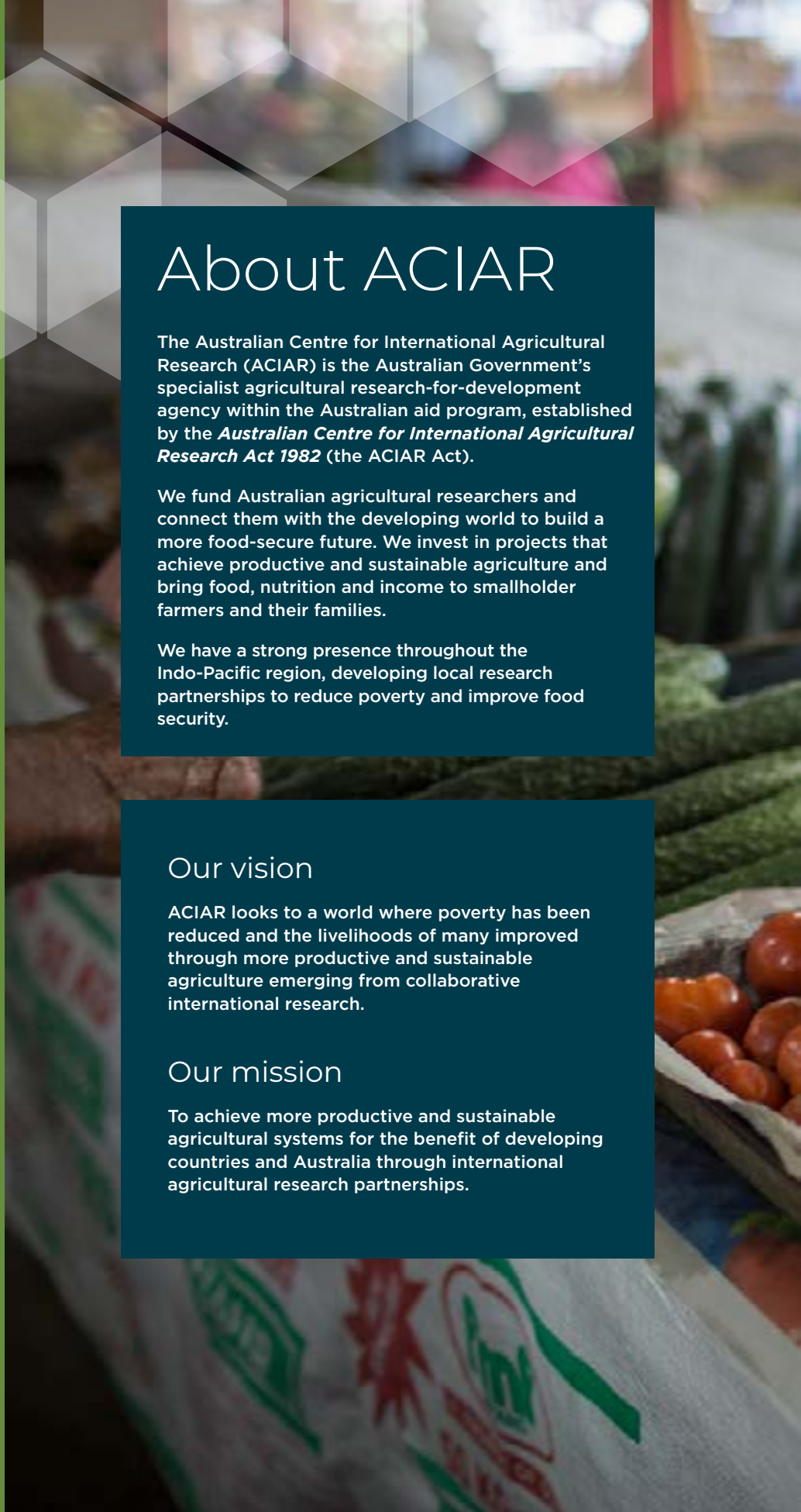
Australian Government

Australian Centre for
International Agricultural Research

ACIAR
Annual Review
2021–22



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, established by the ***Australian Centre for International Agricultural Research Act 1982*** (the ACIAR Act).

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.

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.

ACIAR Annual Review
The ACIAR Annual Review features key achievements and outcomes of the work of ACIAR and its partners during 2021–22, through quick facts and highlights.

This report should be attributed as the *ACIAR Annual Review 2021–22*

ISBN 978-1-922787-72-9 (print)
ISBN 978-1-922787-73-6 (pdf)

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Design: whiteFox.com.au
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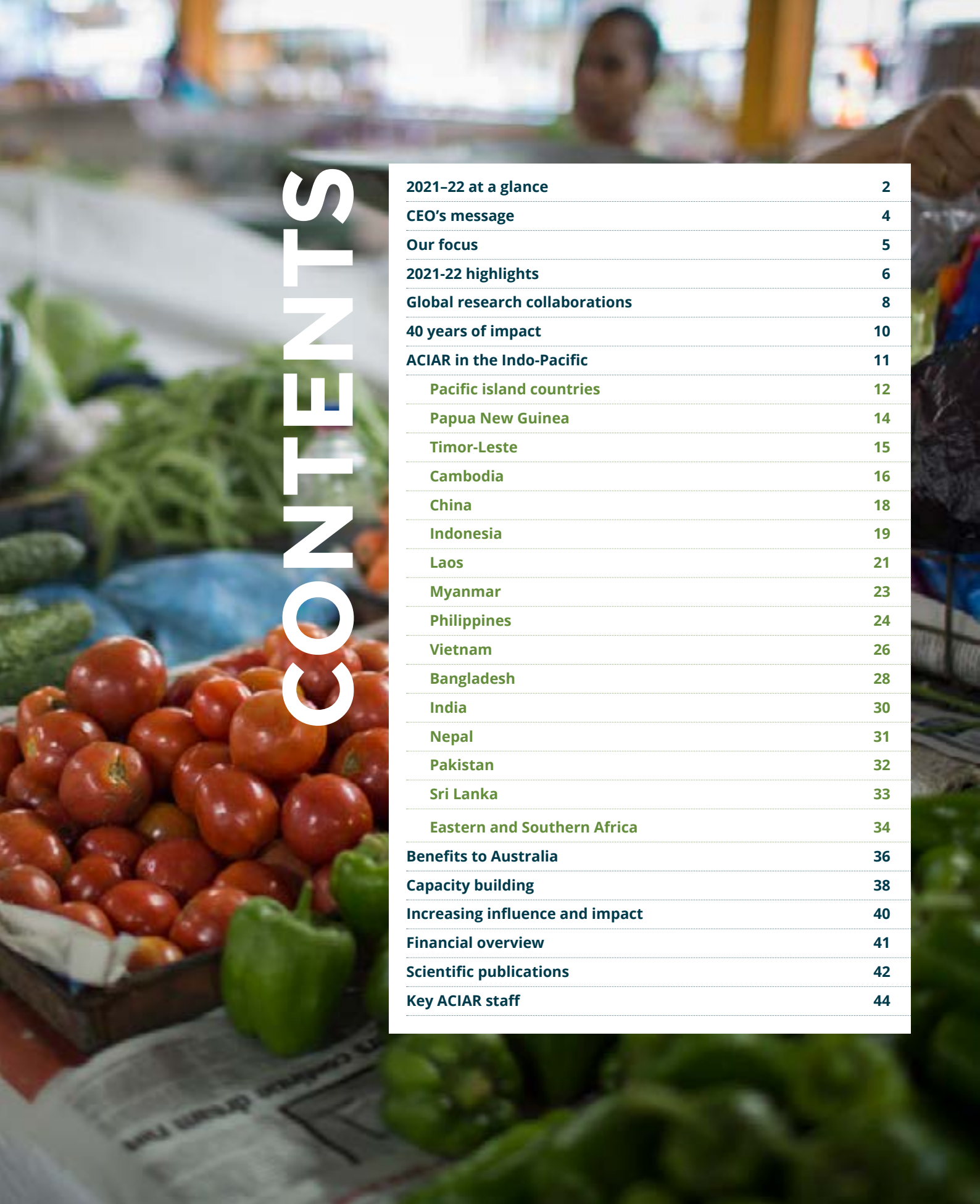


CONTENTS

2021–22 at a glance

A$47 million
invested in bilateral research programs

A$25.8 million
invested in global research collaborations

A$10.5 million
invested in capacity building programs

31
countries across the Indo-Pacific region

181
bilateral research projects

60
commissioned organisations leading ACIAR projects

Photo: Mark Anthony Perandos

* Based on analysis by the Centre of International Economics of approximately 10% of ACIAR investment since 1982 (ACIAR Impact Assessment No. 100)

A$64 billion
total benefit from research investment since 1982*

A$3.7 billion
benefit to Australia from research investment since 1982*

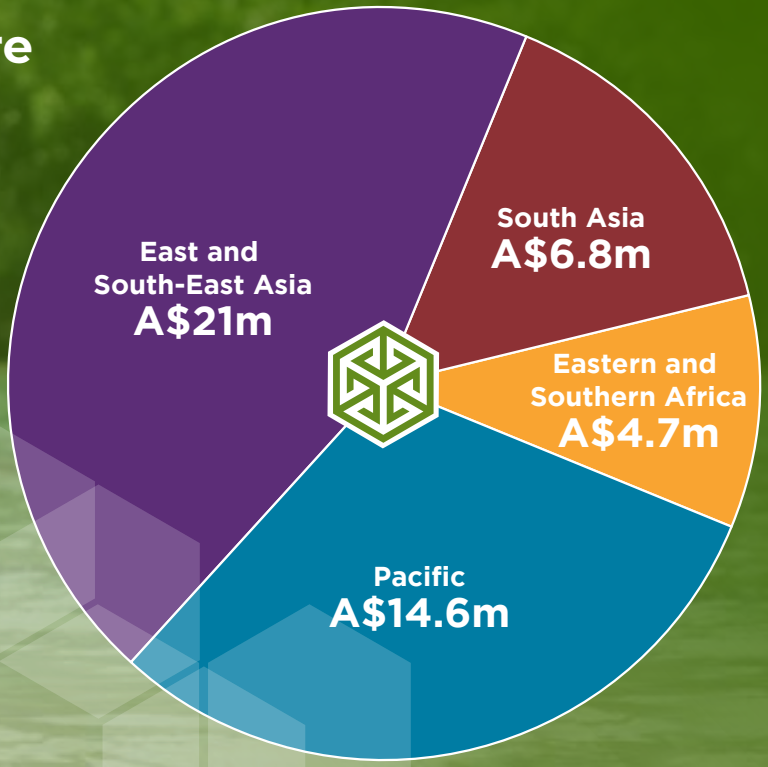
81
ACIAR staff

> 385
project partners

> 600
active fellowship alumni

165,828
website users

ACIAR expenditure by region



CEO'S MESSAGE

The 2021–22 year marked 40 years since the establishment of ACIAR, and throughout the year we celebrated the achievements and impacts of 40 years of agricultural research-for-development.

At the outset of 2022 ACIAR released a 2-part impact assessment of 40 years of research. The quantitative assessment, based on projects representing just 10% of ACIAR investment since 1982, demonstrated a total benefit of A$64 billion, with a A$3.7 billion benefit to Australia. The qualitative assessment identified the key design, management and practice principles that support effective translation of research knowledge into development outcomes.

Coinciding with the release of the assessment was a mid-term review of the ACIAR 10-Year Strategy 2018–2027, commissioned by the Commission for International Agricultural Research. The review was conducted in early 2022 by an independent expert panel chaired by Dr Wendy Craik and informed by written submissions and interviews with more than 120 ACIAR stakeholders.

Notwithstanding the considerable disruptions of the COVID-19 pandemic, the review concluded that the 10-year strategy is a bold, visionary document that remains fit-for-purpose. It affirmed that ACIAR is held in high regard across the region and delivers value for money and effort, leveraging Australian strengths. It also noted impressive progress against important elements of the strategy, including monitoring, evaluation and learning, gender equity, capacity building and outreach. Fourteen recommendations from the review will guide a refresh of the strategy and implementation priorities over the 2022-2027 period..

The impact assessment and the review gave us confidence that our well-established but continually evolving research partnership model is delivering against our vision and mission. The ACIAR business model of brokering science partnerships in agriculture, fisheries and forestry between the Australian innovation system and our neighbours in the Indo-Pacific region remains as relevant today as it was when ACIAR was established in 1982.

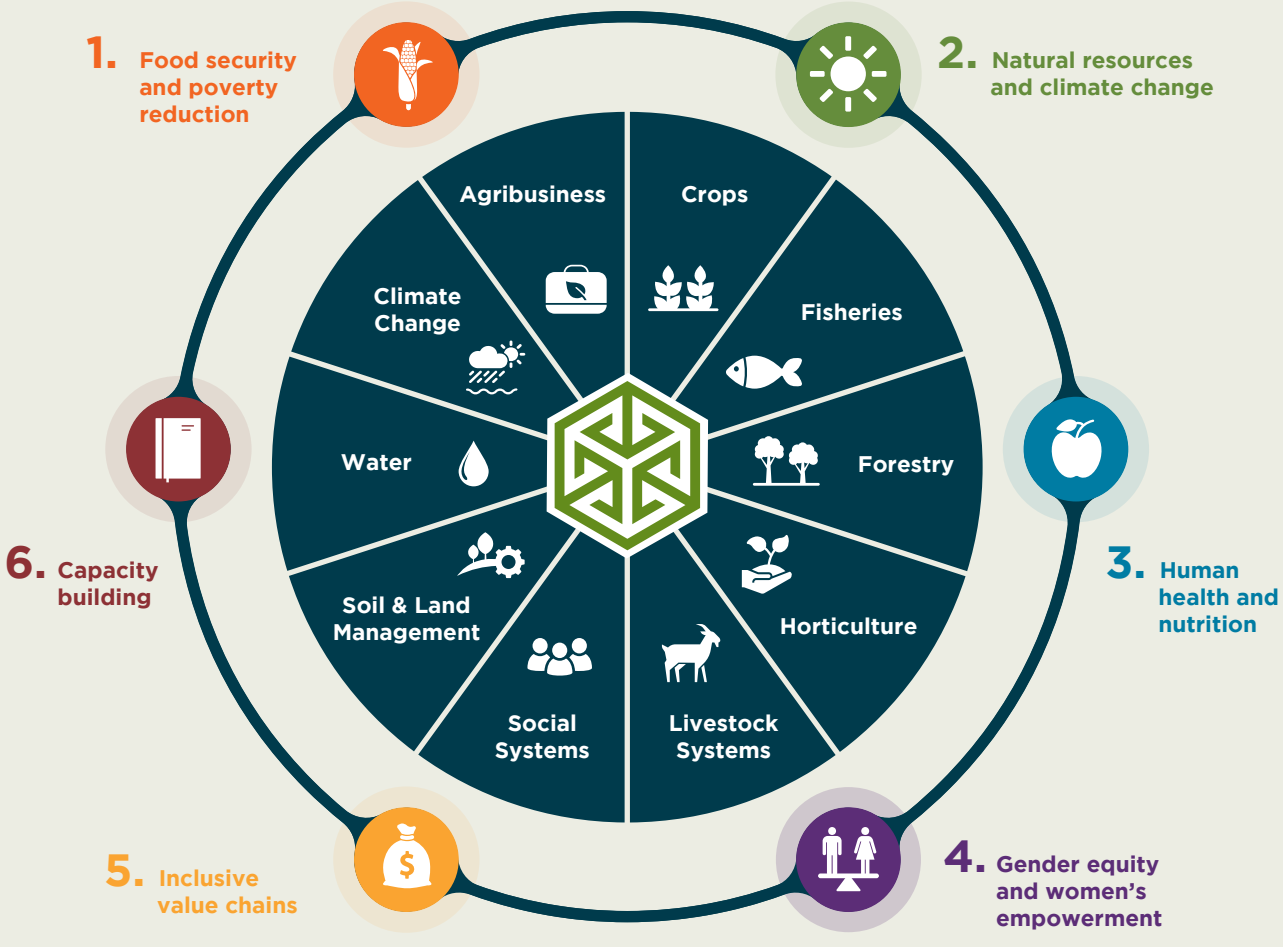
As I complete my final year as the CEO of ACIAR, I am confident that ACIAR is well positioned and well prepared to continue the great work that we do, and to deliver on our 10-year strategy successfully. With its highly committed and skilled staff and partners in Australia and our partner countries, and robust research programs, including the growing Climate Change Program, ACIAR will undoubtedly add to the 40 years of durable impact and tremendous return on investment from this most strategic element of the Australian aid program.

Professor Andrew Campbell
Chief Executive Officer

Our focus

The ACIAR 10-Year Strategy 2018–2027 sets out 6 high-level strategic objectives that guide our partnerships, programs and projects.

While projects are managed within one of our 10 research programs, they also address several or all strategic objectives. These objectives are consistent with the purpose stated in our enabling legislation and reflect the development policy imperatives of the Australian Government.



2021–22 highlights

JUL 2021

ACIAR and Canada's International Development Research Centre (IDRC) hosted a United Nations Food Systems Dialogue and launched the Food Loss Research Program

SEP 2021

Hazel Aniceto joined ACIAR as Country Manager, Philippines

MAR 2022

A new mobile-first online learning program, ACIAR Learn, launched for agricultural researchers in ACIAR partner countries

Dr Neil Lazarow joined ACIAR as Research Program Manager, Water

APR 2022

ACIAR-supported scholars from across South-East Asia graduated from a new program developed by Charles Sturt University to advance river and fisheries management

New climate resilience program, the ACIAR Pacific Agriculture Scholarships, Support & Climate Resilience Program (PASS-CR), was launched in Fiji

MAY 2022

Kate Turner-Mann joined ACIAR as Director, Capacity Building

Luis de Almeida joined ACIAR as Country Manager, Timor-Leste

Dr Rachel Chikwamba, Dr Surmsuk Salakpetch and Mr Sunny Verghese were appointed as members of the Policy Advisory Council for international agricultural research

NOV 2021

Australian-Indonesian bamboo project - KANOPPI-2 - shines at COP26

The first entirely Vietnamese cohort of agricultural scientists and researchers commenced training for the John Dillon Fellowship

DEC 2021

ACIAR and the Pacific Community (SPC) renewed their research for development partnership with signing of new 5-year agreement

New One Health research program with IDRC commenced

JAN 2022

FEB 2022

Foreign Minister, Senator the Hon Marise Payne, spoke at a dinner celebrating 40 years of ACIAR

100th edition of the ACIAR Impact Assessment Series published, focused on the impact of ACIAR research over 40 years

JUN 2022

Australia's Commission for International Agricultural Research and Policy Advisory Council visited Vietnam for their annual in-country meeting

ACIAR marked 40 years since the ACIAR Act was passed by the Australian Parliament on 3 June 1982

Global research collaborations

ACIAR works with international partners to foster and implement global research collaborations that support strategic development in agriculture, fisheries and forestry.

During 2021–22, we strengthened multilateral relationships by serving the international research community in 3 key ways:

- as an engaged investor
- as a strategic research facilitator
- as a broker of Australian science (by engaging relevant Australian research expertise).

The funding and support of international agricultural research centres is a core role of ACIAR, mandated by the ACIAR Act (as amended). We foster and maintain active working relationships with international agricultural research centres by providing timely, reliable, consistent funding and strategic advice on research and governance.

We aim to be a valued, engaged funder and a strong, innovative partner in international agricultural research. Boosting food and nutrition security and food system resilience, tackling climate change impacts and managing water and biosecurity risks are global challenges affecting all countries. It makes no sense for every country to try to do all its own research on these issues unilaterally. We support multilateral partners because they have strategically valuable, place-based physical and intellectual assets.

Chief among our multilateral collaborations is CGIAR – the world's largest agricultural innovation network. CGIAR, which celebrated its 50th anniversary in 2021, conducts world-class, interdisciplinary research combining biophysical and social sciences to deliver development impact at scale in developing countries, with an annual budget of about US$900 million.

Photo: Vu Khanh Long

Australia, and subsequently ACIAR, has had a strong relationship with CGIAR since it was established in 1971. ACIAR has represented Australia and managed its financial contribution to CGIAR since 1992. ACIAR, on behalf of Australia, has high-level representation on CGIAR governance bodies. Australia's expertise in and commitment to international agricultural research is reflected in many Australian research leaders having influential roles throughout CGIAR.

In addition to the CGIAR engagement, during 2021–22, ACIAR continued its engagement with international agricultural research centres and networks, including:

- The Pacific Community (SPC), with whom we renewed our research-for-development partnership in December 2021 by signing a new 5-year agreement that extends the partnership beyond 35 years.
- Asia–Pacific Association of Agricultural Research Institutions (APAARI), where ACIAR, on behalf of Australia, has chaired the Executive Committee for a 2-year term which was recently extended to 2024.
- World Vegetable Centre (WorldVeg), with whom our strategic partnership arrangement ends in 2022. We have begun to develop a new arrangement with WorldVeg in recognition of the organisation's valuable role in research for development and the conservation of vegetable genetic diversity.
- Centre for Agriculture and Biosciences International (CABI).

ACIAR also develops and manages co-investment alliances and partnerships with like-minded organisations and funders. Co-investment partnerships leverage capacity and complementary research strengths to build a critical mass of resources to invest in more ambitious research.

Key partners in co-investment alliances during 2021–22 included Canada's International Development Research Centre (IDRC), with whom we are delivering 3 key research programs:

- Cultivating Africa's Future Fund (CultiAF2)
- Food Loss Research Program
- ACIAR–IDRC Research Program on One Health (AIRPOH), which introduced 4 new projects addressing issues at the human-animal-environment interface through a collaborative, multi-sectoral approach.

Another co-investment, the Alliance for Agricultural Research and Development for Food Security, is a joint initiative between ACIAR, the Syngenta Foundation for Sustainable Agriculture and the Crawford Fund. In 2021–22, through the Alliance, we continued to co-fund the 'Demand-led plant breeding' project in Africa, concluded a small research study of participating farmer hubs in Bangladesh and co-designed a new project on soil health.

Co-investment programs take many forms, from shared design and implementation of a research suite to programs designed to support industry and build capacity.

In 2021–22, we continued our association with:

- Coconut Genetic Resources Network – ACIAR, DFAT and the International Coconut Community continued their collaboration to reinvigorate and sustain the Coconut Genetic Resources Network (COGENT).
- Department of Foreign Affairs and Trade (Australia) – under a record of understanding, we continued managing 11 activities funded by and co-invested with DFAT. Through an additional DFAT investment, we also broadened an existing ACIAR-supported fisheries project to include scaling of fish passage technologies across Mekong countries.

Australia is also a member of the Global Research Alliance for Agricultural Greenhouse Gases (GRA), a global collaboration finding ways to grow more food without increasing greenhouse gas emissions. ACIAR represents Australia on the GRA and concluded its term as chair of the 65-country alliance in March 2022. During the term, ACIAR also chaired the working group developing the second GRA Strategic Plan and co-chaired the GRA Integrative Research Group with Canada and France.

40 years of impact

For more than 33 years, ACIAR has undertaken systematic, independent impact assessments and adoption studies of its portfolio of research activities.

These assessments have, where possible, quantified the achievements of our Australian and international research partners, and have informed the selection, design and delivery of subsequent ACIAR research investments.

In February 2022, we published the 100th edition of the ACIAR Impact Assessment Series, 'The impact of ACIAR work in agricultural research for development 1982–2022'. The report comprises 2 volumes, presenting quantitative and qualitative impacts of ACIAR work over 4 decades.

Volume 1 provides compelling evidence of the significant returns on our research investment in our region. This aligns with international research and evaluation work that has consistently found agricultural research-for-development to be an extremely effective and efficient way of investing overseas development assistance funds.

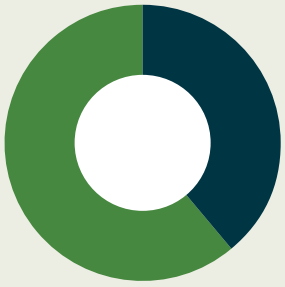
Volume 2 presents the findings of a sizeable cross-case analysis of past projects. Recognising that not all impacts can be crystallised in production numbers or financial returns, this study applied qualitative comparative analysis to identify the key research design, management and practice principles that have supported the effective translation of research knowledge into development outcomes.

Both volumes of Impact Assessment 100 are available to download on the **ACIAR website.**

Total benefit of ACIAR-supported projects

A$64 billion

Projects in this study represent approximately 10% of ACIAR investment since 1982



- Benefits attributed to ACIAR **$25.2 billion**
- Benefits attributed to partners **$39.2 billion**

Benefit: cost ratio

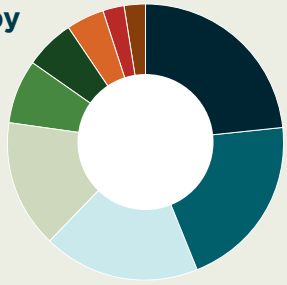
43:1

For projects examined in this study with outcomes specifically attributed to ACIAR

4:1

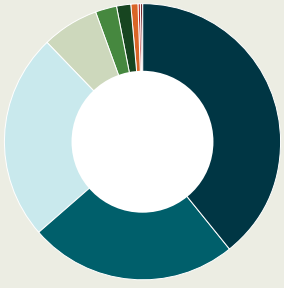
For all ACIAR projects – based on the extreme assumption that projects not examined in this study generated no benefit at all

Net benefit by country



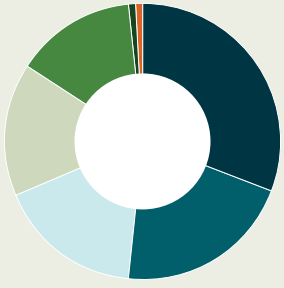
- Indonesia **$14.7 billion**
- India **$13.0 billion**
- Vietnam **$11.5 billion**
- China **$9.4 billion**
- Philippines **$4.8 billion**
- Australia **$3.7 billion**
- Africa **$2.7 billion**
- Thailand + others **$1.7 billion**
- Papua New Guinea **$1.4 billion**

Net benefit by research area



- Crops **$24.6 billion**
- Livestock Systems **$15.3 billion**
- Forestry **$15.3 billion**
- Fisheries **$4.1 billion**
- Water and Climate **$1.5 billion**
- Agribusiness **$1.1 billion**
- Horticulture **$0.5 billion**
- Soil and Land Management **$0.2 billion**
- Social Sciences **$0.1 billion**

Net benefit by impact pathway



- New varieties **$19.4 billion**
- Pest and disease **$13.1 billion**
- Capacity building **$10.8 billion**
- Systems management **$9.8 billion**
- Input management **$8.8 billion**
- Post-harvest **$0.6 billion**
- Policy **$0.4 billion**

ACIAR in the Indo-Pacific

Through longstanding partnerships with many countries in the Indo-Pacific region, ACIAR supports collaborative research on productivity, resilience, sustainability and equity in agriculture, forestry and fisheries systems to reduce poverty and improve livelihoods.

This work is dominated by bilateral and regional research projects underpinned by longstanding country partnerships. During 2021–22, 181 projects were active in our operational area. These projects are collaborations between Australian and international scientists with in-country partners and brokered by ACIAR research program managers across 10 areas of research.

Our work is organised in 4 regions of operation in the Indo-Pacific, with 31 partner countries and guided by locally engaged staff in 11 Country Offices.

This chapter highlights significant achievements and events from research collaborations and events in 2021-22.

Pacific

59
projects

East and South-East Asia

85
projects

South Asia

26
projects

Eastern and Southern Africa

24
projects

Note: some projects occur in more than one region, therefore the total of projects in each region will exceed the total number of individual projects listed on page 2.

Pacific island countries

Pacific

A$8.54 million
Supporting research & programs

41
research activities

3
Agribusiness

4
Climate Change

1
Crops

9
Fisheries

3
Forestry

9
Horticulture

7
Livestock Systems

3
Social Systems

2
Soil and Land Management

0
Water

Photo: Sunayna Nandini, ACIAR

More than 40 agritourism enterprises were supported to develop their on-farm experiences, including processing tours, accommodation, and farm-based recreational activities through Phase 2 of the Pacific Agribusiness Research in Development Initiative (PARDI 2). The initiative identified agritourism as a useful diversification option for agribusinesses regularly impacted by climate-related disasters. The project led to the development of the Vanuatu Government-led Food Tourism and Agritourism Initiative, which won a global Island Innovation Award for 'Most Transformational Government Sustainability Initiative' in May 2022.

AGB/2014/057 | Agribusiness | University of the Sunshine Coast

It is prohibitively expensive for smallholder farmers in Fiji to access soil information using traditional analytical methods. This limits their capacity to make informed soil management decisions based on accurate information. The research team of the 'Soil management in the Pacific islands' project installed spectral analysis technology at the Fiji Ministry of Agriculture soil laboratory. The Ministry is now successfully using the technology as standard practice as a result of capacity building activities delivered by the project, and smallholders are able to obtain soil health information for as little as A$5 instead of A$200.

SMCN/2016/111 | Soil and Land Management | CSIRO

Research has long established that climate change impacts men and women differently and that diverse voices with diverse roles in farming families must contribute to adaptation solutions. Despite this awareness, actions on gender-equitable climate response and associated finance have been slow to emerge. An ACIAR-supported small research activity explored structural and institutional barriers at the highest levels, which may be preventing progress, and gathered emerging evidence to work around these barriers, including with civil society organisations in Pacific island countries. The research team released a guide to support more strategic gender negotiations in COP processes, which informed the Pacific negotiating team for COP27.

CLIM/2021/110 | Climate Change | Queensland University of Technology

HIGHLIGHT

Sweet success in Pacific beekeeping

A 4-year project led by Dr Cooper Schouten of Southern Cross University is increasing the productivity and profitability of smallholder beekeeping operations in Fiji and Papua New Guinea.

Bees are food security's unsung heroes. With more than 75% of the world's food crops and 35% of global agricultural land depending on pollination, bees and other pollinating animals form a critical link in the global food chain.

In addition to the vital importance of bees to the planet, beekeeping can be an excellent way of making money without exacerbating environmental degradation.

'Often, when people think about bees, they think about honey, but bees have much more to offer than just honey,' said Dr Schouten.

'Beekeeping has a negligible carbon footprint and honeybees produce wax and propolis, which can be developed into profitable products. Bee products have important health properties, and honey doesn't readily spoil, so it can be sold in times of financial hardship.'

At the height of the COVID-19 pandemic, many Pacific islanders took up beekeeping to supplement their incomes. But, like any livestock, bees must be carefully managed to be productive.

Regular requeening of bee colonies is vital to maintaining healthy, productive hives.

In 2022, for the first time in more than 2 decades, Fiji imported queen bees from abroad, accepting 20 Australian breeder queens.

ACIAR Research Program Manager for Livestock Systems, Dr Anna Okello, said this marks a significant milestone for the project.

'The arrival of the Australian queen bees for Fijian beekeepers is an important step towards a more resilient and productive national beekeeping industry in Fiji,' she said.

Knowledge of biosecurity, pest and disease management, and an understanding of honeybee nutrition and genetics are equally critical to success.

In partnership with local governments and beekeeping associations, researchers are working with extension officers, the private sector and rural beekeepers to enhance capacity through various research and training activities.

The project team has developed a program that exemplifies approaches to support organisations to implement effective beekeeping programs that grow inclusive family businesses and strengthen Pacific beekeeping industries.

LS/2014/042 | Livestock Systems | Southern Cross University

Photo: Dr Cooper Schouten

Papua New Guinea

Pacific

A$4.87 million
Supporting research & programs

24
research activities

0
Agribusiness

0
Climate Change

2
Crops

4
Fisheries

3
Forestry

6
Horticulture

3
Livestock Systems

3
Social Systems

3
Soil and Land Management

0
Water

Photo: Conor Ashleigh

Women's groups involved in the 'Sweetpotato integrated pest management' project in PNG are producing and selling sweetpotato flour made from roots unsuitable for sale in supermarkets, which is a significant value-add to good quality roots. The women's groups are investigating opening a shopfront to sell a range of products produced through this and another ACIAR-supported project, including honey. Business courses developed by the project team are helping the women to create business plans to ensure further success.

HORT/2014/097 | Horticulture | Central Queensland University

Masterclasses were held in Bougainville, Goroka, Kokopo and Lae to train staff from ACIAR-supported projects to conduct Family Farms Team training. The training combines financial literacy education, agricultural planning techniques, and banking and saving training to help improve livelihoods and reduce gender inequalities in farming communities. The farmer learning and extension model was developed through previous research under the 'Transformative Agriculture and Enterprise Development Program' (TADEP), jointly funded by the Australian Department of Foreign Affairs and Trade and ACIAR.

ASEM/2014/095 | Social Systems | University of Canberra

The 'Developing the cocoa value chain in Bougainville' project team has been working to improve cocoa production and quality, market access and healthy living for smallholder farmers. The Cocoa of Excellence 2021 competition judges recognised a sample of Bougainville cocoa beans to be among the top 50 in the world. Grown by the Bougainville Department of Primary Industries at its research station in Kubu, the samples were submitted to the competition in Paris, where they were judged alongside 235 cocoa beans. This project is supported through TADEP.

HORT/2014/094 | Horticulture | The University of Sydney

Timor-Leste

Pacific

A$1.17 million
Supporting research & programs

5
research activities

0
Agribusiness

0
Climate Change

1
Crops

2
Fisheries

0
Forestry

0
Horticulture

2
Livestock Systems

0
Social Systems

0
Soil and Land Management

0
Water

In 2022, the long-term partnership between ACIAR and Timor-Leste was strengthened by the opening of an ACIAR Country Office in Dili and the appointment of Mr Luis de Almeida as Country Manager, Timor-Leste.

Ending in 2022, the 'Agricultural innovations for communities for intensified and sustainable farming systems in Timor-Leste' project has identified and promoted cropping intensification with pulses and demonstrated that the application of rice hull-derived biochar alleviated soil constraints. Another project starting in 2022 will continue research to address soil constraints that limit the productivity of Timor-Leste farms. The new project will also continue to develop intensification options and management strategies to support sandalwood production.

CIM/2014/082 | Crops | The University of Western Australia

Cambodia

East and South-East Asia

A$2.88 million
Supporting research & programs

14
research activities

2 Agribusiness

0 Climate Change

2 Crops

2 Fisheries

2 Forestry

0 Horticulture

2 Livestock Systems

2 Social Systems

2 Soil and Land Management

0 Water

Photo: Majken Søgaard

The 'Soil management for Cambodian uplands' project team facilitated a collaboration with the UN Food and Agriculture Organization and the Japan International Cooperation Agency to develop the foundations of a national soil mapping system. The project teams are working to establish the architecture and the standards to help strategically focus and target soils and agricultural research and development. The long-term goal is to develop a national soil map and information system.

SMCN/2016/237 | Soil and Land Management | Murdoch University

Due to labour scarcity, Cambodian farmers have moved away from transplanting rice seedlings in puddled soil, however the replacement method – seeding by hand – requires a large amount of seed (up to 200 kilograms per hectare). The 'Sustainable intensification and diversification of lowland rice' project team demonstrated that direct row seeding with a small machine allows the use of less seed (60–80 kilograms per hectare) and investment in a higher quality seed. Cambodia's government now supports the move to mechanised seeding, with support for machinery and the construction of a dedicated seed facility.

CSE/2015/044 | Crops | The University of Sydney

Australia celebrated 70 years of partnership with Cambodia, with ACIAR research programs playing a pivotal role in its success. Since 1990, ACIAR-funded researchers have worked closely with Cambodian farmers to improve the productivity and sustainability of agricultural systems by delivering more than 100 agricultural research projects.

HIGHLIGHT

Australia to scale-out fish-saving technology in South-East Asia

Many fisheries in South-East Asia are under threat from the growing development of irrigation and hydropower infrastructure.

Previous ACIAR-supported research has shown that fish passages can mitigate the impacts of irrigation development and have lasting economic and social benefits for river communities by allowing fish to migrate up and down waterways to access feed sources and breeding spots.

The Australian Government announced a A$5 million investment in an ACIAR-supported initiative known as 'FishTech' to protect fish and boost river health and food security to increase climate resilience across the Mekong region.

The announcement, made by the Australian Deputy Ambassador to Lao PDR, Mr Dan Heldon, in June 2022, was welcomed by ACIAR CEO Professor Andrew Campbell.

'Fish provide 60% of all protein consumed by humans in the Mekong Basin. Typically, Mekong fish species migrate upstream to breed and back down again to complete their life cycles. Structures like irrigation weirs or hydroelectric dams that block fish migration upstream or downstream ultimately threaten the food security of the region,' said Professor Campbell.

'This investment is a clear example of the Australian Government, through DFAT and ACIAR, working collaboratively with country partners to deliver innovative new technology to protect native fish and boost river health across the Mekong Basin.'

'FishTech' project leader, Professor Lee Baumgartner of Charles Sturt University, has been involved with the ACIAR-supported fish passage program in South-East Asia since 2006.

In that time, the program has facilitated the construction of 28 fish passes in Myanmar, Laos, Thailand, Cambodia and Vietnam and has identified more than 20 sites for implementing demonstration fish passages in the future.

The 'FishTech' project team and partners also developed a Graduate Certificate course in fisheries management for Charles Sturt University, from which 6 scholars from Laos, Indonesia and Myanmar have graduated.

FIS/2018/153 | Fisheries | Charles Sturt University

China

East and South-East Asia

A$0.12 million
Supporting research & programs

2
research activities

1
Agribusiness

0
Climate Change

0
Crops

0
Fisheries

0
Forestry

1
Horticulture

0
Livestock Systems

0
Social Systems

0
Soil and Land Management

0
Water

Photo: Majken Søgaard

Success in rural transformation is measured not only by income growth in the rural population, but also by the degree of inclusiveness in the society. A project in China, Bangladesh, Indonesia and Pakistan, led by Dr Chunlai Chen of the Australian National University, has found that while rural transformation in these 4 countries has led to per capita income growth and poverty reduction, rural inequality has deepened. The participating countries are at different stages of rural transformation, which has enabled researchers to observe and understand the pathways and drivers of transformation.

The research suggests that investments, policies and institutions play an important role in facilitating the success of rural transformation and has identified that increased investment in gender equality initiatives can increase success. Policy recommendations will be identified in the next stage of the project.

ADP/2017/024 | Agribusiness | Australian National University

Indonesia

East and South-East Asia

A$5.29 million
Supporting research & programs

25
research activities

7
Agribusiness

4
Climate Change

1
Crops

5
Fisheries

2
Forestry

3
Horticulture

3
Livestock Systems

1
Social Systems

3
Soil and Land Management

0
Water

Photo: Charles Sturt University

The KANOPPI-2 bamboo project, which has improved the lives of women and potentially helped to mitigate the effect of climate change, was showcased at the world's largest climate gathering, the 26th UN Climate Change Conference of Parties (COP26) in Glasgow in November 2021. Objective coordinator Desy Ekawati shared the lessons from the project and her work with the Environmental Bamboo Foundation as part of her presentation: 'Women saving the planet: gender equality in the fight for climate change'. The KANOPPI-2 project looked to discover opportunities for bamboo to generate income for Indonesian rural communities. It identified ways to reposition the non-timber forest product so it can underpin a sustainable industry delivering added value to the economy and environment.

FST/2016/141 | Forestry | World Agroforestry Centre

ACIAR-supported scholars from Indonesia, Laos and Myanmar, including Indonesia scholars Rezki Antoni Suharmi and Moh. Faozan Tsani, were among the first graduates of a new program developed by Charles Sturt University to advance river and fisheries management. The course's development and the scholars' financial support are part of a broader project to facilitate greater adoption of fish conservation technology in South-East Asia through improved scientific capacity and governance structures.

FIS/2018/153 | Fisheries | Charles Sturt University

HIGHLIGHT

Australia & South-East Asia join to control mango pest

An ACIAR-supported project is showing promising results in reducing fruit fly damage to mangoes grown in Indonesia and the Philippines.

Indonesia is home to an estimated 2.3 million mango growers, with more than 70% being resource-poor smallholders.

Reducing the damage and impacts caused by fruit fly can decrease food loss, improve fruit quality and boost farmer livelihoods.

The research shows that by using a systems approach to pest management with male lures, targeted protein bait spraying, sanitation and monitoring, farmers can significantly reduce fruit fly populations and infestations.

ACIAR Research Program Manager for Horticulture, Ms Irene Kernot, said the key is combining lures and baits over specified areas. Such 'area wide management' programs mean the fruit fly population is reduced over the whole treated area and provides a good alternative to chemical cover sprays.

She said this project is already delivering better quality fruit to market.

'In Indonesia, growers can now leave their local variety of mango 'Gedong Gincu' on the tree a little longer, allowing them to harvest and sell more mature fruit with better blush at a higher price.'

Project teams in both Indonesia and the Philippines have been able to maintain fruit fly populations and infestations at low levels compared to farms that are not participating in the program.

Areas in Indonesia not participating in the area wide management program saw damage to mango crops reaching as high as 67%. However, damage fell to 0–0.2% within 6 months of implementation in areas covered by the program.

The project teams have engaged mango farmer groups, decisionmakers and government pests and diseases observers through group discussions, training and regular online 'Fruits Talks'.

The project also seeks to solve other fruit quality issues, including nutrition, diseases, post-harvest handling and post-harvest diseases. Trials are underway to test the impact of fruit bagging, hot water treatments and post-harvest fungicides to improve the quality and shelf life of the fruit.

In the future, these activities can be scaled out across the Asia-Pacific region and complement other efforts to improve fruit quality and yield.

HORT/2015/042 | Horticulture | Queensland Department of Agriculture and Fisheries

Laos

East and South-East Asia

A$3.55 million
Supporting research & programs

17
research activities

2
Agribusiness

0
Climate Change

1
Crops

2
Fisheries

2
Forestry

1
Horticulture

3
Livestock Systems

3
Social Systems

3
Soil and Land Management

0
Water

Photo: Majken Søgaard

ACIAR CEO Professor Andrew Campbell was presented with a Certificate of Appreciation by the Lao Minister of Agriculture and Forestry, Dr Phet Phompipak, recognising 40 years of ACIAR-supported work in the region and 70 years of unbroken diplomatic relations between Laos and Australia.

Researchers from the National University of Laos used skills and knowledge gained through 'Value-adding to Lao timber products' projects to build beds for COVID-19 patients at the height of the pandemic. Three successive projects encouraged the development of innovative wood processing technologies and industries and have focused on engineered wood products to maximise value from plantations. To help their community, a team of staff, students and alumni from the Faculty of Forest Science secured a grant to design and build ready-to-assemble beds.

FST/2016/151 | Forestry | The University of Melbourne

ACIAR-supported scholars from Indonesia, Laos and Myanmar, including Lao scholars Somphou Phasulath and Vaviyo Simonkhoun, were among the first graduates of a new program developed by Charles Sturt University to advance river and fisheries management. The course's development and the scholars' financial support are part of a broader project to facilitate greater adoption of fish conservation technology in South-East Asia through improved scientific capacity and governance structures.

FIS/2018/153 | Fisheries | Charles Sturt University

HIGHLIGHT

From little things, big things did grow

From an ACIAR-supported research project and a National University of Laos research facility has come the know-how to transform small tree stems into high-value engineered wood products.

The wood manufacturing industries in Laos are in their infancy compared with those in neighbouring countries.

In 2017, the 'Advancing enhanced wood manufacturing industries' project (also known as VALTIP3) led by Dr Hilary Smith of the University of Melbourne set out to deliver a program to support the development of new processing capabilities and a range of engineered wood products that can be produced from small-diameter timbers, including plywood, glue-lam beams and panel products incorporating agricultural waste.

The project's social, scientific and economic benefits are now rolling in.

Three greenfield industrial developments have resulted from 3 ACIAR-supported forestry projects. One such development is a US$26 million state-of-the-art plywood mill now selling their products into Australia and 4 other countries.

ACIAR Research Program Manager for Forestry, Dr Nora Devoe, has visited hundreds of processing plants around the world but this mill is different.

'A transformative aspect of this investment has been hiring women to staff the plant, doing every job from driving log trucks to operating veneer lathes and plywood presses, paid equally with men in the same positions,' said Dr Devoe.

Female participation across the project is high, with female students from Laos and Australia actively participating in research and training. The project team has also completed a gender study to identify opportunities to improve employment conditions for women.

Perhaps the most significant project achievements so far have been the high demand by plantation-wood processing companies to recruit Faculty of Forest Science graduates from the National University of Laos into their operations and by the government and other stakeholders looking to project team members for their contributions to policy changes.

This comes as a result of the intensive training provided for current and former Faculty of Forest Science academic staff and graduates, which included technical training as well as building knowledge of market requirements, timber legality and chain of custody.

FST/2016/151 | Forestry | The University of Melbourne

Photo: Dr Nora Devoe, ACIAR

Myanmar

East and South-East Asia

A$1.13 million
Supporting research & programs

0
research activities

0
Agribusiness

0
Climate Change

0
Crops

0
Fisheries

0
Forestry

0
Horticulture

0
Livestock Systems

0
Social Systems

0
Soil and Land Management

0
Water

Photo: Conor Ashleigh

The political instability sparked by the military coup of February 2021 has resulted in Australia's development program with Myanmar being redirected to support the immediate humanitarian needs of the most vulnerable, with non-government partners coordinating implementation. Many of our research programs were halted and ACIAR is not supporting any new research collaborations.

ACIAR-supported scholars from Indonesia, Laos and Myanmar, including Myanmar scholars Aye Myint Swe and Nyi Nyi Tun, were among the first graduates of a new program developed by Charles Sturt University to advance river and fisheries management. The course's development and the scholars' financial support are part of a broader project to facilitate greater adoption of fish conservation technology in South-East Asia through improved scientific capacity and governance structures.

FIS/2018/153 | Fisheries | Charles Sturt University

Philippines

East and South-East Asia

A$4.23 million
Supporting research & programs

17
research activities

3
Agribusiness

0
Climate Change

0
Crops

4
Fisheries

0
Forestry

3
Horticulture

3
Livestock Systems

1
Social Systems

3
Soil and Land Management

0
Water

Photo: Jeoffrey Maitem

Vegetable farmers are enjoying 48% higher prices than they traditionally achieve thanks to certification developed by the PhilGAP project team. The certification process resulted in sustained links to markets, including supermarkets, concessionaires, hospitals, fast food chains and public market stalls. The project has set up a new safe vegetable store in the Baybay wet market and has gained support from the Baybay city government to establish a PhilGAP-certified section of the Baybay market.

HORT/2016/188 | Horticulture | Applied Horticultural Research, Australia

An Exchange of Letters was signed between the Philippines Department of Science and Technology (DOST) and ACIAR to formalise their commitment to a co-investment scheme for a graduate scholarship program aligned with the John Allwright Fellowship (through the Australia Awards). The program aims to harness the strengths and expertise of Filipino and Australian researchers to solve real-world problems through scientific evidence. This pilot proposal has the potential for scaling out to other partners throughout the Indo-Pacific, representing a new co-investment model for ACIAR.

ACIAR Impact Assessment Series No. 102, *An Integrated Approach to Ex-post Impact Assessment*, was launched at an event commemorating the 43rd anniversary of the College of Economics and Management at the University of the Philippines Los Banos (UPLB). The Australian Embassy in the Philippines Deputy Head of Mission Richard Sisson and UPLB Chancellor Dr Jose Camacho, Jr attended the event. The report is the product of several years of research into developing solutions to the challenge of evaluating research impacts beyond the “numbers”, or the economic frameworks and values that result from research work.

HIGHLIGHT

Strong partnerships lead to project success in the Philippines

An ACIAR project focusing on rubber-based cropping systems in the southern Philippines is enjoying success in engaging new partners thanks to long-term connections and alumni.

Rubber is the fourth largest crop in Agusan del Sur, the poorest province of the southern Philippines. Only 50% of the rubber area planted is productive or tappable, and yields are much lower than the national average.

By introducing improved, profitable rubber-based intercropping systems that adapt to local land and climatic conditions and promote effective soil management practices, a project led by Professor Chengrong Chen of Griffith University is boosting household incomes for smallholder subsistence farmers.

Professor Chen and his team have been working closely with the Provincial Government of Agusan del Sur to promote sustainable diversification and management of rubber production.

In its first 3 years, the project demonstrated the benefits of diversification and changes in rubber tree management practices to farmers, communities, government agencies, research partners and other stakeholders.

As a result, the Provincial Government integrated the knowledge and management methods developed by project researchers into their Upland Sustainable Agro-forestry Development Program.

This information is now being disseminated to smallholder rubber producers across the country by the Philippines government.

ACIAR Research Program Manager for Soil and Land Management, Dr James Quilty, explained that the project's success is due to the strong partnership between Australia and the Philippines.

'The strengths of the partnerships in this project are built on a foundation of the long-term partnership between Australia and the Philippines, bolstered by more than 20 Australia Award fellows within the Provincial Government of Agusan del Sur, who is a key project partner,' said Dr Quilty.

'The Provincial Government recognises the skills, knowledge and experience gained by the Australia Awardees as crucial to supporting farmers and communities to improve their livelihoods and address poverty within the region.'

The Philippines Rubber Research Institute, the Agusan del Sur State Institute of Science and Technology, the Municipal Government of Trento and the Philippines Bureau of Agricultural Research have recently partnered with the project. This has resulted in additional complementary research into rubber-based cropping systems and further technical training for farmers and researchers.

SLAM/2017/040 | Soil and Land Management | Griffith University

Vietnam

East and South-East Asia

A$3.79 million
Supporting research & programs

28
research activities

8
Agribusiness

1
Climate Change

0
Crops

4
Fisheries

3
Forestry

0
Horticulture

6
Livestock Systems

2
Social Systems

4
Soil and Land Management

0
Water

Photo: Khanh Long

Nineteen Vietnamese agricultural scientists and researchers commenced their John Dillon Fellowship program in 2021, the first time that the fellowship has had an entirely Vietnamese cohort. In response to the COVID-19 pandemic, the program was redesigned to focus on individual country cohorts and be adaptive to the distinctive needs of partner organisations and the agriculture sector in each region. Developed jointly with the University of New England, the fellowship aims to enhance leadership skills, opportunities and pathways for mid-career professionals engaged in agricultural research-for-development.

Vice Minister Le Quoc Doanh of the Ministry of Agricultural and Rural Development awarded ACIAR CEO Professor Andrew Campbell a commemorative medal recognising the contribution of ACIAR to Vietnam's agricultural and rural development.

Australia's Commission for International Agricultural Research and Policy Advisory Council visited Vietnam to learn about the country's agricultural development priorities and explore research opportunities with Australia. A major focus of the delegation's visit was the Mekong Delta in the country's south, where the impacts of climate change are placing increasing stress on the region's agricultural production and food security.

HIGHLIGHT

Adapting to saltwater intrusion across the Indo-Pacific

Coastal and river delta communities throughout the Indo-Pacific are battling saltwater intrusion into agricultural lands, with rising sea levels likely to place increasing stress on food production.

ACIAR-supported research projects are connecting Australian agricultural knowledge to smallholder farmers to help rural communities adapt to saline conditions and produce food sustainably.

Various research efforts are underway, in areas ranging from the Indus Basin in Pakistan to the Mekong Delta in Vietnam.

In Bangladesh and India, in the Indus Basin, farmers are growing new crops and using new management techniques to produce more food and build their resilience to climate extremes.

'Farmers in the region primarily grew just rice, and only in the wet season, because it was the only reliable crop to grow,' said Dr Mohammed Mainuddin, project leader at CSIRO.

The project team showed that short-duration, high-yielding rice, which is harvested 2 to 4 weeks earlier than standard rice, can be grown successfully during the wet season. The short-duration varieties allow time for another crop to be planted and established before water scarcity due to the dry season becomes a problem.

'We have also identified associated management techniques that preserve freshwater through the dry season so it can be used to support crop production,' said Dr Mainuddin.

In Vietnam, the 'Farmer options for crops under saline conditions' project aims to equip local stakeholders with the best soil management techniques and alternative crop options to grow during the dry season when the threat of salinity is greatest.

Through glasshouse and field experiments the project, led by Dr Jason Condon of Charles Sturt University, has identified suitable crops to grow in the dry season and has demonstrated the beneficial use of mulches to decrease soil salinity and increase production.

Using Chameleon soil water sensors to manage irrigation has enabled water use to be halved without loss of yield and the reduced irrigation has led to significant savings in fuel, water and labour costs.

Farmers participating in the project are earning additional income as a result.

Lessons learned from these projects can be shared with other countries experiencing similar climate impacts in the future.

'In as far as the problems of sea-level rise and climate change impacting farms go, the Mekong is probably one of the worst deltas, so we are ahead of the game in a way,' says Dr Condon.

'We should take this opportunity to show other countries what their future is going to look like.'

LWR/2014/073 | Water | CSIRO
SLAM/2018/144 | Soil and Land Management | Charles Sturt University

Photo: Bangladesh Rice Research Institute

Bangladesh

South Asia

A$2.15 million
Supporting research & programs

13
research activities

1
Agribusiness

1
Climate Change

6
Crops

0
Fisheries

0
Forestry

0
Horticulture

0
Livestock Systems

0
Social Systems

1
Soil and Land Management

4
Water

Photo: Conor Ashleigh

The 'Mitigation and adaptation co-benefits modelling trial' project has led to an approved flagship project with the Global Research Alliance on Agricultural Greenhouse Gases (GRA). The project is trialling an approach to quickly and efficiently determine the best agricultural practices that farmers can adopt to reduce greenhouse gas emissions and adapt to climate change. Researchers hope this will accelerate the path from research into policy and practical actions in this Decade of Action for solutions to the Sustainable Development Goals.

CLIM/2021/109 | Climate Change | The Trustees of Columbia University in the City of New York

ACIAR hosted the first ever face-to-face meeting of ACIAR alumni in Bangladesh. Attendees had the opportunity to get to know each other, workshop a 5-year plan for alumni activities, including training and mentoring, and sharing knowledge. Alumni were joined by Ms Eleanor Dean, General Manager of Outreach and Capacity Building, and Dr Pratibha Singh, Regional Manager for South Asia.

HIGHLIGHT

Processing of mungbean increases crop value to farmers

Researchers are implementing an effective solution to increase income and nutrition benefits for smallholder farmers in Bangladesh.

The 'Incorporating salt-tolerant wheat and pulses into smallholder farming systems in southern Bangladesh' project is evaluating dry season crops suitable for the southern region of Bangladesh and possible innovations to intensify the system.

The project team, led by Dr William Erskine and Dr MG Neogi of the University of Western Australia, found that farmers were not obtaining the full income and nutrition benefits of their mungbean crops because of the lack of village-based dehulling facilities.

Smallholder farmers in southern Bangladesh produce two-thirds of the country's mungbean but consume very little.

The crop has high nutritional value and is a short-duration crop, requiring only 60–70 growing days to harvest. Still, farmer interest has historically been low because while consumers are paying up to A$2.6 per kilogram for hulled mungbean, the wholesale price for farmers of unhulled mungbean is often less than A$1.

In response to this issue, the project team established 3 pilot mungbean dehulling machines to understand the impact of mini-mills at the community level. Within 3 months, one of the mills had processed 507 kilograms of mungbean and 54 kilograms of lentils.

Village-based processing enables the farmers to sell a higher-value grain and encourages home consumption of this nutritious legume.

The increased return to growers from mungbean dehulled by the mini-mills has created a shift in farmer perceptions of the crop, with many farmers now indicating their interest in mungbean cultivation.

ACIAR Research Program Manager for Crops, Dr Eric Huttner, says that the mini-mills are unlocking the potential of mungbean production.

'The next step for ACIAR and the project team will be to consider the path to distributing the dehulling mini-mills at scale," said Dr Huttner.

'The work on mungbean processing expanded the original project scope, building on the outcomes of previous projects on small machinery. This is an excellent example of the role of adaptive management in capturing unexpected opportunities.'

CIM/2014/076 | Crops | The University of Western Australia

India

South Asia

A$0.85 million
Supporting research & programs

8
research activities

0
Agribusiness

0
Climate Change

4
Crops

0
Fisheries

0
Forestry

0
Horticulture

0
Livestock Systems

0
Social Systems

0
Soil and Land Management

4
Water

Photo: Conor Ashleigh

An Australian Department of Foreign Affairs and Trade and ACIAR-supported project successfully developed a system to store more groundwater to help alleviate water scarcity in South Bihar, one of the most water-challenged regions in India. The aquifer storage and recovery system recharges wet season water into an aquifer located at a pilot site, where there is often insufficient water for essential needs during the dry season. With local agricultural production depending heavily on rainfed irrigation, this innovative system improves food security and food system resilience.

WAC/2018/211 | Water | Nalanda University

ACIAR and the Australian Department of Foreign Affairs and Trade contributed A$50,000 to the new Centre of Excellence for Conservation Agriculture at North Bengal Agriculture University, where agricultural extension officers, farmers, policymakers and service providers will receive training in conservation agriculture practices. The Centre will help extension officers share the most up-to-date information so that more smallholder farmers can learn about current labour-saving and production-boosting practices that support sustainable agricultural intensification.

Nepal

South Asia

A$0.73 million
Supporting research & programs

5
research activities

0
Agribusiness

0
Climate Change

2
Crops

0
Fisheries

1
Forestry

0
Horticulture

0
Livestock Systems

0
Social Systems

0
Soil and Land Management

2
Water

The 'Sustainable Development Investment Portfolio' (SDIP) program, which has supported the development of more sustainable food systems and improved the lives of more than 100,000 people in South Asia, concluded in 2021. ACIAR managed a large-scale food systems component of the program spanning India, Bangladesh and Nepal. The work has proven that big thinking and a broad approach can deliver lasting results for smallholder farmers and their communities. Funded by the Australian Department of Foreign Affairs and Trade, the program ran for 8 years and comprised more than 20 long-term and short-term projects.

Australian Ambassador to Nepal, HE Felicity Volk, hosted a lunch for 6 ACIAR alumni, 4 Meryl Williams Fellows and ACIAR Assistant Regional Manager for South Asia, Ms Chetali Chhabra, in April 2022. The group discussed policies and practices in agriculture, forestry, livelihoods, food security and governance.

Pakistan

South Asia

A$2.71 million
Supporting research & programs

12
research activities

2
Agribusiness

0
Climate Change

3
Crops

0
Fisheries

0
Forestry

2
Horticulture

2
Livestock Systems

0
Social Systems

0
Soil and Land Management

3
Water

Photo: Conor Ashleigh

A long-term research program across Pakistan's salinity-affected landscapes is underway using Australia's experience from the Murray–Darling Basin to guide engagement with farmers and landholders to tackle salinity in agricultural landscapes. Salinity affects at least 4.5 million hectares of land across Pakistan, meaning that, like in Australia, farmers face the challenge of developing agriculture within water-scarce, salinity-affected landscapes.

LWR/2017/027 | Water | Charles Sturt University

The 'Sustainable vegetable value chains' project is trialling the use of video to engage women farmers in gaining a better understanding of the tomato value chain. Researchers worked with farmers to change the traditional mindset from focusing on production to focusing on creating value for customers and consumers. Participants have reported that they are now selling their produce for higher prices after learning about the importance of grading rather than only removing damaged product.

HORT/2016/012 | Horticulture | Centre for Agriculture and Bioscience International

The ACIAR Pakistan office launched the inaugural meetings of the 'Agribusiness Reference Group in Pakistan' in Lahore and Karachi. The participants included owners, directors and managers from 28 firms active in agribusiness across Pakistan. Participants also involved senior officers from the Pakistan Agricultural Research Council, the University of Fasilibad and the University of Veterinary and Animal Sciences. The initiative will assist ACIAR-supported researchers in Pakistan to engage with private agribusiness firms by providing greater insight into private sector needs and issues, as well as those of smallholder farmers.

Sri Lanka

South Asia

A$0.39 million
Supporting research & programs

1
research activity

0
Agribusiness

0
Climate Change

0
Crops

1
Fisheries

0
Forestry

0
Horticulture

0
Livestock Systems

0
Social Systems

0
Soil and Land Management

0
Water

Sri Lanka has a well-developed and sustainable inland reservoir fishery that makes up approximately 12–15% of total fish production and significantly benefits rural communities in the Northern province. The Government of Sri Lanka has long recognised the potential for the extensive culture of the indigenous giant freshwater prawn (*Macrobrachium rosenbergii*) in inland reservoirs. Still, development has been ad hoc, with productivity and returns relatively low. A project is investigating stocking, monitoring and harvesting practices to optimise fish and prawn productivity and improve product quality. The research team will also conduct market-chain analysis to ensure farming practices meet market product requirements and that benefits are socially equitable.

FIS/2018/157 | Fisheries | James Cook University

Eastern and Southern Africa

A$4.70 million
Supporting research & programs

26
research activities

2
Agribusiness

0
Climate Change

9
Crops

5
Fisheries

1
Forestry

1
Horticulture

4
Livestock Systems

0
Social Systems

2
Soil and Land Management

2
Water

Photo: Emmie Wachira, ACIAR

Faba bean gall disease can cause losses of up to 100% of faba bean crops, severely impacting food security in Ethiopia, particularly for smallholders. In an exciting plant health research breakthrough, researchers working on an ACIAR-supported project discovered the true cause of faba bean gall disease. The discovery, published in the international journal *Plant Pathology*, identifies the pathogen *Physoderma viciae* responsible for the disease. Researchers can now develop management strategies that align with the pathogen's nature and behaviour.

CIM/2017/030 | Crops | The University of Western Australia

AgriFutures Australia, ACIAR and the International Centre for Insect Physiology and Ecology (*icipe*) launched a knowledge-sharing initiative to accelerate insect farming as an emerging industry in Africa and Australia. Insects as feed, food and fertiliser have tremendous potential to benefit sustainable development globally and contribute to waste management. The Emerging Insect Technology Hub will be a catalyst for scientists and industry to share knowledge and research to accelerate progress and uptake of insect technologies. One of the first activities will be to develop a gold standard black soldier fly manual.

HIGHLIGHT

Transforming irrigation in Southern Africa

ACIAR has invested in the 'Transforming Irrigation in Southern Africa' (TISA) project since 2013. This innovative partnership has brought together African and Australian researchers to improve farmer livelihoods, equity and community management in smallholder irrigation schemes in Mozambique, Tanzania and Zimbabwe.

'Africa is very similar to Australia, where water is often scarce, particularly in the dry season, so we really need to use water very efficiently,' said project leader, Professor Jamie Pittock of the Australian National University.

'Our research showed that when you put tools in the hands of farmers, they will find ways of using natural resources more efficiently and profitably.'

The project team introduced farmers to the soil water and nutrient monitoring tools consisting of Chameleon soil water sensors and wetting front detectors. These tools provide farmers with the data they need to make informed choices about managing their land, water and crops, which has dramatically increased yields.

The second crucial tool used by the project team is a social process called agricultural innovation platforms. These platforms foster engagement between stakeholders such as farmers, government officials, suppliers and marketers, and introduce farmers to higher-value crops, better seeds, new markets and improved farming practices.

These combined interventions have increased farm productivity, saved water and reduced the amount of time farmers spend irrigating by 65%, empowering hundreds of rural communities to transition from subsistence farming to profitable, self-sustaining irrigation systems.

Kiwere tomato farmer Anatalia Kilienya has reported that since deploying these tools, her earnings have increased from approximately A$17–23 to A$56 per acre, allowing her to buy a dairy cow for her family.

In May 2022, the project was presented with the Excellence in Practice Award for Ecosystem Development from the European Foundation for Management Development.

Professor Pittock said he was proud to lead an initiative where African and Australian scientists joined forces to reduce poverty and improve rural livelihoods.

'We believe that our agricultural research for development project has had a significant impact for a more equitable and sustainable world. This award is welcome recognition of the excellent work of our partners, especially in Africa, and a boost for promoting the solutions identified in our work for sustainable development,' said Professor Pittock.

The TISA project is scheduled to conclude in June 2023. The project team will focus on opportunities to scale up successful interventions in the final year.

LWR/2016/137 | Water | Australian National University

Photo: Andrew Munuwa

Benefits to Australia

>A$3.7 billion

Benefit to Australia, based on an assessment of 10% of ACIAR investment 1982–2021

Supporting Australia's national interests by contributing to sustainable economic growth and enhanced regional stability, ACIAR sits at the intersection of Australian agricultural research and its diplomatic outreach.

We have a strong track record of bringing Australian and international researchers together to improve sustainable agricultural productivity in both developing countries and Australia.

In this way, our investments contribute to Australia's trade and development policy efforts for a transparent, predictable, rules-based global trading system.

We work with partners across the Indo-Pacific region to tackle the intersecting challenges of health security, food security, water security and biosecurity, which ultimately feed into our national security.

Through longstanding relationships with our partner countries, we provide opportunities for Australian scientists to conduct real-world research that benefits our partner countries and Australian industry, by boosting the productivity and sustainability of agricultural systems.

The knowledge and technical capacity developed in ACIAR-supported projects can help tackle common challenges of all farmers in the Indo-Pacific region, including Australia.

Photo: Dr Cooper Schouten

Through our work, ACIAR is delivering benefits to Australia by:

- forming part of Australia's pre-border defence to international biosecurity threats
- 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.

HIGHLIGHT

Project team influences Queensland response to *Fusarium* wilt

***Fusarium* wilt, or Panama disease, is considered to be the most destructive of all banana diseases. In the early 2000s, ACIAR began supporting a program of work to reduce the impact of *Fusarium* wilt on banana production.**

Researchers have found that one of the projects within the program, the 'Integrated management of *Fusarium* wilt of bananas in the Philippines and Australia' project, will generate an economic benefit of A$120 million. Findings will be published in an upcoming ACIAR Impact Assessment report.

Bananas are an important commodity in the Philippines, the second largest exporter by value of bananas globally. Resilience to *Fusarium* wilt is growing in this essential industry due to increased scientific knowledge on the disease's epidemiology, containment, and management developed by the project team led by Dr Anthony Pattison of the Queensland Department of Agriculture and Fisheries.

This has had a significant economic impact in the Philippines, indicatively valued at A$27 million to 2028, the year to which benefits are expected to be generated. Even greater impact has been achieved in Australia.

One year after the 'Integrated management of *Fusarium* wilt' project began, the disease was detected in northern Queensland, home to more than 95% of Australia's banana production.

The project team had a significant influence in containing the disease, using scientific findings from the Philippines to develop disease suppression systems that have since gained widespread international credibility.

The Queensland Department of Agriculture and Fisheries used these findings to design capacity-building workshops for farmers and industry, focusing on the importance of ground covers, biosecurity measures, fertiliser practises and farm design in disease containment.

The disease has been largely contained thanks to these measures, with the number of infected farms increasing from 1 to only 5 from 2015 to 2022.

Disease suppression practices are also reducing soil and water pollutants contaminating the Great Barrier Reef.

With the project's indicative economic benefits to Australia there is no question that ACIAR-supported research can provide significant benefits to Australia.

HORT/2012/097 | Horticulture | Queensland Department of Agriculture and Fisheries

Photo: Conor Ashleigh

Capacity building

Innovation in the agriculture sector helps reduce poverty, increase food security and underpin broad-based economic growth. Building the capacity of agricultural researchers, their networks and institutions unlocks this innovation potential and supports countries to deploy relevant, effective agricultural practices and policies.

Strengthening the capacity of individuals and organisations in developing countries is central to empowering communities to develop by implementing and sustaining their own solutions. It is not a onetime effort for immediate and short-term results but a continuous improvement strategy to create sustainable and effective improvement over time.

Capacity building is at the core of everything that ACIAR does. 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, to support lasting change. We deliver a range of innovative capacity-building approaches focused on 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, 2-way transfers of ideas and technologies, and support 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 integrated with our ongoing technical work.

ACIAR also facilitates connections with capacity-building activities and researchers in Australia through our long-standing partnership with the Crawford Fund.

ACIAR capacity-building programs

Program	Objective	Active participants in 2021–22
Meryl Williams Fellowship	enhancing the skills emerging and current women leaders in agricultural science	40
John Allwright Fellowship	providing formal postgraduate training	37
John Dillon Fellowship	providing leadership and research management training for career development	37
Pacific Agriculture Scholarships and Support and Climate Resilience (PASS-CR) Program	supporting emerging agricultural scientists through scholarships at Fiji National University and the University of the South Pacific	23
ACIAR Alumni Program	supporting a diverse and dynamic network of agricultural researchers throughout the Indo-Pacific	180
Launch Fund	supporting ACIAR alumni to attend international events, such as conferences	8 events

HIGHLIGHT

Highlight: Breathing new life into soil

In Fiji, 2 ACIAR alumni are working with smallholder farmers to boost soil health and strengthen food security across the Pacific region.

Sustainable management of soil is critical to ensuring food and nutrition security. Soil fertility decline due to unsustainable land management in the Pacific region is causing productivity decline.

'Without soil, there is no life,' said Dr Ellen Iramu, a soil scientist based with the Pacific Community (SPC), a John Allwright Fellow and a member of the 'Soil management in Pacific Islands' project team.

'We are working with agricultural ministries and farmers to ensure that soil knowledge is enhanced and provides a reliable foundation for sustainable intensification of agricultural systems,' explained Dr Iramu.

This includes the development of the Pacific Soil Portal, a regional effort to collate information, knowledge and advice on soils and make them available to soil and land users.

'We aim to have the portal as the first and most trusted point of reference for any queries on the soils of the Pacific, forming an integral part of the emerging global soil information system,' said Dr Iramu.

Senior Research Office for the Ministry of Agriculture and ACIAR scholarship recipient, Dr Rohit Lal, shares similar sentiments on soil health, explaining that today's farming practices determine the soil conditions for the future generation.

'In Taveuni, the Ministry of Agriculture extension officers work with 3600 taro farmers. Over the years, we have seen the soil fertility decline, causing unsustainable production and threatening farmers' livelihoods,' said Dr Lal.

Dr Lal looked back to his ACIAR supported master degree, which focused on the mucuna bean, for ideas to improve soil fertility. Mucuna crops add nitrogen to soil, improve soil porosity and structure, and replenish nutrient content.

'Apart from mucuna, we encourage farmers to implement agroforestry practices, allowing commercial and small-scale farmers to diversify their production systems to be more profitable, mitigate risk and enhance agricultural landscape resiliency,' said Dr Lal.

These practices, combined with ACIAR-supported soils training, are changing the mindset of farmers in Fiji and the Pacific region. ACIAR General Manager, Outreach and Capacity Building, Ms Eleanor Dean, said that ACIAR brings a unique approach to capacity building.

'Our Capacity Building Program identifies and establishes opportunities for individuals and institutions in partner countries to boost technical, policy and management skills in agricultural research-for-development,' said Ms Dean.

'Dr Iramu and Dr Lal are not only valuable technical resources for farmers, agricultural departments and the Pacific, they are also champions inspiring future scholarship recipients, researchers and alumni members.'

Photo: Sunayna Nandini, ACIAR

Increasing influence and impact

>165,500 users
ACIAR website

>3,000
subscribers to *Partners* magazine

>86,500
followers on social media

>514,500
ACIAR website page views

Through our outreach activities, ACIAR aims to communicate the value and impact of our research investments.

We are also responsible for demonstrating the value of government investment through the aid program in international agricultural research to the Australian public.

Stakeholder engagement continues to be one of the priorities for ACIAR Outreach with the number of these activities growing throughout 2021–22 as the COVID-19 pandemic restrictions eased and travel recommenced.

To mark 40 years of operation since 3 June 1982, ACIAR Outreach developed recollections, achievements and impacts of ACIAR-supported work through stories, videos and podcasts. A key event was held in Canberra with many current and past staff, Commissioners, members of the Policy Advisory Council and researchers attending an ACIAR-hosted dinner to mark 40 years of ACIAR. Australia's Minister for Foreign Affairs Senator the Hon Marise Payne addressed the guests at the dinner and acknowledged the significant contribution that ACIAR and its partners have made to the immense challenges of agriculture and food production in the Indo-Pacific region.

We also participated in, organised, hosted and sponsored a number of events and awareness-raising initiatives. A key initiative included working with the Australian Regional Leadership Initiative, run by Save the Children Australia, on their visit to Fiji with Australian Members of Parliament and Senators as well as Australian business leaders.

ACIAR produces a diverse range of scientific publications to capture and share the results and experience gained through our research partnerships. In 2021–22, ACIAR published 11 books, guides and reports, covering topics ranging from community-based sandfish sea ranching in the Philippines to an assessment of impact of 40 years of ACIAR-supported research.

We also published our quarterly magazine, *Partners in Research for Development* and our monthly ACIAR e-newsletter.

Our social media channels continue to be a key communication tool for the organisation. With a consolidated effort, our followers across our channels continued to grow and engage further in 2021–22.

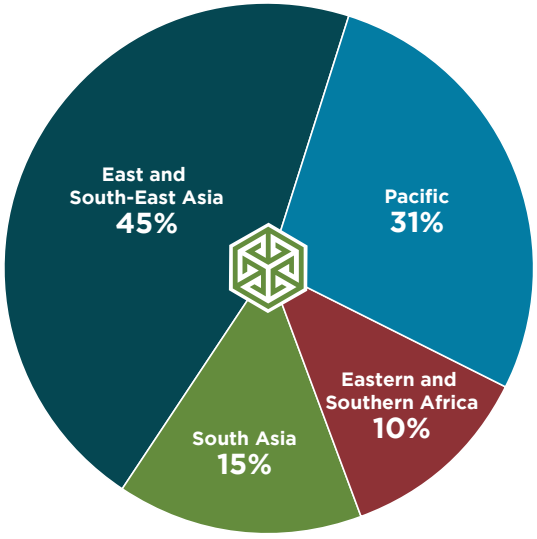
We also continued to develop our network of communications professionals in 5 country offices: Fiji, Kenya, Papua New Guinea, the Philippines and Vietnam.

The network enables ACIAR to find and tell great local stories and increase engagement with our partners and stakeholders in-country. Additional communication support was provided to the ACIAR country offices without an in-country communication officer. Recruitment activities continue, with the goal of growing the network to 8 officers.

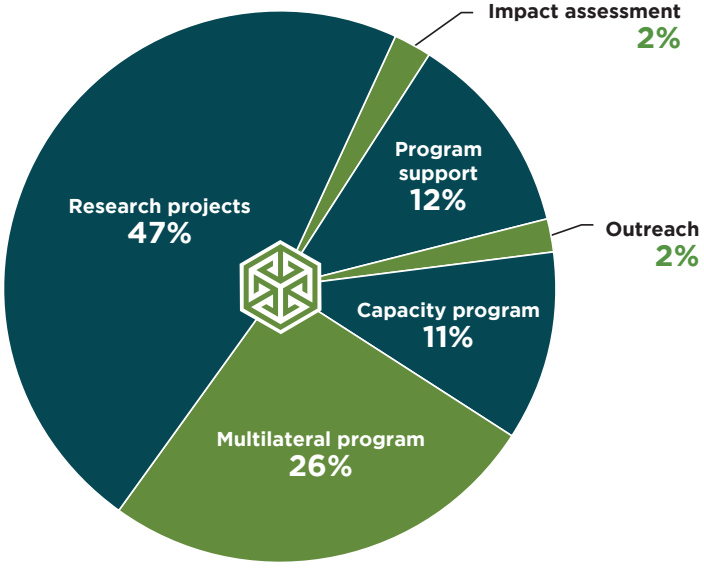
Financial overview

Research projects by region and country	Expenditure (A$)
Pacific	**14.58**
Pacific island countries	8.54
Papua New Guinea	4.87
Timor-Leste	1.17
East and South-East Asia	**20.99**
Cambodia	2.88
China	0.12
Indonesia	5.29
Laos	3.55
Myanmar	1.13
Philippines	4.23
Vietnam	3.79
South Asia	**6.83**
Bangladesh	2.15
India	0.85
Nepal	0.73
Pakistan	2.71
Sri Lanka	0.39
Eastern and Southern Africa	**4.70**
Burundi	0.07
Ethiopia	1.37
Kenya	0.70
Malawi	0.36
Mozambique	0.57
Rwanda	0.12
South Africa	0.35
Tanzania	0.23
Uganda	0.39
Zambia	0.16
Zimbabwe	0.38
Total research projects	**47.10**
Multilateral program	25.86
Capacity program	10.52
Outreach	2.28
Impact assessment	1.82
Program support	11.84
TOTAL	**99.42**

Research expenditure by region 2021–22



Research expenditure by operational area 2021–22

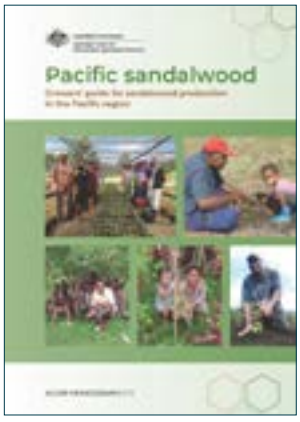


Scientific publications

published in 2021–22

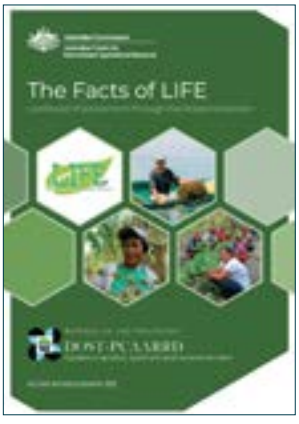
Making value chains work better for the poor

Editors
Dominic Smith, Rodd Dyer and Tiago Wandschneider



Pacific sandalwood: Growers' guide for sandalwood production in the Pacific region

Authors
Tony Page, David Bush, Bronwyn Clarke and Lex Thomson

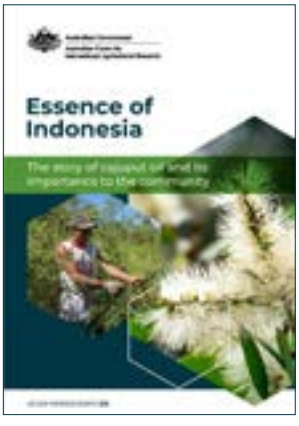


The facts of LIFE: An introduction to a new model of agricultural extension for conflict-vulnerable areas of the Philippines

Author
Noel Vock

Community-based sandfish sea ranching in the Philippines: Exploring social factors influencing success

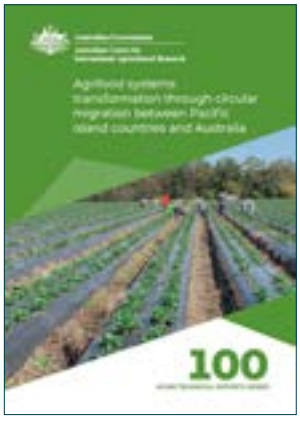
Editors
Nicholas McClean and Michael Fabinyi



Essence of Indonesia

Authors
Anto Rimbawanto, Noor Khomsah Kartikawati and Prastyono

Editors
Eko Bhakti Hardiyanto, Arif Nirsatmanto and Christopher Beadle



Agrifood systems transformation through circular migration between Pacific island countries and Australia

Authors

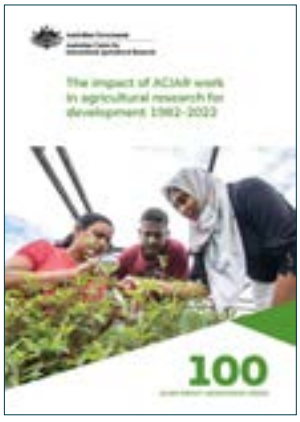
Federico Davila, Olivia Dun, Carol Farbotko, Brent Jacobs, Natascha Klocker, Ema Vueti, Lavinia Kaumaitotoya, Angela Birch, Peter Kaoh, Tikai Pitakia and Sinaitakala Tu'itahi

Sandalwood Regional Forum

Editors
Tony Page, John Meadows and Toufau Kalsakau

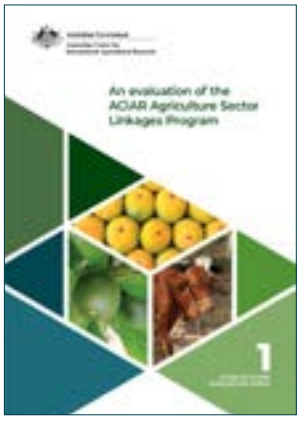
Adoption of ACIAR project outputs 2020

Editors
David Pearce and Bethany Davies



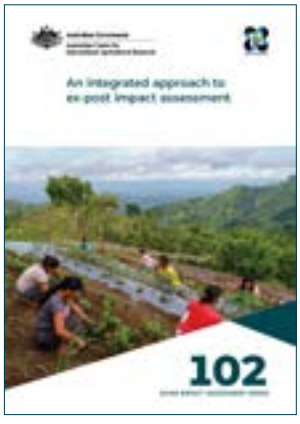
The impact of ACIAR work in agricultural research for development 1982–2022

Authors
Vol 1: Centre for International Economics
Vol 2: Jeroen van der Heijden



An evaluation of the ACIAR Agriculture Sector Linkages Program

Author
Penny Davis
Alinea International



An integrated approach to ex-post impact assessment

Authors
LJ Williams, L McMillan, M Van Wensveen, JRA Butler, JDV Camacho Jr, A Lapitan, R Datoon, J Gapas, E Pinca, F Macavinta-Gabunada, MNV Serino, L Nunez, AL Recto, JH Ruales, WC Enerlan, EG Cagasan, PAB Ani and MB Aranas

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40
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