



Australian Government
**Australian Centre for
International Agricultural Research**

ACIAR ANNUAL REVIEW 2019-20



About ACIAR

The Australian Centre for International Agricultural Research (ACIAR) is the Australian Government's specialist agricultural research-for-development agency within the Australian aid program.

We fund Australian agricultural researchers and connect them with the developing world to build a more food-secure future. We invest in projects that achieve productive and sustainable agriculture and bring food, nutrition and income to smallholder farmers and their families.

We have a strong presence throughout the Indo-Pacific region, developing local research partnerships to reduce poverty and improve food security.

ACIAR Annual Review

The Annual Review features key achievements and outcomes of the work of ACIAR and its partners during 2019–20, through quick facts and case studies.

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Cover photo: Aurora Rosal harvests eggplant from her farm in the mountains of Assumption village, Koronadal City in the southern Philippines.
ACIAR project: ASEM/2012/063. © ACIAR

Our vision

ACIAR looks to a world where poverty has been reduced and the livelihoods of many improved through more productive and sustainable agriculture emerging from collaborative international research.

Our mission

To achieve more productive and sustainable agricultural systems for the benefit of developing countries and Australia through international agricultural research partnerships.



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2019-20 at a glance



A\$65.2 million
invested in bilateral research
programs



A\$104.7 billion
total benefit from ACIAR
research project investments
since 1982*



A\$98 billion
total benefit to developing country
partners from ACIAR research project
investment since 1982*



34
countries across the
Indo-Pacific region



246
bilateral research
projects



64
commissioned organisations
leading ACIAR projects





A\$17.40

economic return for each dollar invested in bilateral research project since 1982*



A\$5.3 billion

total benefit to Australia from ACIAR research project investment since 1982*



79

ACIAR staff



> 400

project partners



>800

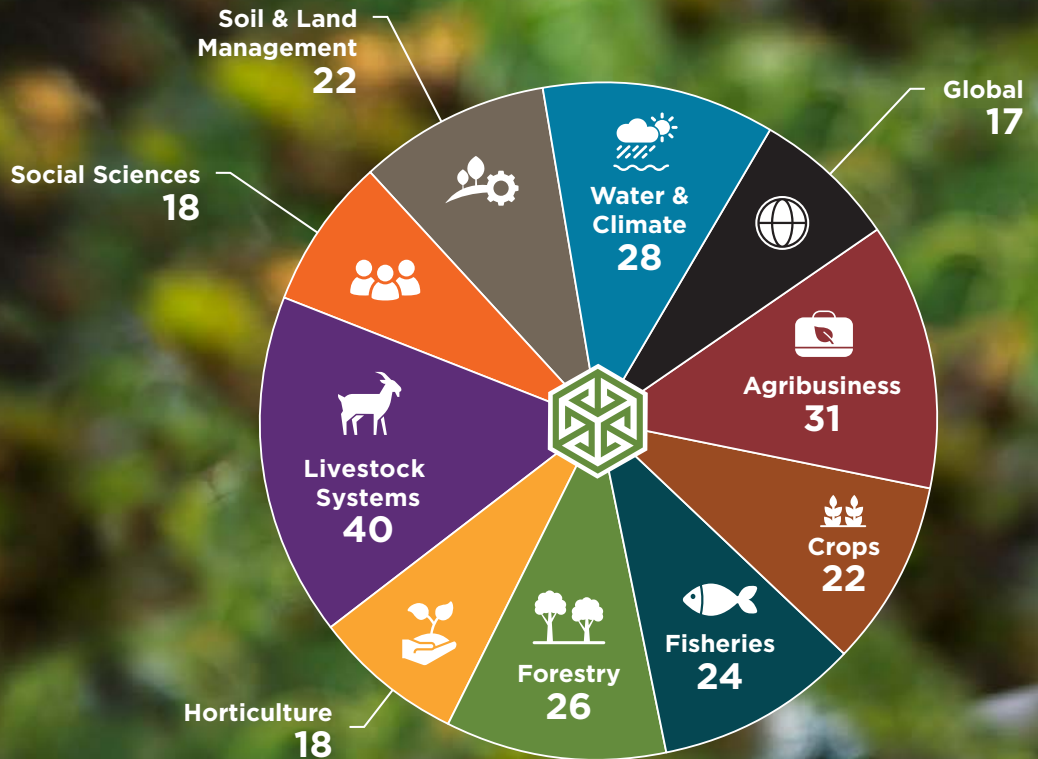
ACIAR fellowship alumni



360,000

visits to the ACIAR website

ACIAR research programs and number of projects







CEO'S MESSAGE

The 2019–20 financial year began with the world enjoying historically high levels of aggregate food supply after good seasons in major food-producing regions. It ended with a global pandemic (the sixth major zoonotic disease since 1980) exacerbating food insecurity in vulnerable regions everywhere.

Like many organisations in Australia and around the world, ACIAR has had to completely change the way we work in order to keep our staff and our partners safe. Importantly, our work to help countries and communities grow more and healthier food, improve nutrition and reduce poverty has continued.

While the global health crisis of COVID-19 is yet to precipitate a full-blown global food crisis, many international experts and agencies have highlighted that risk. In May 2020, ACIAR commenced a three-stage assessment of the impacts of the pandemic, and the responses to it, on smallholder farmers and food systems in the Indo-Pacific region.

As we continue to grapple with the multifaceted and far-reaching implications of the pandemic, the ACIAR value proposition is more compelling than ever. Australia's deep and broad scientific expertise in sustainable and resilient food systems is a strategic national asset. We work with partners across the Indo-Pacific region to tackle the intersecting challenges of health security, food security, water security and biosecurity—all of which ultimately affect our own national security.

Throughout the year, we have continued our important work, pursuing strong partnerships and better science to catalyse and share innovations that farmers can use now and in the future to grow more and healthier food, earn more and reduce environmental impacts.

We invest in research through three partnership models: bilateral research programs, multilateral research collaborations and co-investment alliances with like-minded donors. I have been extremely impressed with the resilience of all three models in the face of the multifaceted and ongoing disruptions of COVID-19, thanks to the commitment and hard work of our many partners.

Australia is a major investor in the CGIAR, and ACIAR is charged with managing that investment. The importance of the 'One CGIAR' reform process to improve cohesion and impact across the CGIAR system has only been underlined by the pandemic, and Australia remains committed to the objectives of this historic reform.

To focus and strengthen our capacity to build knowledge to manage natural resources and produce food more sustainably, while adapting to climate variability and mitigating climate change, this year we established a new climate change research program.

This program will focus on agriculture's contribution to climate change and opportunities to reduce greenhouse gas emissions from the agriculture, fisheries and forestry sectors in our region.

In October 2019, Australia was elected Vice-Chair of the Global Research Alliance on Agricultural Greenhouse Gases. When I represent Australia as chair of this important global collaboration in March 2021, ACIAR will consolidate Australia's reputation and expertise in climate science in agriculture. This alliance of more than 60 countries works to create an enabling environment for research collaboration on the most promising ways to reduce agricultural emissions. Australian researchers play an important role in the alliance, often through ACIAR-supported projects.

Our work is guided by eminent experts on the Commission for International Agricultural Research. I would like to acknowledge the outstanding contributions of the commissioners who retired in 2019–20: Mr Don Heatley (Chair), Ms Catherine Marriott and Professor Gabrielle Persley.

The achievements reported in this publication are only made possible by the people running our research projects on the ground—committed and talented scientists from our research partners in Australia and our partner countries, who have continued to operate in difficult situations throughout the year. I must also acknowledge the smallholder farmers—the women and men who are the intended beneficiaries of our work—who are often willing participants and helpers in our important work.

In delivering on our far-sighted mandate, I am lucky to be leading an organisation staffed by very talented and committed people in Australia and our 10 country offices who are doing an outstanding job in often challenging circumstances. Our people remain our greatest asset and I am proud of the achievements of my colleagues across the Indo-Pacific region, whose devoted work contributes to the global effort to tackle poverty, hunger and major nutrition imbalances.

Over the last year (like many of our partners I suspect) I have participated in more than 150 videoconferences. Personally, I am looking forward to more direct face to face contact, but that may not be realistic for quite some time yet. In the meantime, this annual review illustrates that the ACIAR research portfolio has continued to exemplify the strategic importance and value of Australian aid in our region and beyond.



Professor Andrew Campbell
Chief Executive Officer



**“I must also
acknowledge the
smallholder farmers—the
women and men who are
the intended beneficiaries
of our work—who are
often willing participants
and helpers in our
important work.”**



2019–20 highlights



ACIAR signed a Memorandum of Understanding with the Indonesian Forestry Environment Research & Development Innovation Agency to improve management of natural forests and agroforestry systems.



ACIAR Country Network met in Canberra.



JULY 2019

AUGUST



ACIAR graduate program named as a finalist in the 2019 Australian HR Award for best Graduate Development Program in Australia.



Crawford Fund Parliamentary conference on Food Security



Nguyễn Thế Thanh An, ACIAR Vietnam Country Manager, awarded the Australian Public Service Medal.

FEBRUARY

JANUARY

DECEMBER



Launch of the Meryl Williams Fellowship, which enhances the leadership skills of women in agricultural science across the Indo-Pacific region.



ACIAR Project Leaders meeting in Brisbane



Animal disease and economics experts from across Australia met in Canberra to discuss the impact of African swine fever, one of the world's most damaging animal biosecurity threats.

MARCH

APRIL



Commission for International Agricultural Research visited ACIAR-funded projects in Lombok, Indonesia.



Dr Segenet Kelemu, ACIAR Policy Advisory Council Member, honoured by UN Women as one of seven female scientists who have helped shape the world.



ACIAR partnered with the Australian Broadcasting Corporation to launch the 'Celebrating Agriculture in the News' competition, an initiative helping professional communicators report on agricultural issues in the region.



Launch of *G'Day Mate: ACIAR Filipino Alumni Stories*, a storybook featuring the experiences of ACIAR scholars.

SEPTEMBER

OCTOBER



ACIAR strengthened partnerships at Pacific Week of Agriculture in Samoa to support a more resilient region.



ACIAR co-hosted the 5th Global Science Conference on Climate-Smart Agriculture in Bali, with the Government of Indonesia and the CGIAR program on Climate Change and Food Security (CCAFS).



Indonesian dairy farmers visited Australia to learn industry best-practice from Australia's leading dairy farmers.

NOVEMBER



Australia's Minister for Education, the Hon. Dan Tehan MP, joined members of the Government of India's Jal Shakti (Water) Ministry to sign a new agreement on managing groundwater in India.



Sweetpotato farmers from Papua New Guinea visited Bundaberg to learn best-practice irrigation techniques from Australian commercial sweetpotato farmers.



First cohort of John Allwright Fellowship Executive Leadership fellows graduated after 15 months of training in management and leadership skills.

MAY

JUNE 2020



Food systems security, resilience and emerging risks in the Indo-Pacific in the context of COVID-19: a rapid assessment was released, the first stage assessment of the current and emerging impacts of the COVID-19 pandemic on food system risks and resilience across the Indo-Pacific region.



ACIAR CEO kicked off the CGIAR Climate Change, Agriculture and Food Security event 'A new era for food and climate: driving transformative actions', a full-day, around-the-world virtual relay event that began in Australia and concluded in Colombia.



Our response to COVID-19

The COVID-19 pandemic that began in early 2020 is a global health and economic crisis that will disrupt the lives and livelihoods of diverse communities around the world for years to come. This includes almost 500 million smallholder farmers who produce food for half of the global population.

While the health crisis caused by the pandemic has yet to precipitate a global food crisis, food systems in the Indo-Pacific region are under significant pressure, often amplifying existing problems and weaknesses.

In response, we pivoted our research program to focus on these emerging threats. The research we support often takes a long-term view of solutions to improve livelihoods; however, the last quarter of 2019-20 saw all projects facing short-term challenges due to the pandemic. As part of our Business Continuity Plan, we intensively managed our in-country partnerships, including maintaining formal and informal communication through the response, re-engagement and recovery phases, and reassuring all major partners of our ongoing commitment to collaboration.

Adapting to change

Lockdowns and domestic and international travel restrictions meant that hands-on fieldwork was put on hold, as scientists, technicians and extension staff had to work from home. We quickly analysed the likely impacts of COVID-19 and the risks it posed to active research projects. The initial indication was that at least 25% of these projects needed substantive redesign, including potential adjustments to objectives, methodologies and partners.

This analysis and adaptive management is ongoing, to maximise productivity despite restrictions on travel for Australian scientists and their in-country partners. Amidst the disruption of the global pandemic, ACIAR-supported projects continued to yield benefits at individual, community and institutional levels in our partner countries. Diverse project results reflect our nine research programs: key agriculture sectors (Crops, Livestock Systems, Fisheries, Forestry and Horticulture), the science needed to sustain the resource base (Soil and Land Management, and Water and Climate) and disciplines that generate economic and social understanding (Agribusiness and Social Sciences).

Rapid assessment of food system security

A significant initiative of our Business Continuity Plan was to commission a multistage assessment of the current and emerging impacts of the COVID-19 pandemic on food system risks and resilience across the Indo-Pacific region.

The first stage, *Food systems security, resilience and emerging risks in the Indo-Pacific in the context of COVID-19: a rapid assessment*, was released in May 2020. This stage collated insights from our network of partners, researchers and advisers, including the Commission for International Agricultural Research and the Policy Advisory Council, to rapidly develop a picture of food system vulnerabilities across the region. The second- and third-stage assessments are scheduled for release in 2020-21.

Alumni boost pandemic-resilient agriculture

In March 2020, we moved quickly to design and launch a new program to enable our alumni to access support for small (up to A\$20,000) research projects, especially for short-term work related to COVID-19. The Alumni Research Support Facility initiative provided funding for 40 small projects that build resilience and respond to the emerging challenges that COVID-19 has placed on agricultural systems in our partner countries.

The alumni are working hand-in-hand with Australian researchers to provide insights into how this pandemic is affecting local food security issues and to ensure the food future of the Indo-Pacific region. More than half of these researchers are women, ensuring that their voices and views will play a leading role in shaping the response to this pandemic.



**Amidst the disruption
of the global pandemic,
ACIAR-supported projects
continued to yield benefits
at individual, community
and institutional levels in
our partner countries.**

Building new opportunities

ACIAR identified new opportunities ready to be scaled up in COVID-19-relevant areas like One Health, biosecurity and improving resilience in food supply chains, both within partner countries and between Australia and partner countries.

This included discussions with potential co-investors, such as Canada's International Development Research Centre, to look at how we can take promising One Health pilot research to scale to make a significant difference in reducing the risks of future pandemics arising from zoonotic diseases, with a particular focus on South-East Asia and the Pacific region.





CASE STUDY

Fresh vegetables delivered to Filipino communities affected by COVID-19



With support from ACIAR, the Visayas State University (VSU) in central Philippines distributed free vegetables to students and families in communities affected by the COVID-19 pandemic.

VSU launched the initiative, 'Enhancing vegetable production for COVID-19 mitigation', to help ensure a steady supply of different vegetable crops in response to stresses on food supply caused by the pandemic.

This activity is part of an ACIAR-VSU project that was already helping farmers acquire accreditation to market 'safe vegetables' under the banner of the Philippines Good Agricultural Practices (GAP) certification. The project established model farms within VSU and other areas in Leyte where healthy vegetables are being produced with the safe use of pesticides.

Harvested vegetables from the ACIAR-VSU model farms were included in the food packs distributed by VSU to stranded students and families in neighbouring communities. By mid-May 2020, more than 2,000 food packs had been distributed.

'This initiative was a quick-response activity, which was based on our experience after Typhoon Haiyan,' said Dr Othello Capuno, VSU Vice President for Research and project coordinator for the ACIAR-VSU GAP project. 'When the enhanced community quarantine was implemented due to the COVID-19 pandemic, our access to our primary source of vegetables was restricted so we decided to adapt and implement this project.'

Several students at VSU had also been stranded in the dormitories. Most of them were unable to go back to their homes or conduct field research, due to travel restrictions from the enhanced community quarantine implemented from mid-March.

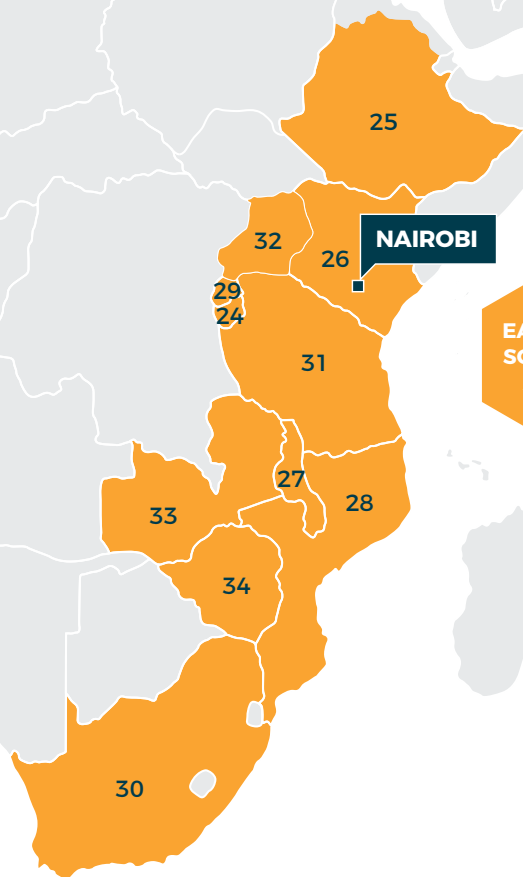
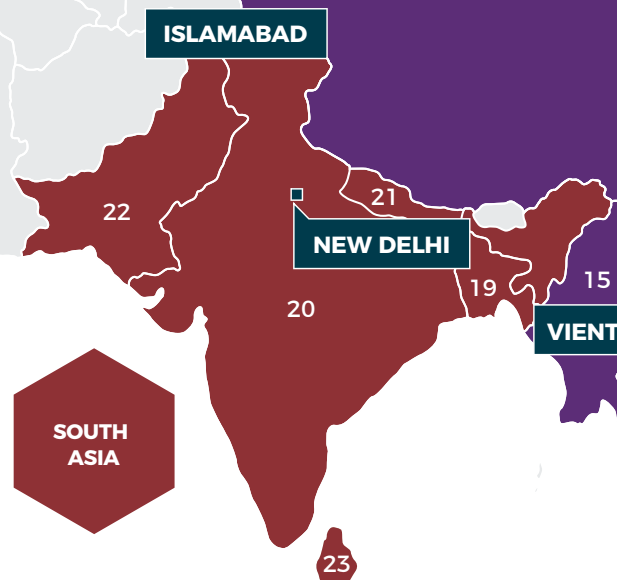
'Healthy foods such as fruits and vegetables are not readily available to us at this time. Canned goods and instant foods are very helpful, but there are also potential health risks from eating these kinds of food every day,' said Blanche Franchette Llera, a 21-year-old graduate student studying horticulture.

ACIAR and VSU have long been partners in agricultural research. From keeping soils healthy to improving market access, ACIAR has been working with VSU for a decade to support farmers to produce greater quantities of high-quality and safe vegetables, ensuring food security and better incomes.

Where we work

Partnering for a better future for our neighbours and our world

We work with partners from around Australia and the world, including research organisations, universities, private sector and governments. In our bilateral research programs, we are proud to manage a portfolio of 246 projects in 34 countries in the Indo-Pacific region.





KEY

Pacific

- 1 Fiji
- 2 Kiribati
- 3 Papua New Guinea
- 4 Samoa
- 5 Solomon Islands
- 6 Timor-Leste
- 7 Tonga
- 8 Tuvalu
- 9 Vanuatu

East and South-East Asia

- 10 Cambodia
- 11 China
- 12 Indonesia
- 13 Laos
- 14 Mongolia
- 15 Myanmar
- 16 Philippines
- 17 Thailand
- 18 Vietnam

South Asia

- 19 Bangladesh
- 20 India
- 21 Nepal
- 22 Pakistan
- 23 Sri Lanka

Eastern and Southern Africa

- 24 Burundi
- 25 Ethiopia
- 26 Kenya
- 27 Malawi
- 28 Mozambique
- 29 Rwanda
- 30 South Africa
- 31 Tanzania
- 32 Uganda
- 33 Zambia
- 34 Zimbabwe

Pacific



55
ACIAR projects



9
countries



4
locally-based staff



A\$17.3 million
invested into research projects



COUNTRIES WHERE WE WORK

Fiji | Kiribati | Papua New Guinea | Samoa
Solomon Islands | Timor-Leste | Tonga | Tuvalu | Vanuatu



26.6%
of ACIAR project
investment



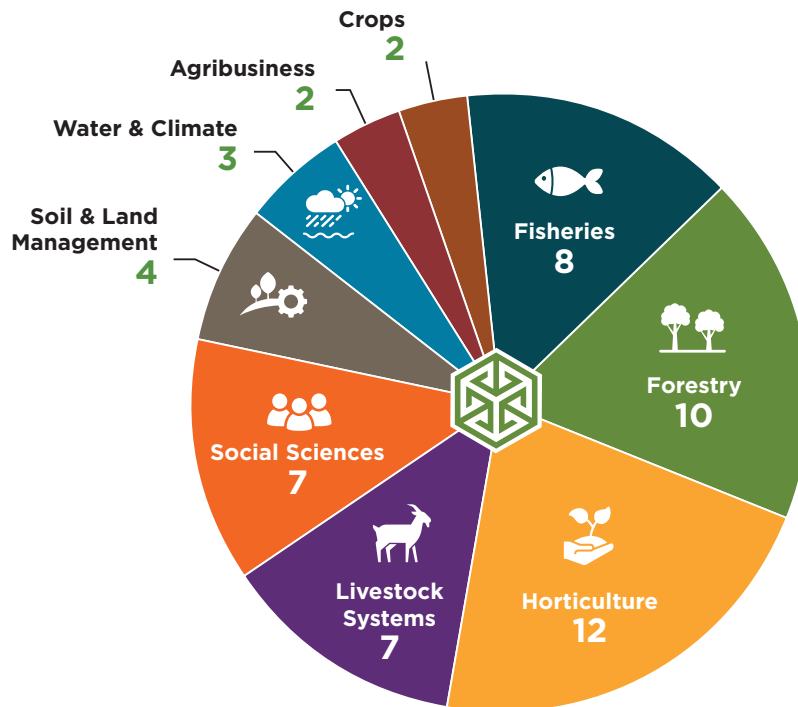
24
organisations commissioned
to lead ACIAR projects



250
ACIAR fellowship
alumni

The ACIAR Pacific region encompasses nine Pacific island nations, including Papua New Guinea. The regional strategy focuses on projects in biosecurity, climate-resilient livelihoods and opportunities for stronger agribusiness development in fisheries, forestry, crops and soil and land management.

Projects by research program



NOTE: Chart will not always reflect the sum of total projects per program as it shows projects by region. If a project is in multiple regions, it will be counted for each region.

Region highlights

September 2019: ACIAR attended the Pacific Week of Agriculture in Samoa. The week-long event saw agriculture ministers and representatives from 28 Pacific countries meet to discuss agricultural challenges facing the region. The conference theme encouraged better partnerships for sustainable agriculture, fisheries and forestry.

November 2019: National Plant Health Clinic Training took place in Samoa, in partnership with Samoa's Ministry of Agriculture and Fisheries, Land Resources Division of the Pacific Community, the University of Queensland and Fiji Ministry of Agriculture. The training was attended by 31 Samoans, including 13 women, who hold leadership roles in agriculture.

February 2020: ACIAR alumni in Papua New Guinea held their first workshop, with networking and relationship building at the heart of the two-day meeting. The alumni, made up of scholarship recipients of the John Dillon and John Allwright fellowships, gathered in Kokopo, East New Britain, to strengthen their networks, reflect and share their experiences in the agriculture research sector.

June 2020: A team of 'plant doctors' in the Pacific islands found new ways to help farmers in Fiji diagnose and treat plant disease remotely while in-person clinics are on hold. Since the onset of COVID-19, in-person clinics have been cancelled. Plant doctors are using innovative tools and specifically designed technologies (including remotely identifying plant health problems) to support farmers.

East and South-East Asia



130
ACIAR projects



9
countries



12
locally-based staff



A\$29.9 million
invested into research projects



COUNTRIES WHERE WE WORK

Cambodia | China | Indonesia | Laos | Mongolia
Myanmar Philippines | Thailand | Vietnam



46.1%
of ACIAR project
investment



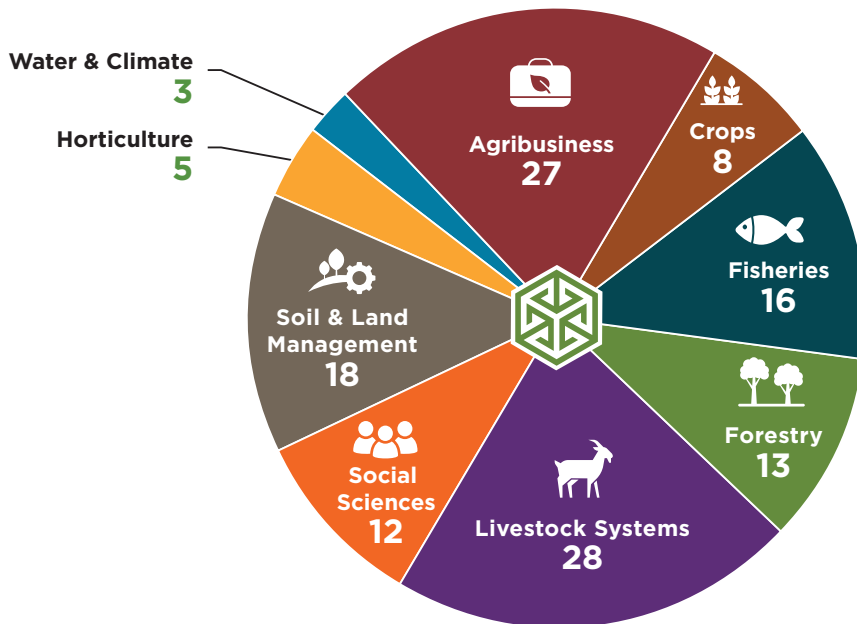
37
organisations commissioned
to lead ACIAR projects



>420
ACIAR fellowship
alumni

ACIAR partners with nine countries in our East and South-East Asia region. We have enjoyed an enduring relationship with these countries, which is largely and traditionally characterised by bilateral country research partnerships. Our work in the region is underpinned by common trends to create opportunities for greater regional cooperation and trilateral collaboration in research.

Projects by research program



Region highlights

July 2019: ACIAR signed a Memorandum of Understanding with the Indonesian Forestry Environment Research & Development Innovation Agency to improve management of natural forests and agroforestry systems.

November 2019: ACIAR signed off the new 10-year country program strategy in Cambodia. From 2019 to 2029, ACIAR and our Cambodian partners will focus research collaborations on three agricultural domains to support the development of Cambodian agriculture.

December 2019: The 2nd Annual Regional (Mekong) Alumni Workshop was held in Bangkok.

January 2020: President of the National Assembly of Laos, Pany Yathotou, and Lao Ambassador to Australia, H.E. Sisavath Inphachanh, visited ACIAR in Canberra.

February 2020: Dr Peter Horne, ACIAR General Manager for Country Partnerships, visited Vietnam and participated in the ACIAR and Vietnam health check dialogue. Dr Horne had an in-depth discussion with Vietnamese partners from the Ministry of Agriculture and Rural Development, the Ministry of Science and Technology, and the Ministry of Planning and Investment.

March 2020: The Australian Commission for International Agricultural Research visited Indonesia to strengthen cooperation with some of Indonesia's leading research institutes.

South Asia



44
ACIAR projects



5
countries



4
locally-based staff



A\$10.4 million
invested into research
projects



COUNTRIES WHERE WE WORK

Bangladesh | India | Nepal | Pakistan | Sri Lanka



16.1%
of ACIAR project
investment



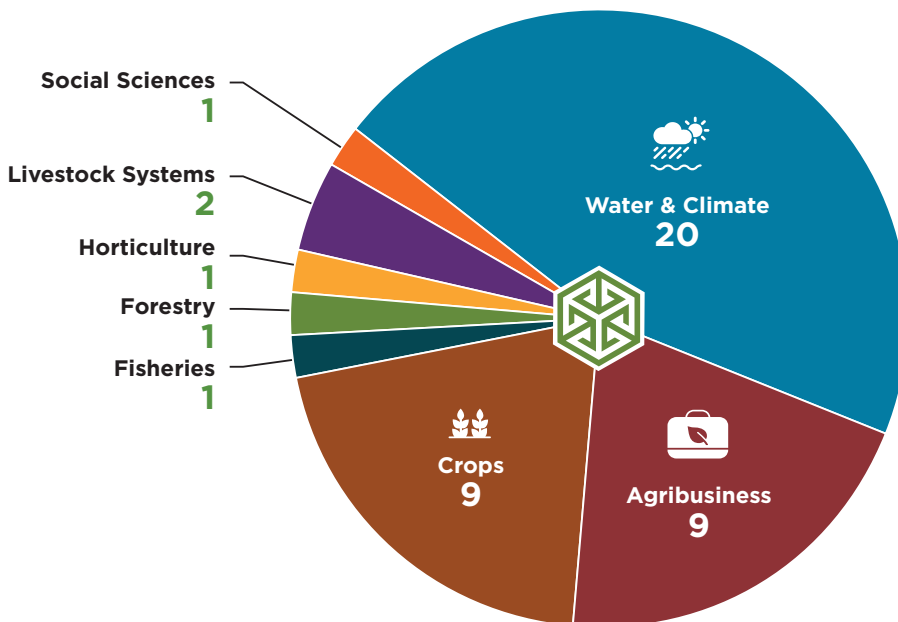
17
organisations commissioned
to lead ACIAR projects



>60
ACIAR fellowship
alumni

Our South Asia region takes in five Indian Ocean rim countries. These countries are important strategic partners for Australia, which is also an Indian Ocean rim country. The regional strategy focuses on communities, production systems and resource management that identify appropriate reform policy, increase adoption of technology, improve productivity and livelihoods in marginalised communities and improve productivity of crop, livestock, forestry and fisheries systems.

Projects by research program



Region highlights

November 2019: A final consultation meeting took place in Dhaka to complete the final stage of the ACIAR-Bangladesh Research Collaboration Strategy 2019-2028. The strategy sets the priorities for ACIAR and Bangladesh research collaborations.

November 2019: The 'Jal doot' program ('water messenger' in Hindi) was launched by the Federal Water Minister of the Government of India, Mr Gajendra Singh Shekhawat, during the 2nd International Conference on Sustainable Water Management in Pune, Maharashtra. The project will scale out research that engaged and trained local village volunteers to help monitor and understand local groundwater to help farmers make better cropping decisions.

February 2020: ACIAR CEO, Professor Andrew Campbell, visited Pakistan and signed a research project to deepen the understanding of rural transformation in China, Indonesia, Myanmar and Pakistan.

Eastern and Southern Africa



15
ACIAR projects



11
countries



2
locally-based staff



A\$7.3 million
invested into research
projects



COUNTRIES WHERE WE WORK

Burundi | Ethiopia | Kenya | Malawi | Mozambique | Rwanda
South Africa | Tanzania | Uganda | Zambia | Zimbabwe



11.2%
of ACIAR project
investment



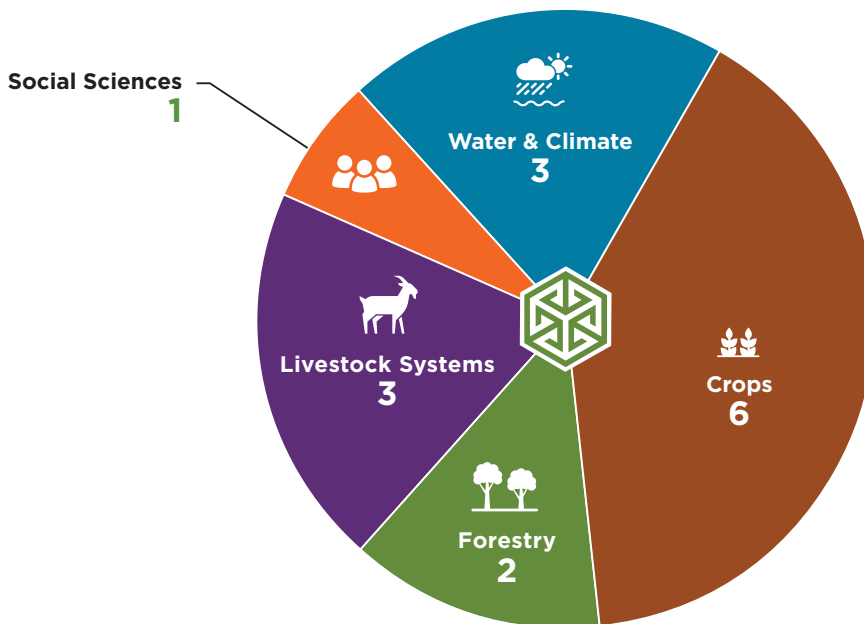
19
organisations commissioned
to lead ACIAR projects



>60
ACIAR fellowship
alumni

The ACIAR region of Eastern and Southern Africa currently takes in 11 countries where there are ACIAR-supported projects and programs. Our footprint, however, extends beyond these borders due to our association with the four CGIAR centres and many regional organisations in sub-Saharan Africa. The regional strategy focuses on promoting regional collaboration while helping create new opportunities, particularly for Africa's smallholder farmers.

Projects by research program



Region highlights

September 2019: ACIAR attended the 2019 African Green Revolution Forum in Accra, Ghana—a flagship event for African agriculture. The forum's theme was 'Grow digital: leveraging digital transformation to drive sustainable food systems in Africa'. The 'Insects for feed for poultry and fish production in Kenya and Uganda' project was among the projects showcased in a side event on making research and innovation work for women and youth in Africa held by ACIAR partner, the International Development Research Centre.

October 2019: The Australian High Commissioner to Kenya, Tanzania, Uganda and Rwanda, Ms Alison Chatres, joined ACIAR in Uganda for an end-term review of the ACIAR-funded and ICRAF-implemented 'Developing value chains innovation platforms for food security' project. The project sought to identify principles and drivers that support scalable establishment of effective and equitable innovation platforms that enhance food security through greater engagement of smallholder farmers with markets.

November 2019: The World Agroforestry team hosted the Research Program Manager, Dr Nora Devoe, and the ACIAR Africa team and project coordinators in Ethiopia, Uganda, Rwanda and Kenya for a two-day meeting on the ACIAR-funded 'Trees for food security' project. The coordinators presented their research results and challenges encountered during implementation.

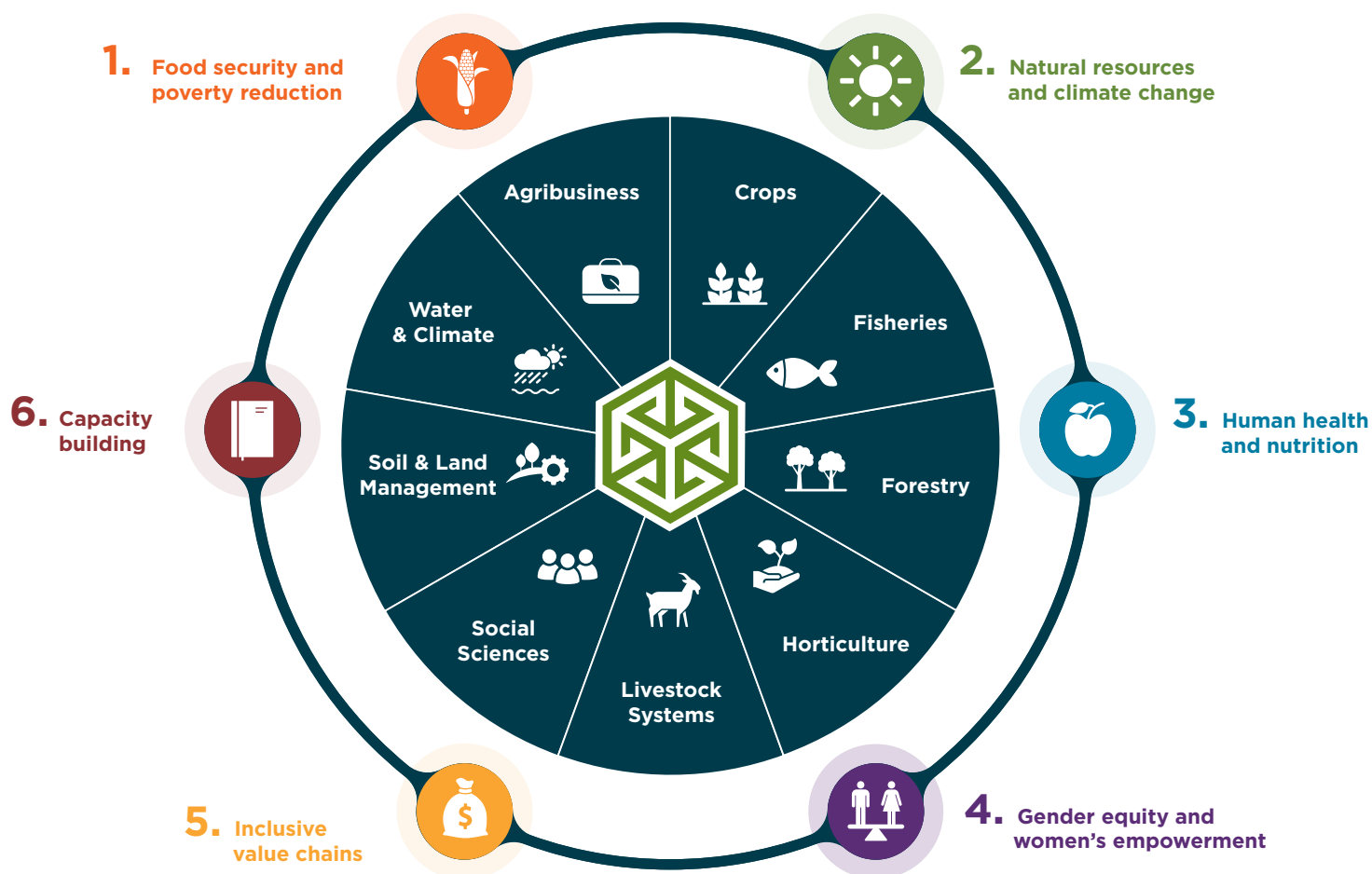
The Africa team held its second ACIAR Fellowship Alumni event via the Science Communication Series workshop, 'Stakeholder netmapping workshop for enhancing use of research outcomes'. Two alumni from the Australia Awards Africa cohort in Kenya joined 18 alumni (from both John Dillon and John Allwright fellowships) from Botswana, Ethiopia, Kenya, Malawi, South Africa and Uganda.

Our focus areas

Our work is guided by six strategic objectives, outlined in our 10-Year Strategy 2018–2027.

These objectives are more relevant and urgent than ever and reflect our work to reduce poverty and improve livelihoods through agricultural research-for-development.

While each project is managed within one of our nine research programs, it also addresses several or all strategic objectives. The following section outlines each strategic objective, its relevance and highlights for the year.



Goals for global action



In 2015, world leaders signed on to the United Nation’s Sustainable Development Goals, a set of 17 goals designed to end poverty, fight inequality and stop climate change.

Agriculture is essential for achieving these goals and is central to our vision of reducing poverty and improving livelihoods. We actively contribute to 12 of the 17 Sustainable Development Goals through our collaborative international research partnerships.



1. Food security and poverty reduction



Improving food security and reducing poverty among smallholder farmers and rural communities

Food is a basic human right. But one in 10 people—700 million people around the world—do not have enough food. Poverty and food security are intricately linked, and hunger is on the rise. Without an income or resources to grow food, more people are chronically undernourished or malnourished.

Scarcity of natural resources, increasing populations and climate change are placing huge burdens on food security. Investing in smallholder farmers is an effective way to reduce poverty, hunger and malnutrition, particularly in rural areas, where most of the world's poorest people live. We must simultaneously increase the productivity and incomes of smallholder farmers while building more sustainable and resilient food and agricultural systems.

Our work

ACIAR works throughout the Indo-Pacific region to improve food security and reduce poverty among smallholder farmers and rural communities. This contributes to our mission to improve livelihoods and make production systems more sustainable.

We partner with leading Australian research institutions to invest in programs that:

- » increase productivity, sustainability and utilisation of major crops by applying genetic and agronomic innovations to cropping systems
- » develop appropriate technologies and policy recommendations to support productive aquatic farming systems and sustainable fisheries
- » develop more productive, profitable and sustainable livestock systems, including breeding and raising healthy animals
- » improve the productivity, profitability and sustainability of fruit, vegetable, ornamental and beverage crop production in low- and middle-income countries
- » improve production practices to minimise pre- and post-harvest loss
- » adapt soil, water and nutrient management, and other agronomic interventions, to local conditions
- » contribute to income and food security by assisting smallholder farmers to generate saleable timber, fruit, nuts and other forest products in agroforestry systems and smallholder woodlots.

Highlights

Flagship project culminates in increased food security

Eastern and Southern Africa | Crops | International Maize and Wheat Improvement Center

One of our flagship projects—the Sustainable Intensification of Maize–Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA)—concluded in October 2019. This ambitious project sought to help create more productive, resilient, profitable and sustainable maize–legume farming systems across seven African countries. Over the nine years of the project, an estimated 484,000 farmers adopted reduced tillage, cutting their time spent in manual labour by half while increasing farm labour productivity, food production and household income. The project resulted in the release of 40 new maize and 64 new legume varieties, the establishment of 58 agricultural innovation platforms and 57 policy briefs. At the farm level, the impact of adoption rates of at least two conservation agriculture practices could lead to yield increases of 4–6% per year across the region, compared to recently reported increases in Australian crop productivity of about 1.2%.

ACIAR expertise on the frontline fighting African swine fever

Timor-Leste | Livestock Systems | University of Queensland

African swine fever has been spreading steadily throughout Asia, seriously affecting economies and global pig production and meat supply. The recent discovery of the virus in Timor-Leste has caused significant concern for Australia. ACIAR-funded researchers have been present and active on the ground since the outbreak was first reported in Timor-Leste in September 2019. Our research teams have been working directly with the Timor-Leste Chief Veterinary Officer and Australian Department of Agriculture veterinarians to support the initial outbreak investigation and provided research findings to highlight the potentially devastating economic impact of African swine fever on Timor-Leste.

Improving income of smallholder sandalwood

Vanuatu | Forestry | University of Western Australia

ACIAR has supported sandalwood research in Vanuatu for more than 15 years. A 2020 assessment of the impact of this work found a clear, positive and enduring impact on institutional capacity and smallholder capacity. The economic impact for smallholder farmers is expected to be positive, with sector-wide returns of A\$3.8 million from mature trees at harvest, reflecting a benefit : cost ratio of 5.7 : 1 from our investment. Social analysis of the policy context identified that future policies will play a critical role in maximising returns to smallholders. This relates to the transparency of prices and alternative policy systems that allow for public auctioning of heartwood.





Enhancing tropical fruit industries in the Pacific

Fiji | Horticulture | University of Sunshine Coast

Two ACIAR projects have delivered benefits to tropical fruit industries in Fiji. New research is helping fruit trees quickly regain productivity following tree damage after cyclones. Preliminary research on breadfruit trees—one of the most important Pacific staple food crops—in Fiji has shown that applying the plant hormone paclobutrazol has an immediate and positive impact in tree recovery and fruiting. A major study of post-harvest mango diseases in Fiji has reduced fruit losses by up to 95%. The study identified six new pathogens never previously reported in Fiji, and a simple hot water fruit treatment of 55°C for 5 minutes has been successfully developed and tested, helping farmers improve fruit quality and reduce loss.

Tackling cassava diseases

Vietnam, Lao, Cambodia, Myanmar, Thailand and China | Agribusiness | International Center for Tropical Agriculture

A new project developed management solutions for farmers across South-East Asia who are battling cassava diseases. Cassava is an important cash crop in the region and a staple food of millions of people. This project addresses two disease threats—cassava mosaic disease and cassava witches' broom disease—that could devastate this multibillion-dollar industry. The project is taking a multipronged approach involving breeding, surveillance, agronomy and seed system interventions, coupled with engagement with government institutions and agribusiness. It highlights deep collaboration between six countries and has successfully progressed during COVID-19 due to the quality and organisation of in-country teams in multiple countries.



A woman with braided hair, wearing a light-colored shirt and shorts, is cooking fish in a black frying pan. The pan is placed over a fire made of sticks and wood, which is burning brightly. The woman is using a wooden stick to turn the fish. The background shows a rustic structure made of bamboo and wood, with various items like a blue plate and a white container visible. The ground is dirt and covered with some leaves and debris.

Since the community implemented the management plan, it has reported seeing a greater variety of fish species and more fish overall in the reef inshore area.



CASE STUDY

Empowering communities is the key to food and job security



The sustainable supply of fish to feed the Pacific region's growing population is in doubt. Researchers predict that, unless resources are better managed, the region will experience a significant food gap over the coming decades.

A research team led by Professor Neil Andrew from the Australian National Centre for Ocean Resources and Security at the University of Wollongong is developing a community-led approach to improve coastal fisheries management and tackle food insecurity in the Pacific region.

Inshore fisheries—those closer to shore—are typically used by local communities as a source of income and food in Pacific island countries, including Kiribati, Solomon Islands and Vanuatu.

However, fast-growing populations and unsustainable fishing practices are reducing the availability of fish and putting pressure on the long-term health and viability of these fisheries.

ACIAR and the Department of Foreign Affairs and Trade (DFAT) are co-funding a research team to work across the three countries to facilitate a process that supports community-based fisheries management to tackle these challenges.

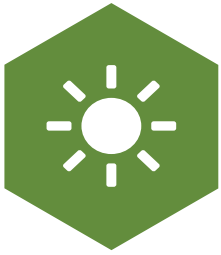
So far, more than 100 communities have engaged with the project, with the long-term aim of setting their own fisheries management goals and rallying resources to meet them.

In Vanuatu, Pita Neihapi, a community-based resource management officer for the Pacific Community, is supporting 31 communities in community-based fisheries management.

In the Maskelyne Islands, three communities wanted to have a management plan. One of these previously managed a large outer reef, but not the inshore area. '[This community] wanted to have a management plan because an agreed management plan would help them to better manage the resources,' said Mr Neihapi. 'They said it would be something that was not from the chief but was a community initiative with community input.'

In its management plan, the community also identified taboo areas where fishing was not allowed, except to satisfy an urgent community need—and then, only with approval. 'In accessing those taboo areas, they use the management plans. Their fishers are not allowed to use certain nets. They have to use what was in the management plan,' said Mr Neihapi.

Mr Neihapi said that, since the community implemented the management plan, it has reported seeing a greater variety of fish species and more fish overall in the reef inshore area. He said people were very happy with both the plan and the increased number of fish they have observed as a direct result.



2. Natural resources and climate change



Managing natural resources and producing food more sustainably, adapting to climate variability and mitigating climate change

Degradation of natural resources, climate change and extreme weather events threaten our ability to ensure global food security, eradicate poverty and achieve sustainable development.

The hardest hit are the rural poor, who mostly depend on agriculture, fish or forests for their livelihoods in the context of increasing scarcity and competition for natural resources.

Effectively managing these resources—including land, forests, vegetation, water and energy—requires a coordinated approach with local communities to slow down, stop and ultimately reverse natural resource degradation to secure sustainable agricultural production and protect these unique assets for future generations.

Our work

ACIAR is committed to investing in projects that tackle climate impacts on agriculture and encourage sustainable use and management of natural resources, including rehabilitation of soils, forests, landscapes and waterways. Across the Indo-Pacific region, we strive to improve livelihoods through sustainable intensification of farming systems, develop innovative transformational adaptation responses for smallholder farmers and build institutional capacity to understand and implement practical emission-reduction activities. During 2019–20, we started planning a new research program to assess agriculture's contribution to climate change, and identify opportunities to reduce greenhouse gas emissions from the agriculture, fisheries and forestry sectors in our region.

We partner with leading Australian research institutions to invest in programs that:

- » support low- and middle-income countries to tackle climate impacts in agriculture, in line with their national plans and strategies
- » promote natural resource conservation and rehabilitation through scientific support for the establishment, management and sustainable use of forests, soils and waterways
- » address the challenges of efficient, sustainable water use to support agricultural production
- » identify and provide realistic options to deliver meaningful emissions reductions in agriculture
- » improve access to, and outcomes from, irrigation and sustainable use of groundwater in agriculture
- » develop innovative transformational adaptation responses that increase resilience of smallholder farmers
- » build linkages between Australia and developing countries to better adapt to changing climates, and to understand, measure and mitigate emissions
- » strengthen Australia's own agricultural climate change capabilities through trialling innovative approaches.

Highlights

ACIAR raises profile through global climate collaboration

Global

Professor Andrew Campbell was confirmed as Vice-Chair of the Global Research Alliance on Agricultural Greenhouse Gases (GRA) on 6 October 2019. This will be followed by a one-year term as GRA Council Chair beginning in March 2021, taking a leadership role in agricultural and climate change research. This alliance of 64 member countries and more than 20 partner organisations was initiated in 2009 and Australia has been involved from the outset. The GRA works to create an enabling environment for research collaboration on the most promising ways to reduce agricultural emissions, for example, from ruminants and cropping systems. Leading Australian researchers in these areas have played important roles in the GRA, often supported by ACIAR. To mark the beginning of Professor Campbell's tenure as chair, Australia will host the GRA annual council meeting in March 2021.

Australian app game changer for Pakistani farmers

Pakistan | Water and Climate | Charles Sturt University

'Apna paani' ('our water' in Urdu) is a new app that assists Pakistani farmers who are challenged by declining groundwater levels. Pakistan is one of the most water-stressed countries in the world. The app has tools to improve groundwater management by Pakistani farmers. It allows them to better monitor and report on the quality and quantity of groundwater. Farmers input water data, including water usage and consumption. The app provides overall water details to each farmer in the area who has the app. It also provides farmers with soil data, to help them determine the best farming practice in relation to the soil content.

Helping Tonga recover from Tropical Cyclone Harold

Tonga | Social Sciences | University of Western Australia

Tropical Cyclone Harold hit Tonga in April 2020, causing significant damage to food crops and critical infrastructure, including water supplies. The destruction caused by the Category 5 cyclone is estimated to cost more than US\$111 million. ACIAR is providing additional support to help the small island nation recover its agrifood systems and prepare for future natural disasters, with a focus on climate resilience. This includes providing high-resolution imagery to identify priority areas for recovery, developing an interactive web map to visualise satellite images, and new refrigerated seed storage to replenish seed supplies to farmers. Additionally, 657 citrus trees and elite citrus root stock have been imported into Tonga to help rebuild domestic fruit production as part of an ACIAR project.





Changing crops reduces erosion without changing practices

South Asia | Soil and Land Management | University of Queensland

Landscapes in Vietnam and Laos are changing, and soil erosion is decreasing through adopting new crops without changing cultivation practices. An ACIAR-funded project is working with farmers and agricultural commodity traders to introduce strategies to improve soil health and reduce soil erosion. In 2016, most of the farms were growing corn; today, many fields have been converted to fruit tree orchards. An ACIAR-funded project identified that using ricebean as an intercrop with maize and as a cover crop under fruit trees was effective at reducing erosion and stabilising soil without the need for additional cultivation practices.

Australia and China combine knowledge on climate action

China | Livestock Systems | Charles Sturt University

Scientists from Australia and China have continued a long-running agricultural research partnership, publishing new findings that will help safeguard one of the world's largest ecosystems. The vast grasslands of China cover approximately 400 million hectares and support the livelihoods of 16 million herders and their low-income pastoral households. However, more than 90% of these grasslands are now overgrazed and considered degraded. The latest research has demonstrated, at a significant scale, that herders can halve their stocking rates while maintaining or increasing their income by up to 60%. This is being used to help target China's investments of \$2 billion a year, focusing on poverty alleviation and improved grassland management.





A new forestry innovation is helping curb illegal timber smuggling by assisting farmers and forest owners to protect and restore this vital natural resource.



CASE STUDY

Tracking tree DNA to protect the world's forests



A new forestry innovation is helping curb illegal timber smuggling by assisting farmers and forest owners to protect and restore this vital natural resource.

ACIAR research has successfully developed cost-effective DNA tests for one of the most valuable timbers in the world: teak. This is helping authorities thwart the illegal trade in timber from South-East Asia and the Pacific region by ensuring teak comes from legal sources. This important work is vital for the long-term sustainability of teak production and improve environmental outcomes.

Across the project, more than 1,600 samples were collected from the natural and planted range of teak in South-East Asia and the Pacific islands. Samples sent to the University of Adelaide were used to develop a DNA reference map of genetic variation for the valued species.

Project leader, Professor Andrew Lowe from the University of Adelaide, said the DNA tracking will help to reduce the A\$42.8 billion illicit trade of teak.

Teak is one of the most commercially important timbers in the world. It is durable and water-resistant, and is used for boats, buildings, veneer, carving, turnings and furniture. Illegally logged timber products, including teak, can enter markets through mixing legitimate supply chains and associated document fraud.

In Indonesia, the project used DNA to trace teak timber along a large plantation supply chain from the Perhutani Forest Management Unit at Cepu. 'We trialled two methods that worked for large-scale industrial state-owned plantations in Indonesia—the first to check that logs at different points in the supply chain came from the same tree, which proved 90% accurate,' Professor Lowe said.

'The second tested whether logs matched the genetic profile of their source plantation. This was 100% accurate, and that's what we recommend for large-scale and smallholder plantations.'

DNA tracking has previously been used in the USA to successfully prosecute the illegal trade in bigleaf maple. It is hoped this teak DNA map will be used in the same way to abolish illegally traded teak, support a sustainable teak supply chain and deliver better environmental outcomes.



3. Human health and nutrition



Enhancing human nutrition and reducing risks to human health

The global health emergency caused by the COVID-19 pandemic has had a devastating impact on people across the world. It has never been more important to focus on human health and the food system to address factors that limit access to nutritious foods.

Emerging zoonotic diseases threaten human and animal health, economic development and the environment. In addition, a range of plant and animal diseases and plant pests continue to threaten food security. Many countries also face the 'triple burden' of malnutrition: the coexistence of food insecurity, micronutrient deficiency and obesity and associated diseases such as diabetes and heart disease.

Our work

ACIAR supports partner countries to not only increase agricultural production but also focus on better nutritional outcomes and address risks to human health through diseases linked to livestock, agrichemical use and food safety issues. In 2019, we strengthened our technical expertise by recruiting a Nutrition-Sensitive Agriculture Advisor to provide nutrition and food security advice, develop key products on nutrition-sensitive agriculture in the Indo-Pacific region, and work towards achieving more sustainable food systems for healthier and more nutritious diets.

We partner with leading Australian research institutions to invest in programs that:

- » respond to emerging pest and disease threats in the Indo-Pacific region
- » address the linkages between food security, human health and the environment through a One Health approach
- » explore social, ecological and systems-based drivers and mechanisms for improved disease control
- » examine the entire supply chain to deliver safe and nutritious food that is necessary for human health
- » enhance surveillance and diagnoses of zoonotic diseases and antimicrobial resistance to reduce their impact
- » research the contributions of food systems to human nutrition, health and wellbeing and making food system policies nutrition-sensitive
- » enhance biosecurity and quality control in farm production
- » minimise risks to human health from diseases linked to livestock, agrichemical use and food safety issues.

Highlights

One Health: guarding against the next pandemic

South-East Asia and Pacific regions | Livestock Systems | Department of Foreign Affairs and Trade

ACIAR launched a new regional One Health research program to help address the growing rate of zoonotic diseases across South-East Asia and the Pacific region. The three-year, A\$10.2 million program is co-funded with DFAT's Indo-Pacific Centre for Health Security. It brings together leading Australian researchers and regional counterparts to address issues at the critical interface between people, animals and the environment. The research will address zoonotic malaria in Indonesia, antimicrobial resistance in Fiji, extrapulmonary tuberculosis and zoonotic arboviruses in Papua New Guinea, and highly pathogenic avian influenza policies and implementation in Cambodia, Laos PDR and Vietnam.

Enhancing nutrition through COVID-19

Uganda | Fisheries | Cultivating Africa's Future

During the COVID-19 pandemic, innovations to improve nutrition security have become more urgent. ACIAR is investing in the NutriFish project to harness the nutrients of underused fish-based products to address nutritional deficiencies in Uganda's poor communities. In response to COVID-19, the project fast-tracked the development of a maize flour enriched with nutritious silver fish and amaranth seeds. More than 2.5 tonnes of the flour was distributed to breastfeeding mothers, reducing the incidence of micronutrient deficiencies in children under five years of age.





Tackling diabetes one meal at a time

Fiji | Horticulture | Central Queensland University

Fiji's population suffers the highest rates of diabetes in the world. Unhealthy diets, lifestyles and environment are key risk factors that contribute to this burden of malnutrition. In rural households that sell vegetables for income, fresh food consumption is worryingly low, despite these communities being directly involved in food production. ACIAR is collaborating to encourage a return to traditional food production and consumption by delivering workshops that tackle diabetes and cardiovascular disease in farming villages. These workshops educate local farmers on how to avoid common but preventable diseases by including a wide range of fruits and vegetables grown on the farm into their daily household diet.

SafePORK program improves food safety

Vietnam | Livestock Systems | International Livestock Research Institute

Pork is the most popular source of meat in Vietnam, but one in five people become sick every year due to pork-borne salmonella. ACIAR is supporting research to improve food safety in wet markets and safeguard livelihoods across the pork sector. The SafePORK project has developed a Food Safety Performance Tool to better inform interventions at critical control points, including inexpensive tests to detect foodborne pathogens and training for traders in the wet markets. The tool will ensure a consistent approach to risk assessments in wet and informal market systems and is relevant across east Asia.

Promoting better health and nutrition for women and children

Eastern Africa | Crops | University of Western Australia

A new project was launched in December 2019 to improve common bean varieties that have shorter cooking times and provide higher protein and increased micronutrients (such as iron and zinc). These bean varieties will promote better health and nutrition for women and children in Burundi, Ethiopia, Kenya, Rwanda, Tanzania and Uganda. The project will apply innovative rapid methods of variety selection that have never been applied to bean breeding before. Through the collaborative research between scientists in Australia and eastern Africa, the project aims to reduce the cooking time of common beans by at least 30%.



Helping Fiji sustainably manage the growing threat of antimicrobial resistance in its hospitals, farms, local communities, waterways and environment.





CASE STUDY

Research for One Health system strengthening



Fiji has led the Pacific island nations in embracing a One Health approach to the emerging problem of diseases that are resistant to standard antimicrobial drugs. Fiji is now partnering with Australia to put its antimicrobial action plan into practice.

Dr Walter Okelo, a CSIRO researcher, is leading the project, which aims to help Fiji sustainably manage the growing threat of antimicrobial resistance (AMR) in its hospitals, farms, local communities, waterways and environment.

One of the first tasks for Dr Okelo's team is to address the lack of reliable baseline surveillance data on AMR and antimicrobial use in Fiji.

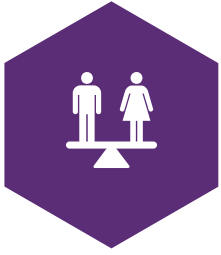
'At the moment, no-one knows the magnitude of the problem because there is little research that has been done to date,' said Dr Okelo. 'What we're trying to do is rebalance things—push the animal health and environment side along fairly quickly so they are on a par with the human health side in terms of disease detection and response.'

The team is working with researchers at the Fiji National University and the University of the South Pacific to build local capacity in both diagnostics and the collection and analysis of AMR data. This will allow researchers to better map AMR hotspots, determine how AMR spreads and its economic impact, and predict where and when outbreaks might occur.

Eventually, this information will help Fiji's policymakers prepare for future outbreaks—for example, by educating doctors and pharmacists to take a more considered 'antimicrobial stewardship' approach to prescribing antibiotics or by educating the community to use antibiotics more judiciously in livestock production systems.

This co-funded ACIAR and DFAT project will involve some innovative research, including partnering with Australian-based XING Technologies to develop bioengineering and nanotechnology laboratory diagnostic tools to boost Fiji's diagnostic and testing capacity.

It will also help fill gaps in the implementation of Fiji's One Health action plan, enabling the agricultural and environmental systems to catch up with the human health system.



4. Gender equity and women's empowerment



Improving gender equity and empowerment of women and girls

Women and men play a central role in the farming, food and health, and natural resource management systems of low- and medium-income countries. However, women's contributions are often undervalued or unrecognised—and they are often disproportionately affected by poverty.

Gender equality is crucial to alleviating poverty in rural communities. In developing countries, women do much of the manual labour on farms, as well as domestic duties. ACIAR recognises the untapped potential for improved production, income and family nutrition that occurs when women play a more visible and equal role in agricultural decision-making.

If women had equal access to resources, their farms would be more productive and they would be able to feed more hungry people. When women earn an income, they invest in their families, who then become healthier and more educated, which in turn leads to greater prosperity for their communities.

Our work

ACIAR projects change women's lives by helping them to realise their potential and make their farms more sustainable, productive and profitable, to the benefit of all. We are working to redress gender imbalance by supporting projects that are designed to be equitable, inclusive and empowering.

We work with all our project partners to:

- » mainstream gender equity and women's empowerment into the research portfolio, incorporating principles of gender equity in project design
- » ensure research is undertaken in a way that advances gender equity and empowers women
- » create more equal systems of access and recognition of women's agency, decision-making and participation
- » deliver outreach and capacity-building activities to ensure equitable access to opportunities for women
- » identify opportunities for gender equity impact and transformation for women's empowerment
- » boost women's influence in setting the agendas for research.

Highlights

Raising the status of women and girls

Global | Impact and Evaluation

To reflect the emphasis that ACIAR, and the Australian aid program more broadly, gives to improving the status of women and girls through our activities, ACIAR tracks and reports on how consistently our projects contribute to improved gender equity. In 2019–20, 83% of concluded project reviews were rated as ‘good’ or ‘above’ in relation to making a positive contribution to gender equity. This places ACIAR ahead of the aspirational threshold of 80% established across the Australian aid program.

New fellowship supports women in agricultural research

Cambodia, Fiji, Indonesia, Laos, Papua New Guinea and Vietnam | Capacity Building | University of New England

The Meryl Williams Fellowship, which targets women in research leadership, was launched in February 2020 in Sydney. Dr Meryl Williams attended the launch and met the inaugural cohort of 20 Fellows from Fiji, Papua New Guinea, Laos, Cambodia, Indonesia and Vietnam. The Meryl Williams Fellowship is a key initiative in the ACIAR Gender Policy and Strategy (alongside the Bill and Melinda Gates Foundation and the Canadian International Development Research Centre, in particular), complementing our leadership in boosting gender research support across CGIAR. It is delivered by the University of New England in partnership with Coffey (International Development). It aims to help more women achieve and succeed in positions of leadership in international agricultural research by strengthening their leadership skills, confidence and networks.

Integrating local expertise and gender responsiveness

Uganda and Kenya | Livestock Systems | International Centre of Insect Physiology and Ecology

Limitations on travel during COVID-19 prompted some research teams to train local community resource people to help them reach out to smallholder farmers, particularly women. The ‘Insect for Feed’ project in Uganda and Kenya used the Project-level Women’s Empowerment in Agriculture Index, a survey-based index for measuring empowerment, agency and inclusion of women in the agriculture sector. The researchers found that the pandemic had put wives (when compared to women heads of households and husbands) at a greater disadvantage in accessing resources for their insect feed businesses because of their limited access to training in insect farming. The research team is using the findings to respond to the needs of these women and ensure their participation.





Women gain financial independence through household gardens

Indonesia | Soil and Land Management | NSW Department of Primary Industries

A 16-year presence in Indonesia demonstrates the value of playing the long game to build trust and focus on working with women. An ACIAR project enjoyed great success in changing soil management practices by engaging with women farmers in Aceh. The project helped to introduce dry season crops and improve fertiliser management in these systems, resulting in improved livelihoods for farming families. Vegetable production in household gardens managed by women increased household income by A\$402 to A\$2,000 per year. A total of 725 women were supported in the project to develop a home garden, with some of these women gaining financial independence as a result and some creating businesses out of the production.

Empowering women smallholder farmers

Papua New Guinea | Social Sciences | University of Canberra

Previous ACIAR research found that a whole-of-family approach to farming leads to improved livelihoods. Building on this research, 'family farm team' activities have been scaled out into five provinces with a focus on working towards a gender equitable and planned approach to farming as a small family business. A total of 266 farmers (165 women and 101 men) trained as village community educators. These educators then trained another 1,622 women and 869 men. A further 45 women and 53 men were trained as family farm team trainers with support from Australia's Pacific Women Shaping Pacific Development and Pacific Governance Facility. The research has found a marked improvement in gender equity and increased recognition of the role of women in farming.





Women farmers said rice seedling cultivation is contributing an additional INR 10,000-12,000 (\$200-250) per month to their incomes.



CASE STUDY

Empowering rural women to power agriculture



An ACIAR collaboration has a strong emphasis on meaningfully engaging female farmers in South Asia, enabling them to thrive in the face of climate and economic change.

The Eastern Gangetic Plains region of Bangladesh, India and Nepal is home to the greatest concentration of rural poor in the world. More than 90 million people depend on agriculture for food security and livelihoods.

Since 2014, the Sustainable and Resilient Farming Systems Intensification (SRFSI) project has aimed to make smallholder agriculture more productive, profitable and sustainable. It targets the poorest and most vulnerable, particularly women and girls.

Women farmers are specifically targeted in the scaling project. It is intended that a third of participants will be women and that at least 25% of the households involved will be led by women. Priorities include crop diversification and rotation, reduced tillage using machinery, efficient water management practices and integrated weed management practices.

Mooni Bibi is one of the women benefiting from this important work. She lives in the village of Hawragari in the Cooch Behar district of West Bengal. For most of her life, she has worked as a farm labourer.

In the past few years, Mooni Bibi and other women from her community formed the Mukta Self Help Group. Through the SRFSI project, they were introduced to the new business opportunity of producing rice seedlings for use in mechanical rice transplanters.

Women farmers said rice seedling cultivation is contributing an additional INR 10,000–12,000 (\$200–250) per month to their incomes, bringing improved health, education and livelihood benefits at the household level and improved social standing within the community.

‘We are keeping some of the money we are earning from this rice seedling business, and some of it we put in the bank. We are feeling great to be doing this together. We work as a unit,’ said Mooni Bibi. SRFSI is a collaborative venture with the International Maize and Wheat Improvement Center, with more than 20 partners representing the research, development and educational sectors. These partners are key to reaching large numbers of farmers, especially women, and promoting an inclusive and equitable approach to sustainable agricultural production techniques.

This partnership has supported more 70,000 farmers in West Bengal to use conservation agriculture-based sustainable intensification technologies.

Our work, funded through DFAT’s Sustainable Development Investment Portfolio, is contributing to much-needed changes to the agriculture sector.



5. Inclusive value chains



Fostering more inclusive agrifood and forestry market chains, engaging the private sector where possible

Value chains have the power to transform livelihoods of some of the world's poorest and most vulnerable people. Millions of people in the developing world work as smallholders—producers, labourers, traders, processors, retailers or consumers in agricultural value chains—yet they are the most disadvantaged in market systems.

Unlocking the potential for people to participate equitably in markets and benefit from the opportunities provided by business is a proven way to create employment, improve business outcomes for smallholders and communities and increase economic security in developing countries.

ACIAR creates partnerships to increase the efficiency of supply chains, improve food safety and reduce food losses, and promote inclusive value chains that are profitable for everyone involved. We use best practices in agriculture production, supply-chain management and market-based solutions to build value through supply chains.

Our work

We work with business to create and strengthen complex agrifood value chains—from the farmers who produce goods to the markets where they are sold and the customers who buy them.

We work with a range of partners and engage with the private sector to:

- » connect smallholder farmers to business opportunities, increase access to markets and make value chains more inclusive and effective
- » build communications and management skills of people along the value chain, equipping them with appropriate economic tools to build business partnerships
- » research all points along value chains, including inputs, production and harvest, and post-harvest activities of packaging, transport and storage, processing, marketing and sales
- » address biosecurity, farm production management, quality control and compliance with market and government regulations
- » identify opportunities for smallholders to adopt new technologies, making agriculture competitive and sustainable
- » understand factors that influence market development, regulations, policies and institutions that influence production, investment and infrastructure.

Highlights

Pakistan policymakers drive policy reforms with ACIAR evidence

Pakistan | Agribusiness | Monash University

An ACIAR project in Pakistan has provided evidence for policymakers to drive much-needed reform to marketing of fresh produce. Despite being a major world horticultural producer, government regulation dictated that farmers could only sell produce at agricultural produce markets. There was considerable appetite for reform, and a growing understanding that this outmoded marketing model was holding Pakistan's horticultural industry back. The project took a multipronged approach to provide empirical evidence to support policymakers. The federal government has been receptive, and in July the Prime Minister announced a PKR309 billion national agricultural 'emergency' program, including a PKR23.6 billion (A\$223 million) scheme to transform Punjab's agricultural produce markets.

Innovative platforms sweeten milk and honey value chains

Uganda | Forestry | World Agroforestry Centre

A project in Uganda is empowering smallholder dairy and honey farmers to control their own community development by unlocking the potential of agricultural supply chains. By coming together agricultural innovation platforms, farmers are using their collective knowledge and scale to develop their milk and honey products and access high-value markets. Additionally, capacity-building activities, including training, are helping farmers from the Mount Elgon region improve their management of bees and dairy cows to increase production of honey and milk.





Strengthening coordination of the temperate fruit industry

Vietnam | Agribusiness | University of Queensland

The 'Temperate fruits' project has established a multiparty industry association in Vietnam that has been given the opportunity to manage industry planning, instead of government. Together with important temperate fruit actors, the project team studied examples of existing associations in Vietnam and Australia and explored different governance structures, business models and communication mechanisms for an industry association to function and deliver benefit to its stakeholders. This project has also resulted in the importation of licensed varieties from Australia to upgrade and diversify the retail offer and provide improved productivity and profits for growers.

Markets for high-value beef

South Africa | Livestock Systems | University of New England

Red meat consumption in South Africa has increased by about 20% since the early 1990s and is projected to increase by a further 20% by 2023. To meet this demand, an ACIAR-funded project has been improving the profitability of smallholder cattle farmers by developing cost-effective and environmentally sustainable value chains that supply cattle to meet the specifications of high-value free-range beef markets. This outcome will improve the profitability and productivity of smallholder farmer businesses through higher prices for cattle and improved on-farm production systems that increase animal performance and supply of cattle.



A woman with dark hair, wearing a blue and white plaid shirt over a light green t-shirt and a purple and pink striped sarong, stands smiling next to two blue plastic crates filled with oranges. The background shows a rural landscape with green hills and trees. The text is positioned in the upper right quadrant of the image.

Farmers can gain even higher prices in the future due to their involvement in the project and the Myanmar GAP accreditation.



CASE STUDY

New safe vegetable supply chain in Myanmar



Farmers in Myanmar are accessing a new path to market for their vegetables via an accreditation program to help them sell into high-value modern retail markets in the country's largest city.

The supply of vegetables to distant urban markets is a major barrier for many smallholder farmers. City consumers demand a high level of food safety that often precludes many small operators, who opt instead to sell locally for less economic return.

Myanmar farmer U Sar Saw Myint and his wife traditionally sell their ripe tomatoes and capsicums in local markets around the fertile shores of Inle Lake (Nyaung Shwe). In May 2020, the couple teamed up with five farmers from Taung Boet Gyi village to pack 2,000 kg of ripe tomatoes into boxes and truck them 600 km to Yangon city, where they sold the produce for 34 cents/kg—triple the usual price at home.

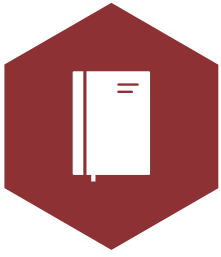
The vegetables have been grown in accordance with Good Agricultural Practice (GAP) protocols, ensuring crops are grown and handled to safety standards and in a way that excludes foodborne diseases and pathogens.

The milestone is part of a wider effort across Myanmar and Vietnam to help farmers achieve the highest possible return for their produce. This is a major factor in further reducing poverty across the region.

The project's leader, Dr Gordon Rogers, said farmers can gain even higher prices in the future due to their involvement in the project and the Myanmar GAP accreditation.

'There is great potential for farmers to negotiate even higher prices because tomatoes delivered to the Yangon wholesale markets can reach \$1.30/kg at this time of year,' said Dr Rogers.

'The farmers who produced the tomatoes are certified Myanmar GAP suppliers. This means they use the best agricultural practices to grow and handle their crops and test them to ensure they do not contain toxic pesticide residues and are safe to eat. In addition to tomatoes, the Taunbogyi village farmers are also producing sweet pepper, which is similar to capsicum, and two farmer groups in the neighbouring village of Pindaya already grow cabbage, cauliflowers, snow peas and other crops and are certified suppliers under the Myanmar GAP program.'



6. Capacity building



Building scientific and policy capability within our partner countries

Innovation in the agriculture sector is a key pathway to poverty reduction, increased food security and broad-based economic growth. Building the capacity of agricultural researchers, their networks and institutions unlocks this innovation potential and supports countries to deploy contextually relevant, effective and agricultural practices and policies that reduce poverty.

Strengthening the capacity of individuals and institutions in developing countries is central to empowering communities to develop, implement and sustain their own solutions. Capacity building is much more than merely transferring skills and knowledge through training. It includes on-the-job training, leadership, mentoring, two-way transfers of ideas and technologies, and empowerment to undertake research. It is not a one-time effort to improve short-term effectiveness, but a continuous improvement strategy towards the creation of sustainable and effective development outcomes.

Our work

Capacity building is at the core of everything we do. Our goal is to ensure that the people we work with have the skills, resources and knowledge to sustain new initiatives, systems and approaches, both now and in the future, ensuring that our efforts lead to lasting change.

We deliver a range of innovative capacity-building approaches, focused at multiple levels for effective international agricultural research-for-development. Our approach includes both formal and project-based capacity building.

We work with our partners to:

- » facilitate formal programs in scientific research, leadership, management, policy and governance
- » deliver tailored capacity-building approaches to on-the-job training, leadership, mentoring, two-way transfers of ideas and technologies, and empowerment to undertake research
- » foster a strong alumni program, working closely with past fellows to support ongoing collaborative capacity building
- » ensure all capacity-building approaches are gender-aware and work towards gender equity
- » tailor approaches at individual, organisational and institutional levels, ensuring our approaches are intertwined with our ongoing technical work.

Formal capacity-building programs

- » Meryl Williams Fellowship: enhancing the skills and career prospects for women in agricultural science
- » John Allwright Fellowship Program: providing formal postgraduate training
- » John Dillon Fellowship Program: providing leadership and management training for career development
- » Pacific Scholarship Program: supporting emerging agricultural scientists through scholarships at Fiji National University and the University of the South Pacific
- » The Crawford Fund: delivering training and links with Australian-based networks, master classes and an annual conference at Parliament House
- » Researchers in Agriculture for International Development network: supporting early-career Australian researchers to engage with agricultural research-for-development
- » ACIAR Alumni program: supporting a diverse and dynamic network of agricultural researchers throughout the Indo-Pacific

Highlights

Capacity-building project builds on strengths of 10-year program

Pacific region | Capacity Building | University of the South Pacific

Since 2008, the ACIAR–University of the South Pacific (USP) Postgraduate Scholarship Scheme has supported students from seven Pacific island countries to complete postgraduate diplomas, masters degrees or PhDs in a range of agricultural fields. A recent 10-year review of the scheme showed it has granted scholarships to 91 awardees engaged in 121 courses. Of these, 108 courses have been completed, reflecting high completion rates for postgraduate diplomas (93%), masters degrees (94%) and PhD qualifications (80%). This is a significant improvement on completion rate of less than 59% in 2011–12, which prompted ACIAR to invest more in pastoral care and mentoring. These are exceptionally good results, given that in 2016 the general completion rate for PhDs at USP was around 10%, while completion rates for masters degrees was around 15%.

Plant biosecurity Fellows secure leading roles

Pacific region | Capacity Building

An ACIAR-funded project is strengthening the capacity of plant biosecurity officials in the Pacific region. Fellows are taking knowledge gained from placements in Australia back to their home countries, and they have been provided opportunities in leading roles for high priority tasks within their National Plant Protection Offices and governments. For example, a fellow in Vanuatu is leading the operational response to the recent coconut rhinoceros beetle outbreak, and another fellow is playing a key role in regional communication surrounding the response. In Samoa, two fellows were invited by their agriculture minister to contribute to a ministerial brief on the Pacific Plant Biosecurity Program.

Australian farmers show Indonesia the dairy way

Indonesia | Agribusiness | University of Adelaide's Centre for Global Food and Resources

Researchers from Indonesia visited rural Queensland in November 2019 to learn about industry best-practice from Australian dairy farmers. The visit included tours of several different dairy farms and set-ups, with the researchers experiencing how Australian dairy farmers took varied approaches to feeding systems, milk quality, herd management and business management, depending on their commercial objectives. The visit was part of a research project aiming to increase milk production and milk quality by 25% for 3,000 dairy farmers across Indonesia. The project has various focal points, including government policy and strategy intervention, supply-chain policy and on-farm research and development.





ACIAR research outcomes reach thousands

Global | Water and Climate | Sustainable Development Investment Portfolio

ACIAR-funded research outcomes underpinned a massive open online course run by Bihar Agricultural University and the International Maize and Wheat Improvement Center. More than 4,000 participants from 60 countries enrolled in the course, which was presented in both Hindi and English. The course drew on eight years of successful ACIAR activities across the Eastern Gangetic Plains, focusing on conservation agriculture-based sustainable intensification approaches, which have been adopted by more than 90,000 farmers and have been shown to reduce labour and crop establishment costs, improve farm incomes and decrease greenhouse gas emissions from agriculture.

John Allwright Fellows graduate from leadership program

Pacific region | Capacity Building

In June 2020, the first cohort of the John Allwright Fellowship Executive Leadership program graduated in an online certificate ceremony hosted by the University of New England. Twenty-five inaugural Fellows completed a 15-month tailor-made program designed to give them the skills needed to become effective leaders in their home countries. The executive leadership program adds value to our significant investment in John Allwright Fellows by equipping them with leadership and management skills to complement their postgraduate journey in Australia.



“I consider myself lucky to have brilliant mentorship through the MWF. They have been able to support and inspire me to continue my research remotely and innovatively.”





CASE STUDY

Building women's leadership in the agrifood sector



Aradhana Deesh is a Fijian Research Officer at the Plant Protection Unit in the Ministry of Agriculture. She is one of 19 recipients of the prestigious Meryl Williams Fellowship (MWF) in the inaugural 2020 cohort.

'Plant health is a field I am very passionate about. Agriculture and forests are essential to our island life and culture. The COVID-19 pandemic has revealed the vulnerability of our food system and our dependence on imports. We need more Pacific islanders to consider agriculture as a career choice,' said Mrs Deesh.

Despite COVID-19 leading to worldwide travel restrictions and impacting on the studies of future and emerging scientists doing the fellowship, Mrs Deesh is determined to pursue the research portion of her career development activity remotely.

'I lead a research team with the Ministry of Agriculture that is developing best management options for weeds affecting agricultural production systems in Fiji using chemical, biological and cultural options. Weed biological control is an area of research I am trying to revive. Fiji has been very successful in the Pacific in this regard in the past but recently no major work has been carried out,' she said.

Mrs Deesh began her research locally, looking at a highly invasive weed called Koster's curse (*Clidemia hirta*) and its natural biocontrol agent, *Clidemia thrips* (*Liothrips urichi*).

'Using biocontrol agents for weed management will be cost-effective and environmentally friendly. The weed and biocontrol agent insect are both present in Fiji and the Department of Agriculture and Fisheries in Queensland is interested in importing the thrips to Australia—where Koster's curse is also a problem—for further research,' she said.

Mrs Deesh is also supporting the Ministry of Agriculture team to upgrade their first biocontrol nursery with separate cubicles to rear different biocontrol agents on specific host plants. She has high hopes for the rearing of biocontrol agents as it will be beneficial for other Pacific island countries that face similar weed problems but do not have biocontrol agents.

'I consider myself lucky to have brilliant mentorship through the MWF. They have been able to support and inspire me to continue my research remotely and innovatively. I look forward to going back and sharing my findings with them. I am honoured to be part of the MWF and I hope to inspire other Pacific women to turn challenges into opportunities.'

Our global partnerships

Through engaging in multilateral research collaborations and co-investing with other development partners, ACIAR continues to promote more productive and sustainable agricultural systems for the benefit of developing countries and Australia.

These partnerships enable us to maintain extremely valuable physical and intellectual global public goods such as gene banks. By leveraging the comparative strengths of the organisations involved, we can participate in ambitious cross-border research that we could not achieve alone.

Multilateral partnerships

The largest of our multilateral partnerships is with CGIAR (formerly the Consultative Group on International Agricultural Research)—the world's largest agricultural research network. In 2019–20, the Australian Government, through ACIAR, was the sixth-highest contributing funder and research partner of CGIAR. Australia is an extremely active participant in the network, with a voting seat for our CEO on the highest governing body of the CGIAR, the System Council. Many other governance roles are held by ACIAR staff. This year has seen many changes in CGIAR as it undergoes a reform process to build 'One CGIAR', a more efficient and better-funded system. We are actively engaged in the reform to ensure that research and governance remains aligned with our mission and Australia's interests.

We worked to build stronger strategic relationships with the Pacific Community (SPC), the principal scientific and agricultural technical organisation in the Pacific, and to enhance strategic management capacity for results and strengthened capacity in coastal fisheries development. We participated in regional consultation processes facilitated by SPC, such as Pacific Week of Agriculture, Heads of Agriculture and Forestry Services and Ministers of Agriculture and Forestry Services.

This year has also seen a strengthening in our relationship with the Centre for Agriculture and Bioscience International (CABI). Membership helps CABI address issues of global concern through science, information and communication, with a focus on international development and research, publishing and microbial services. The partnership includes support to Plantwise (networks of plant clinics) and the CABI Development Fund (for pilot projects).

We worked with the Asia-Pacific Association of Agricultural Research Institutions (APAARI) to promote and coordinate national agricultural research institutes in the Asia-Pacific region through inter-regional and inter-institutional cooperation. In recognition of the valuable role the organisation plays in the region, ACIAR is the current Chair of the APAARI Executive Council and the Asia-Pacific Consortium on Agricultural Biotechnology and Bioresources.

Our support for WorldVeg and its program of vegetable breeding and capacity building in Asia and sub-Saharan Africa continued. Notably, the partnership includes support of the International Mungbean Improvement Network—a benefit to farmers overseas and in Australia.



Co-investments

Our most significant co-investment is with the Canadian International Development Research Centre (IDRC). ACIAR was originally modelled on the IDRC by Sir John Crawford in his 1981 recommendation to then Prime Minister Fraser. IDRC has a non-binding agreement with ACIAR to build collaborations on a range of research initiatives of mutual interest until 2027 and discussions are underway regarding new investment opportunities. Our current co-investment is a 50:50 partnership with Cultivating Africa's Future program and the more exploratory Food Futures program.

ACIAR has also reinforced our strategic engagement with other development partners, including the Swiss Syngenta Foundation for Sustainable Agriculture (SFSA), and The Crawford Fund in Australia. A joint initiative between ACIAR, SFSA and The Crawford Fund includes the Alliance for Agricultural Research and Development for Food Security (Alliance). This year, Alliance members started to design a portfolio of new research projects, the first of which will investigate how farmers' hubs are being used to deliver solutions and services to farming communities in countries like Bangladesh and Cambodia.

Australia's funding, through ACIAR, to CGIAR in 2019-20

Focus	Amount (A\$ million)
Overarching	6.2
Fisheries	1.2
Forestry	1.25
Livestock	1.2
Maize	0.4
Rice	0.5
Roots, tubers and bananas	1.4
Wheat	0.8
Grains, legumes, and dryland cereals	0.8
Agriculture for nutrition and health	1.1
Climate change, agriculture and food security	1.3
Policy, institutes and markets	0.5*
Water, land and ecosystems	1.25
Gender	0.9*
TOTAL	18.8

*PIM and GENDER totals include out of cycle contributions of 0.3 (World Bank Modification 20) and 0.4 (CGIAR Trust Holding Account), respectively. The 0.3 PIM contribution was for Agricultural Science and Technology Indicators (ASTI).

Highlights

ACIAR plays key role in development of the CGIAR Gender Platform

A key highlight this year was the development of the new CGIAR Gender (Generating Evidence and New Directions for Equitable Results) Platform. ACIAR (along with other leading donors including the Bill and Melinda Gates Foundation, USAID and the Canadian IDRC) was instrumental in the establishment of this platform, which is a critical element of research infrastructure, analogous to CGIAR gene banks. We are committed to tackling gender inequality in research design, delivery and impact and have been a strong and engaged supporter of the platform. Integrating gender in agricultural research-for-development in CGIAR is a smart and sensible development as it addresses the needs of both women and men, while recognising and addressing unequal access to resources and decision-making.

Food Futures Research Program


The Food Futures Research Program is an innovative partnership between ACIAR and IDRC. The program canvasses and supports strategic agricultural research that will have a potential breakthrough and/or transformative impact on global food security in the near future. ACIAR and IDRC have jointly committed A\$5 million to the program, which ACIAR is managing on behalf of the partnership. In 2019–20, the program completed foresight and impact analysis work to understand prevailing macro and sector trends in food security and identify the major future obstacles and key gaps in research. The USA Foundation for Food and Agricultural Research co-invested in this work, which was undertaken by XPRISE and resulted in the publication of an impact roadmap.

First ACIAR-SPC Roundtable

A key focus for both ACIAR and SPC is enabling regional collaboration in research and capacity building to address common development issues and explore joint opportunities. The first ACIAR-SPC Roundtable meeting was held in 2019 and confirmed the strong alignment between the organisations' programs towards leadership in regional food systems, biosecurity and climate-resilient livelihoods. This alignment was further endorsed and encouraged through SPC's membership of the ACIAR Policy Advisory Committee.

Informing policy and investment decisions in agricultural research in the Indo-Pacific

Agricultural research stakeholders need reliable data on research investment and capacity trends to identify key gaps, set investment priorities and ensure coordination and coherence of agricultural research initiatives. The Agricultural Science and Technology Indicators Indo-Pacific project, funded by ACIAR and facilitated by APAARI and the International Food Policy Research Institute, provides partners in the region with access to data on the funding, human resource capacity and outputs of agricultural research in countries in the region. The project is now in the outreach phase, helping to facilitate policies for effective and efficient agricultural research in the Indo-Pacific region. This information is a powerful persuasive tool for national and regional research managers, policymakers, donor organisations and other stakeholders to drive higher levels of investment in agricultural research, which is key to increasing agricultural production to meet global needs.



ACIAR recognises the untapped potential for improved production, income and family nutrition that occurs when women play a more visible and equal role in agricultural decision-making.



The use of black soldier flies reduces the time to market for the pigs from 6 weeks to 1.5-4 weeks, creating a reservoir of feed for use on other animals.



CASE STUDY

INSFEED: Insect feed for poultry and fish production in sub-Saharan Africa



Rosanne Mwangi, a pig farmer in Makuyu, Kenya, found out about insect farming during a 2018 conference visit to Uganda. Her curiosity about how chicken feed could be made from pig manure, with the help of houseflies, led her to research more on insects as a supplement for animal feed.

'As a pig farmer, I was amazed to learn you can develop cheaper and quality animal feeds from insects. I came back to Kenya determined to find ways to grow maggots from which I could derive pig and chicken feeds,' said Ms Mwangi.

In Kenya and Uganda, researchers are testing the feasibility of using insects, particularly black soldier flies, for livestock feed rather than soybeans and fish meal. The switch will help reduce costs for small-scale producers and redirect food crops currently used as livestock feed toward human consumption.

The Insect for Feed (INSFEED) project is delivered by the International Centre of Insect Physiology and Ecology (ICIPE) and is a joint investment of ACIAR and the IDRC.

After training in July 2019, Ms Mwangi received a starter kit of 10 kg of black soldier flies from ICIPE. In 3 months, she produced an average of 500 kg of larvae per batch.

Ms Mwangi keeps pigs as part of a group of 18 women in Kitengela. Currently, they have 160 pigs and feed them on a ratio of 25% black soldier fly, 15% soya and fishmeal feed, and 60% direct plant waste.

The use of black soldier flies reduces the time to market for the pigs from 6 weeks to 1.5-4 weeks, creating a reservoir of feed for use on other animals. The pigs retail at 16,000-18,000 Kenyan shillings (\$242-272).

'Our pigs fetch a good price in the market. Farmer's Choice, the main pig supplier in Kenya, has graded the carcass quality at grade one, especially the eye of the loin, as it has less fat and more lean meat compared with other suppliers,' said Ms Mwangi.

Research expertise from ICIPE allows farmers like Ms Mwangi to access quality inputs and advice to help their businesses prosper.

Our research program

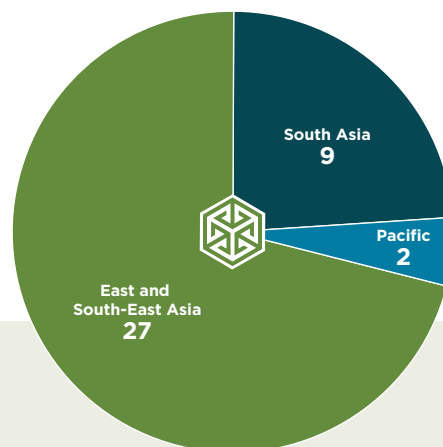
The ACIAR research structure focuses on nine programs of work. These programs cover key agriculture sectors (Crops, Livestock Systems, Fisheries, Forestry and Horticulture), the science needed to sustain the resource base (Soil and Land Management, and Water and Climate) and disciplines that generate economic and social benefits (Agribusiness and Social Sciences).

Research programs

Agribusiness

Unlocking economic opportunities for farmers

The Agribusiness Program works to improve business outcomes for smallholder farmers, communities and industries. It involves research at all points along the agricultural, forestry and fisheries value chains, including inputs, production and harvest, and post-harvest activities of packaging, transport and storage, processing, marketing and sales.



31

ACIAR projects



\$5.97 million

invested into research projects



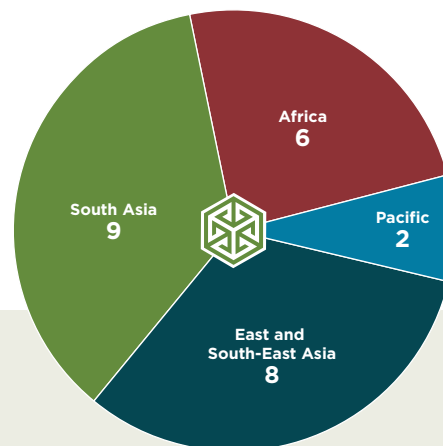
9.7%

of ACIAR project investment

Crops

Cultivating productive and sustainable crops

The Crops Program aims to increase the productivity and sustainability of major crops by exploring improved varieties and new crop management methods. The program is built on two complementary themes of genetics and sustainable intensification and diversification.



22

ACIAR projects



\$6.01 million

invested into research projects



9.8%

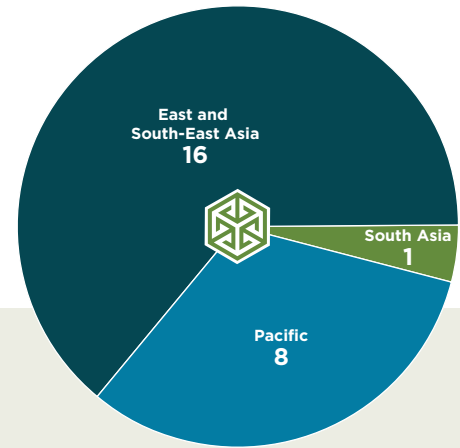
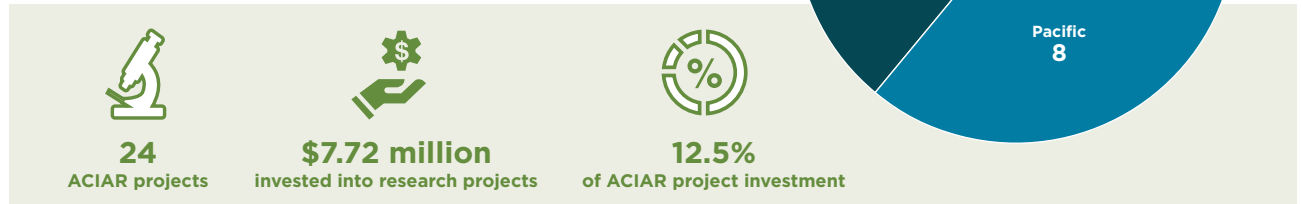
of ACIAR project investment

NOTE: Charts will not always reflect the sum of total projects per program as it shows projects by region. If a project is in multiple regions, it will be counted for each region.

Fisheries

Building productive aquatic farming systems and sustainable fisheries

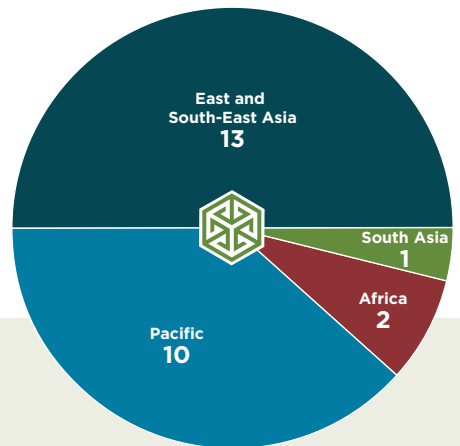
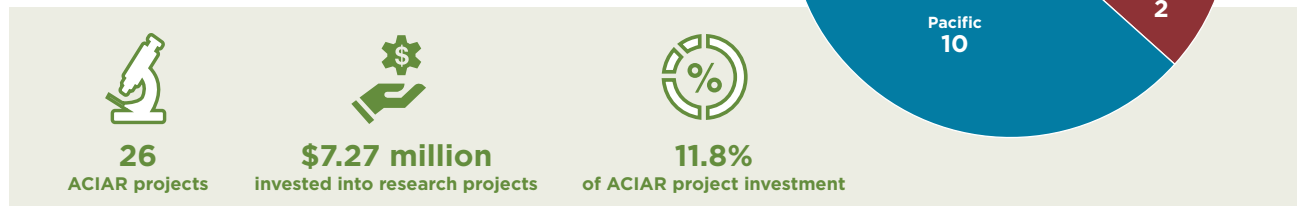
The Fisheries Program brokers research partnerships to improve food security and fishers' livelihoods through productive aquatic farming systems and sustainable wild-catch fisheries. It aims to improve human health and wellbeing by making food systems and policies more nutrition-sensitive.



Forestry

Scientific support to establish, manage and sustainably use forests

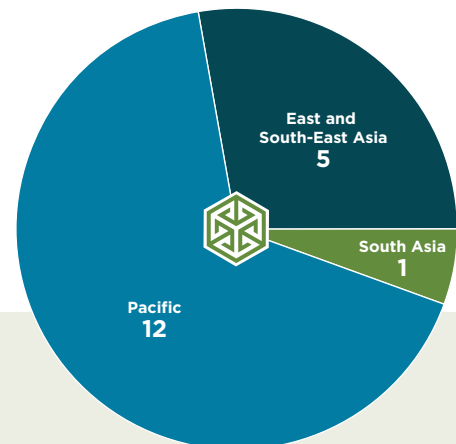
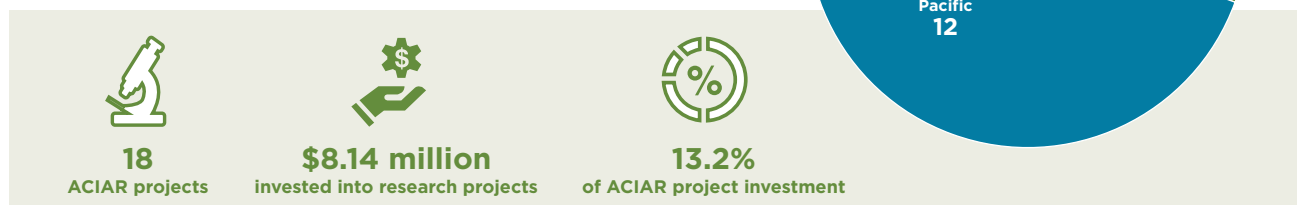
The Forestry Program contributes to conservation and rehabilitation of natural resources to establish, manage and sustainably use forests. This provides social, economic and environmental benefits to partner countries and Australia.



Horticulture

Improving fruit, vegetable and ornamental crop production

The Horticulture Program aims to improve the productivity, profitability and sustainability of fruit, vegetable, ornamental and beverage crops in developing countries to improve livelihoods and deliver safe, nutritious food.



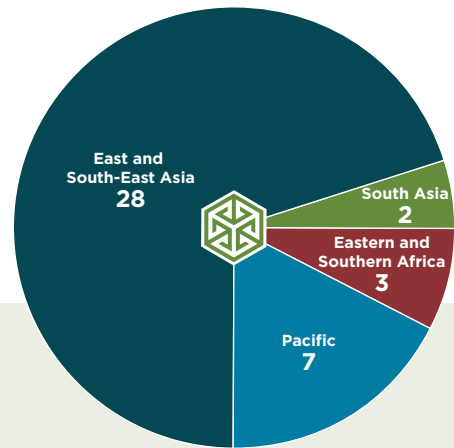
NOTE: Charts will not always reflect the sum of total projects per program as it shows projects by region. If a project is in multiple regions, it will be counted for each region.

Our research program

Livestock Systems

Developing more productive, profitable and sustainable livestock systems

The Livestock Systems Program brokers research partnerships to 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, looking at animal health and production technologies within the broader sociocultural, gender, policy and economic contexts.



40

ACIAR projects



\$11.22 million

invested into research projects



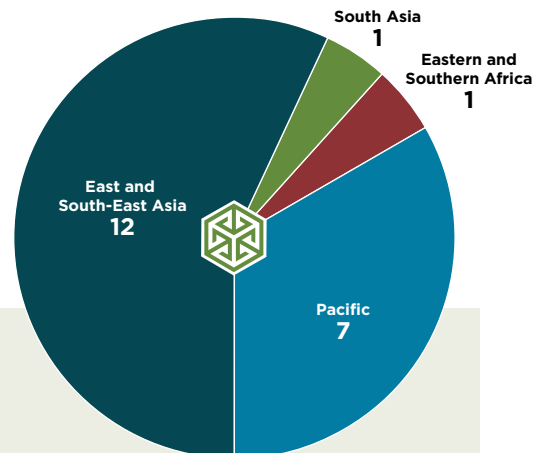
18.2%

of ACIAR project investment

Social Sciences

Putting people at the centre of agricultural research-for-development

The Social Sciences Program takes a people-centred approach to agricultural research-for-development to reduce poverty. Demographic issues such as gender, age, education, income, assets and distance to market are considered in project design to ensure equitable development.



18

ACIAR projects



\$4.23 million

invested into research projects



6.9%

of ACIAR project investment

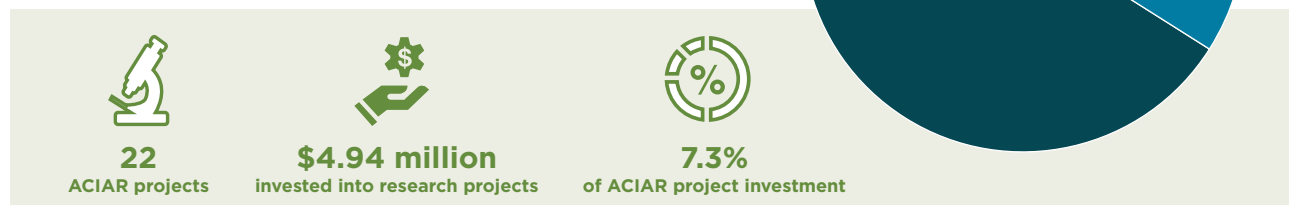
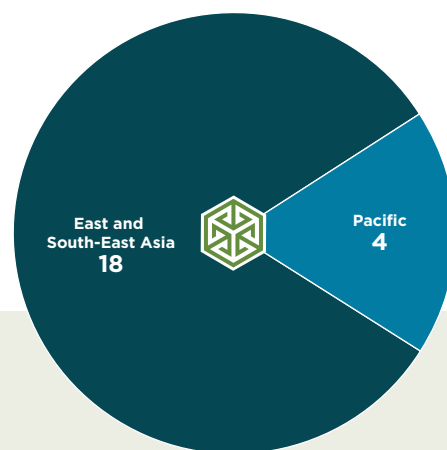
NOTE: Charts will not always reflect the sum of total projects per program as it shows projects by region. If a project is in multiple regions, it will be counted for each region.

Our research program

Soil and Land Management

Introducing conservation agriculture

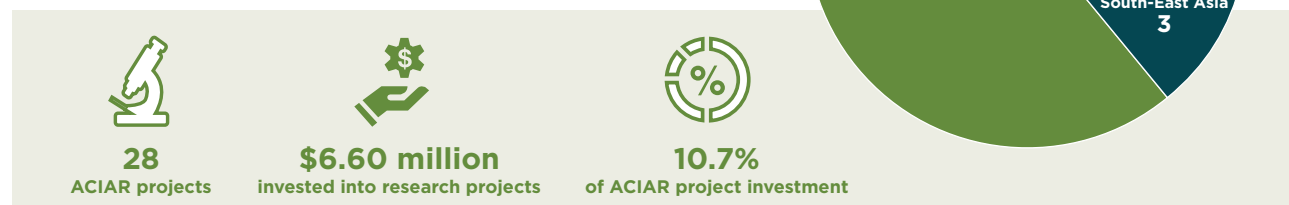
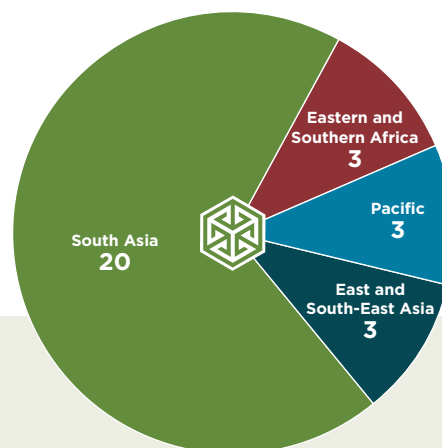
The Soil and Land Management Program aims to help smallholders boost productivity through sustainable use of limited resources in a changing climate. Ensuring that agricultural production is sustainable and benefits smallholder farmers is a key challenge for long-term food security.



Water and Climate

Improving agricultural water management through innovative approaches

The Water and Climate Program addresses the challenge of efficient, sustainable water use to support agricultural production in the context of increasingly uncertain climate, competition from other sectors and declining water quality. During 2019-20, ACIAR developed a new Climate Change program, so that from 1 July 2020 there were separate research programs on Water and Climate Change.



NOTE: Charts will not always reflect the sum of total projects per program as it shows projects by region. If a project is in multiple regions, it will be counted for each region.

Our impact



A\$104.7 billion
total benefit from ACIAR
research project
investments since 1982*



A\$98 billion
total benefit to developing country
partners from ACIAR research
project investments since 1982*



A\$17.40
economic return for each dollar
invested in bilateral research
project since 1982*

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.

The program continued the established process of evaluation of ACIAR investments through a combination of medium-term adoption studies and longer-term impact assessments.

Impact evaluations conducted throughout the year include:

- » Mahogany and teak furniture: action research to improve value chain efficiency and enhance livelihoods (FST/2007/119)
- » Improving reproductive performance of cows and performance of fattening cattle in low input systems of Indonesia and northern Australia (LPS/2008/038)
- » Developing multiscale adaptation strategies for farming communities in Cambodia, Lao PDR, Bangladesh and India (LWR/2008/019)
- » Increased productivity and reduced risk in pig production and market chains (AH/2010/019)

Impact assessments looking at the longer-term economic and social impact of ACIAR-supported research:

- » Landcare in the Philippines
- » Sandalwood in Vanuatu
- » Conservation tillage for dryland cropping in Australia and China.

*Based on analysis by the Centre for International Economics of 169 bilateral projects covered in 56 Impact Assessment studies (2019).

Cumulative value of ACIAR investments

ACIAR has been systematically undertaking independent impact assessment studies of its portfolio of research activities for more than 30 years. During 2019–20, we assessed the economic returns from 169 research-for-development projects.

The estimated median benefit-to-cost ratio across the projects studied shows that A\$17.40 is returned for every A\$1 spent. The total benefit from ACIAR research project investments is estimated to be A\$104.7 billion in today's dollars. Of this:

- » A\$98 billion has been realised for developing country partners
- » A\$5.3 billion has been realised in Australia.

The benefits directly attributable to ACIAR funding more than covers not only our total expenditure across these projects, but also our total investment since our inception (approximately A\$3.28 billion).



Our benefit to Australia



A\$5.3 billion
total benefit to Australia from ACIAR
research project investment

Supporting Australia's national interests by contributing to sustainable economic growth and enhanced regional stability

Australia's deep and broad scientific expertise in sustainable and resilient food systems is a strategic national asset. We work with partners across the region to tackle the intersecting challenges of health security, food security, water security and biosecurity, which all ultimately feed into our own national security.

ACIAR supports Australian national interests by contributing to sustainable economic growth and enhanced regional stability, with a focus on economic diplomacy and women's economic empowerment.

The collaborative international programs and partnerships underpinning ACIAR-supported research also improve Australian scientific capabilities and the productivity and sustainability of agricultural systems in Australia. Improved technologies and practices identified and developed through ACIAR research programs often address the shared challenges of all farmers in the Indo-Pacific region, including Australia.

ACIAR research findings are brought back to Australia to tackle our own agricultural challenges, vital to our nation's future wellbeing and prosperity. Through our work, ACIAR is delivering benefits to Australia by:

- » enhancing biosecurity to help stop plant pests and diseases and animal diseases before they arrive at Australian borders
- » taking a One Health approach to tackle emerging zoonotic diseases (like COVID-19) that threaten human and animal health, economic development and the environment
- » helping Australia and other countries meet their international commitments to reduce greenhouse gas emissions
- » applying our research to challenges that improve the livelihoods of farmers in our partner countries and Australia
- » providing jobs and exceptional career opportunities for Australian scientists and financial support to the university and research sector, especially in regional Australia.

Biosecurity

The global cost of around 1.2 million invasive species is estimated at A\$1.4 trillion per year—close to 5% of global gross domestic product. ACIAR has more than 30 operational projects addressing biosecurity threats that contribute to an ongoing fight against the spread of plant and animal diseases. This is a significant line of pre-border defence for Australian primary industries.

Some of the biosecurity threats that ACIAR projects are tackling include:

- » **Fall armyworm:** Understanding the genetics of fall armyworm, an invasive pest causing widespread crop destruction across the Indo-Pacific, is the focus of new ACIAR-funded research.
- » **Citrus greening disease:** The Australian citrus industry is partnering with ACIAR on a project investigating citrus greening disease, a bacterial disease of citrus with no known cure.
- » **Wheat blast:** In partnership with other governments and funding agencies, ACIAR is supporting an international effort to tackle an urgent threat to South Asia from wheat blast. This has resulted in the release of a high-yielding wheat variety that is resistant to wheat blast, which will be available to plant breeders worldwide, including Australia.



CASE STUDY

Global collaboration benefits Australian mungbean growers



Our partnership with the International Mungbean Improvement Network is delivering great benefit to farmers in Australia.

Mungbeans are a Queensland success story, worth A\$100 million each year at the farm gate. They are the preferred summer rotation crop in Queensland. Around 100,000 hectares of mungbeans are planted each year. More than 90% of this high-value grain is exported to India and South-East Asia.

However, export standards are stringent and there are large price differentials between the three grades: sprouting, cooking and processing. Even minor insect damage to the bean will reduce the quality grading.

The ACIAR-supported International Mungbean Improvement Network (IMIN) is contributing to Australia's competitiveness in a growing world market and continues to deliver improvements in crop varieties that have a significant positive impact on growers' bottom lines.

IMIN is investing in new varieties that offer Australian growers the genetic tools they need to combat costly diseases, lift production and drive increased profitability,

Australia's mungbean industry supports a small and effective breeding program, led by Dr Col Douglas, senior plant breeder with Queensland Department of Agriculture and Fisheries.

Dr Douglas highlighted the benefits of Australia participating in the network, including important work towards generating higher yielding and pest- and disease-resistant lines of mungbean. The focus on genetic resistance to disease is the cornerstone of mungbean research.

'We have an exciting project ... to implement new breeding technologies and crop physiology—work that is beyond the scope of what we in Australia could achieve alone. Combined with breeding for high-yielding varieties, genetic resistance is key to securing a reliable future for the [Australian] mungbean industry,' said Dr Douglas.

With access to suitable material and knowledge, facilitated by IMIN, the Australian mungbean breeding program will continue to release to the industry improved varieties that will underpin its profitability and sustainability.

Our influence and impact



360,000 visits
to the ACIAR
website



6500
subscribers to
Partners magazine



78,000
followers on
social media



3 million
impressions on
social media

Through our outreach activities, we endeavour to extend the influence and impact of the results and outcomes of our diverse research investments.

We also have a responsibility to demonstrate to the Australian public the value of government investment through the aid program in international agricultural research.

Despite COVID-19 travel and event restrictions, our outreach team continued throughout 2019–20 to develop a growing range of activities to raise awareness of ACIAR-funded research. This included organising and supporting ACIAR-sponsored events, partnering with The Crawford Fund in event and publicity activities, and publishing our magazine, *Partners in Research for Development*.

Our social media channels continue to be a key communication tool for the organisation. Over the past three years, our combined following across Facebook, Twitter, Instagram and LinkedIn has increased by more than 1,000%. Among our major outreach achievements during 2019–20 was the launch of the new Drupal 8 website, which includes improved project, program, country and regional pages, along with improved search functionality and an interactive map.

We also launched the ACIAR Research Portal to empower project leaders to be able to create templated websites within the ACIAR-hosted web environment that they can easily administer. A key element of the portal is the ACIAR Biosecurity site, developed in May 2020—a quick-response, COVID-relevant site that curated projects, publications, updates and Q&A with our research team about our work in the region.

We continued to strengthen our network of communications professionals in five country offices: Fiji, Papua New Guinea, Vietnam, the Philippines and Kenya. The network enables ACIAR to find and tell great local stories, ensuring more proactive content is being produced and increasing engagement with our partners and stakeholders.

Events

ACIAR participated in conferences and forums as a contributor of knowledge, co-host and/or sponsor. These included:

- » Crawford Fund Parliamentary Conference, Canberra (August 2019)
- » 5th Global Science Conference on Climate-Smart Agriculture, Bali (October 2019)
- » 2nd Pacific Week of Agriculture, Samoa (October 2019)
- » TROPAG 2019: International Tropical Agriculture Conference, Brisbane (November 2019)
- » Australasian Aid Conference, Canberra (February 2020)
- » Transforming Global Food Systems Under Climate Change - achieving zero emissions, Copenhagen (February 2020)
- » The Australasian Agricultural & Resource Economics Society Conference, Perth (February 2020)
- » New Era for Food Climate, a global virtual (online) relay event organised by the CGIAR Research Program on Climate Change, Agriculture and Food Security (June 2020)



CASE STUDY

Promoting agricultural journalism in the Pacific

Media coverage of agricultural research projects and the benefits and outcomes to local communities is set to grow across the Pacific as a result of an outreach capacity-building initiative run by ACIAR and the Australian Broadcasting Corporation's (ABC) International Development group.

Celebrating Agriculture in the News (CAN) was designed to help early-career journalists in the Pacific gain insights into new techniques and novel approaches they can take to reporting on agricultural research stories to make them interesting and informative for their audiences.

CAN was open to all emerging journalists from across the Pacific nations. Entries were submitted by published journalists working or studying in a range of countries including Fiji, Kiribati, Papua New Guinea, Samoa, Solomon Islands, Tonga and Tuvalu. They represented print, radio, television and digital media platforms.

Each entrant was judged on their already published work, but the prize for the top 16 was a chance to polish their reporting technique at a special masterclass run as part of the second Pacific Week of Agriculture in October 2019, held in Apia, Samoa.

The masterclass was officially launched by Ms Sara Moriarty, Australia's High Commissioner to Samoa, at an event hosted by ACIAR CEO, Professor Andrew Campbell. The week-long training—which included discussions, workshops, networking and field trips—was led by veteran Australian journalist Philippa (Pip) Courtney from ABC TV Landline and Amelia Makutu, Country Liaison from the ABC Pacific Media Assistance Scheme.

Scientific publications

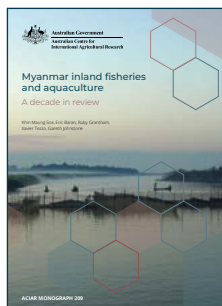
ACIAR produces a diverse range of publications that capture and share our results and experience. Our guides and 'how to' manuals provide practical information generated by research projects across the Indo-Pacific region. They cover many aspects of agriculture, fisheries and forestry and are useful to farmers, extension agencies and community organisations, and are valued by scientists, research leaders and policymakers. Publications produced in 2019-20 included:



Enabling policies for developing smallholder agriculture in Pakistan

Authors

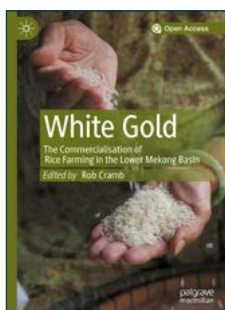
Muhammad Azeem Khan, Aamer Irshad, Hidayatullah Chhajro, Nazeer Kalhoro, Muhammad Irfan Khalid, Ghazanfar Ali Khan, Kashif Rashid, Abdul Qadir Tareen, Ahmed Ali Zafar, Bhajan Grewal, Jim Lang and Peter Sheehan



Myanmar inland fisheries and aquaculture: a decade in review

Authors

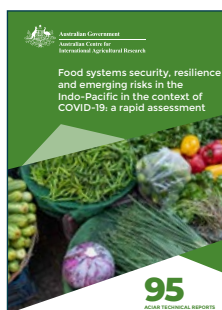
Khin Maung Soe, Eric Baran, Ruby Grantham, Xavier Tezzo and Gareth Johnstone



White gold: the commercialisation of rice farming in the Lower Mekong Basin

Editor

Rob Cramb



Food systems security, resilience and emerging risks in the Indo-Pacific in the context of COVID-19: a rapid assessment

Authors

Todd Sanderson, George Chapman, Daniel Walker and Peter Horne



Success stories in agricultural water management research for development

Editor

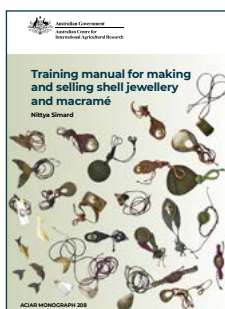
Dr Evan W Christen



Implications of conservation agriculture-based sustainable intensification technologies for scaling and policy

Authors:

Peter R Brown, Toni Darbas, Avinash Kishore, Maria Fay Rola-Rubzen, Roy Murray-Prior, Md Mazharul Anwar, Md Shakhawat Hossain, Md Nur-E-Alam Siddique, Rashadul Islam, Mamunur Rashid, Ram Datt, Ujjwal Kumar, Kausik Pradhan, KK Das, Tapamay Dhar, PM Bhattacharya, AK Chowdhury, A Ghosh, Bibek Sapkota, Dinesh Babu Thapa Magar, Surya Adhikari, Dipendra Pokharel, Fraser Sugden, Panchali Saikia, Sanjiv de Silva, Niki Maskey, Sofina Maharjan, Mahesh Gathala and TP Tiwari



Training manual for making and selling shell jewellery and macramé

Authors

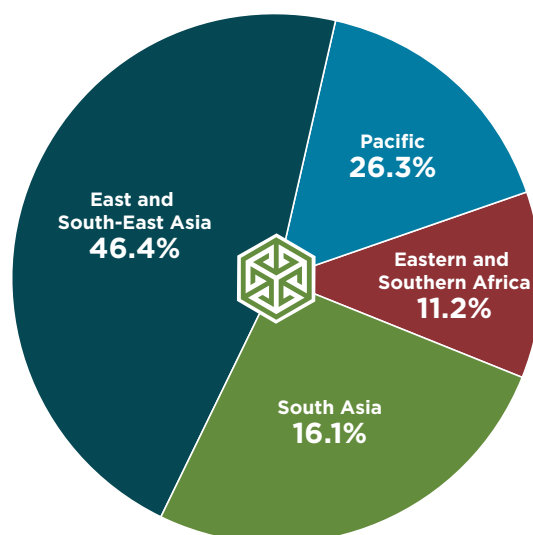
Nitty Simard

Financial overview

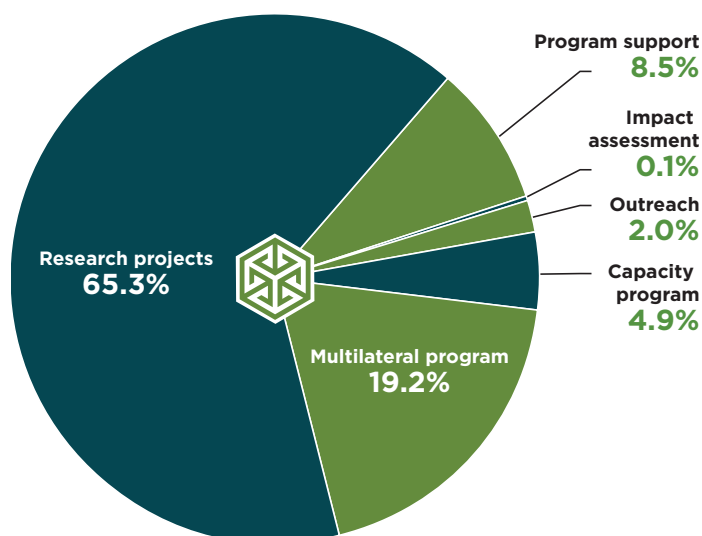
Research projects by region and country actual (A\$)

Papua New Guinea & Pacific	19,657,168
Papua New Guinea	7,738,980
Pacific island countries	11,918,188
Timor-Leste	2,283,530
East and South-East Asia	27,877,088
Cambodia	2,582,259
China	325,604
Indonesia	7,928,540
Laos	3,736,023
Malaysia	17,857
Mongolia	126,592
Myanmar	4,954,183
Philippines	3,863,353
Thailand	4,248
Vietnam	4,338,429
South Asia	10,896,214
Bangladesh	3,421,129
India	2,311,259
Nepal	1,374,927
Pakistan	3,708,899
Sri Lanka	80,000
Eastern and Southern Africa	9,611,610
Total research projects	68,042,080
Research projects	68,042,080
Multilateral program	19,964,000
Capacity program	5,113,056
Outreach	2,052,552
Impact assessment	132,599
Program support	8,882,713
TOTAL	104,187,000

Research expenditure by region 2019-20

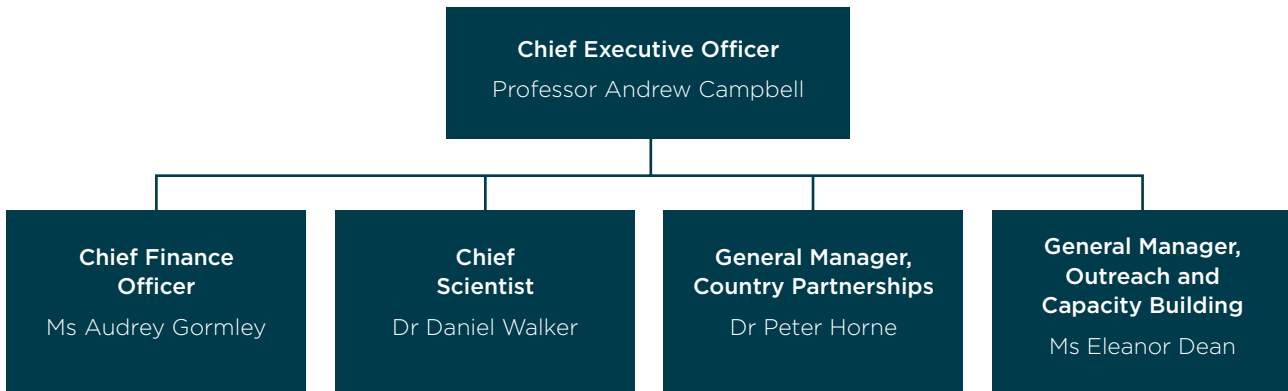


Research expenditure by operational area 2019-20



How ACIAR operates

Established under the *Australian Centre for International Agricultural Research Act 1982* (the ACIAR Act), ACIAR is a non-corporate Commonwealth entity under the *Public Governance, Performance and Accountability Act 2013* and the *Public Service Act 1999*. We operate as a statutory agency within the portfolio of Foreign Affairs and Trade. The ACIAR Chief Executive Officer reports directly to the Minister for Foreign Affairs.



Our staff

As at 30 June 2020



79
ACIAR staff



2 years
median length of
APS service



ACIAR
70% female
30% male



ACIAR STAFF
81% full time
19% part time



67%
ongoing staff as
% of total

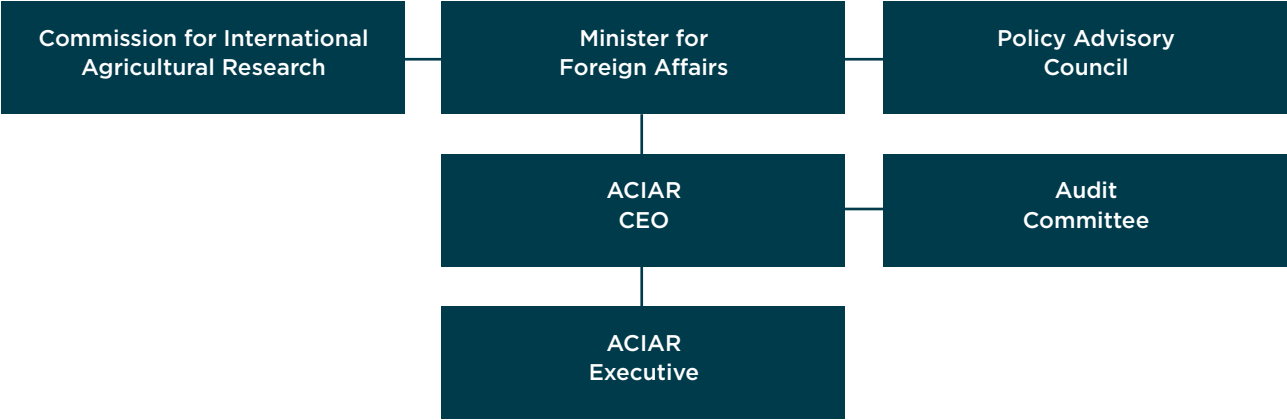


41 years
average age of
employee



10%
employee
turnover

Our governance structure



Commission for International Agricultural Research

The Commission provides expert, strategic advice to the Minister for Foreign Affairs on priorities for ACIAR. The Commission in 2019–20 consisted of a chair and five other Commissioners:

- » Mr Don Heatley OAM (Chair)
- » Ms Catherine Marriott
- » Professor Gabrielle Persley AM
- » Dr Sasha Courville
- » Ms Su McCluskey MAICD
- » Professor Andrew Campbell FTSE FAICD

Acknowledgments

ACIAR acknowledges the outstanding contributions of these Commissioners who retired in 2019-20



Mr Don Heatley, Chair

Don Heatley's six-year tenure occurred in a period that saw many changes within ACIAR, ranging from the appointment of a new CEO and new commissioners to the implementation of a 10-year strategy.

'I felt very attracted to the notion of chairing a commission that conducts agricultural research-for-development in developing countries,' Mr Heatley said. 'ACIAR is an organisation that epitomises the values Australia has to offer other countries, including support and friendship. To not want to be part of something like that, well, your values would have to lie somewhere else.'

Mr Heatley hopes that, despite any future external changes, the focus of ACIAR will remain its people-to-people engagement. Throughout its history, that engagement has seen ACIAR gain invaluable credibility, along with the vital trust and respect of its partner countries.

'If I thought about what I have learned during my time with ACIAR it would certainly be what an amazing organisation it is,' he said. 'It adopts a low-key, extremely pragmatic approach to solving a plethora of food supply and security issues faced by vast populations in the developing countries of the Indo-Pacific. ACIAR is low on process, high on delivery and punches well above its weight on a small fraction of the Australian aid budget.'

'I thank my fellow commissioners, CEO Professor Andrew Campbell and the entire ACIAR team for their support and wish them the very best of good fortune as they work to resolve the many issues faced by our partner countries.'



Ms Catherine Marriot

With experience ranging from working as a cattle nutritionist in South-East Asia to establishing a rural women's mentoring program between Australia and Indonesia, it was unsurprising that Catherine Marriot was appointed to the commission six years ago.

In June this year, Ms Marriot's tenure concluded. However, she believes she is leaving an organisation that has built a greater public presence, has a sharper focus on gender outcomes and will lead Australia's foreign aid program on One Health issues in a post-COVID-19 environment.

'Something I pushed really hard for early on—which I am so happy we have achieved—is a stronger communication strategy,' explained Ms Marriot. 'I could see that there was a risk for ACIAR in not sharing the "good news" stories we had built.'

Ms Marriot said she sees a strong future for ACIAR in helping deliver on the United Nations Sustainable Development Goals as well as driving the One Health and international research agendas. 'With the current management and capacity of ACIAR, we are very well placed to contribute to and indeed lead some of the most important animal and human science the world needs into the future.'



Professor Gabrielle Persley

Professor Gabrielle Persley's journey over the past 40 years, from being the first ACIAR-appointed scientist when she was appointed as Scientific Advisor, to her appointment to the Commission for International Agricultural Research, has been one of passion and pride. It has involved her in almost every aspect of ACIAR, as a research program manager, a project leader, an investment partner, and a Commissioner.

Having been instrumental in setting up the organisation, she became our first scientific staff member. She was with us for eight years and, among other roles, worked with Pacific island countries as Pacific research coordinator. Even after she moved on in 1990, she was never far from our orbit. In 2018, Australia's Minister for Foreign Affairs Senator the Hon Marise Payne invited Professor Persley to join the Commission for International Agricultural Research.

'When I received the invitation to become a member of the Commission, that was one of those falling-off-the-chair moments where you think, "That's an interesting cycle of life that rolled out in front of you." So yes, I must admit I'm really pleased about that,' she said.

Professor Persley said the leadership of ACIAR in the early days created both a solid foundation and a robust approach to providing aid through agricultural research that has sustained ACIAR as a key partner in Australia's foreign aid program over the decades.

'Looking back, I feel it was part vision, part persistence that aligned with political wills when the time was right. The strong leadership in the initial years is one of the key factors why ACIAR remains today, despite many changes in political leadership and changing priorities in foreign aid policy. ACIAR remains as strong now as it was in its early days.'

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ACIAR

