SUSTAINABILITY & THE BUILT ENVIRONMENT

The Sustainability and the Built Environment theme encompasses the work of our researchers towards the vision of sustainability as "meeting the needs of the present generation without compromising the ability of future generations to meet their needs[1]".

The problems of the world do not present themselves within traditional silos, so realising this vision relies on integrating researchers across areas from climate, water, energy, health and built environment, and from varied disciplinary backgrounds that include architects, scientists, sociologists, geographers, engineers, economists, and policy professionals.

Our researchers provide holistic research approaches to environmental issues and policies. They're investigating the use of smart building materials which protect from natural disaster and developing eco-friendly construction materials including "green cement". They provide natural resource managers with the information and tools they need to help protect specific habitats and to have greater confidence in preserving the environment within the broader climate change debate. They're coming up with new, more sustainable fuels and transportation solutions to reduce our reliance on fossil fuel and the impact of humans on the natural environment.

UTS researchers help state and federal government partners to develop policy that supports sustainable development. They also work with industry groups and corporations to create and implement sustainable strategies and operations, and assist community groups by providing solid research to support their actions. Field research locations include Antarctica, the Southern Ocean, Northern Territory, Great Barrier Reef and Western NSW.

CENTRE FOR BUILT INFRASTRUCTURE RESEARCH

PLANT FUNCTIONAL BIOLOGY AND CLIMATE CHANGE CLUSTER

GREEN ENERGY AND VEHICLE INNOVATIONS RESEARCH CENTRE

INSTITUTE FOR SUSTAINABLE FUTURES

CENTRE FOR TECHNOLOGY IN WATER AND WASTEWATER

1 The Brundtland Commission on Environment and Development, Our Common Future, was published by Oxford University Press in 1987. ISBN 0-19-282080-X

WHY UTS?

STATE-OF-THE-ART FACILITIES

The Faculty of Engineering and Information Technology laboratories in the area of civil and environmental engineering contain a range of advanced equipment to enable our world-leading research. Our Materials Testing Laboratory houses a variety of bench-top and floor mounted test units for tensile, compression and flexural tests; computer controlled Class A and Class AA Universal testing machines and a torsion tester.

The largest of its kind in Australia, the shake table in the Structures Lab is a high performance uniaxial table used primarily for seismic testing and other high frequency applications.

The science laboratories in the Plant Functional Biology and Climate Change Cluster House the latest equipment for aquatic plant ecophysiology research, including fluorometers, coral and algal culture facilities, and systems for measuring photosynthesis, heat flux, soil moisture and oxygen. These facilities support both field campaigns and laboratory studies. Researchers can also conduct pigment analysis with High Pressure Liquid Chromatography – a rapid, very sensitive and objective method for determining the concentration of different pigments in algae, corals, seagrasses andsediments.

Our Microstructural Analysis Unit contains an array of state-of-the-art scanning probe and scanning electron microscopes along with instruments for X-ray diffraction, spectroscopy and nanophotonics. These allow our researchers to image, analyse, test, manipulate and fabricate materials and objects at the nanoscale.

Our Environmental Engineering Laboratories are also well equipped with advanced water quality analysis instruments, including: ion chromatography; total/dissolved organic carbon analyser; flow field flow fraction; UV-analyser; zetasizer; particle size analyser; and contact angle measurement instruments.

WORLD-LEADING RESEARCH

The Australian Research Council's 2012 Excellence in Research for Australia (ERA) rated 100 per cent of all assessed UTS research as world standard or above to world leading. Our research in the fields of environmental science and agricultural and veterinary sciences was ranked as ERA five or "world leading, well above world standard".

RESEARCH WITH IMPACT

Delivering research which has real impact for society, industry and the environment is a core element of the UTS vision. The UTS developed Evengold™ bioreactor involves a low-cost, scalable bioreactor design which addresses the current limitations on biofuel production from microalgae. This innovation, ready for commercialisation, will deliver an estimated yield four times higher than current methods and supports the delivery of new sustainable, low carbon transport fuels.

Traditional water recycling methods often result in chemical by-products that can't be recycled and don't biodegrade. This chemical sludge is often disposed of by burning or being buried in landfill. A collaborative project between the Centre for Technology in Water and Wastewater, Korean company Photo & Environmental Technology and Shandong University in China led to the development of a process which converts the sludge into titanium dioxide, an environmentally-friendly product sought after by a range of industries.

Developed by the Institute of Sustainable Futures and commissioned by the Department of Environment and Climate Change, SWITCH is the first vehicle to grid (V2G) interactive vehicle that can both be charged from, and feed power back into, the main electricity grid. The key advantage of V2G is the potential to store electricity in the batteries and feed energy back to the main power grid in times of generation supply shortage or network capacity constraints. The Department are currently using SWITCH vehicles as part of their fleet.

UTS researchers in the Centre for Built Infrastructure Research developed technologies for prefabricated structural systems constructed from engineered wood products for floors and building frames. Timber concrete composite floors provide an excellent balance between increased stiffness, reduced weight, better acoustic separation and good thermal mass when compared with solid concrete or timber floors. The project also resulted in the formation of the Structural Timber Innovation Company, a research company that will continue to develop timber building systems in non-residential buildings in Australia and New Zealand.

GLOBALLY RECOGNISED

UTS is ranked in the top 500 universities in the Academic Ranking of World Universities.

UTS was ranked 10th in Australia at 272 in the QS World University 2013–2014 index. UTS ranks first in Australia and 20th in the world for universities under 50 years old according to the 2014 edition of the QS Top 50 Under 50 index of newer universities – those less than 50 years old. The rankings are based on research, teaching, employability and internationalisation.

UTS was ranked in the top 350 universities in the Times Higher Education World University Rankings 2013–2014 powered by Thomson Reuters, and ranked 10th in Australia. For universities under 50 years old, UTS was ranked 83rd globally.

RESEARCH CAPABILITIES

At UTS, our research is conducted both within nationally recognised Research Strength centres as well as faculty-based centres. UTS researchers within this theme are currently investigating the following areas:

- Biofuels
- Civil engineering
  - > New and green building materials development
  - > Damage detection
  - > Earthquake engineering
- Climate change
  - > Climate change adaptation
  - > Energy and climate change
- Coastal oceanography
- Corporate sustainability
- Deep sea biology
- Ecotoxicology
- Energy policy and planning
- Environmental chemistry
- Electric vehicles
- Flood management and catchment modeling
- Green energy
- Microbial ecology
- Mineral and geologic resources futures
- Plant and animal ecophysiology
- Seagrass and estuarine ecology
- Social dimensions of sustainability
- Stream, amphibian and coastal marine ecology
- Sustainable food, farming and fisheries
- Terrestrial ecohydrology
- Urban planning and city development
- Water, sanitation and hygiene
- Water, wastewater and stormwater treatment

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STARTING A RESEARCH COLLABORATION WITH UTS

A research partnership allows you and your organisation to access the skills and knowledge of UTS's talented people and our leading facilities. We have opportunities for organisations of all sizes to engage with our research solutions.

There is a collaborative research model to suit whatever organisational outcome you are seeking, regardless of the type of problem you're looking to address.

CONTRACT RESEARCH

If you have a particular problem in mind and a sense of the research area that is relevant to your needs, UTS can work with you to develop a research contract to solve the problem.

COLLABORATIVE RESEARCH

You can contribute intellectual input and resources including staff, funding, materials and facilities to collaborate with UTS researchers on a project that fits your business objectives.

INDUSTRY SPONSORED PHD SCHOLARSHIPS

Enhance the professional capacity of your staff or bring in a UTS PhD student to undertake targeted research for your business. An industry funded PhD can provide unique benefits and low cost research solutions and position you as a global leader in your field.

AUSTRALIAN COMPETITIVE GRANTS

You may choose to leverage your research investment by aligning with a UTS application under the Australian Competitive Grants Register. Relevant funding schemes include ARC Linkage Grants and NHMRC Development Grants.

COMMERCIALISATION OPPORTUNITIES

UTS has many inventions and technologies that are under commercial development. You can support their further research or license the technology for commercial use.

GOVERNMENT SUPPORTED RESEARCH

Our industry partners have achieved exciting successes working with UTS through government schemes such as Tech Vouchers and Researchers in Business. As a UTS industry partner, you may also be eligible for R&D tax credits.

FIND A COLLABORATOR

UTS researchers are actively seeking new opportunities for collaboration with other researchers, domestically and internationally, and increasing our research collaboration is key to the overall UTS research strategy. We are also committed to promoting innovation and excellence in researcher education, including fostering and maintaining a vibrant research community.

Contact our team to get some ideas about the sort of research expertise that will best fit your needs.

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Find out how you can engage with collaborative research opportunities in one of UTS's other research theme area

Health Futures

UTS researchers are improving the quality and safety of health care with specific strengths in developing biotechnology and medical devices, evaluating health systems and services to improve practice and generating meaningful economic analyses to take health into the future.

Creative Industries and Civil Societies

UTS researchers from the arts and social sciences, design and the sciences give a unique perspective on cultures, creative practice, knowledge and learning and cultural change. This ranges from the impact of technology upon society and the characteristics that effect social cohesion and cultural change to the opportunities for creativity and creative industries.

Business Innovation

Our experts are world-leading in fundamental discipline areas such as finance, economics, accounting, marketing and management with innovative cross-disciplinary approaches to the role of business and public policy in addressing key economic, social and environmental problems.

Communication and Intelligent Systems

This theme addresses issues that are fundamental to society, namely how we communicate and share information. Researchers examine new ways to draw insight from oceans of data, understanding and leveraging the communication potential of new media and technologies, design real-time intelligent systems and investigate how regulation can promote the free and ethical flow of information.

Future Services, Industries and Productivity

UTS researchers in areas such as robotics, IT and nano-materials are defining and supporting the next generation of Australian industry and services.

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RESEARCH

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