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CLIMATE CONVERSATIONS.

**A university's journey
towards a sustainable future**

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A university's journey towards a sustainable future: A case study from the University of Canterbury

Introduction

As the world grapples with the urgent challenges posed by climate change, universities find themselves in a unique position to drive meaningful progress towards a more sustainable future. Beyond their role as large, complex organisations with significant environmental footprints, universities serve as vital hubs of research and innovation, pioneering the development of new sustainable technologies and practices. Equally important, they bear the responsibility of educating and empowering the next generation of leaders, policymakers, and changemakers to understand and effectively address these critical issues.

This case study delves into the sustainability journey of the University of Canterbury (UC). Through the lens of a comprehensive Climate Conversation delivered by Professor Jan Evans-Freeman, the Pro-Vice-Chancellor of Sustainability, we gain valuable insights into the university's holistic approach, key initiatives, achievements, and ongoing challenges as it strives to embed sustainability throughout its operations, teaching, research, and community engagement.

Background

Established in 1873, the University of Canterbury has grown to become one of New Zealand's largest and most prestigious universities, renowned for its excellence in teaching, research, and community engagement. With a student population of approximately 23,900, including both domestic and international students, UC is home to one of the country's two largest engineering colleges.

In 2019, the university reached a pivotal moment in its sustainability journey when it became evident that the principles and goals of sustainability had organically woven themselves into every facet of the institution's activities and aspirations. Recognising the critical importance of sustainability and the urgent need for action, UC made the strategic decision to elevate sustainability as one of its eight core strategic pillars, alongside research excellence, teaching, and efficiency. This bold move signalled the university's unwavering commitment to environmental stewardship and set the stage for a transformative 10-year sustainability strategy.

Cover image: UC's Aotearoa Bike Challenge staff team cycled a combined 71,483km in February 2024, placing third overall and coming out on top in the university category. Photo: University of Canterbury

Governance structure

To ensure the effective implementation and oversight of its sustainability strategy, UC has established a robust governance framework that engages stakeholders from across the institution:

1. The Sustainability Office

Housed within the Facilities Management department, this office focuses on operational sustainability initiatives such as waste management, water conservation, and sustainable procurement.

2. The Sustainability Hub

Reporting directly to the Vice-Chancellor and university council, the Sustainability Hub provides high-level strategic direction and oversight, ensuring a holistic and integrated approach to sustainability across all aspects of the university.

3. Academic Sustainability Committee

Comprising representatives from each of the university's faculties, this committee facilitates the integration of sustainability into teaching, learning, and research activities.

4. Sustainability Programme Board

Overseeing a network of practical working groups, the Programme Board addresses specific sustainability challenges such as sustainable food sourcing in campus cafes, biodiversity conservation, carbon sequestration, and reducing the environmental impact of air travel.



Left: UC's Te Ngaki o Waiutuutu | Waiutuutu Community Garden provides an informal recreation and learning space for students, staff and anyone else associated with the university. Photo: University of Canterbury

Key sustainability initiatives

Carbon neutrality initiative



Boiler conversion

In a significant step towards reducing its carbon footprint, UC has successfully converted its main campus coal boiler to run on locally sourced biomass, specifically wood chip and pellet. This transition not only dramatically reduces greenhouse gas emissions but also supports the local economy and sustainable forestry practices.



Renewable electricity

The university has partnered with Meridian Energy, a leading renewable energy provider, to source 35% of its electricity from net-zero carbon sources.



Electric vehicle fleet

UC has made strides in greening its transportation fleet, with 11 fully electric vehicles and a growing number of hybrids.



Sustainable travel

Recognising the significant environmental impact of air travel, the university actively encourages its academics to reduce non-essential flights and explore alternative modes of collaboration and networking.

Research for sustainability



SDG-aligned research

To catalyse research that directly addresses global sustainability challenges, UC has awarded 28 PhD scholarships for projects aligned with the United Nations Sustainable Development Goals (SDGs).



Public engagement

The university actively showcases its sustainability research through public events, lectures, and strategic communications, fostering community awareness and engagement.



Global recognition

UC's commitment to impactful sustainability research has earned recognition in prestigious global rankings such as the QS World University Rankings and the Times Higher Education Impact Rankings.

Embedding sustainability in education



Curriculum audit

UC conducted a comprehensive audit of its course offerings to identify the extent to which sustainability concepts and the SDGs are integrated into its educational programmes.



Experiential learning

Students are provided with unique opportunities to learn from real-world sustainability projects on campus, such as the installation of ground source heat pumps.



Virtual field trips

Leveraging virtual and augmented reality technologies, UC enables students to participate in immersive field trips and simulated hospital design projects without the need for physical travel, reducing the environmental footprint of educational activities.

Sustainable campus operations



Ground source heat pumps

The university has implemented an innovative geothermal heating system that harnesses the energy from underground aquifers to heat campus buildings efficiently.



Biodiversity enhancement

By allowing selected grass areas to grow into wildflower meadows, UC enhances biodiversity, supports pollinators, and creates a more ecologically vibrant campus environment.



Green Impact programme

Staff members are actively engaged in making sustainable changes in their daily work practices through the Green Impact programme, fostering a culture of sustainability throughout the organisation.



Sustainable procurement

UC is progressively incorporating sustainability criteria, such as embodied carbon and the use of green materials, into its procurement processes for new building projects.

Strategic partnerships



City collaboration

The university maintains a close collaborative relationship with the Christchurch City Council, working together on initiatives that promote sustainable urban development and community wellbeing.



Sustainability networks

UC actively participates in national and international sustainability networks specifically tailored to higher education institutions, fostering knowledge-sharing, collaboration, and collective action.

Challenges and next steps

Despite its significant progress, the University of Canterbury acknowledges the ongoing challenges it faces in its pursuit of sustainability.

Policy uncertainty

Ambiguity in government policies regarding the Emissions Trading Scheme and voluntary carbon market rules create uncertainty for the university's carbon offsetting plans.

Scope 3 emissions

Measuring and reducing indirect emissions, particularly those stemming from student and staff commuting and travel, remains a complex challenge requiring further data collection and innovative solutions.

Sustainable travel

Finding the right balance between encouraging academics to fly less, while still supporting crucial research networks and collaborations, is an ongoing process that requires cultural change and the adoption of new practices.

Remote learning

As the university navigates the shift towards more remote and hybrid learning models, it must carefully consider the pedagogical implications and strive to deliver high-quality, engaging educational experiences that prioritise both student outcomes and sustainability.

Despite these challenges, UC remains steadfast in its commitment to its 2030 sustainability strategy and its role as a leader in the transition to a more sustainable future. Key next steps include completing the conversion of the secondary campus heating system to low-carbon alternatives, further enhancing sustainability criteria in procurement processes, and actively advocating for enabling government policies that support the university's sustainability goals.

By openly sharing its journey, successes, and challenges, UC hopes to inspire and collaborate with other institutions, organisations, and communities to collectively work towards a more sustainable, resilient, and equitable world.

Q&A

In considering the environmental impact of electrical vehicles, have you taken into account the pollution from mining for batteries in the decision-making process?

Not initially when we started moving to EVs, as this was before a lot of the public debate on those supply chain issues. It's something we need to look at more closely for any future EV purchases and weigh those factors.

What are the carbon emissions of biomass fuel transport for your boiler?

We don't know the exact supply chain emissions as this falls under our Scope 3 emissions. We did, however, intentionally keep transport emissions low by requiring a local biomass supplier

Has UC taken into account the accommodation halls and their emissions and energy use?

Yes, absolutely – the halls are part of our overall campus footprint.

An estimate suggests UC students could be producing 65,000 tons of carbon annually, over 3x the university's reported footprint, from driving to and from campus. Has the sustainability hub considered this and taken any action?

We would dispute some of those figures. Most UC students walk or bike rather than drive. We've invested heavily in secure, well-lit bike parking and free bike repair. Many live in halls on campus. But measuring student commuting is part of the broader Scope 3 emissions we need to look at.

When UC converted the boiler from coal to biomass, did you consider going all-electric instead?

I expect it was considered but electric boilers may not have provided sufficient heat for the whole campus rather than just process heating.



Is offsetting via planting trees sustainable long-term given limits to available land?

There are some complexities here. In terms of atmospheric carbon, planting fast-growing exotic trees like radiata pine can sequester a lot of carbon quickly, for about 20 years, before they need to be harvested and replanted. In that sense, it can therefore help with offsetting. However, there are debates about the long-term sustainability of that approach, and impacts on biodiversity and land use in New Zealand. The Government has also put the use of forestry in the Emissions Trading Scheme on hold which creates some uncertainty for offsetting plans. It's an area we're watching closely.

Does UC measure the embodied carbon in the construction of new buildings on campus?

Not currently, but we are starting to include sustainability and embodied carbon questions in our procurement processes for new building projects like the Digital Screen Campus. It's definitely an emerging factor we want to consider.

For the ground source heat pump project, how many bores were drilled and to what depth?

I believe it was two extraction bores and two injection bores. Initially we drilled down to 190m but found the water flow insufficient. The final bores were shallower than 190m, but still fairly deep.



Engineering New Zealand Te Ao Rangahau

hello@engineeringnz.org
www.engineeringnz.org
04 473 9444

L6, 40 Taranaki Street
Wellington 6011