Australian National University

ANU Below Zero Overview of Strategy Development

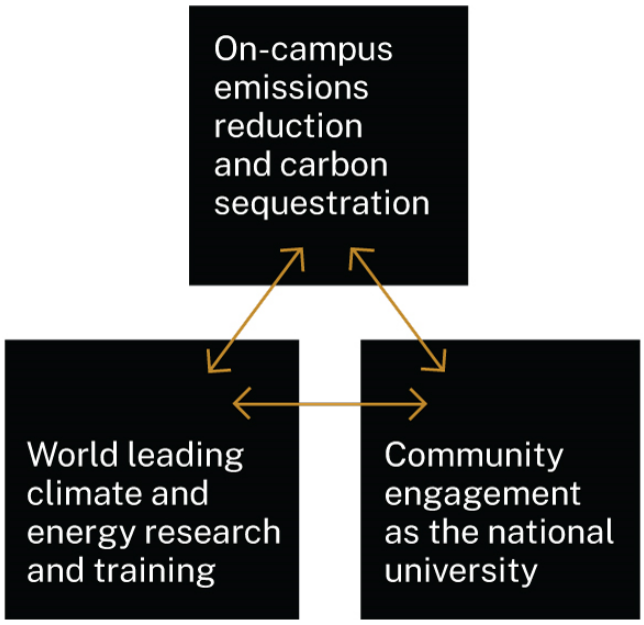
May 2021

Background

Transformational change is required to limit climate change to 1.5°C above pre-industrial levels, as agreed in the Paris Climate Agreement. Reducing our greenhouse gas emissions to net-zero as soon as possible is essential, but this effort alone is no longer enough to limit temperature increases to globally agreed levels. As a society, we will also need to implement approaches and technologies that sequester greenhouse gases from the atmosphere for the long term.

ANU has announced the Below Zero Initiative, which aims to transition ANU from being part of the problem to becoming part of the solution – from a source of greenhouse gases (GHGs) to a sink for atmospheric carbon dioxide. The goal is for ANU to achieve below -zero emissions by 2030 for energy, waste, business travel and direct on-campus greenhouse gas emissions. Our approach integrates practical emission-reductions with research and teaching activities at ANU. We aim to use our expertise to drive innovation in this vital sector.

ANU is one of the first universities in the world to adopt such ambitious targets including below zero emissions goal. As Australia's national university, we are aiming to promote innovation, engage the community and provide leadership to other organisations in Australia and around the world.

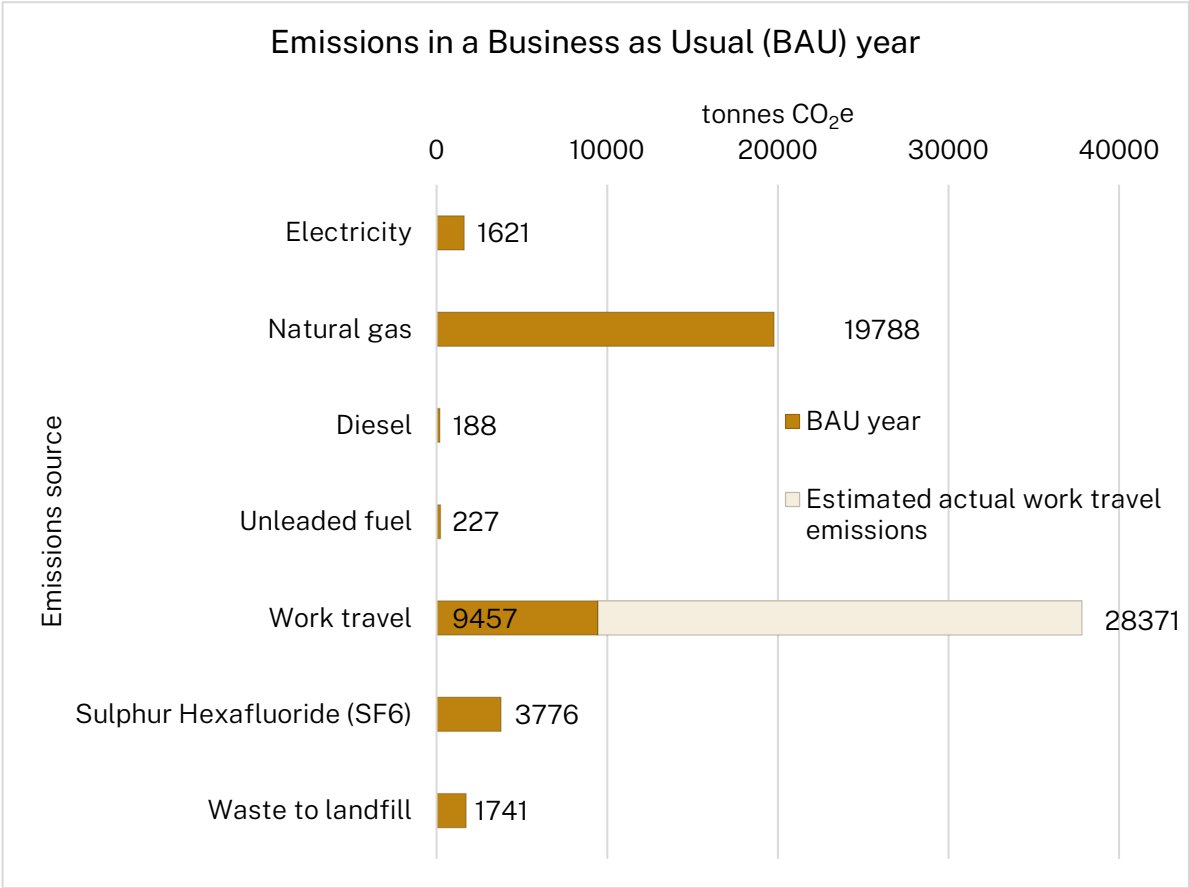


Current ANU Greenhouse Gas Emissions

Total ANU direct, energy-related, waste and work-based air travel emissions are projected to be approx. 55,800 tonnes carbon dioxide equivalent (CO_2e[1]) for a future, non-pandemic year under business as usual (based on projected increases in electricity consumption of 7% and gas of 11% p.a. with the assumption that other emissions will remain stable).

[1] "Carbon dioxide equivalent" or "CO_2-e" is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO_2-e signifies the amount of CO_2 which would have the equivalent global warming impact." Matthew Brander. 2012. *Greenhouse Gases, CO_2, CO_2-e, and Carbon: What Do All These Terms Mean?* Ecometrica [Access from https://ecometrica.com/assets/GHGs-CO2-CO2e-and-Carbon-What-Do-These-Mean-v2.1.pdf]

In a “normal year” without a global pandemic, it’s estimated that work-based air travel would be the largest source of ANU GHGs, although there are significant uncertainties around this as only 23% of work travel is booked via the ANU travel system. The second largest source of emissions is gas which is predominantly used for heating. These estimates exclude most indirect Scope 3 emissions (i.e. purchasing, services, research, and staff and student commuting to and from campus) which have yet to be quantified. Activities generated by the Acton campus accounted for 96% of ANU emissions in 2019

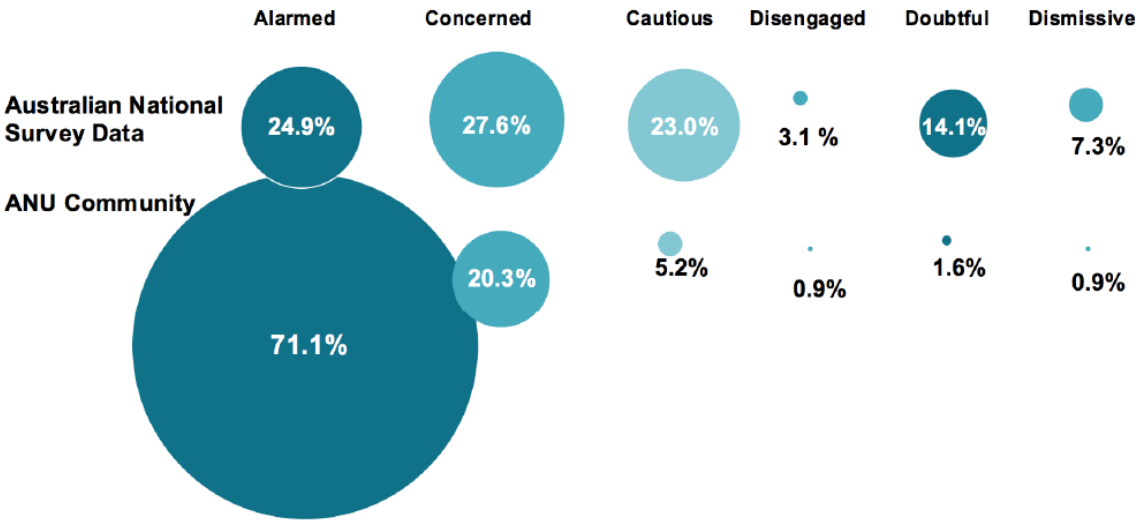


ANU benefits enormously from our location in the ACT which means we are using 100% renewable electricity. Without this renewable source, ANU is projected to emit about another 102,773 tonnes CO_2e in 2022, dwarfing all other GHG sources.

Attitudes to Climate Change and Emissions Reduction amongst ANU Students and Staff

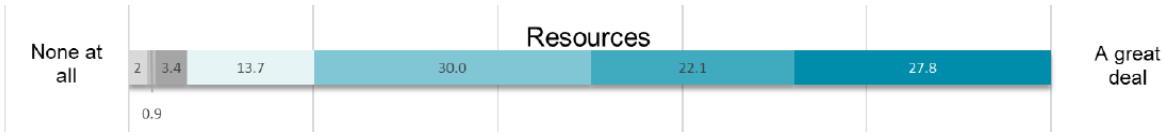
In late August, over 500 members of the ANU Community shared their attitudes to climate change and emissions reduction via a brief online survey. Some key findings:

- The ANU Community demonstrates extremely high levels of concern about climate change (91.4% of respondents are alarmed or concerned compared with 52.5% in the general population).



- There is very high support for the Below Zero Initiative despite low levels of familiarity with the Initiative at the time this survey was taken. (Low familiarity is not surprising given that the Initiative had not been launched nor had the consultation started at the time of this survey). Nearly 90% of respondents indicated that the Initiative would confer at least some positive impact on the reputation of ANU with more than half rating this impact at the extreme positive end of the scale.

- There was strong support for ANU providing resources to achieve the Below Zero goal with almost 80% in favour and 48% supporting the allocation of a great deal of resources.



- Most people (51.5%) felt that it was equally the responsibility of ANU (the Institution) and the ANU Community to take action on emissions reduction.
- The views above were relatively consistent across groups - students, academic and professional staff.
- The actions that were rated as highest priority were (in order of priority):
    1. ANU becoming an international leader in acting to address climate change
    2. Installing rooftop solar panels on appropriate buildings
    3. Maximising the energy efficiency of all existing buildings
    4. Supporting research and development of technologies that actively remove greenhouse gases from the atmosphere
    5. Aligning the ANU investment strategy with the below zero emissions goal
    6. Phasing out gas on all campuses and replacing with renewable energy

Consultation on ANU Below Zero

University-wide consultation on ANU Below Zero took place over six weeks in September / October 2020. The objective of the consultation was to seek ideas from throughout the ANU community on how the University might progress to below zero emissions as rapidly, effectively and efficiently as possible.

The consultation process generated 292 ideas and 183 comments across seven core themes, with more than 170 people using an online idea capturing platform and 225 participants attending workshops.

Following the idea generation phase with the ANU Community, a series of seven expert panels met to discuss key recommendations emerging from the process. These recommendations have been incorporated into our targets and the strategies outlined below.

Fit with Existing ANU Strategies & Structures

The development of the ANU Below Zero Initiative has been influenced by the following key documents, strategies and stakeholder engagement:

- ANU Strategic Plan 2020–2023
- Development of ANU 2025 Strategic Plan
- ANU Council Resolution, Feb 2020
- Acton Campus Master Plan, August 2019
- ANU Acton Campus Energy Management Strategy (ACEMS), August 2019
- ANU Draft Environmental Strategy
- ANU Climate change & emissions reduction survey, Sept 2020
- ANU Below Zero Consultation, Sept–Oct 2020

ANU Below Zero Targets

ANU has committed to reach the following targets:

- **2025 – Net zero emissions** for direct and energy related emissions (Scope 1 and 2) and business travel and waste (partial Scope 3), using high quality, Australian carbon offsets as a back-up to on-campus emissions reductions.
- **2030 – Below zero emissions** for the scope outlined above drawing down emissions on ANU land or only using carbon offsets that have the option of including an ANU research or teaching connection in order to help drive innovation in this sector. This will require the development of external partnerships as well as potentially the use of GHG sequestration and use/storage (negative emissions) on ANU land for any GHG emissions that cannot be mitigated.
- **Beyond 2030 -** Emissions below zero to progressively compensate for emissions that were accumulated earlier (particularly during the lifetime of the Below Zero Initiative). Exact targets to be announced later.
- All other indirect emissions arising from purchasing of goods and services and commuter travel (Scope 3) – ANU will work to reduce Scope 3 emissions as rapidly as possible, based on international best practice for Scope 3 emissions reductions for the university sector.

These targets will be reviewed on a regular basis to see if we can raise ambition.

Overall Strategy Development

This document broadly outlines how we will meet our goal of reducing emissions to below zero as rapidly as possible. This strategy outline will contribute to the ANU 2025 Strategic Plan. Whilst this document provides an overarching guide to the ANU Below Zero Initiative, we are at

the start of the journey and more detailed implementation plans incorporating these goals and principles are being developed and continually updated.

Overall principles

Our first priority is to reduce our emissions wherever possible. For example, replacing gas-fired heaters with high-efficiency electric systems. ANU will use purchased carbon offsets as a backup only in the short-term (before 2030) and from projects that are of high quality and offer additional benefits such as support for indigenous land management activities. External, purchased carbon offsets will be phased out by 2030 and replaced with mechanisms to draw down GHG emissions on ANU land or offsets with a connection to ANU research or teaching activities.

Below is a list of the current strategies under development.

Monitoring

- Implementing regular monitoring and transparent reporting on emissions from multiple sources in a way that is accessible, engaging and as targeted as possible, including incorporating into ANU annual reporting.

Reducing Emissions from Work Travel

- Developing travel guidelines with the goal of reducing GHGs from staff and student travel for research, fieldwork, teaching and other university business
    - Prompting staff and students to consider whether travel is essential and encouraging and facilitating virtual alternatives
    - Making GHG impacts of travel transparent by providing GHG emissions calculator for travel planning
    - Developing “Low emissions travel guide” and “Guidelines for virtual conferences and events” to support staff and students to make more climate-friendly choices
    - Embedding GHG emissions reduction into an updated ANU travel policy and with providers
- Exploring the role of a University-wide GHG offsets scheme for essential work travel

Reducing Energy Emissions

Our energy-related greenhouse gas emissions reduction priorities are:

Stage 1

- Transition away from the use of natural gas as rapidly as possible via electrification
- Transition away from the use of other fossil fuels i.e. petrol and diesel vehicles (and diesel generators). This includes options for supporting electric vehicle availability, use and facilities (both ANU fleet and staff, students and visitors) on campus
- Install renewables and battery storage to power non-ACT campuses

Stage 2

- Explore options for self-generation of renewable energy to power the ACT campus using solar PV and other renewable technologies and associated storage
- Maximise energy efficiency of our buildings, particularly around heating
- Ensure that any new buildings constructed in future do not rely on fossil fuel use, are highly energy efficient, powered by renewables and built with low GHG emission materials

To achieve these goals, we are working to:

- Assess alternative and innovative business models to achieve Stage 1 priorities.
- Plan for GHG emission-neutral precincts across ANU through shared energy systems between buildings within and across precincts.
- Implement the Acton Campus Energy Management Strategy (ACEMS).
- Develop a priority list of energy efficiency projects (including completing the transition to LED lighting), ensuring that on point of replacement that heating systems are electric not gas and strictly enforce energy efficiency buildings standards for new buildings and renovations.
- Create financial incentives to achieve energy savings to entities that make operational decisions.

Removing atmospheric greenhouse gases (carbon removal or negative emissions)

- Developing an ANU policy re carbon offsetting incorporating The Oxford Offsetting Principles
- Developing and researching approaches to actively remove greenhouse gases from the atmosphere. Currently, there is a dearth of research on best-practice approaches that can meet land-based carbon sequestration and address other goals concurrently. These approaches could have co-benefits around biodiversity, agricultural production, water resource management, indigenous livelihoods and cultural practices and the governance arrangements needed to support good decision-making. We are establishing an ANU research and education network focussed on building capacity around land management for carbon sequestration. We are also pursuing funding opportunities and partnerships in this field, including with indigenous communities.
- Facilitating greenhouse gas removal coursework and student research projects and integrating into existing undergraduate and postgraduate courses.
- Sharing ANU knowledge on greenhouse gas removal via teaching, communications, outreach and policy engagement.
- We are also developing strategies to implement best practice carbon sequestration on existing ANU land and linking this with research and teaching.

Reducing Emissions from Waste

- Planning to avoid and manage waste to reduce GHG emissions.

Encourage and Support Behavioural Change

- Establishing an ongoing community engagement program to empower students and staff around climate-friendly behaviours, providing opportunities and incentives for every School and residence to be involved. This program will support building local area and student-led teams to drive targeted behaviour change from the grassroots.

Integrating Below Zero into research and teaching

- Integrating Below Zero research projects and internships into existing research themes / courses / internship structures throughout ANU, both as individual and group projects, providing a range of interdisciplinary options. There are multiple opportunities for research projects linked to ANU Below Zero from undergraduate, postgraduate to HDR HDR-level and beyond.

These include (but are not limited to):

- measurement of GHG emissions across buildings, travel, waste, procurement or research,
- energy efficiency (involving hardware, software, business processes and / or behaviour change),
- co-location of renewables,
- battery storage and carbon sequestration,
- transitioning away from natural gas,
- renewable energy technologies including solar PV or heat storage,
- carbon offsetting,
- carbon sequestration at landscape scale and across a range of ecosystems,
- carbon capture and use (CCU),
- life cycle analysis,
- reducing emissions from travel via improving infrastructure and / or encouraging behaviour change,
- reducing emissions from waste,
- behavioural change particularly around energy use,
- transport and waste,
- community engagement around emissions reductions,
- innovative financing options for energy efficiency / renewable energy generation
- development of technologies to support behaviour change around emissions reduction

Given the global requirement for innovation around greenhouse gas removal and the University's own requirement for carbon offsets, it will be particularly important to focus on research and teaching in this field.

- Developing new mechanisms to engage research and teaching with ANU Below Zero, showcase the work of past students and attract new students.

Reducing emissions from purchasing

- Developing procurement policies that consider GHG emission impacts and actively engage with suppliers on reducing GHG emissions.

ANU Below Zero Initiative
+61 2 6125 6611
belowzero@anu.edu.au

The Australian National University
Canberra ACT 2601 Australia
www.anu.edu.au

CRICOS Provider No. 00120C