



SDG 9 Industry, Innovation and Infrastructure

Overview

UQ is demonstrating significant contributions towards progressing SDG 9 through its commitment to fostering innovation across sectors, investing in infrastructure, and collaborating with industry on world-class research. UQ's commercialisation efforts translate research into real-world impact, and its Collaborative Research Platforms (CRPs) provide cutting-edge interdisciplinary infrastructure and technology capabilities, enabling transformative research programs and projects that address research, industry and government needs. UQ also works to improve capability in key sectors – for example, the 2024 launch of new Australia Research Council (ARC) Training Centres for Environmental and Agricultural Solutions to Antimicrobial Resistance, Predictive Breeding in Agricultural Futures, and Green Electrochemical Transformation of Carbon Dioxide. In teaching and learning, UQ aims to offer rich and varied education opportunities and experiences that foster entrepreneurship, civic duty and digital literacy in future leaders. Together, these activities reflect UQ's commitment to building resilient infrastructure, promoting sustainable industrialisation and fostering innovation.

Progress made in 2024 towards SDG 9 is reported here with reference to the following domains and enablers from UQ's Strategic Plan 2022-2025:

- Learning and student experience
- Research and innovation
- Enriching our communities
- Our global profile
- Securing our future

Related SDGs

- [SDG 3 Good Health and Well-being](#)
- [SDG 6 Clean Water and Sanitation](#)
- [SDG 7 Affordable and Clean Energy](#)
- [SDG 8 Decent Work and Economic Growth](#)
- [SDG 13 Climate Action.](#)

Learning and student experience

In 2024, UQ continued to champion sustainable innovation through both its curricular and extra-curricular activities, nurturing future-ready leaders equipped to drive impactful change across industries and society.

Courses and units relating to Industry, Innovation and Infrastructure

Building on its tradition of excellence in teaching innovation, UQ endeavours to equip graduates with both disciplinary knowledge and transferable skills essential for success in a constantly changing global workplace, including in the areas of resilient and sustainable industry, innovation and infrastructure development. In 2024, UQ offered bachelor's level programs in:

- [Business Management](#)
- [Engineering \(Honours\)](#)
- [Information Technology](#)
- [Environmental Science](#)
- [Environmental Management \(Honours\)](#).

Innovation and Entrepreneurship is offered as a major in the Bachelor of Advanced Business (Honours), Bachelor of Business Management, and Bachelor of Design, and as a minor in the Bachelor of Biotechnology.

UQ also offers the following master's degrees that prepare students to contribute to SDG 9:

- [Master of Entrepreneurship and Innovation](#)
- [Master of Sustainable Energy](#)
- [Master of Environmental Management](#).

In the Master of Sustainable Energy, students can take courses such as Energy Investment and Finance, and the Master of Business also allows students to specialise in the field of Innovation and Entrepreneurship and Organisational Sustainability. The Master of Leadership and Innovation includes coursework on Service Design Thinking, Service Interactions in a Digital Age, and Principles of Innovation.

Student extra-curricular opportunities

UQ offers a variety of extra-curricular activities and opportunities to complement curricular learning by enabling students to grow their innovation and entrepreneurship mindset and capabilities, and to develop their knowledge and industry networks. Some of these include:

- **Entrepreneurship programs** which are going from strength to strength, with 5,967 students participating in one of the many UQ Ventures programs or workshops on offer in 2024, such as:
 - The Ventures' Sustainability program which enabled students to explore the world of social enterprises and gain the knowledge to integrate UN Sustainable Development Goals (SDGs) into their idea or business. The 7-week program

comprised community building, weekly workshop sessions, guest speakers and personalised mentoring sessions, enabling students to hone their skills in sustainable entrepreneurship.

- The Ventures Industry Challenge 2024 which focused on Ocean Innovation, engaging students in an 8-week program to address real-world marine challenges. Participants developed solutions around water quality, pollution reduction, sustainable ocean use, and climate resilience, culminating in a Pitch Showcase in October at the Queensland Museum. The challenge was supported by industry and research partners including the Port of Brisbane, Australian Marine Conservation Society, Ocean Impact Organisation, Orchid Energy, and the UQ Centre for Marine Science.
- The [Global Startup AdVentures program](#), where students learn first-hand from innovative startup communities. In 2024, UQ delivered 5 one-month Startup AdVentures programs in San Francisco, Singapore, Shanghai, Shenzhen and Vietnam, with 109 students engaging with entrepreneurial networks and participating in life-changing work experience.
- **The Sustainability Innovation Challenge 2024**, led by the UQ Innovation and Entrepreneurship Society (UQIES), invited students to develop creative solutions to pressing environmental issues. Problem areas included circular design innovation, resource use and efficiency, and waste management solutions. The challenge was student-led and collaborative, involving UQ Ventures and UQ Sustainable Innovators Club. It provided hands-on experience in sustainable innovation and encouraged interdisciplinary teamwork, fostering leadership and environmental awareness among UQ's student community.
- **UQ's [School of Electrical Engineering and Computer Science \(EECS\) Innovation Showcase 2024](#)** highlighted student-led technology and engineering projects. This opportunity provided a platform for students to present their work to industry professionals and the UQ community, encouraging collaboration and networking. Supported by faculty and external partners, the event celebrated creativity, technical excellence, and real-world problem-solving, reinforcing UQ's commitment to hands-on learning and innovation.
- **The UQ Green Ambassador Program 2024** empowered students to lead sustainability initiatives across campus. Through workshops and volunteering, ambassadors promoted environmental awareness and community engagement. The program focused on leadership development and practical action, helping students contribute to UQ's sustainability goals. Managed by the UQ Sustainability Office, it provided a platform for students to collaborate, advocate, and inspire change within the university and beyond.

Research and innovation

UQ is committed to fostering mutually beneficial partnerships for research translation and commercialisation at scale, to create positive impact for our communities, the environment and economy. In terms of SDG 9, UQ's research activities in 2024 directly contributed towards the development of cutting-edge technological advancements for the medical and

advanced material sectors and provided innovative solutions for industry and government challenges.

Technological innovation

- **4D Printing Technology:** Researchers at UQ's Australian Institute for Bioengineering and Nanotechnologies (AIBN) developed a [groundbreaking 4D printing technology](#) using liquid metals for soft robotics. This innovation allows 3D-printed structures to change shape in response to infrared lasers. Using spherical liquid metal nanoparticles to create resins that respond to near-infrared light, this technology enables precise control over material behaviour and is capable of grasping and lifting objects up to 5 times their weight. It has the potential to revolutionise aeronautical engineering and medical devices and holds numerous possibilities for innovation across a range of other sectors.
- **Chondral Quant:** UQ researchers from the Faculty of Engineering, Architecture and Information Technology (EAIT), in partnership with CSIRO and Siemens Healthineers, developed Chondral Quant. This is a machine learning software tool that aims to create the first MRI-based biomarker for osteoarthritis. It uses MRI scans to non-invasively identify key regions of the knee affected by the disease, significantly reducing analysis time from hours to minutes. Chondral Quant also examines cartilage's biochemical properties, offering insights into the condition's progression. Approved by US Food and Drug Administration (FDA), the tool is now available in several countries, providing hope for earlier detection, better diagnoses, and improved treatments for osteoarthritis, ultimately enhancing patient outcomes.

Innovative solutions for industry and government

- **Quantum Technology:** UQ is a global leader in quantum technology, defining the field, building Australia's quantum economy and driving industrial transformation. UQ's world-renowned researchers are making fundamental quantum discoveries and applying quantum technologies to change the way the world works to solve society's biggest challenges. UQ is creating the workforce of the future and instilling skills sought after by industry, while drawing on UQ's cutting-edge research infrastructure to create new quantum capabilities. In 2024, UQ signed a memorandum of understanding with PsiQuantum and 4 other universities to support the growing demand for skills in the quantum computing economy and to explore research projects in adjacent fields. UQ secured \$29 million in funding through the Queensland Government Quantum and Advanced Technologies Strategy to address decarbonisation, computing, and athlete performance, positioning the University at the forefront of quantum technology on the global stage. UQ also continued to lead the Australian Research Council (ARC) funded Centre of Excellence in Quantum Biotechnology, a multi-year (2023-2030), multi-institutional project driving innovation across manufacturing, energy, agriculture, health and national security. UQ also wrapped up the ARC funded Centre of Excellence for Engineered Quantum Systems, which worked to solve the most challenging research problems at the interface of basic quantum physics and engineering.
- **Food and Beverage Accelerator:** UQ leads the [Food and Beverage Accelerator \(FaBA\)](#), a transformative initiative aimed at boosting Australia's food and beverage

manufacturing sector. It unites academic and industry expertise to drive innovation in product development, bio-manufacturing, and precision fermentation. FaBA supports early-stage companies, promotes onshore value-adding, and trains future professionals in food science and biotechnology. With funding from the Australian Government's Trailblazer Universities Program, FaBA seeks to double industry value, create 1,700 skilled jobs, and launch 20 startups. Over 4 years it is expected to generate \$1 billion in manufacturing investment, deliver 30 new products, and foster strong industry partnerships, driving sustainable growth and commercial impact.

- **Critical Minerals and Circular Economy Research Alliance:** The Queensland Government partnered with UQ's Sustainable Minerals Institute (SMI) to launch [the Critical Minerals and Circular Economy Research Alliance](#). Backed by an \$8 million investment, this 4-year initiative supports the development of a sustainable critical minerals industry in Queensland. With a focus on identifying and recovering critical minerals, implementing circular economy practices, and fostering innovation in renewable technologies, the collaboration aims to contribute to Queensland's energy transition and future job creation by creating a responsible value chain from mining to manufacturing.
- **Reef Catchments Science Partnership (RCSP):** This is a collaborative initiative between UQ's Faculty of Science and the Queensland Government's Department of Environment, Tourism, Science and Innovation aimed at improving water quality and ecosystem resilience in the Great Barrier Reef catchments. Established in 2021, RCSP integrates advanced technologies like remote sensing, modelling, and machine learning to identify pollution risks and support proactive land management. It bridges science and policy, supports behavioural insights research, and mentors future environmental leaders. A 2024 RCSP study examined water quality offsetting as a policy tool to balance emissions from development, highlighting risks from low-integrity offsets near urban centres. The research supports SDG 9 by promoting innovative, data-driven infrastructure solutions that enable sustainable development while protecting ecosystems.

Research translation and commercialisation

UQ's diverse commercialisation activities reinforce its mission of delivering for the public good through leadership in innovation, a commitment to strengthening the startup ecosystem, and translational research which addresses real-world challenges. UQ's goal is to foster mutually beneficial partnerships for research translation and commercialisation at scale, to create positive impact for communities, the environment and the economy.

Activities during 2024 include:

- partnering with Emory University to create the \$32 million Queensland Emory Vaccine Centre at UQ to accelerate the development of vaccine candidates for clinical trials, focusing on emerging diseases, pandemic preparedness, and infectious diseases in the Asia-Pacific region
- appointing a Cisco Chair in Future Networks to facilitate research co-funded by UQ and Cisco
- maintaining a strong focus on research excellence and a commitment to progressing fundamental research that will support future translational outcomes for Queensland

- maintaining UQ's position as the leading Australian university for commercialisation revenue in the Survey of Commercialisation Outcomes from Public Research

Spotlight: UniQuest, UQ's commercialisation arm

Since 1984 UQ's commercialisation company, [UniQuest](#), has been transforming research into real-world impact. It has launched over 100 startups, facilitated more than 1,000 industry partnerships, and leads Australia in university-generated commercialisation revenue. UniQuest manages intellectual property, licenses technologies, and supports across biotech, agriculture, engineering, and digital sectors. Notable successes include Spinifex Pharmaceuticals, Inflazome, Vaxxas, and Microba. Highlights during 2024 include:

- raising US\$100 million through UniQuest startup Vicebio for a combined RSV and hMPV clinical trial using the molecular clamp vaccine technology
- Canadian company Transoft Solution's acquisition of UniQuest startup Advanced Mobility Analytics Group, which uses real-time AI-interpreted data to reduce road crashes and monitor road infrastructure.
- expanding the UniQuest spin-off portfolio with companies like NuNerve, which advanced its motor neurone disease drug NUN-004 through Phase 1 trials
- entering into a strategic partnership with the global biotech company Molecule to Medicine (MTM) to establish new biotech companies in Brisbane and translate academic research into new medicines and treatments, including possible treatments for neuroinflammation-linked degenerative diseases such as Alzheimer's and Parkinson's
- Swiss company Culture Software Group acquiring [Ortelia Curator](#), a UQ startup specialising in exhibition design software that enables curators and designers to create interactive 2D and 3D exhibition spaces. Established in 2009 by UniQuest, Ortelia now serves over 150 global institutions. Its virtual exhibition tools proved vital during the pandemic.

These ventures and innovations reflect UniQuest's strategy of combining world-class science with targeted investment and industry collaboration.

University spin-offs

As at December 2024, UQ had 21 active spin-offs, created between 2001 and 2021. Spin-offs are defined as registered companies which are set up to translate intellectual property that has originated from within the institution. They are:

Medical and health technologies

- Biopsy: minimally invasive skin microbiopsy device for skin cancer diagnosis
- EMVision Medical Devices: portable brain scanners for stroke diagnosis
- Gertude BioMedical: small molecule inhibitors for cancer treatment
- Infensa Bioscience: peptide-based drugs from spider venom for heart and stroke treatment

- Magnetica: compact, helium-free MRI systems
- Microba: gut microbiome testing and therapeutics
- NeoRehab: telerehabilitation platform (eHAB®)
- NuNerve: therapies for motor neuron disease
- Q-Sera: blood collection tubes using snake venom proteins
- QUE Oncology: non-hormonal therapies for hot flashes
- Vaxxas: needle-free vaccine delivery via microarray patches
- ViceBio: next-gen vaccines using Molecular Clamp technology

Environmental and agricultural innovations

- Ausroads: borehole condition measuring system
- Aussie Colours: commercialisation of Australia's native flora
- Bioherbicides Australia: biological and chemical herbicide solutions
- BlueQuest: hydrate gel membrane filtration
- Perkii: probiotic drink using encapsulation technology
- Pure Battery: low-carbon battery materials using refining tech

Advanced technology and engineering

- AQC Microscopic: superconducting hardware for quantum computing
- GridQube: power system state estimation and network analysis
- Arborescent: handheld narcotics detection device

Enriching our communities

To meet its mission of delivering for the public good, UQ offers a variety of collaborative opportunities and resources that foster the growth of sustainable and resilient innovation in communities.

How we are achieving this

- UQ's [UniQuest Extension Fund](#) is a \$32 million venture capital initiative supporting early-stage startups founded by UQ staff, students, and alumni. It provides funding, resources, and industry connections to help startups grow and expand globally. The fund also supports UQ's talent pipeline by involving students in real-world projects. With \$11.8 million committed to 19 startups, UEF drives innovation, job creation, and global impact.
- [UQ Ventures](#) works with students, industry, alumni and the broader community – including local high school groups – to support entrepreneurs at every stage of their journey and create leaders of the future. In 2024 UQ Ventures supported 70 startups to further develop their business or social enterprise through Accelerator programs. These programs include [Empower pre-Accelerator](#) for female founders, the flagship

ilab Accelerator, and [Momentum Accelerator](#), in partnership with the Queensland Investment Corporation (QIC). Each accelerator culminated in pitch events to showcase startups to investors and the UQ community.

- In June 2024 UQ officially launched its [Office of 2032 Games Engagement \(OGE\)](#) as a central coordination point for Brisbane 2032 Games-related activities and partnerships, including those with local, state, national and global communities.
- UQ is leading one of Australia's largest Mobility-as-a-Service (MaaS) trials through the [ODIN PASS](#) project. The pass provides a full range of transport options, including public transport, e-scooters and e-bikes, taxis and car sharing, in a single monthly bundle. These kinds of mobility packages could encourage a greater shift towards active, shared and public transport. In 2024, ODIN PASS offered bundles as part of a Tourism-focused MaaS research trial, led by Griffith University, at Brisbane Open House 2024. This was part of an Advance Queensland Research Fellowship Project supported by Queensland Department of Transport and Main Roads, Griffith University, Beam Mobility, Neuron Mobility, Brisbane City Council and Townsville City Council.
- **Socially responsible procurement at UQ** considers how the University can use its buying power to enrich the communities in which it operates. Guided by the Queensland Government's [Queensland Procurement Policy \(2023\)](#), UQ takes a responsible public procurement approach and works to consider social enterprises, Indigenous businesses, [Australian Disability Enterprises \(ADEs\)](#) and [local businesses](#) in applicable sourcing activities. Work with Indigenous businesses is supported by the [UQ Indigenous Procurement Strategy \(2022-2025\)](#). The strategy outlines the University's goals relating to engaging with Indigenous businesses, building relationships and targeted spend levels. UQ offers training and support to staff around socially responsible procurement including online courses and workshops supported by procurement staff and third parties. In addition, UQ supports inclusive procurement by promoting the use of supplier databases to connect staff with verified suppliers who promote social, economic and environmental impact.

Spotlight: UQ's Innovation Precincts

UQ aims to accelerate and grow innovation precincts that support collaboration with industry, community and government, and enable shared access to state-of-the-art research facilities. UQ:

- successfully established a fourth campus – [UQ Dutton Park](#) – reaffirming a presence in the Boggo Road Innovation Precinct. The campus is the primary teaching and research location for the School of Pharmacy and houses the Queensland Alliance for Environmental Health Sciences and the Cornwall Street Medical Centre.
- continued supporting the development of the Translational Manufacturing facility at The Translational Research Institute (TRI), scheduled for completion in late 2025. TRI is a joint venture involving UQ, Queensland University of Technology Institute for Biomedical Innovation, the Princess Alexandra Hospital, Mater Medical Research Institute and the Queensland Government. The Translational Manufacturing facility will be Australia's first manufacturing facility of its type for maturing innovative biotech,

pharma and medtech companies. It will comply with international and Australian regulations and standards.

- appointed a Director of Biotechnology Innovation and Precinct Development to work with government and industry on the University's precinct strategy.

Our global profile

UQ's vision of knowledge leadership for a better world drives research with global impact. In terms of SDG 9, UQ aims to strengthen its network of international partnerships to build scale and impact, and support capability building across diverse sectors. In 2024, UQ achieved this by:

- **hosting the 17th Latin American Colloquium.** UQ built its global commercialisation and innovation networks by hosting the event themed 'Biotechnology for health, environment and food security'. The colloquium brought together 134 leaders from government, industry, and research focused on Latin America. UQ also participated in the Global Bioeconomy Alliance Conference in Brazil, fostering international collaborations with leading institutions such as São Paulo State University (UNESP), Technical University of Munich (TUM), Technical University of Denmark (DTU), University of Exeter, and the Novo Nordisk Foundation. These initiatives highlight UQ's commitment to advancing biotechnology and global partnerships for sustainable development and innovation.
- **delivering Building a Coalition for Quality Infrastructure Funding and Financing.** This short course aimed to build a coalition of mid-level professionals committed to planning and implementing quality infrastructure projects through high quality finance. The course was delivered in collaboration with the Department of Foreign Affairs and Trade-funded KIAT program, which supports the Indonesian Government's goal of sustainable and inclusive growth through improved access to quality infrastructure for all people. Through a mix of expert presentations, site visits, industry engagement and case study discussions, participants learnt best practice for mainstreaming gender equality, disability and social inclusion (GEDSI) and climate considerations into infrastructure planning, project identification, preparation and implementation.
- **delivering Digital Transformation Policy and Practice.** This short course was offered through UQ's International Development unit with expertise from UQ's Business School to enhance digital capabilities across 25 Indonesian Government agencies. Supported by the Australian Government, the course combined academic expertise with practical insights from public and private sector partners, focusing on the impact of digital transformation on policy development, regulatory frameworks, data use, and inter-agency coordination. Sustainability was a key theme, highlighting how digital tools can support economic growth, education, and health, while fostering long-term international collaboration.

Securing our future

To achieve UQ's mission of delivering for the public good, the University must ensure it is securely positioned for the future. That involves diversifying UQ's revenue base and investing purposefully in the infrastructure, systems, people and partnerships that will enrich the student experience and broaden the impact of research.

UQ continued to invest in capital infrastructure and digital capabilities to provide vibrant and sustainable campuses and support collaboration with industry, community and government, enabling shared access to state-of-the-art research facilities.

Spotlight: UQ's Collaborative Research Platforms

The University's [Collaborative Research Platforms \(CRPs\)](#) span a wide range of fields – from microscopy and imaging to plant science, genomics, drones and high-performance computing. What unites them is a shared mission: to support interdisciplinary collaboration by providing fair access to world-class physical and digital infrastructure. But CRPs are about more than just cutting-edge equipment. At their core, they're powered by people who provide the expertise, insight, and innovation that drive research forward. CRPs enable research excellence and impact not only within UQ, but also through close partnerships with industry, government and other universities.

CRPs are embedded within the Research and Innovation portfolio. Both individually and as a group, because of their diversity, the CRPs and the research they enable have a strong alignment with UN SDG 9. CRPs:

- **build resilient infrastructure.** CRPs are centralised, high-quality facilities with research infrastructure that supports a variety of fields. They are designed with sustainability and scalability in mind.
- **promote inclusive and sustainable industrialisation.** CRPs collaborate with industry partners. This supports technology transfer and research commercialisation and contributes towards economic growth.
- **foster innovation.** CRPs enable the development and application of new techniques and methodologies, helping to keep UQ at the forefront of global research. They are also critical in the training of the next generation of engineers, scientists and innovators.

2024 activities include:

- The establishment of two new CRPs – the [Nuclear Magnetic Resonance CRP](#) and the [UQ Drones Platform](#). The UQ Drones Platform hosts part of a National Collaborative Research Infrastructure Strategy (NCRIS) activity, Coastal Research Infrastructure (Coast RI). Coast RI aims to provide a national scale coastal observing and modelling capability, to plan for and mitigate change and sustainably manage Australia's coast.
- The Centre for Microscopy and Microanalysis (CMM) securing funding from the National Research Infrastructure Strategy (NCRIS) and Queensland Government funding to establish the [Natural Resources Innovation and Characterisation Hub \(NRICH\)](#). The NRICH will enhance Queensland's capabilities in critical minerals and battery industry development and deliver a sustainable resources-to-renewables characterisation pipeline, developed in collaboration with other UQ research infrastructure. Two small sample preparation devices developed through R & D collaborations with overseas instrument providers have been taken to market by these industry partners – a modest but meaningful innovation outcome.
- Completing construction of the [\\$65 million Plant Futures Facility](#). The facility will help Australian plant scientists and industry improve crop productivity and secure

future food supplies, extend UQ's involvement in the Australian Plant Phenomics Network, and support the work of the ARC Centre for Plant Success in Nature and Agriculture.

UQ's CRPs:

- Centre for Microscopy and Microanalysis
- Research Computing Centre
- Herston Imaging Research Facility
- UQ Sequencing Facility
- Nuclear Magnetic Resonance
- UQ Biological Resources
- Pinjarra Hills
- UQ Data Science
- Plant Futures Facility
- UQ Drones Platform
- Protein Expression Facility
- UQ Materials Performance.