

4

Bilateral and regional research



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ACIAR works with scientists in Australia and partner countries to use science and technology to improve the livelihoods of smallholder farmers and the sustainability of food systems throughout the Indo-Pacific region.

Our work in each partner country and within our 4 regions is determined through dialogue and consultation between ACIAR, research partners and in-country partners. ACIAR-supported research addresses the specific challenges and opportunities arising in local environments and builds on established relationships.

Our research portfolio is organised into 10 programs:

- » Agribusiness
- » Climate Change
- » Crops
- » Fisheries
- » Forestry
- » Horticulture
- » Livestock Systems
- » Social Systems
- » Soil and Land Management
- » Water.

The development of projects within and across programs is guided by the objectives of the ACIAR 10-Year Strategy 2018-2027.

We identify research priorities collaboratively with partner countries, and broker research partnerships and projects to tackle those priorities. Once projects are established, we manage and monitor these investments throughout the research process to maximise impact and return on investment.

Research projects developed as bilateral and regional partnerships are led by a commissioned organisation (such as an Australian university, CSIRO, state government agency or private firm) or an international agricultural research centre. The projects are a collaboration between the commissioned organisation, other Australian or international research providers and in-country organisations. We work closely with collaborators to determine and monitor the achievement of project milestones.

We also work with other government agencies to implement programs and projects with shared goals. Since 2006, our largest and most important partnership with another government agency has been with our portfolio partner DFAT. A new partnership agreement (Record of Understanding) was established during 2019-20, under which ACIAR currently manages 11 activities and an investment of almost \$11 million.

Relationships with our in-country partners change as partner countries develop more capability in research and change focus on their research priorities. Our approach to research prioritisation and partnership brokering adapts in order to deliver research projects that are consistent with jointly agreed priorities, needs and capabilities.

Our research portfolio evolves in response to new research opportunities enabled by new knowledge and technologies, and new research and development imperatives. For example, during 2022-23, we are developing areas of activity addressing:

- » water security for smallholder communities, particularly where impacted by climate change
- » building new value chains that include opportunities for women
- » managing responses to new and emerging pests and diseases
- » 'circular economy' approaches to improving the efficiency and resilience of smallholder production systems.



Project and partners



172

Research projects and small research activities



32

Countries where projects are located



71

Commissioned organisations



372

Collaborating institutions

Note: An organisation or institution may partner with ACIAR on more than one project. In this data, a partner is only counted once for its role as a commissioned organisation and/or collaborator. This data was compiled in August 2022 and may change during 2022-23.

Research portfolio



20

Agribusiness projects



9

Climate Change projects



17

Crops projects



22

Fisheries projects



15

Forestry projects



21

Horticulture projects



19

Livestock Systems projects



14

Social Systems projects



16

Soil and Land Management projects



14

Water projects



5

CultiAF projects

Agribusiness

The Agribusiness Program focuses on research and adoption of innovations to improve business outcomes for smallholder farmers, their communities and their industries at all points along the agricultural, forestry and fisheries value chain. This includes input supply, production and harvest at the farm level, as well as post-harvest activities such as shipping, processing, packaging and marketing of farm products.

The program seeks to understand and identify skills and opportunities to help smallholders, communities and industries manage complex and interrelated factors, issues and tasks in the production chain to understand and link markets and adopt new enabling technologies. The program investigates the availability of finance for smallholders to participate in value chains, biosecurity, quality control and quality management of farm production, and compliance with market and government regulations. The program also works and co-invests with private firms to improve the effectiveness, efficiency and sustainability of commercial agrifood chains that link smallholder farmers and their private sector partners to markets.

Successful Agribusiness projects catalyse innovation and adaptation throughout the agrifood chain; facilitate adoption and impact among participating smallholder households, their communities and their chain partners; empower participants to continue the learning process after the project has completed; leverage and source funds for further adoption and impact beyond participant communities and chains; and leave a legacy of 'how to' guides and recommendations to foster greater uptake of innovations and adaptations beyond project participants and beyond the life of the project.



Mr Howard Hall is the Research Program Manager for Agribusiness. Before joining ACIAR, Howard founded and operated a specialist agribusiness consultancy for almost 30 years. He worked across tropical and temperate horticulture, intensive and extensive meat and seafood industries, grains, pulses and field crops, and food packing and processing. He has also worked as a senior manager in corporate agribusiness in the agricultural inputs sector, and in both food manufacturing and food and grocery distribution. Howard has worked across north and South-East Asia, Papua New Guinea and the Pacific. He has a Bachelor of Applied Science (Rural Technology) from the University of Queensland and a Graduate Diploma of Business Studies from the University of New England.

Climate Change

The Climate Change Program progresses the science and practice of how to transform food systems and livelihoods that are under the most pressure to adapt to climate impacts or where there are the greatest opportunities to reduce greenhouse gas emissions.

Systems transformation requires a strong focus on social and institutional change, supported by technical analyses, to create fundamentally new ways in which livelihoods are sustained and food is produced. The research strategy aims to progress the science and practice of 3 pillars that support transformation:

- » co-governance of adaptation pathways – formal and informal ways to align and sequence the actions of governments, businesses and communities to collectively shift food and livelihood systems
- » adaptive learning – equipping governments, businesses and communities with the tools and skills for anticipatory learning and for rapidly adjusting plans and actions
- » institutional mechanisms for co-benefits – use of policy and market mechanisms to simultaneously achieve benefits through climate-resilient development, ensuring benefit to small-scale producers.

Emphasising locally led approaches, interdisciplinary research, gender and social equity, and building the capacity of Australian and partner country researchers and stakeholders to engage in systems thinking, the program aims to translate sciences that often seem conceptual into tangible projects and pathways for change. It also contributes to global, multilateral collaborations and dialogues on climate change. The program commenced in late 2020 and is building a full portfolio of projects.



Dr Veronica Doerr is the Research Program Manager for Climate Change. Her career has been characterised by integration of social and biophysical sciences to achieve sustainability goals, including research co-design with land managers and policymakers. Before joining ACIAR, Veronica spent 15 years at CSIRO researching multi-functional landscapes and how to support collaboration and learning in climate adaptation. She also managed research groups and external partnerships for climate adaptation and transition. She built and led the Climate Risks and Resilience Group and was Research Director for the Sustainability Pathways Program and a core member of the Land and Water Leadership Team. She has a Bachelor of Arts from Yale University and a PhD from the University of Nevada – Reno.

Crops

The Crops Program aims to increase the productivity, sustainability and use of major crops by applying genetic and agronomic innovations to cropping systems important for partner countries and relevant to ACIAR strategic goals. The program is built on 2 complementary and integrated themes of genetic improvement and sustainable intensification and diversification.

Projects within the genetic improvement theme address specific issues, such as incorporating tolerance or resistance to pests and diseases, or building skills and technological capacity of plant breeding programs (modernisation). ACIAR-supported projects are partnerships to enable the release of improved breeding germplasm, rather than directly disseminating new varieties. Current projects supported by the program identify genes for important traits and support their introduction into breeding lines. Variety release may also be a direct outcome of the gene discovery work.

Projects supported under the sustainable intensification and diversification theme consider the productivity, profitability and resilience of the whole cropping system. These projects design, test and disseminate cropping system innovations, using farming systems research methods, to increase productivity, returns and the sustainability of targeted systems, while exploring opportunities to reduce their climate change footprint. Concentration of poverty in rural areas, migration out of farming, the increasing gap between urban and rural incomes and lower growth for agriculture compared with the overall economy all challenge family farming as a viable, profitable and satisfying pursuit. The Crops Program explores sustainable intensification as one response to these issues.



Dr Eric Huttner is the Research Program Manager for Crops. He started his career in plant molecular genetics, working in the public research institute Institut National de la Recherche Agronomique in France. Before ACIAR, he worked for more than 20 years in private companies, including founding a start-up plant genetic analysis service company. Eric has also managed public-private research initiatives in both Australia and France. Eric was a founding partner and director of Australia's Cooperative Research Centre for Plant Science and a member of the Australian Biotechnology Advisory Council. He is a graduate of France's leading agricultural science school, Institut National Agronomique (AgroParisTech), and was a postdoctoral fellow at the Chinese Academy of Science in 1987.

Fisheries

The Fisheries Program brokers research partnerships that improve the livelihoods of fishers and their communities from productive aquatic farming systems and sustainable wild-catch fisheries. The program's focus is on small-scale artisanal fisheries and low-technology aquaculture methods that benefit both women and men and includes research on post-harvest processing and trade along the supply chain.

The Fisheries Program also invests in a small number of challenging and emerging-needs research initiatives that address important priorities for our partner countries. It aims to improve food security and human health by making food systems and policies more nutrition-sensitive through research on sustainable food systems and fish's contributions to human nutrition, health and wellbeing.

Another key goal of the program is improved sustainability of fish resources, providing environmental, economic and social benefits through research on viable fisheries management policies and practices, both for artisanal fishery communities and for national or export fisheries sectors.

Across the program there is a focus on improving gender equity through research on small businesses and collective enterprises to meet market demand for aquatic products. It also aims to include work to better understand the barriers to women's decision-making and empowerment. The program also strives to strengthen the capacity of fisheries researchers (both Australian and partners) and fisheries managers, through better knowledge of practice-based education and training.



Prof Ann Fleming is the Research Program Manager for Fisheries. Ann came to ACIAR from Monash University, where she was a research development specialist for 2 years. Before that, Ann was Manager of Aquaculture in Northern Territory Fisheries for 5 years, and for the 10 years prior she was Assistant Leader and then Leader of the Abalone Aquaculture Program for the Fisheries Research and Development Corporation. Ann has a PhD in aquaculture from the University of Melbourne, a Bachelor of Science (Honours) from Monash University and a Graduate Certificate in Public Sector Management from Flinders University. She holds an Adjunct Professor position at James Cook University and is currently undertaking a part-time Master of International Development at RMIT.

Forestry

Forests and trees provide social, economic and environmental benefits. The goal of the Forestry Program is to increase these benefits to the human community in the present while enhancing environmental integrity and natural assets for future generations. The program focuses on opportunities to support livelihoods of the rural poor in partner countries from enterprises associated with forests and agroforests. The densification of tree cover outside forests now occurring globally has heightened the economic opportunity associated with tree crops.

The Forestry Program portfolio includes projects that span the value chain from seedlings to processed timber products. During the period 2020 to 2025, the aim is to develop research projects in which the science is strong, prominent and broadly applicable across geographies and forest types while development outcomes are concentrated in focal countries.

ACIAR is participating in the UN Decade on Ecosystem Restoration (2021-2030) with research examining management actions to channel natural processes towards ecosystem aggradation – the building of carbon stores, water-holding capacities, trophic complexity and biodiversity. These projects aim to restore and expand forest cover and the benefits of forests for a diversity of stakeholders.



Dr Nora Devoe is the Research Program Manager for Forestry. Before joining ACIAR, Nora worked in commercial hardwood production in Victoria and Western Australia, New Zealand and several tropical countries. She has also been employed in public policy, academia and forestry for rural development. Nora is a biophysical scientist with longstanding interest in the social dimensions of forestry, with prior research in community forestry and sustainability, including social, economic and ecological aspects. Nora holds a PhD (silviculture) and a Master of Forest Science (forest ecology) from Yale University, as well as a Bachelor of Science in environmental science from Antioch University, USA.

Horticulture

The Horticulture Program aims to improve the productivity, profitability and sustainability of fruit, vegetable, ornamental and beverage crop production in partner countries and Australia.

Research projects cover a broad scope. The program works along the whole supply chain and across a large variety of commodities, including banana, mango, pineapple, citrus, sweetpotato, coconut, cocoa, coffee and various indigenous and traditional vegetables. Research supported by the program increases on-farm productivity through integrated crop management, disease and pest control, and improved post-harvest storage and management. Beyond the farm, the focus is on market development and linking production improvement with improvements to nutrition and health.

The Horticulture Program takes a complete supply-chain approach to crop production, which considers consumer needs for safe, high-quality food, and works with the whole chain to deliver sustainable competitive advantages to smallholders in the countries where ACIAR works.

The challenge for horticulture research is to improve livelihoods in rural areas and deliver the food necessary for health and nutrition in both rural and urban regions. Higher intensity systems – such as protected-cropping and production systems that are resilient to climate effects and can withstand pest and disease pressure – are complemented by projects that effectively reduce loss along the chain.



Ms Irene Kernot is the Research Program Manager for Horticulture. Irene started her career in 1978 as an agronomist with the Northern Territory Department of Primary Industries. Moving to north Queensland in 1990, Irene worked in education as a horticultural instructor and served on the board of the Australian College of Tropical Agriculture before she joined the Department of Primary Industries in Queensland as an extension horticulturist in tropical fruits, particularly mango and avocado. In 2003, Irene transferred to research management as the Director of Tropical Fruit and Value Chain Research Development and Extension, adding the post-harvest and market access research portfolios to her work in tropical fruit production systems.

Livestock Systems

The Livestock Systems Program brokers research partnerships that develop more productive, profitable and sustainable livestock systems for the benefit of humans, animals and the environment. The program takes a holistic view of livestock systems, considering animal health and production technologies within the broader sociocultural, policy and economic contexts. Animal welfare and gender-sensitive approaches are central to the research design.

The program has 3 key areas of focus:

- » livestock and climate change – there is an urgent need to consolidate existing evidence (and identify gaps) in global research that demonstrates the greenhouse gas emissions reductions that occur with more efficient, climate-smart livestock production systems.
- » trade and market access – research into the transition from low-input to more market-oriented livestock systems has been a key ACIAR theme for many years. A whole-system approach that focuses on livestock production and biosecurity improvements within the relevant sociocultural, gender, policy and market aspects of the value chains will continue to be a key focus of the program.
- » the role of animal-sourced foods in nutrition and food security – understanding and enhancing animal-sourced food, particularly for women and children, is a key focus in environments more prone to food insecurity, such as those experiencing recurring drought or higher-than-average malnutrition and/or stunting.



Dr Anna Okello is the Research Program Manager for Livestock Systems and oversees One Health investments for ACIAR. A registered veterinarian, Anna holds a postgraduate diploma in International Animal Health from the University of Edinburgh, and a PhD in public health policy from the University of Edinburgh's School of Social and Political Science (Centre for Africa Studies). Anna has almost 20 years international development experience, holding research, management and technical advisory roles for non-government organizations, academia, the World Health Organization and the Australian government, and maintains a key academic interest in issues at the research-policy interface. Anna is an Academic Teaching Fellow in Global Health and Infectious Disease at the University of Edinburgh Medical School and a Lancet Commissioner for One Health.

Social Systems

The Social Systems Program takes a people-centred approach to agricultural research-for-development to reduce poverty. The program commissions research to address questions most effectively answered, or led primarily, by qualitative social scientists, with elements of quantitative social science where relevant to the issue under investigation. All projects endeavour to conduct trans-disciplinary research to deliver innovation and reduce poverty.

The program's 5 key research areas are:

- » agricultural extension
- » gendered social relations
- » women's empowerment
- » natural resource management
- » climate adaptation.

Social science theories and methods can contribute significantly to systems research, particularly when considering systems as a descriptor of holistic approaches that encompass complex interactions. However, the contribution of social science extends beyond systems thinking. In both research for, and in, agriculture-for-development and development more broadly, empirical research and development practice have clearly shown that engaging with people as active agents, rather than passive recipients of research and aid, results in greater and better impact.



Dr Clemens Grünbühel is the Research Program Manager for Social Systems. Clemens is an ecological anthropologist with expertise in sustainable resource use and agricultural development. Before ACIAR, he was Research Leader with the Stockholm Environment Institute, based in Bangkok. He has 20 years experience in environmental public policy, participatory natural resources management, social impact assessment, institutional analysis and climate adaptation. His work has included stakeholder engagement and teaching and training. Clemens has worked in Australia, Myanmar, Laos, Thailand, Vietnam, Cambodia and Indonesia. His research expertise and publishing include climate adaptation, rural innovation, agroecological analysis and resource use systems.

Soil and Land Management

The Soil and Land Management Program aims to help smallholders boost productivity and resilience. At the same time, it strives to ensure that soil and food security are achieved, through sustainable use of limited resources in a changing climate. The program takes an integrated approach to identify promising practices within farming systems in specific agroecological zones. Intersecting with socioeconomic and cultural factors, it develops technologies that enable farmers to sustainably use resources and improve the productivity of their farming systems.

In some regions, research is focused on improving soil security and the resilience and sustainability of farming systems, in the context of climate change and changing socioeconomic circumstances. The focus is to improve the efficiency of resource use, while maintaining and enhancing ecological services. In other regions, the goal is to improve livelihoods by raising yields and increasing profitability of agricultural enterprises.

Scarcity of resources, increasing population growth and climate change place huge burdens on smallholder farmers. Inappropriate farming systems and overexploitation of resources are degrading land, affecting soil security, depleting nutrients and speeding up soil acidification, salinisation and desertification. Ensuring that agricultural production is sustainable – and benefits smallholder farmers – is a key challenge for long-term food security.



Dr James Quilty is the Research Program Manager for Soil and Land Management. Before joining ACIAR, James worked at the International Rice Research Institute, based in the Philippines, for 7 years. He completed his PhD in soil science at the University of Sydney, studying the soil health implications of organic amendments in conventional irrigated cotton systems in central western New South Wales. After completing his PhD, James worked with Forests New South Wales, studying the impacts of managed pine forests on soil carbon and soil respiration in the central tablelands of New South Wales.

Water

The Water Program addresses the challenge of efficient, sustainable water use to support agricultural production in a context of increasingly uncertain climate, competition from other sectors and declining water quality. The program works to improve agricultural water management through innovative technical and policy approaches under 3 main themes:

- » improving access to, and outcomes from, irrigation for smallholders
- » sustainable use of groundwater in agriculture
- » risks and opportunities for safe productive use of low-quality water, including adapting to and managing the impacts of salinity.

Projects brokered by the Water Program, across all themes, share the broad aims of supporting sustainable diversification and intensification of food production, working towards equitable access to and equitable returns from water within and between communities and regions, and working with decision-makers to inform policy development at local, regional and national levels.



Dr Neil Lazarow is the Research Program Manager for Water. Before joining ACIAR in 2022, Neil was the Regional Water Lead at CSIRO and previously Research Director for the Water Program and Group Leader for International Water Practice. Neil led the development of CSIRO's water research in South America from 2015–2019, including delivery of Peru's first drought management plan. He led the DFAT–CSIRO Research for Development Alliance Phase 3 from 2013–2016, which included a diverse portfolio of work in South and South-East Asia. In Australia, Neil has been involved in water research programs focused on the Murray–Darling Basin and northern NSW. Neil formerly held roles at the Department of Climate Change and Energy Efficiency and Griffith University. Neil has a PhD from the Australian National University on managing and valuing coastal resources.



Planning for the ACIAR research portfolio includes consideration of economics and policy impacts, to support sustainable and inclusive economic development. Photo: Chris Maglangit

Economics and policy

Our economics and policy activities focus on research and initiatives that support sustainable and inclusive economic development. This addresses ways to manage profitable and sustainable food and resource systems from smallholders to policymakers.

Access to, and integration with, markets is essential to the development of these food and resource systems. Markets provide the means for smallholder communities to move from subsistence to commercial scales of production. Achieving sustainable development requires equipping managers at all levels with accessible information, digital technologies, decision-making tools and financial products to manage their systems effectively.

The Economics and Policy team works to understand the trade-offs involved in management and policy decisions, and the opportunities to find balanced pathways for development. Key examples include:

- » markets that fail to provide participants with conditions for equitable access
- » competing demands on resources among alternative uses, both over time and under uncertainty
- » production activities with the potential to create negative environmental or social externalities.

Each requires carefully designed management and policy solutions. Our work in this area is concerned with the processes that support the translation of scientific, social and economic knowledge into policy for sustainable and inclusive economic development.



Dr Todd Sanderson is the Research Manager, Economics and Policy. Before joining ACIAR, Todd was a CSIRO research scientist working in the area of agriculture, digital economics and markets. Prior to this he was a lecturer in economics at the University of Sydney, with research covering agricultural trade, climate adaptation, and smallholder decision-making under uncertainty. Todd has worked with ACIAR projects in Papua New Guinea and Laos, providing economic insights and developing collaborative relationships with in-country research partners. He has a PhD in agricultural economics from the University of Sydney.

Planning and evaluation

Portfolio planning and impact evaluation helps us refine our priorities and learn lessons from current and past projects, as well as enabling accountability to our Minister, the Australian Government and the Australian public.

An important aspect of our work lies in strategically planning for, and measuring, the impact of our investments. Our Portfolio Planning and Impact Evaluation team is responsible for the ongoing development of organisation-wide performance frameworks and the evaluation of our investments in the medium and long-term. The team engages with emerging thinking on the design of effective research-for-development portfolios, and invests in developing methods to appropriately monitor and assess the contribution of our investment to development outcomes.

ACIAR investments are evaluated through a combination of medium-term outcome evaluations and longer-term impact assessments.

Adoption studies enable research teams to assess the extent to which research findings are taken up, and identify the effects of the project on the scientific community and next-users in partner countries and Australia. They also provide a deeper understanding about the pathways to change.

Impact assessments are done by independent consultants with specialist expertise in measuring the impact of agricultural research. They analyse economic return on investment, assess social and environmental impacts and understand the contribution that we have made to complex systems change processes.

These assessments apply various methods to quantify impacts and findings from all studies, and are published in the ACIAR impact assessment series.

Consistent with the ACIAR 10-Year Strategy 2018–2027, the Portfolio Planning and Impact Evaluation team has 2 key areas of focus during 2022–23:

- » systematic portfolio planning, monitoring and reporting
- » commissioning evaluation studies.

Systematic portfolio planning, monitoring and reporting

The systematic portfolio planning, monitoring and reporting system explicitly links our bilateral, multilateral and capacity-building investments to our strategic objectives. It enables us to clearly explain how, and to what scale, our current portfolio is anticipated to contribute to these objectives, provides a framework to demonstrate progress towards these, and facilitates adaptive management at the portfolio level in response to lessons learned and changing contexts.

We are continuing to revise our existing planning and reporting documents to ensure that projects are designed and budgeted in a way that enables effective project-level monitoring, evaluation and reflection throughout implementation, and longer-term impact assessment after project completion.

Commissioning evaluation studies

We will continue to commission studies that quantify our contribution and produce lessons relevant to the achievement of all ACIAR objectives. We will build on, and continue to develop, methods to understand and value the different contributions of agricultural research to human development and environmental sustainability. We will look for opportunities to undertake truly integrated impact assessments that explore the multiple values of our work. In response to the ACIAR Gender Equity Policy and Strategy 2017–2022, we will trial the application of both formative and ex-post gender-integrated assessment methods.

We will also commission studies that will inform how we design and commission future work to deliver our objectives. These studies will aim to understand how and why research is influencing the knowledge, attitudes, behaviour and practices that support the achievement of longer-term development outcomes. This will include cross-cutting reviews of common strategies for translating knowledge to impact, and developing and/or applying analytical frameworks for systematic pathway assessment. We will also seek to develop ways to more accurately analyse the contribution of our work, using methods that acknowledge the co-contributions of enabling innovation systems, policy environments and other aligned investments.



Ms Bethany Davies is Research Manager for Portfolio Planning and Impact Evaluation. Bethany has extensive experience of practical and applied approaches to project planning, participatory program design, theory of change, monitoring and evaluation framework development and implementation, evaluation training and capacity building. Before joining ACIAR, she worked for 5 years specifically in research-for-development programs, including as the Research to Impact Team Leader for the Center for International Forestry Research, and as the Forest Trees and Agroforestry Monitoring Evaluation, Learning and Impact Assessment Coordinator. Bethany holds a Bachelor of International Relations and a Master of International Development from RMIT.