Cambodia

A$3.3 million
Budgeted funding

15
Bilateral and regional research projects

In 2020, the Kingdom of Cambodia largely avoided a health crisis due to swift actions to detect and contain local COVID-19 outbreaks. However, Cambodia still suffered critical shocks triggered by the global pandemic, and the economic impacts were more severe than the health impacts.

During the last 2 decades, Cambodia was the fastest growing country in East Asia, averaging a 7.7% real growth rate. The nation's key growth drivers were construction, tourism and merchandise exports, which accounted for more than 70% of growth and 39% of total paid employment, but these were severely affected by the global pandemic. Prior to COVID-19, poverty in Cambodia was reported to be less than 10%.

About 76% of Cambodia's population lives in rural areas and agriculture remains the main source of employment. Agriculture contributed 21% to national GDP in 2019. More than 60% of poverty alleviation from 2007 to 2011 was attributed to positive developments in the agriculture sector, and in 2020 the World Bank reported that the agriculture sector was the least affected by the global pandemic. During the pandemic, agriculture benefited from increased labour availability due to layoffs in the services and industry sectors and the return of migrant workers from cities and abroad.

Wet season rice cultivation increased to 2.3 million hectares (7.2% increase) in 2020 due to better weather conditions. Dry season rice harvesting also increased by 39%. Rice exports continue to increase, with milled rice now being exported to 41 countries around the world. China is the biggest market (56%), followed by 19 countries in Europe and 3 ASEAN countries (Malaysia, Singapore and the Philippines).

Crop production, especially rice, continues to account for most (60%) agricultural GDP. In addition to traditional exports of rice, cassava and rubber, emergent agricultural export products such as bananas and mangoes are promising. However, there are opportunities for Cambodia to develop and strengthen its agriculture sector through diversification, higher value-added crops, fisheries and livestock. Currently development is limited by relatively slow adoption of modern agricultural technology, including input use and irrigation.

Border closures, travel restrictions and business shutdowns during the pandemic hit the complex web of agricultural supply chains, affecting input suppliers, producers, collectors, processors and consumers in Cambodia. Food supply, demand disruptions and market uncertainties strained critical supply chains and posed threats to food systems in the country. Movement restrictions, lack of in-country transportation and the existing debt with microfinance institutions prevented farmers from accessing agricultural services and inputs for the next planting season.

There were other concerns too. Domestic livestock production covers about 82% of domestic demand for animal products. Although measures have been put in place by the Ministry of Agriculture, Forestry and Fisheries to avoid disruptions to the supply chains due to the COVID-19 pandemic, there were pre-existing influences, for example the African swine fever outbreak, that were already reducing production.

In December 2019, the Ministry of Agriculture, Forestry and Fisheries launched the 2019–25 Agriculture Sector Development Strategy which aims at modernising the agriculture sector. This is an important step towards accelerating the transformation from subsistence farming to commercial agriculture.

Country priorities

ACIAR and the Royal Government of Cambodia (represented by the Ministry of Agriculture, Forestry and Fisheries) have an ongoing 10-year agreement on the strategic priorities for research collaboration. From 2019 to 2029, research collaborations will focus on 3 domains to support the development of Cambodian agriculture:

- sustainable intensification and diversification of agriculture, focusing on non-rice crops in traditional crop-rice systems and alternative cropping systems
- sustainable intensification of market-oriented smallholder livestock production systems
- sustainable intensification of freshwater aquaculture production systems for nutrition-rich species.

Research priorities over this time will also take into consideration cross-cutting themes that address challenges across the agriculture sector. These are:

- gender equity, women's empowerment and nutrition – these are particularly important in the context of increasing labour migration that impacts women and children in rural Cambodia, and high rates of stunting and poor nutrition among women and children
- climate variability mitigation and adaptation to climate change, taking into consideration climate variability and enabling climate-resilient farming systems
- food safety and standards.

2021–22 research program

- **15 ACIAR-supported projects in Cambodia**
- **5 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 Cambodia. 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.

Cambodian and Indonesian fisheries research organisations are working together to enhance the skills of Cambodian researchers in fish nutrition, hatchery production and fish health. Ultimately, the project supports livelihoods of about 2 million people in Cambodia, including fish farmers such as Mrs Yit Sophea (pictured). Photo: Majken Soegaard. ACIAR project: FIS/2016/130

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]

Agribusiness | Crops

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

Sustainable intensification and diversification of rainfed lowland rice production systems in north-western Cambodia has the potential to increase farm income and business resilience. Associate Professor Daniel Tan of the University of Sydney leads a project that has evaluated innovative crop management practices, such as machine planting of direct-seeded rice, using high-quality seed at lower seed rates. Having established growers' confidence to purchase more expensive high-quality seed, the project is now concluding its investigation of scale-up and scale-out models for adoption at village and community level. The project is building the capacity of farming communities, tertiary agricultural education institutions and agricultural input suppliers to support new technologies beyond the life of the project.[3]

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.[4]

ACIAR is supporting a regional project to develop technically viable and economically and socially sustainable ways to improve the resilience of cassava production systems and value chains. Photo: Majken Soegaard. ACIAR project: AGB/2018/172

Fisheries

In Cambodia, about 80% of the animal protein consumed comes from freshwater fisheries, which provide work for about 2 million people. The development of finfish mariculture in Cambodia has been accelerated through a south–south cooperative research partnership with Indonesia in a project led by Dr Mike Rimmer and Professor Nicholas Paul of the University of the Sunshine Coast, and in partnership with Cambodian and Indonesian fisheries research organisations. In 2021, experienced researchers from Indonesia will conduct final training activities to enable Cambodian researchers to gain skills in fish nutrition, hatchery production and fish health.[5]

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.[6]

Forestry

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.[7]

Horticulture

Mango production in the Asia-Pacific region accounts for about two-thirds of global production. Much of the crop is produced by smallholders, who achieve relatively modest yields and participate in traditional value-chain arrangements that offer little incentive to innovate or pursue higher quality. Some producers seek better returns by supplying higher-value export markets (such as Korea), but struggle to deliver fruit that meets market or regulatory standards. Dr Muhammad Sohail Mahzar of the Northern Territory Department of Primary Industry and Fisheries Industry, Tourism and Trade will lead a new project in Cambodia and the Philippines that aims to improve the ability of selected mango supply chains to deliver fruit that better meets consumer expectations of quality and value, and provide smallholder growers with a better return on investment.[8]

Livestock Systems

Several issues threaten regional, and potentially global, health security in the Mekong region: fast economic growth rates, marked climate and other environmental disruptions, and shifting human and animal geographies. Zoonotic disease outbreaks such as SARS (severe acute respiratory syndrome) and the current outbreak of COVID-19 are thought to be attributed, in part, to these converging issues. Professor Barbara McPake of the Nossal Institute for Global Health leads a project to identify opportunities to improve collaboration between human and animal health sectors and use incentive-based regulation to intervene in veterinary markets in the region, to improve health security and livestock productivity.[9]

Poultry enterprises offer opportunities to improve the nutrition of households and economically empower women, who are the key custodians of smallholder poultry in South-East Asia. However, low-producing chicken genotypes typically dominate smallholder or family production systems. Dr Tadelle Dessie of the International Livestock Research Institute leads a project that is testing and making available high-producing, farmer-preferred genotypes of chickens to increase smallholder productivity as a pathway out of poverty in Cambodia, Myanmar and Vietnam. The project is also strengthening the capacity of young scientists in the project countries to conduct high-quality research on village poultry systems, for the benefit of smallholder farmers.[10]

Social Systems

A farmer's decision to adopt an agricultural technology or practice involves technical, local, financial, contextual and personal factors. Efforts to encourage adoption must therefore prioritise farmers' perceptions of problems and solutions. A project led by Dr Brian Cook of the University of Melbourne has investigated the adoption of technologies and best practice for sustainable cassava production in north-western Cambodia, where the crop area is expanding rapidly and market returns are high. The final stage of the project will be completed in 2021 with the analysis of household interviews and village engagement activities. This will inform understanding on why some groups adopt new technologies, and identify barriers specific to poor, marginalised and female-headed households.[11]

The previous project found that extension does not overcome powerful social relations, especially credit and debit. Dr Brian Cook of the University of Melbourne also leads a new project that will analyse the social relations that farmers actively avoid, wish to avoid, or prefer and wish to strengthen as part of self-determined efforts to improve their livelihoods. Ultimately, the project seeks to define pathways that support farmers to benefit from agricultural development.[12]

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.[13]

Soil and Land Management

Continued expansion of cultivation into unused or degraded land has been recognised as environmentally unsustainable by the Royal Government of Cambodia. Sustainable intensification, improved yields and diversification of cropping is a priority in areas where upland farming is being developed. A project led by Dr Wendy Vance of Murdoch University focuses on understanding Indigenous soil knowledge and suitable land use to develop site-specific soil management practices. The project concludes in 2022 with the delivery of simple tools to help farmers identify soil types and constraints, and soil data to be added to the Cambodian Agronomic Soils Classification system and the FAO World Reference Base for Soil Resources.[14]

Cambodian cattle farmer Sar Samoul on her way to the field where her herd grazes. She has planted forages as a part of a project investigating how farmers can grow more profitable crops with less water. Photo: Majken Soegaard. ACIAR project SMCN/2012/075

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.[15]

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See page 197 for contact details.

Rice farming on the lowlands of Cambodia is difficult due to periods of drought. ACIAR supports research where farmers are experimenting with other crops to make the system more sustainable. Photo: Majken Soegaard. ACIAR project SMCN/2012/075

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. Sustainable intensification and diversification in the lowland rice system in Northwest Cambodia (CSE/2015/044)
4. Weed management techniques for mechanised and broadcast lowland crop production systems in Cambodia and Laos (CROP/2019/145)
5. Accelerating the development of finfish mariculture in Cambodia through south-south research cooperation with Indonesia (FIS/2016/130)
6. Translating fish passage research outcomes into policy and legislation across South-East Asia [Cambodia, Indonesia, Laos] (FIS/2018/153)
7. Building effective forest health and biosecurity networks in South-East Asia [Cambodia, Indonesia, Laos, Malaysia, Thailand, Vietnam] (FST/2020/123)
8. Improving mango crop management in Cambodia, the Philippines and Australia to meet market expectations (HORT/2016/190)
9. Collaboration on One Health economic research for systems [Cambodia] (LS/2019/118)
10. Asian chicken genetic gains: a platform for exploring, testing, delivering, and improving chickens for enhanced livelihood outcomes in South-East Asia [Cambodia, Myanmar, Vietnam] (LS/2019/142)
11. Uptake of agricultural technologies amongst farmers in Battambang and Pailin provinces, Cambodia (ASEM/2013/003)
12. Next generation agricultural extension: social relations for practice change [Cambodia] (SSS/2019/138)
13. 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)
14. Land suitability assessment and site-specific soil management for Cambodian uplands (SMCN/2016/237)
15. Management practices for profitable crop livestock systems for Cambodia and Laos (SMCN/2012/075)