



Fisheries

# Quantifying biophysical and community impacts of improved fish passage in Laos and Myanmar

## Overview

**Long-term sustainability of vital capture fisheries throughout the Lower Mekong and Ayeyarwady Basins is at threat from increased water development projects. Capture fisheries are often the main source of protein and cash income for river communities.**

Rice is actively farmed in all provinces in both Laos and Myanmar, with most rice production occurring on the fertile soil of floodplains. Consequently, these floodplains are experiencing extensive development with flood control and irrigation systems (regulators and low head barriers) to improve rice production and prevent crop inundation during seasonal flooding.

Although these developments are beneficial for rice farming, the infrastructure blocks important migration pathways for fish seeking access to critical nursery and feeding habitats.

Floodplain development in both countries is progressing at an unprecedented rate. Detailed barrier-mapping has shown more than 8000 barriers to fish migration in just three tributary catchments. Such developments have led to substantial capture-fishery decline in some areas.

Although river communities can gain a more stable income from improved rice yields, the trade-off is a loss of fishing income and an important source of protein, potentially leading to loss of key livelihood systems, poorer nutrition and social disruption.



## KEY FACTS

**ACIAR Project No.** FIS/2014/041

**Duration:** January 2016 to December 2020 (4 years)

**Target areas:** Laos and Myanmar

**Budget:** A\$2,646,018

### Project Leader

Dr Lee Baumgartner, Charles Sturt University

### Key partners

- University of South Australia
- National University of Laos
- Living Aquatic Resources Research Centre, Laos
- Department of Fisheries, Myanmar
- Department of Irrigation, Laos

### ACIAR Research Program Manager

Dr Ann Fleming

## Objective

### The project's overall aim is to facilitate greater adoption of fishway technology in the Lower Mekong and Ayeyarwady Basins to rehabilitate declining capture fisheries.

While previous projects have shown that fishways can be effective for Mekong species, riparian agency staff and international scientists have recommended that the scope of existing work be expanded to demonstrate and quantify impact.

This study aims to provide the scientific conservation and economic evidence to conclusively prove broad-scale fisheries recovery.

#### The project's specific objectives are to:

- Evaluate the extent of fish migration barriers and the colonisation of riverine species in seasonal wetlands.
- Quantify whether there is an annual increase in capture fishery production at sites where fishways have been constructed.
- Quantify in social and economic terms, the options for constructing fishways at riverine infrastructure.
- Promote the uptake of project outputs to other Mekong countries and rivers in South-East Asia, especially in Myanmar.

## Expected scientific results

- Greater understanding of migratory fish behaviour and capture fisheries rehabilitation in the Lower Mekong and Ayeyarwady Basin.
- Greater understanding of methods to mitigate the impacts of irrigation infrastructure on capture fisheries in the Lower Mekong Basin.
- Identification of research technologies for further application across Lower Mekong countries—ensuring that robust scientific methods are available for wider application is essential to increase management capacity for capture fisheries in the region.
- Quantify economic and ecological benefits of floodplain restoration.

## Expected outcomes

- Understanding of the impact of fishway construction on the fish populations in wetlands, in terms of fish species' ecology and productivity of capture fisheries.
- Insight into the potential scope for capture-fisheries rehabilitation using fishways at low head regulators.
- Better knowledge of sustainable and low-cost fishway options for application in Laos and other countries in the Lower Mekong Basin (Cambodia, Thailand, Vietnam and Myanmar) and Ayeyarwady Basin in Myanmar.
- Greater ability for researchers, fisheries, managers and local communities to apply low-cost fishway technology at low head barriers in the Lower Mekong Basin.
- Improved local economies through increased fisheries production, and associated nutritional and economic impacts where fishways are constructed.
- Increased floodplain fisheries diversity and sustainability at the study site, and subsequently wherever fishways are constructed throughout the Lower Mekong Basin.

