

Laos



A\$3.8 million
Budgeted funding



13
Bilateral and regional
research projects



3
Small projects and
activities

Laos has made substantial progress in reducing poverty from 25% in 2012–13 to 18% in 2018–19. However, poverty in rural areas is more than 3 times higher than in urban areas, and reduction of rural poverty remains a high priority of the Lao Government.

In 2020, the Lao Government imposed COVID-19 containment measures that helped avert a health crisis. However, the restrictions resulted in disruptions to the labour market and supply chains that deliver inputs to export-oriented manufacturing industries and the construction sector. Since the outbreak, more than 200,000 Lao migrant workers have returned from abroad, resulting in a loss of remittance income for many households. The World Bank has warned that the economic shock due to COVID-19 could push as many as 214,000 people into poverty.

To date, the livelihoods of farming households have only been moderately affected by the pandemic. Family farming is the main source of income for approximately 75% of households and 92% of these households were able to operate their family farms unaffected by the pandemic. The agriculture sector acted as a buffer during this time and absorbed workers that had been laid off in other sectors. About 10% of workers laid off in manufacturing and wholesale and retail trade were re-employed in agriculture.

Disruptions in transportation and weak demand for agricultural products were the common challenges for commercial farmers in 2020. Declining agricultural exports and business closures in other economic sectors, such as hotels and restaurants, led to a reduction in market outlets for many commercial farmers. Disruptions in transportation increased the cost of production inputs and caused delays in transporting farm products.

In 2019, the Ministry of Agriculture and Forestry outlined plans to ensure the country is on track to meet the goals of its agriculture development strategy. The 5-year development plan aims to support greater than 3% growth in the agriculture and forestry sector. These sectors are expected to contribute 19% to the national economy. The newly amended Forestry Law continues to drive national priorities, given government commitment to protect forest cover while making the forestry sector able to support livelihoods of its people. Also guiding the strategic priorities of the Ministry of Agriculture and Forestry is the Lao Government's National Nutrition Strategy (2015–2025), which aims to reduce chronic malnutrition (stunting) in children under 5 from the current rate of 33% to 25% by 2025.



ACIAR-supported research shows that integrating fishways to allow passage of migratory fish up and down regulated rivers has lasting economic and social benefits for river communities. Research is now focused on facilitating sound, cross-sector decision-making on fish passage construction programs. Photo: Candice Bartlett. ACIAR project FIS/2018/153

Country priorities

In 2021–22, if the COVID-19 pandemic status is favourable, ACIAR will recalibrate our long-term strategic program priorities based on consultation with Lao stakeholders. In the meantime, the strategic priority outcomes that currently guide our investments in Laos are:

- » efficient and sustainable forestry industries, including non-timber products, with suitable climate-change resilience
- » innovative livestock systems that allow for intensification and land-use requirements, while raising animal health and biosecurity levels
- » increased fish habitat restoration and protection of fish migration routes
- » cost-effective and sustainable rice-based farming systems, through mechanisation, diversification and intensification, along with better crop quality, quarantine standards and value-adding for domestic and export markets
- » improved natural resource management that benefits livelihoods and food security by delivering land-use options to smallholders, with attention to both water and nutrient management within climate-change adaptation
- » improved institutional training and communication frameworks that enable smallholders to adopt and adapt new technologies, and increase the capacity development of researchers and educators.

2021–22 research program

- » **16 ACIAR-supported projects in Laos**
- » **6 projects are specific to this country**
- » **10 projects are part of regional projects**

The research program addresses our high-level objectives, as outlined in the ACIAR 10-Year Strategy 2018–2027, as well as specific issues and opportunities identified by ACIAR and our partner organisations. The following sections briefly describe individual ACIAR-supported projects and anticipated outputs in Laos. The projects are grouped according to research program. Each project description is referenced in a list at the end of this section, which provides the project title and code.

Agribusiness

Catfish (*Pangasius* sp) farming and wild caught catfish are important income generating activities for smallholder farmers in the Mekong River Basin and are an extremely important source of dietary protein for those countries' populations. The continued availability of catfish for human consumption is influenced by many factors including the impacts of climate change, the COVID-19 pandemic, consumer perceptions on food and health safety provenance, and environmental and political changes. Dr Van Kien Nguyen of the Health and Agricultural Policy Research Institute

leads a new project in Cambodia, Laos and Vietnam to identify food loss and waste along the catfish value chain; conduct foresight exercises to determine the uncertainties of catfish production for food systems; and develop solutions to reduce food loss in catfish production. This project is part of the ACIAR-IDRC Food Loss Research Program (see page 8).¹

Cassava witches' broom disease and Sri Lanka cassava mosaic virus are spreading rapidly in South-East Asia. A project led by Dr Jonathan Newby of the International Center for Tropical Agriculture is developing technically viable and economically and socially sustainable ways to improve the resilience of cassava production systems and value chains in Cambodia, Laos, Myanmar and Vietnam. During 2021-22, the project will continue testing and evaluation of virus-free planting material and resistant varieties, and on-farm testing of new agronomic practices and training of farmers and extension officers. The establishment of facilities using innovative methods for rapid multiplication of clean planting material continues, funded in joint ventures with private firms and non-government organisation in multiple countries.²

Crops

New crop establishment practices for rice, such as broadcasting and direct seeding (manually or mechanically), offer significant labour savings for growers. However, changed field conditions compared with traditional crop establishment methods, such as transplanting, increase the risk of weed infestations. A project in Cambodia and Laos, led by Dr Jaquie Mitchell of the University of Queensland, aims to develop weed management packages to address labour constraints and reduce the reliance on chemical control. New weed control options will enable rice farmers to adopt and benefit from mechanisation and sustainable intensification and conservation agriculture practices. Appropriate weed management will also improve grain quality and enable growers to participate in high-value markets.³

Fisheries

The Xayaburi Power Company, which is responsible for the design and construction of the Xayaburi hydro-electric dam across the Mekong River in Laos, built a complex fishway system designed to enable the upstream and downstream passage of migratory fish. There are hundreds of species of fish in the Mekong River, varying in size from a few centimetres to more than one metre. A project team led by Professor Lee Baumgartner of Charles Sturt University is working with the Xayaburi Power Company to develop robust tools and techniques to assess the effectiveness of the Xayaburi Dam fish passage facilities, and provide a standard for other hydro-electric dams planned for the mainstem Mekong River.⁴

Floodplain development and the regulation of river flows for rice production across South-East Asia are affecting fisheries and fish migration, and the livelihoods of communities that depend on fish for protein and trade. Previous ACIAR-supported research showed that integrating fishways into water regulator designs, allowing passage of migratory fish up and down regulated rivers, can have lasting economic and social benefits for river communities. Professor Lee Baumgartner of Charles Sturt University is leading a project to establish a stakeholder network to facilitate sound, cross-sector decision-making on fish passage construction programs across South-East Asia. During 2021-22, researchers will work with donor bodies and government sectors to determine the factors that drive investment decisions, and to support locally generated national guidelines and university curriculum in Cambodia, Laos and Indonesia.⁵



Dr Monthathip Chanphengsay, Director General of National Agriculture and Forestry Research Institute (far left) and Dulce Carandang Simmanivong, ACIAR Regional Manager, East and South-East Asia (next left), plant the cassava mosaic disease resistant plantlets in Laos. Photo: Khounkham Douangphachone. ACIAR project AGB/2018/172



Students working in a wood-processing workshop at the Faculty of Forestry at the National University of Laos. New processing capability and development of engineered wood products from an ACIAR-supported project have enhanced the capacity of wood manufacturing industries and grown markets for plantation timber in Laos, as well as created a use for underused plantation resources in Australia. Photo: Majken Soegaard. ACIAR project FST/2016/151

Forestry

Lao wood manufacturing industries are yet to adopt contemporary processing technologies used in neighbouring countries. Research led by Dr Hilary Smith of the University of Melbourne will complete the development of new processing capability and engineered wood products from small-diameter timbers. This research is benefiting wood manufacturing industries in Laos by increasing capacity and growing markets for timber from new plantations, and in Australia by increasing the use of underused plantation resources. During 2021-22, reports will be completed on the characterisation of the current plantation resource and options for modelling future wood supply, as well as prospective pathways for influence and change in relevant policy, governance and administrative environments.⁶

The Lao Government has set ambitious targets to restore forest cover in the country. Agroforestry will be fundamental to this process by allowing joint cultivation of trees and agricultural crops across the landscape and reducing logging pressure on residual natural forests while not adversely affecting food security. A small research activity led by Associate Professor Mark Dieters of the University of Queensland will build on the achievements of previous ACIAR projects. The project will provide genetically improved planting materials of teak through clonal propagation and development of improved seed sources. Provenance stands will be established for Mai Tae Kha and Mai Du.⁷

Increased trade, global movement and a changing climate increase the threat of emerging pests and diseases. The capability to detect and respond to forest pest and disease incursions is crucial to minimising their impacts. In South-East Asia, this capacity varies widely among countries, but there is a general lack of preparedness to respond to invasive pests and diseases. A new project will establish an effective and sustainable forest biosecurity network in South-East Asia to improve risk management for invasive forest pests and diseases. Associate Professor Simon Lawson of the University of the Sunshine Coast will lead the project, which will use shared field protocols and data as an entry point and foundation for coordinated biosecurity response. The project will develop science tools to support and sustain the forest biosecurity network and develop coordinated forest biosecurity policies for South-East Asia.⁸

Laos has an ambitious target of 70% forest cover by 2030 but currently nearly half of the country is degraded or unstocked forest. The Government of Laos seeks to restore native forest while also providing benefits to resident and neighbouring communities. A new project addresses the opportunity to shape reforestation policy and practice, determining how to fulfil the government requirements. Professor Patrick Baker of the University of Melbourne leads this project, which will test post-disturbance treatments to accelerate and channel forest recovery towards desired economic, social, and ecological outcomes. By testing ecosystem assembly theory, the project will advance the state of the art in forest restoration.⁹

Horticulture

Fusarium wilt tropical race 4 (TR4), or Panama disease, has become widespread throughout South-East Asia. The disease is threatening smallholder banana production in countries including Indonesia, the Philippines and, more recently, Laos. A project led by Dr Anthony Pattison of the Queensland Department of Agriculture and Fisheries aims to develop an integrated management response to the spread of the disease. The research will investigate the effects on banana production of altering the banana microbiome to suppress disease and increase plant resistance. During 2021–22, field surveys of production systems and natural environments will be conducted, and there will be ongoing development and training in statistics and experimental procedures for glasshouse and field experiments.¹⁰

Livestock Systems

Laos is a comparatively small producer of pork compared with Vietnam and China, but pork production has grown significantly in recent years. Improved safety of animal source foods that is free from zoonotic parasites such as *Taenia solium*, or pork tapeworm, is gaining greater attention in the region. Dr Amanda Ash of Murdoch University leads a project to identify and recommend interventions to mitigate the risk of disease from food-borne parasites in pigs, adding value to the growing cross-border pig trade between northern Laos and Vietnam. During 2021–22, research and activities will focus on informing and developing protocols to manage food-borne parasitic disease at the farm level.¹¹

Goat production in Lao has more than doubled over the past 10 years, largely driven by high demand for goat meat from Vietnam. Traditional extensive goat-raising methods can result in overgrazing of feed resources, negative consequences for the environment and higher incidence of diseases and parasites in livestock. A project led by Dr Stephen Walkden-Brown of the University of New England is aiming to enhance income-generating opportunities for goats in Lao farming systems, while identifying sustainable production practices. Additionally, the project is seeking greater understanding of consumer preferences for goats in Vietnam to further develop market specifications, especially for premium meat.¹²

Social Systems

The Lao Government increasingly demands evidence to support policy development. The relationship between research-for-development and policy has not been clear-cut and there is an identified need for ACIAR projects to adopt more effective research-to-policy approaches in the Lao context. Dr Hilary Smith and Professor Peter Kanowski from the Australian National University will examine ACIAR-commissioned research projects through an analysis of case studies and in-depth interviews with key stakeholders to identify the processes, practices and circumstances that facilitate or hinder the influence and uptake of ACIAR-commissioned research within Lao policy contexts.¹³

Agrichemicals are an important tool for increasing agricultural yields and a necessary contributor to food and nutrition security. However, off-label use can have significant impacts on human and environmental health. A small research activity, led by Dr Liana Williams and Dr Lucy Carter of CSIRO, is using a human-centred approach to understand the interplay between agrichemical use and the institutional and regulatory frameworks that are intended to safeguard against off-label use, as well as networks for access to chemicals, information and training. Agrichemical use will be analysed through case studies in selected crops in Laos and Vietnam. Understanding gained from the study will serve as a foundation for future ACIAR research.¹⁴

In Laos and Cambodia, access to formal financial services is low. It is substantially lower among rural and remote communities, and lower again for women. Dr Erin Taylor of Western Sydney University leads a project that will review theoretical frameworks to understand how the approach to digital financial services in Laos and Cambodia compares with global trends, and what global lessons can be applied. The project will assess theories of change and impact methodologies that have been used around the world to introduce digital financial services to reduce poverty in rural areas and improve gender equality. The project aims to identify best practices and suggest improvements to methodologies, potentially highlighting the need for new models.¹⁵

Soil and Land Management

Agricultural production in the lowlands of Cambodia and Laos is characterised by a high proportion of each nation's poorest and most food-insecure people. Their livelihoods are generally reliant on rainfed, low-input rice production and limited livestock keeping. Practices to increase the overall productivity by introducing managed forage production in these farming systems have been investigated in a project led by Dr Matthew Denton of the University of Adelaide. The project will report on soil and water management practices to improve sustainability, productivity and profitability, and on social and economic impacts of adoption of forages. Farmers will be provided with practical information and technologies from the research, and local scientists and extension officers will be trained to conduct ongoing research and promote outcomes.¹⁶

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See page 197 for contact details.

Current and proposed projects

1. Food loss in the catfish value chain of the Mekong River Basin (Food Loss Research Program) [Cambodia, Lao PDR, Vietnam] (CS/2020/209)
2. Establishing sustainable solutions to cassava diseases in mainland South-East Asia [Cambodia, Laos, Myanmar, Vietnam] (AGB/2018/172)
3. Weed management techniques for mechanised and broadcast lowland crop production systems in Cambodia and Laos (CROP/2019/145)
4. Assessing upstream fish migration measures at Xayaburi Dam in Laos (FIS/2017/017)
5. Translating fish passage research outcomes into policy and legislation across South-East Asia [Cambodia, Indonesia, Laos] (FIS/2018/153)
6. Advancing enhanced wood manufacturing industries in Laos and Australia (FST/2016/151)
7. Supporting agroforestry through tree improvement and gene conservation in Laos (FST/2020/119)
8. Building effective forest health and biosecurity networks in South-East Asia [Cambodia, Indonesia, Laos, Malaysia, Thailand, Vietnam] (FST/2020/123)
9. Forest restoration for economic outcomes [Laos] (FST/2020/137)
10. An integrated management response to the spread of Fusarium wilt of banana in South-East Asia [Indonesia, Laos, Philippines] (HORT/2018/192)
11. Investigating and developing interventions to mitigate food borne parasitic disease in production animals in Laos (LS/2014/055)
12. Goat production systems and marketing in Laos and Vietnam (LS/2017/034)
13. Policy impact in Laos: from research to practice (SSS/2020/142)
14. Understanding agrichemical use in South-East Asia agriculture [Laos, Vietnam] (SSS/2020/143)
15. Building the evidence base on the impacts of mobile financial services for women and men in farming households in Laos and Cambodia (SSS/2020/160)
16. Management practices for profitable crop livestock systems for Cambodia and Laos (SMCN/2012/075)



ACIAR is supporting research to increase the overall productivity of crop and livestock systems in Laos and Cambodia by introducing managed forage production to these farming systems. ACIAR project SMCN/2012/075