

2022 - 2023

Interim Sustainability Report



JAMES COOK
UNIVERSITY
AUSTRALIA



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Acknowledgement of Country

JCU acknowledges, honours and respects the Elders, Traditional Owners and Historical People¹ in the communities where our campuses and study centres are located, who share their cultural insights, wisdom and knowledge with the University on a daily basis.

We pay our respect to the Elders, past, present and emerging of the Bindal People on whose lands our Bebegu Yumba campus lies, and the Wulgurukaba Peoples of the Townsville region. We also acknowledge the Yirrganydji Peoples where our Nguma-bada campus in Cairns is based and the other First Peoples of the region the Djabugay, Gunggandji and Yidinji Peoples. We also respectfully acknowledge the Yuibera Peoples of the Mackay region, the Muralag, Kala Lagaw Ya, Kalaw Kawaw Ya and Meriam Mir Peoples of the Torres Strait and the Kalkadoon Peoples of the lands around Mount Isa. The University acknowledges the Indigenous Peoples of Australia as the longest continuous surviving cultures on the planet and is grateful for the contributions that Indigenous staff and communities have made to the diverse and inclusive environment of the University.

¹Historical people is a term used by Australian Aboriginal and Torres Strait Islander peoples who live on land where they are not Traditional Owners. Through no fault of their own under Government legislation, Historical People were sent away from their communities. Some Historical People have played a major role in the areas where they live. It is important that these people who have contributed to self-determination also be given the courtesy and respect they deserve. It is usually the Traditional Owners who have been involved in their communities at the grass roots level, who would know which Historical People should be engaged.



Indigenous Education and Research Centre

Message from the Vice Chancellor

It gives me great pleasure to present James Cook University's (JCU) 2022-2023 Interim Sustainability Report, and to affirm our ongoing commitment to equitable and sustainable development. Sustainability is the cornerstone of society's wealth, propelling collaborative efforts across governance, leadership, diversity, education, research, partnerships, and communication.

Since our original commitment to the UN Sustainable Development Goals in 2016, we've progressively aligned our mission with these global objectives. For JCU, 2023 has been marked by a renewed focus on our sustainability goals. We are especially proud of the many achievements of our staff and students in education, research, community outreach, and regional stewardship.

Looking ahead to 2024, our focus is on achieving a carbon-neutral future, concentrating on carbon management, sustainable transport, and energy efficiency. We're dedicated to engaging the JCU community in our sustainability journey and look forward to sharing our progress.

Together, let's continue shaping a positive future for people in the Tropics and beyond.

Simon Biggs
Vice Chancellor and President
James Cook University



Introduction to the JCU Sustainability Report

James Cook University Sustainability Statement

JCU is committed to working towards equitable and sustainable development in Northern Queensland, Northern Australia, the Tropics and worldwide. JCU believes sustainability is fundamental to a thriving society. This requires working collaboratively to build social, environmental, and economic systems and processes that seek to enhance the current and future quality of life of all living entities.

For this reason, JCU engages decision-makers, industry, and communities in the task of pursuing more sustainable ways of living.

This Statement applies to all members of the JCU community. JCU commits to working towards the achievement of sustainable development as follows:

- Foster a university wide culture of sustainability by embedding sustainability principles into governance policies, strategies, and procedures.
- Demonstrate leadership in sustainable practices and behaviour.
- Promote equity, diversity, inclusivity, and social justice within University operations.
- Ignite and support a passion for learning about sustainability through the embedding of sustainability into curriculum and learning and teaching practices.
- Build and apply research excellence to meet economic, environmental, social, and cultural challenges of sustainability.
- Engage and support students and staff in sustainability practices and strive for continual improvement.
- Pursue opportunities to improve organisational sustainability and embed sustainability principles into University procurement and investment.
- Develop strategic industry, community, government, and non-government partnerships to innovatively address sustainability challenges.
- Communicate the University's sustainability values, activities and performance.
- Monitor, evaluate and report annually on the University's sustainability activities and performance.

In 2016, JCU became the first university signatory to the University Commitment to the Sustainable Development Goals. Through this commitment, JCU has agreed to:

- Support and promote the principles of the UN Sustainable Development Goals.
- Undertake research that provides solutions to sustainable development challenges.
- Provide the educational opportunity for our students to acquire the knowledge and skills needed to promote sustainable development.
- Contribute to the achievement of the UN Sustainable Development Goals by ensuring our campuses and major programs are environmentally sustainable and socially inclusive, and report on our activities in support of the UN Sustainable Development Goals.



Introduction to the JCU Sustainability Report

Sustainability can be defined as fulfilling the needs of current generations without compromising the needs of future generations, while ensuring a balance between economic growth, environmental care and social wellbeing. Sustainable development can be interpreted as incorporating three pillars: environment, social and economic sustainability. Sustainable development occurs at the intersection of these three pillars, as represented in this Venn diagram from Elkington, 2004. James Cook University's efforts towards sustainable development at the intersection of these three spheres is actively making a liveable, viable, fair, and sustainable difference to life in the Tropics.

In the environment pillar, JCU aims to protect the biodiversity and environmental health of its campuses and the broader Tropics, reduce the use of water, energy and resources in its operations and reduce its output of waste and pollution. JCU's social pillar goals are to create a campus environment free of discrimination of all kinds, a fair and equitable university and improve the lives of people in the Tropics through its outreach and research activities. JCU's aims under the economic pillar are to create an economically viable university that supports the local community, creates fair and rewarding employment for its staff, and supports sustainable investment respecting human rights and avoiding carbon intensive industries.

In this first sustainability report for James Cook University, we aim to capture the achievements that JCU has made towards the 17 UN Sustainable Development Goals across our campuses in Australia and Singapore. We recognise the challenges and difficulties we face in reaching our sustainability goals in our current fiscally restrained situation, and regional and remote campus locations. JCU's campus locations give the University its strong and unique sense of place, and a unique student population with rural and remote students. This location adjacent to two World Heritage Areas, incredibly beautiful landscapes, ancient and vibrant Indigenous cultures and amazing endemic biodiversity, gives the University a source of identity and strength, it provides our research foci, and inspires staff and students to do better to understand and protect the environment we live and work in.

2023 has been a year of re-focusing our sustainability priorities, to assess where we are now against our goals, and to decide where we want to be as a university in the future. We are proud of the sustainability achievements of our staff and students, in their research, community outreach and stewardship for our region, and we are excited for the plans and projects that are underway for future research and actions for the goals.

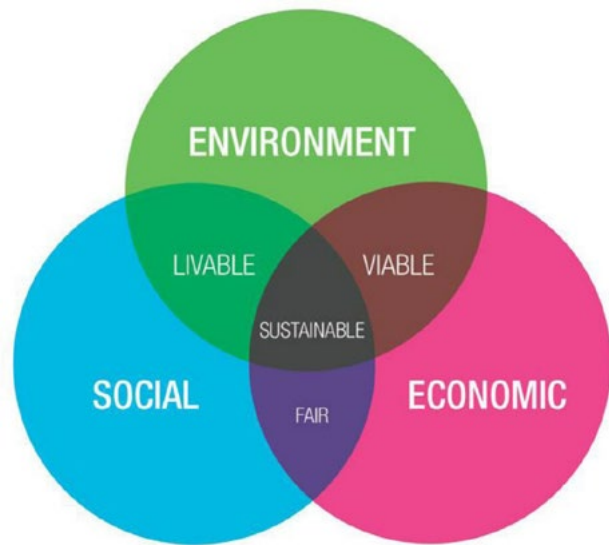


Figure 1.1: Sustainable development spheres from Elkington, 2004

The next step in our sustainability journey as a university is to plan our roadmap to a carbon neutral future, and we are already well on the way to working out the steps we need to take to get to our goal. In 2024 we will focus our efforts on carbon management, sustainable transport and energy efficiency in our utilities and all other services to reduce our greenhouse gas emissions as much as possible. Communicating our goals to students and staff and increasing engagement in JCU's sustainability journey is the main priority of the sustainability team and we look forward to reporting on the results of our efforts in 2024.

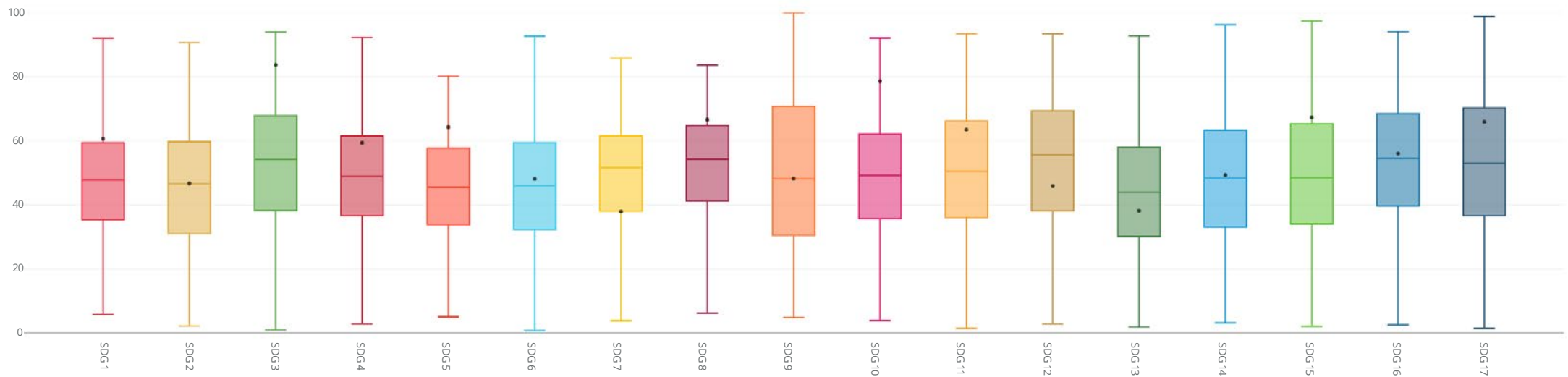


JCU achievements towards the UN Sustainable Development Goals

QS Sustainability Rankings 2023

- #1 in Australia for Sustainable Education
- #5 in Australia for Environmental Impact
- #16 in Australia for Sustainable Institutions
- #17 in Australia for Sustainable Research

Times Higher Education Impact Ranking 2023 - JCU results shown as dots



2022 SUCCESS HIGHLIGHTS



JCU scholarships for students from low SES backgrounds helped 529 students.



Student Rainbow Lounges opened on Townsville and Cairns campuses to support the JCU LGBTQIA+ community.



2022 JCU TropWATER-led project partnership won the Agriculture and Regional Development Award at the 2023 34th Banksia National Sustainability Awards.



Three highly energy-efficient buildings designed to meet LEED Gold standards now open on JCU campuses.



Over 100,000 patients from the local community seen at JCU health and allied health clinics in Townsville and Cairns, most from low SES backgrounds.



124 tonnes of waste recycled from JCU Townsville and Cairns campuses.



872 first in family students started a degree at JCU.



2000 trees planted on the Townsville campus in 2022.



76% of JCU graduates, and 49.6% of senior staff were female.



JCU TropWATER long term seagrass research and trials resulted in commencement of seagrass restoration project in 2023.



JCU water security northern Australia research partnership with NAUA completed co-design phase.



JCU joint winner for the Green Gown Awards Australasia – Sustainability Champion - Staff.



74,681kWh of solar energy generated at JCU.



New JCU Corporate Strategy launched.



JCU ranked #1 in Queensland for graduate salaries.



JCU regional partnerships for making rural health matter in Australia.



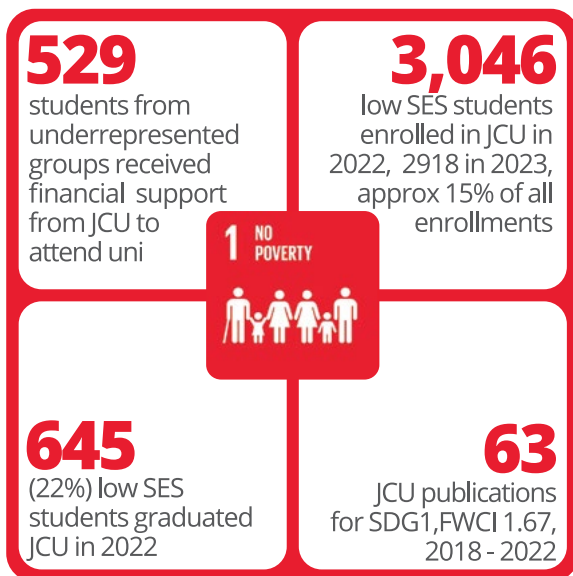
\$20 million in research income from industry and commerce in 2022.

Social Sustainability



2.0 Social sustainability can be defined as a concept of identifying and managing both positive and negative impacts of systems, processes, and organizations on the quality of life, equality, diversity and wellbeing of individuals and communities. JCU demonstrates adoption of the social sustainability values through education and research, health outreach and caring for students, staff and local communities and by making a difference to life in the Tropics.

2.1 Progress towards UN Sustainable Development Goal 1 - No Poverty



In this section

- 2.1.1 JCU Institutional equity targets for students
- 2.1.2 Monitoring course completions for students from low socio-economic backgrounds
- 2.1.3 JCU Financial aid for students
- 2.1.4 Providing free, or low-cost basic services – JCU Health Services
- 2.1.5 JCU Ideas Lab - local start-up support
- 2.1.6 Research into global poverty
- 2.1.7 JCU participating in government policy



END POVERTY IN ALL ITS FORMS EVERYWHERE

2.1.1 JCU Institutional equity targets for students

In Australia, the School Disadvantage Index is a calculated value for a school based on the average Index of Relative Socio-economic Disadvantage (IRSD) of the address of students that attend that school. The IRSD is a general socio-economic index published by the Australian Bureau of Statistics that summarizes a range of information about the economic and social conditions of people and households within an area. This index includes only measures of relative disadvantage. A low score indicates relatively greater disadvantage in general. A high score indicates a

relative lack of disadvantage in general. Every year, JCU sets ambitious targets to enrol students from Queensland schools with low IRSD scores. Annual UniX Roadshows provide information to students in these locations about pathways, scholarships, and future career options.



Domestic Enrolments by Socio-economic Status and Year

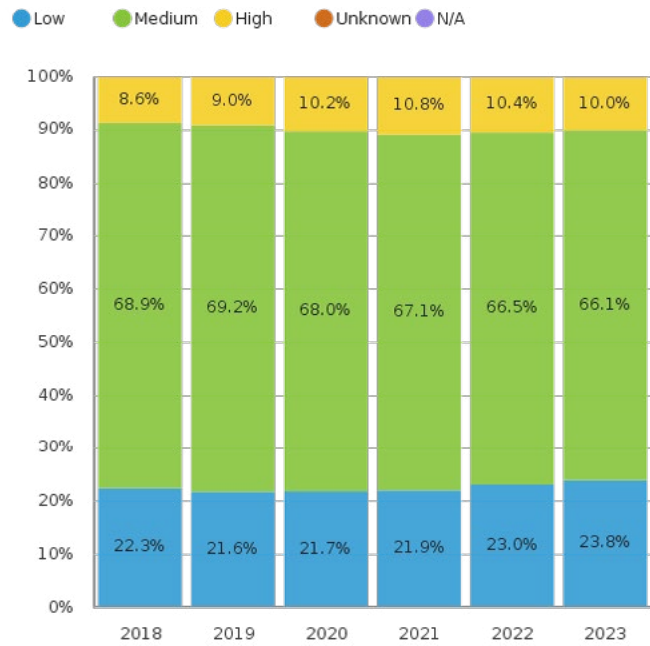


Figure 2.1: Socio-economic status of JCU students enrolled at JCU from 2018 to 2023

JCU also reports on its progress towards these targets through the Higher Education Participation and Partnerships Program (HEPPP)

- In 2022 JCU exceeded its target of 3,000 enrolments of students from low SES backgrounds by 46 enrolments.
- 702 Indigenous students were enrolled, missing the ambitious target of 800 students by 98 enrolments.
- 9,930 students from rural and remote areas were enrolled, missing the target of 10,000 students by only 61 enrolments. This followed a pattern of decreasing enrolments at James Cook University for this time.
- In 2022, 23% of students enrolled at JCU were from a low SES background, which is an increase on previous years enrolments.
- In 2023, 23.9% of students enrolled at JCU are from a low SES background.

Table 1: HEPPP - Higher Education Participation and Partnerships Program - JCU Performance Measurement Dashboard 2022 Targets

PRE-ACCESS				
<i>Pre-Access: The activity primarily consists of outreach activities designed to build or enable aspirations for higher education (e.g. to schools, students or communities).</i>				
PERFORMANCE MEASURES	DEFINITIONS	Target 2022	Final Result 2022	Commentary on 2022 Full Year Result
% ratio of school visits to JCU HEPPP identified schools with an Australian Aboriginal and Torres Strait Islander school student body population greater than or equal to the Queensland (State) Indigenous population %.	As per the latest 2021 ABS Census data, 4.6% of all Queenslanders identified as Aboriginal and Torres Strait Islander. This 4.6% is used as the threshold for the school student population, and cross referenced against the latest My Schools data to evaluate each school visited. Calculation: Total school visits to JCU HEPPP identified schools with an Indigenous student body of greater than or equal to 4.6% / (divided by) the Total JCU HEPPP identified school visits. Represented as a percentage ratio to one (1) decimal point. Source = Outreach, Careers and Wellbeing team (Kate Sheppard and Orr Thomason) for the list and number of school visits; and, My Schools dashboard data for the Indigenous student body population.	80.0%	100.0%	The target was met and exceeded by 20%.
% ratio of School visits to JCU HEPPP identified schools assessed as Low SES based on the school's Index of Community Socio-Educational Advantage (ICSEA) percentile	A school with an ICSEA (Index of Community Socio-Educational Advantage) percentile of less than or equal to 33 is assessed as 'Low SES'. This means the school is "more educationally disadvantaged" than 67% of schools in Australia. The schools visited are cross-referenced and evaluated against the latest My Schools data. Calculation: Total school visits to JCU HEPPP identified schools with an ICSEA percentile of less than or equal to 33 / (divided by) the Total JCU HEPPP identified school visits. Represented as a percentage ratio to one (1) decimal point. Source = Outreach, Careers and Wellbeing team (Kate Sheppard and Orr Thomason) for the list and number of school visits; and, My Schools dashboard data for the ICSEA percentile value.	50.0%	69.2%	The target was met and exceeded by 19.2%.
% ratio of School visits to JCU HEPPP identified schools in a Regional and Remote location	Calculation: Total JCU HEPPP identified school visits in a Regional or Remote location / (divided by) the Total JCU HEPPP identified school visits. Represented as a percentage ratio to one (1) decimal point. Source = Outreach, Careers and Wellbeing team (Kate Sheppard and Orr Thomason) for the list of schools and number of school visits.	90.0%	100.0%	The target was met and exceeded by 10%.
Access (incl. enrolments / commencements)				
<i>Access: The activity primarily consists of support for students to access higher education (e.g. pathway programs, admissions support, entry scholarships).</i>				
PERFORMANCE MEASURES	DEFINITIONS	Target 2022	Final Result 2022	Commentary on 2022 Full Year Result
Australian Aboriginal and Torres Strait Islander Student Total Enrolments	Total Enrolments of Aboriginal and Torres Strait Islander Students at the University. Cognos A3 Course Demographics Dashboard. Filters = (All Data) / Tabular View / Enrolments. [Widget/Table: Domestic Enrolments by Indigenous Status and Year] = "Indigenous".	800	702	The target was not met by -98 enrolments.
Low SES Student Total Enrolments	Total Enrolments of Low SES Students at the University. Cognos A3 Course Demographics Dashboard. Filters = (All Data) / Tabular View / Enrolments. [Widget/Table: Domestic Enrolments by Socio-economic Status and Year] = "Low".	3,000	3,046	The target was met and exceeded by 46 enrolments.
Regional and Remote Student Total Enrolments	Total Enrolments of Regional and Remote Students at the University. Cognos A3 Course Demographics Dashboard. Filters = (All Data) / Tabular View / Enrolments. [Widget/Table: Domestic Enrolments by Regionality and Year] = "Regional/Remote".	10,000	9,939	The target was not met by -61 enrolments. The fall in Indigenous enrolments also directly negatively impacted this measure.

Participation (incl. retention/success)		<i>Participation: The activity primarily consists of support for existing higher education students to remain enrolled and engaged in their studies (e.g. academic support, mentoring, targeted wellbeing support, ongoing scholarships).</i>		
PERFORMANCE MEASURES	DEFINITIONS	Target 2022	Final Result 2022	Commentary on 2022 Full Year Result
Australian Aboriginal and Torres Strait Islander Student Participation (%) UG	Total % of Undergraduate (excluding Enabling) Australian Aboriginal and Torres Strait Islander students enrolled at the University, on the following campus locations: Townsville, Cairns, Mount Isa, Thursday Island and Mackay. % Reported to 2 decimal places. % of Domestic Enrolments. Source = Cognos [KPI / PI / OPT - Student Report].	6.76%	6.43%	The target was not met by -0.33%. Indigenous enrolments dropped sharply from 2021 to 2022 which negatively impacted the ratio.
Low SES Student Participation (%) UG	SES means 'Socioeconomic Status'. Total % of Undergraduate (excluding Enabling) Low SES students enrolled at the University, on the following campus locations: Townsville, Cairns, Mount Isa, Thursday Island and Mackay. % Reported to 2 decimal places. % of Domestic Enrolments. Source = Cognos [KPI / PI / OPT - Student Report].	25.00%	24.51%	The target was not met by -0.49%. The target is deliberately high (tough); however, the result is still far higher than nearly all universities in Australia.
Regional and Remote Student Participation (%) UG	Total % of Undergraduate (excluding Enabling) Regional and Remote students enrolled at the University, on the following campus locations: Townsville, Cairns, Mount Isa, Thursday Island and Mackay. % Reported to 2 decimal places. % of Domestic Enrolments. Source = Cognos [KPI / PI / OPT - Student Report].	90.00%	87.41%	The target was not met by -2.59%. The target is one of the highest (toughest) in Australia, with a result far exceeding most Australian universities.
Attainment (incl. completion)		<i>Attainment: The activity primarily consists of support for existing higher education students to complete their study and transition into employment (e.g. work-integrated learning support, career support).</i>		
PERFORMANCE MEASURES	DEFINITIONS	Target 2022	Final Result 2022	Commentary on 2022 Full Year Result
Australian Aboriginal and Torres Strait Islander Student Career Support - number of eligible distinct students who attended career support sessions	Number of distinct eligible Aboriginal and Torres Strait Islander students who attended a JCU career support session. All year levels. Source = Cognos [special HEPPP student support program - drill through report]. On the "Overview" Tab, Pick [Careers] on the droplist. Pick [Indigenous] on the Indigenous Status droplist. NB: An "eligible" student is defined as: [UG & PG], [Domestic], at ATCSC.	20	12	The target was not met by -8 eligible distinct students.
Low SES Student Career Support - number of eligible distinct students who attended career support sessions	Number of distinct eligible Low SES students who attended a JCU career support session. All year levels. Source = Cognos [special HEPPP student support program - drill through report]. On the "Overview" Tab, Pick [Careers] on the droplist. Pick [Low] on the SES droplist. NB: An "eligible" student is defined as: [UG & PG], [Domestic], at ATCSC.	70	61	The target was not met by -9 eligible distinct students.
Regional and Remote Student Career Support - number of eligible distinct students who attended career support sessions	Number of distinct eligible Regional and Remote students who attended a JCU career support session. All year levels. Source = Cognos [special HEPPP student support program - drill through report]. On the "Overview" Tab, Pick [Careers] on the droplist. Pick [Regional/Remote] on the Metro or Regional/Remote droplist. NB: An "eligible" student is defined as: [UG & PG], [Domestic], at ATCSC.	310	247	The target was not met by -63 eligible distinct students.

2.1.2 JCU monitoring course completions for students from low socio-economic backgrounds



Each year JCU carefully tracks course completions for all groups of students, including students from low socio-economic backgrounds, Indigenous students, female students, and students from rural and remote areas. JCU sets ambitious targets each year to assist students to both participate in their studies and attain their course qualification, and then transition into the workplace through supporting students to remain enrolled and engaged in their studies through academic support, mentoring, targeted wellbeing support and ongoing scholarships. Attainment support includes supporting students to complete their study and transition into employment through work-integrated learning support (placements) and career support.

- In 2022, 19.6% of students completing their JCU course were from low-socio-economic backgrounds, and this proportion has increased over the years from 18% in 2018.

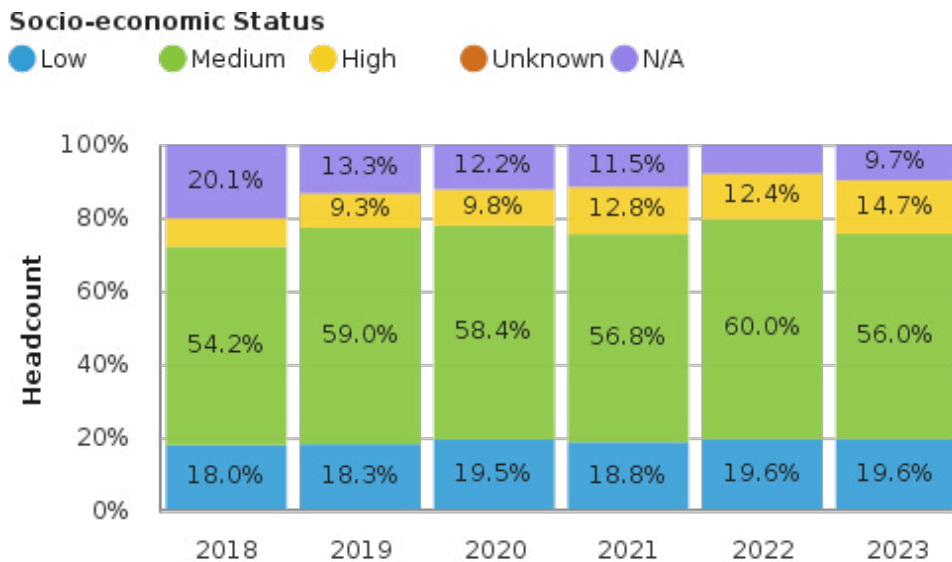


Figure 2.2: Socio-economic status of students completing their courses at JCU from 2018 to 2023

2.1.3 JCU financial aid for students

JCU has always supported students from low socio-economic backgrounds, particularly from rural and remote areas of Australia to overcome financial barriers to attending university. The University supports the most vulnerable students through the JCU Access Fund, which provided over \$412,000 to 132 students in 2022, and \$319,000 to 91 students in 2023. 258 Aboriginal and Torres Strait Islander students received scholarships in 2022 and 214 students were granted scholarships in 2023. These scholarships, which are administered by JCU, were funded by JCU, Commonwealth Government, industry and philanthropic partners totalling over \$585,000 in 2022 and over \$400,000 in 2023.

International students from some of the world's poorest countries are also supported to attend JCU. The JCU International Merit Stipend, which is open to students from Africa and the Australia Award Scholarships administered by the Australian Department of Foreign Affairs provide opportunities

for people from developing countries in the Indo-Pacific region to afford a university education. JCU has also raised the PHD stipend rate in July 2023 to the highest in Queensland in recognition of the rising cost of living, and indicating the very strong support for research at JCU. The increase for the Research Training Program Scholarships, JCU Postgraduate Research Scholarships, AIMS@JCU Scholarships and International Research Training Program Scholarships will be funded by the Graduate Research School.

The JCU Student Hardship Fund was established to support students who face unexpected short-term financial difficulty, such as the traumatic flood and fire events on the JCU Townsville campus in 2019. In 2022 the Fund provided 29 students with financial assistance totalling \$14,500. The JCU Indigenous Student Support Fund provides financial support for Indigenous Australian students experiencing financial difficulty and is supported by donations from the JCU community and the public.

2.1.4 Providing access to free or low-cost services for the community

JCU's College of Healthcare Sciences, and College of Medicine and Dentistry operate the JCU Health General Practice, JCU Physiotherapy Clinic, JCU Speech Therapy Clinic, JCU Exercise Physiology Clinic, and JCU Occupational Therapy Clinic to provide low-cost or free vital health services to people in local community who would otherwise struggle to afford services. The JCU Dental Clinic is a wholly owned subsidiary of the university. These services are provided by JCU students on placements in these clinics, supervised by qualified practitioners, as a key part of the hands-on, practical learning for their courses. In 2022, 177 students provided essential dental services to over 30,000 members of the North Queensland community. The JCU Dentistry students and staff made custom-fitted mouthguards for 30 students from AFL Cape

York House in November 2022 (see image below). The project was supported by the Healthier Smiles Community Service Grants, a joint initiative of the Australian Dental Health Foundation and the Mars Wrigley Foundation. "The personalised mouthguards will go above and beyond the standard store-bought protection and will provide a whole new level of comfort and protection for these young Aussie Rules players," JCU Professor in Prosthodontics and Operative Dentistry, John Abbott, said. The mission of AFL Cape York House is to strengthen resilience, provide positive life experience and opportunities to Indigenous Australians through culturally appropriate education, sporting, and wellbeing pathways.



2.1.5 JCU Ideas Lab – local startup support

Throughout the year, the JCU Research and Innovation team host and co-host a range of programs and workshops for JCU staff, students and members of the general public in the JCU Ideas Lab on the Nguma-bada campus in Cairns. The JCU Research and Innovation team support local startups through their wealth of knowledge and experience.

On the 2nd to 4th of November 2022, the Northern Australian Regional Digital Health Collaboration (NARDHC) and JCU Research and Innovation team held an event for undergraduate and postgraduate health, IT, and business students, HDR candidates and professionals from the community. They participated in a 3-day simulator to design, prototype and validate digital health solutions. The event was developed and deployed by Dr Samantha J. Horseman, JCU Innovation Facilitator. The aim was to help transform a sustainability-focused technology idea into a business or not-for-profit opportunity.

The ideas proposed were to address the UN Sustainable Development Goals with solutions across a variety of sectors including mining, financial technology, circular economy, gaming, telecommunications, and water. The most compelling idea won \$10,000 in seed grant funding to help take their concept to market. The Sustainability Impact 10X program attracted participation from 3 JCU campuses - Cairns, Townsville, and Singapore.

The team from JCU Singapore won the Futuristic Technology Award for their idea at the JCU IMPACT10X Sustainability UN SDG Simulator. The Singapore team clinched the Futuristic Technology Award in the Simulator, with an idea that directly addressed Sustainable Development Goal 6 Clean Water and Sanitation.

Teams that participated in the program were afforded the opportunity to build upon their ideas as innovators and entrepreneurs, while being mentored by the JCU Research and Innovation Team.

The Singapore team garnered interest from leading Information and Communication Technology provider Ericsson, the International Atomic Energy Agency, and NGO Com Net Mekong to collaborate on deploying their idea.

The Singapore team comprised of Dr Michele Chew, Associate Director of Research Connect at JCU in Singapore; Dr Jusak, Senior Lecturer of Internet of Things; and Dr Steven Kerrison, Senior Lecturer of Cybersecurity. With their JCU Founders-in-Residence Portfolio, the Singapore team will be the pioneers for the JCU Founders- in-Residence initiative in Singapore soon.

JCU IMPACT10X

DIGITAL HEALTH SIMULATOR

ARE YOU INTERESTED IN DEVELOPING DIGITAL SOLUTIONS TO ADVANCE HEALTH IN RURAL AREAS?

- WIN \$10,000 AUD to further develop your prototype.
- Join our 3- day simulator at the JCU Ideas Lab Nov 2 – 4, 2022
- Be inspired by Nic Blair, Founder Midnight Health who recently raised \$12 million AUD
- Calling all Innovators, Technologists, Healthcare Professionals, JCU students & staff across all colleges.

Learn more here:

Register here:

Australian Government Department of Education, Skills and Employment | NARDHC | CRCNA | OPTUS | CSIRO | JAMES COOK UNIVERSITY AUSTRALIA

2.1.6 Research into poverty - JCU Research Ethical Development (RED) Symposium

The JCU's Research for Ethical Development group (JCU RED) works to promote ethical development research and ethical development practice. Their work is both conceptual and applied and aims to contribute to scholarly and policy debates regarding the ethics of development work, and to inform practice through research conduct and collaborations. The first JCU RED symposium was held in 2022, and the convenor for this symposiums was Dr Kearnin Sims of The Cairns Institute.

The 2023 RED Symposium "A Broken Promise? The 2030 Agenda's commitment to leave no one behind" was held at JCU's The Cairns Institute on the 27-29th of September. The symposium examined progress towards the UN Sustainable Development Goals including Goal 1- No Poverty. In 2020, the share of the world's workers living in extreme poverty increased for the first time in two decades; hunger and food insecurity is rising globally, and progress in many areas of gender equality is falling. As Oxfam's 2023 inequality report notes, all of this is occurring at the same time as 'the very richest have become dramatically richer and corporate profits have hit record highs'.



2.1.7 JCU participating in government policy



JCU provided submissions to the Federal Government review of the Australian Universities Accord – supporting measures to relieve financial pressure on students. The Accord Interim Report outlines a vision for the future of Australia's higher education system. The Report reflects high-quality, thoughtful submissions and extensive engagement with a wide range of stakeholders, including JCU.

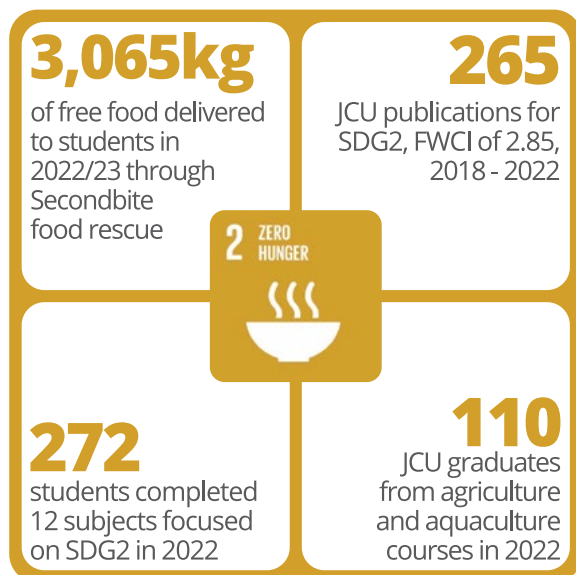
The Accord contains five recommendations for priority action and raises issues for further discussion to inform the Review's Final Report. Section 3.3.5 of the Accord – Improving affordability for students, relates to SDG1 – No Poverty, and discusses how to ensure that student contributions are fair and affordable, debt for education is manageable for students, repayments are not overly burdensome, HELP debt forgiveness, student loan fees on FEE-HELP loans and considers a new funding model and considers a new funding model based on student attributes rather than student numbers..

JCU Singapore – Volunteer Club – Community outreach for no poverty

The JCU Singapore Volunteer Club partnered with Habitat for Humanity Singapore for Project HomeWorks in 2022, where both staff and student volunteers helped with the cleaning, decluttering, and painting of homes for the elderly and financially under-privileged Singaporeans. Having the opportunity to improve home conditions for vulnerable families was an eye-opening experience for our volunteers, and a rewarding one as well.



2.2 Progress towards UN Sustainable Development Goal 2 - Zero Hunger



In this section:

2.2.1 Student food pantry, SecondBite MOU and partnership with Coles

2.2.2 Recycling organic waste

2.2.3 JCU services for farmers and food producers Agriculture Technology and Adoption Centre (AgTAC) Tropical North Queensland Drought Hub;

JCU Centre for Tropical Water and Aquatic Ecosystem Research (TropWATER);

JCU Centre for Sustainable Tropical Fisheries and Aquaculture (CSTFA);

JCU Tropical Futures Institute Aquaculture Research Centre



END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVE NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE

2.2.1 JCU food security services for students

JCU has a long history of providing care for students experiencing financial hardship and many staff have volunteered their time to provide students with meals, snacks, essential toiletries and sanitary items. In particular the staff of the JCU Wellbeing and Outreach services in the Nguma-bada campus library in Cairns have provided a food pantry for students for many years, assisting them with their basic needs, while also providing counselling, personal support and learning support services. The Pathways team in the Eddie Koiki Mabo Library, Bebegu Yumba campus, Townsville, have similarly provided a food pantry for their students, helping overcome barriers for students studying pathway courses.

The JCU Indigenous Education and Research Centre have long provided Indigenous students with a warm and welcoming, culturally supportive learning environment, providing essential support in many forms including free food and drinks, working on closing the gap in educational outcomes for Indigenous students.

In 2022 JCU signed a Memorandum of Understanding with SecondBite, a food rescue organisation, who in partnership with Coles supermarkets, rescues tonnes of unwanted food from being discarded each year and provides food for disadvantaged people. This formalised a long relationship between SecondBite and JCU assisting students experiencing food insecurity on campus. Volunteers on the Cairns campus collect food from Coles at Clifton Beach twice a week and deliver bread, fruit and vegetables to the student kitchen the 'Food Lab' where it is enthusiastically received by students in need.



SecondBite
Ending Waste. Ending Hunger.

2.2.2 Recycling organic waste on campus

JCU has established community gardens on the Bebegu Yumba campus, Townsville, the Rotary Sunshine Community Garden, and on the Ngumbada campus, Cairns, where students are able to learn about growing their own food in a tropical climate. The gardens are managed by the Estate Directorate and have student gardening clubs which hold events throughout the year. The gardens have a wide range of established tropical fruit trees, fruiting vines and shrubs and are a haven for wildlife.

JCU's staff and student kitchens have green organic waste bins for users to dispose of their kitchen scraps and JCU waste contractor JCU cleaning and waste service providers collects the organic waste and delivers it to the community garden compost system on the Cairns campus, and to the groundswell major composting system on the Townsville campus. An average of 39kg of compost is delivered to the groundswell composting facility in Townsville each

week, from the university kitchens alone, approximately 2000kg per year. All green waste generated from gardens on campus is mulched or composted on site and the compost generated in the Townsville groundswell is enriched with bioinoculants and produces a rich soil for use in the campus landscaping plant nursery.



2.2.3 JCU services for farmers and food producers

JCU has key research and development partnerships with the agricultural and food sector in Australia and Singapore.

Agriculture Technology and Adoption Centre



(AgTAC) Agriculture research focused on solving industry-relevant problems by working closely with industries both locally and globally in true partnering arrangements. JCU's primary technology-enabling capabilities are directly applied to the agriculture sector, including Data

Science, Artificial Intelligence and Machine Learning. Dr Eric Wang, a JCU Senior Lecturer, Electronic Systems and IoT Engineering, together with the Department of Agriculture Fisheries and Forestry (DAFF) are developing a near-infrared spectrometer (NIRS) to determine how much meat is in mud crab claw. The handheld instrument is designed to be taken on fishing boats and can quickly grade live crabs, allowing fishers to optimise their catch and return low-grade crabs to the water. Dr Brian Collins has developed an irrigation rapid assessment tool (i-RAT) that is providing valuable economic and environmental guidance to sugarcane growers. Dr Collins said "i-RAT harnesses the power of computer modelling and combines it with the knowledge and experience of local cane growers and advisors to enable rapid comparisons of thousands of combinations of farm management scenarios, which is not possible to test in the field."

Tropical North Queensland Drought Resilience and Adoption and Innovation Hub



Drought has significant impact on the wellbeing of people and communities across Tropical North Queensland, affecting agriculture industries including beef, sugar, vegetable, dairy, citrus and tropical fruit. The TNQ Drought Hub is one of 8 hubs across Australia supporting farmers and communities to become more drought resilient. Hub partners are providing co-contributions of \$18.5 million over 4 years. Through the Hub, farmers, Indigenous landholders, communities, researchers, and business have come together and co-designed approaches and solutions for drought resilience in Tropical North Queensland.

Projects include:

- Gathering data to assist in identifying future drought impacts and how they can be mitigated.
- Developing insurance products against drought impacts.
- Developing proven water and energy efficiency measures to a new group of farmers.
- Improving opportunities for work-integrated learning for tertiary students.

Cooperative Research Centre for Developing Northern Australia

In July 2022 Professor Allan Dale, Professor of Tropical Regional Development at the JCU Cairns Institute and Chief Scientist for the Cooperative Research Centre for Developing Northern Australia (CRCNA) chaired the Developing Northern Australia Conference in Mackay. The conference brought together leaders, decision makers, industry representatives and community members to discuss the challenges of northern Australian development including agriculture and water supply and a vision of a sustainable and inclusive northern Australia. Keynote speakers included representatives of the Aquaculture industry and Centrefarm Aboriginal Horticulture Limited, a company established to benefit Aboriginal landowners in the Northern Territory, developing regional economies focused on primary industries.



Developed through the National Environmental Science Program's Tropical Water Quality Hub and administered through the Cairns-based Reef and Rainforest Research Centre (RRRC), TropWATER's project's outstanding success has led to significant further investment and works in the catchment.



Tropical Futures Institute – Aquaculture Innovation Centre



JCU recognises that Tropical region of the world face unprecedented challenges due to the population growth and an associated demand for high-quality seafood. This population expansion will continue to pressure wild fisheries resources and dictate ever higher efficiencies from aquaculture production. JCU Singapore has formed an aquaculture partnership with industry and academic partners focusing on sustainable production of aquaculture species and international business and trade in Asia. The JCU Tropical Futures Institute Aquaculture Innovation Centre has partnerships with industry and Government including the Singapore Food Agency, and local producers, to support Singapore's '30 by 30' target for food security, in which the country aims to build the agri-food industry's capacity and capability to produce 30 per cent of its nutritional needs locally by 2030.

JCU TropWATER



The JCU Centre for Tropical Water and Aquatic Ecosystem Research (TropWATER) is a team of JCU researchers and postgraduate students who provide industries, communities and government with science-based solutions to better manage, protect and restore our tropical water ecosystems.

In 2023 a TropWATER-led water quality monitoring project won the Agriculture and Regional Development award at the 34th Banksia National Sustainability Awards. Under the project that was carried out in 2022, scientists work with growers in the Russell-Mulgrave River catchment to monitor water quality to help farmers understand their irrigation, fertiliser, pesticide and sediment surface losses. The project provides paddock-scale data to empower farmers to confidently adopt improved land management practices that improves water quality while ensuring a profitable farm. The initiative involves scientists working closely with growers to develop tailored solutions relevant to their farms.



Tropical Futures Institute public seminar 2022 – Food innovations and health aspects

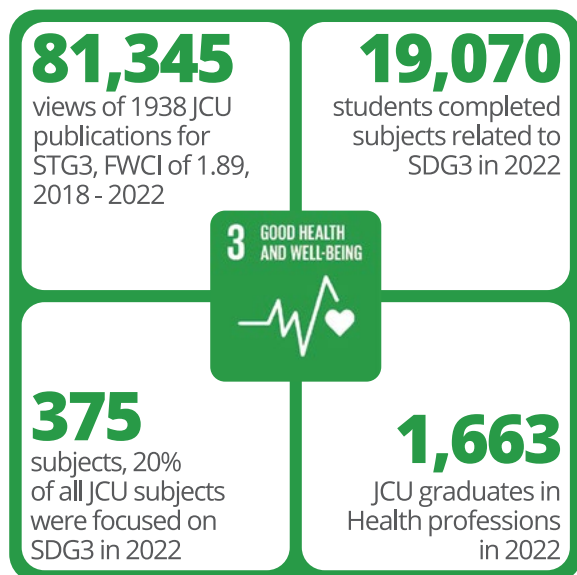
Food innovations are urgently needed to foster healthy diets for the growing and ageing world population. In Singapore, urban aquaculture seafood, plant-based and cultivated meats (e.g., cell-based fish) will play a critical role in sustainably tripling domestic food production by 2030, as highlighted in the Singapore Food Story. The Singapore Food Story is a Singapore Food Agency strategy to secure the food supply for Singapore by diversifying sources of food imports, increasing local production to 30% by 2030 and growing food overseas. Currently Singapore imports 90% of its food from over 180 countries.

Health benefits of food innovations include reduced risk of foodborne illness and possibly food allergies, which are under investigation as part of food safety assessments. Academics of the JCU's Tropical Futures Institute are pioneers in this field. Contributors to the session were Dr Wasamon Nutakul (SciTech Specialist,

The Good Food Institute Asia Pacific, Singapore); Mr Mihir Pershad (Founder, CEO, Umami Meats, Singapore); and James Cook University, Singapore Emerging Leader Dr Thimo Ruethers (Research Fellow — Human Health & Ageing, TFI). The seminar was moderated by Professor Andreas Lopata (Personal Chair in Biochemistry, James Cook University, Australia, Professorial Research Fellow — Human Health & Ageing, Tropical Futures Institute, James Cook University, Singapore).



2.3 Progress towards UN Sustainable Development Goal 3 - Good Health and Wellbeing



In this section:

- 2.3.1 JCU Good Health and Wellbeing research
- 2.3.2 Collaborations with health institutions
- 2.3.3 JCU commitment to Indigenous health
- 2.3.4 Health education at JCU
- 2.3.5 JCU health outreach programs
- 2.3.6 Covid-19 in the Tropics – JCU State of the Tropics Report and research



ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AGES

2.3.1 JCU Good Health and Wellbeing - Research



AITHM | AUSTRALIAN INSTITUTE OF TROPICAL HEALTH & MEDICINE



James Cook University is a leading institution in the field of medicine for Tropics, with a focus on public health, infectious disease and tropical medicine. By advancing the knowledge and practice of medicine for tropics, JCU contributes to combating infectious diseases, strengthening health systems, reducing maternal and child mortality, developing vaccines, discovering drugs and improving environmental health. JCU also collaborates with various partners and stakeholders across Australia and the Asia-Pacific region to address the pressing health and development issues relevant to tropical and remote communities. Through its innovative and impactful research and teaching in health-related disciplines, JCU plays a vital role in creating a brighter future for people of the tropics and the planet in general.

Australian Institute of Tropical Health and Medicine (AITHM)

The AITHM is a flagship research institute of James Cook University based in the Tropics of Northern Australia. Australia's only dedicated tropical health and medicine research institute, AITHM is focused on solving problems of importance to the Tropics, developing vaccines and novel drugs, leading to improvements in health systems and healthcare delivery, improved biosecurity, and enhanced health outcomes for Australians and our neighbouring tropical nations. Both the JCU College of Medicine and Dentistry (CMD) and the College of Public Health, Medical and Veterinary Sciences (CPHMVS) contribute to the work of the Australian Institute of Tropical Health and Medicine. AITHM's research program confronts Australia's major health security risks, tackles its worst health outcomes, develops better ways to deliver health services to remote communities and contributes to the development of northern Australia. The emphasis is on working 'in-with-and-for' communities across northern Australia and the wider tropics.

Some of AIITHM's current projects include:

- Associate Professor Catherine Rush and Associate Professor Jeffrey Warner — Using expertise in microbiology and immunology to focus on infectious diseases (including melioidosis and TB) predominantly in Papua New Guinea (PNG) and Far North Australia.
- Professor Patricia Graves — Monitoring, evaluating and investigating lymphatic filariasis, scabies and malaria in Vanuatu, Fiji, Samoa, PNG and Tonga.
- Distinguished Professor Alex Loukas — Developing anti-helminth subunit vaccines and diagnostics, and treating inflammatory and metabolic diseases in Thailand.
- Professor Tom Burkot — Working with PacMOSSI to prevent current and emerging arboviral and parasitic diseases (dengue, chikungunya, Zika and malaria) transmitted by Aedes and anopheline mosquitoes throughout the Pacific Island countries.
- Professor Emma McBryde — Using a model of disease transmission to evaluate and optimise COVID-19 vaccine roll-out strategies in the Philippines, Indonesia and Malaysia.
- Associate Professor Paul Horwood — Using novel techniques of sample collection and analysis to conduct viral discovery in wildlife to assess the potential of zoonotic risk in Cambodia and Laos.

JCU Health Research Centres and Institutes:

- Anton Breinl Research Centre for Health Systems Strengthening
- Centre for Molecular Therapeutics (CMT)
- Centre for Nursing and Midwifery Research
- Centre for Rural and Remote Health (CRRH) Centre for Tropical Bioinformatics and Molecular Biology (CTBMB)
- Queensland Research Centre for Peripheral Vascular Disease (QRC-PVD)
- WHO Collaborating Centre for Vector-borne and Neglected Tropical Diseases



2.3.2 Collaborations with Health Institutions

Collaboration is a key aspect of research excellence, innovation and advanced teaching practices, especially in the field of health. James Cook University is committed to fostering collaborative research projects with local and national health institutions across Australia and the world. JCU researchers collaborate with partners from industry, government, not-for-profit, and academia, to address the health challenges and opportunities in the Tropics and beyond. Some of the benefits of collaboration include sharing expertise and resources, enhancing research quality and impact, increasing funding opportunities, and building networks and reputation.



The Northern Queensland Regional Training Hubs

is a partnership between private and public hospital and health services, GP clinics and James Cook University. This medical training network is committed to improving the health services of rural and remote communities in the northern Queensland region and provides doctors in-training with valuable experience. This network of hospital and health services works together with James Cook University to strengthen medical specialist training in Cairns, Central West, Mackay, Northwest, Torres Strait and Cape York, and Townsville.

Murtupuni Centre for Rural and Remote Health



The Centre for Rural and Remote Health (CRRH) James Cook University is part of the Australian Rural Health Education Network (ARHEN), a national network of 15 University Departments of Rural Health (UDRH) funded by the Commonwealth Department of Health under the Rural Health Multidisciplinary Training Program. The CRRH's region covers the outback, remote and rural areas of Northwest, Lower Gulf, Central West and the Western Cape Queensland and spans more than 600,000 square kilometres – more than 50% of Queensland.



WHO Collaborative Centre for Vector-borne and Neglected Tropical Diseases

JCU collaboration established in 2017. The Centre was established in 2017 to support the control of vector-borne and neglected tropical diseases. The Centre supports the development and expansion of;

- Surveillance programs
- Research capacity building
- Control programs training, monitoring and evaluation throughout the western Pacific.

Support the scale up and evaluation of WHO recommended vector control methods and other NTD control and elimination strategies.

- Develop innovative and sustainable NTD surveillance strategies, particularly post-elimination surveillance according to WHO priorities.
- Demonstrate sustainable early detection, prevention and management of lymphatic filariasis-related morbidity through integrated service delivery with other primary healthcare interventions according to WHO priorities.

Participate in collaborative operational research under WHO's leadership, including early detection, prevention and management of chronic morbidities and effective tools for vector control.



Tropical Futures Institute – Healthy Ageing Research Pillar

With every country in the world experiencing growth in both the size and the proportion of older persons in the population, JCU has a clear commitment to finding solutions for a better future. The Healthy Ageing Research collaborations in public health, healthcare and support services provide an important opportunity for aged care industry stakeholders and the health sector to contribute to the development of strategies, innovation and investment that benefit healthy ageing processes in the tropics.

2.3.3 JCU Commitment to Aboriginal and Torres Strait Islander Health

Closing the gap between the health of Aboriginal and Torres Strait Islander peoples and non-Indigenous Australians is a national priority. In collaboration with both ACRRM and RACGP, JCU General Practice and Rural Medicine is delivering a GP training program committed to developing a general practice workforce that works effectively with Aboriginal and Torres Strait Islander peoples towards improving their health outcomes. Two-thirds of Queensland's approximately 100,000 Aboriginal and Torres Strait Islander people live within JCU General Practice and Rural Medicine region, which means there are a variety of opportunities for registrars to develop an extended scope of practice in Aboriginal and Torres Strait Islander health. JCU General Practice and Rural Medicine offers registrars the opportunity to undertake training in a range of Aboriginal and Torres Strait Islander Health Service settings.

Culturally appropriate healthcare - James Cook University (JCU) General Practice and Rural Medicine provides registrars with a range of Aboriginal and Torres Strait Islander health educational activities including:

College Online Cultural Awareness Module - RACGP or ACRRM online Cultural Awareness modules must be satisfactorily completed within the first two months of commencing the term.

Cultural Awareness Training Workshops - Cultural Awareness Training Workshops are delivered locally within the JCU General Practice and Rural Medicine regions by our Cultural Educator and in partnership with local community members.

Anton Breinl Research Centre Building on the strengths of Aboriginal and Torres Strait Islander communities to improve health and wellbeing outcomes is a priority issue and this stream spans the domains of health research in collaborative research to "close the gap". Research projects include:

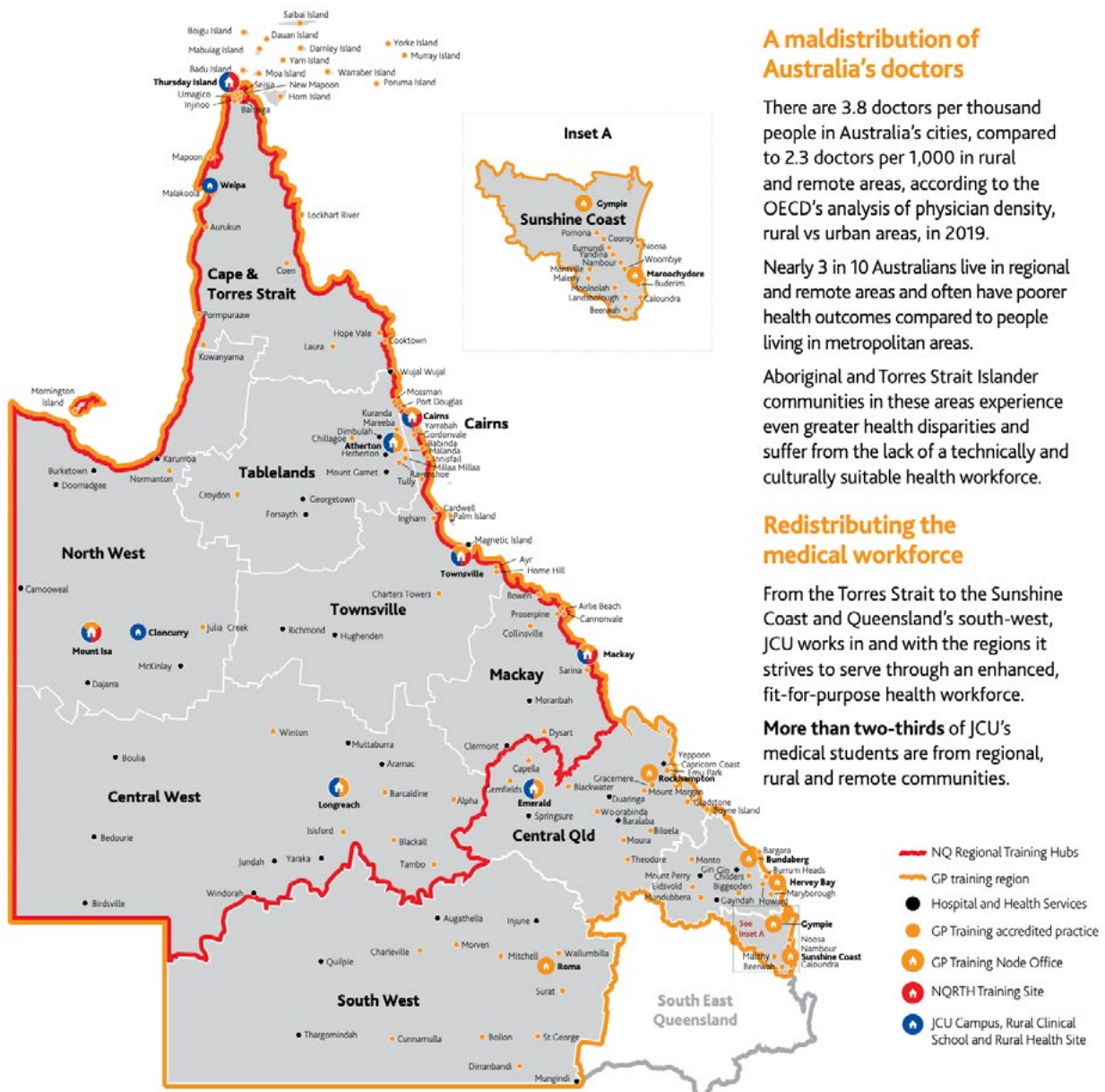
- Women's action for Mums and Bubs (WOMB): a trial of community women's groups to improve Aboriginal and Torres Strait Islander maternal and child health.
- Reducing dementia risk in Aboriginal and Torres Strait Islander communities
- Aboriginal and Torres Strait Islander Health Worker skills recognition and up-skilling project
- Strengthening systems for Indigenous healthcare equity (CRE-STRIDER)



2.3.4 Health education at JCU

JCU proudly trains thousands of healthcare graduates that are job-ready for the challenges of healthcare in rural and remote Australia and around the world. Medicine, dentistry, healthcare, and allied healthcare students complete many months of hands-on placements in rural and remote healthcare centres across regional Australia, from Tasmania to the Torres Strait, and even overseas. In 2022 JCU health outreach services saw over 100,000 local Queenslanders, in health and allied healthcare clinics at JCU Bebegu Yumba Townsville and Nguma-bada campus clinics in

Cairns. The vast majority of these patients were from low socio-economic backgrounds, and JCU health services form a vital and important provision of care relieving pressure on local Government health services. JCU students on placement provide care for many of these appointments, becoming an important part of the journey to better health for many local Queenslanders. JCU has outlined its commitment to healthcare education for rural Australia in a new guide: *Making Rural Health Matter*.



2.3.5 JCU Health Outreach Programs – for JCU students, staff and the local community

James Cook University is also committed to engaging with and contributing to the communities it serves, both locally and globally. JCU has initiatives and programs that enable its staff, students, and alumni to give back to the community in different ways. One way the University gives back to the community is through general health and wellbeing support services for students, staff and the local community. JCU Health provides bulk-billed general health services to students with a Medicare card and student card, and is located on the Bebegu Yumba campus in Townsville. The JCU Dental clinics in Bebegu Yumba Townsville campus and Nguma-bada Cairns campus are free for Healthcare card holders, and offered discounted services for students, staff and the community. Free sexual health services are available for students in both Townsville and Cairns through the Queensland Government Sexual Health Service.

The James Cook University Counselling and Wellbeing team provide free, confidential counselling by qualified counsellors to JCU students on campus or by telephone, to improve students' mental health outcomes. JCU offers a free Employee Assistance Program for staff and their immediate family members. It provides professional, confidential counselling and support 24/7, managed by an independent company, LifeWorks.

In 2022 JCU released its Mental Health and Wellness Strategy (2022-2026) acknowledging the responsibility to support mental health and wellness as part of the University's core business. The Strategy has been designed in collaboration with students, staff, and stakeholders. It presents an integrated model which:

- Recognises diversity, voice, and reconciliation,
- Develops student and staff agency,
- Supports actions and commitments that are culturally informed, sustainable, and connected to community

CLINIC NAME	CLINIC APPOINTMENTS	NUMBER OF JCU STUDENTS PROVIDING SERVICE	NOTES
JCU Dental Clinic Cairns	20,169	157	79% of patients were healthcare card holders from low SES backgrounds
JCU Dental Clinic Townsville	9,229	20	81% of patients were healthcare card holders from low SES backgrounds
JCU Occupational Therapy Clinic	840	24 students completed over 450 hours of placement at the clinic.	Additional 46 patients seen for chronic condition coaching in 2022
JCU Physiotherapy Clinic	2386 total community appointments for the musculoskeletal clinic, Better Balance clinic, and Massage clinic	All 3rd and 4th year Bachelor of Physiotherapy students	Additional student volunteering supporting community sporting events: the Challenge Games and the Indigenous rugby league carnival in Townsville.
JCU Speech Pathology Clinic	70 children appointments per week 25 adult appointments per week	50 second- and third-year students, supported by fourth years students from the Bachelor of Speech Pathology and qualified practitioners	2 Clinical educator workshops held for professional speech pathologists with 20 participants.
JCU Psychology Clinic	713 patient appointments	10 Master of Psychology (Clinical) students completed placements, 5510 hours of supervised placement.	90% of patients are from underrepresented groups including from low SES backgrounds.
JCU Exercise Physiology Clinic	3995 occasions of service	2022 - 58 students on placement across SES, BCEP and MCEP degrees	2022 - 277 patients seen 2022 - 3515 placement hours.
JCU Interprofessional Clinic	637 appointments	8 x 3rd and 4th year students on placement in 2022.	The Clinic provides low-cost student led individual and group services including rehabilitation and education.
JCU Health General Practice	65,252 patient presentations	30 student placements, over 984 supervised placement hours	25% of appointments were student patients, 25% of appointments were member of the community from low SES backgrounds.
JCU Counselling	970 JCU student appointments	No student volunteers – qualified counsellors conduct appointments	

Table 2: A snapshot of the JCU Community Health Outreach Programs delivered in 2022

2.3.6 Covid-19 in the Tropics



The State of the Tropics project is an alliance of 11 institutions in the Tropics led by JCU, with the aim of answering the question, Is life in the Tropics getting better? The 2022 State of Tropics Report – Covid-19 in the Tropics, edited by Professor Simon Biggs, Shelly Templeman and Ann Penny, looks at the effects of the

Covid-19 pandemic across different regions of the Tropics, considering both fragility and resilience within societal systems. It presents a broad-ranging statistical analysis of a set of indicators relating to pandemic data collated from existing datasets. These datasets derive from several authoritative and multi-lateral sources, including various United Nations agencies, the World Bank, the Food and Agriculture Organization and other repositories. The report considers direct health outcomes, impacts on allied health, education and literacy, travel and tourism, unemployment, GDP and environmental outcomes. It also includes case studies discussing the personal impacts Covid-19 has had on people and communities. Covid-19 focused attention on the inequalities that persist around the world, even in the most advanced nations. Two years on, Covid-19 continues to affect communities, and the full effects may not be realised for many years. This report provides an initial assessment of the impacts of Covid-19 on the health, economics, environment, and community resilience across the Tropics. Below is a summary of some of the major findings of the report:

Covid-19 cases, mortality, and vaccination rates in the Tropics

- Caseloads have varied considerably among nations. On average, non-tropical regions reported around 8% of the population infected. Caseloads have generally been lowering in the Tropics than in the rest of the world. South America has been hardest hit, with over 11% of the population infected by March 2022. Vaccination rates vary among tropical regions. Central and Southern Africa, and Northern Africa and the Middle East both have vaccination rates below 15% compared to 68% in the rest of the world.

Impacts on allied health

- Restrictions placed on the provision of other healthcare services during the Covid-19 pandemic increased risks to those with underlying medical conditions. Increased pressure on public health systems resulted in an additional 4 million children missing out on basic immunisations in 2020. A decline in mental well being also resulted from the stresses of the pandemic.
- Extreme weather posed challenges for Covid-19 management in some tropical settings. Climate change heightens these challenges and will make responses to these crises even more difficult.

Education and literacy

- The Covid-19 pandemic has increased literacy poverty. The number of 10-year-olds without basic literacy skills has increased by 17% since the beginning of the pandemic. Many schools in low and middle-income nations through the tropics provide regular school meals to alleviate malnutrition. School closures meant this was not available to many students. To overcome this, some countries transitioned to alternative approaches to ensure that students had continued access to adequate nutrition.

Travel and tourism

- Eight of the 10 nations most heavily dependent on tourism as an export earner are in the tropics. Of these, the Maldives is considered the most vulnerable, with 79% of total exports coming from tourism. Four of the 10 tourism-vulnerable countries are in the Caribbean.

Trade, unemployment, and GDP impacts

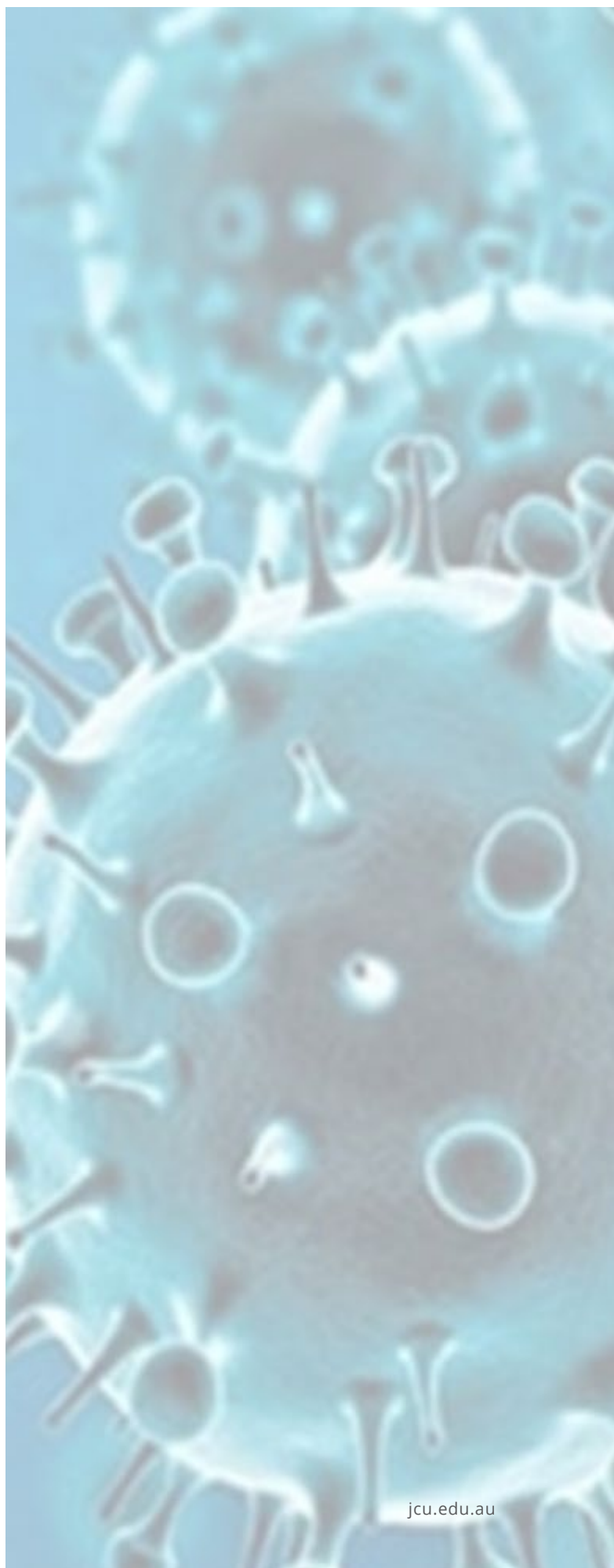
- Unemployment increased globally by 15% between 2019 and 2021. The tropics' unemployment rate increased from 6.6 to 8.1% over this period, an increase of 22% overall.

Covid-19 impacts on tropical environments

- CO² emissions in the tropics decreased by almost 6% over this period, with emissions in Central America decreasing by 17%. The decrease in CO² emissions in the rest of the world was lower despite having higher overall emissions. Wildlife trafficking and tropical deforestation increased in Brazil, Colombia and Cambodia.

2022 Covid-19 research and event highlights

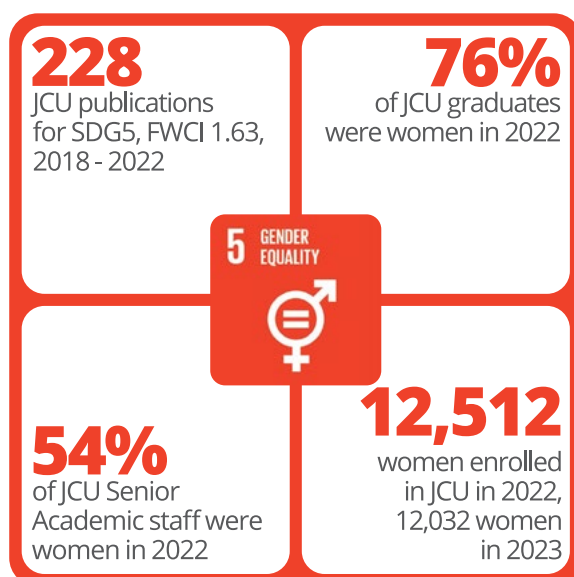
- **International Conference on Business, Economics, Management and Sustainability (BEMAS) July 2022.** “Re-imagining economic resilience and urban futures in the post Covid-19 era”. BEMAS 2022 aimed at uncovering the path to post-Covid-19 economic recovery and emphasised the importance of building resilient economies capable of dealing with complex external financial and public health shocks and disturbances. The conference provided an excellent opportunity to learn from nearly 70 presentations, with insights shared by key regional leaders, hundreds of researchers, and entrepreneurs from all four corners of the globe during three memorable days.
- **Covid-19 Prevention Strategies for Victoria Students within Educational Facilities: An AI-Based Modelling Study.** Oyelola Adegboye, a Senior Lecturer in Biostatistics, and Associate Professor Theophilus Emeto at JCU's College of Public Health & Tropical Medicine were part of a research team which at JCU's College of Public health and Tropical medicine were part of a research team examining Victoria's attempt to prevent Covid-19 from spreading in school age children. The scientists analysed all Covid-19 cases in patients aged 0–19 years in Victoria, more than 240,000 in total. The study indicates effective contract tracing programs, mandatory face covering requirements, comprehensive testing policies, and vaccination requirements in the education sector are significantly associated with the prevention of Covid-19 in schools.
- **Study of Effectiveness of Rapid Antigen Tests** - In a world first, James Cook University researchers have developed a new way to rate the effectiveness of Rapid Antigen Tests (RATs). Published in Talanta Open journal, the study was led by Associate Prof Schaeffer and involved JCU PhD candidate Casey Toft, Master's candidate Rebecca A. Bourquin, Dr Alanna Sorenson, Associate Prof Paul Harwood and the Doherty Institute's Dr Julian Druce. The study highlights the wildly varying accuracy of RATs and has prompted calls by the JCU team and others for better quality assurance of the tests. JCU researchers used a fluorescent protein to develop a new reference standard to check RAT performance. 10 RATs were selected by the team for evaluation, who used a Covid-19 fluorescent protein to determine the lowest detectable amount of Covid-19 protein for each test. Out of the 10 RATs analysed, only two returned consistently positive readings at the lowest concentration of Covid-19 protein used.



Diversity, Equity, Equal Opportunity and Inclusion at JCU

2.4 James Cook University plays a vital role in advancing gender equality by promoting equal opportunity and diversity, integrating gender perspectives and analysis into our teaching and learning activities, generating and disseminating knowledge and evidence on gender issues through our research and innovation activities, and engaging with the wider society and community on gender equality through our outreach and advocacy activities.

2.5 Progress towards UN Sustainable Development Goal 5 - Gender Equality



In this section:

- 2.5.1 Gender Equality at JCU
- 2.5.2 JCU gender balances in student enrolment and retention
- 2.5.3 JCU Respect Now Always - Statement of Commitment to the Elimination of Sexual Harassment and Sexual Assault
- 2.5.4 Workplace Gender Equality Agency (WGEA) reporting
- 2.5.5 Women in Earth and Environmental Sciences in Australasia (WOMEESA)
- 2.5.6 Science in Australia Gender Equity (SAGE) and Athena SWAN framework - JCU Bronze Accreditation
- 2.5.7 MOMA Changemaker Award
- 2.5.8 JCU support for parents



2.5.1 Gender Equality at JCU

James Cook University has a comprehensive suite of policies and procedures for staff and students to prevent and respond to bullying, discrimination and harassment supported by:

Equity Contact Officers - for staff and students to contact regarding discrimination attributes and areas, including harassment and bullying queries and concerns.

Student Equity and Wellbeing Unit - counselling, and support services for students.

JCU Staff Gender Equity Training - online training module for JCU staff educating staff about gender equity.

JCU also has a suite of initiatives involving staff and student communities designed to prevent and respond to sexual harassment and sexual assault and supporting gender equality support gender equality as a foundation for respectful relationships. This work is led by the Vice Chancellor Professor Simon Biggs through the Chief of Staff, Vanessa Cannon, and is operationalised university wide. Examples of which include:

JCU Respect Program - online training modules, workshops and events addressing sexual harassment and sexual assault

Sexual Misconduct Officers - provide a single point of contact for a person who has been subject to Sexual Harassment or Sexual Assault, or to the manager or person supporting that person.

2.5.2 JCU gender balances in student enrolment and retention

JCU celebrates diversity through an inclusive and supportive environment for students of all genders. More than 60% of the University's students are female (figure right) and course retention by female students is currently higher than male students (figure below). In 2022, out of 1,439 students starting a degree at JCU, 972 were female, and 626 of these students were the first in their family to start a tertiary qualification.

Enrolments by Gender and Year

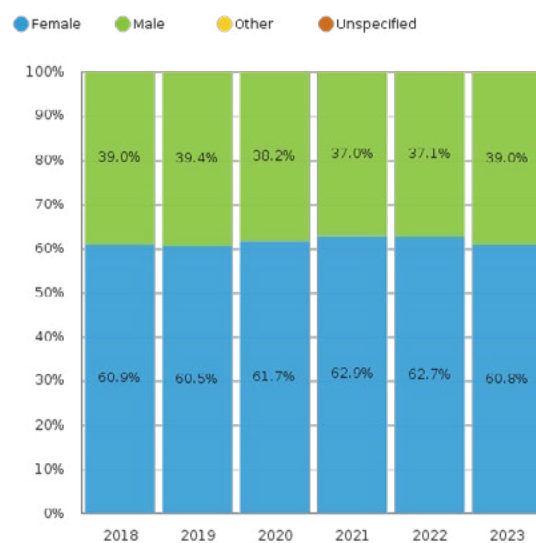


Figure 2.3: JCU student enrolments, percentage of male and female students from 2018 to 2023 (above)

Course Retention by Gender

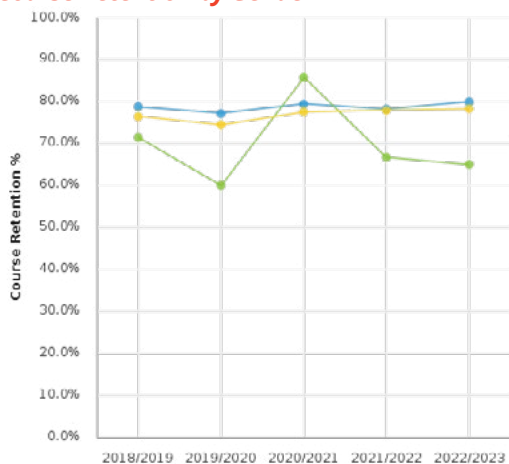


Figure 2.4: JCU student course retention comparing male and female students from 2018 to 2023 (left)

2.5.3 Respect Now Always - Statement of Commitment to the Elimination of Sexual Harassment and Sexual Assault

James Cook University is committed to fostering a community that features, at its core, respect, inclusion and safety for all. We support gender equality as a foundation for respectful relationships and an underpinning principle for change. This means a strong and enduring commitment to the elimination of sexual harassment and sexual assault. The urgent need to foster safe, respectful communities free of discrimination, sexual harassment and sexual assault, has gained momentum worldwide. Our University recognises that need and is determined to do all we can in our community and in the communities we serve. As an institution dedicated to education and research, and committed to the communities we serve, we have a special responsibility to critically reflect, and create the change that is required, in order that men and women enjoy equal respect free from sexual violence in all its forms.

We recognise that our values of Excellence; Authenticity; Integrity; Sustainability; Mutual Respect and Discovery can only be fully realised when the contributions of all in our community are recognised, supported, and respected. We recognise that institutional structures and individual behaviours within society, and within our own University, need to change and that change can be immensely challenging. Change requires examining deeply held beliefs and assumptions, and sustained effort.

We recognise the material circumstances of peoples' lives matter, and that the institutions of our society need constant attention to ensure just and equitable outcomes. Without vigilance, there is risk that some people – by virtue of their identity, ethnicity, sex, abilities, resources, or age – are routinely believed, supported and served whilst others are routinely marginalised, disbelieved and forgotten. In 2017, JCU appointed Elizabeth Broderick AO, former Australian Sex Discrimination Commissioner, to review our University's response to sexual harassment and sexual assault. We are committed to strengthening our University by implementing every recommendation of the Broderick Review. We know that the progress we have made to date, and the progress we need to make, is not possible without the generous and courageous sharing from those who have experienced sexual harassment and sexual assault, and the commitment of all members of our community. We are committed to strengthening gender equality and playing our part to create the safe and respectful environment that our community deserves and look to a future when the scourge of sexual violence is comprehensively defeated.

2.5.4 Workplace Gender Equality Agency (WGEA) reporting

James Cook University complies with the Australian Government Workplace Gender Equality Agency (WGEA) reporting commitments and submits staff reviews as required under the Workplace Gender Equality Act 2012. The University monitors and aims to continually improve gender equality outcomes in staff recruitment including the representation of women and underrepresented groups in senior academic and leadership roles and the measurement and elimination of gender pay gaps. In the WGEA Scorecard 2022: *The State of Gender Equality in Australia* it states that Australia's gender pay gap is 22.89%, and that 7 out of 10 employers have a pay gap that favours men and women are paid an average \$26.6K less than men per year in Australia. JCU has reported to WGEA in 2022 a gender pay gap of 13.4% favouring men, well below the national average. In management at JCU 49.6% of staff were female and 50.4% of staff were male in 2022, with an increase of 7 female managers.

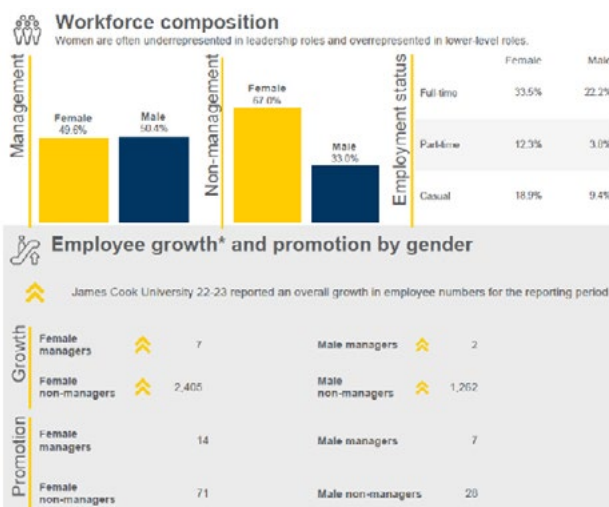
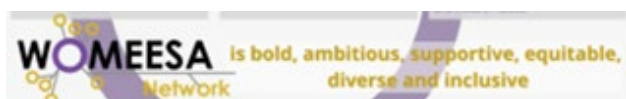


Figure 2.5: Extract from JCU's report from its 2022 submission to WGEA, showing staff gender breakdown by employment group

2.5.5 Women in Earth and Environmental Sciences in Australasia (WOMEESA)



WOMEESA formed during the Inaugural Dorothy Hill Women in Earth Sciences Symposium (Nov 2017) identifying a need to bring together women in Earth and Environmental Sciences throughout Australasia. WOMEESA is guided by a strategic plan and is determined to encourage more women to stay in Science, Technology Engineering, and Mathematics (STEM) fields as the sector strives to become more gender diverse. Dr Melanie Finch, a JCU Geoscience lecturer and the President of WOMEESA, said on average, universities in Australia had a gender split of about 40 per cent women and 60 per cent men in their undergraduate geoscience classes, which stayed the same into the most junior levels of academia and in entry level jobs in mining and environmental science.

James Cook University is committed to fostering a community that features, at its core, respect, inclusion and safety for all. We support gender equality as a foundation for respectful relationships and an underpinning principle for change.



2.5.6 Science in Australia Gender Equity (SAGE) and Athena SWAN framework – JCU Bronze Accreditation

James Cook University is a member of SAGE and was awarded Bronze accreditation in 2020. SAGE is a national program promoting gender equity and diversity in science, technology engineering, mathematics and medicine (STEMM). It is based on the principles of the UK's Athena SWAN Charter, an evaluation and accreditation framework that addresses the improvement of gender equity policies and practices in STEMM.

Gender Equity Action and Research (GEAR) Report on GEAR Forums - November 2022

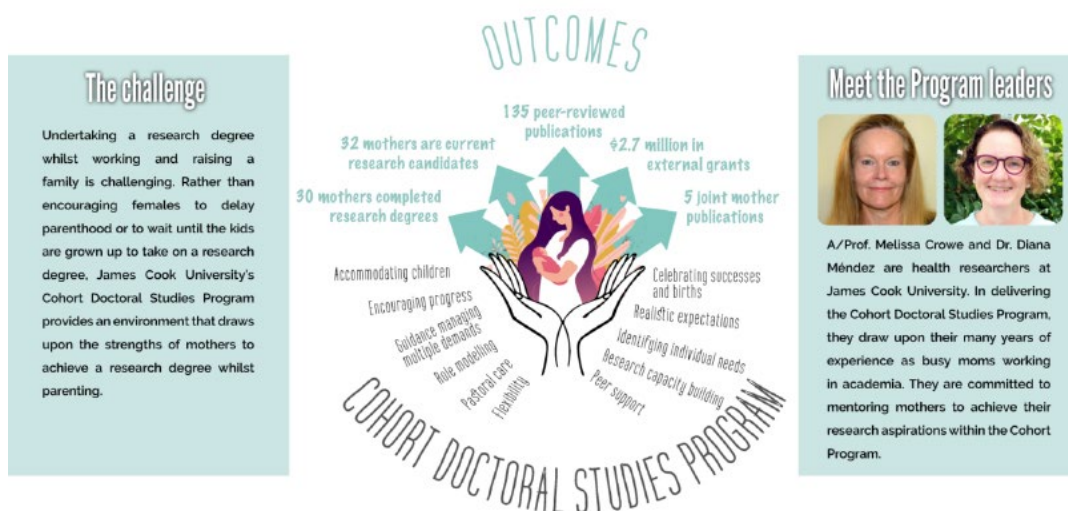
GEAR Forums provide an opportunity for the GEAR team to update women in the JCU community on JCU's actions towards gender equity, and to provide a space

where women are welcome to raise and discuss equity issues that are important to them and share their views and experiences. Forums were scheduled quarterly during 2022. GEAR Forums are confidential, with the GEAR Coordinators producing a de-identified report that summarises the kinds of issues discussed across the Forums. GEAR Forum reports are used to inform the ongoing work of JCU in achieving gender equity. On the 15th and 17th November 2022, approximately 40 JCU women joined two GEAR Forums. Each forum began with an update on JCU's Gender Equity Action Plan. There was then space for open discussion to talk through whatever issues women wanted to raise.

2.5.7 MOMA Changemaker Award – making opportunities for mothers in academia in 2023

Associate Professor Melissa Crowe and Dr Diana Mendez achieved international recognition for their work in the Cohort Doctoral Studies Program with *First Place for Making Opportunities for Mothers in Academia (MOMA) Changemaker award* in the category of University/Institution. The award was bestowed by the International Association of Maternal Action and Scholarship (IAMAS) and presented at the IAMAS conference in Chicago on 12th March 2023. The award recognises the outstanding achievements supporting mother scholars to undertake and complete research

degrees. The Cohort Doctoral Studies Program has supported 30 mothers of school-age children or younger to complete a research degree and is currently supporting a further 32 mothers. The majority of these mother scholars are working part or full time in addition to studying and raising a family. The success of the mother scholars is evidenced in the 135 peer-reviewed publications, \$2.7 million grant income and 5 joint mother publications that have been produced by this group.



The strength of the program is reflected in the successful outcomes of the moms who have graduated and those currently engaged in the program.

2.5.8 James Cook University support for parents

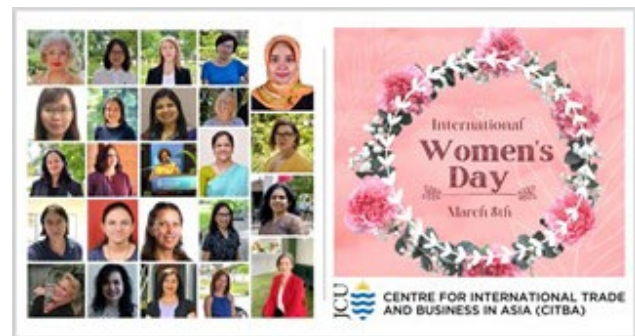
There are two childcare facilities located on the JCU Bebegu Yumba Townsville campus, UniCampus Kids and Unicare Centre, and these are available for staff and students. In Cairns, there are several childcare centres located near the JCU campus and in the surrounding suburbs – contact details for these centres are available at Cairns Campus.

JCU has a comprehensive policy and procedure to support mothers and parents in the workplace including the Parental Leave Procedure providing paid parental leave to staff. Full-time staff mothers (other than casual) are entitled to up to 26 weeks continuous paid parental leave. Flexible working arrangements and remote working are also options available to parent staff at JCU to assist with keeping a work/life balance.

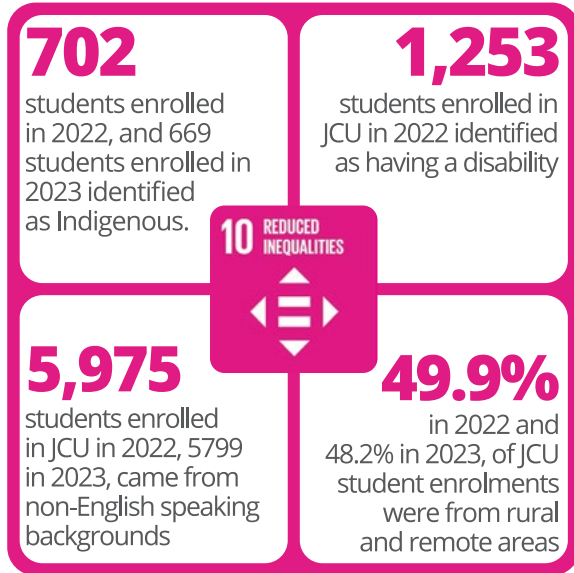
International Women's Day

James Cook University celebrates International Women's Day on the 8th of March each year in Australia and Singapore. In Townsville in 2023 Dr Louise Floyd, a JCU Associate Professor of Law, addressed an audience of over 100 at an International Women's Day Breakfast at The Ville Casino.

The JCU based Centre for International Trade and Business in Asia (CITBA) recognised and celebrated the extraordinary achievements of its leading women researchers, highlighting the challenges they face and their invaluable contributions to research, education, and leadership within Academia.



2.6 Progress towards UN Sustainable Development Goal 10 - Reduced Inequalities



In this section:

- 2.6.1 Reducing inequality in education at JCU
- 2.6.2 Bullying, Discrimination, Harassment, and Sexual Misconduct Policy
- 2.6.3 First in family students
- 2.6.4 Supporting JCU LGBTQIA+ students and staff
- 2.6.5 JCU Celebrates Indigenous Australians and Reconciliation
- 2.6.6 JCU Indigenous Workforce Strategy
- 2.6.7 JCU Accessibility support for students and staff living with a disability



REDUCE INEQUALITY WITHIN AND AMONG COUNTRIES



2.6.1 Reducing inequality in education at JCU

James Cook University offers inclusive and equitable quality education for all students, regardless of their background, identity, or ability, by providing access to scholarships, grants, loans, and other financial assistance. It fosters a culture of diversity and inclusion within the University community, by respecting and celebrating the differences among students, staff, and faculty, and by addressing any forms of discrimination, harassment, or violence. JCU actively engages in social responsibility and community outreach activities that benefit Indigenous and Torres Strait Islander students, rural communities, women, youth, and people with disabilities.

James Cook University has an extensive program in place to encourage diversity, and reduce inequality in the University and in communities, examples of which include:

- Diversity messages in our recruitment advertising, such as, “We are enriched by and celebrate our workplace diversity and welcome applications from candidates of all backgrounds and abilities”.
- Extensive event calendar where JCU students and staff come together to acknowledge, celebrate and raise awareness of the diverse groups that make up our community, including Harmony Day, International Women’s Day, NAIDOC Week, Disability Action Week, IDAHOBIT (International Day Against LGBTQIA+ Discrimination).
- Diversity training for all staff.
- Policies and procedures to ensure that all students and staff work, research, study, live and socialise in an environment based on inclusivity, respect, free from discrimination, bullying, harassment, including hazing and vilification, and sexual misconduct. This aligns with the JCU Corporate Strategy goal for an inclusive and respectful environment that fosters a sense of belonging and wellbeing.

To reach this goal JCU has developed support programs for staff and students including the Indigenous student support program, Indigenous Student Success Program, Accessibility support for students experiencing a disability, Chaplaincy and counselling and wellbeing programs.

In the 2021 Higher Education Participation and Partnerships Program (HEPPP) report JCU set targets to increase engagement with HEPPP identified schools, and increase indigenous, low socioeconomic (SES) and regional, rural and remote (RRR) enrolments, participation and completion.

- In 2022 Indigenous students comprise approximately 6% of JCU’s domestic students,
- 24% of JCU undergraduate students identified as low SES, and
- 88.1% of undergraduate enrolments are identified as RRR.

These students can disadvantage that can strongly impact their ability to complete their studies. JCU provides generous scholarships and bursaries, however an ongoing focus on providing support to the poorest and most vulnerable students is needed, to make sure they receive the support they need to complete their studies at JCU.

The current cost-of-living crisis is causing renewed financial hardship pressure on students and making attending university more difficult for students from lower SES backgrounds. Further effort by JCU to address equity, health and wellbeing outcomes for staff and students needs to focus on setting targets and tracking the enrolment and graduation of students in the bottom financial quintile, and from underrepresented groups (low SES, Indigenous, students with disabilities, women, LGBTQIA+ students, refugees, and international students from developing countries) to tackle inequality with our university community.



2.6.2 Bullying, Discrimination, Harassment, and Sexual Misconduct Policy

James Cook University's commitment to diversity, equity and inclusion is stated in policy, procedure and statements from the University. The Bullying, Discrimination, Harassment, and Sexual Misconduct policy establishes the expectation that all members of James Cook University Council, Students, Staff and Affiliates (the University Community) work, research, study, live and socialise in an environment

based on inclusivity and respect, free from Bullying, Discrimination, Harassment, including Hazing and Vilification, and Sexual Misconduct. This policy is supported by the Code of Conduct for Staff and Students. In 2023 the policy was revised to be more specific about types of discrimination based on personal characteristics, including ethnicity, immigration status and transgender status.

2.6.3 First-in-family students

Domestic Enrolments by First in Family Status and Year

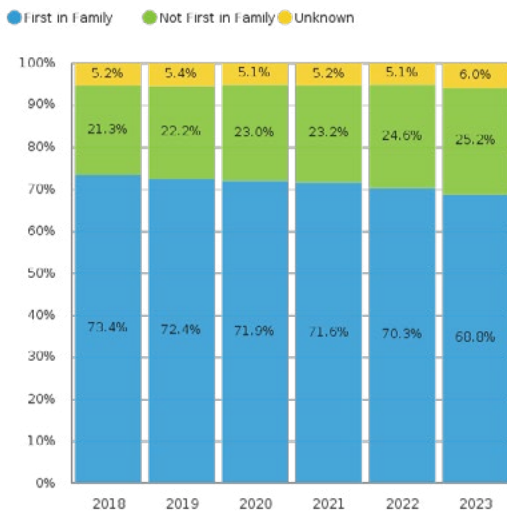


Figure 2.6: JCU domestic student enrolments showing percentage of first-in-family students.

First-in-family students is a cohort that require additional support and guidance as they sometimes may feel like they lack the social and cultural capital that other students have, or they may experience difficulty in navigating the academic expectations, policies, and procedures of the university.

As over 70% of JCU domestic enrolments in 2022 were students who were the first in their family to attend a university. JCU is proud to serve the rural and remote communities of Northern Australia, and being the first experience of a university within so many families across this region. In 2022, 626 first-generation were female students, from a total of 872 first-generation students starting at degree at JCU.



2.6.4 Supporting JCU LGBTQIA+ students and staff



JCU established a bright permanent reminder of the University's stance supporting the LGBTQIA+ community and against discrimination of all kinds with Progress Pride Flag artwork bordering the main pedestrian crossing on the Nguma-bada Cairns campus in October 2022, and the Bebegu Yumba Townsville Campus shortly after. The Progress Pride Flag markings are a first for JCU campuses and the installation occurred as Cairns celebrated the annual Cairns Pride Festival with events from the 14th to 23rd of October 2022.

JCU is focused on ensuring its students have access to inclusive and respectful environments in line with the University's values of Authenticity, Integrity, Excellence and Respect. Professor Maree Dinan-Thompson, Deputy Vice Chancellor Education, hosted the official launch of the Rainbow Lounge at the Bebegu Yumba (Townsville) campus on 17 May 2023. The opening was attended by JCU staff representatives, JCU Student Association (JCUSA) and the LGBTQIA+ community. The Bebegu Yumba (Townsville) Rainbow Lounge is located in Building 34.020, and the Nguma-bada (Cairns) Rainbow Lounge was opened in 2022 and is located in Building A4.006 and are open during university hours.

LGBTQIA+ students and staff are supported at JCU through the JCU Pride Ally Network, Student Equity and Wellbeing unit, Equity Contact Officers to report issues and sexual misconduct officers to report or make a complaint about sexual harassment or assault. The contribution the LGBTQIA+ community brings to diversity and inclusion at JCU is celebrated on IDAHOBIT Day each year at JCU hosted by the Student Services Directorate and the JCU Student Association featuring free music, food and information for staff and students.



2.6.5 JCU Celebrates Indigenous Australians and Reconciliation

Eddie Koiki Mabo Timeline

Eddie Koiki Mabo (known as Koiki) is remembered for his commitment and tireless effort to educate others about the rights and culture of Aboriginal and Torres Strait Islander peoples. Koiki famously challenged the Australian legal system and won his people's case for land ownership. The Mabo case (1992) was one of the most significant turning points for Aboriginal and Torres Strait Islander peoples in the fight for native title (see image top right). Koiki had a strong and long-lasting connection with James Cook University, spending several years working, teaching, and learning on campus. His time at the University defined the trajectory of his life; it was here that he began his journey to challenge land ownership laws on Mer (Murray Island) in the Torres Strait.

The JCU Townsville library was officially renamed in 2008 as the Eddie Koiki Mabo Library to honour the memory of Eddie Koiki Mabo and his achievements. JCU has published a timeline of our shared history with Eddie Koiki Mabo and the University's actions towards Indigenous recognition and Reconciliation on campus, including a visual timeline wall in the library (image right). Each year a public lecture, The Mabo Lecture is held to pay tribute to Eddie Koiki Mabo. In 2022 the Mabo lecture was presented by Stan Grant on the 3rd of June.

Returning Indigenous artefacts to Traditional Owners

In October 2022 JCU returned Djungan and Djabugay artefacts stored in the University's Material Culture Collection to representatives of the Indigenous community, as part of a long-term project to repatriate Aboriginal and Torres Strait Islander cultural heritage materials. JCU returned a boomerang and a stone axe-head to representatives of the Djabugay community, along with six photographic slides that show Dan Coleman making a rainforest sword and a basket at Kuranda. At the same event, representatives of the Djungan community accepted a group of bark paintings which were donated to the Material Culture Collection in 1977 by the Australian Heritage Gallery.



JCU Reconciliation Action Plan 2020-2022

JCU is continually seeking to enhance its relationship with, and improve equity, health, and wellbeing outcomes for the Australian Aboriginal and Torres Strait Islander community. JCU has developed a Reconciliation Action Plan describing the University's reconciliation journey from 1977, incorporating the JCU Reconciliation Statement committing to work towards achieving genuine and sustainable reconciliation.



Reconciliation is an honest and critical understanding of Australia's shared history, and how it has informed the lives of Australian Aboriginal and Torres Strait Islander peoples and other Australians today. Reconciliation involves other Australians and Aboriginal and Torres Strait Islander peoples building and preserving mutual, positive, and respectful relationships. It involves optimising these JCU recently celebrated the bestowing of Indigenous names for all campuses by local Traditional Owners, and unveiling signs at the entrance of each campus with their new names.

Professor Ngiare Brown is the first female and first Indigenous Chancellor of James Cook University. She was elected as the sixth Chancellor of the University in January 2023, commencing in April 2023. She is also the second member of the University's alumni to take up the role. A proud Yuin nation woman from the south coast of New South Wales, Professor Brown is a senior Aboriginal medical practitioner with qualifications in medicine, public health, and primary care, and has studied bioethics, medical law and human rights.



Indigenous Education and Research Centre (IERC) provides leading Indigenous education research and engagement through successful and sustainable programs and services. JCU will also host a new Australian Research Council (ARC) Centre of Excellence for Indigenous and Environmental Histories and Futures (CIEHF) on the Townsville campus in a collaboration of researchers from 30 organisations.

2.6.7 JCU Indigenous Workforce Strategy

In 2021 James Cook University launched its Aboriginal and Torres Strait Islander Workforce Strategy 2021-2025 developed in the context of JCU continually seeking to enhance its relationship with the Aboriginal and Torres Strait Islander community. James Cook University aims to have a strong workforce of Aboriginal and Torres Strait Islander people at all levels of our organisation. JCU will provide career growth opportunities, competitive pay and benefits, and a safe work environment for all Aboriginal and Torres Strait Islander employees.

The principles used in the development of this workforce strategy are:

- mutual respect and understanding of the important place of the First Peoples of Australia;
- our shared history unites us in our collective responsibilities to right the wrongs of the past; and
- what we do together, and for each other, enhances our collective cultural awareness as an educational institution.

2.6.8 JCU Accessibility - support for students and staff living with a disability

James Cook University is committed to ensuring that students living with a disability and/or health condition have equal opportunities to access, engage and participate in all levels of our university. Students who have a documented disability or a short- or long-term health condition, can register with AccessAbility to access a range of support services and assistance to support them to succeed at JCU.

There are a range of services and on campus facilities for students with a documented disability, injury, illness, short or long-term health condition. Students and staff can discuss their situation and the options available for them in an appointment. Listed below are some of the facilities and services offered by JCU:

Facilities on campus

- Assistive Technology Room Services
- Alternative Formatting
- Software
- Volunteer Note Taker Scheme
- Mobility Aids
- Assistive Equipment
- Access on campus and support services

The University's Student Disability Policy and Student Disability AccessAbility Support and Plans Procedure sets out James Cook University's approach to:

- Establishing a diverse student community that is representative of the broader community, and
- Creating an environment where all students have the opportunity to develop their unique abilities and realise their potential.

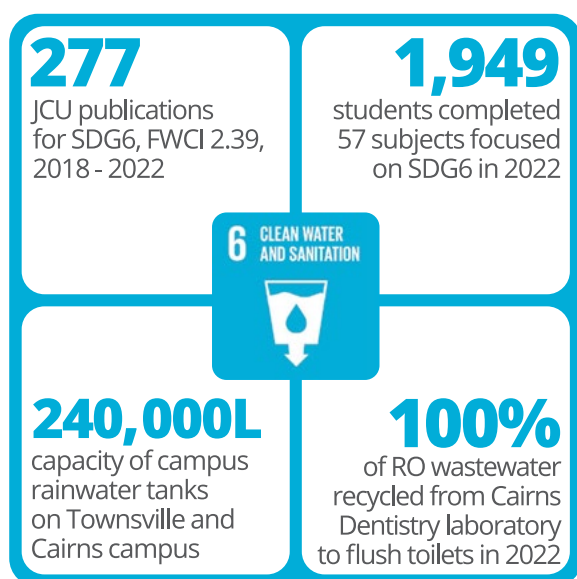
The purpose of the policy and associated procedures is to create an inclusive, empowered student community, by ensuring education and training is accessible to all people experiencing disability. James Cook University strongly encourages people experiencing any form of disability to share their perspectives and experiences and participate in higher education. The student disability reasonable adjustments procedure states that JCU staff and affiliates will support admission and enrolment enquiries from prospective students (or their carer) seeking admission to a course offered by JCU and who have a disability, injury, or health condition. JCU also provides access to University Specialist Employment Partnerships (USEP), a free employment service that supports graduating or graduated students with a disability and/or health condition (including mental health conditions) who are seeking graduate employment.

Environmental Sustainability



3.0 Environmental sustainability is maintaining an ecological balance in Earth's natural environment and conserving natural resources to support the wellbeing of current and future generations. The link between environmental sustainability and socio-economic development is central to sustainable development. Resources from natural ecosystems are vital to the livelihoods, health, and wellbeing for people across the Tropics. Degradation of ecosystems and biodiversity loss can lead to loss of livelihoods, increase in poverty and reduced economic development.

3.1 Progress towards UN Sustainable Development Goal 6 - Clean Water and Sanitation



In this section

- 3.1.1** Clean fresh water on JCU campus
- 3.1.2** Local freshwater creek surveys
- 3.1.3** Water-conscious irrigation and gardens
- 3.1.4** Water-conscious building design
- 3.1.5** Water consumption and water usage tracking
- 3.1.6** JCU Water security partnership for Northern Australia
- 3.1.7** JCU Water quality monitoring and education on water conservation in the community



ENSURE AVAILABILITY AND SUSTAINABLE MANAGEMENT OF WATER AND SANITATION FOR ALL

3.1.1 Clean fresh water on JCU campus



James Cook University provides chilled freshwater in water fountains in every building and gathering place to encourage students and staff to refill their water bottles. JCU has installed several state-of-the-art Elkay EZH20 bottle filling stations that have a visual bottle fill record, allowing users to see how many plastics bottle have been saved from landfill by using the filling station. Water filling stations are provided at different heights to be accessible to all, including wheelchair users. JCU events no longer provide attendees with disposable plastic bottles and either encourage attendees to bring their own and provide chilled water for refills or give attendees a reusable JCU branded bottles such as the school student visiting the campus in the image above.



3.1.2 Local freshwater creek surveys



JCU Bebegu Yumba Townsville and Nguma-bada campus have seasonal intermittent creeks that flow strongly in the wet season and stop flowing in the dry season. Gonndaloo and Wadda-mooli creeks on the Bebegu Yumba campus in Townsville are surveyed in January and April each year. Freshwater biodiversity is surveyed, and water quality assessed to monitor pH and nitrites. Fish, reptile, amphibian and crustacea, insect and aquatic plant species are recorded.

Fish migrations

The Townsville campus has installed several Fish Ladders to ensure the uninterrupted passage of native fish to their spawning grounds during the wet season. Each year the fish ladders are monitored for effectiveness and maintenance. Additionally, water berms have been installed in campus creeks to slow flow, assisting migratory species in their journey, as well as decreasing bank erosion.



3.1.3 Water-conscious irrigation and gardens

Water-conscious irrigation systems have been installed across the Bebegu Yumba Townsville JCU campus. This has included introducing over 380 waterwise R-Van Rainbird irrigation heads. These heads have a more controlled and heavier flow than our previous head, allowing for a more targeted use and effective infiltration. In addition, our Townsville sporting fields and select gardens have had in-line fertigation systems installed, which utilise wetting agents and bio-inoculants, to promote healthier soils and plants, and decrease our required water. In 2021 water-conscious gardens and irrigation systems were established at the new Buralga Yumba student accommodation, The Science Place, Eddie Koiki Mabo Library and Central Plaza on the Bebegu Yumba campus. This has saved the campus a considerable amount of water and included establishing 64 plants, across 17 threatened species. Various other campus gardens, such as our Heath Garden, also showcase Northern Australia's

drought tolerant garden options, and are used as a living laboratory by our ecology classes. More effective and coordinated use of mulch and bio-inoculants have also been adopted to further increase the soil health, and so decrease its water dependency further, without sacrificing botanic diversity.

In the Estate Directorate Nursery, the hardening area overhead irrigation has been replaced by targeted and adjustable drippers. This has decreased water usage by 9.4%, while increasing our plants health. The Nguma-bada campus mostly has gardens of remnant native rainforest vegetation which does not require irrigation and instead relies of the high rainfall of the region. Rainfall is collected from the rooves of The Cairns Institute Building and JCU Ideas Lab and collected in a 20,000L underground water tank. The tank is then used for irrigation of garden beds on the Nguma-bada campus in the dry season.

3.1.4 Water-conscious building design - bioswales



Bioswales have been built on the Nguma-bada Cairns campus near the JCU Ideas Lab and John Grey Residential Hall to ensure stormwater runoff from the buildings are naturally filtered before entering the storm water drains. This helps to prevent any pollutants from entering the drain and entering the environment. JCU Design Guidelines state that all new builds must conform the highest sustainability ratings, Gold LEED or 5 Green star ratings. These ratings specify that the buildings be water-conscious to a high standard, including water-saving faucets, water conscious landscaping, reuse of laboratory wastewater for toilets or gardens, and use of licensed bore water or captured rainwater for gardens. Irrigation fittings are a high water-saving standard. JCU has large rainwater tanks on both the Townsville and Cairns campuses for garden use, including the community gardens where it is used to water fruit trees and vegetable beds. Gardens are generally planted with native hardy plants accustomed to the tropical climate, and soil additives to improve the water-holding capacity of the soil are used with a thick layer of mulch to reduce necessary watering.



3.1.5 Water consumption and water usage tracking

JCU carefully tracks water usage on its campuses in buildings and grounds each year and monitors usage for leaks and wastage. JCU reports water consumption to the Tertiary Education Facilities Management Association each year for their benchmarking survey of Australian Universities. In 2022 JCU consumed 771,037kL of water, and harvested 6,875kL of bore water from bores under license from the Queensland

Government, following sustainable water extraction guidelines. Bore water and rainwater were used for irrigation and grounds. Rainwater is harvested on the Cairns campus, stored in underground rainwater tanks and used for irrigation in the D3/D4 precinct. Recycled wastewater from reverse osmosis systems in the D2 Dentistry building are used to flush toilets in the building to conserve water.

3.1.6 JCU water security partnership for Northern Australia

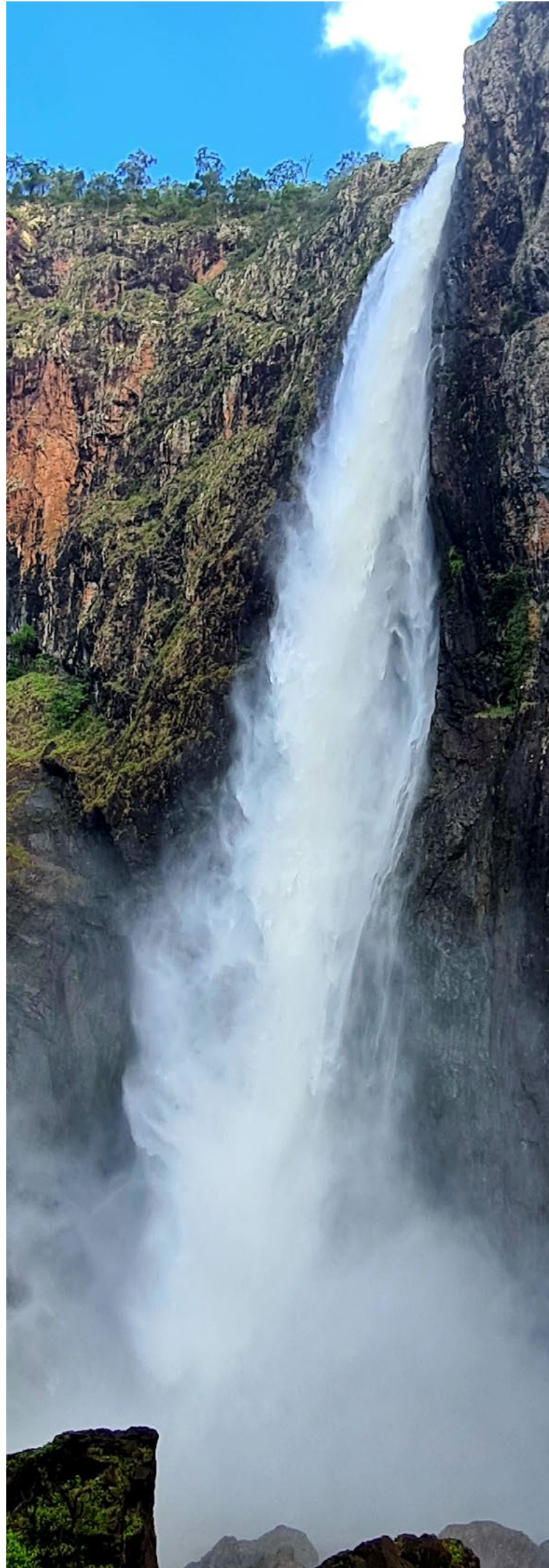
Three universities with headquarters in the north have partnered with the Cooperative Research Centre for Developing Northern Australia (CRCNA) to develop a comprehensive program of research focused on water security in Northern Australia.

James Cook University (JCU), Charles Darwin University (CDU), and Central Queensland University Australia (CQU) have formed the Northern Australia Universities Alliance (NAUA), and partnered with the CRCNA to jointly deliver flagship research activities which address water infrastructure and security knowledge gaps.

Some of the areas the CRCNA are interested in addressing through this co-investment include improving governance models around water resource allocations, including First Nations' interests, addressing water security to better support agricultural diversification and water trading opportunities and improving water service delivery to remote and regional areas, including First Nations' communities. The NAUA partners will collaborate on undertaking a program of stakeholder engagement and research needs analysis in 4 focal catchments (Nodes) in order to design, develop and cost a cohesive and impactful 3.5-year research program that delivers on the core priorities of those stakeholders in those 4 focal catchments. These have been identified as:

- Wider Tindal Basin, NT
- Douglas Daly and Roper River, NT
- Lower Fitzroy Basin/ Gilbert River, catchment QLD
- Kimberley-Ord Irrigation Scheme, WA

The research will involve the project team gaining a better understanding of the constraints to agricultural and water resource development, engaging with key stakeholders and government agencies to better understand the issues they believe are priorities for further research and then to develop a suitable research plan to address the issues identified during this process.



3.1.7 JCU Water quality monitoring and education on water conservation in the community.

Sediment hotspots for the Great Barrier Reef.

New research by JCU TropWATER suggests the effectiveness of water quality catchment models – used to identify sediment hotspots in Great Barrier Reef catchments – can be enhanced by incorporating river sediment tracing and independent water samples.

Led by James Cook University TropWATER, in collaboration with CSIRO, Queensland Department of Environment and Science and Griffith University, the research highlights how multiple lines of evidence are critical in improving confidence in model outputs for both policymakers and managers.

Lead author JCU TropWATER's Dr Zoe Bainbridge said while the spatial model has been continually refined over the past two decades, local field data from the catchment helps to validate the model and accurately identify sediment hotspots. The study is part of the Landholders Driving Change (LDC) project managed by the NQ Dry Tropics Natural Resource Management body, funded through the Queensland Government (Major Integrated Project) and the partnership between the Australian Government's Reef Trust and Great Barrier Reef Foundation. This research was published in *Science of The Total Environment* under a CSIRO-JCU Catchment Water Quality Science Partnership, and an Advance Queensland Research Fellowship.

JCU TropWATER- community water quality monitoring in the Bowen, Broken and Bogie River Catchments in North Queensland.

Graziers and scientists are working together to understand how, when and where sediment moves from the land into the Bowen, Broken and Bogie catchments – building a more accurate understanding of the local water quality.

Over the past four wet seasons, JCU TropWATER scientists Zoe Bainbridge and Steve Lewis have worked with local graziers and NQ Dry Tropics' Landholders Driving Change project team to run the LDC Community Water Quality Monitoring Group, collecting and analysing water samples across nine river and creek sites during high rainfall events.

Latest results: The 2021-2022 wet season.

Despite limited rainfall in the Collinsville region this wet season, more than 50 water samples were collected by graziers during local streamflow events and delivered to TropWATER to be analysed for phosphorous, nitrogen and sediment content. The water quality data collected from this project is paired with historical water quality and sediment source tracing data, giving an improved understanding of the sediment sources and transport processes within these catchments. These valuable datasets are being used by the Paddock to Reef Program's catchment modellers to improve the spatial model representation of water quality across the Bowen Broken and Bogie catchments, including how this relates to land management changes within the catchment.



TropWATER's Zoe Bainbridge and Steve Lewis with Rebecca Lathwell, of Havilah



JCU TropWATER education programs for the community

JCU TropWATER offers a short course in aquatic environment monitoring skills which will improve understanding and value-adding from the perspectives of field staff, recent graduates and experienced professionals. Indigenous ranger training for river and wetland health protection. TropWATER provides several Land and Sea Indigenous ranger training programs in northern Australia. These training programs have resulted in many major on-ground monitoring and restoration projects which has not only contributed to restoring environmental values, but also returned cultural values into coastal wetland landscapes.

The STEM Waterways Citizen Science Project is designed to enable school teams to learn to: study aspects of waterways in depth, identify areas of scientific importance and interest, engage in good STEM practices and gain access to technologies and experts in order to create viable data and information that is a valuable contribution to local, and potentially global knowledge on these essential systems. IScientists from JCU TropWATER, partnering with Cairns Regional Council and the Dawul Wuru Aboriginal Corporation invite teams from high schools in the region to form their own STEM Waterways Citizen Science Project.



3.2 TropEco



TropEco is the University's sustainability program supporting students and staff to create a culture of sustainability at JCU.

The program supports participation through activities including:

- *Student internships* - for individuals to make a more significant contribution through sustainability projects.
- *Staff team challenges* - friendly competitions between work groups performing sustainability actions.
- *War on waste* - facilities to help people reduce, reuse and recycle as much personal waste as possible.
- *Community gardens* - promoting local food production and self-sufficiency.
- *Green bike program* - reconditioning old bicycles and encouraging use of active transport.

TropEco Monitoring Resource consumption.

TropEco staff carefully monitor resource use on campus at JCU:

- Water consumption, water reuse and recycling.
- Energy consumption, renewable energy production.
- Waste production to landfill.
- Recycling volumes of co-mingled recycling and specialist recycling sources including e waste, batteries.
- Green waste and compost recycling.
- Paper use and printing rates, paper and cardboard recycling

JCU TropEco and the Estate Directorate produce annual reports to the Australian Tertiary Education Facilities Management Association (TEFMA) on this data. TEFMA conducts an extensive annual benchmarking survey of its member institutions to gather comparative costs and performance data for a range of facilities management operations.



TropEco Achievements 2022:



SIXTEEN STUDENTS & STAFF ENGAGEMENT EVENTS

TWENTY FOUR STUDENT INTERN PLACEMENTS



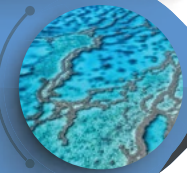
2000 TREES PLANTED

FIVE ENVIRONMENTAL AND SUSTAINABILITY DOCUMENTS REVIEWED



1ST DRAFT SUSTAINABLE TRANSPORT PLAN CREATED

1ST DRAFT CARBON MANAGEMENT PLAN CREATED



HUNDREDS OF TROPICO WEBSITE UPDATES

FOUR SITES BIODIVERSITY MONITORING AT KIRRAMA STATION ORPHEUS ISLAND TOWNSVILLE AND CAIRNS CAMPUSES

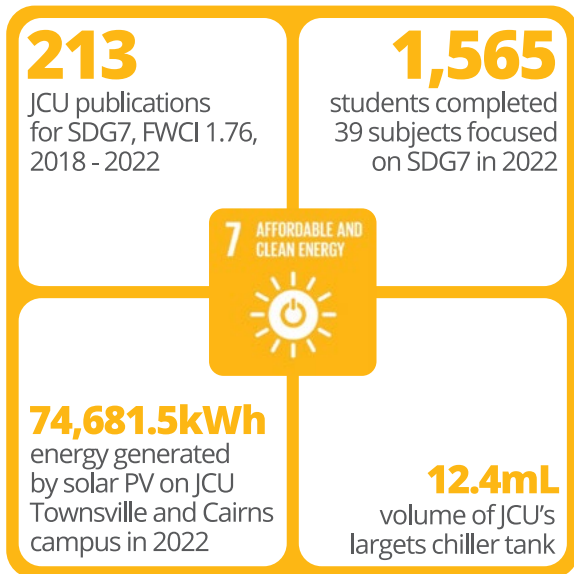


TEN COLLABORATIONS WITH STAKEHOLDERS

HUNDREDS OF REUSABLE CUPS AND BOTTLES GIVEN TO STUDENTS



3.3 Progress towards UN Sustainable Development Goal 7 - Affordable and Clean Energy



In this section:

- 3.3.1 Monitoring greenhouse gas emissions
- 3.3.2 Action to reduce greenhouse gases.
- 3.3.3 Trends in JCU resource use 2019 to 2022
- 3.3.4 Research into affordable and clean energy
- 3.3.5 A roadmap to carbon neutral



3.3.1 Monitoring greenhouse gas emissions

James Cook University's greenhouse gas (GHG) emissions have been measured annually since 2017 and has been submitted in emission reports to the National Greenhouse and Energy Regulator (NGER). James Cook University measures its corporate value chain emissions (scopes 1, 2, and 3) with the view to strategically position actions towards emissions reduction following a prioritized hierarchy, left.

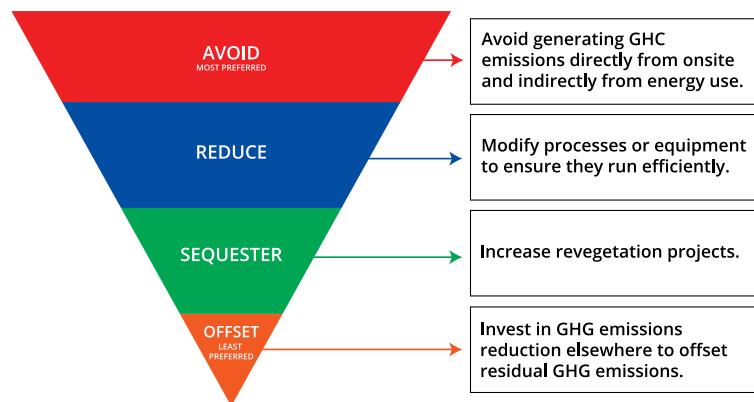


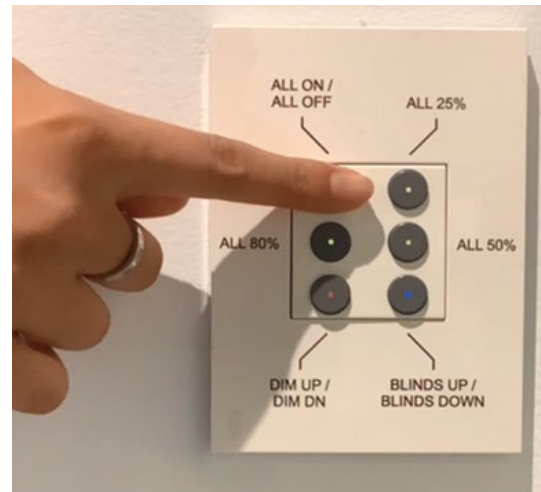
Figure 3.1: Hierarchy of preferred actions towards carbon neutrality

3.3.2 Energy efficient actions towards reduced greenhouse gas emissions

JCU recognises the serious threat of climate change and the devastating impact that climate change will have on ecosystems and communities living in the Tropics. The University's regional location away from choices in energy providers and complex pre-existing energy infrastructure in capital cities, presents unique challenges for moving to reduce greenhouse gas emissions and move to a carbon neutral future. JCU is making progress towards reducing greenhouse gas emissions in spite of its currently fiscally restrained environment and has made some great achievements in energy management.



- ✓ Campus District Cooling System - JCU has an award-winning energy management system including the Campus District Cooling System on both the Cairns and Townsville campuses. The cooling system had the largest water tank in the southern hemisphere at the time of construction at 12.5 megalitres (above). Water is chilled at night in the huge CDC tanks which then provide chilled water (4°C) to JCU's air conditioning systems through a network of underground pipes. This makes JCU's air-conditioning system highly energy efficient, saving CO₂ emissions and millions of dollars in energy costs.
- ✓ Monitoring air-conditioning, lighting, energy use with timetabled occupancy - JCU's energy management system includes software allowing careful monitoring of energy use and cooling to match timetabled room occupancy and daily weather conditions for maximum efficiency. Teaching spaces, laboratories and lecture rooms are only cooled for scheduled classes saving a great deal of energy.
- ✓ Transition from fluorescent tube lighting to energy-efficient LED panels - JCU is transitioning its fluorescent lighting to energy efficient LED panels and has recycled over 3 tonnes of fluorescent tubes in 2022 and 2023.
- ✓ Solar PV installations on all new builds - Solar PV systems currently exist on Rotary International House, The Science Place, The JCU Ideas Lab, and Burrallga Yumba. This adds to the sizeable solar power generated by existing installations at the Daintree Rainforest Observatory and Orpheus Island Research Station. These research stations are now nearly fully powered by renewable energy, only requiring backup power from generators for a few hours per day.
- ✓ Construction of a new solar carpark on the Burrallga Yumba Townsville Campus, commencing in 2024.
- ✓ High energy efficient building design on all new builds - LEED Gold and 5 Green Star. JCU's The Science Place was a landmark achievement in sustainable development, the first educational building in Australia to achieve the standard of LEED Gold, under the Leadership in Energy and Environmental Design (LEED) international sustainable building certification program.



- Energy-efficient design appropriate to the tropical environment
- Reflective roofing that reduces heat gain and air conditioning use
- A 25kW solar power system that generates renewable energy.
- Sensor lighting that reduces output when natural daylight is available.
- Recycled plastic fibre in place of steel reinforcement in concrete paths.
- Energy metering that supplies usage data to building management systems.
- Sustainable certified wood used in construction.
- Extensive indoor air quality testing and management.
- Low-emission materials including flooring, adhesives, sealants and paints.

JCU has implemented campus Master Plans with principles of space rationalisation and an energy-efficient, consolidated urban arrangement of key buildings which will further aid emissions reduction. A consolidated campus is more geared towards public and active modes of transport and less towards private cars which will reduce emissions in internal travel.



3.3.3 Trends in JCU resource use 2019 to 2022

James Cook University carefully tracks energy use on each of its campus to monitor trends in energy use over time. The figures right and below provide a snapshot of the current use in energy per person and JCU, and per square meter of usable floor area. On average in 2022, a person at JCU used:

- 13.76GJ of energy,
- 76.8kL of water and produced:
- 49kg of waste and
- 8kg of recyclable waste for the year.

Resource use decreased significantly during the Covid-19 lockdown in 2020 and has been steadily increasing since 2021 with the return of students and staff to campus. The reduction in student enrolments and the size of the overall JCU community has reduced the total quantity of resource use, however the per person usage has increased over this time.

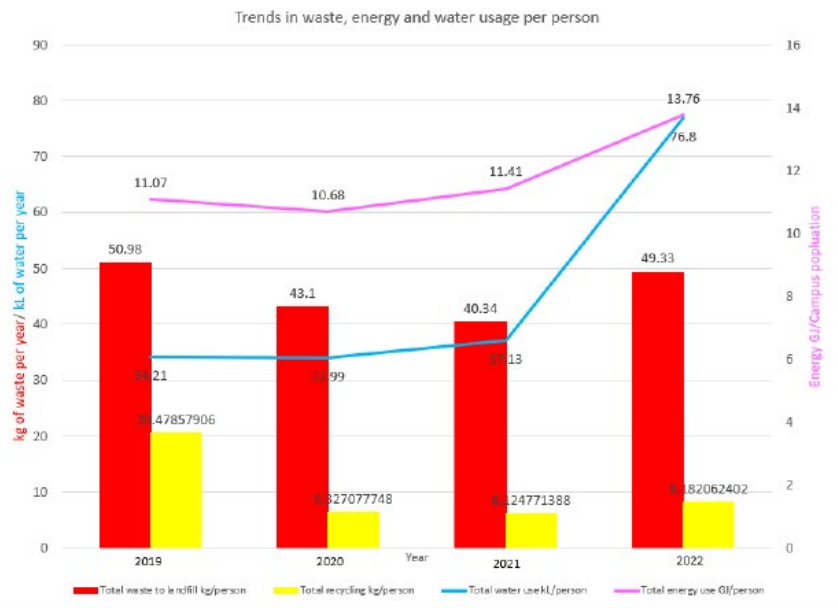


Figure 3.2: Energy, water use, and waste and recycling produced per person at JCU from 2019 to 2022

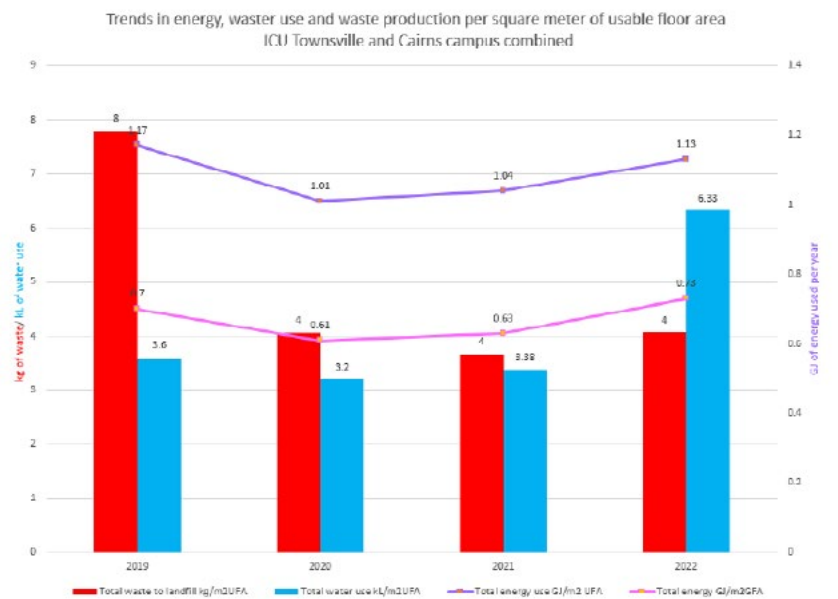


Figure 3.3: Energy, water use, and waste produced by floor area at JCU from 2019 to 2022

3.3.4 Research into affordable and clean energy

Recycling Lithium-Ion batteries



JCU PhD Candidate Emenike Okonkwo is researching a better method to recycle batteries that is both environmentally friendly and more cost effective. Every year, only about 10 per cent of Australia's lithium-ion battery waste is recycled. The CSIRO estimates

this is a lost value of more than \$603 million. Lithium-ion batteries continue to be used in everything from mobile phones to electric cars. After a life span of about 3- 10 years, these batteries become 'spent', but they still contain valuable metals such as lithium, manganese, cobalt and nickel.

But battery recycling in Australia is still facing challenges. Emenike says his research is developing both a cost effective and environmentally friendly method for extracting these precious materials from spent lithium-ion batteries. "The idea was to incorporate everyday waste materials into this process for recycling so that we could overall reduce the cost of recycling and have a method that is more eco-friendly," he says.

Solar Power Infrastructure Research

Researchers from James Cook University are joining a multi-national effort to design and build a groundbreaking green energy network for the Asia-Pacific. Renewable energy company Sun Cable has assembled nine corporate and research institutes to develop what will become the world's largest solar energy infrastructure project, exporting renewable energy generated in the Northern Territory to Darwin and Singapore via a high voltage cable - known as the Australia- Asia PowerLink.

The research group, known as the Asia Green Grid Network (AGGN), will drive innovation to make the technologies required for such a massive project a reality. The solar cable project will eventually be capable of supplying up to 15 per cent of Singapore's total electricity needs by 2040 – equivalent to almost \$800 billion worth of electricity each year. The project is estimated to create 870,000 jobs in the Asia-Pacific while abating 3070 megatonnes of carbon dioxide per annum. JCU College of Science and Engineering former Associate Dean, Dan Christie said JCU would be tasked with solving some of the research challenges the project presented.

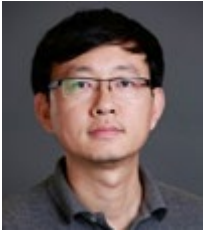
Renewable Energy Education and Research at JCU



JCU Electrical Engineering students study renewable energy systems and research into low carbon generation technology. Adjunct Associate Professor Ahmad Zahedi with the College of Science and Engineering is a lecturer in power engineering and renewable energy systems. Associate Professor Zahedi's research includes Smart Grid & Smart Grid technologies, distributed renewable energy generation systems, the impacts of large-scale penetration of solar PV and wind generation on dynamic performance of power system and renewable energy education and Plug-in Hybrid Electric Vehicles (PHEV). Associate Professor Zahedi is the lecturer for JCU engineering subject EE5500 - Sustainable Power Generation and Distribution, which aims to introduce the concepts behind sustainable electricity systems as well as the main renewable and low-carbon generation technologies.

The subject covers a wide range of power generation and distribution systems such low-carbon networks, introduction to low carbon thermal generation (nuclear, Carbon Capture and Storage, bio diesel, biomass), Wind Energy: introduction to the technology, Renewable Energy: system level integration challenges (operational reserves, impact on conventional generation, capacity credit), introduction to multi-generation (cogeneration, Combined Heat and Power (CHP), waste heat recovery, tri-generation, heat storage, heat networks.





Dr Yang Du, a lecturer with the College of Science and Engineering, is a researcher in renewable energy integration, power electronics and smart grids, and also teaches JCU engineering students in these topics. One of the subjects, EE4400 - Power Engineering 2, provides

the theoretical and practical background knowledge required to understand, design and carry out planning for electrical power systems. The subject examines the engineering and economic aspects of distributed renewable energy technologies such as solar, wind, and the other commercially available renewable energy technologies. It focuses on solar energy resources, solar photovoltaic (PV) materials and electrical characteristics, photovoltaic systems, and their applications. In relation to wind energy, the focus is on wind resources, wind power, and wind turbine technologies, modelling and simulation of wind power operation. This subject concludes with a lecture on smart grid, its characteristics and benefits to both utilities and electricity consumers.



Dr Elsa Dos Santos Antunes, a lecturer in Mechanical Engineering with the College of Science and Engineering, is a researcher in new smart materials, including understanding production of value-added products from

biomass pyrolysis, production of value-added products from Biomass Pyrolysis and investigating new catalyst for biodiesel production from Biomass Pyrolysis. Dr Elsa Antunes recent research publications include Bio-oil and biochar from the pyrolytic conversion of biomass: A current and future perspective on the trade-off between economic, environmental, and technical indicators (2022) in the journal Science of the Total Environment. The study examines evaluating biomass as an energy source using Techno- economic analysis (TEA) and life-cycle assessment (LCA) and including the impacts of many environmental indices on the assessment.



3.3.5 A roadmap to carbon neutral

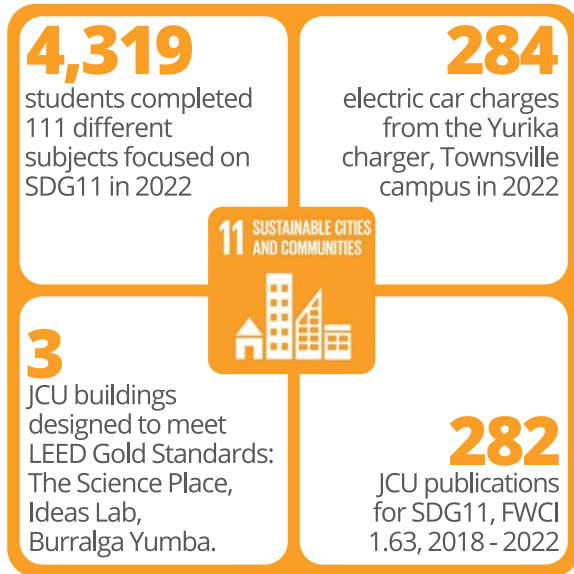
James Cook University is currently developing a roadmap to carbon neutral to lead the University into a more sustainable future. The roadmap will detail the steps that the University will need to take to reduce our current greenhouse gas emissions from utilities and all other services as much as possible. This body of work is being carried out by the Estate Directorate, being led by Dr Emmanuel Acheampong, TropEco Strategic Planning Officer. James Cook University will continue to commit to sustainability initiatives that, among other outcomes, will result in significant emissions reduction with its associated positive effects on the environment. Numerous activities carried out on JCU campuses and research stations emit greenhouse gases directly or indirectly. These emitting sources broadly cover utilities, equipment, transportation, third party services, and waste. JCU, as a champion of sustainability initiatives, is committed to make significant contributions to emissions reduction through teaching, learning, research, and operations. In the JCU community staff and students are carrying out sustainability initiatives in their own small spaces, which is an encouraging movement in the right direction. These initiatives together have a significant impact on emissions reduction.

The steps to reach these goals will be outlined in the roadmap to carbon neutral, the sustainable transport plan and also the campus master plans for Townsville and Cairns. There are several other supporting plans including the Waste and Recycling Procedures, and the Natural Asset Management Plans. The plans include the current campus consolidation and pedestrian prioritisation works, renovating existing infrastructure to be more energy-efficient, and a plan to increase the renewable energy production on campus with the construction of a solar carpark on the Bebegu Yumba Townsville campus, commencing in 2024.

JCU students and staff will be encouraged to participate in sustainability campaigns and initiatives to raise awareness about the roadmap to carbon neutral and everyone's role in the university's sustainability journey. Effective communication and sustainability leadership will be key to the success of sustainability engagement outcomes. Part of the communication process will be the development of a sustainability induction program for students and staff to better educate our JCU community about sustainability and the impact that the actions of each individual can have on reaching our sustainability goals.



3.4 Progress towards UN Sustainable Development Goal 11 - Sustainable Cities and Communities



In this section:

- 3.4.1 JCU campuses open access to the local community
- 3.4.2 Eddie Koiki Mabo Library art space exhibition 2022
- 3.4.3 Serving Country exhibition 2023
- 3.4.4 Falling from the Sky collaborative art exhibition
- 3.4.5 Sustainable transport at JCU
- 3.4.6 Working remotely - communication technology platforms
- 3.4.7 Sustainable development – Gold LEED rating buildings at JCU
- 3.4.8 JCU Tropical Urbanism and Design Lab (TUDLab)
- 3.4.9 Affordable housing for JCU Students



MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

3.4.1 JCU campuses open access to the local community



James Cook University campuses are part of the local community, visitors are welcome to the campus to enjoy open green areas, gardens and walking paths, and access to places of learning and entertainment such as the Eddie Koiki Mabo Library, art galleries, and special collection, cafes and eateries. The local community is encouraged to get involved in JCU through University Open Days, attending JCU community healthcare clinics, campus tours, and public lectures and seminars on topics of interest to the public. JCU involves the community in partnerships with local businesses, government,

community groups and not-for-profit organisations working with JCU students to increase their connection with the community. JCU students complete hundreds of hours of work placement in local schools, hospitals, businesses and industries and are an important part of the north Queensland workforce. JCU holds many events for local school children to experience JCU, including University Experience Days and programs for high school students to have hands-on experience of different career opportunities.





JCU values the arts and local heritage of the local communities in which the campuses are located.

- In 2022 JCU spent \$5,160,292.00 on supporting and maintaining Arts and Australian and regional heritage on JCU campuses.

JCU campuses all have been bestowed a local Indigenous name through consultation with the local Traditional Owners and Indigenous communities, to recognise and respect Aboriginal and Torres Strait Islander knowledge and the significance of JCU's place in northern Queensland. Each year the university

holds Art exhibitions and events open to the public to celebrate Indigenous cultural heritage and local artists and performers. JCU campuses are open for the celebration of cultural events including NAIDOC week, Harmony Day, and welcomes the local community to use the campus facilities.

JCU Nguma-bada Cairns campus hosts the World Mountain Bike championships and the Crankworx World Tour mountain bike events on its extensive network of mountain bike trails. These events draw thousands of visitors from around the world to the JCU campus for a week of racing and entertainment.



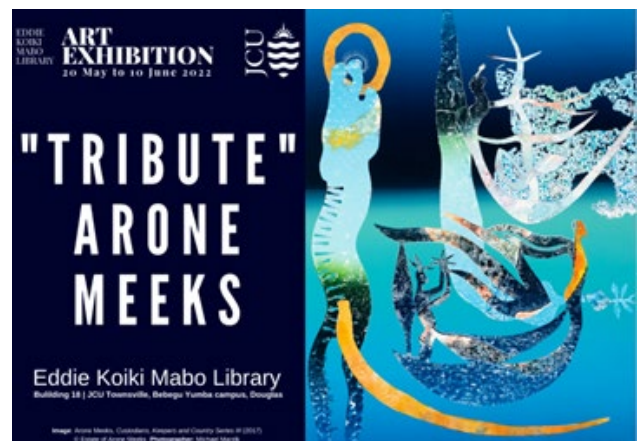
3.4.2 2022 Eddie Koiki Mabo Library Art Exhibition

An exhibition of the artworks of Gail Mabo, Eddie Koiki Mabo's daughter, was held on the first anniversary of the naming of the Eddie Koiki Mabo Library. Library and Information Services staff endeavour to hold an annual Indigenous art exhibition in commemoration from May 21st for three weeks to coincide with National Sorry Day (May 26), National Reconciliation Week (May 27 to June 3), and Mabo Day (June 3).

The event enabled Library and Information Services staff, students and visitors the opportunity to participate in the JCU Reconciliation Action Plan in a broad public manner. As a vibrant celebration, the exhibition n lived our public space and generated conversation not only about the art but also the building name, the man behind it, the importance of Aboriginal and Torres Strait Islander peoples, and to recognise and value cultural diversity as an asset which enriches the life of the university community. The 2022 Eddie Koiki Mabo Library Art Exhibition showcased the work of Arone Meeks.

2022 marks the 30-year anniversary of the Mabo case, one of the most significant turning points for Aboriginal and Torres Strait Islander peoples in the fight for native

title. To celebrate, JCU Library hosted the exhibition "Tribute" Arone Meeks. The "Tribute exhibition featured artworks from the late Arone Meeks (b.1957 - d. 2021), a nationally and internationally acclaimed and celebrated Queensland artist and proud Kuku Midiji man. This event was collaboratively curated by independent Cairns-based artist Geoff Dixon and the Manager of Special Collections Bronwyn McBurnie and included selected paintings and prints created by Arone Meeks in the years between 2001 – 2021.



3.4.3 Serving Country Exhibition February to May 2023

A long-running exhibition featuring photographs of Indigenous veterans inspired and educated James Cook University students in 2023. Ten photo banners from the Serving Country exhibition, each featuring a veteran, were displayed at JCU's Indigenous Education and Research Centre on the Bebegu Yumba Campus in Townsville.

JCU Deputy Vice Chancellor, Indigenous Education and Strategy, Professor Martin Nakata said the exhibition was a powerful reminder of the service of Indigenous people across many generations in defence of Australia. "The men and women featured in this display each have an inspirational story to tell that was forged by hard work, mateship and sacrifice," he said. "From conflicts in South Africa and Gallipoli through to Afghanistan and Iraq, Indigenous Australians have always been there to answer the call to defend our nation.

"We are honoured to host part of this exhibition at JCU, and we hope the exhibition inspires our students." More than 200 veterans were photographed by Belinda Mason and Dieter Knierim for the exhibition, which has been featured at various locations across Australia since 2014.



3.4.4 Falling From The Sky – collaborative art exhibition with JCU and local schools

Held at The Cairns Institute, Lux Gallery, and JCU Library Nguma-bada campus, the theme "Falling from the Sky" evokes the plight of bats in Cairns that fell to their death in the hot summers a few years ago. The exhibition focuses on negative impacts of climate change and environmental pollution that have produced a threatening environment for birds and other non-human forms of life. Falling from the sky was a science-inspired and arts-delivered exhibition featuring works of art by students from Smithfield State High School, St Monica's College, Trinity Bay High School and 20 professional artists. "Falling from the Sky" featured 25 works by 20 Australian and international artists, including Aly de Groot, an award-winning contemporary fibre and eco-artist, textile artist Marion Gaemers, Maharlina Gorospe-Lockie, an artist and anthropologist, and Carolyn Cardinet, who refers to herself as an "accidental ARTivist (accidental artist)".

As climate change will have an impact on the future of children around the world Robyn also invited local schools to encourage their students to submit artwork for the exhibition. In total, the three Cairns high schools submitted 29 works of art, some of which were collaborative projects between several students.



3.4.5 Sustainable transport at JCU



JCU campuses have ample bike parking and shower facilities, a wide network of paths and bike lanes, low-cost bike mechanic services and a Bicycle Users Group (Townsville campus) to provide support to cyclists. Students and staff are encouraged to travel by bicycle to the Townsville and Cairns campuses. Secure bike parking facilities are available next to the Eddie Koiki Mabo Library, the Medical Precinct (behind the Padua Lecture Theatre) and at The Science Place in Townsville. Swipe card access is required to use this parking. JCU's award winning Green Bike Fleet program repairs secondhand bikes and sells them at low cost to JCU students. The program provides affordable and convenient transport, saves energy, reduces carbon emissions, improves health, improves resource efficiency, and reduces waste. To date the project has refurbished and sold over 400 bikes. JCU has partnered with Beam electric scooter to encourage students and staff to use scooters to travel around campus and reduce private car use on campus.

A survey of JCU staff commutes in 2023 found that staff use 8 different modes of transport to travel to Uni, the most common being car, followed by cycling, then motor cycling or scooter. JCU is developing a sustainable transport action plan to further encourage sustainable transport and increase the number of students and staff using public transport to travel to uni.

The main public transport provider in the region, Sunbus, added 5 electric buses to their Cairns fleet, allowing the local JCU community to travel to the university by electric vehicle. An electric vehicle charger operated by Yurika is located on the Bebegu Yumba campus Clinical Practices Building as part of the Queensland Government's Electric Superhighway program. This enables JCU students and staff driving electric vehicles to University to charge their vehicles on campus. JCU Estate Directorate staff and cleaning contractors use electric buggies to travel around campus and carry tools and equipment.



3.4.6 Working remotely – communication technology platforms

JCU developed a Remote Working Procedure to allow staff more flexibility to work remotely, following the Covid-19 lockdown. Working remotely reduces staff commute and allows staff to improve their work/life balance. JCU recognises the importance of, and the benefits of, Remote Working Arrangements (RWA) in the attraction and retention of staff. JCU acknowledges

the need to balance this benefit to staff with the creation of a vibrant on-campus experience and a positive workplace culture. JCU has also invested in high quality remote digital meeting tools including Microsoft Teams and Zoom to enable staff and students to collaborate across the large distances between JCU campuses and colleagues in Australia and overseas.

3.4.7 Sustainable development



JCU has invested in several important initiatives to create more environmentally sustainable campuses and actively pursue its commitment to sustainable development. LEED Gold is a standard under the Leadership in Energy and

Environmental Design (LEED) international sustainable building certification program. The Science Place on JCU's Bebegu Yumba campus in Townsville was the first educational building in Australia to achieve the standard of LEED Gold. On JCU's Nguma-bada campus in Cairns, the JCU Ideas Lab was also designed and constructed to meet

LEED Gold standards, as a partner to The Science Place for innovation and sustainable development. The most recently completed JCU building designed and constructed to meet LEED Gold standards is the new Buralga Yumba student accommodation complex on JCU's Bebegu Yumba campus in Townsville.

New buildings at JCU are built on brownfield sites, cleared land from the demolition of older buildings to preserve the existing bushland on campus. This is reflected in the Townsville and Cairns campus master plans.

3.4.8 JCU Tropical Urbanism and Design Lab (TUDLab)



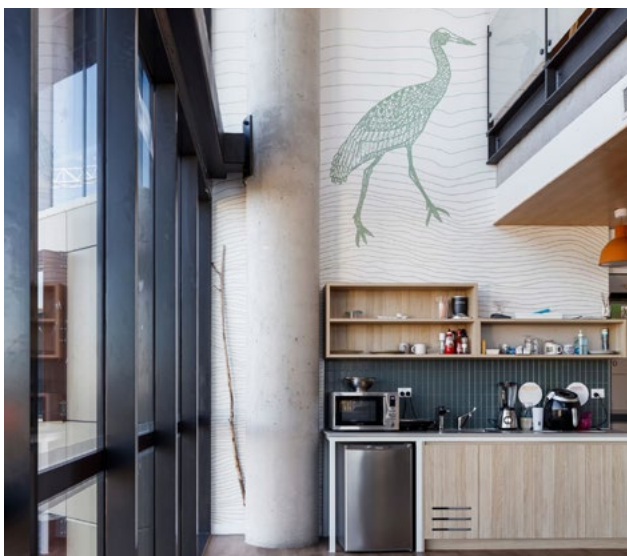
JCU TUDLab assists the development industry, governments and non-government organisations by providing solutions for improving the sustainability of tropical urban areas. The JCU TUDLab pulls together the capacity and

multidisciplinary expertise of James Cook University researchers with strong links to local governments and industry. The TUDLab bridges academic knowledge and real-world planning and design endeavours. Research projects include Urban Heat, Urban Water, Urban Design and Regional Regeneration, and Migration and Liveability. In 2022 TUDLab's Associate Professor Lisa Law hosted regional Queensland high school students

to consider the role of science and urban planning in building a city resilient to hazards. The group focused on building a medium-density neighbourhood on a 10-ha site just north of the James Cook University Cairns Campus. They heard from experts on mapping the site with drones (Karen Joyce), acid sulfate soils (Paul Nelson), urban hydrology (Han She Lim), and ecology (Brandan Espe and Myles Menz). The TUDLab has formed partnerships with the Cairns Regional Council and Cassowary Coast Regional Council and many local business including architects and town planners. Figure above shows Associate Professor Lisa Law at the JCU tent at the 2022 Cairns City Council Ecofiesta, educating the public about sustainable city design through a fun interactive game.



3.4.9 Affordable housing for JCU Students



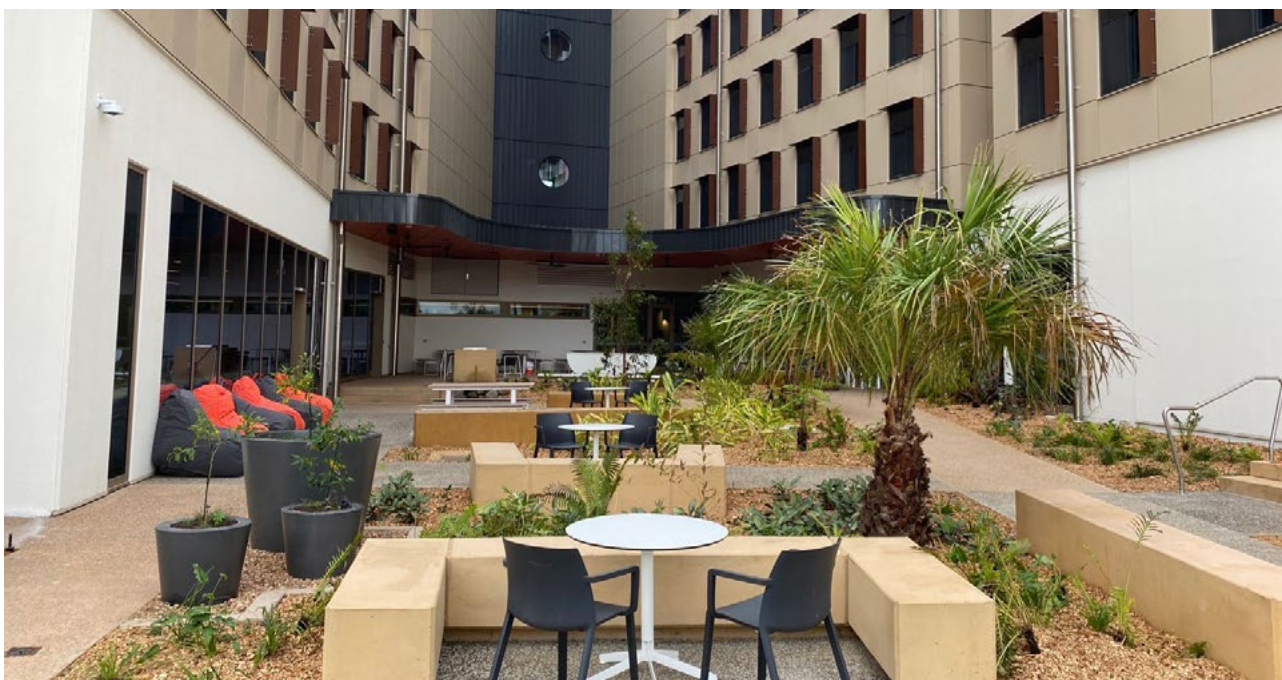
self-catered facility features a master chef style kitchen and dining with gas cooktops, ovens, and individual (and lockable) fridges and freezers. It has a range of high-quality communal facilities including study rooms, a sports lounge, a theatre room and a music room. The facility is managed by UniLodge and an on-site manager and administrative support team. Residential assistants help to provide pastoral care to students. This new facility also increases the number of disability accessible rooms on campus for students living with a disability.

James Cook University also supports Aboriginal and Torres Strait Islander student to afford accommodation while studying at JCU through the Indigenous Student On-Campus Accommodation Scholarships, study support, provision of social and cultural activities including the residential life program.

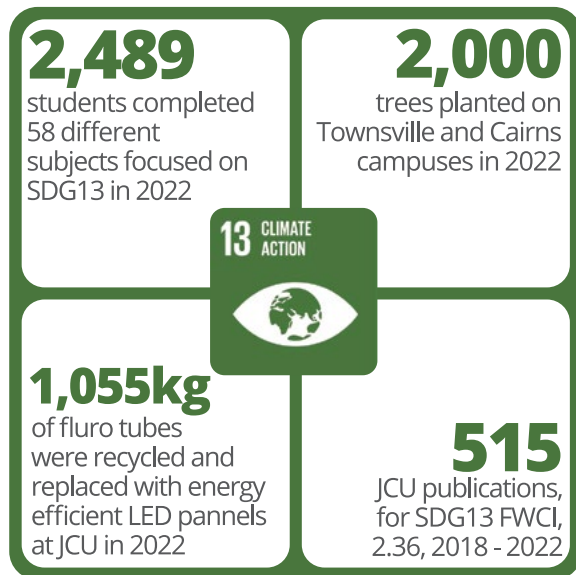
James Cook University offers on-campus accommodation for students at an affordable price with options to suit the needs for a wide variety of students. JCU believes living on campus for students reduces the cost and environmental impact of a commute so provides accommodation in association with several accommodation providers. The new Burrallga Yumba accommodation facility on the Bebegu Yumba Townsville campus opened in 2022. Derived from the Birrigubba language of the Bindal People, Burrallga Yumba means Brolga Place, in recognition of the dancing burrallga, or brolga. Burrallga Yumba offers brand-new purpose-built student accommodation where students can thrive. The seven storey, 403-bedroom building is located in the heart of the campus.

Designed to provide contemporary and affordable student accommodation in a secure, safe, and environmentally sustainable environment, this fully

JCU Brisbane has partnered with Amber student, a leading provider of quality student accommodation to enhance the experience of international students studying in at JCU Brisbane. This collaboration aims to enhance the overall experience of our international students by offering quality, affordable, and safe housing options near our campus.



3.5 Progress towards UN Sustainable Development Goal 13 - Climate Action



In this section:

- 3.5.1 Climate change awareness at JCU
- 3.5.2 Climate change research at JCU
- 3.5.3 Cooperative planning and research for climate change disasters
- 3.5.4 Climate change in the Tropics
- 3.5.5 Public education on climate change – seminars and events
- 3.5.6 Coral bleaching on the Great Barrier Reef
- 3.5.7 Sustainability and climate action at JCU Singapore



TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

3.5.1 Climate change awareness at JCU

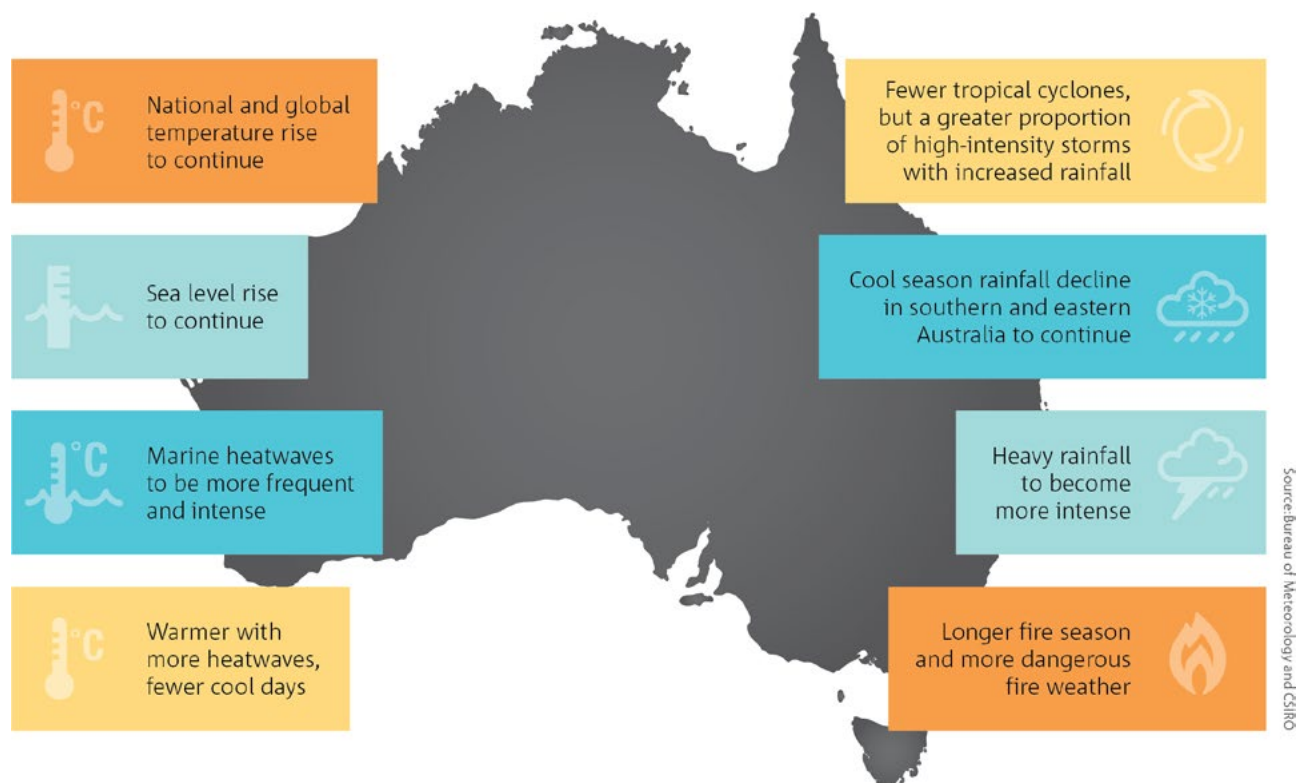


Figure 3.4: Predicted climate change impacts on the Australian climate from the Bureau of Meteorology State of the Climate 2022 report.

James Cook University is a tropically focused university with campuses from Singapore to Brisbane. The tropical region of Australia is predicted in the Australian Bureau of Meteorology's State of the Climate 2022 report to experience increased likelihood of intense rainfall events, heatwaves and sea level rise, and fewer, but more intense cyclones (see image above). These events have the potential to impact the University's buildings and infrastructure, research and teaching business continuity. For example, more frequent marine heatwaves on the Great Barrier Reef could lead to further and more extreme coral bleaching events, impacting the University's world-class marine research reputation, teaching activities and viability of the Orpheus Island Research Station. JCU currently has policy and procedure for managing business continuity risks, critical incidents and emergency events. The impact of climate change is not currently specifically included in these documents, and it is recommended that these impacts be considered to improve the University's climate change preparedness level. JCU maintains a Riskware Enterprise Risk Management (ERM) Register, a comprehensive record of all risks across the University landscape, which also needs to be updated to include climate change risks.

JCU has a comprehensive Emergency Management Plan including external threats such as cyclones (Code Brown). Future planning for response, management and post-incident recovery for severe climatic events needs to be informed from lessons learnt from recent experiences, including the Townsville floods in 2019 (see right). The Master Plan - Townsville Campus recognizes that currently there are significant flood issues across the campus which need to be addressed. Workplace health and safety policies and procedures designed to protect students and staff engaged in work and learning activities outdoors may also need to be updated for increased risks of events such as heatwaves and intense rainfall.

All new JCU buildings are built to the highest sustainability ratings, LEED Gold or 5 Green Star, which significantly reduce their environmental impact and resilience to increased intensity of weather events. These buildings have sustainable architecture that minimizes resource and energy use and heat gain. Older, less sustainable buildings that are less resilient to climate change are planned to be decommissioned and demolished and the construction materials will then be recycled at an average rate of 90%. New JCU buildings such as the Technology Innovation Complex follow local council guidelines regarding flood zones. Designs have been modified including raising building ground levels to take into account 1 in 100-year flood events. The Master Plans for the campuses also recognize the need for weather protected/shaded connections between buildings, which will become increasingly important with the likelihood of more heatwaves and intense rainfall events. As climate change impacts not only the University's business continuity but also the wellbeing of the JCU community, JCU needs to have well communicated resilience strategy to reassure future students that it recognises the risks and is adequately prepared to respond to events.



3.5.2 Climate change research at JCU

The Centre for Tropical Environmental and Sustainability Science (TESS) is based at JCU. The TESS mission is to promote cutting-edge ecological and environmental research in the Tropics, and the wise management, conservation and sustainable use of tropical terrestrial and coastal ecosystems, in Australia and internationally. The TESS research Theme 2 - Environmental change and archaeology is focused on the reconstruction of past environments using various

geochemical, isotopic, microfossil and sedimentary proxies, and the derivation of millennial to decadal scale length records of events and environmental changes, such as tropical cyclones, floods, droughts, landslides, bushfires, sea levels, temperature, rainfall, sea surface salinity, vegetation, terrestrial run-off, and sedimentation in marine environments, along with broad regional climate variations such as the El Niño-Southern Oscillation (ENSO).

Agroecology modelling – JCU research into hot and dry years

In 2022 a James Cook University scientist found years that are both hot and dry have increased markedly in Australia over the past 30 years.

Dr Brian Collins is an Agroecological Modeller at JCU's College of Science and Engineering. He says that years that are both hot and dry can be more damaging to the environment and human health than either phenomenon individually.

“For example, we know interactions between heat and drought have major implications for crop production, and tree mortality can significantly increase due to the compounding effect of drought and hot temperatures and increased risk of bushfires,” he said. Dr Collins analysed temperature and rainfall records for Australia between 1889-2019 using advanced statistical techniques. “The results showed a general cooling-wetting trend over 1889-1989. From 1990-2019 there was not much change in rainfall, but there was a significant change in the frequency and severity of hot extremes across the country,” said Dr Collins. He said in contrast to the previous cooling period, his analysis showed annual average maximum daily temperatures had significantly increased across 89 per cent of the country since 1990. “This means the frequency of

Compound Hot-Dry (CHD) extremes significantly increased between 1990 and 2019 in more than 40 per cent of the country, mostly located in the north, south-east and southwest,” said Dr Collins. He said between 1930-1959 most areas across Australia had only 1-2 annual CHD extreme events with some not having any. But the frequency of such extremes increased to an average of 5.3 annual events in 1990-2019 with nearly 50% of areas studied experiencing more than eight years with CHD events over the 30-year period.



3.5.3 Cooperative planning and research for climate change disasters



Centre for Disaster Studies
– Townsville Bushfire
Preparedness Case Study 2022.
In 2021, Queensland Fire and
Emergency Services (QFES)
commissioned the JCU Centre

for Disaster Studies (CDS) to conduct a community-based survey within the Townsville peri-urban communities of Bluewater, Nome and Horseshoe Bay (Magnetic Island). Supported by the local Rural Fire Service (RFS) in each of these localities, this research was designed to explore current community and social variables relating to bushfires. JCU researcher Dr Yetta

Gurtner produced the report in 2022 and found that there is a need to better educate and promote bushfire risk, survival and evacuation planning - particularly if there are dependants in the household, or for anyone with significant medical or physical mobility issues (aging demographic). Additional increased social networking and engagement within the local community could facilitate and provide opportunities for open dialogue between neighbours regarding bushfire risk, preparedness (particularly property maintenance) and mitigation (enhancing community self-sufficiency and resilience).



JCU Cyclone Testing Station

The JCU Cyclone Testing Station conducts wind engineering research into the performance of houses and other buildings in response to cyclones and other severe wind events. The knowledge gained is used to improve building regulations and standards to ensure that buildings are safe. For over 30 years, the Cyclone Testing Station has been at the forefront of damage investigations after cyclones and other severe wind events. The aim of these investigations has been to understand what building products and systems performed well, as well as identifying areas for improvement in building regulations and standards. The Station has conducted these damage investigations in Queensland, Northern Territory, Western Australia and New South Wales, as well as Tonga, Vietnam, and USA. Findings from these investigations help to improve building materials and standards to minimise further loss and suffering.



3.5.4 Climate change in the Tropics

Effect of climate change on mosquito borne diseases: climate change and other environmental factors are fanning the geographical distribution of Aedes mosquitos, which now play a growing role in the transmission of diseases such as dengue, Zika and chikungunya in Pacific Island countries and the wider area of South East Asia. A collaborative study between AIITHM and the University of New South Wales (UNSW), which set out to identify the frequency of arboviral (mosquito-borne) disease outbreaks in 22 Pacific Island countries, discovered major inconsistencies in how these outbreaks are reported – which may jeopardise efforts to contain the diseases.

“We found that data on outbreaks are not routinely reported, nor are they reported in a consistent manner,” said JCU Associate Professor of Virology and Viral Diseases, Paul Horwood, one of the study leaders. The human cost of explosive outbreaks can be devastating for countries with fragile health systems,” added epidemiologist Dr Adam Craig, co-supervising author from UNSW. “In 2016-17, the Solomon Islands experienced the largest dengue outbreak on record in the Pacific. It swept through the capital, Honiara and affected more than 12,300 people, resulting in 877 hospitalizations and 16 deaths.” These species of mosquito are now spreading rapidly across South-East Asia, bringing increased disease risk to Singapore, Southern China and PNG.



Brain Health in the Tropics – a virtual conference -



Responding to mental health challenges in uncertain times - July 2022 – Creating Futures, supported by James Cook University. In July 2022, Creating Futures delivered a series of four free lunch time sessions on Brain Health. The sessions were presented by Professor Zoltan Sarnyai, Head

of the Laboratory of Psychiatric Neuroscience at JCU. The effects of climate change can be direct or indirect, short-term, or long-term. Acute events can act through mechanisms similar to that of traumatic stress, leading to well-understood psychopathological patterns. In addition, the consequences of exposure to extreme or prolonged weather-related events can also be delayed, encompassing disorders such as posttraumatic stress, or even transmitted to later generations. The lectures summarised the current research findings in this highly important new field which can help not only health care professionals but also policymakers dealing with the potential devastating consequences of global warming. Working with partners in the Pacific, Creating Futures aims to support on ground health professionals and community members with skills development, information, training, leadership courses and networking opportunities.

Community perceptions of human-assisted adaptation in the Great Barrier Reef - Dr Gillian Paxton, JCU Cairns Institute seminar series, June 2022. While reducing global greenhouse gas emissions is urgently needed, it will no longer be enough to guarantee the long-term survival of the Great Barrier Reef as we know it. The Reef Restoration and Adaptation Program (RRAP) is a multi-institutional collaboration seeking to create a suite of innovative and targeted technological measures to help the Great Barrier Reef adapt and survive in a future marked by climate change.

3.5.5 Public education on climate change – seminars and events

TESS seminars feature international, Australian, and local JCU researchers whose work falls within Tropical Environmental and Sustainability Sciences. Speakers are typically established or postdoctoral researchers.

TESS Seminar Series 2023

- **Research priorities for adapting forest restoration to future climate change** – Professor Susan Laurence, Kali Middleby PhD candidate, JCU. Limiting the rise of global warming under 2°C will necessitate a rapid reduction in greenhouse gas emissions and the additional sequestration of carbon from the atmosphere. Tropical forest preservation and restoration will be crucial to meet this goal. However, current, and future changes in climate such as climate warming, heatwaves, drought and their promotion of wildfires, threaten the potential of tropical forests to sequester carbon. Furthermore, the synergisms of these phenomena with existing disturbances such as cyclones, invasive grasses, and land use, encompass a suite of challenging scenarios that will require adaptive solutions. The seminar discussed impacts of current and future climate scenarios on tropical forests and present the results of ongoing restoration research in order to establish how we should prioritise restoration research priorities for coming decades.
- **Interactions between dugong biology and the biophysical determinants of their environment** - Emeritus Professor Helene Marsh, JCU. Dugongs perceive their environment largely through touch, hydrodynamic reception, and hearing; vision and taste are less important components of their sensory repertoire. The important elements of their biophysical environment include the drivers of the distribution, abundance, species composition, biomass of seagrass communities, and the environmental parameters that influence dugongs directly such as water depth, light, temperature, tides, waves, currents, coastline features, and predation risk. The most profound effects of climate change on dugongs are likely to be short and long-term changes to the distribution, species composition, and biomass of seagrass habitats, which, in turn, will affect their life history parameters, movements, and habitat use.
- **The need for bold nature retention targets to drive effective biodiversity conservation in the Anthropocene** – Professor James Watson, University of Queensland. Humanity is exerting unprecedented pressure on the natural environment, driving a biodiversity extinction and climate crisis and placing strain on natural resources. Understanding the spatial distribution and growing dominance of

different human pressures is vital for ambitious global goals such as the United Nations Sustainable Development Goals (SDGs) and Kunming-Montreal Global Biodiversity Framework. We still have time to 'bend the curve' back for biodiversity but this can only happen when with an evidence-based strategy based on what species and ecosystems need in the face of expanding human pressures and the changing climate.

TESS seminar series 2022

- **How has climate change affected Queensland's Mulga and Mitchel grass over the past 50 years?** - Dr Brian Roberts. This work exposes the floristic change and climatic trends over half a century. A definite conclusion is difficult as the processes are still ongoing, and the authors found appropriate to summarize the factual findings rather than to attempt to closeup the 50-years of dynamic study. Some of the findings over the course of the study are mean annual temperature has increased by about +0.20°C for the half century; the generally expected trend toward more drought-resistant plants has not been detected by the vast number of observations (up to 2021); and annual rainfall has decreased by an average of 1.0mm per decade over the past 13 decades.
- **CAFNEC and Community Power for Change** – Lucy Graham, Cairns and Far North Environmental Centre (CAFNEC) is going from strength to strength after operating in FNQ for 41 years. FNQ holds some of the most incredible environments in the world and like most precious things, has depended on the protection and stewardship of people. Lucy Graham, CAFNEC Director, highlighting the important work that CAFNEC volunteers and members are doing to take action and protect our environment and people, discussing climate action, biodiversity, conservation, citizen science and more.



3.5.6 Coral bleaching on the Great Barrier Reef

New research in 2022 shows global warming of 1.5°C above pre-industrial levels will be catastrophic for almost all coral reefs – including those once thought of as refuges. Associate Professor Scott Heron from James Cook University was part of the study. He said the team of scientists used the latest generation of climate model projections to predict future thermal exposure of shallow-water coral reefs around the globe. “We identified thermal refuges – places where it’s thought coral reefs have a good chance of surviving warming oceans due to things like consistent upwelling of cool deep waters,” said Dr Heron. He said the scientists found that the refuges will provide almost no escape. Only 0.2%, or one fifth of one percent, of coral reefs globally are projected to avoid frequent bleaching-level heat stress under a 1.5°C climate warming scenario.

“This means corals worldwide are at even greater risk from climate change than previously thought, especially as limiting warming to 1.5°C is looking increasingly unlikely,” said Dr Heron.

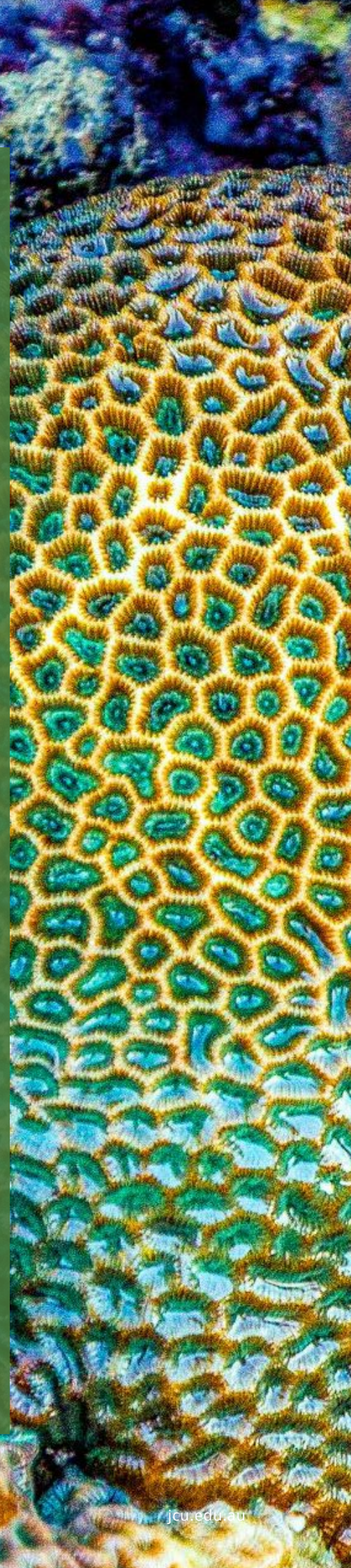
Dr Heron added that the scientists wanted to highlight that climate change effects are already impacting ecosystems in many areas of the world and will worsen, even at the 1.5°C of global warming set as a target in international agreements. This includes potential impacts of heat stress this year on the Great Barrier Reef and off Western Australia.



Algae protecting coral reefs from bleaching.

JCU scientists have found macroalgae (seaweed) can help protect some corals from bleaching, and the removal of the canopy-forming seaweed should be carefully timed to help coral reefs thrive. Associate Professor Scott Heron said such findings were becoming increasingly important. “With the escalating frequency and intensity of anomalously high temperature events, climate-driven coral bleaching and mortality is now occurring somewhere in the world every year. This is the biggest risk to reef ecosystems over the coming decades. “It’s in no way a theoretical problem – broad-scale coral bleaching events have already had major effects on the Great Barrier Reef in 2016, 2017, 2020, and again in 2022,” he said. Research officer Hillary Smith said “Our study suggests that the timing of removing macroalgae on the Great Barrier Reef may maximise benefits. Algae removal before the annual mass spawning period in September/October will reduce competition for space between algae and baby corals.

“Conversely, it seems that allowing some regrowth of the algae canopy prior to the maximum summer heat in February and March will give some protection to mounding corals”. The study was published in 2022 in the *Journal of Experimental Marine Biology and Ecology*.



Research into impacts on local business.

In 2022 JCU researchers have been examining how businesses operating on the Great Barrier Reef have been trying to adapt to a warming climate – with many becoming involved in action against climate change. James Cook University PhD candidate Henry Bartolet led the study. He said coral reefs are increasingly affected by climate-induced disturbances, magnified by increasing ocean temperatures. About half the operators surveyed became involved in action against climate change. The researchers also found one unexpected response that they had not included in the survey questions – some businesses had chosen to educate visitors about climate impacts.

Coral bleaching – JCU analyses impact on management of the Great Barrier Reef.

New JCU research in 2022 shows mass bleaching did little to change the issues addressed or key players involved in management of the Great Barrier Reef. PhD candidate Amber Datta from James Cook University's ARC Centre of Excellence for Coral Reef Studies led the study.

She said researchers looked at key issues discussed by a range of major parties playing a role in management of the reef, such as industry groups, NGOs, as well as government organisations; before and after two coral bleaching events in 2016 and 2017. Ms. Datta said mass coral bleaching events have caused some action, such as new coral restoration programs. Yet overall, their results showed that the events primarily reinforced existing priorities and did not change the relative influence of different parties. Meeting documents indicated this may be because the Great Barrier Reef has a very established management system, and those involved chose to utilise existing forums rather than create new ones in the face of crisis. "This implies that extreme climatic events may fail to unseat the entrenched status quo."



3.5.7 Sustainability and climate action at JCU Singapore

The Environmental, Health and Safety (EHS) Committee at James Cook University in Singapore came up with the following initiatives in 2022:

- World Water Day (awareness)
- Participation in Earth Hour
- Environmental & Safety talks
- Participation in “Old Shoe New Future” program organised by ActiveSG.
- Green DNA Certification issued by Singapore Environment Council the University.



JCU Singapore has also attained the Green DNA Certification, which recognises the University's enduring sustainability journey. In addition, the University has also received the Eco Office certification and the EcoF&B certification, which recognise the sustainability efforts and eco-consciousness among staff and the Campus's F & B operators respectively.

Yellow flame Awards JCU Singapore

At the 2022 School Green Awards, JCU Singapore received the Yellow Flame Award! This is our third Yellow Flame Award, reflecting our blossoming environmental efforts across various activities and initiatives, as well as on campus facilities. The School Green Awards (SGA) is a voluntary environmental program which serves as a platform for students to develop and showcase their environmental efforts, through customised activities which will help them gain better understanding of the environment. The Singapore Environment Council (SEC) is an independently managed, non-profit and non-governmental organisation (NGO) and an institution of Public Character (IPC).



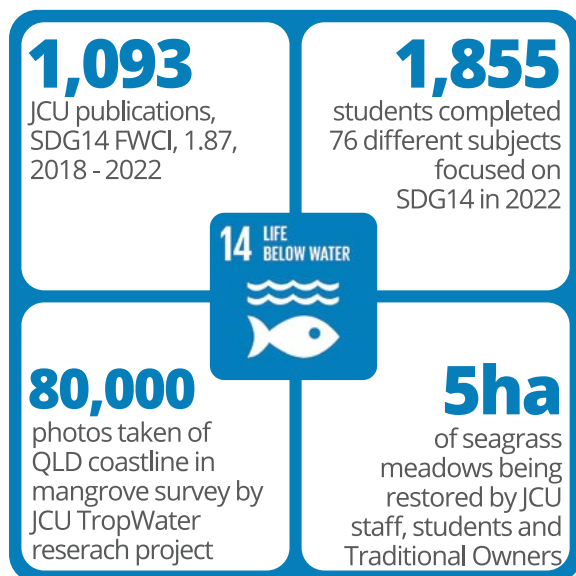
Singapore addresses key global challenges

The SEIGOP 2023 Conference provided a platform for academics, researchers, industry practitioners and students to share their research on sustainability, organisational psychology, and more with other global experts.

The inaugural Sustainability, Economics, Innovation, Globalisation and Organisational Psychology (SEIGOP) 2023 Conference took place at James Cook University (JCU), Singapore from 1–3 March, attracting various experts to discuss the latest research and innovations in these key areas.

The conference brought together leading academics, researchers, practitioners, and policymakers to share their insights on the challenges and opportunities associated with sustainability, economics, innovation, globalisation, and organisational psychology. The event was organised by the Centre for International Trade and Business in Asia (CITBA) at JCU, Singapore. Over the course of the three-day conference, participants engaged in lively discussions and shared their latest research findings and innovative solutions to some of the most pressing challenges facing businesses, governments, and societies around the world. Professor May Tan-Mullins — Dean International at JCU in Singapore, and Advisor to the Organising Committee — said, “The SEIGOP 2023 conference provides a platform for experts from around the world to share their insights and collaborate on solutions to some of the world's most pressing challenges. By bringing together experts from diverse fields, we hope to foster interdisciplinary dialogue and facilitate the exchange of innovative ideas and best practices. It was a truly exciting event, and we look forward to the productive outcomes that will emerge from this conference.”

3.6 Progress towards UN Sustainable Development Goal 14 – Life Below Water



In this section:

- 3.6.1** Life below water - research
- 3.6.2** JCU marine biology and marine science partnerships and community action
- 3.6.3** JCU sustainable fisheries, aquaculture and marine conservation
- 3.6.4** Research into overfishing on the Great Barrier Reef
- 3.6.5** Large-scale seagrass restoration project with JCU TropWATER



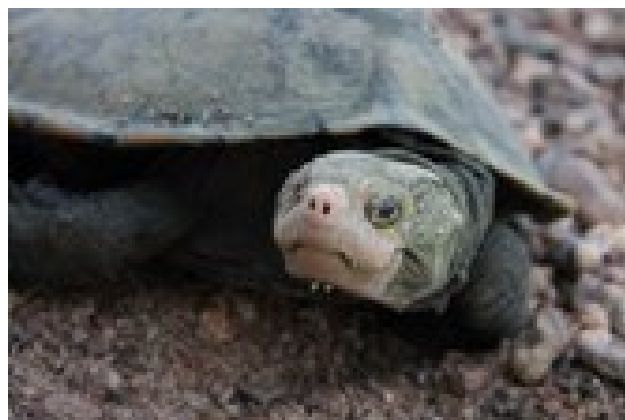
CONSERVE AND SUSTAINABLY USE THE OCEANS, SEA AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT

3.6.1 Life Below Water - research at JCU

JCU is very active in the field of freshwater Ecology and conservation and its flagship research Institute, JCU TropWATER, has many active freshwater research projects being undertaken by JCU postgraduate students and JCU researchers.

Biodiversity of freshwater turtles in Northern Queensland

Coastal Queensland is home to Australia's highest freshwater turtle diversity with seven genera comprising a total of 16 species. Due to their restricted distributions and specialised physiologies (i.e., bimodal respiration) these turtles are vulnerable to water quality degradation and loss of habitat. This project led by Jason Schaffer (TropWATER), with Professor Damien Burrows and Cecilia Villacorta-Rath aimed to determine the distribution, habitat requirements and population demographics (age class structure, abundance) of northern Queensland freshwater turtles. The study discovered an iconic species of turtle, Irwin's Turtle, locally known as the lost bum-breathing turtle, which had not been seen for 25 years, in the lower Burdekin river, using DNA detection in water samples.



JCU Research – change in tidal wetlands

Researchers analysing more than one-million satellite images have discovered 4,000 square kilometres of tidal wetlands have been lost globally over twenty years – but ecosystem restoration and natural processes are playing a part in reducing total losses. Dr Nicholas Murray, Senior Lecturer and head of James Cook University's Global Ecology Lab, led the study. He said global change and human actions are driving rapid changes of tidal wetlands —tidal marshes, mangroves and tidal flats — worldwide. The scientists found that almost three-quarters of tidal wetland loss globally has been offset by the establishment of new tidal wetlands in areas where they formerly did not occur – with notable expansion in the Ganges and Amazon deltas. "Most new areas of tidal wetlands were the result of indirect drivers, highlighting the prominent role that broad-scale coastal processes have in maintaining tidal wetland extent and facilitating natural regeneration. This result indicates that we need to allow for the movement and migration of coastal wetlands to account for rapid global change," said Dr Murray.

Partnerships with farmers for protecting wetlands

In one of the most sugarcane-dominated catchments in Queensland, JCU's Dr Adam Canning worked with Ingham farmer John Cardillo and Greening Australia in leading a project that has the potential to be scaled up across the Great Barrier Reef catchment. Together, they have converted 15 acres of flood-prone cane paddocks into Melaleuca plantations. These paddocks back on to Palm Creek, which is fed by the Herbert River and flows down into the Great Barrier Reef.

Canning is investigating the amount of carbon stored by these plantations compared to non-restored areas, and their role in capturing nutrients from farm run-off mobilised during high rainfall to reduce nutrient pollution to the Reef. "Planting Melaleuca plantations on flood-prone farms has dual benefits," he says. "They are powerful carbon sinks and can help improve water quality. But if agricultural land is restored, it could be at a loss to farmers so, we need to think about how restoration can have co-benefits for farmers." The restoration project examines how farmers could generate income while offering farmland to be converted into wetlands, specifically when the paddocks back onto key waterways.



3.6.2 JCU marine biology and marine science partnerships and community action

Dieback in tropical mangroves

Breakthrough research by James Cook University scientists in 2022 has solved the mystery of the catastrophic death of 40 million mangrove trees around the Gulf of Carpentaria in 2016 – and the discovery could help scientists predict, and possibly prevent, future events. The latest research reveals that the devastating mass death of tidal mangrove forests was a result of an unusually low sea-level due to large-scale swings in El Niño – Southern Oscillation events. Lead author Dr Norm Duke from JCU's TropWATER Research Centre said the mangroves had not recovered seven years on, making the mangrove dieback event an ongoing coastal catastrophe. "The key factor responsible for the mass dieback appears to have been the sudden 40-centimetre drop in sea level that lasted for about six months, coinciding with no rainfall, killing vast areas of mangroves," he said.

"Essentially, the trees died of thirst." The study shows that strong El Niño events – often associated with coral bleaching on the Great Barrier Reef – are also a threat to vital mangrove ecosystems. The dieback's exact cause has been revealed after a four-year research partnership between James Cook University, Charles Darwin University, and Carpentaria Land Council Aboriginal Corporation Indigenous Rangers in the Gulf, funded by the Australian Government's National Environmental Science Program and the Northern Territory Government.

Women Warriors of the Torres Strait The Great Barrier Reef Census

The Women Warriors of the Torres Strait – an all-female crew of Traditional Owners, rangers and scientists led by the Torres Strait Regional Authority (TSRA) Sea Team and James Cook University – set sail as part of the Great Reef Census to survey the northernmost section in the Torres Strait, Northern Australia. The Women



Warriors of the Torres Strait Great Reef Census voyage is funded by the TSRA and supported by partners including the Citizens of the Great Barrier Reef and JCU.

James Cook University is one of the major delivery partners for the Great Reef Census, an annual citizen science initiative led by Citizens of the Great Barrier Reef. Within just three years, the program has significantly expanded survey coverage across the Great Barrier Reef, helping to capture a broad scale snapshot of reef condition and provide timely information to reef managers and scientists that help to target protections.



The Great Barrier Reef Census

510

reefs surveyed in every sector of the Great Barrier Reef

15%

of reefs now surveyed. Previously, only 5% of reefs were regularly surveyed

85,747

reconnaissance images collected from thousands of sites on the Reef

10,523

citizen scientists from 700+ locations across 64 countries analysing Census images

130,503

analyses completed (and counting) by everyday people on a first-of-its-kind AI assisted platform

622

reefs re-ranked for conservation priority after Census pilot



Data from the first three Great Reef Census expeditions is helping direct Crown-of-Thorns starfish control vessels. This species is responsible for around 50% of coral loss on the Great Barrier Reef.



Analysis of reconnaissance imagery is helping identify key source reefs on the Great Barrier Reef, which during the annual mass spawning help regenerate nearby "needy" reefs that have low coral cover.



Great Reef Census expeditions provide a soft infrastructure for other conservation missions including seagrass mapping and sea cucumber conservation. More than three tonnes of ghost nets have also been removed from the Reef on Census expeditions.

3.6.3 JCU Sustainable Fisheries, Aquaculture and Marine Conservation

Centre for Sustainable Tropical Fisheries and Aquaculture.



The team provides world class, multidisciplinary, solutions-focused research for local, state, federal and international resources managers, both in government and the private sector. The University offers a teaching and industry-outcome R&D portfolio delivered by internationally renowned experts. With a comprehensive undergraduate offering in aquaculture and fisheries sciences, through to graduate coursework and higher degree research options, JCU trains the next global leaders in aquatic food production. Through the Centre for Sustainable Tropical Fisheries and Aquaculture (CSTFA), JCU also partners with industry, NGOs, and government to tackle grand challenges associated with sustainable production of seafood. JCU researchers work closely with commercial, recreational, charter and indigenous fishers, and provide advice on management of fished resources to relevant management agencies locally, nationally and internationally. JCU staff hold key positions on national and international advisory panels and management bodies actively advising policy and management. JCU's location provides for close links with world leading marine and fisheries research and management agencies, and with fishing industry groups. The JCU Fisheries Human Dimensions team work directly with individuals, communities, and decision-making bodies to provide targeted advice and research to support use, management and conservation needs. These include commercial, recreational, charter and indigenous fishers both nationally and internationally, and key agencies such as the Great Barrier Reef Marine Park Authority of Australia, Queensland's Department of Agriculture and Fisheries, the National Fisheries Authority of Papua New Guinea, and the Galapagos Science Centre in Ecuador.

Agri-Food Tech Expo Asia (AFTEA) 2022



Held at Marina Bay Sands Convention Centre, Singapore, 26-28th of October 2022, the Agri-Food Tech Expo Asia is a strategic platform that evolves with the industry and

is shaped by leaders and experts to explore strategies and solutions for sustainable systems and production to build a vibrant Agri-Food hub in Asia. In addition

to hosting a booth at the expo, Professors Andreas Lopata and Dean Jerry were also the Sandbox speakers for the event. A Constellar event with international content partner DLG (the German Agricultural Society), its inaugural edition in 2022 welcomed over 6,000 attendees from 66 countries, and 163 exhibitors from 24 countries with 9 national pavilions from Canada, France, Germany, Indonesia, Israel, Republic of Korea, Singapore, The Netherlands and the United Kingdom. 2022's edition also facilitated over 500 business meetings and 55 sandbox sessions over the event days.

Collaborating with farmers to improve water quality in the Great Barrier Reef Better

Across the Great Barrier Reef catchment, TropWATER scientists and cane farm extension officers are enhancing paddock-scale water quality monitoring projects to strengthen the crucial link between water quality science and sustainable agriculture. The initiative unites ten water quality monitoring projects – spanning the Wet Tropics, the Burdekin, and Mackay Whitsunday regions – to collectively improve the data collection and communication of water quality science in farming communities. By integrating scientific expertise from leading water quality researchers with strategies from science communication specialists, the project helps build farmers' trust in water quality science to ultimately transition to a sustainable future for both farmers and the environment. The initiative is funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation, under the Regional Water Quality Program.

Investigating historical environmental and climate records across the Great Barrier Reef

TropWATER scientists are investigating the long-term environmental and climate records across the Great Barrier Reef to provide crucial insights into the region's historical conditions. By analysing proxy records like coral cores, the project uncovers disturbances, linking them to specific factors for a profound understanding of the reef's evolution. The resulting data not only informs marine ecosystem dynamics but also aids practitioners, managers, and researchers in comprehending the region's past. This knowledge guides sustainable practices and builds awareness of environmental shifts across the Great Barrier Reef catchment and lagoon, promoting informed decision-making for the future.

3.6.4 Research into overfishing on the Great Barrier Reef

Restricting spearfishing in some 'yellow zones' in the Great Barrier Reef Marine Park has doubled the abundance of coral trout, according to new research led by James Cook University scientists. The study published in 2022 in the journal *Biological Conservation* focused on reefs around the Capricorn Bunkers, offshore from Gladstone, looking at the abundance of targeted fish species in partially protected Marine Park Zones known as yellow zones. Researchers compared yellow zones that allow spearfishing to 'special management area' yellow zones that prohibit spearfishing.

JCU's TropWATER scientist Dr April Hall said while spearfishing can be an ecologically sustainable activity with minimal bycatch, restricting the activity via designated spearfishing-free management zones can have conservation benefits at a regional

scale. JCU's Professor Mike Kingsford said no-take marine reserves were one of the most effective conservation measures to restore the abundance of fish. "Fully protected green zones in the area support the most significant number of large coral trout," he said. Co-author, Great Barrier Reef Marine Park Authority's Director Darren Cameron said the research demonstrated that yellow zones were an important marine park management tool providing a balance between conservation and sustainable fishing activities. "Healthy fish populations in both yellow zones and protected no-take green zones produce baby fish, many of which grow up and are subsequently caught throughout fished areas. These zones prove fishing, with more fish also importantly contributing to the health and resilience of the entire Great Barrier Reef," he said.



3.6.5 Large-scale seagrass restoration project with JCU TropWATER, 4 traditional owner groups, Oz Fish Unlimited, with funding from BHP's Blue Carbon grants program

Tropical Australia's first large-scale seagrass restoration project began in 2023 in Cairns and Mourilyan, aiming to replenish more than 400 hectares of seagrass habitat devastated by cyclones and La Nina weather events more than a decade ago. JCU TropWATER's Associate Professor Michael Rasheed, who leads the team, said the project was built on years of rigorous research and trials.

"This is the first time seagrass restoration has been attempted at this scale in tropical Australia. We'll be working in partnership with communities and leading researchers in the field. "For more than a decade, the loss of these seagrass meadows has set off a ripple effect, robbing these ecosystems of their remarkable benefits – as a food source for dugongs and green turtles, and as essential nurseries for prawns and fish. "It's critical these habitats are restored, not just for the sake of the marine life they sustain, but for the resilience of our coastal communities."

Seagrasses are coastal marine powerhouses, capable of capturing carbon from the atmosphere up to 35 times faster than tropical rainforests. Along with re-establishing the seagrass meadows the team will measure these "blue carbon" storage gains and will monitor the return of fish. Led by James Cook University's TropWATER, the initiative will see scientists, students and volunteers planting thousands of seagrass fragments and sowing more than half a million seeds over the next four years. The initiative brings together Traditional Owner partner groups, including Gimuy Walubara Yidinji, Dawul Wurru, Goondoi and Mandubarra, in safeguarding their Sea Country estates. The donor seagrass for the program comes from Gimuy Walubara Yidinji country in Cairns.

JCU TropWATER – Providing solutions for government, communities and industry

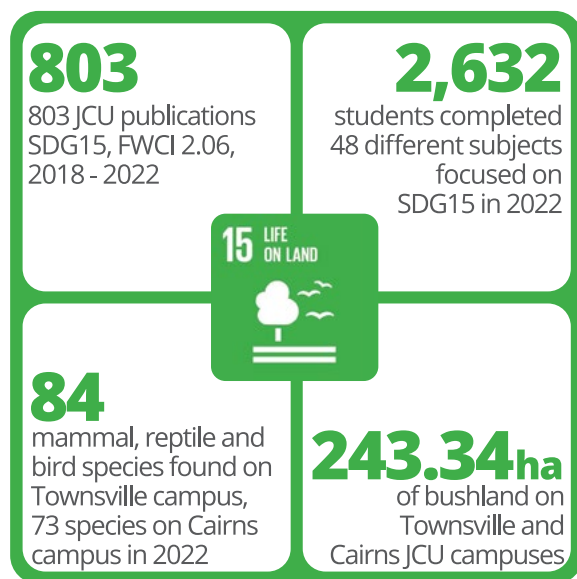
JCU TropWATER staff and members have been working with government Port Authorities on applied research and monitoring programs at numerous sites for over 20 years. JCU TropWATER currently conducts environmental monitoring in all the major ports of north Queensland – Gladstone, Hay Point, Mackay, Abbot Point, Townsville, Mourilyan Harbour, Cairns (Trinity Inlet), Thursday Island, Weipa and Karumba. JCU TropWATER's port-related research includes benthic habitat mapping, seagrass monitoring, mangrove health assessment, dugong and turtle health and population monitoring and water quality, long-term logging of turbidity and light penetration characteristics, artificial engineered seascapes as fish habitat, dredging monitoring and modelling and remote sensing analysis of sediment plumes. JCU TropWATER research team includes.

- JCU Honours, Masters' and PhD students
- JCU Scientists
- Laboratory and Technical staff

Services offered by the TropWATER Water Quality Laboratory include analysis of water, wastewater and water quality research of freshwater streams, rivers, wetlands and reservoirs for JCU research projects, as well as a consulting service for industry and a commercial analytical service to government agencies and industry.



3.7 Progress towards UN Sustainable Development Goal 15 – Life on Land



In this section:

- 3.7.1 JCU protecting biodiversity
- 3.7.2 Rare and threatened species program
- 3.7.3 Habitat for wildlife at JCU
- 3.7.4 JCU environmental activities in the community
- 3.7.5 Invasive species management
- 3.7.6 Public seminars for conservation and biodiversity
- 3.7.7 JCU Tropical North Queensland Drought Hub - Sandpit to Seed funding
- 3.7.8 Sustainable development land use in tropical Australia – research and partnerships



3.7.1 JCU protecting biodiversity



The abundance and diversity of flora and fauna on the JCU campuses are a drawcard to students and staff. JCU has a responsibility to protect and enhance the natural assets of the campus and is bound by specific local, state, and federal legislation in relation to this.

Natural Assets Management Plans (NAMP) have been prepared for the Townsville and Cairns campuses to protect and enhance their natural assets, while helping to inform future sustainable development through the Master Plan projects. The NAMPs aim to protect high value species, habitats, and green corridors, and encourage developments to prioritise degraded and previously cleared areas. JCU has the knowledge and expertise to ensure our natural assets are managed effectively and environmental health preserved. Biodiverse campus environments provide an on-site living laboratory for students and staff and demonstrate the University's achievements in best practice and innovation in natural asset management.

In 2021 JCU and the TropEco team have planted over 2000 trees on the Bebegu Yumba campus, in rehabilitation sites and landscape gardens. 3000 trees were planted in 2020 and a further 2000 trees have been planted in 2022. Native plants including vulnerable species have been selected to provide food, habitat and resources for native wildlife including birds, bats and possums. Additionally, plant species have been chosen for their ability to suppress invasive weed species, stabilize slopes and riverbanks and control erosion, increasing water quality in JCU's freshwater streams. Revegetation on the Nguma-bada campus is an ongoing process renewing unplanted areas of campus near established buildings, riparian areas and new constructions. In October 2022, 180 rainforest trees were planted on campus near the mountain bike tracks in collaboration with local community groups.



3.7.2 Rare and threatened species program - Green Gown Awards Australia Sustainability Champion winner - Brandan Espe



In 2023, Brandan Espe, JCU's Environmental Officer and facilitator of the TropEco program, was awarded the Green Gown Awards individual Sustainability Champion – Staff winner shared with

University of Otago's Jesikah Triscott. Brandan started the threatened plant species program as he has a passion for the environment and noticed that there was not a lot of work being carried out around the ex-situ conservation of endangered flora in North QLD. He has since acquired recognition for the threatened plant species program from a number of government agencies, and the program now includes partnerships with the Royal and National Botanic Gardens, as well as a range of smaller regional botanic gardens, the state government, local council and various local non-government organisations, now making this a national program. This project has shed light on the true state of condition of some of Australia's rarest and poorly known plants and has now been used by our state government in re-assessing the classification of some of these species, due to their decline or lack of prior data. The program is also immensely important as a maintained collection, as it allows for these species to be safeguarded, should they continue to decline, or disappear in the wild, with several species in the collection threatened with extinction in the wild by the end of this decade. The collection allows for easier and fast-tracked propagation for conservation, simpler and cheaper research, as well as providing the opportunity for our students to safely work with flora they would likely never get the chance to see. Brandan, through the threatened plant species program, is now liaising with researchers to determine how this resource and capacity can be used to assist in

combating threats to native plants from the pathogen Myrtle Rust in the region.

Species include the critically endangered *Acacia pupurepetala* (purple wattle), the restricted *Gossia lewisensis* (Mt Lewis Gossia) and the rare *Uromyrtus metrosideros* (mountain Malletwood).

- *Backhousia tetraptera* – critically endangered Mt Stuart Mystery Myrtle. Since 2021 cuttings have been collected from wild plants and have been grown in campus greenhouses. In 2022 18 tree saplings were planted in on the Townsville campus adjacent to Mt Stuart within the species' native distribution.
- *Eucalyptus paedoglauca* – vulnerable Mt Stuart Ironbark. 39 trees have been grown from seed and planted on campus in 2021 and 2022. This includes a dedicated grove of 33 trees, from 5 different parent trees to ensure genetic diversity, this grove will be used as a long-term monitoring plot.



3.7.3 Habitat for wildlife on JCU campus

James Cook University's Australian Tropical campuses are rich in natural bushland and tropical rainforest that provide habitat for local wildlife. JCU TropEco volunteers monitor native flora and fauna on campus, particularly conservation listed species. In 2023 koalas were sighted on the Bebegu Yumba Townsville campus for the first time in some years, and Lumholtz tree kangaroos occasionally visit the Nguma-bada Cairns campus. Wildlife cameras are used to record species occurring on campus including rare and threatened species. For a list of plants and animals found on campus please see Discover Nature at JCU prepared by the College of Science and Engineering. In 2022 TropEco staff made bee hotels for native stingless bees from native tree timber and placed in campus gardens to encourage native bees to establish on the JCU campus. Ponds and bird baths have been established on JCU campuses to provide water for wildlife during the dry season and grow native aquatic plants. Microbat homes, bird nesting boxes have

been placed in trees to prove nesting sites for native birds and microbats. In addition, skink gardens have been constructed providing habitat and cover for local native reptile species.



3.7.4 JCU environmental activities in the community

Ecofiesta - community outreach

JCU has been involved in supporting the Townsville and Cairns communities Ecofiesta events for several years. At the 2022 Townsville Ecofiesta, TropEco showcased work towards a more sustainable environment on campus, through discussing with the public its revegetation efforts, sustainable landscaping, wildlife monitoring, and waste reduction projects. In addition to this our staff presented on sustainable ecological landscaping, presenting on not only how JCU has increased its sustainability, but also how members of the public could.

For the 2022 Cairns Ecofiesta TropEco collaborated with Lisa Law - Tropical Urban Design Lab, showcasing sustainable urban design, and Professor Nico Adams from the JCU College of Science and Engineering showcasing innovative sustainable technologies in solar power and house design.

National Tree Day

JCU celebrated National Tree Day on 18 June 2022 at the Townsville Bebegu Yumba campus with a collaborative event for the JCU community and public organised by TropEco, The JCU Zoology Society and The JCU Sunshine Community Garden Club (see right). Native trees were planted on the campus grounds and attendees learnt about what makes a successful revegetation project.

National Science Week

Sustainability Officer Holly Field presented at the JCU Centre for Tropical Environmental and Sustainability Science (TESS) Youth seminar on JCU's TropEco sustainability actions to the Cairns community as part of their 2022 seminar series. The seminar was held in National Science week and was a youth-focused environment and sustainability science forum.



3.7.5 Invasive species management

Each year JCU staff collaborate with the Queensland Parks and Wildlife Service, Department of Environment and Science and local contractors to control introduced plant and animals species on campus. This collaborative work manages invasive species on JCU owned and adjacent land. JCU manages pest species including feral pigs, Asian honeybees and yellow crazy ants that are problem species in the local area. Local TAFE colleges also use this opportunity to train horticulture students in weed management on the JCU campuses in a mutually beneficially collaboration. 2022 TropEco field work TropEco student volunteers returned to Orpheus Island and spent several days eliminating invasive weeds and monitoring are plant species (see right).

Collaborative monitoring of the JCU campus for invasive insect species - 18th March 2022 -JCU hosted the Australian Department of Agriculture, Water and the Environment staff, and Biosecurity Australia staff in collaboration with students studying a Biological Invasions subject with Associate Professor Lori Lach. The team

surveyed the JCU community garden for invasive insect pests damaging to agriculture crops. Monitoring traps were placed in the garden to survey insect species for a period after which they were removed. Fortunately, no pests of significance were recorded.



3.7.6 Public seminars for conservation and biodiversity

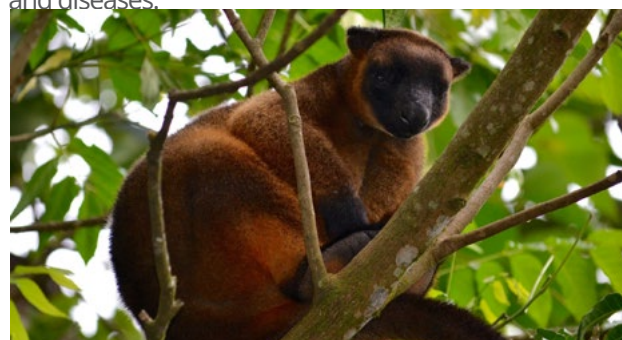
Centre for Tropical Environmental and Sustainability Science seminars

Extinction crisis: native mammals are disappearing in Northern Australia but WOOPS we didn't notice – Dr Noel Preece.

Northern Australian savannas hold exceptional biodiversity values within largely intact vegetation complexes, yet many of the 180+ mammal species, and some other taxa, found in the region when Europeans colonized Australia are Endangered. Recently, 10 mammal species were added to the 20 or so already listed in the Australian endangered category, one up-listed to Critically Endangered, one to Extinct, 2 un-listed, 2 down-listed to Vulnerable and so on.

Current predictions suggest that 9 species of mammal in northern Australia are in imminent danger of extinction within 20 years. We examined the robustness

of the assumptions of status and trends in light of the low levels of monitoring of species and ecosystems across northern Australia, including monitoring the effects of management actions. The causes of the declines include a warming climate, pest species, changed fire regimes, grazing by introduced herbivores, and diseases.



Tropical Mountain Plant Science – a science and ex conservation initiative for climate threatened cloud forest flora – Professor Darren Crayn Australian Tropical Herbarium, JCU. Plant species that are endemic to isolated tropical mountain peaks are particularly vulnerable to climate change, as upward migration to track climate is severely bounded. For the 80+ plant species endemic to the mountain tops (> 1000 m elevation) of Australia's Wet Tropics World Heritage area, environmental niche modelling indicates available habitat will contract drastically by 2080, and for at least seven species, may disappear altogether. No suitable habitat is known to exist beyond the species' current range therefore urgent precautionary conservation action is required. This project responds to that imperative by aiming to secure at-risk species in living collections. Our novel research on seed banking strategies, genetic diversity and tolerance of extreme climates will ensure that the ex-situ collections, distributed across multiple botanic gardens and seed banks along Australia's east coast, incorporate high redundancy, are genetically and physiologically diverse, and climatically matched to wild habitat.

Exciting species discoveries in Queensland's rainforests and what they tell us about the past, present and future – Associate Professor Conrad Hoskin JCU has spent 25 years exploring reptile and frog diversity in Queensland's rainforests. Dr Hoskin presented some highly distinct species discoveries, and what the discoveries mean for our understanding of the deep and more recent history of Queensland's rainforests. Dr Hoskin presented some incredible examples of persistence and adaptation to unique habitats, and discussed some of the conservation challenges around these species and areas as they face an uncertain future. Dr Conrad Hoskin discovered a large gecko with a 'beaky' face, spindly legs, and a spiny tail on Scawfell Island, a rugged, boulder-strewn island about 50 km offshore from Mackay, in the waters of the Great Barrier Reef, in 2023.

JCU The Cairns Institute seminar series Development in the Tropics: supporting regional planning - Mitchell Sheppard May 2022. Policies for developing northern Australia are high profile and receive significant funding. However, research conducted by the CRC Northern Australia has shown that developers, landholders and communities are frustrated with the current development assessment and approval process. Yet, Australia's biodiversity continues to decline, and cumulative impacts are not adequately managed as highlighted by the Samuels Review of the EPBC Act. Moreover, the north's Traditional Owners are concerned that current approaches to development does not positively protect cultural heritage, nor enable Indigenous participation in diverse economic development interests in the landscape. The National Environmental Science Program's Marine and Coastal Hub has provided funding to The Cairns Institute to undertake a scoping study into 'Supporting Regional Planning in Northern Australia'. This project aims to make a positive contribution to easing the contested landscape by exploring the potential of new approaches and improved practices for regional planning across the north. The seminar presentation explored the approach to achieving better environmental, cultural, social and economic outcomes for the north through the impact and engagement of this research.



3.7.7 JCU Tropical North Queensland Drought Hub - Sandpit to Seed funding

James Cook University researchers are working with the TNQ Drought Hub to research ideas that could improve agricultural adaption, sustainability and resilience towards Proof of Concept, Prototype or Minimum Viable Product (MVP) development. Sandpit to Seed funding aims to support projects, technologies and developments that will have a genuine impact on building resilience against drought within Tropical North Queensland.

So far in partnership, the TNQ Drought Hub has provided over \$200,000 of funding to the following research projects including:

- Clean Meat: Accelerating clean fish-meat production at scale in the lab.
- Bug Radar: A radar capable of detecting pests and small birds approaching a farm.
- AutoFish: An automatic fish phenotyping tool for sustainable aquaculture and smart fisheries

Associate Professor Lionel Hebbard says “The Sandpit to Seed fund has been critical for our team to further develop our business model. It has enabled the team to acquire important infrastructure and to conduct crucial experimental work to improve the Technology Level Readiness of our potential products. Through Sandpit to Seed support, we have been able to identify potential collaboration partners and customers. This will hold us in good stead to be successful in commercial funding from traditional grant funding and/or start-up investment funding”.



3.7.8 Sustainable development land use in tropical Australia – research and partnerships

JCU Centre for Tropical Environmental and Sustainability Science - (TESS)

Research projects:

- **Reducing the global impacts of rapid infrastructure expansion**
Coordinator – Distinguished Professor Bill Laurance
- In this Flagship project, we are focusing on:
 - The direct and indirect impacts of roads and other infrastructure on native species and ecosystems, especially in the tropics
 - Devising strategies to minimise the environmental impacts and maximise the socioeconomic benefits of new infrastructure.
 - Conveying to policy makers and the general public the grave dangers posed to native ecosystems by poorly planned infrastructure projects.
- **Sustainable tropical agriculture - Coordinator** - Associate Professor Paul Nelson

The Sustainable Tropical Agriculture project provides supports to farmers, their advisors and regulators to fulfill the potential of agriculture to provide sufficient healthy food, livelihoods, clean water and clean atmosphere, and pass the land on to future generations in better shape than it was received.

- **Capacity building and engagement for sustainable development**
Coordinator - Dr Kearnin Sims
- Sustainable advances in human dignity, human-environmental interactions and sustainable development agendas in Northern Australia and Tropical World.
- This TESS Flagship seeks to address human-environment interactions from an ethical-ecological standpoint, which brings together social and environmental sciences to promote inclusive capacity building and strategic engagement activities. The Flagship seeks to advance sustainable development agendas in Northern Australia and the Tropical World across a range of sectors, including Governance and Policy; Indigenous Futures; Education for Sustainable Development; Sustainable Urbanism; Inclusive Growth; Gender Equity; Sustainable Livelihoods; and Public Health.

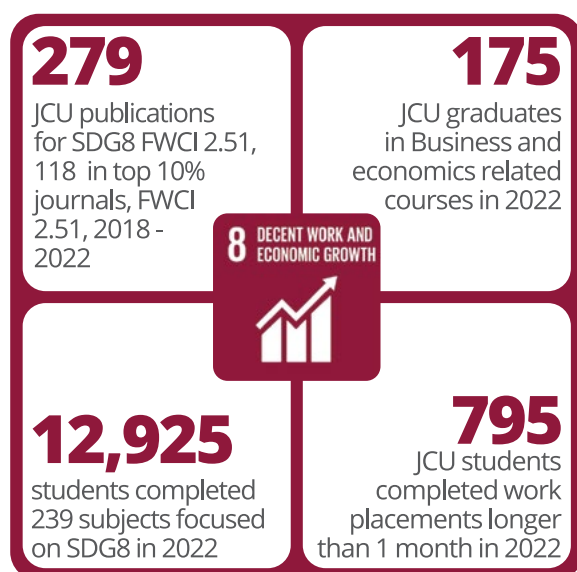
- **Invasive species and biosecurity in tropical Australia**
Coordinator: Associate Professor Lori Lach (right)
- Tropical Queensland is a hotspot of opportunity for the introduction of invasive species, such as weeds, plant pathogens, invasive ants, and Asian honeybees, with millions of dollars spent on control efforts to date.
- A priority will be assessing the potential for land-use change, including habitat fragmentation and the expansion of agriculture and irrigation projects in northern Queensland, to increase disease vectors.
- A key output from this flagship has been the development of a JCU Environmental Biosecurity capacity brochure that describes JCU's biosecurity-relevant expertise.



Economic Sustainability

4.0 James Cook University's Corporate Strategy states under the priority of Securing Our Future that the University must be financially sustainable to benefit our region, and that we must also ensure our actions are socially, culturally, environmental, and economically sustainable. A commitment to finding a balance between these two factors through sustainable and responsible investment is set out in the JCU Investment Policy and Procedures. JCU recognises Economic, Social and Governance (ESG) factors can positively impact investment risk and returns and contribute to sustainable growth.

4.1 Progress towards UN Sustainable Development Goal 8 - Decent Work and Economic Growth



In this section

- 4.1.1** JCU is ranked #1 in QLD for graduate salaries
- 4.1.2** JCU sustainable investments
- 4.1.3** JCU Centre for International Trade and Business in Asia (CITBA)
- 4.1.4** Student placements, Work Integrated Learning (WIL), projects and fieldwork
- 4.1.5** JCU Tax Clinic in Cairns and Townsville
- 4.1.6** JCU workforce impact in regional and remote Queensland
- 4.1.7** JCU Enterprise bargaining 2022

8 DECENT WORK AND ECONOMIC GROWTH

PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL

4.1.1 JCU is ranked #1 in Qld for graduate salaries

JCU is top for salary outcomes, ranked #1 in QLD for median graduate salary by the Good Universities Guide 2024, at both undergraduate and postgraduate study levels. JCU is also ranked #1 in Australia for median graduate salary for international student graduates, in the QILT Graduate Outcomes Survey 2022. JCU graduates are highly valued, emerging job-ready with the knowledge, confidence and practical experience to transition straight into the workplace. James Cook University's PhD scholarship students are now the highest paid in the state. JCU's Deputy Vice Chancellor Research, Professor Jenny Seddon, said the University is strongly investing in research. She said

stipends for PhD scholarship candidates have risen to reflect increases in the cost of living. "From July 1 we raised stipends to \$33,500, up from \$29,863. This amount will increase by 1.5% to \$34,502 in 2024," said Professor Seddon. She said the rate is the highest among all Queensland Universities, and well above the base rate set by the Department of Education. "PhD candidates are essential to universities because they bring fresh perspectives and innovative ideas to the university. They also contribute significantly to research outputs and the intellectual capital of universities," said Professor Seddon.

4.1.2 JCU Sustainable investments

The University has appointed Mercer to manage its investment portfolio and annually review and report on the ESG rating of the investment portfolio. Mercer provides JCU with an Annual ESG Review for the University to view its ESG rating and compare its progress towards more sustainable investments and to other universities within Australia. Mercer reports that JCU is compliant with all relevant commitments in its investment policy and that its ESG rating is currently 1.8 on a scale of 1 to 4, with 1 being the highest rating with ESG embedded in investment policy, and 4 being the lowest rating. JCU screens investments to exclude unsustainable categories including investments in tobacco, controversial weapons and carbon intensive fossil fuels, companies with UN Global Compact red flag incidents and allegations, and modern slavery breaches. The University's investment portfolio is rated for its alignment to the UN SDGs and is given a net Total Portfolio Impact Score of 0.83 (vs. the benchmark of 0.56), which indicates JCU is more strongly aligned to the UN SDGs than the Mercer benchmark, particularly in social objectives, UN SDG 2, Zero Hunger, and SDG 3, Good Health and Wellbeing.

Mercer also performs an assessment of climate transition risk and opportunity, the Analytics for Climate Transition Assessment (ACT), to rate an asset's transition capacity. Assets with a high climate transition capacity are assets that are aligned to, or stand to benefit from, a transition to a low carbon economy. There is room for improvement in the JCU sustainable investment ESG rating which can be achieved by developing an investment plan to further transition University investments away from 'grey assets'- high carbon intensity low transition capacity investments, to 'green assets' with low carbon intensity and high transition capacity. JCU needs to set targets for future investment in green assets which currently sit at 8% of its investment portfolio, JCU has only 2.7% of assets invested in grey assets but these investments contribute to 21.3% of the carbon intensity of the portfolio. Advertising improvements in the University's sustainable investment portfolio will be a positive drawcard for demonstrating to future students that JCU is taking action on sustainability across all levels of operations.

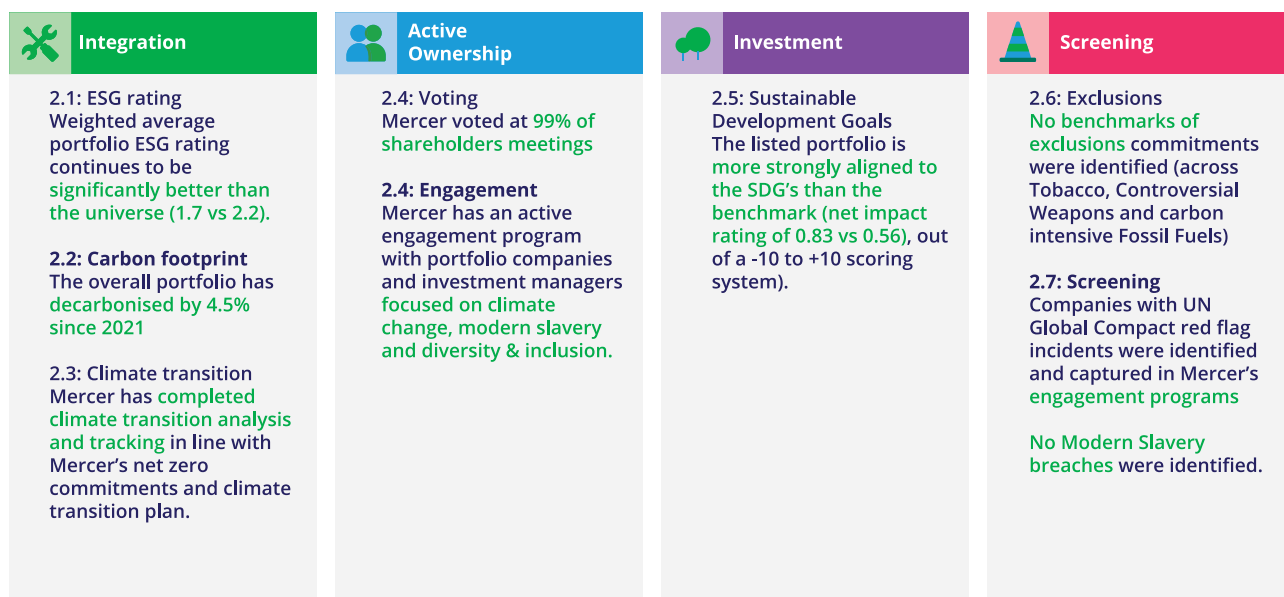


Figure 4.1 Extract from Mercer report Annual ESG Review for JCU showing review of JCU ESG investment for 2022

4.1.3 JCU Centre for International Trade and Business in Asia (CITBA)

The Centre for International Trade and Business in Asia (CITBA) is a progressive and forward-thinking innovative research centre based at James Cook University. As the only research centre embedded within the College of Business, Law, and Governance (CBLG) at James Cook University Australia (JCUA), the Centre provides leadership in research and research excellence for the college. CITBA aims to create a platform for academics, researchers, practitioners and students to disseminate their research findings with other global experts, organizing International Conferences on Business, Economics, Management, and Sustainability (BEMAS) to facilitate this exchange of ideas.

BEMAS 2022 aimed at uncovering the path to post Covid-19 economic recovery and emphasised the importance of building resilient economies capable of dealing with complex external shocks and disturbances. The conference provided an excellent opportunity to learn from nearly 70 presentations, with insights shared by key regional leaders, 100s of researchers and entrepreneurs from all four corners of the globe during three memorable days.

JCU Vice Chancellor and President Professor Simon Biggs provided the opening address and with the panel of experts shared insight about “Re-imagining the economic future of our regional tropical cities in the post- COVID 19 Era.”



4.1.4 Student placements, Work Integrated Learning (WIL), projects and fieldwork

Student placements, projects, clinical practice and fieldwork are central to JCU's learning and teaching approach. Our students have the opportunity to take part in a wide range of hands-on experiences which are informed by industry best practice and designed to prepare for the future of work.

JCU is committed to developing students who have academic knowledge combined with the transferable skills required to succeed within the complex career landscapes of the future. Some of the ways we do this are through embedding authentic learning in the curriculum and by offering a wide range of student placements, fieldwork and projects that are designed to give you valuable, practical hands-on experience.

JCU Business Students Wheels of Wellness placement

JCU students Nanako Binst, Kyle Alolod and Anthony Conolly completed a practical placement supporting the Wheels of Wellness (WoW) charity in Cairns as a third-year subject of their Bachelor of Business degree. The students completed their third-year subject (BU3102 Multi-Disciplinary Project) by working on a real-life business case for the Cairns-based not-for-profit Wheels of Wellness. Wheels of Wellness is an outreach charity service that delivers mobile medical clinics to Cairns most disadvantaged community members”, says Nanako. “WoW do not only have a hub near the Cairns Hospital where homeless people can come in and get

food and see a doctor if they choose to. They also have a van that they use to provide mobile medical services with a General Practitioner on board.” Nanako and Kyle were impressed by the mobile aspect of WoW. “We went out to see the van at Barlow Park. We realised that the Cairns Regional Council has allocated a space within that area so that homeless people can dine in,” Kyle says. “Rosie’s, another charity, would provide food donated by the community, and WoW provided medical services to those in need, but only if people chose to ask for those medical services.” It was such a privilege for WoW to partner with JCU for this subject. The final presentations far exceeded my expectations”, says Yolonde Entsch, Director & CEO of WoW. Yolonde was also pleased with the way the proposed findings and solutions were presented. “Each group provided high-quality reports that any CEO, management team or Board could use for decision making,” she says.



4.1.5 JCU Tax Clinic in Cairns and Townsville

The JCU Tax Clinic is a part of the National Tax Clinic program which is a government-funded initiative to help people who may not be able to afford professional advice and representation with their tax affairs. This program is available to eligible individuals, small businesses, not-for-profit organisations and charities. The Clinic is a friendly, student-run clinic where eligible members of the community can receive advice and assistance from JCU taxation students under the supervision of experienced tax practitioners. The aim of the JCU Tax Clinic is to assist unrepresented individuals, established small businesses and not-for-profit organisations in meeting or complying with their taxation affairs.



The objectives of the JCU Tax Clinic are to:

- offer free advice and assistance to North Queensland individuals, established small businesses and registered not-for-profit organisations.
- provide JCU Law and Business students the opportunity to gain practical experience in a controlled and supportive environment under the supervision of experienced tax practitioners, with a view to preparing them for practice; and
- provide local tax practitioners with an opportunity to engage in pro bono service.

It is not intended or expected to compete with professional tax advisors and accountants services.

Year	Number of JCU students volunteering in the clinic	Consultations	Total Applications for Assistance
2022	14	137	263
2023	14	134	260

Table 3: JCU students volunteering activities at the JCU Tax clinic 2022-2023

4.1.6 JCU workforce impact in regional and remote Queensland

James Cook University graduates are the cornerstone of Queensland's regional and rural workforce, and JCU has produced an infographic report of the impact of its graduates in Queensland. JCU is Queensland's second-oldest university, set in the heart of the tropics. JCU uses the power of its place to attract and train students in, with and for the communities it serves.

Between 2016 and 2021 more than 348,000 Australian university graduates responded to the National Graduate Outcomes Survey*. Of those respondents, 1.5% were from James Cook University (JCU).

Despite being one of the smallest institutions, **JCU is the most successful at delivering a fit-for-purpose workforce for the regions.**

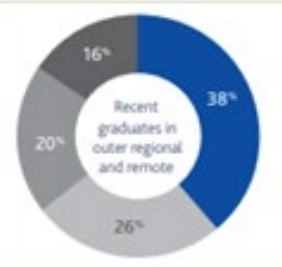
University groups

- James Cook University
- Other Australian Universities
- Other Regional QLD Universities
- South East QLD Universities



QUEENSLAND

JCU accounts for 6.5% of recent graduates that reported working in the state. When compared with other universities, JCU produces the **highest proportion** of recent graduates who work in regional, rural and remote communities



QUEENSLAND

76% of recent JCU graduates work in outer regional and remote locations

NATIONALLY

1 IN 5 recent university graduates working in outer regional and remote locations are from JCU

4.1.7 JCU Enterprise bargaining 2022

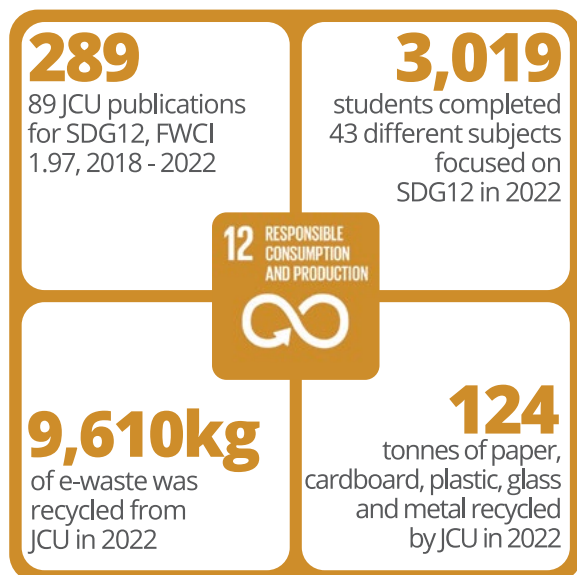
An Enterprise Agreement (EA) is an agreement between the University and its Staff Members that sets minimum conditions of employment. Enterprise agreements are negotiated by the parties through collective bargaining in good faith, primarily at the enterprise level. In 2022 James Cook University negotiated with staff and representative staff unions; the National Tertiary Education Union (NTEU) and the Communications, Electrical, Electronic, Energy, Information, Postal, Plumbing and Allied Services Union of Australia (CEPU). The JCU Enterprise Bargaining Team met many times over the bargaining period with representatives of the staff unions to negotiate the Enterprise Agreement. The meetings were productive, and agreement in principle was reached on a range of clauses, including Misconduct/ Serious Misconduct, Hours of Work Professional and Technical, Casual Academic Duties and Rates, and Loadings and Allowances.

Academic Workloads - University Management proposed to increase HDR supervision from 42 contact hours to 60 contact hours. By working collaboratively, we have been able to develop and refine a clause that supports greater consultation, adaptability and equity across the University. Pay Offer - At the 27 April meeting, University Management tabled a Pay Offer providing annual salary increases for Staff Members whose employment conditions would be governed by the new EA. The Pay Offer is a 13% flat (13.62% compounded) increase over the life of the new EA.

The Fair Work Commission (FWC) approved the James Cook University Enterprise Agreement 2022 which came into effect on Monday, 7 August 2023.



4.2 Progress towards UN Sustainable Development Goal 12 - Responsible Consumption and Production



In this section

- 4.2.1 Social and sustainable procurement at JCU
- 4.2.2 JCU Modern Slavery Statement 2022
- 4.2.3 JCU and the War on Waste
- 4.2.4 Tracking paper usage across campus
- 4.2.5 WARP IT – reusing furniture and equipment online platform
- 4.2.6 Public seminars on sustainable procurement
- 4.2.7 JCU Sustainability Research Cluster
- 4.2.8 Research into waste treatment solutions



ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

4.2.1 Social and sustainable procurement at JCU

Achieving the Responsible Consumption and Production SDG at James Cook University will result in reduction of its environmental impact, enhancement of its social responsibility, and improvement of its economic efficiency and adoption of sustainable consumption and production practices.

The decisions that JCU makes throughout the procurement process have a significant impact on the local economy, environment and community. The University's Corporate Procurement Plan 2022 states a commitment to increase the proportion of sustainable products and services purchased by JCU. Social procurement refers to how JCU spending can be used to support social priorities and is outlined in the JCU Social Procurement Guidelines. By leveraging even a small slice of the University's spend to add social value, local communities and suppliers can benefit enormously.

For example, social and economic participation are indicators of the overall health and vibrancy of a community, so creating employment opportunities is an important priority for JCU.

Social procurement can take the form of JCU using an appropriate procurement opportunity (major project or routine) to generate targeted employment for specific population groups. Groups targeted by these procurement activities may include people with a disability, those who have experienced long-term unemployment, Indigenous Australians, culturally and linguistically diverse groups, youth, public housing tenants, or residents of communities impacted by social and economic disadvantage.



JCU has recently partnered with, an AI-powered sustainability data and insights platform, to search for suppliers that meet sustainability and social procurement guidelines, and verify their sustainability credentials, including certifications, ratings, membership and initiatives. The givable data analysis program will also report supplier scope 3 emissions to help JCU engage with suppliers that will help reduce emissions, reach targets and gain social enterprise accreditation. Below is a table from the

Givable report on the top 100 suppliers that JCU Strategic procurement team provided for analysis. Givable analyses the sustainability credentials of JCU suppliers, the most common credentials held by JCU suppliers are; a Modern Slavery Statement, Diversity Council Australia membership, and Indigenous Australia buyer member (Supply Nation). JCU suppliers are analysed for alignment with the UN SDGs, the most aligned UN SDG for JCU suppliers is, based on their sustainability credentials, SDG8 Decent Work and Economic Growth.

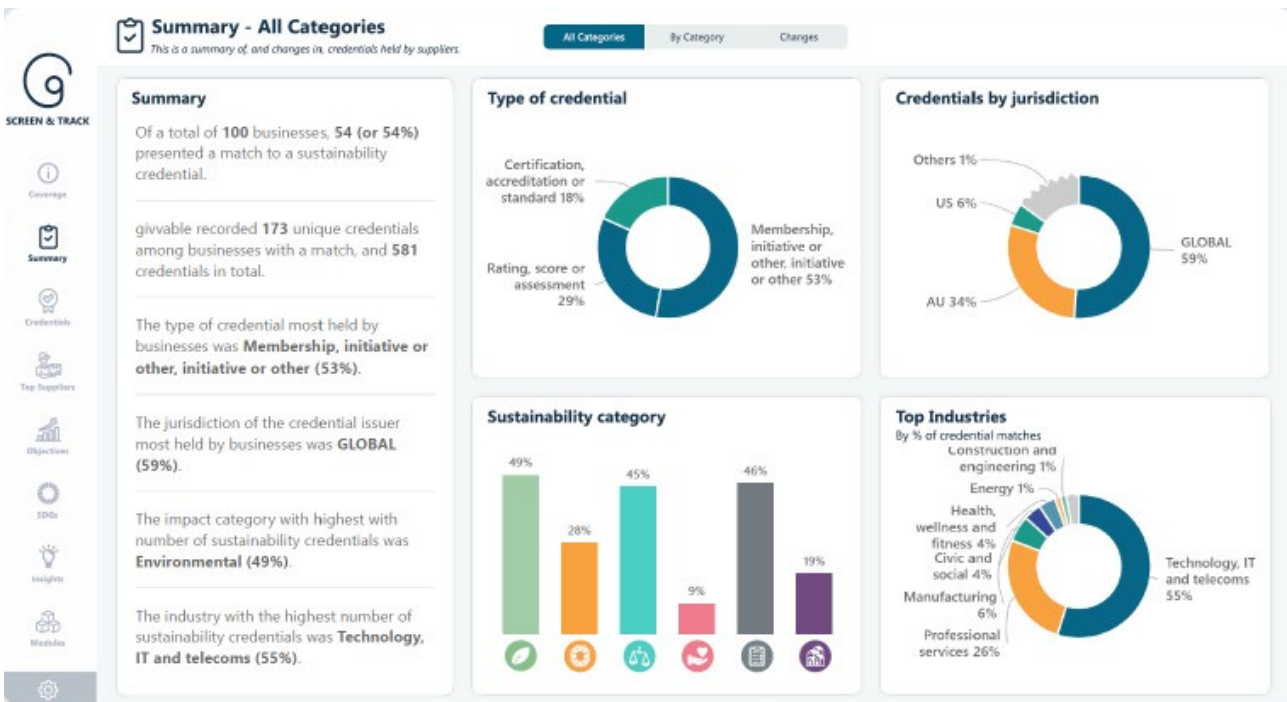


Figure 4.2: JCU supplier analysis from givable ESG report showing sustainability credentials of top 100 suppliers.

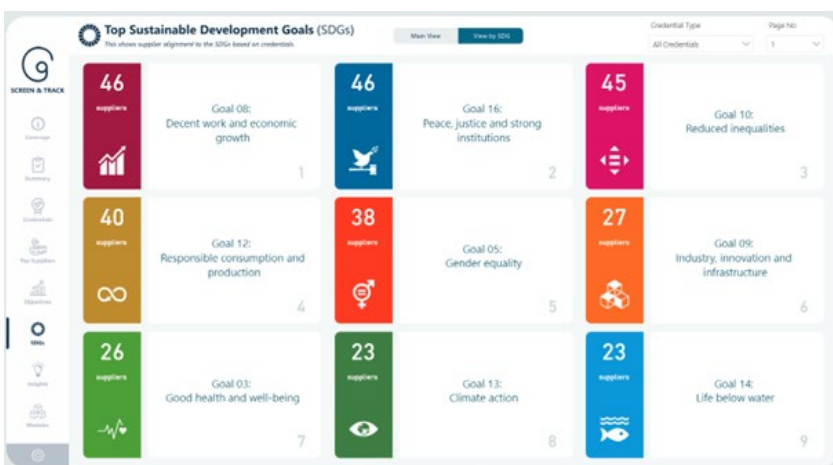


Figure 4.3: JCU supplier analysis from givable ESG report showing alignment with the UN SDGs of the top 100 suppliers

JCU Strategic Procurement has also joined Social Traders, an Australian social procurement specialist to assist JCU in building a database of available social procurement opportunities in goods and services in the regional and remote regions where the campuses are located. Memberships to givable and Social Traders further the University's reputation as a civic university committed to giving back to local communities and making a difference to build a more equitable and inclusive society.



4.2.2 JCU Modern Slavery Statement 2022

Modern slavery is a severe violation of human rights. It occurs when a person is coerced into work and exploited for personal or commercial gain. Under Australian and international law, it includes offences such as forced labour, servitude, child labour, deceptive recruiting and debt bondage. This statement, pursuant to the Australian Modern Slavery Act 2018 (Cth), sets out the actions taken by James Cook University to address modern slavery and human trafficking risks in our business and supply chain for the financial year ending 31 December 2021.

The University has taken a range of actions during this reporting year to identify, assess and address the risks of modern slavery practices in our operations and supply chains. During the reporting year, activities

were largely centred on due diligence in supplier engagement and participation in the AUPN Modern Slavery Working Group (MSWG). The University incorporates clauses specific to modern slavery in its standard contract documents and has added a returnable schedule to its standard tender and market approach documentation, with a view to better understanding its supply chains. The University's Procurement Procedures include the University's obligations under the Modern Slavery Act as a principle that must be adhered to when undertaking any procurement activities. A Supplier Code of Conduct has been developed to assist suppliers to understand the University's requirements.

4.2.3 JCU and the War on Waste

JCU creates approximately 600 tonnes of waste each year from a wide variety of sources, much of which is unnecessarily sent to landfill and contributes to scope three indirect emissions. Ongoing effort is required to minimise waste production and maximise recycling rates. The University's current recycling rate is 20%, the Queensland average recycling rate in the Australian Government's National Waste Report 2022 is one of the nation's lowest at under 40%. A significant issue impeding improvement to this rate at JCU is contamination of yellow co-mingled recycling bins with soft plastic, paper towel, food, and disposable beverage cups; this seems to be caused by confusion around identifying recyclable items. Targeted education campaigns, effective signage and support from managers and student leaders will assist staff and students to improve their efforts to reduce, reuse and recycle.

Waste management targets can be pursued by embarking on 'the circular economy of products' approach through these main strategies:

- choosing reusable or home compostable items over single use (bottles, serving ware, laboratory consumables etc.) Increasing composting of organic wastes
- Avoiding items with non-recyclable packaging
- Avoiding unnecessary purchasing
- Buying repairable, long-lasting items

Waste management is a significant part of the JCU operating budget and reductions in waste volumes will result in immediate savings to JCU. Most of the required infrastructure is already in place to encourage a cultural shift in waste management practices, procurement, and disposal practices. TropEco will have a major role to play in creating the required cultural shift through the War on Waste campaign. Targets will focus on a reduction in total waste volume (waste and recycling combined) and an increase in the recycling rate, and to reduce scope three emissions.

4.2.4 Tracking paper usage across campus

JCU has activated a new function in the program PaperCut in printers and photocopiers across Townsville and Cairns campuses to track printing usage in workgroups. This has provided baseline data for current paper usage and identified the larger consumers of paper across campus. The program provides the number of trees and carbon emissions that the paper use equates to. JCU has consumed 406 trees and produced 42,893kg of C^o2 emissions through printing in this timeframe. This data output will be used in the sustainability program in 2024 to track the success of our paper saving initiatives moving forward.

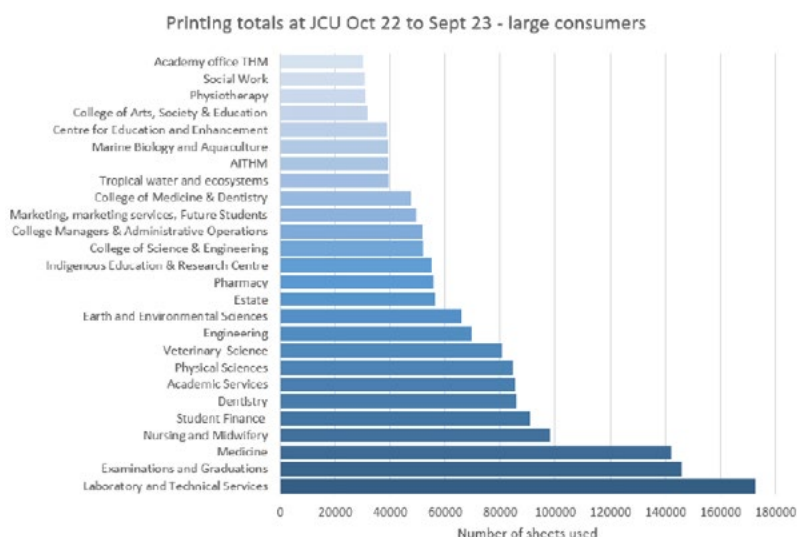


Figure 4.4: Number of sheets of paper used by major user groups across JCU campuses, Oct 2022 to Sep 2023.

4.2.5 WARP IT – reusing furniture and equipment online platform

JCU has used the WARP IT online platform to share unwanted furniture, equipment and office supplies across Townsville and Cairns campus for many years. This has resulted in a highly successful program of reuse saving thousands of tonnes of useable resources going to landfill and saving the University approximately \$472,182 in purchasing new products. The JCU Estate Directorate staff have been the main users of the WARP IT platform directing staff to search for pre-loved items when fielding requests for new items, and posting items no longer wanted by staff on the platform.

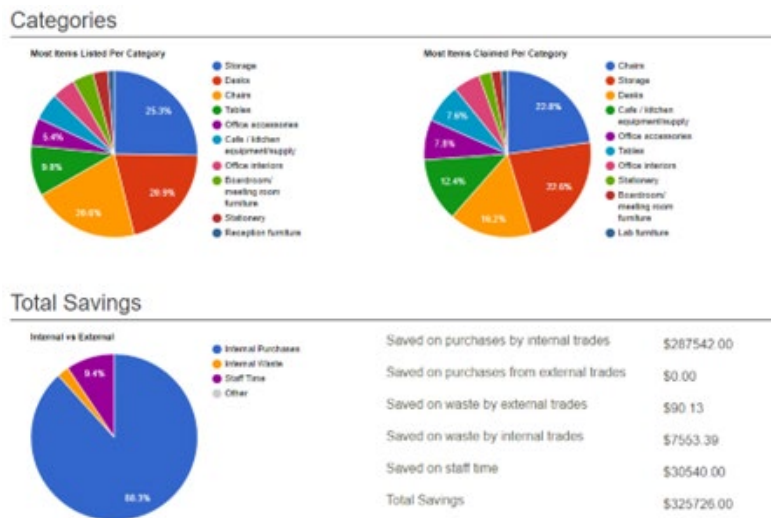


Figure 4.5: JCU impact report from the WARP IT portal showing items reused and savings to JCU.



JCU Waste Warriors in Action

JCU Singapore Beach Clean-up

Beach clean-up with Ocean Purpose Project (OPP) Participants gathered at Ocean Purpose Project (OPP)'s beach hub at Pasir Ris Park where they helped set up equipment and facilitated teams in collecting litter before sorting & cleaning recyclable plastics.

JCU Enters the No More Butts cigarette waste collection competition

JCU's team came second with 1450 cigarette butts collected in Shields St, Cairns city, past the Bada-jali JCU Cairns city campus. JCU came second to AFL Cairns who won the Big Butt Hunt with 1750 butts collected in Aplin St, Cairns city. Thank you No More Butts and the Cairns Regional Council for organising this Great Northern Clean Up event.



4.2.6 Public seminars on sustainable procurement



Social enterprise in Far North Queensland forum : Social Enterprise in the Tropics

A public forum highlighting social enterprise in the Tropics was held at JCU on the 5th of October 2022 at the Nguma-bada campus, The Cairns Institute. The forum topics were:

- What is a Social Enterprise and what supports are available? Queensland Social Enterprise Council gave an overview of social and community enterprises and outline available supports.
- How to become preferred suppliers. Experts in procurement from Cairns Regional Council, the Department of Employment, Small Business and Training and JCU procurement discussed procurement processes and suggested how to become preferred suppliers.
- How do we revitalize Social Enterprise in FNQ. In this session attendees heard from established social enterprise about their stories. A discussion followed of ideas and suggestions to build a vibrant social enterprise environment in the region.
- The Social Enterprise Capacity Building Project is funded by the Department of Employment, Small Business and Training (DESBT), and they generously funding the SENT forum.

Public seminar on circular economy

A circular economy is an economic system that uses a systemic approach to maintain a circular flow of resources, by recovering, retaining or adding to their value, while contributing to sustainable development. The 2022 ISO/TC 323 Circular Economy Meeting paved the way for experts across 65 countries to reach a consensus on a set of three core standards (ISO 59004, 59010 and 59020). This 2022 webinar presented by Associate Professor Adrian Kuah from the JCU Sustainability Research Cluster, draws discussion from the meeting held at Rwanda, where experts came together to discuss requirements, frameworks, guidance, and support tools on the circular economy. The panel believes that societies, businesses and individuals can all play a role in realising our transition to the circular economy.



Singapore ESG (Environment, Social, Governance) series



November 2022, we launched 'ESG Positive Impact Series – Empowering today, Building Tomorrow', with Professor May Tan-Mullins, being the moderator. The event featured the following speakers: Lynette Leong (Chief Executive Officer, Environmental, Social and Governance Funds & Stewardship, CapitaLand Investment), Dr Darian McBain (Advisor, Monetary Authority of Singapore), Mel Gollan (Founder & Owner of RIPA Global), and Andrew Gazal (Founder & CEO, ESGTech). This event is the first part of the series of ESG events to discuss how we could empower the present for the future.

Professor May Tan-Mullins is JCU's Dean International and Chief Sustainability Officer. Her research interests are environmental and energy justice, poverty alleviation and building resilience for the poorest and most vulnerable in the Tropics.

4.2.7 JCU Sustainability Research Cluster

Sustainability aligns with JCU's Strategic Intent by engaging peoples and societies of the tropics in industries and economies that sustain communities and ecosystems. The research that the Sustainability Research Cluster undertakes is directly aligned with SDG 12, SDG 9 and SDG8 and supports SDG 1 and SDG 2. The Sustainability Research Cluster commenced its life as the circular economy and sustainability group arising out Strategic Research Investment Fund Application Round Two in 2018. The Cluster advisor is Distinguished Professor Stewart Lockie of The Cairns Institute, and the cluster receives advice from a board of leading external academics and practitioners, including the Principal Investigator, Associate Professor Adrian Kuah. The Cluster's unique research focuses on three pillars: (1) green economy, (2) social economy and (3) digital economy, which bring multidisciplinary expertise from across the three JCU campuses to collaborate on the framework of sustainable development. The Cluster's interest builds intangible social and environmental analyses into sustainability evaluations including digital analytics and environmental science.

JCU Cairns Campus Café – Moka Bar introduces Green Caffein

The staff at the Moka Bar, Nguma-bada campus in Cairns are leading the way in reducing disposable coffee cup waste. The Moka bar offers customers access to the Green Caffein Swap and Go reusable coffee cup scheme. Customers download the Green Caffein app and check out up to 2 cups for 30 days, similar to a library book loan system. The system is free for the café and customers, with cups, resources and even on-site support provided by the team from Green Caffein. The café has already noticed a saving in spend on disposable cups and many JCU students and staff have embraced the scheme, leading to a significant drop in disposable cup waste from the Café. The Moka Bar also accepts all reusable cups from customers and sells local handmade reusable cups from local artists. The scheme is widespread across Australia in cafes and in the Tertiary sector and has been embraced by the Townsville City Council and Cairns Regional Council.



4.2.8 Research into waste treatment solutions

Microwave Pyrolysis and waste treatment



Professor Mohan Jacob is pioneering in the development of custom-made Microwave Assisted Pyrolysis systems for processing various waste materials, and his research includes Waste to Resources, Waste to Energy and circular economy. Professor Jacob

said plastic waste would be converted into biochar - charcoal that can be used as a soil conditioner. The microwave energy is used in the absence of oxygen to controllably heat materials beyond 600 degrees

Celsius within a custom-made chamber.

Professor Jacob said his group is currently working on stage one of the project.

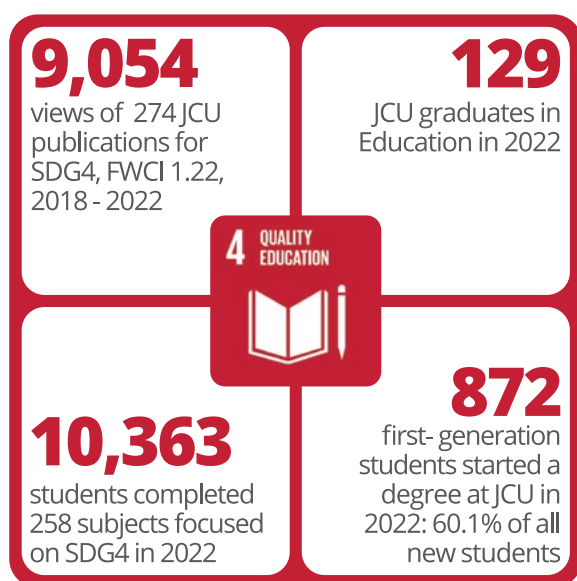
"We are developing a processing chamber, which could process many kinds of plastic materials, up to 5 kilograms of waste. It will be a prototype system for the development of biochars from different types of plastics under various conditions."

He said stage two will optimise the energy efficiency of the system and maximise the yield of by-products. Stage three will build a fully customised and easy to operate waste processing system, which could be installed at medium scale industries.

Sustainability in Teaching and Research



5.1 Progress towards UN Sustainable Development Goal 4 - Quality Education



In this section

- 5.1.1 Quality education at JCU
- 5.1.2 Education partnerships with local schools
- 5.1.3 Pathways to learning at JCU
- 5.1.4 JCU Indigenous Education and Research Centre Summer and Winter School
- 5.1.5 Vocational training and Continuing Professional Development (CPD) at JCU
- 5.1.6 JCU conferences for quality education
- 5.1.7 Lifelong learning at JCU
- 5.1.8 JCU Eddie Koiki Mabo Library - public access to lifelong learning resources



ENSURE INCLUSIVE AND EQUITABLE QUALITY EDUCATION AND PROMOTE LIFELONG LEARNING OPPORTUNITIES FOR ALL

5.1.1 Quality education at JCU

JCU is rated in the top 400 universities in the world by the Times Higher Education World University Rankings 2023. With research connections to more than 100 countries and 25 specialised research centres and institutes, JCU is connected to the world and globally engaged. In Northern Australia, our locations in Cairns, Townsville and Brisbane attract international students from all over the world. JCU was also the first Australian university to establish a branch campus in Singapore. JCU was awarded 5 Stars for teaching and employability in the QS Stars Rankings for 2021 and 5 Stars for full-time employment, median graduate salary, student

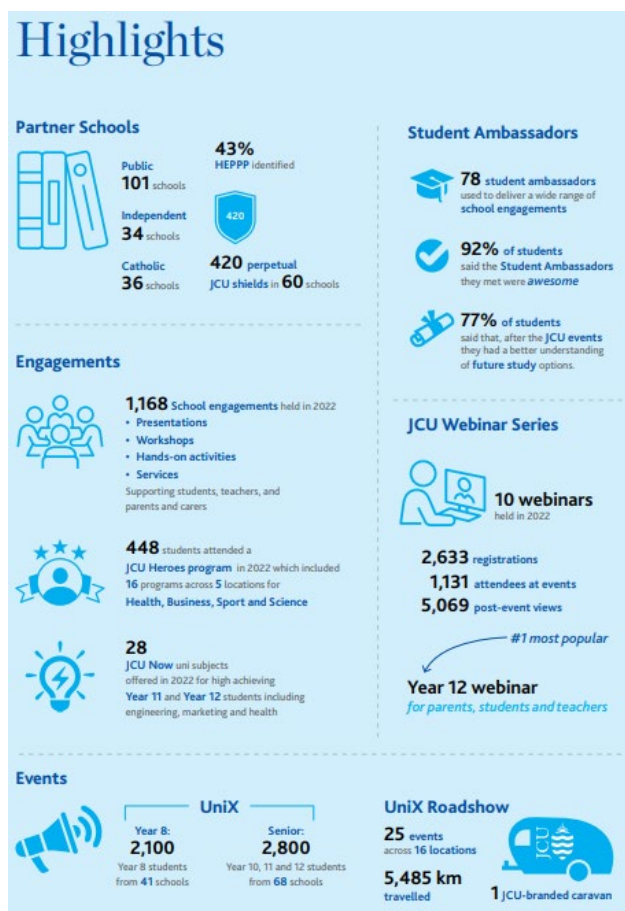
teacher ratio and social equity by the Good Universities Guide for 2024.

2024 Good Universities Guide

- #1 in QLD for learner engagement, learning resources, skills development, student support, teaching quality.
- #1 in Australia for full-time employment, learning resources, overall educational experience, skills development.
- #2 in Australia for learner engagement, student support.

5.1.2 Education partnerships with local schools

In 2023 JCU published a guide encouraging local schools to interact with the University “Your School and Us: after University opportunities for your school to get involved at JCU”. The guide has a catalogue of activities for each year group and teaching staff for schools to plan events and experiences for their students. The guide also covers the highlights of 2022 school engagements including the JCU Heroes program where 448 students experienced 16 programs across 5 locations to gain an insight into careers in Health, Business, Sport and Science (see right). JCU offers a range of presentations, workshops, hands-on activities, and services to support students, teachers, and parents and carers through the process of understanding future career options. The guide recognised that schools have limited time available in the academic calendar for activities involving external organisations, so JCU has developed activities to align with school objectives of building aspirations, developing critical thought, and growing skills in cognition, teamwork, project management and resilience. Activities are delivered by Future Student Advisors, current students and academics; on-campus or in-school.



5.1.3 Pathways to learning at JCU

James Cook University is committed to providing everyone with access to higher education and the opportunity to fulfil their potential. JCU offers opportunities to people of all backgrounds to build their academic skills creating a pathway to university for non-traditional students, students who have not experienced higher education, have completed VET/ TAFE qualifications or other prior learning, or are international students needing to prepare further for a university course. The JCU Pathways team offers bridging courses, Certificate and Diploma level courses to allow students to bridge the gap in their skills to a university qualification. Additionally, the JCU Prep course is a flexible program that enables mature students and school leavers to gain the skills and knowledge they need to enter their preferred course of study. This fee-free enabling course is open to all Australian citizens and permanent residents who want to enter university study at JCU, regardless of academic background and prior work/ study experience.

In 2022, 702 students enrolled in the Diploma of Higher Education bridging course, and in 2023, 562 students enrolled in the course. A further 360 students enrolled in the Certificate of Education in 2022, and 239 students enrolled in this pathway course in 2023. 60 students enrolled in JCU Prep in both 2022 and 2023.



5.1.4 JCU Indigenous Education and Research Centre Summer and Winter School

The JCU Indigenous Education and Research Centre (IERC) offers pathways to students for Aboriginal and Torres Strait Islander students to university study, including a residency program for Indigenous high school students considering university. The Summer School conducts pre-programs for prospective Indigenous school leavers who are seeking to gain entry into JCU. The Summer and Winter schools are run over a five-day period during the school holidays. The focus is to build capabilities in Math, English, Chemistry and tertiary study skills. IERC staff run the program and supervise academic and recreational activities, with the help of Indigenous Student Ambassadors at JCU. The students live on campus and take part in academic lectures and team-building activities. This interaction provides opportunities to meet University staff and students and form bonds with other students in the program. JCU covers all costs associated with

the program, including travel to and from Townsville, accommodation and catering costs for all participants. Accommodation is provided at the Saints Residential College on the Bebegu Yumba campus.



5.1.5 Vocational training and Continuing Professional Development (CPD) at JCU

JCU offers vocational training and continuing professional development (CPD) opportunities for local professionals to keep their skills up to date and learn new and innovative techniques to improve their careers. JCU provides extensive professional development opportunities for healthcare professionals in Northern Queensland, including a webinar series, workshops and short courses.

Professional Development Workshop for Teachers

Dates: 24 to 25 November 2022

JCU held a professional development teacher workshop to support high school educators in the classroom. The workshop seminars were designed in alignment with the high school curriculum and to assist in supporting teachers in the delivery of specific areas.

The one-day program featured consecutive sessions throughout the day focusing on a variety of subject learning areas across the middle and senior school curriculum including Science, Mathematics and Humanities.

Vestibular Rehabilitation - an introductory 2 Day Course

Dates: 12 to 13 November 2022

This two-day course introduced physiotherapists to common vestibular disorders. This course was presented by Leia Barnes (Consultant Vestibular Physiotherapist, Logan Hospital and APA Neurological Physiotherapist) and Natalie Rando-Orr (Assistant Professor in Physiotherapy, Bond University and APA Neurological Physiotherapist) from Vestibular Courses.

JCU Dentistry and Dental Protection Clinical Day

Date: 22 October 2022 - This event was an informative and interactive educational session for dental practitioners and dental students to discuss contemporary innovations in clinical dentistry, participate in clinical demonstrations and meet with industry partners to view the very latest in dental science and technology.

Clinical Day 2022 featured keynote lectures from Dr Annalene Weston- Dentolegal Consultant of Dental Protection, Professor Laurie Walsh AO- Emeritus Professor of University of Queensland and Mr Matt Race- Director of Race Dental laboratory. Research presentations, covering a wide range of oral health care topics, were delivered by current Year 4 Bachelor of Dental Surgery students at JCU. The program was designed for dental practitioners and all other interested health care professionals.

JCU Rural Generalist Program

The Allied Health Rural Generalist Program is a professional development program designed specifically for early career allied health professionals working in rural and remote communities. It combines work-integrated training with online learning modules. On completion of the Allied Health Rural Generalist Program participants will be able to:

- Apply rural and remote generalist knowledge and skills to practice in the workplace context.
- Contribute to identification of local service needs relevant to profession and work-based multi-disciplinary team.
- Facilitate quality improvement initiatives to optimise access, efficiency and effectiveness of the local service.
- Extend and reframe early career knowledge and skills to match the local service strategic intent.

5.1.6 JCU conferences for Quality Education

National Indigenous Learning Support Conference 2023

The inaugural National Conference on Indigenous Learning Support held recently at James Cook University in Townsville drew over 100 professional support staff from 27 Australian universities.

On the first day, delegates delved into the essential outreach and engagement work with the school sector. This emphasized the importance of establishing strong connections with schools to support Indigenous students on their educational journey. The second day centered on learning support services specifically tailored to Indigenous students pursuing degree programs. This spotlighted the innovative approaches to empowering Indigenous students and improving their learning outcomes. This inaugural event follows an annual symposium of six Australian universities sharing the emerging knowledge from recent research work to map the learning journey of undergraduate students and using this knowledge to innovate the professional services to support Indigenous students to succeed in universities. This empirical work has evolved over a seven-year period and has recently been published by Routledge.

Over the two days, this new collegiate of professional support staff maintained their focus on two important educational issues: how to improve the rate of student success in the sector, and how to deliver the volume, capacity and quality of graduates back to their communities so they have the requisite knowledge and skills set to determine their own futures.

Indigenous student success and Indigenous self-determination, the Collegiate hopes, will be considered by the University Accord panel members as national priority areas to drive forward our professional work with more purpose over the next 10-15 years.

JCU Cairns Institute Education Partnership - Early Years Conference 2022



The 2022 Early Years Conference – Today's Children Tomorrow's Future – The National Early Years Conference held 5-6 May had the theme “It takes a village to raise a parent”. The conference built on current knowledge, expanded frameworks and tool kits for practitioners working with parents; included early childhood educators, healthcare professionals, child protection professionals, family support workers, child and family counsellors, community workers and program managers.

A true cross-sector collaboration which benefits children of our communities; the 2022 Early Years Conference held 5-6 May at the Cairns Convention Centre. The Committee are represented by Act For Kids, Benevolent Society, Mission Australia, The Cairns Institute/JCU, Qld Health, Education Qld, Wuchopperen Health and the Department of Children Youth Justice and Multicultural Affairs.

5.1.7 Lifelong learning at JCU

Open Access Publishing: Open Access Week 2022

The 2022 Open Access week theme seeks to provide an opportunity to join together, take action, and raise awareness around the importance of community control of knowledge sharing systems. To mark Open Access Week JCU Library and the Graduate Research School (GRS) invited entries for the “HDR Open Access Advocate” competition. The theme for the 2022 Open Access Week was “Open for climate justice”.

2022 Winners -The winners of the 2022 Awards are:

- ECR Open Access Champion: Daniel Miller, Lecturer, Psychology, College of Healthcare Sciences
- Highly Commended 1: Ailie McDowall, Senior Lecturer, Indigenous Education & Research Centre
- Highly Commended 2: Alexandra Edelman, Research Fellow, College of Public Health, Medical & Vet Sciences

JCU Lifelong learning - public seminars and events – JCU Events

Inspiration on Tap –JCU researchers’ public seminars in local pubs - Bringing advanced learning and valuable insights to the evening crowd, this event series invites locals to be inspired by JCU’s top researchers and academics as they share their expertise in a relaxed, social environment.



From researchers speaking about the intricate social lives of pollinators like bees to managing urban stormwater and other planning considerations, this series has something for everyone.

JCU’s The Cairns Institute holds public seminars and lectures through out the year on a large range of topics. The Cairns Institute Impact and Engagement Seminars offer participants an opportunity to present their research and discuss impact and engagement in a supportive, collegial environment. Each week, one researcher or team will present their work as a case study of research practice and reflect on how they are approaching impact and engagement – whether this be through research design, communication strategy, stakeholder participation, capitalizing on unexpected outcomes, or other means.

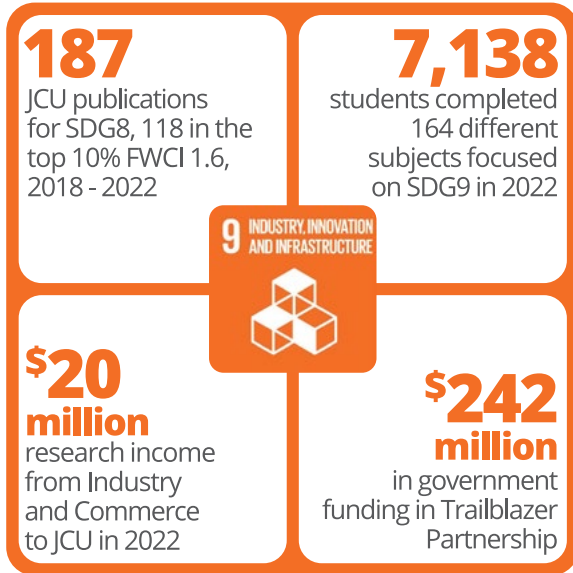
Presenters are encouraged to discuss how they are responding to requirements imposed by funding and regulatory bodies (for example, to define outcomes and articulate program logics) but also who and how they are engaging to articulate research aims. No one approach is relevant across all research contexts so we encourage a diversity of perspectives and will ensure ample time is dedicated to dialogue.

5.1.8 JCU Eddie Koiki Mabo Library - public access to lifelong learning resources

The Library and Information Services Directorate provides innovative, high quality, client-focused library services including research skills, digital and information literacies, information resources, scholarly and cultural collections; and learning facilities that contribute to and enhance the University’s learning, teaching, and research priorities. The Directorate has a library and information commons at the Townsville and Cairns campuses and delivers a wide range of online resources and services to all campus and study locations and to clients both on and off campus. Visitors, including the local community,

are welcome to access the library facilities and to use information resources within the library buildings located on the Cairns and Townsville campuses. Members of the public are welcome to join the Library for a fee of \$55.00 per annum (including GST). Year 11 and 12 students from local high schools are welcome to join the Library for a fee of \$27.50 per annum. Organisations and businesses are welcome to join the Library for a fee of \$55.00 per annum (including GST). Additional cards can be provided if required. Borrowing privileges and conditions are the same as for Community members.

5.2 Progress towards UN Sustainable Development Goal 9 - Industry Innovation and Infrastructure



In this section

- 5.2.1 JCU is ranked world class for research
- 5.2.2 JCU Innovation Strategy 2020-2022
- 5.2.3 JCU students studying innovation and entrepreneurship
- 5.2.4 JCU promoting innovation in the community - Big Ideas Youth Challenge
- 5.2.5 Resources Technology and Critical Minerals Trailblazer program



BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION

5.2.1 JCU is ranked world class for research

JCU achieved the ranking of 'world class' or higher in 83 percent of research fields, including eight as 'well above world class', by Excellence in Research for Australia for 2018.

Six JCU researchers who produced multiple highly cited papers are ranked in the top 1% for their field of research, by Web of Science for 2022.

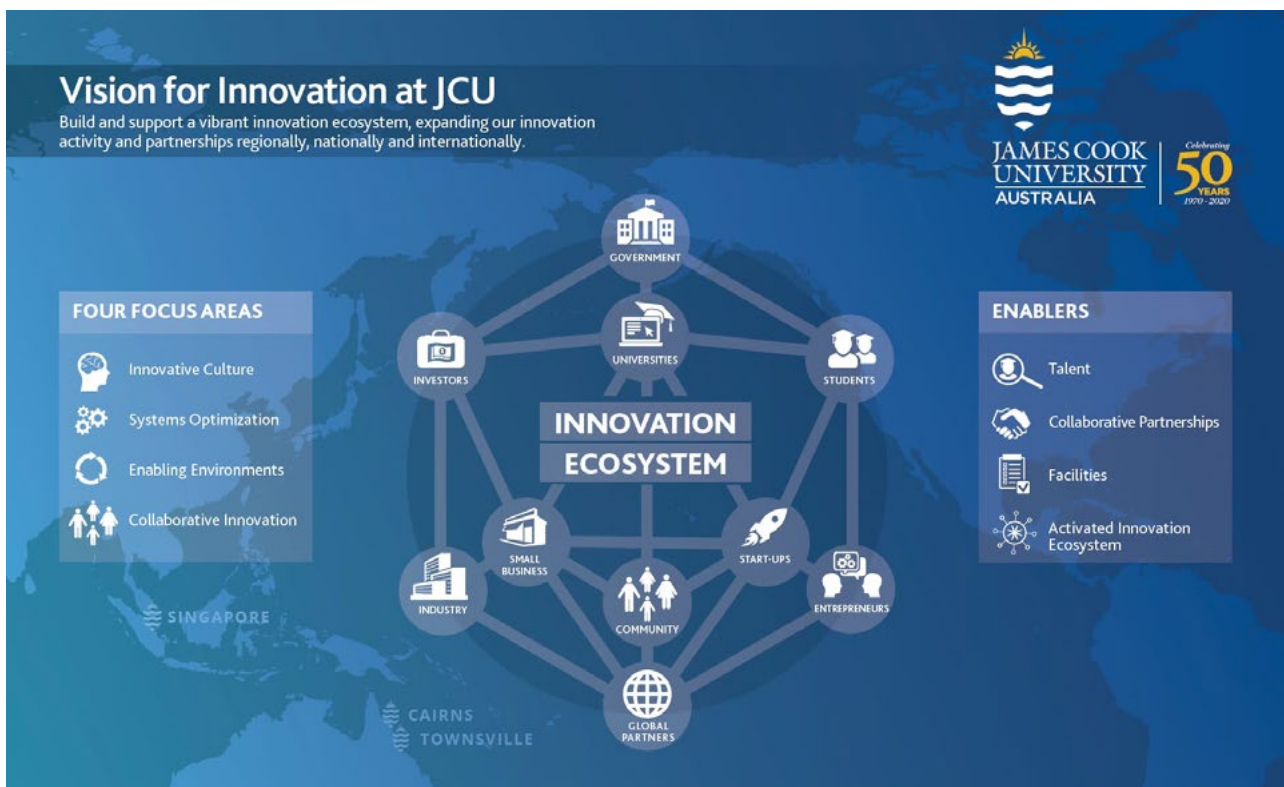
These internationally recognised research outcomes are in fields including biodiversity, ecology and environments, global warming, marine sciences, public health care, tourism and tropical medicine. JCU delivers global, ground-breaking research and discoveries that make a difference to people and societies, experiential learning, the built environment and the natural world.



5.2.2 JCU Innovation Strategy 2020 - 2022

The JCU Innovation Strategy 2020-2022 has 4 main focus areas:

1. Create and support a culture of innovation which embraces the involvement of management, staff and students – realise the potential of our people, be a catalyst for innovation, connecting our region to the global knowledge economy, and develop a culture at JCU that fosters idea creation and innovation across the university.
2. Create and adopt processes and procedures to enable JCU to be a catalyst for innovation and connection – create a vibrant internal innovation ecosystem supported by systems and processes, innovate and experiment, and establish processes to support a culture of innovation.
3. Create environments to inspire innovation and collaboration – Establish an Innovation Centre on the Townsville and Cairns Campuses, and create a vibrant knowledge community inspired by our place in the Tropics and bring global perspectives to our regions.
4. Collaborative Innovation – Develop strategic partnerships, deliver experiential learning and Global connectivity.



5.2.3 JCU students studying innovation and entrepreneurship

JCU offers students a wide array of learning opportunities in innovation and entrepreneurship across many disciplines. Business subjects offer students the opportunity to work in a collaborative environment to explore design with business, social and cultural contexts. Students will examine advanced design and communication concepts and produce creative projects. Additionally, students learn innovation-driven entrepreneurship that explores strategy and entrepreneurship presenting integrated areas in a theoretical, applied and experiential manner based on key themes. These include mainstream and social entrepreneurship identifying commonalities and differences between each category. Law, Engineering, Art and Health-based students are also offered subjects in innovation and entrepreneurship including topics on strategic perspective of technology/ innovation management, developing teaching skills innovative assessment, simulation, e-learning technologies and audio, and exploring the start-up lifecycle and related Web2.0/3.0 technologies with particular focus on entrepreneurship, e-marketing and human resource management.

JCU Area 61

Area 61 is a critical component of the Northern Australian innovation ecosystem, with unique resources and expertise, this industrial-scale facility enables the co-design and build of innovative one-off prototypes which can be scaled for manufacturing. Area 61 is able to design and manufacture items that require the combination of design and build skills and resources across software, electronics and advanced manufacturing. Formed from the requirement to build unique and technically complex items to directly support research over a period of 30 years, Area 61 has been created to expand and make available this unique capability to the wider Northern Australian innovation ecosystem.



2022 Maritime Robot X Challenge – robotics innovation

After a four-year absence, the 2022 Maritime RobotX Challenge took place at the Sydney International Regatta Centre in Sydney, Australia, with 20 teams representing Australia, Chile, Japan, Peru, Singapore, Taiwan, Turkey, and the United States. James Cook University engineering students developed a highly advanced autonomous boat and competed in the event. Known as the Wave Adaptive Modular-Vessel (WAM-V), the electric-powered craft will eventually operate independently of a remote control, together with an autonomous drone.

Project lead and JCU Robotics Club president Ethan Waters said the boat faced some difficult tasks at the 2022 Maritime Robot X Challenge. These included travelling through specific gates based on the location of an underwater beacon, following a specific path indicated by buoys of a different colour, and scanning a light to determine the red-green-blue sequence it produces. The JCU team won a Special sponsors award; the Blue Robotics Award (4x T500 + Basic ESC 500), and a Judge's special award: Value Can Do (\$1,000).



5.2.4 JCU promoting innovation in the community - Big Ideas Youth Challenge

North Queensland's next generation of innovators and changemakers developed their entrepreneurial thinking and design skills at the Townsville City Council Big Ideas Youth Challenge held at James Cook University's Bebegu Yumba campus in August 2022.

Hundreds of students from across the region were led through the Entrepreneur's Odyssey, with teams going on to pitch their big idea in a Shark Tank format to compete for the perpetual trophy and prizes. Smart Precinct NQ General Manager, Cassandra Cazzulino said the event, now in its third year, is a highly anticipated event on the school calendar. "The Big Ideas Youth Challenge gives these students and their teachers the opportunity to undergo the design thinking process to identify a problem and map out a business idea to target that audience," Ms Cazzulino said. "Throughout



the day they were inspired by successful entrepreneurs and be mentored by leading academics, entrepreneurs, local government leaders and businesses. "We've had a fantastic response from the schools, and this year's event reached capacity very quickly."

The event is designed to foster youth entrepreneurship in the region, with the winning team receiving an exclusive tour of the JCU Area 61 industrial scale facility that builds innovative one-off prototypes which can be scaled for manufacturing and a prototyping session to workshop how their idea could be turned into a real product. James Cook University Deputy Vice Chancellor, Academy Professor Marcus Lane said he was thrilled to host the Challenge on campus. "As Townsville's preeminent education and research institution, JCU is the perfect environment for students to cultivate their ideas and explore what's possible through innovative thinking," he said. "I am particularly pleased that students were able to hear from JCU alumnus and LiteHaus International founder Jack Growden, who explained how he turned his passion for making digital technology accessible to disadvantaged communities into an internationally recognised not-for-profit charity, and reinforced the message that any one of those students can make a global impact from right here in Townsville. "Together with James Cook University's recently announced partnership with Smart Precinct NQ to accelerate future innovation in the region, it is an exciting time for our future innovators and entrepreneurs."

5.2.5 Resouces technology and critical minerals Trailblazer program

James Cook University has been selected as one of Australia's Trailblazer universities and will receive a share of more than \$242 million in Federal Government funding to develop a research commercialisation hub that will turn world-leading research into breakthrough ideas, products and businesses. The Resources Technology and Critical Minerals Trailblazer program will match \$50 million of government funding to more than equivalent support from the university and industry partners for a total value of the initiative of over \$200 million. JCU will partner with Curtin University (project lead) and The University of Queensland, as well as 33 company and commercial partners across Australia involved in the technology metals, critical minerals and metals value chains. Professor Simon Biggs said "This Trailblazer will supercharge the

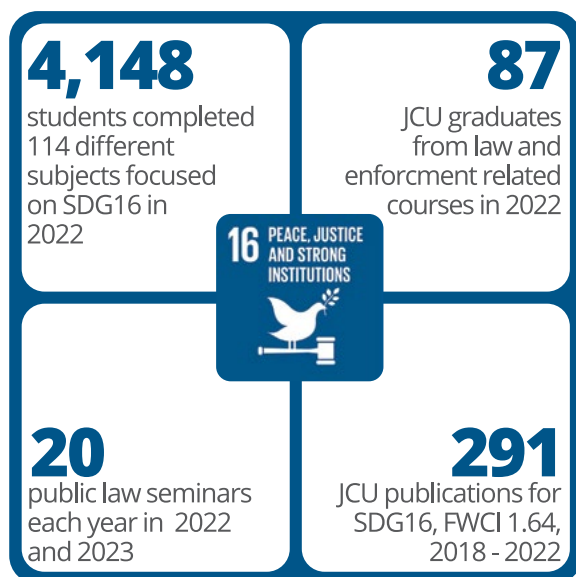
development of our regions' technology metals and critical minerals industry and boost the economic growth of northern Australia. It will further support, encourage, and accelerate the opportunity for JCU to focus on research that delivers industry-aligned commercial outcomes. Supporting the regional resources and critical minerals industry is a priority for JCU and the opportunity presented by this initiative aligns with JCU's strategic direction to increase industry-aligned research that leads to commercial outcomes." "Importantly, for the economic growth of our region, the Trailblazer activities will directly engage regional Small-to-Medium-Enterprise (SME) businesses across the resources and critical mineral sector, as they make up a large proportion of the employment in regional Northern Australia."

Sustainability Governance

6.0 JCU recognises that sustainability is fundamental to a thriving society and is committed to the pursuit of more sustainable ways of living. The United Nations defines sustainability as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs'. This view of sustainability continues to shape JCU's strategic goals and define its values.

As a leading institution in the Tropics, James Cook University has a vital role to play in advancing the UN Sustainable Development Goal 16, which aims to promote peaceful and inclusive societies, provide access to justice for all, and build effective, accountable and inclusive institutions. JCU contributes to SDG 16 through collaboration with local, state and federal governments, civil society, national and international partners, to share knowledge, best practices, and innovative solutions for achieving peace, justice and strong institutions in the tropics. By doing so, the university enhances its social impact and academic excellence, as well as fosters a culture of sustainability and civic engagement among our students and staff.

6.1 Progress towards UN Sustainable Development Goal 16 - Peace, Justice and Strong Institutions



In this section

- 6.1.1** JCU commits to a new Corporate Strategy
- 6.1.2** JCU policy for sustainable governance
- 6.1.3** JCU Annual Report
- 6.1.4** JCU contributing to Government policy and legislation.
- 6.1.5** Voice to Parliament referendum
- 6.1.6** University Council elections
- 6.1.7** JCU College of Business Law and Governance outreach activities
- 6.1.8** Research in business and governance
- 6.1.9** Partnerships with bodies for stakeholder engagement
- 6.1.10** CBLG Advanced Signatory for the Principles of Responsible Management Education



PROMOTE PEACEFUL AND INCLUSIVE SOCIETIES FOR SUSTAINABLE DEVELOPMENT, PROVIDE ACCESS TO JUSTICE FOR ALL AND BUILD EFFECTIVE, ACCOUNTABLE AND INCLUSIVE INSTITUTIONS AT ALL LEVELS

6.1.1 JCU commits to a new Corporate Strategy

JCU's vision to create a more equitable and sustainable world for present and future generations, by addressing the complex challenges and opportunities in Northern Queensland, Northern Australia, and beyond resulted in the 2023 James Cook University new Corporate Strategy that outlines values of the University:

- Authenticity
- Excellence
- Integrity
- Respect

The University identified what matters the most to the university community included 'Our Place' - in the Tropics and beyond.

"As an international, geographically dispersed University, we advocate for, partner with and make a difference to, the regions we serve."

The Impact and focus of one of the Strategic Priorities – "Securing Our Future" deals directly with Sustainability: *"We ensure that our actions today enhance the range of social, cultural, environmental and economic options available to future generations. Integration of social, environmental and economic sustainability is at the heart of our university."*

The University has taken a significant step towards achieving its Strategic Direction by implementing a new Sustainability Governance structure in October 2022. This structure places sustainability at the core of the University's operations and decision-making. The Sustainability officer is now part of the DVCSR Office and coordinates an effective university-wide program that engages all stakeholders and aligns with the University's values and goals.



6.1.2 JCU Policy for Sustainable Governance

James Cook University has a comprehensive policy library governing social, economic, and environmental sustainability in the management and operations of the University. The University has policy, procedures, guides and plans to guide progress towards the UN Sustainable Development Goals for staff and students that are regularly revised and updated with new legislation and to meet the demands of a changing world.

See the publicly available JCU Policy Library to view the full list of JCU Policies, procedures and guides. Policies for Peace, Justice and Strong Institutions include:

- Academic Freedom and Freedom of Speech Policy
- Bullying, Discrimination, Harassment, and Sexual Misconduct Policy
- Code of Conduct – University Council
- Conduct of Council Elections Policy
- Conflicts of Interests Policy – University Council and its Committees
- Staff Code of Conduct
- Fraud and Corruption Procedure - Policy
- Charter of Responsibilities for Academic Quality and Governance

6.1.3 JCU Annual Report 2022

Each Year James Cook University produces a publicly available Annual Report summarising the Universities achievements, outlook and financial position for the calendar year and fulfills the prescribed reporting requirements to the Queensland Minister for Education, Minister for Industrial Relations and Minister for Racing. It also covers the year's key events, challenges and highlights, along with and a look ahead to the next year. The 2022 JCU Annual report is published on the JCU website and Open data is also published annually on

the Queensland Government Open Data website online at <https://data.qld.gov.au>. It illustrates the role of the University within the communities it serves, portrays the scope and importance of its activities, and displays the University's effective utilisation of the resources available to it. The report outlines a wide range of matters that provide insight to the depth and breadth of activities undertaken by the University. These are linked to, and measured against, the strategic intent, aims, priorities, and actions.

6.1.4 JCU contributing to Government Policy and legislation.



James Cook University regularly contributes to Federal, State, and local Government bodies creating policies and legislation to improve life in the Tropics. JCU provides evidence for legislation and reform. Australian Universities Accord. The Accord Interim Report outlines a vision for the future of Australia's higher education system. The Report reflects

high-quality, thoughtful submissions and extensive engagement with a wide range of stakeholders. It contains five recommendations for priority action and raises issues for further discussion to inform the Review's Final Report. Section 3.3.5 of the Accord – Improving affordability for students, relates to SDG1 – No Poverty, and discusses how to ensure that student contributions are fair and affordable, debt for education is manageable for students, repayments are not overly burdensome, HELP debt forgiveness, student loan fees on FEE-HELP loans and considers a new funding model. In 2022 and 2023, James Cook University was very active in providing expert advice to the Australian Federal and Queensland State Government through submissions and consultations on policy reviews, frameworks and strategies. JCU Vice Chancellor, Professor Simon Biggs represented James Cook University in welcoming to the campus visits of Government ministers and representatives from Australia and overseas to discuss the University's position and contribution to governance in Australia.

Selected Submissions in 2022

- 4th March Queensland Anti-Discrimination Act Review
- 22nd March Regional Research Collaboration
- 11th April Elevate STEM Scholarships consultation

- 22nd June SAGE Data Framework consultation
- 22nd July Queensland Attorney General Info and Privacy
- 2nd August NHMRC Gender Investigator Grants
- 7th September TEQSA Research Guidance Notes
- 30th October Productivity Commission Interim Report – 5 Year Inquiry
- 9th October Centre for Disease Control Consultation
- 15th November Startup Year consultation
- 31st November Employment White Paper
- 9th December Joint Select Committee on Northern Australia Workforce Development
- 9th December Parliamentary Inquiry Tourism and International Aid
- 14th December ARC Review
- 19th December Accord Terms of Reference Consultation
- 3rd December Special Envoy SE Asia Strategy

Visits to James Cook University Campus in 2022

- 21st April Department of Science and Technology Philippines
- 9th June Asian Diplomatic Visit
- 14th June Minister Jason Clare
- 16th June Minister Madeleine King
- 7th July Minister Stirling Hinchliffe
- 6th September Minister Scanlon
- 20th September Senator Tony Sheldon
- 18th October Assistant Minister Anthony Chisholm
- 17th November HOM Designate Trinidad

6.1.5 Voice to Parliament Referendum – Uluru Statement of the Heart

To prepare the University community to vote on the Voice to Parliament Referendum, a special Listen, Learn, Share website was created with links to events, resources, and information about the historic vote. James Cook University Council also released a Statement on the Voice to Parliament.

JCU recognizes the history and processes that led to the Uluru Statement of the Heart, our committed to reconciliation, and to the democratic process. JCU has hosted a series of public events providing a platform for community discussion and education on the Voice to Parliament. On the 2nd of June 2023 during National Reconciliation Week, James Cook University hosted the first of a series of community events to discuss the upcoming referendum on the Indigenous Voice to Parliament. Held on the lawns of the Eddie Koiki Mabo

Library at JCU's Bebegu Yumba Campus in Townsville, panel members shared their insights on the Voice and what it means for all Australians. The discussion was followed by a community Q&A session revealing local perspectives on the referendum.



6.1.6 University Council elections

The James Cook University Act 1997 (the Act), establishes a governing body, Council consisting of 15 members including Official, Appointed, Additional and Elected Members and prescribes that the Council must make a policy about the conduct of elections required for the Elected member class. The Policy and Procedure provide guidance to staff responsible for the conduct of Council elections and to ensure public accessibility of the election policy, the integrity and security of the voting system and the openness and transparency of the election process including the appointment of scrutineers.

In accordance with the Voluntary Code of Best Practice for the Governance of Australian Public Universities, Council ensures that its membership has an appropriate mix of skills and experience, but also ensures gender and diversity of its membership.

The University Council is the governing body of the University, established by the James Cook University Act 1997 and consists of 15 members including official, appointed and elected members. The primary role of Council is to oversee the affairs of the University and, in so doing, to ensure that the appropriate structures, policies, processes and planning are in place for JCU to effectively manage its activities and achieve its goals. Academic, Professional and Technical staff and students were elected to the University Council. Three students were nominated, and Ruby Kate Christopher received the majority votes and was elected as the student representative to Council. Jonathon Strauss was elected as the Professional and Technical staff member and Associate Professor Alana Grech and Associate Professor Anthony Leicht were elected as Academic staff members to the Council.

6.1.7 JCU college of Business, Law and Governance – outreach activities

The College of Business Law and Governance facilitates public seminars, lectures and conferences for the local community, school groups and Law and Business professional to engage with the University and to educate the community on current and emerging issues and events.

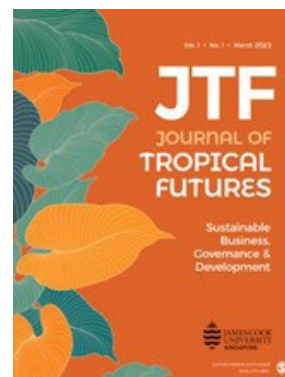
- The Mayo Lecture is an annual event run by the College in conjunction with the James Cook University Law Students' Society (JCULSS) in honour of Mrs Marylyn Mayo, JCU's foundation law staff member. The JCULSS instituted the Mayo Lecture in 1991 as a tribute to Marylyn's work in maintaining a law presence at JCU and, ultimately, in establishing the full law degree. The 2022 Mayo Lecture was presented by The Honourable Justice Lincoln Crowley, KC 'There and Back Again: A Personal Reflection'.

- The JCU Legal Studies Conference invites Legal Studies Teachers and Students in Year 11 and 12 from all schools in the Far North Queensland region to hear from expert speakers, and to participate in interactive sessions. The 2022 JCU Legal Studies Conference was attended by 500 school students and focused on the 30th Anniversary of the historic Mabo Decision. The 2023 JCU Legal Studies Conference focused on the Indigenous Voice to Parliament.

The annual JCU Law Seminar Series is a popular platform for Legal Practitioners to present on a range of legal topics, with many showcasing some of the important and interesting work being carried out in the North Queensland region, and is attended by JCU staff, students and the local community.

6.1.8 Research in business and governance

James Cook University launched a new journal The Journal of Tropical Futures: Sustainable Business, Governance & Development (JTF) in is a peer-reviewed journal from Sage Publications administered by James Cook University, Singapore. JTF is a multidisciplinary journal that promotes sustainable and responsible business, management, and governance in the tropics. JTF seeks to represent and address the complex and heterogeneous nature of the challenges facing these regions by exploring the interrelationship between business, management, political economy, development and the environment. We are particularly interested in the many tensions that exist between demands for economic growth, social and material wellbeing of populations and corresponding environmental impacts.



6.1.9 Partnerships with bodies for stakeholder engagement

The JCU College of Business, Law and Governance proudly collaborates with several organisations and initiatives across the Cairns and Townsville regions. These mutually beneficial partnerships thrive on innovation and drive success and showcase our support and a passion for continuous learning, the local community, and the Tropics. To the right is a snapshot of some of the programs and organisations.

- Accenture Australia and New Zealand
- Townsville Chamber of Commerce
- Cairns Chamber of Commerce
- Townsville Businesswomen's Circle - JCU Business Bites Events
- Tourism Tropical North Qld
- The Australian Army
- Townsville Community Law
- Department of Justice and Attorney General Qld

6.1.10 CBLG Advanced Signatory for the Principles of Responsible Management in Education

The College of Business, Law and Governance is a signatory of the UN-supported initiative, Principles for Responsible Management Education (PRME). PRME engages business and management schools to ensure they provide future leaders with the skills needed to balance economic and sustainability goals, while drawing attention to the Sustainable Development Goals (SDGs) and aligning academic institutions with the work of the UN Global Compact.

PRME Principles for Responsible Management Education

an initiative of the 

6.2 Sustainable Education

Sustainability education fosters critical thinking, creativity, and collaboration skills that are essential for solving complex problems and creating positive change. It is a vital topic to teach and study in university, because it prepares students to become responsible and informed citizens and future leaders who can contribute to solving of the global challenges of the 21st century. Sustainability education also exposes students to diverse perspectives and values that enrich their cultural and ethical awareness. By integrating sustainability across the curriculum and all campuses, JCU demonstrates its commitment to social justice, environmental stewardship, and economic viability. JCU has a strong focus on sustainability and educating students about the UN Sustainable Development Goals across subjects in all courses. In the figures below the number of JCU subjects and the number of JCU students completing subjects tagged for relevance to each UN SDGs is shown for 2022. JCU offers two specific sustainability courses for students:

Bachelor of Environmental Practice/Bachelor of Environmental Science and Management

JCU's Environmental Science and Management students develop an understanding of how to manage the interactions between people and the environment to find solutions to complex environmental problems. In their final year, students build connections through a professional placement and work experience. Students learn key concepts in environmental economics and policy, human dimensions of environmental management, sustainability and planning, and combine socioeconomics with environmental skills to tackle key global sustainability challenges in the environmental and socio-political context. Students understand how people are at the core of environmental problems — and solutions. 44 students are enrolled in the Bachelor of Environmental Practice, and 36 in the Bachelor of Environmental Science and management in 2023. Further students are enrolled in joint Environmental science degrees or undertaking environmental science majors as part of their degrees.

Master of Global Development

Graduates from the Master of Global Development critically reflect on one's social and cultural positionality to identify biases and assumptions that inform understandings of poverty, development, inequality and wellbeing, and analyse, evaluate and generate solutions to complex social and environmental problems, especially related to tropical, remote or Indigenous contexts, by using high levels of initiative, autonomy, accountability and collaboration in the application of development practice knowledge and skills. This course critically investigates the tools used in the design, implementation and evaluation of development programs. Attention is given to how development workers operate in the field, and how different approaches to development policy and practice generate different outcomes. Through the use of local and international case studies, as well as guest presentations by development professionals, the course will introduce students to a range of development practice operators and contexts. The core focus of this course is on how development projects and policies are implemented, with an emphasis on continual comparison against the theoretical perspectives that inform the values, assumptions, rationales and ethics underpinning development practice.

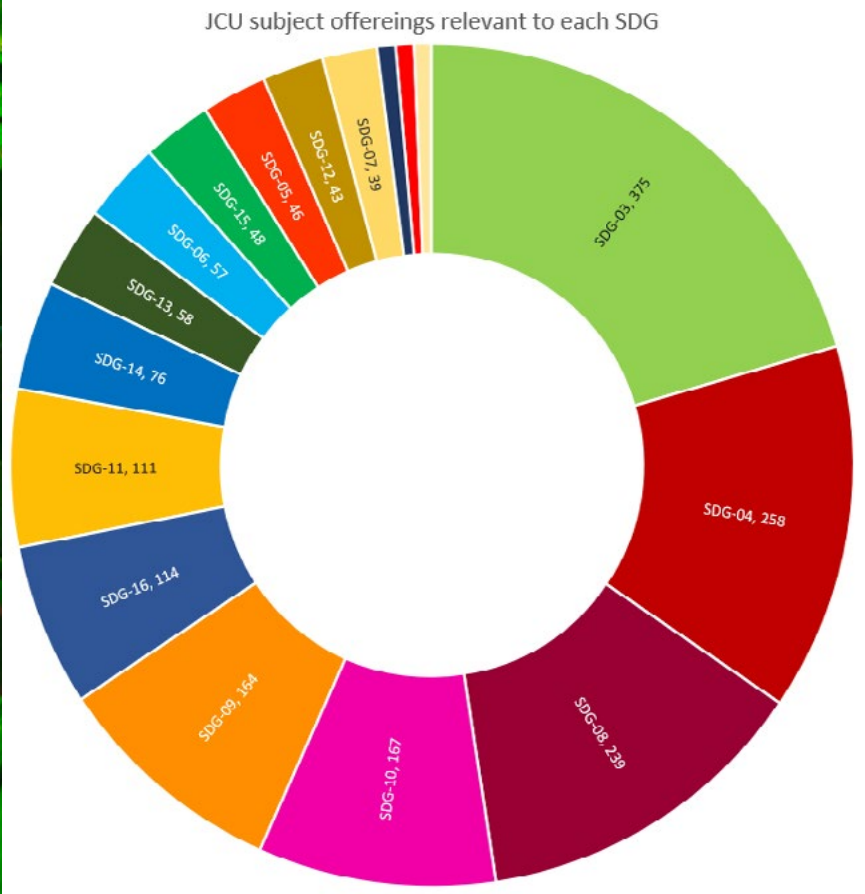
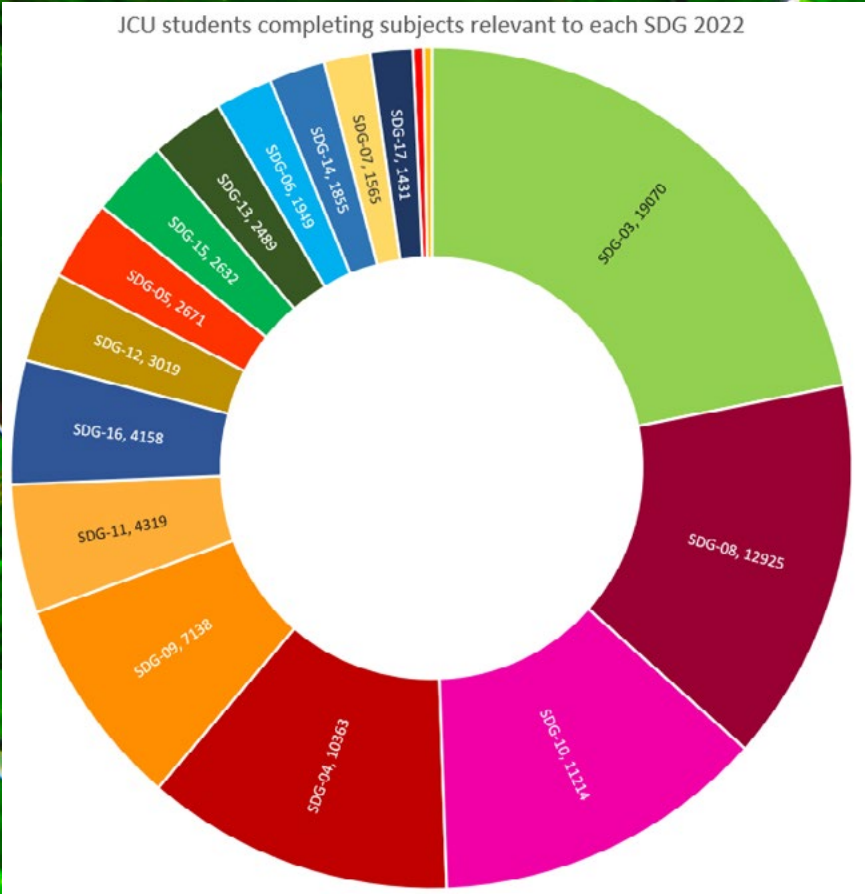
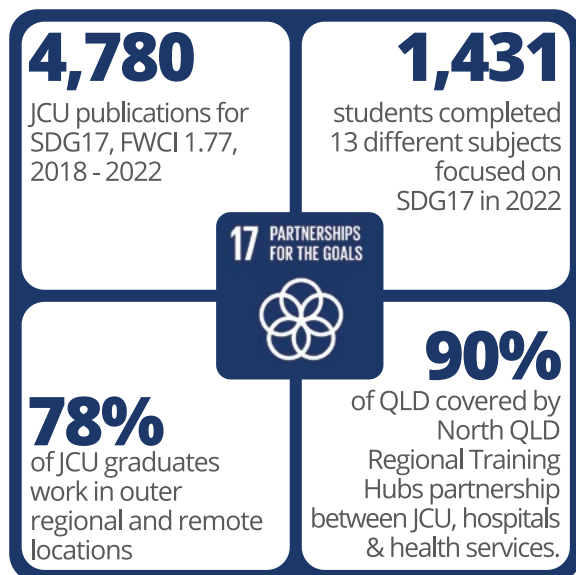


Figure 6.1: JCU subjects mapped to the UN Sustainable Development Goals, compared with number of JCU students enrolled in subjects mapped to the UN SDGs.

6.3 Progress towards UN Sustainable Development Goal 17 – Partnerships for the Goals



In this section

6.3.1 JCU regional and international partnerships

6.3.2 Dialogue on the UN Sustainable Development Goals



BUILD RESILIENT INFRASTRUCTURE, PROMOTE INCLUSIVE AND SUSTAINABLE INDUSTRIALIZATION AND FOSTER INNOVATION

UN Sustainable Development Goal 17

Is about strengthening the means of implementation and revitalizing the global partnership for sustainable development. It recognizes that achieving the ambitious targets of the 2030 Agenda requires a collaborative and multi-stakeholder approach that mobilizes all available resources, knowledge, and technologies. James Cook University aligns its vision, mission, values, and strategies with the UN SDG 17 and embeds it across all aspects of JCU's operations, teaching, research and engagement. JCU educational partnerships play a key role in progressing towards SDG 17 by providing quality education that equips students with the knowledge, skills, and values to contribute to the SDG 17 in their personal and professional lives. JCU conducts interdisciplinary and collaborative research that addresses the complex challenges and opportunities related to the SDG and generates evidence-based solutions.

JCU engages with local and global communities, partners, and stakeholders to share knowledge, raise awareness, and foster action for the SDG 17. JCU monitors and reports on our progress and impact on the SDG using relevant indicators and frameworks. By doing so, JCU demonstrates its commitment to social justice, environmental stewardship, and economic viability, and inspires others in the community to join JCU in creating a more sustainable world for present and future generations.

State of The Tropics Partnerships

The State of the Tropics project is a multi-disciplinary research project that has already greatly contributed to increasing awareness of the challenges facing tropical communities and is actively tackling the UN SDGs across tropical regions. The goal of the JCU Academic Plan to create deliberate links between the State of the Tropics project and the Academy will further embed the UN SDGs into curriculum using real-world, local, and active research projects, and provide undergraduate and postgraduate students with transformative education experiences.

6.3.1 JCU regional and international partnerships



**NORTHERN QUEENSLAND
REGIONAL TRAINING
HUBS**

The Northern Queensland Regional Training Hubs is a partnership between private and public hospital and health services, GP clinics and James Cook University. We are a medical training network, working together as a team, committed to improving the health services of rural and remote communities in the northern Queensland region and provides doctors in training with unmatched opportunities while enjoying the lifestyle that only this part of Australia can offer.

Our network of hospital and health services works together with James Cook University to strengthen medical specialist training in Cairns, Central West, Mackay, Northwest, Torres and Cape, and Townsville. Our regions, spanning almost 90% of the state, offer a wide variety of unique training and research opportunities as well as a diverse mix of people and landscapes.

Australian Institute of Tropical Medicine (AITHM) international partnerships partnership to tackle Tuberculosis

A potential new tuberculosis (TB) vaccine developed at



James Cook University is one of six now being tested in the first phase of a US \$1.7 million “head-to-head” vaccine tournament. Six TB vaccine contenders, developed

by five different research institutions, are now being tested in three countries: South Korea, France and Australia (at JCU). Dr Kupz and his team of collaborators have received grants from the Bill & Melinda Gates Foundation (\$US 1.7m), The National Institutes of Health USA (\$US 3m) and two from the Australian federal government’s National Health and Medical Research Council (\$A 2.6m) to be spent over the next five years – to further develop the TB vaccine, to directly compare it to other vaccine candidates from around the world and to gain a better understanding of this disease. AITHM’s Senior Research Fellow Dr Andreas Kupz said TB is the second leading infectious cause of death globally now behind COVID-19, with 10 million active cases and 1.5 million deaths annually, as well as two billion people latently infected with the bacteria that causes the disease.

“Despite this, the only licensed TB vaccine, named Bacille Calmette-Guérin or BCG, was developed 100 years ago. It is universally used to prevent TB in children but has low effectiveness against reactivation of latent TB and against active TB in adults and is not recommended for people with impaired immunity,” Dr Kupz said.

JCU Centre For International Trade and Business in Asia (CITBA) partnership with World Wide Fund for Nature (WWF)

The Centre for International Trade and Business in Asia (CITBA) serves as a leading research and collaboration centre for enhancing the performance and quality of research at James Cook University, as well as for supporting firms and industries to compete in the global market. It offers expertise across sustainable business, economic development, tourism, and logistics and trade. A key project for CITBA in 2022 was the “Seafood Consumption and Production Trends — Singapore Market Study”. Contracted by the Worldwide Fund for Nature Singapore (WWF-Singapore), CITBA was tasked with conducting a Singapore market study on seafood consumption and production trends. This project sought to provide WWF Singapore with detailed information on trends in seafood supply and apparent consumption in Singapore. The results will be used to inform WWF-Singapore’s seafood strategy moving aquaculture production and farming within Singapore.

JCU Singapore partnerships Partnership University Management In China.



JCU Singapore had over 80 partnership agreements and programs in collaboration with top universities in China, which brought in more than 60% of the new student population in 2022. JCU Singapore focused on study abroad experiences for students from partnership universities in 2022, and produced some student experience videos for the pool of partnership university students to demonstrate that James Cook University is their best choice of study abroad university in Singapore.

Cooperation with Chinese Service Centre for Scholarly Exchange (CSCSE).



JCUS were invited to be featured in an article by the CSCSE regarding social media operations for live streaming to increase the traffic of the China International Education Exhibition Tour (CIEET) 2022. JCU Singapore participated in CIEET 2022 for the pre-live streaming introduction session and received traffic of 55,000 people on the Weibo Platform. The main live streaming session of CIEET, “Growth and Opportunities”, was conducted by Kelvin Liu, Summer Jiao, Yang Hailing, Elena Liang, Hedy Tao and Han Rujing, attracting an audience of 104,000 people.



Koalion.

JCU Singapore designed the very first soft toy representative of Australia and Singapore — the Koalion, which is a combination of a Koala and the Merlion. The koala is an iconic Australian animal, and the Merlion is the official mascot of Singapore.

After getting the approval of using imagery of the Merlion from the Singapore Tourism Board, the adorable Koalion was born in 2022, and became a unique icon of James Cook University, Singapore.

Regional Development Australia (RDA) Tropical North – JCU Partnership



Professor Hurriyet Babacan AM was appointed as the new chair of Regional Development Australia (RDA) Tropical North, in Queensland in March 2023. RDA Tropical North works to drive the development of infrastructure and industry to strengthen the region’s

economy, by providing leadership and supporting meaningful collaboration with all levels of government, industry, community and academia. Professor Babacan is a Professor at James Cook University and the University of Queensland at the Rural Economies Centre of Excellence. She also serves as Vice Chair of the Cape York Natural Resource Management Board. The Tropical North committee of the RDA has an active and facilitative role in the community and a clear focus on stimulating economic development outcomes for the Tropical North Queensland Region through collaboration with all levels of government, industry, community and academia.

The RDA network is a vital link between regional stakeholders and all 3 levels of government. RDA committee members act as real-time advisers to government on critical regional development issues, opportunities, and challenges in their regions. The RDA network provides regional intelligence to inform policy and the implementation of regional programs, information campaigns and grant funding opportunities. The RDA program is administered by the Department of Infrastructure, Transport, Regional Development, Communications, and the Arts.



6.3.2 Dialogue on the UN Sustainable Development Goals

JCU Cairns hosts the IRSA 2022 XV World Congress of Rural Sociology

The objectives of the International Rural Sociology Association are to: foster the development of rural sociology; further the application of sociological inquiry to the improvement of the quality of rural life; and provide a mechanism whereby rural sociologists can generate dialogue and useful exchange.

The XV World Congress of the International Rural Sociology Association was held in Cairns and was hosted by the James Cook University in July 2022. Whose versions of sustainability count in the urban century? How does spatial disadvantage intersect with injustices based on gender, ethnic, linguistic, religious and other dimensions of social difference? What opportunities do flows of people, capital, information and commodities between urban and rural spaces present for sustainable rural development?



JCU Research Ethical Development (RED) Symposium

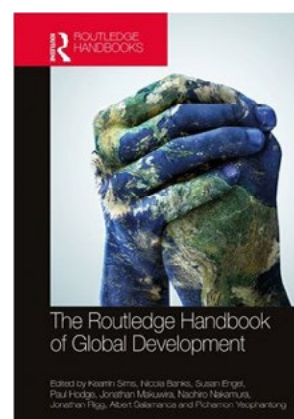
JCU RED hosted its inaugural research symposium on 13-14 July 2022, at the JCU The Cairns Institute. The call for external papers theme was: Beyond bullshit as usual: Re-centering power and politics in the SDGs. The need to move 'beyond business as usual' has become a catch cry for increasing private sector contributions to the SDGs. This phrase reflects a broader trend towards privatization in global development that includes: a redirection of aid funding away from not-for-profit civil society and towards for-profit aid contractors; a return to economic growth as the principal objective of aid; and an enduring faith in using technofixes to address complex social challenges. Proponents of increased privatization assert that the private sector has specific strengths for advancing the SDGs, including innovation, responsiveness, and efficiency. While the private sector does have an important role to play in responding to poverty and other development challenges, technocratic and depoliticised interventions often ignore and perpetuate root structural causes of inequality and disadvantage.

The 2023 RED symposium was held on the 27-29 of September, and titled *A Broken Promise? The 2030 Agenda's Commitment To Leave No-one Behind* sets out a vision for sustainable development that places equality and non-discrimination at the centre of its efforts. To achieve this, the Agenda has the core commitment 'to remain steadfast in ensuring that the Sustainable Development Goals (SDGs) are

implemented in accordance with international human rights law, eliminating gender inequalities and all forms of discrimination, [and] reaching out to those that are furthest behind first. The 2023 JCU RED symposium seeks to grapple with the 2030 Agenda's 'central transformative promise' to Leave No One Behind through a focus on three themes: power; discrimination; systemic injustice. The Cairns Institute Fellow Dr Kearnin Sims coordinates the JCU Research Ethical Development Symposium, now in its second year.

JCU Sustainable Global Development handbook – International Collaboration.

A new handbook, *The Routledge Handbook on Global Development*, led by The Cairns Institute's Dr Kearnin Sims was published in 2022. The volume shows how processes and experiences of development have influenced people's lives in both positive and negative ways, drawing attention to structural inequality and disadvantage alongside potential opportunities for positive change. It includes contributions from six JCU academics on topics ranging from social enterprise to mass extinction, Covid-19, and China's Belt and Road Initiative. A major key point of difference for this volume is that every chapter finishes with recommendations for learning and teaching and (in some cases) development practice. The Handbook is designed to speak to a paradigm shift from 'international' to 'global' development. Chapters explore challenges that are not only in the global South, but also in the Global North; and to challenges that transcend the 'North-South', 'developed- developing', binaries. Collectively, the handbook demonstrates that challenges are becoming increasingly complex and multi-faceted and are to be found in the global 'North' as much as the global 'South'. Not only is this shift evident in the content but also its diverse authorship, with contributors coming from across the globe. Ensuring this diverse representation in authorship was another important aim of the book. As lead editor Kearnin Sims explains, "Having a geographically dispersed team helped the inclusion of perspectives and contributions from some of the commonly less represented countries and regions".



The Handbook will serve as a valuable learning and teaching resource for students and scholars across multiple disciplines. As co-editor Nicola Banks highlights, something they set out to do with the volume, was to help the reader understand key issues in global development but also to challenge dominant ideas, interests, and narratives.

2023 Public seminar - Environmental Outcomes of Chinese Outward Foreign Direct Investment (COFDI) in Southeast Asia

Prof May Tan-Mullins, Chief Sustainability Officer, Dean International, JCU Singapore, spoke about the undisputable significance of China in global environmental issues. Chinese companies inevitably impact on the environment and social contexts of the recipient countries. In particular, the ASEAN countries have been severely impacted as Chinese outward foreign direct investment (COFDI) has been flowing into this region at an unprecedented rate in recent years. This is partly due to the Belt and Road Initiative (BRI) and regional demand for Chinese investment and trade. COFDI is much welcomed by these countries as it brings

economic benefits and enables the pursuit of national development schemes. However, the outcomes of these COFDI projects on the economic, political, cultural, and environmental fabric of host countries have been dramatic, as it often involves a shift of power configuration and resource ownerships between different stakeholders. Drawing from evidence in three Southeast Asia countries (Cambodia, Vietnam, and Malaysia), this paper investigates how variables such as host country regime type and relations with China, and its' local capacity to enforce laws and regulations, shape the environmental outcomes of COFDI. The findings of this paper will inform the mitigation strategies of the environmental implications arising from these COFDI.



7.1 Future Plans for progress towards the UN Sustainable Development Goals

James Cook University's sustainability planning for the future will align with the Corporate Strategy values that focus on creating a brighter future for life in the Tropics and beyond, through education and research that makes a difference locally, and globally and its strategic priority areas aligned with UN sustainable development goals:

The planning will be based on four pillars:

- Transformative Education
- Impactful Research
- Empowering our people
- A Civic University
- Securing our future
- developing a roadmap for reduced greenhouse gas emissions and increased renewable energy usage towards carbon neutrality,
- strategic reporting of progress towards the UN SDGs and environment, social and governance ratings,
- responsible consumption – reducing waste and increasing recycling across all campuses,
- equity and wellbeing, improving equity, health and wellbeing outcomes for students and staff, nurturing a community that maintains respect, inclusion safety and equality for all.

The University's vision is that by achieving the University goals aligned with the UN Sustainability Development Goals, JCU will maintain its position as a leader in sustainable development and will contribute to climate action in the Tropics globally and will see a wide-reaching campaign of student and staff engagement and a focused commitment to implementing and celebrating sustainable practice. And by increasing the visibility of JCU's sustainability agenda, the University will improve its global sustainability ranking scores, making JCU a university of choice for sustainability conscious students, employees, and external partners.

JCU's plans to continue to progress the University in teaching, research, outreach and stewardship, serving the local community, the Tropics and beyond to meet the needs of the future. The plans include partnerships within Australia and internationally to work together in innovative, sustainable ways to progress towards the SDGs. The success of the planning will rely on both systemic organizational and individual behavioural change.



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