

Report on ANU Below Zero Consultation

November 2020



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1. EXECUTIVE SUMMARY

This report outlines the results of consultation on how the Australian National University (ANU) can reduce our greenhouse gas emissions (GHG) to below net zero as rapidly as possible. The consultation took place across ANU in September / October 2020.

Following the idea generation phase with the ANU community, a series of seven expert panels met to discuss key recommendations emerging from the process. The recommendations are that ANU should:

Demonstrate Practical Leadership and Set Targets

1. Implement ambitious greenhouse gas emission reduction targets as follows:
 - **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 direct and energy related emissions (Scope 1 and 2) and business travel and waste (partial Scope 3) without purchasing offsets. This will require developing and using ANU owned and operated carbon sequestration and use/storage (an approach known as negative emissions) for any GHG emissions that cannot be mitigated. Headline target: **ANU to reach below zero emissions by 2030** (without using purchased carbon offsets).
 - **Beyond 2030** – ANU will progressively draw down emissions that were accumulated earlier in its history (particularly during the lifetime of the Below Zero scheme).
 - **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.
2. Use purchased offsets as a transition mechanism to campus decarbonisation, but only in the short-term (before 2030) and from projects that are of high quality and offer additional benefits such as indigenous land management. External, purchased carbon offsets should be phased out by 2030 and replaced with mechanisms to draw down GHG emissions on ANU land.
3. Ensure that ANU Below Zero targets and strategies form part of ANU communication and marketing campaigns
4. Implement regular monitoring and transparent reporting on emissions from multiple sources in a way that is accessible, engaging and ideally as targeted as possible.
5. Initiate student-led native vegetation and tree planting (campus rewilding).

Reduce Emissions from Buildings

6. Plan to develop GHG emission-neutral precincts across ANU through shared energy systems between buildings within and across precincts.
7. Start implementing Acton Campus Energy Management Strategy (ACEMS) immediately.
8. Develop a priority list of energy efficiency projects (including completing the transition to LED lighting), strictly enforce energy efficiency buildings standards for new buildings and renovations.
9. Create financial incentives to achieve energy savings to entities that make operational decisions.
10. Prioritise the transition away from natural gas via electrification.
11. Prioritise the installation of renewables on non-ACT campuses and enforce solar-ready rooftops on all new buildings and other structures on ACT campuses.
12. For the ACT campuses, conduct a thorough evaluation of different models around self-generation of energy via solar photovoltaics (PV) and implement the preferred model.

Reduce Emissions from Travel

13. Colleges, Schools and Divisions aim to reduce international and domestic air travel for business.

14. Make GHG emission impacts of travel transparent by establishing a system of emission budgeting at School level.
15. Develop a University-wide GHG emission offsets scheme for essential air travel.
16. Facilitate and incentivise active and low emissions travel.
17. Facilitate virtual conference attendance and provide support for staff and students to immerse themselves in online events.

Encourage and Support Behavioural Change

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

Integrating Below Zero into research and teaching

19. Below Zero research projects and internships should be integrated into existing research themes / courses / internship structures at every College and School throughout ANU, both as individual and group projects, providing a range of interdisciplinary options.
20. Develop new mechanisms to engage research and teaching with ANU Below Zero, showcase the work of past students and attract new students.

Removing atmospheric greenhouse gases (negative emissions)

21. Make negative emissions (NE) a key research priority across ANU, both by scaling up investment and supporting existing capacity.
22. Facilitate NE coursework and student research projects and integrate into existing undergraduate and postgraduate courses in every School.
23. Export ANU knowledge on NE via teaching, communications, outreach and policy engagement.
24. Seek permanent gifts of land that can be used for practical carbon drawdown and research. Implement best practice carbon sequestration on existing ANU land and link with research and teaching

Financing

25. Take emissions reductions initiatives off budget via “Energy as a Service” delivery model where a third party provides expertise, financing, hardware and software to increase energy efficiency, manage demand and / or facilitate adoption of renewables.
26. Develop an ANU green fund for student-led and local staff-led initiatives to help facilitate projects at a local level.
27. Adjust parking fees to market rates and use the incremental funds generated to establish the ANU green fund.

Purchasing

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

Investments

29. Strengthening of the University’s Socially Responsible Investment Policy is currently being considered by a working group which will make recommendations to the University’s Finance Committee and Council. Below Zero Initiative recommends a net zero emissions goal for the University’s overall investment portfolio in line with best practice by universities globally.

2. BACKGROUND

In February 2020, the ANU Council passed a [resolution recognizing the urgency of action to address climate change](#) and committing to "minimising the University's greenhouse gas emissions footprint through its own operations, in line with commitments to be greenhouse gas negative as soon as possible". The University has established the ANU Below Zero Initiative and is currently exploring options for how we can become GHG emissions negative.

University-wide consultation took place over 6 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 as possible. These ideas will be integrated into the ANU Below Zero strategy.

The consultation was open to all students and staff as well as the public. The consultation process generated 292 ideas and 183 comments across seven core themes, with more than 170 people using the online idea capturing platform and 225 participants attending the workshops.

<i>Theme</i>	<i>Question</i>
Leadership & Targets	As ANU, how might we demonstrate leadership in reaching below zero emissions as fast as possible?
Energy & buildings	How might we reduce greenhouse gas emissions from ANU buildings as rapidly as possible?
Travel	How might we reduce emissions from business travel and commuting to and from ANU?
Behavioural change	How might we incentivise and embed more climate friendly behaviour into the lives of students and staff? (including energy use, waste, travel, purchasing etc)
Integrating Below Zero operations, research & teaching	How might we integrate operational measures with research and teaching?
Removing atmospheric greenhouse gases	How might we fast-track approaches that draw down greenhouse gases at ANU?
Finance, purchasing, & investments	How might we finance activities to reduce greenhouse gas emissions? How might we reduce emissions from ANU purchasing & investments?

Consultation comprised the following steps:

1. Idea generation and collection

8 September – 20 October (6 weeks)

- Participants were asked to post their ideas and comment on and / or like other ideas via an online idea capturing platform, Ideanote.io.
- Seven one-hour workshops were held as zoom meetings. Each workshop featured 2–5 speakers whose focus was to provide context and / or suggest ideas for the relevant theme. Speakers were selected to provide diverse perspectives including as students, researchers, professional staff and from partner organisations such as ACT Govt.

2. Review, refining and evaluation of ideas by expert panels

21 October – 19 November

- Panels for each of the seven themes were established to provide well-informed / expert, diverse perspectives. Each panel consisted of at least three people who had been involved in the consultation, representing a mixture of students, researchers and professional staff members.
- Ideas generated within their theme were rated by the relevant panel based on impact, feasibility, other benefits, potential to deliver cost savings and investment required.
- Some ideas were transferred to a more relevant theme.
- Panellists met (via zoom) to refine ideas and discuss their recommendations.
- This report on the consultation was prepared by the ANU Climate Change Institute, with input from all panellists.

3. RECOMMENDATIONS BY THEME

3.1. LEADERSHIP AND TARGETS

How might we demonstrate leadership in reaching below zero emissions as fast as possible?

An [online workshop](#) was held on Thursday 15th October and attended by 60 people. Speakers included Prof Brian Schmidt, Vice Chancellor, Prof Mark Howden, Director, ANU Climate Change, Paul Duldig, Chief Operating Officer, Kate Donnelly, Master of Climate Change student and Janet Turpie-Johnston, PhD student at the ANU National Centre for Indigenous Studies. The workshop was moderated by Prof Elanor Huntington, Dean of the College of Engineering and Computer Science.

Forty-two ideas were posted on the Ideanote platform.

The panel evaluating the ideas comprised:

1. Prof Mark Howden, Director, ANU Climate Change Institute
2. Prof Ken Baldwin, Director, ANU Energy Change Institute
3. Prof Frank Jotzo, Director, Centre for Climate and Energy Policy, Crawford School of Public Policy
4. Clare de Castella, Business Manager, ANU Climate Change Institute

Key recommendations by the panel

The panel recommends that ANU:

1. Implements ambitious greenhouse gas emission reduction targets as follows:
 - **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 direct and energy related emissions (Scope 1 and 2) and business travel and waste (partial Scope 3) without purchasing offsets. This will require developing and using ANU owned and operated carbon sequestration and use/storage (an approach known as negative emissions) for any GHG emissions that cannot be mitigated.
 - **Headline target: ANU to reach below zero emissions by 2030** (without using purchased carbon offsets).
 - **Beyond 2030** – ANU will progressively draw down emissions that were accumulated earlier in its history (particularly during the lifetime of the Below Zero scheme).
 - **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.
2. Use purchased offsets as a transition mechanism to campus decarbonisation, but only in the short-term (before 2030) and with caution. External emission offsets should be phased out by 2030 and replaced with mechanisms to draw down GHG emissions on ANU land.
 - ANU should be cautious about the type of offsets selected. Emission offsets should be based on activities in Australia that will hold up indefinitely and would not happen without this funding. It is recommended that ANU use offsets that contribute to high quality land management by indigenous communities and provide additional social and economic benefits. Offsets that are based on replacing fossil fuel sources with renewable energy may be viable in the short-term, but as the Australian electricity grid transitions to 100% electricity, they will no longer be viable as a means of offsetting other emissions.

- The price of offsets is likely to rise steeply as demand grows with more and more institutions adopting decarbonisation targets. ANU should aim to reduce their dependence on external emission offsets as rapidly as possible.
 - ANU should link the use of emission offsets (both purchased and in-house) with opportunities for research and teaching.
3. Establish an extensive program of student and community engagement, ensuring that every school is involved and including facilitating student-led teams to champion implementation.
 4. Join relevant industry associations to learn and share learnings about emission reductions in a university context
 5. Ensure that ANU Below Zero targets and strategies form part of ANU communication and marketing campaigns
 6. Implement regular monitoring and transparent reporting on emissions from multiple sources.
 7. Undertake student led native vegetation and tree planting initiative (rewilding the campus)

3.2. ENERGY AND BUILDINGS

How might we reduce greenhouse gas emissions from ANU buildings as rapidly as possible?

An [online workshop](#) was held on Thursday 21st September and attended by 29 people. Short presentations were given by Prof Ken Baldwin, Director, Energy Change Institute, Nicki Middleton, Director, Facilities & Services Division, and Jess Catling, Master of Energy Change student and this was followed by discussion amongst participants. The workshop was moderated by Prof Mark Howden.

Sixty-six ideas were posted on the Ideanote platform.

The panel evaluating the ideas comprised:

- Prof Ken Baldwin, Director, ANU Energy Change Institute
- Doug Gray, Associate Director, Facilities & Services
- Mara Hammerle, PhD student, Crawford School of Public Policy

Key recommendations by the panel

The panel recommends that ANU:

Overall

1. Start implementing Acton Campus Energy Management Strategy (ACEMS) as soon as possible.
2. Ensure that all new buildings are built to ACEMS and building standards are applied and enforced across the campus – including solar-ready rooftops.
3. Apply precinct-wide standards to create GHG emission-neutral precincts through shared energy systems and encourage cooperative action between buildings within a precinct e.g. sharing waste heat.
4. Review the Campus Buildings Requirements Manual (CBRM) to ensure it includes principles from ACEMS.
5. Transition out of energy inefficient temporary buildings / demountables.

Monitoring and reporting

6. Monitor and report on energy usage in a way that is transparent, easily accessible and engaging, including energy dashboards within buildings and online.

Renewables

7. Prioritise transitioning away from natural gas for space and water heating and cooking. Electrify via heat pumps for space and water, and induction cooktops.
8. Prioritise self-generation of renewables outside ACT: Evaluate options for stand-alone solar/storage at Kioloa and Siding Springs.
9. Re: solar power in ACT, conduct thorough evaluation of different approaches to solar via selective tender process for rooftop solar compared with greenfield site. Undertake cost benefit analysis of different financial and operational frameworks for solar (see proposed “Energy as a service” delivery model under the Finance theme)
10. All new buildings should be constructed to be solar-PV ready to gain maximum cost savings from solar rooftop installation
11. Orient solar PV towards the west to help with reducing peak demand and network load in summer months

Energy efficiency

12. Conduct a complete audit of potential energy efficiency projects. In particular, audit all ANU lighting and continue and finalise replacement with energy efficient LED lights.
13. Ensure that insulation is a high priority in new builds, rebuilds and when roofs are replaced.

3.3. TRAVEL

How might we reduce emissions from business travel and commuting to and from ANU?

An online workshop was held on Tuesday 29th September and attended by 29 people. Short presentations were given by Anne Napier, ACT Government Active Travel Coordinator, Nancy Richardson, Executive Officer, College of Science, Caitlyn Baljak, undergraduate student at ANU, Josue Martinez Moreno, PhD student, ANU Research School of Earth Sciences.

Sixty ideas were posted on the Ideanote platform.

The panel evaluating the ideas comprised:

- Nancy Richardson, Executive Officer, College of Science
- Caitlyn Baljak, undergraduate student at ANU
- Josue Martinez Moreno, PhD student, ANU Research School of Earth Sciences.

Key recommendations by the panel

The panel recommends that ANU:

Business travel

1. Colleges, schools and divisions aim to reduce international and air travel for business. Business units should be encouraged to discuss expectations for essential vs non-essential travel, although there is no one size fits all approach. Some guidelines: non-academic business travel should be economy, land travel should be incentivised instead of air travel, particularly to Sydney.
2. Make GHG emission impacts of travel transparent by establishing a system of carbon budgeting at School level, differentiating research travel budgets and conference travel budgets. Carbon impacts should be included in travel approvals e-form system.
3. Develop a university-wide GHG emission offsets scheme for essential air travel. This would be funded by cost savings from reductions in air travel.
4. Facilitate virtual conference attendance & provide support for staff and students to immerse themselves in online events e.g. with dedicated physical spaces and improved digital capability for virtual collaboration.

Personal transport

5. Facilitate active and low emission travel by improving infrastructure for bikes, facilitating trial sampling of e-bikes and scooters and partnering with scooter companies to have stands on campus.
6. Support carpooling via development of an app and parking benefits.
7. Extend salary sacrificing options for bikes, electric motorbikes as well as electric bikes and electric cars.
8. Restructure parking permits for part-time parking and add emission offset charge (see Finance theme re other recommendations re costing parking).
9. Develop and communicate case studies of people who have reduced transport emissions.

Public transport

10. Work with ACT Govt Workplace Travel Planning to improve Canberra bus routes.
11. Explore options for improving ANU connections to public transport e.g. with frequent mini-buses.

3.4. BEHAVIOURAL CHANGE

How might we incentivise and embed more climate friendly behaviour into the lives of students and staff?

An [online workshop](#) was held on Thursday 25th September and attended by 29 people. Short presentations were given by Dr Samantha Stanley, Susan Helyar and Stephanie Penales. The workshop was moderated by Prof Mark Howden.

Fifty-seven ideas were posted on the Ideanote platform.

The panel evaluating the ideas comprised:

- Dr Samantha Stanley, Research School of Psychology
- Susan Helyar, Director, Residential Experience in the Office of the Deputy Vice-Chancellor (Student and University Experience)
- Stephanie Penales, Masters of Environment and Development student and past Below Zero intern

Key recommendations by the panel

The panel recommends that ANU:

1. Consider the pre-conditions for individuals to change behaviour around emissions reduction, including knowledge, capacity, willingness and opportunity, and ensure that they are built into all engagement programs.
2. Establish an ongoing community engagement program to empower students and staff around climate friendly behaviours. This program should support building local area and student-led teams to drive targeted behaviour change from grassroots up. Ideally this program would be supported by a professional staff member focussed on Below Zero, as well as communications campaigns, internships and the development of volunteer groups and research projects so that the lessons learned are documented and contribute to the evidence base more broadly (see integrating research, teaching & operations theme). This program will need both expert mentors and good data platforms to support engagement, ensure effectiveness and provide positive reinforcement of efforts.
3. Explore how ANU can take advantage of existing engagement programs such as Green Impact.
4. Facilitate annual audits of relevant practices and behaviours by local area teams in different schools, colleges, and residences via providing appropriate resources (such as checklists). Involvement by students in areas such as this has been shown to build skills for employment. These audits will identify context-specific areas of need around behaviour change (i.e., where there is the greatest opportunity to reduce emissions) and help local area teams set appropriate targeted goals for the upcoming year.
5. Target new students and staff as they transition to ANU with inductions / digital green welcome packs.
6. Implement default options that incentivise climate friendly behaviour, for example the default use of ceramic mugs or keep cups in school or college kitchen areas, or default vegetarian options in university accommodations.
7. Support measures to build the sharing economy within ANU.
8. Explore potential partnerships with ACT Govt including ActSmart.
9. Pilot interventions, monitor and evaluate initiatives to develop learnings that can be re-applied to the re-iterated initiative and shared to inform other initiatives.
10. Establish digital platforms (website & social media groups as relevant) to provide information on GHG impacts, resources (e.g. case studies), build community and share learnings re Below Zero, and tips and tricks to reduce individual emissions.

11. Incorporate Below Zero into existing ANU award structures e.g. Vice Chancellor's Below Zero innovation award.
12. Contributors to this theme were particularly concerned with waste (energy and travel being dealt with elsewhere in the consultation). ANU should explore developing infrastructure to support new waste streams such as composting and aim for zero waste practices.

3.5. INTEGRATING RESEARCH, TEACHING AND OPERATIONS

How might we integrate operational measures with research and teaching?

An [online workshop](#) was held on Tuesday 6th September and attended by 13 people. Short presentations were given by Dr Chris Browne and undergraduate engineering student, Sophie Burgess. The workshop was moderated by Prof Mark Howden.

Fourteen ideas on this theme were also posted on Ideanote.

The panel evaluating the ideas comprised:

- Dr Chris Browne, Sub Dean, College of Science
- Dr Bec Colvin, Master of Climate Change co-convenor, Crawford School of Public Policy
- Jennyfer Taylor, Lecturer, Research School of Computer Science

Key recommendations by the panel

The panel recommends that:

1. Below Zero research projects are built into existing courses at every College throughout ANU, both as individual and group projects.
2. Below Zero internships are built into existing internship programs across ANU Colleges through the Internships Community of Practice, including the Australian National Internship Program (ANIP) and VC's Course Group Research & Innovation Project. These should cater for different student needs from projects that are more research-based vs more practical to help attract different types of students and teach diverse skills.
3. Develop new mechanisms to showcase the work of students and attract new students, including a student project hub on the Below Zero website (showing past and upcoming student projects) and a bi-annual event to showcase research projects and internships by students.
4. Develop guidelines / workshops on how to reduce the GHG emission impacts of your research.
5. Develop a model to understand – and offset – emissions footprint of research projects. Engage with ANU Ethics Committee to add a (voluntary) statement of environmental ethics in ethics proposals, including emission impacts of proposed research.
6. Develop a Below Zero presentation(s) with guest lecturers who can teach into courses across the university.
7. Engage with course convenors and research supervisors across ANU on a regular basis about the options for Below Zero research projects.
8. Incorporate information on Below Zero into inductions and PULSE training.
9. Develop a CCE course on calculating and reducing personal and institutional GHG emissions.

3.6. REMOVING ATMOSPHERIC GREENHOUSE GASES

How might we fast-track approaches that draw down greenhouse gases at ANU?

An [online workshop](#) was held on Friday 2nd October and attended by 27 people. Short presentations were given by PhD student, Aaron Tang, Prof Penny King, Research School of Earth Sciences and Prof Mark Howden. The workshop was moderated by Dr Roslyn Prinsley.

Twenty-eight ideas were posted on the Ideanote platform.

The panel evaluating the ideas comprised:

- Aaron Tang, PhD student, ANU Fenner School of Environment & Society
- Dr Roslyn Prinsley, Head, Strategic Research Initiatives, Office of the DVC, Research and Innovation
- Prof Mark Howden, Director, ANU Climate Change Institute

Key Recommendations by the panel

The panel recommends that ANU:

1. Make negative emissions (NE) a key research priority across ANU, both by scaling up investment and maintaining existing capacity in carbon capture & usage (CCU), materials and engineering. Raise profile of NE internally within ANU via ongoing engagement and links with ANU Below Zero. Ensure that we are highlighting to Schools the diverse opportunities across multiple disciplines that NE provides as a research theme, including that it is a huge growth area and much research can be desk-based.
2. Facilitate negative emissions (NE) coursework and student research projects and integrate into existing undergraduate and postgraduate courses in every school, perhaps via academic board.
3. Develop connections with innovation hubs and networks for NE to help accelerate R&D.
4. Export ANU knowledge on NE via teaching, (e.g. by developing and running a professional short course), communications, outreach and policy and industry engagement.
5. Seek permanent gifts of land that can be used for practical carbon drawdown and research.
6. Implement best practice carbon sequestration on ANU land and link with research and teaching e.g. landscape design such as Managing Forested Landscapes (ENVS3041/6026) or Ecological Assessment and Management (ENVS3014/6514). Identify relevant courses and engage with convenors.
7. Seek funding for research into biochar and enhanced weathering.
8. Invest in planting native trees at ANU and engage the ANU community in these efforts.

3.7. FINANCE, INVESTMENTS AND PURCHASING

How might we finance activities to reduce greenhouse gas emissions? How might we reduce emissions from ANU purchasing & investments?

An [online workshop](#) was held on Tuesday 13th October and attended by 31 people. Short presentations were given by Prof Frank Jotzo, Bella Himmelreich, undergraduate student and Mark Egan, ANU Procurement Officer. The workshop was moderated by Prof Mark Howden.

Nineteen ideas were posted on the Ideanote platform.

The panel evaluating the ideas comprised:

- Prof Frank Jotzo, Centre for Climate and Energy Policy, Crawford School of Public Policy
- Si Kayser, ANU Finance
- Clare de Castella, Business Manager, ANU Climate Change Institute

Key Recommendations by the panel

The panel recommends that ANU:

Financing

1. Establish financial incentives for Schools and residences to reduce energy bills at a local level by sending clear financial signals to School / Building Managers that reduced energy consumption will save their School money. (This could be based on savings vs historical baselines.)
2. Explore the options for taking emissions reductions initiatives off budget via “Energy as a Service” delivery model where a third party provides expertise, financing, hardware and software to increase energy efficiency, manage demand and / or facilitate adoption of renewables. Given the current financial situation for ANU and the fact that significant capital investment will be required, this would provide funding for emissions reductions with no upfront costs. Cost savings from energy efficiency and / or solar would be shared between ANU and the third party. A professional, incentive-driven approach such as this is also likely to optimise energy efficiency. Whilst an internal green fund can also achieve this, a similar outcome in terms of emissions reduction can be reached more quickly and with less managerial output by going with an outsourced managerial model.
3. Develop a (smaller) ANU green fund for student-led and local staff-led initiatives to help facilitate projects at a local level.
4. Adjust parking fees to market rates using a phased approach and use the incremental funds generated to establish the ANU green fund (see recommendation 3). This would have multiple co-benefits including generating revenue for ANU Below Zero, providing a financial incentive for staff and students to use lower carbon transport options such as car sharing, public transport and active transport and reduce pressure on parking spaces for those who have no option but to drive.

Purchasing

5. Develop procurement policies that consider carbon impacts and actively engage with suppliers on reducing GHG emissions.

Investing

6. Strengthening of the University’s Socially Responsible Investment Policy is currently being considered by a working group which will make recommendations to the University’s Finance Committee and Council. Below Zero Initiative would recommend a net zero emissions goal for the University’s overall investment portfolio in line with best practice by universities globally.

4. APPENDIX – RECORD OF IDEAS FROM CONSULTATION

This section contains a list of all ideas raised by the ANU community during the consultation process. Please note these are not necessarily recommendations – these are listed under Section 3.

4.1. LEADERSHIP AND TARGETS

How might we demonstrate leadership in reaching below zero emissions as fast as possible?

Summary of ideas from the consultation

Please note that the section below is a record of all the ideas from consultation with the ANU community. The key recommendations for Leadership and Targets are [above](#).

Targets

- Set ambitious targets, think long-term and plan for future changes in our climate.
- Use science based and globally accepted targets e.g. based on Intergovernmental Panel on Climate Change (IPCC) and Sustainable Development Goals (SDGs).
- Review targets regularly (every year / two years) to sustain ambition based on actual progress, emerging research and developments.
- Implement targets for every College, School and division and ask every student and staff member to contribute in their own way.
- Include student and staff travel (including commuting) in targets.
- Use emission offsets with caution – use only domestically sourced credits related to land use and ensure that they are for projects that would not go ahead under other circumstances.

Reporting

- Be as transparent as possible in reporting emissions e.g. develop emission budgets as well as financial budgets.
- Frequent monitoring (e.g. quarterly) of progress against emissions targets to help manage seasonal fluctuations in emissions.
- Report based on the Sustainability Tracking, Assessment & Rating System (STARS), a global sustainability standard created by and for higher education.

Knowledge exchange, engagement and communication

- Provide opportunities for students and staff to be actively involved in climate mitigation, including establishing student led teams to champion implementation.
- Join relevant Australian and global initiatives and share / apply learnings e.g. Australasian Campuses Towards Sustainability (ACTS), reinvigorate IARU Sustainability program, engage with Association for the Advancement of Sustainability in Higher Education (AASHE), Green Impact, Universities Australia, Clean Up Australia Day. Apply for industry sustainability awards e.g. Financial Review Higher Education Awards.
- Lobby politicians, institutional leaders and market influences around reducing emissions and speak out against fossil extraction and use.

Other organisational changes

- Provide financial incentives to schools and colleges to reduce energy bills (see Finance, Investments and Purchasing theme).
- Raise the profile of ANU Sustainability within organisational structure by taking it out of Facilities & Services.
- Commit to a formal Energy Management Plan.
- Evaluate and mitigate the carbon impact of projects on an ongoing basis.
- Apply a carbon levy on GHG producing activities.

Campus Planning

- Design buildings and the campus with nature in mind and REWILD the campus. This got a lot of support among workshop participants with the opportunity for various Schools to become heavily involved.
- Establish and support community gardens on campus.
- Increase area of ANU campus that is no mow native plants.
- Plant more native trees all over campus (see Removing GHGs theme).

Other miscellaneous ideas

- Use ECOSIA as default search engine (the platform offsets emissions arising from its operations).
- Harness electricity from people's exercising activities on gym equipment.

4.2. ENERGY AND BUILDINGS

How might we reduce greenhouse gas emissions from ANU buildings as rapidly as possible?

Summary of ideas from the consultation

Please note that the section below is a record of all the ideas from consultation with the ANU community. The key recommendations for Energy and Buildings are [above](#).

Overall

- Develop an Energy Master Plan that addresses all areas of decision-making affecting energy use including capital planning and budgeting, operations and maintenance, staff training, energy data collection and management, progress reporting, and protocols for vetting new technologies. NB There is an existing Energy Management Strategy but it has yet to be implemented.
- Ensure that material selection, siting, energy modelling, water conservation, indoor air quality and waste management are integral parts of building design and construction, taking a whole-of-life approach.
- Ensure performance goals are achieved by requiring design teams to disclose the energy impact of value-engineering/substitution recommendations through revised energy models reflecting proposed changes or a revised Life Cycle Cost Analysis (LCCA).
- Optimise building utilisation.
- Reduce on-campus footprint by promoting remote working and studying.
- Increase staffing level for energy management and utility monitoring.
- Develop an energy strategy for labs.

Transition from natural gas

- Transition end-of-life gas infrastructure to climate friendly fuels e.g. hydrogen or electrify.
- New builds should not include any gas-powered equipment.

Monitoring and reporting

- Real-time monitoring and reporting of energy use and generation (e.g. ANU-wide PV system) including on displays in foyers of buildings.
- Standardised publicly visible labelling of all ANU buildings, identifying the energy star rating of the building, energy sources and typical energy use statistics.
- Continuous fault detection and diagnosis.
- Streaming big data analytics: Smart grid situational awareness. Co-locate advanced micro-PMUs with rooftop solar to improve power quality and manage bi-directional power flows.
- Quantify our dependence on 'imported' non-renewable electricity at night.
- Monitor and report on embedded energy in buildings and other materials including cement, steel and plastics.
- Use Internet of Things technology to inform us about energy efficiency and create smart buildings i.e. the use of space (occupancy rates & movement patterns), lighting, heating, cooling, air quality, water usage, computer monitors, other equipment usage, cleaning contractors, etc.

Lighting

- Replace all lights with energy efficient LED lights.
- Continue solar lighting across campus – bike paths, bollards, footpaths, etc.
- Voice or motion activated lighting in buildings.
- Have all ANU buildings fitted with sunlight reflectors to reduce the need for artificial lighting during the day.

Energy efficiency

- Implement energy efficiency audit, develop and implement a list of priority projects according to ACEMS standards.
- Mandate strict energy efficiency standards for equipment and non-building investments.
- Improve insulation, draught-proofing, double glazing and window shades / curtains.
- Set heating and cooling temperatures to be closer to outside temperatures (i.e. warmer than current set temperatures in summer, cooler in winter).
- Install motion sensors to activate lighting and heating.
- Improve temperature sensors to more accurately monitor actual temperatures as currently there are wide variations in different parts of buildings.
- Install individual temperature controls to allow people to adjust for temperature gradients / Don't have individual temperature controls as this can cause inefficiencies.
- Communicate and implement IT programs around turning off equipment e.g. NightWatchman.
- Incentivise staff to improve home office energy efficiency & add solar via ANU group discounts.
- Have doors within buildings that can close to deal with temperature gradients.
- Install rooftop hot water collectors driving a hydroponic heating system with a booster for early mornings and days when solar energy isn't enough.
- Cool climate ceramics – research lower temperature solutions to existing ceramic technology practices.
- Replace old lecture theatres with energy efficient flexible teaching spaces.
- Incentivise emissions reduction by creating opportunities to significantly decrease utility costs in residences and passing cost savings on to students.

Increase renewable energy generation at ANU

Solar

- There were multiple ideas around installing solar panels on Acton campus including retrofitting new buildings and on all new buildings. Some people also suggested wind turbines.
- Install solar panels (and / or other renewable energy) and storage on non-ACT campuses e.g. Siding Springs, which are currently not powered by renewables.
- Build an offsite solar PV farm.
- Use community based solar funding to finance rooftop solar e.g. Clearsky Solar or explore the option for setting up an ANU community solar farm via an ANU Community Energy Cooperative or an existing organisation such as SolarShare.
- Buy energy direct from nominated solar generators using technology that allows buying and trading.
- Considering partnering with a private enterprise to create a virtual solar power plant.

Other renewables

- Recycle waste heat e.g. from NCI.
- Transition to power based on hydrogen from renewable sources.
- Implement a microgrid.

Miscellaneous ideas

- Plant more native vegetation and rewild the campus (see Leadership theme).
- Install rainwater tanks and add grey water tanks.
- Reduce number of small, inefficient fridges and run larger, more efficient fridges.
- Convert all electric doors to manual.
- Explore options for recycling building, construction and technical waste.
- Review the values and goals of energy partners to ensure they include sustainability criteria.

4.3. TRAVEL

How might we reduce emissions from business travel and commuting to and from ANU?

Summary of ideas from the consultation

Please note that the section below is a record of all the ideas from consultation with the ANU community. The key recommendations for Travel are [above](#).

Monitoring and reporting

- Detailed reporting of university-wide air travel emissions.
- Develop a dashboard that allows staff and students to calculate their own emissions based on different travel behaviours.

Business travel:

Air travel

- Set up and mandate ANU GHG emission offsets scheme for unavoidable air travel. Redirect cost savings from reduced air travel to pay for high quality emission offsets.
- Implement strict limits on international travel.
- Eliminate all non-economy travel with exceptions based on health needs, etc.
- Incentivise land-based travel options, particularly Canberra to Sydney.
- Require air travel with companies who are using lower GHG emission fuels.

Conferences

- Hold conferences at regional and local hubs, rather than a single global location
- Have pre-recorded and on-demand sessions.
- Normalise, encourage and support virtual conference attendance instead of travel e.g. provide conference leave.
- Improve IT infrastructure in every meeting room to enable web-based meeting technology.
- Support and fund conferences that reduce emissions.
- Differentiate between conferences that are essential for networking purposes and those that are too big to network at.
- Better use of distinguished internationals via online access and zoom discussions.
- Minimise travel by prioritising smaller conferences and workshops, prioritising ECRs who need new networks.
- Repurpose accommodation options on campus for visitors and visiting staff to periodically collaborate for less frequent, longer stays.
- Consider using travel for thinking time and slow land-based travel.
- Use great platforms for online conferences such as hopin.to and virtual conference poster session e.g. <https://gather.town/conferences/> .
- Reduce usage of taxis and Ubers.

Travel for research

- GHG emission budgets for research related travel to be reviewed by a central team. For example, for a research project requiring data collection in an international location, could this data be collecting by a research partner on location? This could lead to not only a lower emissions outcome, but potentially also data collected by a researcher with greater insight into the local context.
- Rethink disciplinary practices.

Travel to work: Commuting

General

- Develop resources and support conversations about greener commuting to build social norms e.g. inductions, workshops, web guides.

- Facilitate remote lecture attendance and encourage working from home to reduce the need to travel.

Support active travel

- Provide support for cyclists including showers and lockers, more secure bike and e-bike parking and cycling maps to show people cycling routes and where facilities are located.
- Salary sacrifice for bikes as well as e-bikes.
- Financial incentives to get people on bikes.
- More scooters on campus.
- Establish bike and e-bike share services and facilitate trial of electric bikes by partnering with an e-bike company to allow sampling e.g. during O-Week.

Support electric vehicles

- Support electric motorcycles by adding to salary sacrifice and providing storage for gear.
- Support staff uptake of EVs via partnerships and salary sacrifice.
- Prioritise zero-emission vehicles in ventilated enclosed car parks.
- Install charging stations on campus and solar panel carports.

Public transport

- Work with ACT Govt to redesign bus networks and bring public transport to the centre of campus e.g. Kambri.

Revamp ANU parking

- Restructure parking tariffs to stop incentivising driving every day (currently it's as cheap to park 5 days as it is to park 1 day per week). Offer part-time or flexible permits. Increase on campus parking rates to be proportional to rates in the City.
- Apply emission offsets charge on campus parking permits.
- Free parking for EVs on campus.
- Implement campus master plan to reduce car parks in the centre of campus.

Shared mobility options

- Develop and promote shared mobility options e.g. an ANU car share app, reduced parking permits for those who car share, designated car spaces for those who carpool.

Miscellaneous

- Add ANU transport service within campus.
- Electrify ANU fleet.

4.4. BEHAVIOURAL CHANGE

How might we incentivise and embed more climate friendly behaviour into the lives of students and staff?

Summary of ideas from the consultation

Please note that the section below is a record of all the ideas from consultation with the ANU community. The key recommendations for Behavioural Change are [above](#).

Overarching behaviour change strategies

- Partner with ACT Govt programs such as ACTSmart and seek funding for zero emissions initiatives e.g. <https://www.environment.act.gov.au/cc/be-part-of-the-solution/community-zero-emissions-grants>.
- Apply green nudges ([Little Book of Green Nudges](#) by UNEP) e.g.:
 - o Build ANU identity around climate action to support pro-climate social norms
 - o Make more sustainable behaviour the default option, facilitate sustainable choices by making them more accessible and available
 - o Remove small barriers to sustainable behaviour and add barriers to unsustainable behaviours
 - o Attract attention to a sustainable option by using personalised or relevant messaging and visual cues
 - o Frame messages positively and highlight co-benefits
 - o Use smart incentives
 - o Highlight others' sustainable behaviour and use social connections
 - o Encourage pre-commitments and emphasise present benefits
- Use gamification to drive behaviour change.
- Use pilot groups to see which interventions work best.
- Learn from other trailblazers e.g., Australian Psychological Association, One Million Women, etc. and re-join the internationally-recognised Green Impact program.
- Develop Theory of Change and identify the top 5-20 actions we need to see.

Monitoring and reporting

- Find the easiest way to help staff and students quantify their emissions and to see changes as programs are implemented or new processes or infrastructure are adopted.
- Show how individual impacts aggregate up into ANU subcommunities and then the university as a whole.

Community engagement

- Engage people when they are in a period of transition, e.g., green induction program / welcome packs for new students and staff including bus timetables and cycling maps
- Engage students through green reps and interhall competitions.
- Make climate-friendly behaviour fun, e.g., fashion shows, local cooking classes.
- Offer budget for environmentally friendly student activities.
- Appoint green ambassadors in local areas.
- Develop comms plan and forums to communicate the "how to" of climate friendly behaviour.
- Engage visual arts students to develop rotating communications campaign around climate friendly behaviours.
- Incentivise staff to contribute time towards Below Zero projects.
- Develop targeted strategies for the 6000 people living on campus, building their knowledge, capacity, willingness and opportunity to make positive contributions to reaching the Below Zero target for emissions.

Ideas on specific behaviours

Consumption and waste

- Implement composting / organic waste disposal on campus – this was a particularly popular theme with strong support.
- Strive for zero waste practices and find ways to support people so that it is financially viable e.g., equipment sharing.
- Develop options for recycling specific items via partner orgs such as Terracycle – e.g., disposable gloves.
- Make vegetarian / vegan / low emissions food the default option for ANU catering.
- Education and communication campaigns around ACT recycling e.g. <https://www.cityservices.act.gov.au/recyclopaedia/recyclopaedia-a-z-listing>
- Explore options for greater variety of bins and waste deposit centre on campus e.g. recycling batteries, soft plastics.
- Provide infrastructure to separate glass bottles and cans and drop off to receive 10c refunds. Direct funds raised back to environmental funds.
- Reuse / recycling programs for appliances left behind by residents who leave campus
- Use bio-degradable bin bags.
- Take a digital first approach and reduce printing of publications. Reduce promotional materials such as lanyards and pens.
- Incentivise reuse by getting a discount on food if you bring your own container / cutlery (or an extra charge for using single use items).
- Quit bottled / filtered water delivery.
- Give out ANU branded reusable cups and water bottles.
- Develop strategies to reduce food waste in residential halls e.g. allow people to go back for second helpings so that they don't overload plates.
- Commit that ANU doesn't use plastic cutlery, crockery, cups or straws for events / in kitchens.
- Initiate soft plastic recycling on campus and use the outputs to create products using 3D printing / by building our own plastic recycling machines.

Sharing economy

- Promote and facilitate the sharing economy e.g., ANU thrift shop for sustainable fashion bubble, set up ANU green shed.
- Implement coffee cup swap program e.g., <https://www.act.gov.au/our-canberra/latest-news/2019/december/reusable-coffee-cup-scheme-launches-in-canberra>
- Other ideas on car sharing listed under transport theme.

4.5. INTEGRATING RESEARCH, TEACHING AND OPERATIONS

How might we integrate operational measures with research and teaching?

Summary of ideas from the consultation

Please note that the section below is a record of all the ideas from consultation with the ANU community. The key recommendations for Integrating Research, Teaching and Operations are [above](#).

Overall themes

- ANU should take a whole-of-university approach to Below Zero using the campus as a classroom, with diverse and interdisciplinary opportunities for students to engage, either as part of research projects, internships or in volunteer roles.
- Rethink disciplinary practices, in terms of disciplinary expectations for travel, teaching and research

Build Below Zero into existing courses, student research project units and internship structures

- Reach out to existing structures including internship programs in every College, ANU Internship Community of Practice and group project courses to ensure that they include Below Zero projects.
- Use VC's courses to bring together students from different disciplines.
- Develop internships that have real world practical application.
- Generalise existing internships / programs that currently exist within one school.
- Build Below Zero research projects into existing courses e.g. Independent research project course (ENDV8014, Masters of Energy Change).
- Develop a database of internship co-ordinators who can help advertise BZ projects.

Develop new mechanisms to integrate Below Zero into research and teaching

- Establish a website / hub listing a range of ANU Below Zero student research projects (past and upcoming) and build visibility.
- Develop a model to understand – and offset – GHG emission footprint of research projects.
- Develop mechanisms that can cement engagement between Below Zero and other structures so that they continue e.g. via ANIP and Internship Communities of Practice.
- Develop a leadership internship for Master of Climate Change students.
- Hire a part-time staff member to oversee management of research projects and internships.
- Commit to cease fossil fuel research.

4.6. REMOVING ATMOSPHERIC GREENHOUSE GASES

How might we fast-track approaches that draw down greenhouse gases at ANU?

Summary of Ideas from the consultation

Please note that the section below is a record of all the ideas from consultation with the ANU community. The key recommendations for Removing Greenhouse Gases are [above](#).

Build research and educational capacity on NE

- Scale up investment and accelerate R&D across range of NE themes – not just tech, also governance and comms.
- Systematically explore a broad portfolio of NE technologies – at this stage we don't know which will be able to scale up.
- Expand current research focus on Carbon Capture and Usage (CCU), treating CO₂ as a resource, driven by inherent value of product.
- Contribute to commercialisation of NE technology – spin off companies & accelerators based on IP at ANU.
- Exploring funding opportunities for NE research, particularly with ACT Govt.
- Research regenerative agriculture and different frameworks for land management.

Knowledge exchange re NE

- Export knowledge and be an enabler for scaling up pathways across community.
- ANU can help legitimise promising technologies such as direct air capture as they evolve.
- Create a professional short course on NE, given limited understanding of NE in government and broader society.
- Create a Masters / undergrad unit on NE as this area of research expands (may be premature at this stage but something to consider for future as technology develops and the sector grows).
- Build community around NE via workshops, meetings, conferences.

Practical options for removing GHGs at ANU

- Develop opportunities for practical best practice carbon sequestration and related research at landscape level via trees, vegetation, biochar, enhanced rock weathering and soil on ANU land. Use existing land resources and expand them through philanthropic donations.
- Build wood-framed (rather than cement) buildings to store carbon.
- Plant native trees and involve students and staff in tree planting events e.g. using partnership with Greening Australia. NB Tree planting by students also received massive support in the DVC-Student and University Experience survey and could be implemented in partnership with residences who take on custodianship.
- Approach external carbon offsets with caution (see leadership and targets theme on offsets).
- Use tidal pumps.
- Apply biochar.
- Nutrient removal from Sullivan's Creek.

4.7. FINANCE, INVESTMENTS AND PURCHASING

How might we finance activities to reduce greenhouse gas emissions? How might we reduce emissions from ANU purchasing & investments?

Summary of Ideas from the consultation

Please note that the section below is a record of all the ideas from consultation with the ANU community. The key recommendations for Finance, Investments and Purchasing are [above](#).

Financing emissions reductions

- Leverage community investment for financing and build stronger ties with ANU community e.g. via a community solar organisation such as SolarShare.
- Take Below Zero investments off budget. Given current cashflow constraints and extremely high discount rates applied to energy efficiency investments, partner with external organisations who can fund emissions reductions activities and take this off ANU balance sheet.
- Trade capital against operating expenditure by creating a funding structure that allows capital investment to be recouped by energy savings while also delivering emissions reductions.
- Ensure that there are financial incentives for Schools to reduce energy consumption by ensuring they pay energy bills directly (rather than having bills paid centrally).
- There were various ideas on establishing internal, revolving green funding structures to generate \$s that could be invested in internal emissions reductions projects. These included an internal offsets fund for air travel (see Travel Theme), an ANU staff (and student) carbon offset giving program deducted from salaries and a parking fund where a proportion of ANU parking fees are used to fund solar shading over car parks (see Travel Theme).

Purchasing

- Start by analysing spending patterns and purchasing to identify the largest energy-related impacts and opportunities.
- Build sustainability requirements into procurement policies and procedures using university-wide standards. Review money that ANU is currently spending and use that to drive positive change e.g. via ISO20400 Standard for Sustainable Procurement.
- Select vendors who can demonstrate their commitments to emissions reduction and sustainability e.g. encourage or mandate purchases with third party sustainability certifications, participate in ActSmart sustainable business program.
- Integrate total cost of ownership and total life-cycle costs into purchasing decisions.
- Develop university wide policies based on reduce and reuse as a first step to prevent unnecessary purchasing and save money, as well as reduce emissions.
- Seek out local and seasonal foods in dining operations (see Behaviour Change theme).

Investments

- Adopt a net zero emissions goal for the University's overall investment portfolio in line with best practice by universities around the world.
- Divest all ANU investments from organisations who support fossil fuels.
- Push for UniSuper to accelerate divestment from fossil fuel and move towards net zero.
- Divest from banks who support fossil fuels.

Partnerships and philanthropy

- Reject fossil fuel philanthropy / donations and stop endorsing suppliers and partners that invest in or support the fossil fuel industry.