



SDG 14 Life Below Water

Overview

UQ has a strong and multidimensional capability to advance SDG 14, with world-class research, education, and sustainable campus operations. UQ is internationally recognised for its marine science expertise, supported by dedicated research stations at Heron Island and Moreton Bay, and for its leadership in coral reef restoration and ocean ecosystem resilience. Through specialised teaching programs and global capacity-building initiatives, UQ equips the next generation of marine scientists and conservationists. The University's campus operations contribute to SDG 14 by focussing on sustainable water management, waste reduction, and environmental governance.

Together, these activities reflect UQ's commitment to protecting marine and aquatic environments and supporting global efforts to sustain life below water.

Progress made in 2024 towards SDG 14 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
- Our people

Related SDGs

- [SDG 1 No Poverty](#)
- [SDG 2 Zero Hunger](#)
- [SDG 6 Clean Water and Sanitation](#)
- [SDG 12 Responsible Consumption and Production](#)
- [SDG 13 Climate Action](#)
- [SDG 15 Life on Land](#)

Learning and student experience

UQ strives to provide a dynamic and supportive environment for students that is responsive to contemporary expectations and opportunities and enlivened by partnerships and experiences across and beyond the university. Both curricular and co-curricular learning activities address SDG 14.

Curriculum

UQ offers several programs and courses focused on coastal and ocean science and marine biology, with significant opportunities for hands-on experience at Heron Island Research Station on the Great Barrier Reef and Moreton Bay Research Station on North Stradbroke Island. These programs, primarily within the Bachelor of Science, allow students to study coastal processes, oceanography, ecology, marine geology, and conservation.

In 2024, the undergraduate course on [Living Oceans \(MARS1001\)](#) included a field trip to Moreton Bay Research Station providing practical, hands-on experience in investigating ocean and coastal ecosystems. By studying ocean habitats, coastal interactions, and marine life, students directly engaged with the biodiversity and health of marine environments. This learning experience enabled students to:

- develop an understanding of marine biodiversity and ecosystem dynamics
- learn methods for monitoring and protecting marine life
- gain appreciation of the importance of healthy oceans to human wellbeing and global biodiversity.

Extra-curricular activities

- In 2024 the **Ventures Industry Challenge** connected students with innovation partners including the Port of Brisbane, Australian Marine Conservation Society, Ocean Impact Organisation, and Orchid Energy, to co-design practical solutions to issues such as water quality, plastic pollution, sustainable use, and climate resilience. Winners were:
 - HexaRoot: an innovative product to better stabilise river banks
 - We Sea Change: a device homeowners can install in washing machines to capture and break down microplastics
 - SedimentWatch: satellite-based solutions for sediment and ecosystem monitoring.
- [Marine Society UQ \(MSUQ\)](#) connects students and UQ academics with a wider goal of maintaining marine ecosystem health and well-being. MSUQ encourages students to gain skills from other fields and be part of the conversation on marine issues and topics. Activities organised by the student club in 2024 included a field trip exploring the Queensland Department of Agriculture and Fisheries Bribie Island Research Centre to learn about the latest advancements in aquaculture.

Research and innovation

Throughout 2024 UQ made significant contributions to SDG 14 through research activities across three broad categories: strengthening marine ecosystem resilience; monitoring, data and decision support for marine and aquatic ecosystem management; and supporting sustainable and equitable fisheries.

Strengthening marine ecosystem resilience

- UQ researchers working on the [Reef Restoration and Adaptation Program's \(RRAP\) Regulatory Subprogram](#) published a report on [Governance Principles for Novel Reef Interventions](#). Delivered in partnership with the Australian Government's Reef Trust and the Great Barrier Reef Foundation (an NGO), this work advances regulatory and policy best practice, supports adaptive management, and offers guidance on policy and governance frameworks to support the responsible deployment of reef restoration technologies.
- Researchers from UQ's School of Civil Engineering collaborated with Urban Utilities and the Port of Brisbane to analyse the ecological impacts of sediment washed into Moreton Bay after the 2022 Brisbane River flood. [Published in 2024](#), the findings revealed widespread degradation and nutrient buildup, informing ongoing environmental monitoring and international best-practice on how to prevent marine pollution and protect marine ecosystems by properly managing flood impacts.
- The UQ School of the Environment secured \$1 million from The Goodman Foundation to support a **Healthy Moreton Bay Research Chair**. The Chair will play a pivotal role in a continuing initiative to ensure the bay and its surrounds are exemplars of environmental stewardship, by driving environmental solutions, leading new knowledge, and drawing on interdisciplinary expertise across UQ, tying together field data, solutions testing and modelling. In addition to investment in the Chair, the Foundation will continue to fund enhanced learning opportunities and foster the skills of young marine scientists and researchers, significantly strengthening UQ's ability to develop the next generation of leaders in this vital field.

Monitoring, data and decision support for marine and aquatic ecosystem management

- UQ researchers continued to enhance public understanding of the impacts of pesticide toxicity to reef environments through the [Pesticide Reporting Portal](#) and [Pesticide Risk Metric Dashboard](#). This is part of the Reef Catchments Science Partnership, a data gathering collaboration with the Queensland Government. These freely available tools collect and measure data to help monitor and analyse land-based pesticide runoff affecting coastal waters, supporting sustainable management and conservation efforts.
- [Coral Watch](#), a UQ led initiative, continued its collaboration with regional not-for-profit organisation **Citizens of the Reef** (Cairns) and civil society to facilitate data gathering for the **Great Reef Census**. The census facilitates data collection through hundreds of Queenslanders visiting the Reef, and analysis by thousands of citizens from 175 countries. UQ also ran a Coral Watch event in 2024 where experts discussed current bleaching events and advised on what individuals can do to protect reefs.
- Professor Peter Mumby was directly involved in SDG policy development by providing expert review of the Australian Government Great Barrier Reef Marine Park Authority's 5-year [Great Barrier Reef Outlook Report](#). Assessing the state of marine ecosystems across the reef, this key document supports planning for the long-term sustainability of the reef and informs decisions by UNESCO about the reef's World Heritage Status.

- Researchers at the Faculty of Science continued the [Pesticide Projector](#) project in collaboration with Farmacist, Queensland Government, and Truii. The project aims to reduce pesticides in aquatic ecosystems. The web tool helps users select pesticide active ingredients that are less harmful to plants and animals in waterways, contributing to healthier and more resilient aquatic environments. It is available to all communities which recommend, purchase and apply pesticides to agricultural crops in Australia.

Supporting sustainable and equitable fisheries

- In February 2024, a news story featured researchers from the UQ School of Civil Engineering who collaborated with industry partners, Griffith University and the University of Tasmania for sustainable aquaculture best practice with the design of [SeaFisher](#), a fish farming pen. The project, funded by the Blue Economy Cooperative Research Centre, has led to the design of a pen that can operate in deeper ocean waters to help fish farms meet the growing demand for seafood in an affordable and sustainable way.
- Dr Leslie Roberson from the School of the Environment worked with international collaborators for the project **Leveraging fisher skill to reduce bycatch in global fisheries** to explore how individual fishers' skills can reduce bycatch, the non-target species caught during fishing. This involved a 3-day workshop in June at The Institute of the Americas, University of San Diego, California, attended by 23 experts in sustainable fisheries management, from 11 countries. A quarter of the attendees were from Spanish-speaking countries. The participants primarily came from academia, NGOs, and government, with some representation from industry and private sectors. Most participants had 20 to 30 years of experience in fisheries, some more than 40 years. This was followed by two follow-up workshops with smaller groups in October at the University of Cape Town, South Africa, and in June at the Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB) in Berlin, Germany. A paper was published in December 2024, titled [Opportunity to Leverage Tactics Used by Skilled Fishers to Address Persistent Bycatch Challenges](#), and the research was shared at 3 international conferences in 2024 – the World Fisheries Congress in Seattle, USA (2-7 March), the 74th International Tuna Conference at Lake Arrowhead, California, USA (20-24 May), and the 7th International Marine Conservation Congress, Cape Town, South Africa (13-18 October). By educating communities, raising awareness and promoting fisher-led solutions that are cost-effective and environmentally responsible, the project contributes towards developing best practices and advancing SDG 14.

Enriching our communities

UQ supports and promotes SDG 14 in teaching, research and external engagement through inclusive access to debates, public lectures, cultural events, and other community learning opportunities.

Community outreach and education

UQ owns and operates two marine research stations – Moreton Bay and Heron Island – which are critical to advancing SDG 14 through research, education, and engagement.

[Moreton Bay Research Station](#) on North Stradbroke Island supports marine and land-based research into environmental degradation, habitat loss, and climate change. [Heron Island Research Station](#), on the southern Great Barrier Reef, has supported world-class coral reef research and education for over 70 years. Both stations support marine science education for Australian and international student cohorts from pre-university to postgraduate levels, promote global collaboration, and deepen understanding of marine ecosystems and conservation. In 2024:

- The **Heron Island Research Station alumni tour** (23-25 August) offered participants an immersive look into reef research, including biodiversity studies and the impacts of climate change, strengthening public engagement in marine conservation.
- The **Moreton Bay Research Station Open Day** on 10 August provided an opportunity for community visitors to hear from UQ researchers, interact with marine animals in touch-tanks, and get up close and personal with marine creatures. Visitors also heard from Dr Benjamin Mos, a UQ expert in sustainable aquaculture.
- Both stations continued to offer education resources, programs and opportunities for UQ students, with over 1,300 students (undergraduate and postgraduate) spending more than 4,000 days learning at these research stations in 2024. The sites combined also hosted over 1,900 students from non-tertiary institutions (such as high schools), and more than 350 international visitors (including students from overseas tertiary institutions). The Hidden Vale Research Station was also used for student learning in 2024.

In 2024 UQ delivered these additional opportunities to share knowledge about aquatic ecosystems, ocean sustainability, and SDG 14:

- UQ's Centre for Marine Science hosted its biannual [Talkfest](#) in February and July, uniting researchers, students, and external experts to exchange insights and build collaboration in marine science.
- Beyond campus, Dr Leslie Roberson from the School of Environment led a public discussion at the Cleveland Library on sustainable seafood, helping the community understand and adopt more informed choices.
- A student-led tour of the UQ Lakes at the St Lucia campus showcased efforts to restore aquatic health on campus, giving alumni, staff, students, and community members insight into the creation of a self-sustaining ecosystem and renewed habitat for native species.

Community education spotlight: Coral reef conservation with free online courses

With funding from the Global Environment Facility, UQ offered 2 free online courses in 2024 to support the conservation of climate-resilient coral reefs and the aims of the [GEF 7 Coral Reef Rescue Project](#) and the broader [Coral Reef Rescue Initiative](#). These courses are now available in both English and Bahasa Indonesia on UQ's Edge online learning platform:

- [CRRI101x Coral Reefs: Introduction to Challenges and Solutions](#) – critical insights into the threats facing coral reefs and the innovative solutions being developed to protect them. The course includes content from a range of experts in their field.

- [CRR103x Coral Reefs: Sustainable Blue Economy](#) – understanding and analysing the blue economy in the learner's own context and understanding the risks associated with business-as-usual for coral reef ecosystems and the planet. Learners explore opportunities for transitioning towards a more sustainable, reef-positive, blue economy.

Those taking the courses explore topics such as reef ecology, marine conservation strategies, and the role of the blue economy in sustainable development. The courses are open to anyone with an interest in sustainability, coral reef conservation and community resilience.

Our global profile

UQ seeks to enrich communities in Queensland and around the world. As part of SDG 14, UQ is committed to global development, harnessing its expertise to support Australia's commitment to capacity building across the Indo-Pacific.

Building global and regional partnerships

- In collaboration with the Asian Development Bank, Professor Peter Mumby and Dr Selina Ward's research advanced best practice for SDG 14 by examining how parametric insurance can provide instantaneous funding to restore damaged coral reefs after cyclones or coral bleaching events. This work focused on communities dependant on marine ecosystems in the Philippines, Indonesia, Fiji, and the Solomon Islands.
- Professor Peter Mumby's keynote address promoted cross-sectoral dialogue with UN agencies, government bodies, the private sector, NGOs and civil society at the **2nd UN Ocean Decade Regional Conference & 11th IOC Sub-Commission for the Western Pacific's (WESTPAC) International Marine Science Conference** in Bangkok from 22-25 April 2024. Professor Mumby's keynote explored interventions to build coral reef resilience to global and local impacts, promoting key UN activities that draw together science and pragmatic actions to advance SDG14 in the Ocean Decade.
- UQ researchers collaborated with the World Bank and international partners in Indonesia and the Philippines during 2024 to develop practical tools to advance government best practice for SDG 14 when selecting appropriate sites for Marine Protected Areas (MPAs). These methods were rolled out in 27 regions of Indonesia and now have global application. The success led the UN Food and Agricultural Organization (FAO) to approach UQ while designing a new fisheries project for the Gulf of Thailand.
- The UQ team from the ***Coral Reef Rescue: Resilient Coral Reefs, Resilient Communities*** project, funded by the Global Environment Facility (GEF), participated in the **10th GEF International Waters Conference (IWC10)** held in Punta Del Este, Uruguay from 23-26 September. The project aims to build capacity and solutions in 6 countries – Fiji, Solomon Islands, Indonesia, Philippines, Madagascar, and Tanzania – for the long-term survival of climate-resilient coral reef ecosystems and the communities dependent on them. UQ facilitated cross-sectoral dialogue with a clinic session at the conference, focusing on national and inclusive approaches to

conserving resilient coral reefs. The session introduced the importance of National Hubs in countries such as Fiji and Indonesia, demonstrating how inclusive governance and multi-sectoral stakeholder engagement can enhance coral reef conservation efforts.

Our people

In 2024 UQ presented a **Foundation Research Excellence Award** to [Dr Leslie Roberson](#), Faculty of Science, for her project titled *Combining data and expert knowledge: working with skilled fishers to identify feasible conservation targets for threatened species*. The ground-breaking research uses data in novel ways to find fisher-centric solutions to environmental problems in fisheries and focuses on addressing bycatch. Dr Roberson was also awarded an **Early to Mid-Career Researcher Industry Engagement Award** for her work with the Moreton Bay Seafood Industry Association.

[Dr Elvis Okoffo](#) from UQ's Queensland Alliance for Environmental Health Sciences received a **2024 Max Day Environmental Science Fellowship Award**. Dr Okoffo is researching the extent of microplastic pollution in Moreton Bay to assess the risks to marine life in the bay and inform plans to help protect this important environment.

The **Max Day Environmental Science Fellowship Award** is an Australian Academy of Sciences initiative in honour of Academy Fellow, the late Dr Maxwell Frank Cooper Day AO FAA, who spent a lifetime championing entomology, conservation and forestry, as well as helping other scientists. [Dr Jiaying Li](#)'s research on antibiotic exposure and antimicrobial resistance in urban water systems was highly commended for the 2024 award.