustainability

**Danielle McCartney**
Head of Sustainability

The campus largely returned to normal post the COVID pandemic, with most operations now running again at pre-pandemic levels. We continued implementing sustainability initiatives and commenced the development of the UTS Sustainability Strategy 2023-2027. In line with UTS's commitment to responding to the climate emergency we moved our investments to a fossil-free fund, and launched the UTS Climate Positive Plan. This charts a detailed decarbonisation pathway for UTS to achieve Net Zero emissions and Climate Positive by 2029 – the most ambitious target of any Australian university. Our program of switching to renewable energy is part of this journey and we installed a further 1,300 solar panels, 540kW of capacity, on the roof of the Engineering Tech Lab in Botany.

Sustainability engagement continued to grow with over 2,000 staff and students attending 59 sustainability events throughout the year. Over 80,000 people downloaded the Think Sustainability podcast, run in collaboration with radio station 2SER, and subscribers to the UTS Sustainability newsletter rose 17% to just over 4000.

Projects and people receiving recognition included student Rachael Scott winning the Australasian Green Gown Award in the *Research with Impact* (student) category, and the TDI School subject *Industry Innovation Project* winning the International Green Gown Award in the *Next Generation Learning and Skills* category.

We continued our commitment to embedding the UN Sustainable Development Goals (SDGs) across all levels of the organisation, and for the first year participated in Global Goals week with an interactive exhibition showcasing UTS contributions to the SDGs.

Finally, thank you to staff and volunteers in the Sustainability team, members of the UTS Sustainability Steering Committee, the senior executive, and all staff and students who helped champion sustainability throughout the year. Thank you again for your ongoing contributions.

# About UTS

The University of Technology Sydney (UTS) is a dynamic and innovative university in central Sydney. UTS has a distinct model of learning, strong research performance and a leading reputation for engagement with industry.

With over 44,000 students (44,615 EFTSL) and 3,836 staff, UTS offers over 510 undergraduate and postgraduate courses across disciplines such as architecture, built environment, business, communication, design, education, engineering, information technology, international studies, law, midwifery, nursing, pharmacy and science.

One of the University's five values in the 2027 Strategy is to sustain our local and global environment, organisational health and our ability to create a positive, viable future. The university is committed to integrating sustainability principles into its key functional areas of teaching and learning, research, operations, and community engagement.

"Each year we see more UTS Startups developing solutions to wicked sustainability challenges - reflecting the priorities and awareness of younger generations"

Murray Hurps,
Director, Entrepreneurship

# United Nations Sustainable Development Goals

**The United Nations Sustainable Development Goals (SDGs) are an organisational framework for action on and progress towards sustainability and provide the framework for this Sustainability Report.**

The 17 SDGs have been designed to help guide governments, businesses, organisations and the community towards creating a more just and sustainable world. Below the 17 high-level goals sit 169 targets and 232 indicators to guide and evaluate progress.

In 2016 UTS was one of the first universities in the Asia Pacific region to become a signatory to the University Commitment to the SDGs. In 2017 the UTS Institute for Sustainable Futures (ISF), in collaboration with Australasian Campuses Towards Sustainability (ACTS) produced a *Guide for Universities Getting Started with the SDGs*. The same year, our academics began to incorporate the SDGs into their research and teaching. In 2019 UTS signed the UN Global Compact, the world's largest corporate sustainability initiative, with a mission to support action on the SDGs. As a signatory and member of the Global Compact Network Australia (GCNA), the UTS Business School is working to deepen engagement with future business leaders on the SDGs and responsible and sustainable management.

In 2020 we established the SDGs Working Group to guide our work embedding the SDGs across the organisation, and the Climate Change Cluster Research Centre began mapping and aligning their work against the SDGs. See details here

In 2021 our Sustainability Report adopted the SDGs framework for the first time. This year we developed an SDG Communication & Engagement Strategy to guide our engagement across SDGs in research, teaching, campus operations and community engagement.


# End poverty in all its forms everywhere

| | |
|---|---|
| FWCI of university's research outputs | 1.71 |
| International Collaborations | 65.9% |
| Proportion of pubs in the top 10% of journals according to Citescore | 37.9% |
| Number of publications produced | 208 |
| Number of citations produced | 2,225 |

## Dire competition for social housing

A new study on social housing availability in Australia reveals alarming competition to secure housing as a result of inadequate supply and the onerous process of application and assessment. Researchers at the UTS Institute of Public Policy and Governance, collaborating with universities in NSW, QLD, Tasmania and South Australia reveal the scope of the problem. The team interviewed people involved in the social housing application process and revealed competition is now so intense that applicants need to prove they are massively disadvantaged, such as in danger of becoming homeless, simply to have any chance of success. The problem is compounded by requirements to provide evidence and substantiation of trauma, such as fleeing domestic violence. The process itself has become so onerous and overwhelming that some applicants simply give up. More here

### Anna Thieben

President of the UTS Student's Association in 2022, Anna has been active in the UTS student environment community for a number of years and this year played a pivotal role helping to establish an on-campus pantry providing free essential items to students. The initiative builds on the work of the Students' Association over more than a decade providing free nutritious, sustainable breakfasts and noodle dinners through the pop-up Bluebird Brekkie Bar and Night Owl Noodle Bar. The new Bluebird Pantry meets a critical need in the UTS student body – helping individuals who are experiencing temporary financial hardship and struggling to secure basic food and household items.

Anna was shortlisted in the Australasian Green Hero Awards, Student Champion category for her work with, and advocating for, students.

CASE STUDY

## Right technology, wrong outcome. Learning from experience in India

One of the world's largest solar energy installations in India shows the transition to renewable energy must include social and cultural considerations if everyone is to benefit. A research team from the UTS Social Inquiry Program, in collaboration with the University of Sydney, revealed residents of local villages living adjacent to the massive Pavagada solar park in India, mostly landless agricultural workers, feel their lives are worse as a result of the development, not better. The benefits of the solar park have gone to landowners, the government and corporate investors. While the local community has not benefited. Five years of interviews and fieldwork with key stakeholders showed the Pavagada renewable energy transition model has created winners and losers. Lessons from the research are that local communities, especially in rural and regional areas where renewable energy infrastructure is often located, must have a genuine partnership role to ensure an equitable and just transition to renewable energy. More here


# End hunger, achieve food security and improved nutrition and promote sustainable agriculture

| | |
|---|---|
| FWCI of university's research outputs | 2.98 |
| International Collaborations | 76.3% |
| Proportion of pubs in the top 10% of journals according to Citescore | 50.2% |
| Number of publications produced | 262 |
| Number of citations produced | 7,627 |


The Bluebird Student Pantry'

## Bluebird Student Pantry

The COVID pandemic had a massive financial impact on students, especially international students, many of whom relied on part-time and casual work to survive. Most students lost income and the UTS Students' Association saw first-hand the struggles faced by some to survive. In response, they developed a student pantry providing free essential items to UTS students. The Blue Bird Pantry provides items such as rice and pasta; breakfast cereal; tinned vegetables; dried beans; tea and coffee; long-life milk; laundry powder and hygiene/sanitary products. Everything is free.

All items are donated by food charities, and manufacturers or sales companies with excess stock or items nearing their expiry date. Importantly, the initiative is student driven and centred. The Pantry is staffed mostly be volunteer students, (and occasionally paid staff from the Students Association). This means when students visit the Pantry they engage with fellow students. In addition to the social sustainability benefits the project's other main benefit has been utilising donated food and items destined for landfill.

The pantry has soared in popularity, opening 3 days per week and welcoming over 100 students daily. Students have been very engaged helping build the pantry community, with around two dozen volunteers helping stock and operate the space. Importantly, students provide peer-to-peer support for their fellow students visiting and collecting pantry items.

CASE STUDY

## Mapping agricultural vulnerability to climate change of Punjab province, Pakistan

Agricultural production in Pakistan is highly vulnerable to the impacts of climate change, with the potential to cause mass hunger and social unrest across the region. Pakistan is an agriculture-dependent economy, and the Punjab province is a leading producer of food and cash crops. These agricultural commodities of significance are consumed locally and exported throughout the region. The sector also provides livelihoods and supports local economies in one of the world's most populous regions. However, these will be disrupted under incremental climatic changes such as rising temperatures and more extreme floods and droughts. Adaptation to the impacts of climatic events has the potential to reduce vulnerabilities and help improve resilience.

A research team from UTS conducted a detailed climate mapping exercise of the Punjab province to help improve climate resilience. The project developed maps for individual components of vulnerability at the local district level. The mapping exercise separated and categorised districts based on their vulnerability, revealing spatial patterns and different factors influencing local vulnerability. The exercise illustrates the need for greater understanding of local biophysical, social and economic factors to inform policy responses to climate change. This detailed mapping exercise highlights the need for a more nuanced approach than the current broadscale national top-down model, to more effectively address climate change resilience in Pakistan. More here


# Ensure healthy lives and promote well-being for all at all ages

| | |
|---|---|
| FWCI of university's research outputs | 2.47 |
| International Collaborations | 65.1% |
| Proportion of pubs in the top 10% of journals according to Citescore | 34.5% |
| Number of publications produced | 3,437 |
| Number of citations produced | 75,031 |

## New health and climate change initiative

The newly established UTS Climate Change and Health Research Collaborative (CCHRC) is a multi-disciplinary initiative, led through the Faculty of Health, bringing together academics from a range of disciplines including health, science, engineering, IT, law and the built environment. Working together with industry partners, the group will work on identifying and developing solutions to address the impacts of climate change on health and wellbeing, especially in vulnerable and disadvantaged populations. Climate change is one of the biggest health threats and the CCHRC focuses on building the resilience of health systems. More here

## The mental health impacts of living on contaminated land

A multi-disciplinary team at UTS published a paper in the Journal Emotion, Space and Society examining the mental health impacts of living near contaminated land. The team looked at two sites in regional NSW where previous activities on nearby Australian Defence Force land resulted in contamination of waterways and underground water by PFAS (Per- and poly-fluoroalkyl substances) chemicals. Used in a variety of applications, PFAS chemicals in this instance were used in firefighting foams over many years on the Defence land, resulting in contamination of the surrounding area. PFAS chemicals have been linked to a range of potential human health impacts including cancer, liver damage, reduced infertility, and increased risk of asthma. This study examined the mental health impacts on residents, finding psychological distress was experienced by those living on or near the contaminated sites.

## Community engagement classification tool

For the first time, Australian universities have the opportunity to earn accreditation for their community engagement and public purpose work. UTS co-led a partnership of ten Australian universities to pilot the Carnegie Foundation's Elective Classification for Community Engagement. In order to earn accreditation, universities must undertake an independent assessment of their commitment to, and investment in fostering productive community engagement.

**Rupert Legg**

Named one of the German Federal Ministry of Education and Research's 25 Green Talents, Rupert Legg undertakes interdisciplinary research focusing on both mental health and environmental management. Using human geography and psychology approaches, his goal is to determine how best to protect the mental health of people affected by toxic chemicals. Given how ubiquitous many chemicals have become his research has the potential to better understand the full impact of some chemicals, and potentially reduce the chemical footprint on communities and terrestrial ecosystems. More here

3 GOOD HEALTH AND WELL-BEING

# Ensure healthy lives and promote well-being for all at all ages

## UK Phosphorus Transformation Strategy

The Institute for Sustainable Futures produced the UK's first ever comprehensive plan to manage and secure phosphate – fertiliser essential for growing food and achieving food security. The UK is almost entirely dependent on imported phosphate, importing around 174,000 tonnes annually. Global supply chain shocks over the past two years highlighted the need to manage phosphate more sustainably. Luckily, there should be enough phosphorus circulating in existing food systems and soils if it is managed differently. The Plan sets out pathways to achieving sustainable phosphorus supply through new technologies and adopting new land management practices. More here

## Celebrating leaders

Michele Rumsey, founding Director of the World Health Organisation Collaborating Centre for Nursing, Midwifery and Health Development was recognised with an Order of Australia (AM) for significant service to nursing and health care policy in the Pacific. Establishing the Centre at UTS in 2008, Rumsey has played a pivotal role over many years developing and strengthening collaboration to achieve better health outcomes, especially for women and babies, in the Western Pacific.

## UTS medical service

**18,855**
medical GP consultations

To facilitate accessible, affordable high-quality health care for all staff, students and members of the Ultimo community, UTS provides an on-campus medical service. Offering full general practitioner doctor and nursing services, as well as student counselling. In 2022 the Medical Service provided 18,855 GP consultations and administered 1,753 COVID vaccinations.

CASE STUDY

## Leadership role in Pacific health

UTS was recently named the Secretariat for the Global Network for WHO (World Health Organisation) Collaborating Centres in Nursing and Midwifery and will now serve a four-year term to drive engagement and collaboration across the Western Pacific and Global Network to improve health of individuals and diverse communities locally and globally through leadership and excellence in nursing education, research, practice, and service.

One project currently underway in Papua New Guinea (PNG) is looking to improve the quality of health care by strengthening the health education programs on offer. In PNG, 72% of the country's professional health workforce is comprised of nurses and community health workers and they are integral to realising the nation's health outcomes. The existing curricula for these workers were largely developed in the late 1990s and are no longer fit for purpose as they do not meet current education and clinical best practice.

To best support PNG's health workforce, the WHO Collaborating Centre has been working in close partnership with the National Department and national and regional stakeholders to review, develop and implement up-to-date, evidence-based curricula for nurses and community health workers. More here

**"UTS has a long history of connecting leaders across public health, nursing, and midwifery to achieve the WHO's vision of Health for All."**

- Professor Michele Rumsey, Director WHO Collaborating Centre

# Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

| | |
|---|---|
| FWCI of university's research outputs | 1.74 |
| International Collaborations | 42.5% |
| Proportion of pubs in the top 10% of journals according to Citescore | 25.7% |
| Number of publications produced | 510 |
| Number of citations produced | 5,396 |

## Sustainability radio and podcast

For the fifth year the Think Sustainability podcast and radio program was produced in collaboration with community radio station 2SER. The program continued to grow, with approximately 80,000 podcast listens and over 60,000 weekly radio listeners. Listen here

**80,000** podcast downloads

## Education Ranking

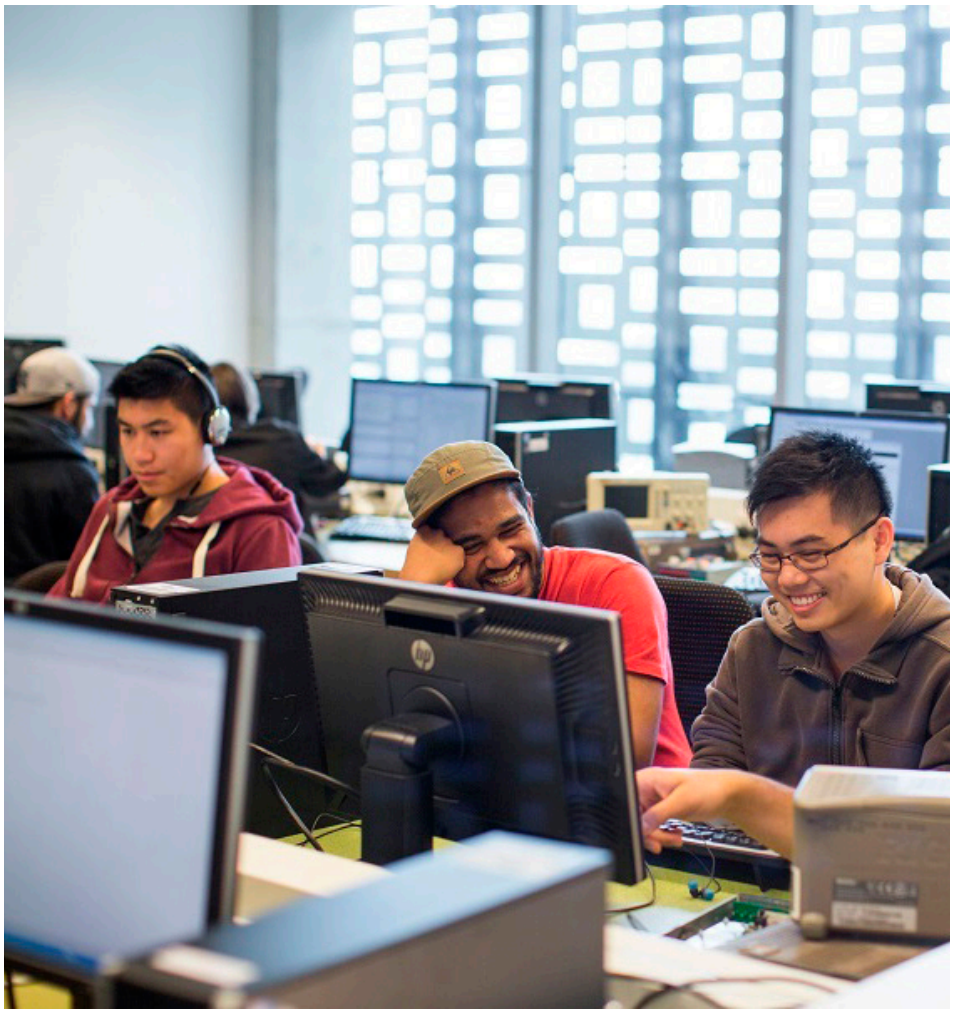
UTS continued its steady improvement in the prestigious Times Higher Education (THE) rankings, rising 10 places to 133rd in the world. In the THE Young University Rankings UTS ranked 8th university under 50 years old, making UTS the highest ranked 'young university' in Australia in both the Times Higher Education, and the QS World Rankings. In the QS Sustainability Rankings UTS ranked 69th globally and 7th in Australia. In the 2022 CWTS Leiden Ranking UTS was the 47th highest ranked university in the world, and second in Australia, for the proportion of publications in the top 10 percent of citations in scientific fields, and ranked first in Australia and 84th in the world for scientific publications with international collaboration.

**Ranked 7th** in Australia in the QS Sustainability Rankings

## Sustainability in the curriculum

The UTS LX Lab provides professional development and support for teaching staff, and ran a serious of workshops and interactive sessions on integrating sustainability and the SDGs into the teaching curriculum. A panel discussion with Professor Sara Wilkinson from the School of the Built Environment and Associate Professor Melissa Edwards from the Business School explored how sustainability is incorporated into the curriculum in their respective disciplines. More LX lab sustainability resources here


# Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all



## Teaching award

The Transdisciplinary Innovation subject *Industry Innovation Project* won the *Next Generation Learning and Skills* category at the International Green Gown Awards (following on from winning the same category at the Australasian awards in 2021). The subject pairs students with community and business partners to work on real-world sustainability challenges.

CASE STUDY


## Student industry challenge

Across the university, industry partnerships enhance the real-world value and application of students' learning experiences. Two of these initiatives are the SOUL and BUILD extracurricular programs, connecting students with community organisations. This year a group of 31 students from the two programs formed 6 trans-disciplinary teams to work with the City of Sydney local Government. The City set a sustainability challenge and over two weeks the students worked in teams applying different disciplinary focuses to sustainability challenges facing the City. Solutions developed by the students included a vertical native nursery for urban greening (responding to the City's limited open space), using gaming to build social cohesion and engagement (targeting youth isolation), a 'walking highway' to improve mobility and fitness, and tapping into geothermal energy from underground train stations to help cut carbon emissions. The City gained valuable insights from the students, and the participants all reported increased skills and confidence from the real-world experience.


# Achieve gender equality and empower all women and girls

| | |
|---|---|
| FWCI of university's research outputs | 1.38 |
| International Collaborations | 59.4% |
| Proportion of pubs in the top 10% of journals according to Citescore | 24.2% |
| Number of publications produced | 416 |
| Number of citations produced | 3,076 |

## The impact of female Presidents and Prime Ministers

New research by senior Lecturer in Law Ramona Vijeyarasa examines why and how female national leaders make a difference. There are currently only 30 female presidents and prime ministers worldwide. Vijeyarasa's research shows they matter in a variety of ways, beyond simple gender equity. One interesting finding is that female leaders help other women up the power ladder. Of the 4 female Presidents and Prime Ministers Vijeyarasa studied, 3 appointed more women to their cabinets, and having more female ministers resulted in more women appointed to senior levels of the bureaucracy. More here

## Gender equality in the Pacific

In the Pacific, women undertake around half of the work involved in getting fish from sea to the plate, yet the fishing industry remains very male dominated. This has significant consequences for the wellbeing of women and their households. The Centre for Climate, Society and Environment Research (C-SERC) held an event in May exploring the slow progress in valuing and implementing gender equality in fisheries planning, management and development across the Pacific. Encouragingly, the research found there is a surge in efforts to create training and tools to help the sector integrate equality and break down gender-based silos.

CASE STUDY

## Forced Marriage in Australia

Globally, forced marriage is a big problem. On any given day in 2021, approximately 22 million people worldwide were living in situations of forced marriage - overwhelmingly women and girls. Australia is not immune – since its criminalisation in 2013, forced marriage has risen to become Australia's most reported form of modern slavery. It is an issue that cuts across cultures, religions and socio-economic groups.

The impacts of forced marriage on individuals, families and communities are often devastating, and lifelong. This is what motivated the creation of the UTS-based forced marriage project known as '*Speak Now*'. A dedicated team within Anti-Slavery Australia, an initiative of the UTS Faculty of Law, is taking a multipronged approach to this issue conducting pioneering research into forced marriage, working to raise awareness, and developing resources for those at risk.

A significant focus of the project is developing resources for those in the best position to identify, respond and support those affected. To that end, the project engages with, educates, and builds the capacity of frontline workers across a range of community-facing professions (such as law enforcement, health, education, and youth and social services). The team produced a specialist free Guide for frontline workers. It contains a set of research-informed principles to guide users through different situations and contexts in which forced marriage may occur. The Guide helps raise awareness of the issue, provides information on people's rights, the support that is available and, where possible, helps to prevent forced marriages from happening.

# Achieve gender equality and empower all women and girls

## Inclusive water management

Women overwhelmingly make most decisions about water use, procurement and management in the home, yet are under-represented at the decision-making level when it comes to water policy and infrastructure. Women have different experiences, knowledge and needs in water, sanitation and hygiene (WASH), underlining the importance of gender equality in the sector. UTS's Melita Grant attended the Cambodia Australia Water Policy Forum in August to share information and experiences. Grant presented research on the role women play in rural WASH enterprises in Cambodia, and delivered recommendations for developing greater gender equality in the sector.

**90,000**

staff and students completed Consent Matters training

## Respect, Now , Always

UTS is a proud and active member of the national Respect. Now. Always. Campaign aiming to eliminate sexual assault and harassment on Australian campuses. In 2022 the team helped launch the Sexual Harm Prevention and Response Policy, formalising our zero-tolerance approach to sexual assault. The team helped educate students about consent, including talking to over 5,000 new students at Orientation. This year they also reached the milestone of 90,000 staff and students having completed the Consent Matters online training module. However, there is always more to be done, and 2023 is shaping up as another big year. See the 2022 wrap here


# Ensure availability and sustainable management of water and sanitation for all

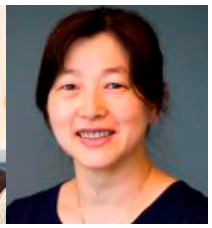
| | |
|---|---|
| FWCI of university's research outputs | 2.26 |
| International Collaborations | 83.4% |
| Proportion of pubs in the top 10% of journals according to Citescore | 60.7% |
| Number of publications produced | 1,103 |
| Number of citations produced | 30,630 |

## UTS at World Water Week

Several UTS researchers participated in World Water Week 2022, both online and in Stockholm where the event was held. Water Week is the leading conference on global water issues and explores new ways of managing water. UTS researchers presented and facilitated sessions on a range of WASH (water, sanitation and hygiene) topics including; accelerating access to safely managed sanitation, women in water management, and democratising data and decision making. More here

## Global leaders

Prof. Huu Hao Ngo



Prof. Wenshan Guo

Distinguished Professor Huu Hao Ngo and Professor Wenshan Guo
The Highly Cited Researchers list published each year identifies leading global researchers who demonstrate their influence through the publication of scientific papers in the top one percent of citations in their field. UTS water and sanitation researchers Distinguished Professor Huu Hao Ngo and Professor Wenshan Guo were in this year's citation list, recognising their work in waste water treatment, reuse, and sustainable water management.

## Fertiliser from human urine

A new research hub was formed to harvest and recycle nutrients in human urine to make agricultural fertiliser. The NICE (Nutrients in a Circular Economy) team uses new membrane technology to treat wastewater and remove nutrients. The UTS Centre for Technology in Water and Wastewater, in collaboration with 7 other universities and 22 commercial partners already have field trials underway on the first two fertiliser products; Urval and ugold.

CASE STUDY

## Creating an inclusive water workforce

UTS researchers from the Institute for Sustainable Futures partnered with NGOs to conduct research on gender dynamics and the roles women play in rural water, sanitation and hygiene (WASH) enterprises in Cambodia and Indonesia. The research acknowledges that in order to achieve equality in WASH at the community level, the WASH workforce needs to be inclusive and able to work with a diverse range of actors that depend upon clean water and safely managed sanitation.

The project reviewed organisational activities and strategies across the globe to address gender equality and inclusion, and developed a guide and a database of practical actions that can be undertaken to advance inclusion within and beyond the WASH sector.

As a result of the project, ISF partnered with international organisations and associations around the world to use the recommendations, and are now working with water utilities in Indonesia, the Pacific, and Vietnam to apply practical findings from the research.

6 CLEAN WATER AND SANITATION

# Ensure availability and sustainable management of water and sanitation for all

## Water consumption

| Year | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| Water [kL] | 203,000 | 145,000 | 117,000 | 128,000 |

## Water consumption

While water consumption on campus increased 10% in 2022 compared to the COVID impacted lows of 2021, the long-term year on year trend of improved water efficiency and lower consumption continued, with our 2022 total of 128,000 kL 37% lower than pre-pandemic levels. A record-breaking wet year resulted in increased rainwater collection and the use of our water tanks, with rainwater utilised mostly for toilet flushing.

2022 total of 128,000 KL

**37%**

lower than pre-pandemic levels

7 AFFORDABLE AND CLEAN ENERGY

# Ensure access to affordable, reliable, sustainable and modern energy for all

| | |
|---|---|
| FWCI of university's research outputs | 2.52 |
| International Collaborations | 80.0% |
| Proportion of pubs in the top 10% of journals according to Citescore | 59.8% |
| Number of publications produced | 1,856 |
| Number of citations produced | 53,405 |

## Electric vehicle transition

UTS transport emissions researchers, in collaboration with Swinburne University, released a new report assessing the environmental benefit of electric vehicles (EVs) compared to conventional combustion engine vehicles. The research found the benefit depend largely on how the electricity is generated, with Tasmanian drivers, where electricity is largely hydro-generated, faring best. South Australia with large amounts of solar generation were next, while states where coal still makes up a large share of electricity generation, offered the least carbon benefit to driving EVs.

## More rooftop solar on campus

Our engineering facility in the southern Sydney suburb of Botany dramatically expanded its roof top solar with an additional 1,300 panels, or 540 kW. The installation uses an innovative model with UTS leasing roof space, adjacent to the UTS engineering lab's own roof, to augment the scale and scope of the solar project. In total, the full installation will be 2,520 solar panels and 1,039 kW when the final section comes on-line in 2023.

**"We have always had to innovate to find solutions to go solar. Although UTS is a tenant in Botany, we've reached a long-term agreement with (landlord) Dexus to cover all available roof space in their development with solar panels."** - Jonathan Prendergast, UTS Green Infrastructure Project Manager.

**Sruthi Supriya**

Bachelor of Engineering (Honours) Diploma in Professional Engineering Practice student, Sruthi Supriya, studied in Singapore as part of the 2022 New Colombo Plan scholarship, pursuing her passions in electrical engineering and social change. Supriya studied at Nanyang Technological University (NTU), conducting research on emerging renewable technologies, before undertaking an internship at a renewable energy power distribution company in Singapore.

**"I would like to work on a project with a social impact that involves working directly with the community to improve my design thinking skills while also understanding smart and nano-grids."**

**1,300**
solar panels installed

7 AFFORDABLE AND CLEAN ENERGY

# Ensure access to affordable, reliable, sustainable and modern energy for all

## Geothermal heat pumps

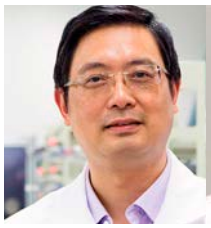
The Fairwater housing development in Western Sydney uses innovative geothermal heat pumps to keep 750 homes cool in summer and warm in winter. A multi-disciplinary research team from UTS, in collaboration with Curtin University, undertook an assessment to gauge the impact and benefits of the project. The team found the homes used 21% less electricity than comparable homes in the area, representing both a cost saving for individual households, plus a significant reduction in greenhouse gas emissions.

## Ultra-long life batteries

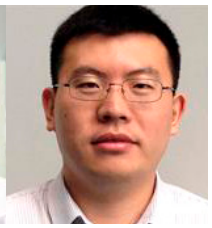
Researchers in the clean energy battery team from the Centre for Clean Energy Technology made a stunning breakthrough with the development of a new molecule with the potential to revolutionise the electric vehicle sector. The technology uses lithium-oxygen batteries and achieved a 46-fold increase in battery discharge capacity, and longer battery life span with more than 1,400 discharge cycles. While still in the research phase, the new technology has the potential to leap-frog the problem of limited recharging infrastructure, and range anxiety and in the process, supercharge the transition from fossil fuels to electric vehicles. More here

Other research highlights from the Centre for Clean Energy Technology can be seen here

## UTS global leaders



Prof. Guoxiu Wang



Dr Bing Sun

Distinguished Professor Guoxiu Wang Appearing in this year's Highly Cited Researchers list of global researchers was Distinguished Professor Guoxiu Wang, recognised for his contribution to clean energy, fuel cells, energy conversion, and battery technology.

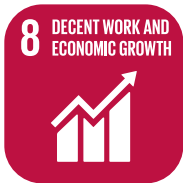
Each year the Australian Research Council awards Future Fellowship funding to Australia's brightest mid-career researchers to undertake innovative research with potential benefits for the nation. This year Dr Bing Sun was chosen to continue his work on battery technology, including improving energy density and life cycle of lithium metal batteries.

CASE STUDY

## Using localised energy solutions to improve climate resilience

As Australia braces for more frequent extreme environmental events local energy solutions such as microgrids could help ensure that regional communities don't run out of critical energy when the next disaster strikes. Energy microgrids have traditionally been deployed around the world in places where supplying power from the main grid is too expensive or difficult. However, microgrids can also improve resilience by providing a reliable, clean, and affordable supply of energy in areas prone to natural and climate-related disasters.

Researchers from the Institute for Sustainable Futures looked at examples from overseas including the recent wildfires in the USA and Greece, earthquakes in New Zealand and cyclones in India. Global evidence indicates that microgrids can help communities withstand disasters. The study highlighted the benefits of renewable energy microgrids helping communities to transition to more local renewable energy supply, and in the process become more climate resilient. Critical success factors include the need for extensive community engagement, cooperation from electricity network corporations, and multi-level planning from all levels of government. More here




## Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

| | |
|---|---|
| FWCI of university's research outputs | 2.43 |
| International Collaborations | 63.7% |
| Proportion of pubs in the top 10% of journals according to Citescore | 48.6% |
| Number of publications produced | 597 |
| Number of citations produced | 12,770 |

## Pacific/Australia circular labour migration

Researches at the Institute for Sustainable Futures, with collaborators from the Universities of Melbourne and Wollongong, and experts in the Pacific published a book on the labour mobility programs enabling Pacific workers to acquire earnings, while at the same time address critical labour shortages on Australian farms. The book *Agrifood systems transformation through circular migration between Pacific island countries and Australia*, produced for the Australian Government, highlights the value of such programs facilitating the exchange of knowledge and skills that can play a catalytic role in rural development, food security and livelihoods in Pacific island countries, helping both Australia and the Pacific.

## Midwifery workplace culture

A multi-disciplinary team from the Faculty of Health and Institute for Sustainable Futures produced a research report on midwifery workplace culture in Sydney. Understanding the culture in midwifery workplaces is essential to developing strategies to stem workforce attrition and optimise patient care. The research surveyed midwives. While participants rated their workplace favourably, they reported highly medicalised workplaces, which sometimes conflict with the philosophy of woman-centred care, and can impact the ability of workers to work autonomously.

## Student employment services

**3,700+**

students attended career events

UTS Careers helps connect UTS students with employment and workplace training opportunities through a wide range of initiatives, events and workshops. Over 3,700 students attended 90+ events in 2022. The CareerHub online portal received 30,240 distinct student logins and promoted a total of 6,547 job advertisements, many of which covered multiple job and career opportunities for UTS students. At total of 18,339 employers are registered on the portal, of which 2,244 were new registrations this year.

CASE STUDY

## Workforce for a clean energy future

With the uptake of renewable energy accelerating, it is essential that Australia has a sufficiently large and skilled workforce in the sector – across energy generation, storage and transmission. The Institute for Sustainable Futures, in collaboration with the Australian Energy Market Operator (AEMO) produced a series of reports with projections of workforce requirements for Australia's Eastern states.

The reports provide projections for different future scenarios, and support the energy sector, governments, and training bodies to develop the workforce necessary to transition to a clean energy future. Key recommendations include supporting workforce training and development, and policy development to maximise economic benefits for Australia, including maximising benefits for regional areas.


# Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

| | |
|---|---|
| FWCI of university's research outputs | 2.38 |
| International Collaborations | 65.2% |
| Proportion of pubs in the top 10% of journals according to Citescore | 50.7% |
| Number of publications produced | 1,112 |
| Number of citations produced | 22,450 |

## New algae research breakthrough

Ground-breaking research and industry collaboration on algae continued to accelerate with the opening of the new UTS Algal Phenomics Facility, a world-class facility focusing on phenomics solutions for the biotech, agriculture and environmental sectors. Federal Minister for the Environment and Water, The Hon Tanya Plibersek MP, officially opened the Facility in October. The team also launched the Green Genie, a portable bioreactor technology platform that can fit into a shipping container, enabling easy integration with industrial sites and processes. Green Genie captures carbon and can be utilised to reduce the carbon footprint of manufactured products.

**"Scientists and engineers have been working to overcome the challenges of achieving carbon capture at scale. Green Genie uses innovative optical techniques and new filtration technology to make a step-change in the fight against climate change."** - Professor Long Nghiem, Director of the Centre for Technology in Water and Wastewater

## Home retrofitting study

New research by Associate Professor Nimish Biloria in the School of Architecture has identified three categories to consider when retro-fitting existing homes to be more climate friendly – visual comfort, thermal comfort, and energy consumption. Light levels must be sufficient, temperatures and air-flow should be determined by the inhabitant's physical condition, and the amount of energy consumed at each step should be considered. Even when the considerations may seem expensive, or time consuming, they can save money in the long term. More here

## UTS global leader

Professor John Zhou
Appearing in this year's Highly Cited Researchers list of global researchers was Professor John Zhou, from FEIT's School of Civil and Environmental Engineering recognised for his contribution to remote sensing of vehicle emissions, environmental sampling and trace analysis, and advanced wastewater treatment. More here

## Nurturing innovation

UTS Startups supports student and staff entrepreneurs to bring their business ideas to life. In November they celebrated their first 1,000 start up projects. Many have sustainability at their core including the winners of the 2022 Startup awards; *Bearhug pallet wraps* – the world's first reusable pallet wrapping, *Refilled* – sparking flavoured water for BYO refillable bottles, Salvage – using native Australian plants and food waste to dye clothing, and *Urban Plant Growers* – hydroponic planting kits for home and office. More here

CASE STUDY

## From the ashes of fast fashion, arises the phoenix of the 'Wellbeing Wardrobe'

Over the past 15 years, global clothing production has doubled while the length of time clothing items are actually worn has fallen by almost 40%. Fast fashion has emerged as a mode of production, a marketing phenomenon, and a type of consumer behaviour. The resources consumed and wastes produced increase exponentially. While efforts of the fashion industry to become more sustainable are laudable, with initiatives such as recycling and the development of new fibres and textiles, these have been swamped by the sheer scale of consumption and growth in the sector.

A study and report by researchers at the Institute for Sustainable Futures proposes a new model. The research suggests that to be sustainable, we need to make two fundamental shifts:

1. buy 75% less new clothes
2. wear clothes till the end of their life.

The fact that these two objectives may sound radical today yet would be common sense to our grandparent's generation demonstrates just how rapidly behaviours have changed and conspicuous consumption has been normalised. The study suggests these necessary changes are achievable by moving to a system designed around wellbeing rather than growth. Focusing on garments' quality over quantity, favouring classic styles over fleeting trends, and renewed attention on repairing and caring for clothes to maximise their lifespan. In the process, long-lost skills such as sewing, mending and up-cycling can be cultivated.

The Wellbeing Wardrobe advocated by the researchers would mean shifting away from the existing high growth business model of the fashion industry. Instead, embracing systems of exchange and collaborative consumption, transitioning to a post-growth model. More here

10 REDUCED INEQUALITIES

# Reduce inequality within and among countries

| | |
|---|---|
| FWCI of university's research outputs | 1.75 |
| International Collaborations | 49.5% |
| Proportion of pubs in the top 10% of journals according to Citescore | 30.9% |
| Number of publications produced | 513 |
| Number of citations produced | 5,607 |

## Student SOUL volunteers

The UTS SOUL Award is an extra-curricular social justice leadership and volunteering program where UTS students venture beyond their degree into the community. The SOUL Award involves skilling up, giving back and making meaningful change with organisations that build and support community. Students select their own volunteering cause and this year the program supported 211 organisations. A total of 302 students provided their skills, contributing a total of 13,051 volunteer hours.

## Staff volunteers

UTS staff can choose to take social justice leave and volunteer their skills and time to support and build the capacity of community organisations. This year 76 staff contributed 13 volunteer days on an initiative working with OzHarvest, the food rescue organisation. Together they packed 10,000 hampers for community food relief.

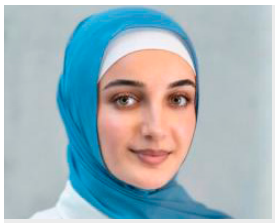
## Widening student access and participation

UTS runs a number of financial assistance and support programs designed to widen the participation of students from low socioeconomic backgrounds at university. Support is in the form of grants, free computers, textbooks, and zero interest loans. In 2022 support totalled $573,000 with assistance provided to 178 international and 583 domestic students.

## Climate Justice

The Climate, Environment and Society Research Centre ran the following events;

- Forum on the social unrest in Chile around constitutional change
- Forum on climate change responses in the Philippines
- Two-day workshop on how land justice and climate justice are being pursued by different Indigenous groups around the world.
- A climate history seminar
- Forum on gender equality in Pacific island fisheries.



**Dua Alkasar**

Bachelor in Communications and Law student, Dua Alkassar, has been a dedicated community volunteer since high school. She is active with the Students for Humanity society on campus, running campaigns and events to tackle racism experienced by people of South Asian background, especially during the COVID pandemic lockdowns. Alkasar has also volunteered with the Our Race initiative, facilitating conversations about ethical storytelling for minorities. In 2022, she was nominated by the UTS SOUL program for a 2022 NSW Volunteer of the Year Award, in recognition of her commitment and contribution to tackling social stigma and disadvantage.

CASE STUDY

## Skills gaps in the financial system

A nation-wide survey of Australia's sustainable finance professionals identified gaps in the skills necessary to support the transition to a net zero carbon future. The report by the Institute for Sustainable Futures, in partnership with the CSIRO, found, while climate literacy and skills are in high demand, there is a shortage of sufficiently skilled workers.

The survey looked at the current level of climate skills across the financial system, defined as climate and/or climate risk-related skills, knowledge areas and competencies, and existing market demands. The report also explored barriers to increasing skills and investigated mechanisms that could provide the necessary upskilling.

More than three-quarters of survey respondents said climate skills are in moderate or high demand in their organisation, yet 39% said there is much less supply than demand.

The key conclusion from the report is that there is currently a skills gap across the financial system. Moreover, the gap is likely to grow unless urgent action is taken. Climate finance is critical to support the transition to a clean energy future. The Report recommends Australia must establish a 'sustainable finance learning ecosystem' that supports ongoing learning, and generation of new climate related knowledge. More here


# Make cities and human settlements inclusive, safe, resilient and sustainable

| | |
|---|---|
| FWCI of university's research outputs | 2.15 |
| International Collaborations | 65.8% |
| Proportion of pubs in the top 10% of journals according to Citescore | 43.7% |
| Number of publications produced | 1,010 |
| Number of citations produced | 17,817 |

## Loss of peri-urban food land

Half of Western Sydney's food bowl land may have been lost to development in the past 10 years. Research by the UTS Institute for Public Policy and Governance, in collaboration with Western Sydney University, uses public ABS data to show the extent of the loss between 2011 and 2021. The worst-affected council areas, The Hills Shire, Blacktown, Camden and Campbelltown, lost 43%, 39%, 26% and 19% respectively over this period. The study suggests that local food production has been undervalued as large swaths of Western Sydney have been converted to housing. The authors suggest that Australian cities must find ways to better value local food production and the role played by agricultural land, including flood mitigation, in order to achieve more sustainable urban development. More here

## Protecting hospitals from flooding

New research shows critical infrastructure such as hospitals are at risk of flooding in low-lying areas of Western Sydney. Researchers from the UTS School of Construction Management, in collaboration with UNSW, use mathematical modelling and evidence from recent flooding events to develop new tools to help policy makers and hospital administrators plan for flooding, and potential evacuation. Surrounding roads and critical transport infrastructure can flood before a hospital, highlighting the complexity of the task. The tools developed by the team will help decision makers plan ahead, and in the process improve resilience against climate change. More here

## Young Tall Poppy award

Atmospheric scientist Dr Peter Irga from the School of Civil and Environmental Engineering was recognised as a NSW Tall Poppy for his world-leading research on reducing indoor air pollution with plants and botanical systems. He studies how indoor plants, green walls and green roofs can remove air pollutants and help make buildings and cities healthier places. The Young Tall Poppy Science Awards is an initiative of the Australian Institute of Policy and Science and recognises excellence in scientific research.

CASE STUDY

## New ways of seeing

Our cities are in a constant state of renewal, building new infrastructure and creating new spaces. In the face of this constant change, how do we stay connected to place and meaning? A research team from DAB's School of Design, and the Faculty of Arts and Social Sciences examined Green Square in Sydney, one of Australia's largest urban renewal projects, to find new ways of connecting the past, present, and future. For millennia, the area has been known by the Indigenous D'harawal people for its freshwater wetlands and seasonal ponds, an important refuge along the Songline routes that connect the areas now known as Sydney Cove and Botany Bay.

The area today is more characterised by high-rise construction than lagoons. The research team worked with residents, workers and visitors to develop *The Green Square Atlas of Civic Ecologies*, covering the surrounding suburbs of Zetland, Beaconsfield, Rosebery, Alexandria and Waterloo. The research used a place-based methodology and is designed to understand place in new ways, connecting people with nature, providing a richer understanding of the links between the past, present, and future.


# Make cities and human settlements inclusive, safe, resilient and sustainable

## Under-reported vehicle emissions

A research team from the Faculty of Engineering and IT tested SUV exhaust emissions to reveal the *Australian Green Vehicle Guide* provides significantly lower emissions data on vehicles than real-world driving conditions. The research revealed CO2 emissions were between 16% - 65% higher than those cited in the Green Vehicle Guide. With SUVs making up a large proportion of the Australian vehicle fleet this means that, as a nation, we may be underestimating the environmental impacts of SUVs. More here

Ran
**59 events**
for 2000+ people

## Campus engagement activities

The Sustainability team runs an ongoing program of events and initiatives to engage staff, students and visitors in sustainability. This year the annual Green Hero Awards, recognising staff and students contributing to sustainability, announced winners on World Environment Day. First place went to academic Yvonne Davila for her work integrating sustainability into the Science curriculum. Second place was professional staff member from ActivateUTS Tracey Longfield recognised for her championing of sustainability. Third place went to student Gemma Fung, President of the student club Enactus, for her work leading a team of student changemakers.

The Sustainability team ran 59 events throughout the year with almost 2,000 attendees. The annual Green Week event held in May had talks, workshops, stalls, and more. The annual Green Week Photo Competition received 91 entries – a record in the 10-year history of the competition – and over 1,000 likes on Facebook. Subscriptions to the UTS Sustainability newsletter rose by 17% to almost 4,000 subscribers, and visits to the sustainability web pages grew by 16%.

Winner of the Green Week Photography competition 'when live gives you melons' by Maja Jurlina

## Green Impact program

For the fourth year the Sustainability team ran the Green Impact Program, a behaviour change program for teams of staff and students to undertake sustainability activities. Examples include reducing the use of single-use plastics, recycling more, and connecting with like-minded people in the community to promote sustainability. This year actions continued to be undertaken both on campus, at home, and in the broader community. Eight teams undertook 93 actions, with the participation of 165 peers and colleagues.

Green Impact terrarium making workshop


# Ensure sustainable consumption and production patterns

| | |
|---|---|
| FWCI of university's research outputs | 2.41 |
| International Collaborations | 68.9% |
| Proportion of pubs in the top 10% of journals according to Citescore | 55.8% |
| Number of publications produced | 559 |
| Number of citations produced | 12,161 |

## Rare earth mineral supply

Dr Hengky Salim from the Institute for Sustainable Futures, in collaboration with researchers from UNSW and Griffith University, released a research paper on the complex issues affecting the security of Rare Earth mineral supply, critical ingredients for the manufacture of digital technologies. The study reviewed existing approaches and theories used to evaluate the Rare Earth supply, the pathways to achieve supply security, and existing drivers and barriers to implementation. Their findings indicate the need to integrate existing approaches and theories such as resilience and material criticality. They suggested four pathway categories that can improve supply security. These are 1) circular economy strategies, 2) supply chain agility, 3) building domestic supplies, and 4) exploring beyond terrestrial mining.

## Plastic Free Food Court

The UTS Plastic Free Food Court continued to be recognised for demonstrating leadership, winning an International Green Gown Award in the *Creating Impact* category, and short listed as a finalist in the Property Council of Australia Awards in the *Government Leadership* category.

CASE STUDY

## Ceramics made from recycled glass waste

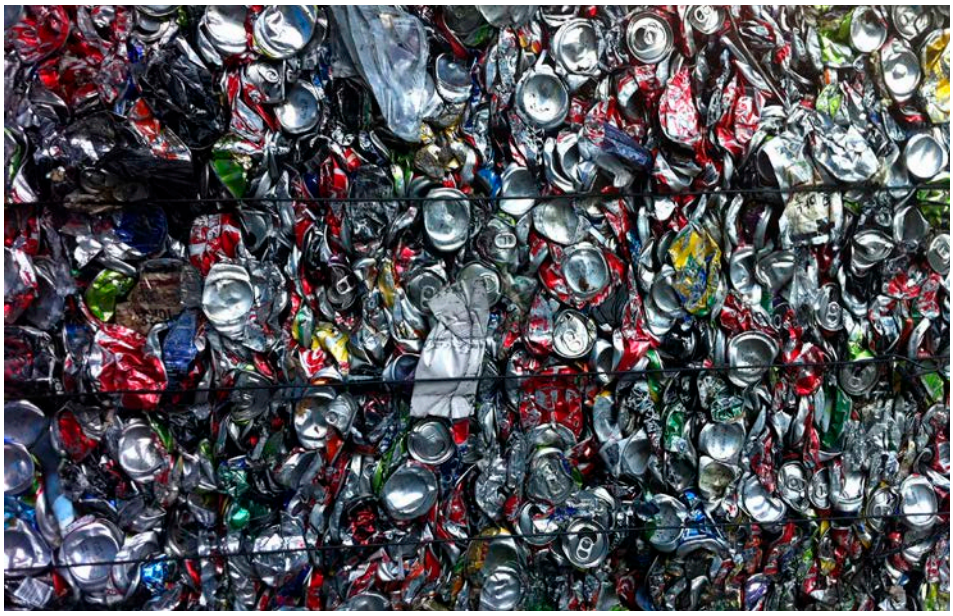
The world produces huge quantities of glass waste, far more than can be consumed in current recycling systems. More ways to utilise recycled glass are needed. At the same time huge amounts of energy and resources are consumed to manufacture ceramic tiles and building materials. Helping to address both of these issues, a research team from DAB's School of Design has invented a new ceramic material using glass waste.

Traditional ceramics used in tiles and bricks are made from clay, earth or cement so the innovation has the potential to reduce the consumption of these materials by using recycled glass instead. The new recyclable ceramic material is made from glass powder, and the manufacturing process involves much lower temperatures than traditional ceramics meaning the new system also has less embodied energy, with a lower greenhouse gas emission footprint than conventional ceramics.

The project was awarded first place in the UTS Research Translation Competition, with a $75,000 prize, which the team will use to further develop the invention, patent and find commercial partners to take the material to market. More here

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

# Ensure sustainable consumption and production patterns



Recycled
**0.632**
tonnes of batteries

## Campus waste and recycling

The total volume of general waste on campus was up 5%, rising from 600,177 tonnes in 2021 to 629,782 in 2022. This was partly a reflection of the campus returning to normal post pandemic. Our recycling rate fell from 85% in 2021 to 70% in 2022. This was mostly attributable to volatility and changes in the broader waste management industry, with a number of recyclers collapsing due to pandemic-induced economic and supply chain issues – such as the soft plastics recycler Redcycle insolvency. For UTS, our compostable waste stream was impacted, with Sydney's only two plants processing compostable waste no longer taking packaging waste. This diverted some of our compostable waste stream from recycling to landfill.

Most IT equipment and computers at UTS are leased, under 'take-back-at-end-of-life' lease conditions for recycling. These items are not included in the university's waste figures. Nevertheless, UTS purchases small quantities of one-off IT items and equipment which are recycled at end of life. This year we recycled 11.9 tonnes of E-waste.

UTS uses a system called Warp-it to facilitate furniture re-use within the university. In 2022 we reused a total of 573 pieces of furniture, diverting approximately 8.2 tonnes of material from landfill. We also participate in the National Fluorocycle program, recycling 100% of our lamp waste which was 0.694 tonnes in 2022. We recycled 0.632 tonnes of batteries.

| GENERAL WASTE FIGURES | |
|---|---|
| **Year** | **Total tonnes per annum** |
| 2018 | 958,586 |
| 2019 | 1,310,000 |
| 2020 | 832,245 |
| 2021 | 600,177 |
| 2022 | 629,782 |

The jump in 2019 represents a change in our reporting. Previously, waste from the campus food retailers was not included, but from 2019 it was including given a more comprehensive picture of total waste volumes.


# Take urgent action to combat climate change and its impacts

| | |
|---|---|
| FWCI of university's research outputs | 2.14 |
| International Collaborations | 72.3% |
| Proportion of pubs in the top 10% of journals according to Citescore | 52.0% |
| Number of publications produced | 758 |
| Number of citations produced | 17,301 |

## Fossil fuel divestment

This year, in keeping with our commitment for action on climate change UTS investments were moved to a fossil-free fund. The move fulfills a key goal within the UTS Climate Positive Plan and is part of the university's ongoing journey to play a leadership role in the transition to a low carbon economy. However, it is our researchers that truly exemplify leadership in responding to climate change - see some highlights of their work at UTS4Climate.

## Climate Connect Forum

In October we hosted the Climate Connect Forum to facilitate staff and students working in different facets of climate action to network and connect. The aim of the event was to facilitate connections across research, teaching and learning, campus operations, partnerships and strategic initiatives, and to leverage and accelerate our climate-change related work.

## Global climate collaboration

UTS became a founding member of the ESTAINIUM Association, a global network aiming to develop international standards for industry to reduce its carbon footprint and mitigate negative impacts. Other founding members include German manufacturing and tech giants Siemens and Merck, and Japanese information technology powerhouse, NTT Data. More here

## Institute for Sustainable Futures

The UTS Institute for Sustainable Futures (ISF) undertakes work across a wide range of sustainability-areas, including climate change, industry transition, and resilience. Public events held by ISF included;

- A forum on disaster response in a changing climate, perspectives and experiences from the Pacific and New South Wales.
- A public seminar 'in conversation' with Stanley Johnson, former member of the European Parliament with the Hon Bob Carr, former NSW Premier and Foreign Minister of Australia, discussing the role of climate action and environmental advocacy.
- A public panel discussion on the Glasgow COP26 Climate Conference, exploring next steps and the global agenda for the rest of the decade.

## Carbon targets for agriculture, forestry, and wood products

A team from ISF released a research paper analysing scope 1, 2, and 3 carbon emissions for the global agriculture, forestry and wood products industries, with the aim of setting pathways to achieve Net Zero in specific industries. The analysis suggests the agricultural sector is unlikely to reach Net Zero emissions by 2050, while forestry has the potential to become carbon negative over the same period. More here

CASE STUDY


## New carbon budget tools to cap warming at 1.5 degrees

Most experts agree it is not too late to limit global warming to 1.5 degrees, but only if we have the right policy and legislative tools to achieve rapid decarbonisation. A new open-access book edited by Dr Sven Teske from the Institute for Sustainable Futures details how this can be achieved by developing detailed carbon budgets and action plans for twelve key industry sectors including steel, cement, aviation, road transport and buildings. The book provides Net-Zero 1.5°C Pathways for Real Economy Sectors, charting decarbonisation pathways for different sectors and industries with targets at five-year steps from 2025 to 2050.

The book follows the 2019 Part 1 edition that focused on pathways for the energy industry. With 300,000+ downloads, that volume is among the most successful research publications on the topic to date.

The detailed decarbonisation pathways for industry sectors were developed using the One Earth Climate Model (OECM), devised by UTS researchers in 2019 to support the United Nations Principles for Responsible Investment initiative (UNPRI). More here

13 CLIMATE ACTION

# Take urgent action to combat climate change and its impacts

## Shifting views on climate change

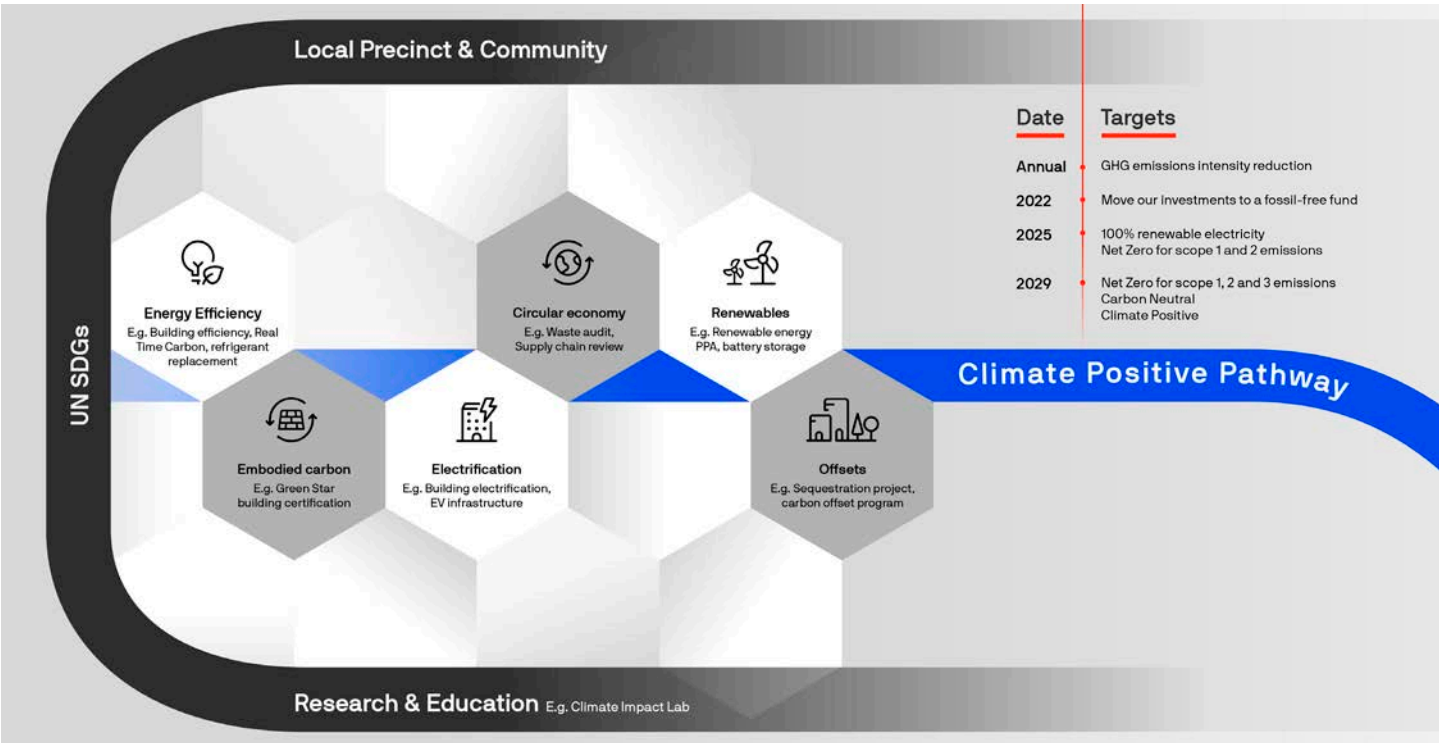
A new study from the UTS Business School revealed that Australian's views on climate change have become less partisan. The study found 90% of Australians across the political spectrum from the Greens to One Nation think climate change is a problem. This contrasts with much greater partisanship in a similar study in 2019, when only 48% of right-leaning voters thought climate change was important. While people's priorities and policy responses may vary, the 2022 study found 94% of all voters believe that environmental damage is a problem. The study, taken before the Federal Election in May, provides interesting insights into the ultimate outcome of the election, with candidates advocating for climate action performing well. More here

## Climate Positive Plan

UTS is on a decarbonisation journey. In 2019 we signed the Climate Emergency declaration and accelerated the installation of roof top solar. This year, following extensive consultation with staff and students the *UTS Climate Positive Plan* was launched. The Plan provides a road map with targets and timelines to transition UTS to Net Zero and beyond, achieving Net Zero and Climate Positive by 2029. Total greenhouse gas emissions this year rose, from 32,448 tonnes in 2021 to 34,055 tonnes in 2022, due to the campus reactivation post pandemic. Despite this we still exceeded our emissions intensity target of 105 kg CO2-e/m² GFA by a significant margin, achieving an impressive 84.2 kg CO2-e/m² GFA. More here

**"By becoming a founding member of ESTAINIUM, UTS is showing leadership on a global strategy to decarbonise industry and shape a more sustainable future for our planet."**

- Distinguished Professor Peter Ralph, Director of the UTS Climate Change Cluster.



# Take urgent action to combat climate change and its impacts

## Gas and electricity usage

Campus reactivation in 2022 increased electricity and gas use by 3.7% and 17.8% respectively, compared to 2021 when campus operations were reduced due to the pandemic. Ongoing energy management and efficiency initiatives helped reduce consumption including building analytics projects in Buildings 1,2,3,4,6,7, 8, 10 and 11, as well as campus-wide building management system tuning. Thermal energy imports through a precinct energy sharing program with our neighbours at Central Park helped to reduce electricity used for air-conditioning.

| ELECTRICITY | | |
|---|---|---|
| Year | Gj | Gross Floor Area ($m^2$) |
| 2018 | 148,699 | 371,537 |
| 2019 | 159,236 | 434,688 |
| 2020 | 161,784 | 437,756 |
| 2021 | 135,041 | 434,517 |
| 2022 | 140,085 | 404,624 |

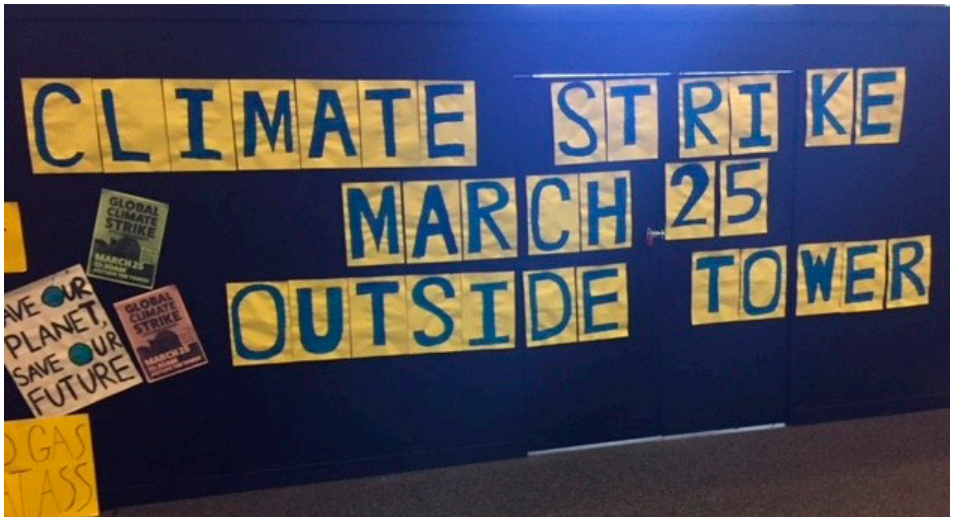
| GAS | | |
|---|---|---|
| Year | Gj | Gross Floor Area ($m^2$) |
| 2018 | 46,249 | 371,537 |
| 2019 | 49,921 | 434,688 |
| 2020 | 52,598 | 437,756 |
| 2021 | 48,646 | 434,517 |
| 2022 | 64,478 | 404,624 |

**Professor Chris Turney**

Starting in the role of Pro Vice-Chancellor of Research in early 2022, Chris Turney is an Earth system scientist specialising in finding solutions to climate change. Passionate about harnessing research from universities to drive rapid decarbonisation, he has studied the impacts of climate change for many years. In 2022, he made his 9th trip to the Antarctic, which he says gives unique insights into our planet's past, present, and future climate.

## Student actions

Student activism on climate remained strong with the Enviro Collective organising a UTS contingent to participate in the two national climate strikes during the year, including a loud and colourful rally in Sydney attended by thousands in October.




## Conserve and sustainably use the oceans, seas and marine resources for sustainable development

| | |
|---|---|
| FWCI of university's research outputs | 2.1 |
| International Collaborations | 65.9% |
| Proportion of pubs in the top 10% of journals according to Citescore | 43.8% |
| Number of publications produced | 554 |
| Number of citations produced | 10,593 |

## Student leading light


Postgraduate student Rachael Scott won the Australasian Green Gown Award in the Research with Impact (student) category. Scott's research focuses on coral resilience and climate change on the Great Barrier Reef. She works with a team on an innovative coral restoration project, planting baby corals in collaboration with tourism boat operators in damaged sections of the reef. She also works as a science educator in the UTS Faculty of Science with the algae research team, communicating the exciting potential uses for algae. More here

## Rewilding Sydney Harbour

A major underwater project to restore marine habitats in Sydney Harbour is underway. The research team, including UTS marine ecologist Professor David Booth from the School of Life Sciences, is installing living seawalls and restoring kelp beds to create habitats for fish and seahorses. Urban development and boating have degraded many of the Harbour's habitats and the project is designed to repair and return the habitats required for key marine species.

## Corals heading south

Corals are generally associated with tropical marine water, but coral biologist Dr Jen Matthews from the Climate Change Cluster working in collaboration with researchers from the universities of Sydney and Queensland, has shown that some subtropical corals are moving south, as far as Sydney. The research team found some species may be able to survive the impacts of climate change simply by moving south into cooler water. Rising temperatures and ocean acidification will still have a devasting impact on corals, but the research suggests that some individual species may be able to survive and thrive by moving.

CASE STUDY

## A reef reborn: Enhancing coral larvae survival

Climate change is having a devastating impact on coral reefs around the world. If we are to help improve reef resilience, one key contribution is increasing the survival rate and growth of baby corals. Currently, less than 1% of coral larvae survive the first year. This drastically limits coral reproduction and the ability of reefs to recover from damage. Until recently, coral larvae were considered non-feeding. However, by providing them with food in the laboratory, researchers from the School of Life Sciences have shown that coral larvae can in fact feed. Furthermore, the research shows that during the critical early stages of development added nutrition can increase survival rates by up to 46%. This has exciting potential implications for reef restoration and resilience. The next step is to scale up and provide supplementary nutrition to larvae in situ on the Great Barrier Reef, to see if the technique can be used to help re-establish coral populations in zones damaged by recent coral bleaching.

In partnership with the reef tourism industry and management agencies, the team plan to develop a mass larval feeding and enhancement program involving the collection, rearing and feeding of millions of larvae on the Great Barrier Reef. This will hopefully strengthen reef recovery and resilience in tourism and ecological hot spots.


**Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**

| | |
|---|---|
| FWCI of university's research outputs | 2.07 |
| International Collaborations | 69.3% |
| Proportion of pubs in the top 10% of journals according to Citescore | 44.8% |
| Number of publications produced | 388 |
| Number of citations produced | 7,482 |

## Climate change impacts on cotton production

New research from a team in the School of Mathematical and Physical Sciences has revealed changing rainfall patterns, both droughts and more intense rainfall, is having a negative impact on Australia's cotton growing region in the Murray-Darling Basin. Cotton is one of Australia's most lucrative agricultural exports. The research findings confirm climate model predictions, longer and more frequent droughts and floods. This is likely to lead to lower cotton yields, and ultimately impact the livelihoods of cotton growing communities. More here

## Institute for Sustainable Futures

The Institute for Sustainable Futures conducts leading sustainability research, hosts and participates in national and international events, and collaborates with industry and government partners. Highlights of initiatives this year include;

- Hosted a national circular economy dialogue with researchers, practitioners and government stakeholders to explore circular economy metrics for Australia.
- Launched a new online tool to inform and improve product stewardship in Australia.
- Formed a new partnership with industry on a hub to boost nutrient recovery from human waste.
- Researchers attended the COP27 Climate Conference in Egypt.
- Provided input to the ACT Government Your Resilient Home guide.
- Launched a report on the value of organics waste in Western Sydney.
- Hosted a workshop at the Water Association World Water Congress and Exhibition (WWCE) in Copenhagen.
- Delivered a session on creating a more inclusive workforce at the second Cambodia–Australia Water Policy Forum.
- Participated in World Water Week 2022, online and in Stockholm.
- Released a report on supercharging Australia's clean energy transition.
- Hosted a panel discussion on disaster response approaches in a changing climate.
- Launched a new collaboration with 13 local governments on smart technology solutions for measuring air quality.
- Launched the Green Wave Report (RACE for 2030 CRC project) providing a blueprint for Net Zero pathways.
- Reviewed NSW government policies to explore ways to achieve more resilient food systems and security for Sydney and NSW.

CASE STUDY

## Sharing the consequences of extreme bushfire events online

The devastating impacts of the 2019-2020 "Black Summer" fires on Australian flora and fauna were seared into the public consciousness through the use of social media and hashtags, changing mainstream Australia's relationship with nature and accelerating social movements for climate action. A camera in the pocket of every person and the ubiquitous use of social media and hashtags meant that, for the first time, nature and animals received equal billing in the visceral media feed of the event.

A new paper by researchers at the Climate, Society and Environment Research Centre, and the Institute for Sustainable Futures finds the impact on our relationship with nature has been profound. Social media cast a spotlight on the suffering of not only humans, but also nature and other species. Images of singed koalas clinging to life, or post-apocalyptic eucalypt forests, framed and collated through the power of Twitter hashtags, coalesced to show us direct parallels with the suffering of humans and bring home the reality of climate change in new ways.

The researcher's analysis of online data collected over five-months found the use of hashtags can cultivate new connections. Connections between nature and humans, which can foster human empathy and care for the non-human. Also, articulations of multispecies justice and public understanding of extreme bushfire events in the context of climate change.

#AustraliaOnFire
#AustralianFires
#KoalasNotCoal


**Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels**

| | |
|---|---|
| FWCI of university's research outputs | 3.65 |
| International Collaborations | 46.2% |
| Proportion of pubs in the top 10% of journals according to Citescore | 31.0% |
| Number of publications produced | 563 |
| Number of citations produced | 18,887 |

## Times Higher Education Impact ranking

In the 2022 THE Impact ranking, which uses the SDG framework similar to this report, UTS ranked 15th in the world and 2nd in Australia. Times Higher Education also ranked UTS as 2nd globally for Clean Water and Sanitation, and 3rd for Responsible Consumption and Production. More here and More here

**Laura Smith-Khan**

Law academic Laura Smith-Khan took out Australia's top humanities award, the 2022 Max Crawford Medal, for her research exploring how language and the law intersect in immigration processing. Navigating Australia's complex legal system, with paperwork and demanding interviews and court processes, in a second language, can be daunting and challenging. Smith-Khan's work focuses on how refugees and migrants experience the legal system, and how language can impact their visa outcomes. Adopting a sociolinguistic approach, she brought together a unique research community around law and linguistics. An asylum seeker's credibility is built on how they communicate, yet the institutional context and who they are talking to can determine how their story is understood and assessed.

Smith-Khan has been tying her research into coursework in the Faculty of Law, integrating sociolinguistics into course design so that graduates have a better understanding of the role of language in immigration law, and how they themselves can better communicate with future clients.

Collaboration with the teaching team in UTS's Graduate Diploma in Migration Law and Practice received a UTS Citation and a Law Faculty teaching award.

**"Being this year's recipient of the Max Crawford Medal is a huge honour. The humanities play a crucial role in bringing to light and addressing injustices in our society."**

- Dr Laura Smith-Khan

CASE STUDY

## Legal protections for climate migrants

Impacts of climate change and other disasters are displacing people across the Pacific. A ground-breaking new report provides the first in-depth look at the legal risks of statelessness and nationality loss in the Pacific as a result of climate change.

UTS researcher Hélène Lambert from the Faculty of Law, along with collaborators at the University of Melbourne and UNSW examined the legal ramifications of nationality loss as people are forced to relocate. The report recommends that Pacific Island nations adopt specific legal protections to help preserve the nationality rights of their populations - such as amending laws to prevent loss of nationality from residents living abroad, and granting citizenship to stateless children born overseas. *The Future of Nationality in the Pacific: Preventing Statelessness and Nationality Loss in the context of Climate Change* report contains recommendations that could safeguard nationality rights and help future proof the connection Pacific people have with their island homes.

**"Our report respectfully acknowledges the agency of Pacific countries in preparing for the impacts of climate change"** - Professor Hélène Lambert


## Strengthen the means of implementation and revitalize the global partnership for sustainable development

### Wind energy in Vietnam

Dr Sven Teske from the Institute for Sustainable Futures, in collaboration with researchers in France, Germany and Vietnam undertook analysis of the off-shore wind sector in Vietnam since 2018, and the scope for potential growth in the sector through to 2030. The sector accelerated following the introduction of a feed-in tariff in 2018, which stimulated the uptake of wind technology. Their findings and projections looked at three scenarios and concluded that by 2030 wind capacity in Vietnam could be around 17GW of onshore and 10GW of offshore. To achieve this however, Vietnam needs to commence offshore infrastructure planning soon.

### Surf company collaboration

Scientists from the Climate Change Cluster research team partnered with surf brand Piping Hot to develop a new textile made from seaweed, as an alternative to plastic nylon based fibres. The aim is to not only reduce the environmental impact of synthetic fibres, but also find a bio-based solution that will sequester carbon from the ocean.

### Better Buildings Partnership

We continued our membership of the Better Buildings Partnership (BBP), a network of owners and managers of large commercial buildings in the Sydney CBD collaborating to improve the sustainability of city buildings. Members of the Sustainability team participate on the Leadership Panel and in the Climate Positive Working Group, and staff from UTS Central Services participate in the Circular Economy Working Group. Visit the BBP

CASE STUDY

### Water security in Asia and the Pacific

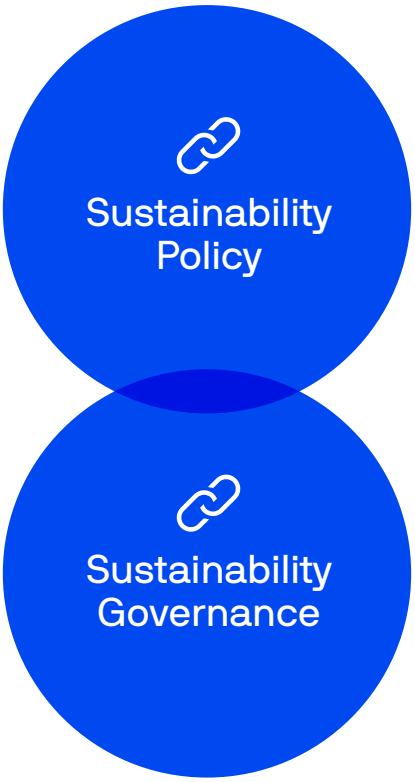
Researchers at the Institute for Sustainable Futures partnered with UNICEF to develop 21 country-specific factsheets providing an overview of self-supplied water services in each country. Self-supply is a water service delivery model where individual households or groups privately own and manage their own source of water. The factsheets outline the prevalence of self-supply in each country along with information on spatial trends, service levels, water quality and availability, equity dimensions, and relevant policy impacting self-supply – all vital issues to inform decision making. The initiative was part of the larger Water for Women research project. More here

**Julienne Paradis**

International exchange student Julienne Paradis didn't chose to live in Bondi beach simply for the surf and sun, she threw herself into the community as well. Volunteering through the UTS SOUL program, Paradis joined forces with the not-for-profit group Responsible Cafés, working with local cafés to improve their sustainability. The main focus of her work was helping businesses switch from single-use disposable cups to reusable. Working in collaboration with the local Government in the area, Waverley City Council and their DitchTheCup campaign, Paradis signed up 20 cafés over a six month period – creating impact in her newly adopted home!

# Leadership and governance

# Sustainability Policy and Strategy




The *UTS Sustainability Policy* provides a framework for sustainability at UTS across the four key areas of teaching and learning, research, campus operations and community engagement. The Policy is regularly updated to reflect ongoing best practice.

The *UTS Sustainability Strategy* provides the framework for implementing the Policy and outlines the university's sustainability vision, goals, and the initiatives and mechanisms to achieve these goals. The development of the *UTS Sustainability Strategy 2023-2027* has commenced with the identification of priority areas.

The *UTS Plastic Free Plan*, provides a strategic framework for helping UTS transition away from single use plastics. (Full Plan here - staff-only access)

The *UTS Social Impact Framework* articulates and structures the university's current and future endeavours in social justice. See here

## Sustainability Steering Committee

The Sustainability Steering Committee oversees implementation of the UTS Sustainability Strategy and provides high-level guidance for sustainability activities across the university. The Committee meets quarterly. Throughout the year membership was made up of the following;

- **Glen Babington**
  Chief Operating Officer (Chair)
- **Nigel Oliver**
  Director, Property Unit
- **Danielle McCartney**
  Head of Sustainability
- **Celia Hurley**
  Vice President Advancement
- **Associate Professor**
  Katherina Petrou, Science
- **Dr Emma Camp**
  Post-Doctoral Research Fellow, Science
- **Dr Nic Surawski**
  Deputy Head of School, Engineering and IT
- **Amy Persson**
  Director Government Relations
- **Damien Nguyen**
  Enviro Collective student representative
- **Dr Paul Brown**
  Senior Lecturer, School of Transdisciplinary Innovation
- **Professor Stuart White**
  Director, Institute for Sustainable Futures
- **Professor Jo McKenzie**
  Deputy Vice-Chancellor (Education and Students)
- **John Chalmers**
  Director, Marketing and Communications
- **Anna Thieben**
  President UTS Students Association
- **Distinguished Professor Jim Macnamara**
  Deputy Dean, Faculty of Science
- **Dr Melissa Edwards**
  Senior Lecturer, Business School
- **Murray Hurps**
  Director, Entrepreneurship Innovation and Entrepreneurship
- **Verity Firth**
  Pro Vice-Chancellor (Social Justice and Inclusion)
- **Associate Professor Jan McLean**
  Director Interactive Media and Learning
- **John Bonnici, Facilities Manager**
  UTS College
- **Professor Lindon Coombes**
  Director Jumbunna Research Office

## Sustainability Development Goals Working Group

The SDGs Working Group aims to assist with the development of UTS's institutional response to the UN SDGs with the aim of embedding them across the university's academic, operational and engagement activities. Working Group membership this year was;

- **Professor Stuart White**
  Director, Institute for Sustainable Futures (Chair)
- **Associate Professor Kristine Aquino**
  Senior Lecturer International Studies and Global Studies
- **Mitra Gusheh**
  Executive Manager Social Impact, Centre for Social Impact and Inclusion
- **Elvira Fonacier**
  Head of Performance Evaluation
- **Alex Fransen**
  SDGs Project Manager
- **Professor David Leary**
  Faculty of Law
- **Jen Mansell**
  Internal Communications Manager
- **Associate Professor Jacqui McManus**
  Institute for Interactive Media and Learning
- **Associate Professor Katherina Petrou**
  School of Life Sciences
- **Associate Professor Sara Wilkinson**
  School of Built Environment
- **Associate Professor Timo Rissanen**
  School of Design
- **Alison Atherton**
  Program Lead, Economy and Governance, Institute for Sustainable Futures
- **Emil Oquist**
  Acting Head of Learning Design, LX Lab
- **Professor Joanne Gray**
  Acting Pro-Vice Chancellor (Education)
- **Associate Professor Jan McLean**
  Director Institute for Interactive Media and Learning
- **Danielle McCartney**
  Head of Sustainability Strategy
- **Professor Roger Hadgraft**,
  Director, Educational Innovation and Research
- **Dr Rosemary Saint**
  Lecturer, Business School
- **Dr Emma Camp**
  Postdoctoral Research Fellow, Science
- **Jen Mansell**
  External Communication Manager
- **Professor Kees Dorst**
  School of Transdisciplinary Innovation
- **Professor Robynne Quiggin**
  Associate Dean (Indigenous Leadership and Engagement)

## About this report

### Methodology

This Sustainability Report uses the SDGs framework, reflecting our ongoing journey working towards integrating the SDGs across all areas of UTS's research, teaching and learning, operations, engagement and governance. The report has a section on each of the 17 SDGs, with highlights of relevant initiatives, activities and UTS people contributing to the SDGs. Case studies provide qualitative information and demonstrate how projects relate to specific SDGs and deliver global impact. Data for these was drawn from internal sources including websites and reports as well as interviews with relevant staff and students.

Research metrics and some graphs throughout the report provide quantitative data. The graphs relate to campus operations and data was drawn from our operational reporting systems and processes. Data for the research metrics is from external sources, mostly through Elsevier's SciVal, and relate to the 2018-2022 period. The Elsevier reporting is based on Scopus mapping information for each SDG. Metrics in this report were based on this Scopus data source updated in April 2023. We have not included metrics for SDG 17 because Elsevier does not provide data for SDG 17 as this SDG relates to each of the other SDGs (i.e. partnerships).

# The UTS Sustainability team


**The UTS Sustainability team** (left to right), **Annie Walker**: Sustainability Assistant, **Jonathan Prendergast**: Green Infrastructure Project Manager, **Daniel Harris**: Carbon & Sustainability Engineer, **Danielle McCartney**: Head of Sustainability Strategy, **Seb Crawford**: Sustainability Engagement Manager, **Alex Fransen**: SDG Project Manager, **Libby Moore**: Green Impact Administrator (inset right), **Vasilios Giotis**: Acting Carbon and Sustainability Engineer (inset left)

## Contact us

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Facebook/UTSgreen


"Staff and students are embracing the SDGs as a new way to contextualise, and contribute to, sustainability"

Alex Fransen,
SDG's Project Manager

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40342 APRIL 2023
Images credit: Andy Roberts, Toby Burrows, Andrew Worssam, UTS Sustainability, UTS staff and students, Adobe Stock.