The University Of Queensland
AUSTRALIA

CREATE CHANGE

Responding to the climate crisis

UQ capability and expertise in the Indo-Pacific

Knowledge leadership for a better world

As a research and teaching institution with a vision of creating 'knowledge leadership for a better world', sustainability is central to everything we do. Our diverse range of educational and research programs mean that we're at the forefront of seeking solutions to sustainability issues; whether that be food security, water security, climate change or any number of other societal or environmental challenges.

Our impact is particularly evident in the ground-breaking scientific discoveries that are emerging from our dedicated research institutions, such as the Sustainable Minerals Institute and the Queensland Alliance for Agriculture and Food Innovation.

Australia has a moral imperative to reduce its carbon emissions and to address the proximate causes of the climate change crisis in a meaningful and productive way. As one of the country's leading universities, and a signatory to the United Nations' Sustainable Development Goals (SDGs), UQ is committed to informing and shaping Australia's response to climate change, and to providing the leadership and vision needed to move towards a net-zero future.

UQ's expertise is recognised for its in-country impact. Acknowledging the importance of local expertise and networks, UQ has developed several long-term collaborative relationships with partners around the world, including in Bangladesh, Fiji, India, Indonesia, Japan, Malaysia, Nepal, New Zealand, Papua New Guinea, Philippines, Singapore, Sri Lanka, the United States, Vanuatu, the Solomon Islands and Vietnam.

UQ research has identified multidimensional and interdependent optimisation points for future climate action initiatives. These research outcomes present potential opportunities for future global development impact, utilising UQ expertise in collaboration with diverse development partners and funding collaborators.

This capabilities statement identifies expertise that exists across a broad thematic range, in keeping with the multifaceted nature of climate change. The broad expertise that exists within UQ highlights the unique opportunity for a multi-pronged approach to tackling climate change complexities across three key research areas:

- Climate Adaptation
- Climate Mitigation
- Climate Resilience

Agriculture

UQ ranks 16th for Agriculture and Forestry in the QS World University Rankings 2022

Environment

UQ ranks 19th for Environmental Sciences in the QS World University Rankings 2022, and in the top 100 for Earth and Marine Sciences

Energy & Resources

UQ ranks 73rd for Engineering and Technology in the QS World University Rankings 2022

Health

UQ ranks 31st for Life Sciences and Medicine in the QS World University Rankings 2022

Governance & Infrastructure

UQ ranks in the top 100 for Law and Legal Studies, Education and Training, and Development Studies in the QS World University Rankings 2022

Partnering in the Indo-Pacific

The Indo-Pacific is a region of great importance to UQ. We work closely with our international neighbours to better understand one of the most biodiverse regions of the world, and to protect the oceans, crops, and animals that its communities rely on.

UQ academic, research, and development staff are applying their world-class expertise to a range of projects in the Indo-Pacific region. Engagement spans the disciplines of medicine, science, health, and international development to increase the capacity of the region's countries and peoples.

Our partnerships take many forms, including joint research and development centres, licensing deals, scholarships, exchange and internship opportunities, graduate employment programs, and philanthropic foundations.

In the past five years, UQ has collaborated on more than 2000 co-publications with researchers in the Pacific, largely in the areas of Ecology, Environmental and Occupational Health, and Environmental Sciences.

UQ's people-to-people links are strengthened by its network of around 2000 alumni currently residing in the region, including President of Kiribati, His Excellency Taneti Maamau, and Ambassador and Deputy Permanent Representative, Papua New Guinea, Her Excellency Ms Caitlin Wilson.

Global development leadership

Global development work is integral to UQ's vision to create change through knowledge leadership.

As one of the world's leading universities, UQ has a wealth of theoretical and applied research and teaching capabilities, spanning six faculties and eight institutes. Complementing the University's comprehensive teaching, learning and research strengths, the Global Development Impact Plan (2022-2025) demonstrates a commitment to delivering significant and lasting impact in communities across the Indo-Pacific region.

The **Global Development (GD) Hub** acts as the virtual consolidated entry point for engagement with key global development stakeholders. The GD Hub brings together the University's academic champions, leverages existing and emerging expertise, and connects key stakeholders with a range of external opportunities to position UQ as the 'go to' University for global development impact.

Partnering for development impact

UQ's partnerships are core to its global development work. By identifying and aligning UQ expertise with leaders across a range of industries, including government and multilateral and philanthropic funders, the University is able to develop strong bilateral and multilateral relationships in areas of national and international significance.

UQ maintains a reputation for rapid, effective development and delivery of training and capacity building programs for the Department of Foreign Affairs and Trade (DFAT), New Zealand Ministry of Foreign Affairs and Trade (MFAT), Asian Development Bank (ADB), World Bank, and the United Nations (UN).

International Development unit

UQ's International Development unit is one of the Indo-Pacific's leading university development groups. Since 2011, International Development has designed and delivered more than 215 tailored courses for more than 6600 participants from across South-West Asia, Vietnam, Africa, the Middle East, and the Pacific.

The unit is widely regarded as a leading provider of technical assistance, advisory, services, and capacity building programs in the Indo-Pacific, facilitating access to UQ's wealth of experts in development. It works to build the capacity of people, organisations and governments to achieve key development goals. Our professionals work with a diverse range of donors and clients, and have built a reputation for high-quality project management, program delivery, and complex logistical support.

UQ has partnered with global leaders such as the Food and Agriculture Organisation of the United Nations (FAO) and World Wildlife Fund to execute projects funded by the World Bank's Global Environment Facility (GEF). These partnerships position UQ to leverage global expertise and networks to tackle complex development challenges in the face of increasing climatic and environmental shocks.

Spotlight projects

UQ partners with India and Fiji to bring low carbon concrete to the Pacific communities

Deputy Director (Research) of UQ's Sustainable Minerals Institute (SMI), Professor Daniel Franks, is leading a large, multi-year project focused on climate mitigation and adaption in Fiji and other Pacific Small Island Developing States (PSIDS).

The project is exploring the feasibility of implementing a new type of low carbon cement in Fiji: Limestone Calcined Clay Cement or LC3. LC3 has the potential to reduce the CO2 emissions of cement by 40 per cent. LC3 also uses local resources, reduces the costs of production, and generates a range of local employment opportunities. If successfully applied to Fiji, there is the potential to reduce the annual CO2 emissions by up to 80,000 t (or around 4% of Fiji's total emissions).

The project also seeks to build resilience in regional supply chains to ensure PSIDS have reliable sources of materials (cement and aggregate) for infrastructure development, including the infrastructure required to adapt to the impacts of climate change, such as sea walls and climate resilient housing.

Project partners include Fiji's Mineral Resources Department, the Pacific Community, UNDP, and Technology and Action for Rural Advancement (TARA) and the Indian Institute of Technology Delhi (IITD) in India. *Read more online.*

Pictured below: members of the UQ, TARA, Pacific Community, UNDP, and Mineral Resources Department project team undertake site visits to Tengy Cement, Fiji.

Pacific Fisheries Leadership Program (PFLP)

UQ designed a customised leadership and management training program for fisheries leaders in the Pacific, funded by the New Zealand Minisry of Foreign Affairs and Trade and delivered by UQ International Development in partnership with the Pacific Community (SPC), Forum Fisheries Agency (FFA), and other partner organisations.

The PFLP is designed to support existing and future Pacific leaders to improve the management of national fisheries agencies and to cooperate more effectively. A total of 14 Pacific countries and one territory were eligible to participate.

The PFLP was delivered through a formal professional development program that involved training, coaching, and workplace attachments (projects that participants implement within their organisation), based around each agency's development priorities.

UQ provides targeted leadership training, which enables participants to earn credit toward an award program, UQ's Graduate Certificate in Business Leadership.
Read more online.

Mitigation

UQ Associate Professor Paul Dargusch worked in collaboration with Climate Change and Development Authority (CCDA) and the Department of National Planning and Monitoring (DNPM) to create 'The 30 by 30 Roadmap: Papua New Guinea's Climate Change Response Plan'.

Funded by the United Nations Development Program in Papua New Guinea (PNG), the plan has been ratified by PNG's National Executive Council and adopted as the core framework for national climate policy and planning up to 2030.

PNG is one of the world's 17 'megadiverse' countries, and this roadmap outlines a set of tangible and high impact accelerators to reduce, prevent, and reverse the negative effects of climate change on people and environments. The plan will not only serve as a roadmap, but also as a crucial advocacy tool to garner political will and influence development investment to tackle climate change. Specifically, the document will outline actions towards reaching the National Climate Compatible Development Management Policy (NCCDMP) target of a 50% reduction in emissions by 2030.

By utilising the guiding framework of the Sustainable Development Goals and SDG 13 ('take urgent action to combat climate change and its impacts') the roadmap includes 30 sets of actions that must be completed between 2020 and 2030 in order for PNG to make progress across all 17 goals.

Adaptation

An international project involving UQ PhD candidate with the Children's Health and Environment Program, Centre for Children's Health Research, Hong Le, is working to minimise the impact of traffic-related air pollution (TRAP) on children.

Children are a vulnerable population group and are often exposed to high levels of TRAP while travelling to and from school in urban settings. However, very little data on the health effects of TRAP in Vietnamese children are available, which hinders the development of appropriate policies to minimize TRAP and the exposure to TRAP in children.

The research, which involves several Vietnamese research institutes and medical research centres, aims to develop evidence-based products to promote community engagement in protecting school children from a high level of exposure to TRAP. ***Read more online***.

Resilience

Funded by the Australian and Pacific Science Foundation, researchers from UQ's School of Agriculture and Food Sciences and Queensland Alliance for Agriculture and Food Innovation (QAAFI) are working with the Pacific's chief scientific organisation, The Pacific Community (SPC), to find wild salt-tolerant taro varieties in Australia.

A major threat to the Pacific region is the risk of rising sea levels causing tidal inundations. Toxic levels of salt can impact on the cultivation of major food crops in the region such as taro (Colocasia spp.). Wild relatives of taro may hold the key to developing salinity tolerant taro for the Pacific region.

The project uses a cost-effective throughput phenotyping technique to evaluate Australian and Pacific Island taro germplasm for salinity tolerance. ***Read more online***.

Coral reef rescue: resilient coral reefs, resilient communities

UQ is working with international partners to build capacity and find solutions to safeguard globally significant coral reef ecosystems in the Philippines, Solomon Islands, Fiji, Indonesia, Tanzania, and Madagascar.

The World Wildlife Fund (WWF) and Global Environment Facility (GEF) project is linked to the The Global Coral Reef Rescue Initiative (CRRI) and partnership. The objective of the CRRI is to enhance reef productivity and resiliency in each of the six countries. It is also working to protect resilient coral reefs with regeneration potential to ensure the co-benefits of biodiversity and livelihoods for 120 million+ people who will rely on these reefs throughout the next decade.

UQ researchers will also help identify key threats to coral reefs in each of the six countries, and offer guidance on national strategies that would mitigate and reduce these threats.

Part of the project will center around the development of an investment portfolio of sustainable businesses and long-term sustainable livelihood investments for local communities. ***Read more online***.

UQ climate change expertise

UQ has broad expertise across the diverse areas that affect climate change mitigation, livelihoods and policy, including research and projects related to the environment, agriculture, energy, resources, health, governance, education, and infrastructure.

UQ is also home to the Mental Health in Climate Change Transdisciplinary Research Network (UQ MHCC-TRN). Established in 2019 the Network specialises in mental health for communities that are impacted by climate change events. Its focus is on research, evidence, and solutions.

The following academics are a sample of the breadth and depth of UQ's work around climate change. More academic champions can be found on the UQ website at researchers.uq.edu.au. Contact the International Development Unit if you would like to be connected with a UQ climate change expert.

Dr Simon Albert
Senior Research Fellow, School of Civil Engineering

Dr Albert has a background in the fields of natural resource management, water quality, marine ecology and climate change. For the past 20 years, he has worked at the intersection of these fields in both Australia and Melanesia providing a gradient of social-political-ecological factors. He has developed and applied innovative approaches that blend technology and traditional knowledge to answer and understand complex spatio-temporal trends. His assessment of sea-level rise impacts on coastal communities in the Solomon Islands has been one of the most highly cited works on Pacific climate threats in recent years with more than 20 million views through a range of media outlets.

He has engaged in high-profile projects assessing impacts of sea-level rise, supporting planning for relocation of Provincial capital Taro in Solomon Islands. Specifically, Dr Albert played a lead role in the Australian Government funded climate adaptation work in the Solomon islands from 2010-2018 through the; Pacific Adaptation Strategy Assistance Program (PASAP), where he led community-based marine adaptation efforts. Most recently, Dr Albert worked with the South Pacific Regional Environment Program (SPREP) to conduct climate change adaptation planning in Honiara, Solomon Islands through the Pacific Ecosystem Based Adaptation to Climate Change Program (PEBACC). In addition to 60 peer-reviewed journal articles, Dr Albert has published books and directed films to communicate environmental issues to the broader community.

Professor Tom Baldock
Head of School, School of Civil Engineering

Professor Baldock is a coastal engineer and works on assisting communities to adapt to climate change associated with sea level rise and storms, plus mitigation measures against natural coastal hazards that are increased by climate change. He also works on assessing and enhancing the resilience of coral reefs to climate change and natural hazards.

Professor Baldock has partnered with Industry and Government on a range of projects in the Pacific and Australia, including the Reef Restoration and Adaption Program (Great Barrier Reef Foundation), the Capturing Coral Reef Ecosystem Services project (World Bank/GIF), Boosting coral abundance on the Great Barrier Reef (Advance Queensland: Queensland Small Business Innovation Research Round), Resilience of coasts to clustered storm events, (CRC Bushfire and Natural Hazards and Geoscience Australia) and an Integrated Climate Change Risk and Adaptation Assessment to inform Settlement Planning in Choiseul Bay, Solomon Islands (Australian Government, Department of Infrastructure).

Dr Bradley Campbell
Research Fellow, Centre for Crop Sciences, Queensland Alliance for Agriculture and Food Innovation

Dr Campbell has more than 15 years' experience in plant biotechnology research and has held research positions focused on plant molecular genetics. His research involves the use of genomic tools for crop improvement, with an emphasis on the sustainable production of grain and horticultural crops. His major focus is on the improvement of crops for food security, feed and bio-industrial end-uses. Since 2019, he has focussed on the conservation of the Pacific Islands principal crop Taro (Colocasia spp.), a root crop of substantial cultural importance.

Climate development work includes a collaboration with the Food and Agriculture Organisation of the United Nations (FAO) and The Pacific Community (SPC, Fiji) to genotype the entire germplasm collection of taro held by the Centre for Pacific Crops and Trees (CePaCT). This work is essential for the conservation of taro for future food security needs and has implications for breeding programs aimed at addressing climate resilience traits such as salt tolerance. Additionally, he is involved in specific projects designed to tackle salinity tolerance of taro in New Caledonia (Fonds Pacifique 2022) and regionally within the wetlands and waterways of South-East Queensland (Australian & Pacific Science Foundation, APSF21074). Assessment to inform Settlement Planning in Choiseul Bay, Solomon Islands (Australian Government, Department of Infrastructure).

Professor Emerita Jennifer Corrin
School of Law

Professor Emerita Corrin researches law reform and development in plural legal regimes and legal issues affecting small states. She has participated in several research grant projects including an ARC Discovery Grant, which investigated means of better managing the flow of public finances and people across Australia's international borders, and work on environmental issues in the Solomon Islands, funded by the MacArthur Foundation.

Most recently, Professor Emerita Corrin has been the co-investigator of a project concerning the inclusion of women's voices in marine resource management in the Pacific, funded by the Arts and Humanities Research Council (UK). She has published in the areas of legal pluralism, comparative law, South Pacific law, Pacific land law, customary law, human rights, court systems, evidence, civil procedure, family law, land law, constitutional law and contract law. Professor Emerita Corrin's publications include four books and numerous chapters and articles on Pacific Law. Before joining UQ, Professor Emerita Corrin spent six years at the University of the South Pacific, having joined the faculty after nine years in her own legal firm in the Solomon Islands. She is a member of a number of editorial boards including the Asia Pacific Journal of Environmental Law Government, Department of Infrastructure).

Associate Professor Paul Dargusch
Associate Professor, School of Earth and Environmental Sciences

Associate Professor Dargusch's expertise primary lies within developing more effective approaches to climate change mitigation and covers carbon management issues associated with forests, soil, waste, agribusiness, infrastructure, transport and electricity. In 2019 and 2020 he served as an advisor for the United Nations Development Program in Papua New Guinea and was the lead author on 'The 30 by 30 Roadmap - Papua New Guinea's Climate Change Response Plan' which has been ratified by the country's National Executive Council and adopted as the core framework for national climate policy and planning up to 2030. In 2020, he was project leader on a capacity development program funded by the South Pacific Environmental Program and the Stockholm Resilience Centre and administered by UQ on the use of Nature-based Solutions for Infrastructure Development in Fiji and the Solomon Islands.

He currently serves on two Australian Department of Foreign Affairs Expert Panels; one for Climate Education in the Pacific (through the firm Palladium) and the other on Climate-Resilient Infrastructure Development (through the firm WSP).

Dr Marina Fortes
Senior Lecturer, School of Chemistry and Molecular Biosciences

Dr Fortes has a degree in Veterinary Medicine (2004) and a Master of Science in Animal Reproduction (2007) from the University of Sao Paulo, Brazil. She completed her PhD in genetics at UQ in 2012; her thesis title was "Genes and genetic markers associated with puberty in beef cattle" and was awarded prestigious scholarships from UQ and the Beef CRC (UQ Research Scholarship, UQ International Research tuition Award, and Beef CRC top-up scholarship).

After completing her PhD, Dr Fortes worked as a post-doc at the Queensland Alliance for Agriculture and Food Innovation. Her main research project was titled "Transcriptome of the Pubertal Brahman Heifer". On August 2014, she joined the School of Chemistry and Molecular Biosciences (SCMB), to lecture in genetics and bioinformatics and to establish the Livestock Genomics Group. Her group is interested in understanding how genetics influence livestock production, reproductive biology, and cattle methane emissions.

Ongoing collaborations link her group to a rich research environment, both domestic and international, which contributes to sustainable livestock industries. Meat and Livestock Australia has provided ongoing support to the projects led by her group.

Professor Daniel Franks
Program Leader-Development Minerals and Deputy Director (Research), Sustainable Minerals Institute

Professor Franks' work is focused on the interconnections between minerals, materials and sustainable development, with a particular focus on the role of minerals in poverty reduction and the social and environmental change associated with mining and energy extraction.

His work spans the governance of artisanal, small-scale and large-scale mining. He is especially focused on industrial minerals, construction materials and other 'Development Minerals' that are mined and used for local and domestic development, including those used to mitigate and adapt to the impacts of climate change. His recent work includes exploring the potential to introduce low carbon cement to Pacific

Small Island Development States (PSIDS) and the role of Development Minerals in building resiliency into natural disaster management responses in the Pacific. He is currently leading a large, multi-year project focused on climate mitigation and adaption in Fiji and other Pacific Small Island Developing States (PSIDS) (more information under 'Spotlight projects').

Dr Daniel Harris
Senior Lecturer, School of Earth and Environmental Sciences

Dr Harris' research career began when he recognised that the marine world had a history and pattern that could be studied and understood to better explain the past, understand the present, and predict the future. He started studying beaches and coral reefs as they are iconic and complex systems where marine, ecological, geological and human processes constantly interact resulting in the ecosystems we see today.

His goal, and that of his lab (The BeachLab), is to develop tools, gather data, and provide analyses to help coastlines and coral reefs navigate a warmer world. Their projects are focused on fundamental research questions about how coasts and coral reefs change through time. They also have applied research objectives to support the future management of coastal and coral reef systems.

He is also a teacher and researcher in Geography and Marine Science at the School of Earth and Environmental Science and the Remote Sensing Research Centre at UQ. Prior to his appointment at UQ, he was a teacher and researcher at The University of Sydney (where he completed his PhD), The University of Bremen and the Leibniz Center for Tropical Marine Ecology (ZMT). He grew up on the east coast of Australia and has a personal and professional passion for beaches, coral reefs, surf, and the ocean.

Associate Professor Joerg Henning
Associate Professor in Vet Epidemiology, School of Veterinary Science

Dr Henning has more than 15 years of experience in development projects, and is strongly engaged in projects focusing on animal health, One Health, and methods to improve small-scale livestock farming under challenging climatic conditions. For example, he developed an agriculture technology to manage high-valued native chickens under semi-intensive conditions in dry areas of Myanmar where limited feed resources are available, providing farmers with entrepreneurial opportunities to increase their income.

He uses a strong inter-disciplinary approach linking animal production and health, social science, public health, economics and environmental science. Dr Henning has advised government agencies across several counties on approaches to combat infectious animal diseases and has been invited by major international organisations to help in the design, analysis or review of research and of surveillance programs to revise and update animal health policies. He is the only Australian-based investigator on an international multi-disciplinary project aimed to combat risks (many of the related to climate adoption) associated with emerging poultry industries in South-East Asia (One Health Poultry Hub).

Professor Ove Hoegh-Guldberg FAA
Professor, School of Biological Sciences

Ove Hoegh-Guldberg is Professor of Marine Studies at UQ and a Fellow of the Australian Academy of Science since 2013. His research focuses on the impacts of global change on marine ecosystems and he is one of the most cited authors on climate change. In addition to pursuing scientific discovery, he has had a 20-year history in leading research organisations such as the Centre for Marine Studies and the Global Change Institute, both at UQ. He is also dedicated communicator of the threat posed by ocean warming and acidification to marine ecosystems, being one of the first scientists to identify the serious threat posed by climate change for coral reefs in a landmark paper published in 1999, which predicted the loss of coral reefs by 2050.

Since then, Professor Hoegh-Guldberg has led global discussions and action on the science and solutions to rapid climate change. He has also conceived and led the scientific XL-Catlin Seaview Survey, which has surveyed more than 1000 km of coral reefs across 25 countries and that captured and analysed more than 1 million survey images of coral reefs using Artificial Intelligence. He has served extensively with the IPCC as Coordinating Lead Author on the Ocean chapter for AR5 and Coordinating Lead Author on the Impacts Chapter in SR1.5, and was Reviewing Editor for the chapter on Australia and New Zealand for the latest report (AR6).

He has been instrumental in helping he establishment of the Paris (COP15) targets of 1.5oC, which has played a key role in international climate policy development and solutions development. Developing these resources is part of his current push to understand and support solutions to global change with partners such as WWF International and the Great Barrier Reef Foundation.

Dr Natalie Jones
Lecturer and Research Fellow (Social Science), School of Agriculture and Food Sciences

Dr Jones is an applied anthropologist dedicated to advancing the role of social science in agriculture and natural resource management within interdisciplinary teams. Her research interests involve understanding how people perceive and interact with environmental systems, and has a particular interest in the study of mental models and human values.

She currently co-leads the Regenerative Agriculture Group within the School of Agriculture and Food Sciences. The focus of this inter-disciplinary group is to advance knowledge and practice of regenerative agriculture to increase social and ecological resilience within Australia's agri-food systems. She is also leading the social component at an Australian Centre for International Agricultural Research in Fiji, which aims to develop a value chain for converting senile coconut trees into engineered wood products.

Prior to UQ, Dr Jones was a Researcher at the Australian National University working in the Resource Management of the Asia Pacific Program. This involved working as a social scientist in an international collaboration with CIRAD – Agricultural Research for Development, to evaluate 34 participatory modelling projects globally.

Dr Gunnar Kirchhof
Principal Research Fellow/Senior Lecturer, School of Agriculture and Food Sciences

Dr Kirchhof is a research Academic for Land Resource and Soil and Water Management. He is also the director of Think Soils, an international advisory and capacity-building consortium for land management. Originally from Germany, he spent several years with the International Institute for Tropical Agriculture (IITA) in Nigeria working on water-induced soil degradation and water use efficiency. He has a special interest in the management of tropical soils, mainly in emerging economy countries.

He has led research and capacity-building activities throughout the Asia-Pacific region and Africa, and was course leader and course designer for several programs under the Australia Awards program for Africa and Indonesia on themes relating to soil and water management and soil fertility. As a member of the steering committee for the Agroecology for Southeast Asia, he has addressed climate-smart production systems to promote climate-resilient agriculture; this links to research that focuses on the adoption and sustainability of agro-ecological systems.

Dr Julius Kotir
Postdoctoral Fellow, School of Agriculture and Food Sciences

Dr Kotir's academic and research interest is focused on understanding and managing the complex and long-term sustainability of linked socio-economic-environmental systems. A particular interest is how to use this understanding to design decision support tools in the form of models to evaluate the impact of different options in the context of climate variability and market risks.

His work primarily involves combining participatory co-design and field-based approaches with systems thinking tools and system dynamics modelling to develop qualitative and quantitative simulation models for scenario analysis and decision support to enhance climate resilience and adaptation. Dr Kotir uses these tools and methods to address a wide range of complex agri-environmental problems, including climate change and climate-smart agriculture, food security and food systems sustainability, natural resource base systems, agricultural value/supply chains, and water resources management.

Dr Nina Lansbury (Nina Hall)
Senior Lecturer, School of Public Health

Dr Lansbury's research examines health aspects for remote Indigenous community residents on both mainland Australia and in the Torres Strait in terms of housing, water and sewerage, and women's health. She is also investigating the impacts of climate change on human health, and this involves a role as lead author on the Intergovernmental Panel on Climate Change (WG II, AR6). Within the research sector, she was previously a senior research scientist at CSIRO, manager of the Sustainable Water program at UQ, and senior research consultant at the Institute for Sustainable Futures, UTS. Within the non-government sector, Dr Lansbury was previously the director of the Climate Action Network Australia and a research coordinator at the Mineral Policy Institute.

Hong Huynh Thi Cam Le (Hong Le)
PhD Candidate, Children's Health and Environment Program,
Centre for Children's Health Research

Hong Le is currently a Co-PI for two international projects of traffic-related air pollution prevention for children in Vietnam and impacts of traffic-related air pollution on children health. She is also a community fieldwork coordinator for data collection and health impact assessment. In Vietnam she was an environmental health expert and provided training to local health, educational, environmental workers and medical students to understand the effects of climate change on health. Her main project is to generate evidence of outdoor air pollution on children's health and the effectiveness of wearing masks to protect them from air pollutants. She also creates communication materials educating children about environmental health risks.

Dr Annie Lau
Lecturer in Geography, School of Earth and Environmental Sciences

Dr Lau joined UQ in 2016. Her primary research interest is in analysing past occurrences of coastal hazards, in particular extreme waves generated by storms and tsunamis, through sedimentary, geomorphological and historical records for assessing the future threat in coastal areas. In her recent project, shes used the characteristics of large coastal boulders (e.g. size and distribution of rocks) to estimate the strength of extreme waves and to reconstruct the history of extreme events in the past millennia at a few tropical islands in the Asia-Pacific area. Coastal geomorphology and late Quaternary sea-level change were also examined at study sites, to investigate extreme-wave processes on different kinds of coastlines.

Amelia Lee Zhi Yi
PhD Candidate, Centre for Mined Land Rehabilitation, Sustainable Minerals Institute

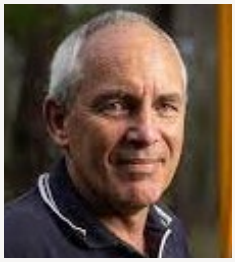
Amelia Lee Zhi Yi is an environmental-turned-social scientist with experiences in the UN Environment Programme (UNEP 2020) and the International Atomic Energy Agency (IAEA 2016-2020).

As a REDD+ Safeguards Consultant at the UNEP, she supported the Malaysian Ministry of Energy and Natural Resources in setting up a Safeguards Information System (SIS) for the REDD+ program, which aims to mitigate climate change by reducing emissions from deforestation and forest degradation. Development of the SIS allowed for assessment of Malaysia's federal forestry policy alignment with REDD+ Indicators, leading to mobilization of Green Climate Fund disbursements. Her work contributed to the dissemination of Malaysia's experience at the UNFCCC CoP 26.

At the IAEA, she worked on the development of climate-smart agricultural practices, as well as the development of IT tools to ensure food safety during nuclear emergencies. The latter work resulted in notable collaborations with the Belgium Ministry of Defence and the Fukushima Prefectural Authority.

Professor Kristen Lyons
School of Social Science

Professor Lyons is a public intellectual with more than 20 years' experience in research, teaching and service that delivers national and international impacts on issues that sit at the intersection of sustainability and development, as well as the future of higher education. Trained as a sociologist, Professor Lyons works in transdisciplinary teams to deliver socially just outcomes, including for some of the world's most vulnerable communities. She works regularly in Uganda, Solomon Islands and Australia, and her work is grounded in a rights-based approach (centring the rights and interests of local communities, including Indigenous peoples, in research design, collaboration, impacts, and outcomes).



Professor Hamish McGowan
School of Earth and Environmental Sciences

Professor McGowan is a Geographer and Professor of Atmospheric and Climate Sciences with interests in: local and regional scale windfields in complex terrain, severe weather (thunderstorms, bushfire meteorology), earth surface atmosphere energy and trace gas exchanges, aeolian dust transport (meteorological controls on wind erosion, dust transport and the impacts on regional and global climate dynamics), palaeoclimate reconstructions, mountain meteorology and hydroclimate.

Associate Professor Karen McNamara
ARC Future Fellow and Associate Professor,
School of Earth and Environmental Sciences

Associate Professor McNamara is a development geographer that is ultimately interested in how livelihoods can be enhanced to respond to the triple crises of poverty, disaster risk and climate change. She has been undertaking applied and policy-relevant research in resilient livelihoods, climate change adaptation, noneconomic loss and recovery, human mobility, and gender for over 15 years, partnering with governments, and inter-governmental and nongovernmental organisations throughout the Asia- Pacific region.

Associate Professor McNamara currently leads several grants with the Australian Research Council (ARC), the Organisation for Economic Co-operation and Development (OECD), the Department of Foreign Affairs and Trade (DFAT), the Vanuatu Government, and Palladium. Her ARC Future Fellowship, in partnership with local grassroots organisations, is exploring non-economic loss as a result of environmental change and identifying ways of working through this loss and grief in Australia, the Cook Islands and Vanuatu. She is also working closely with the Vanuatu Government to explore how the impacts of climate change can impinge on people's human rights, as part of the Government's quest for climate justice through the UN and International Court of Justice.

Professor Peter Mumby
Research Fellow
School of Biological Sciences

Professor Mumby began his career helping to design MPAs in Belize, Central America. On realising how little science was available to guide this he moved to the University of Sheffield to undertake a PhD on the use of remote sensing for mapping coral reefs, seagrass beds and mangroves.

After his PhD, he won a NERC Post-doctoral Fellowship to study ecological processes on coral reefs and moved to the University of Newcastle to join the Centre for Tropical Coastal Management Studies. He was then awarded a Royal Society Fellowship to integrate empirical ecological data into models of coral reefs with a view to studying how changes in human activity can affect the health of reefs. At this point he moved to the University of Exeter where he was made Professor at the age of 34. In 2010, he moved to UQ to take up an ARC Laureate Fellowship. He was awarded a Pew Fellowship in Marine Conservation in 2010, and is also winner of the Rosenstiel Award for excellence in marine biology and fisheries, and the Marsh Award for contributions to marine conservation.

His research focuses on delivering science to improve the management of coral reefs. He carries out empirical ecological studies at scales ranging from millimetres (algal patch dynamics) to thousands of kilometres (gene flow in Caribbean corals) to plug gaps in our understanding of reef processes. Empirical data are then used to develop ecosystem models from which we can investigate the effectiveness of conservation measures in mitigating disturbance on reefs including climate change.

Dr Kylie Navuku
Sessional Academic, School of Communication and Arts

An experienced university teacher and researcher, Dr Navuku also has experience in working with NGOs and regional organisations on creative initiatives with the purpose of raising public awareness and contributing to education about environmental themes in the Pacific Island region. Specifically related to climate change, her work includes the illustration and co-authoring of the storybook, *The Children Take Action! A Climate Change Story*, published by Pacific Regional Environment Program (SPREP). She has also illustrated posters on climate change and food security for use in campaigns in Fiji.

Dr Julie Pearce
Research Fellow, Centre for Natural Gas, School of Earth and Environmental Science

Dr Pearce is a geochemist and an expert on gaswater-rock interactions during CO2 storage with a focus on the Surat Basin, Qld, Australia, and in geochemical processes in gas and oil shales. She is currently working on field monitoring techniques for measurement of greenhouse gases and aquifer waters and understanding gas migration and fugitive emissions through geochemical and isotopic techniques.

She has collaborated in research projects with the gas and CO2 storage industries and provided expert opinion to the Queensland Government. She has worked on various projects to mitigate climate change through ensuring the safety of geological carbon dioxide storage to remove CO2 from the atmosphere and mitigate climate change. Understanding methane migration and emissions is also a central theme to mitigate global warming. Dr Pearce has shown that current monitoring practices may not be sufficient to quantify and identify potential methane migration in aquifers that overlie gas reservoirs, and that a component of fugitive methane emissions are being missed.

Dr Anna (Anya) Phelan
Lecturer, UQ Business School

Dr Phelan is a Lecturer within the Strategy and Entrepreneurship Discipline at The University of Queensland Business School. She is also Entrepreneur in Residence with the CSIRO Plastics Innovation Hub and Impact Initiatives Advisor for Blue Oceans Capital. Her ongoing research efforts are structured around the following streams: 1) circular economy and plastics 2) social entrepreneurship and small-scale enterprise development 3) decarbonisation and business sustainability.

Dr Phelan's research portfolio includes working closely with stakeholders from government, industry, sustainability sector, not-for-profits, and community. She brings 23 years' combined academic and industry experience in business sustainability, technical consulting, and sustainable development. She is currently a CI for the following projects: Cape York Recycling Project, which aims to support the advancement of people living in Far North Queensland through innovative recycling solutions, and Australian Research Council Industrial Transformation Training Centre (ITTC) for bioplastics and biocomposites. She is also part of the Future Fuels CRC.

In 2020, Dr Phelan led the Global Change Institute Flagship Project - Small Island Initiative for a Plastic Free Ocean - investigating factors contributing to ocean plastic pollution in Indonesia. She has designed and delivered research studies and was part of the Business Development team for the Capturing Coral Reef & Related Ecosystem Services (CCRES) project, focused on alternative sustainable livelihoods that protect and enhance coastal ecosystem services.

Associate Professor Chris Roelfsema
Principal Research Fellow, School of Earth and Environmental Sciences

Associate Professor Roelfsema's expertise centres around monitoring ecosystem health of coral reefs and seagrass habitats, integrating field and remote sensing image datasets, calibrating and validating of remotely sensed imagery in coastal environments, and the developing cost-effective benthic habitat mapping approaches.

He has developed unique field methods for the calibration and validation of high/low spatial resolution, multi-/hyper-spectral airborne and satellite imagery in combination with object based image analysis approaches. These methods have been adopted as standard practice in a number of resource management agencies and research institutes around the world. In his current work he is the principal investigator on three major coral reef habitat mapping projects: 3D GBR Habitat Mapping Project; Global Habitat Mapping Project; and Heron Reef Long-Term Monitoring of Benthic Composition Project.

Professor Daniel Rodriguez
Queensland Alliance for Agriculture and Food Innovation

Professor Rodriguez has National and International leadership in the development of modelling tools and integrative analyses in agriculture, that he applies to develop crop and cropping systems designs that are more profitable, sustainable and resilient under high climate variability and climate change, and smallholder farm designs that are better able to manage multiple constraints in low-income countries.

Evidence of his impact includes, the development and application of whole farm simulation models in the $40M ACIAR funded project SIMLESA program, that resulted in the increased food security of 484000 smallholder farmers across Eastern and Southern Africa. He has also engaged in science and collaboration activities in Indonesia (Sulawesi), Latin America, and China. He is presently the President of the Australian Society of Agronomy (2019-22) and organiser of the Australian Agronomy Conference.

Professor Rodriguez is an Elected Member at UQ's Academic Board, and member of its Research and Innovation Committee. He is Expert Advisor for the Independent Science for Development Council (ISDC) of CGIAR Advisory Services Shared Secretariat (CAS). He is also member of the College of Experts at UQ's Global Change Institute; Associate Editor of Field Crops Research; member of the Editorial Board of Agricultural Systems where he was Editor-in-Chief of until 2017. He has been one of the permanent contributors to the International Symposium for Farming Systems Design since 2009; and organiser of the Global Food Security Conference in 2015 and 2017, and the World Congress on Conservation Agriculture in 2011.

Dr Paul Rogers
Senior Research Fellow, Development Minerals Strategic Program,
Sustainable Minerals Institute

Dr Rogers' research is focused on finding new and innovative ways to promote sustainable development in communities and regions impacted by the extractive industries, particularly the Development Minerals sector, in the Asia-Pacific region. Development Minerals include industrial minerals and construction materials, some of which such as sand and aggregate, have a crucial role to play in adapting to the impacts of climate change in climate vulnerable regions such as Pacific Small island Developing States (PSIDS). His current work supports Fiji's efforts to mitigate climate change through the adoption of low carbon cement, as well as building resiliency into supply chains of construction materials.

Dr Shweta Singh
Lecturer, School of Agriculture and Food Science

Dr Singh is an Indian born, Australian agriculture and vermiculture scientist and educator, who completed her Master and PhD in Botany in 1997 from University of Rajasthan, India. She was honored at the Queensland Training Awards in Brisbane where she won the Regional Teaching Award for three years in a row from 2019 to 2021 for her Teaching Excellence. Her primary research interest lies in identifying and developing sustainable farming practices across the globe. She has a particular interest in evolving and adopting sustainable agriculture practices including value chain prepositions in agrifood systems, life cycle analysis, vermifiltraion, carbon sequestration, farm waste management to advocate clean and green food to the community.

Dr Peter Walters
Senior Lecturer, School of Social Science

Dr Walters is part of a research team that, for the past decade, has investigated the intersection of traditional cultural practices, Western science and environmental imperatives in the Solomon Islands. A recent addition to this research effort has been the opportunity, with funding from the Department of Foreign Affairs and Trade, to involve undergraduates from UQ in practical fieldwork to advance understanding and cooperation between Australia and Solomon Islands. He also conducts research in Bangladesh where, with PhD students, he has been working on climate urbanism, urban poverty, citizenship and the urban subaltern. He has led research in collaboration with local universities to investigate ways the urban poor understand themselves as citizens and how they access government services directly and through systems of patronage.

Professor James Watson
Professor (Environ Mgmt), School of Earth and Environmental Sciences

Professor Watson leads the Green Fire Science research group, whose mission is to do policy oriented research aimed directly at improving the outcomes of conservation around the world. He also leads the Research and Recovery of Endangered Species (RARES) Group, whose mission is to work with partners to do applied research that is linked directly to the practice of site based rare species conservation.

Professor Watson founded the International Union of Nature Conservation Climate Change Specialist Group in 2012. He was the chair of this specialist group between 2012-2018 and led the development of IUCN Best Practice Guidelines when it came to species assessments, protected area assessments and World Heritage Assessments.

He served on the United Nation's International Panel for Biodiversity and Ecosystem Services (IPBES) Data and Knowledge Task Force between 2016-2020, and is Research Fellow for the UN's Environment Program, and a Senior Technical expert for the UNDP's Global Programme on Nature for Development. He has been funded by numerous governments, industry and conservation NGOs to undertake ranging the impacts of climate change on species and area-based conservation actions. He has also worked in the climate mitigation space, generating UNFCCC policy briefs and published science on better ways to account for Nature Based Solutions when mitigating climate change, especially when it comes to forest conservation.

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