



Charles Sturt  
University

# Training the next generation of fish passage professionals:

Development of Fish Passage Research and  
Education to secure fisheries within irrigated  
Landscapes in SE Asia



John Conallin

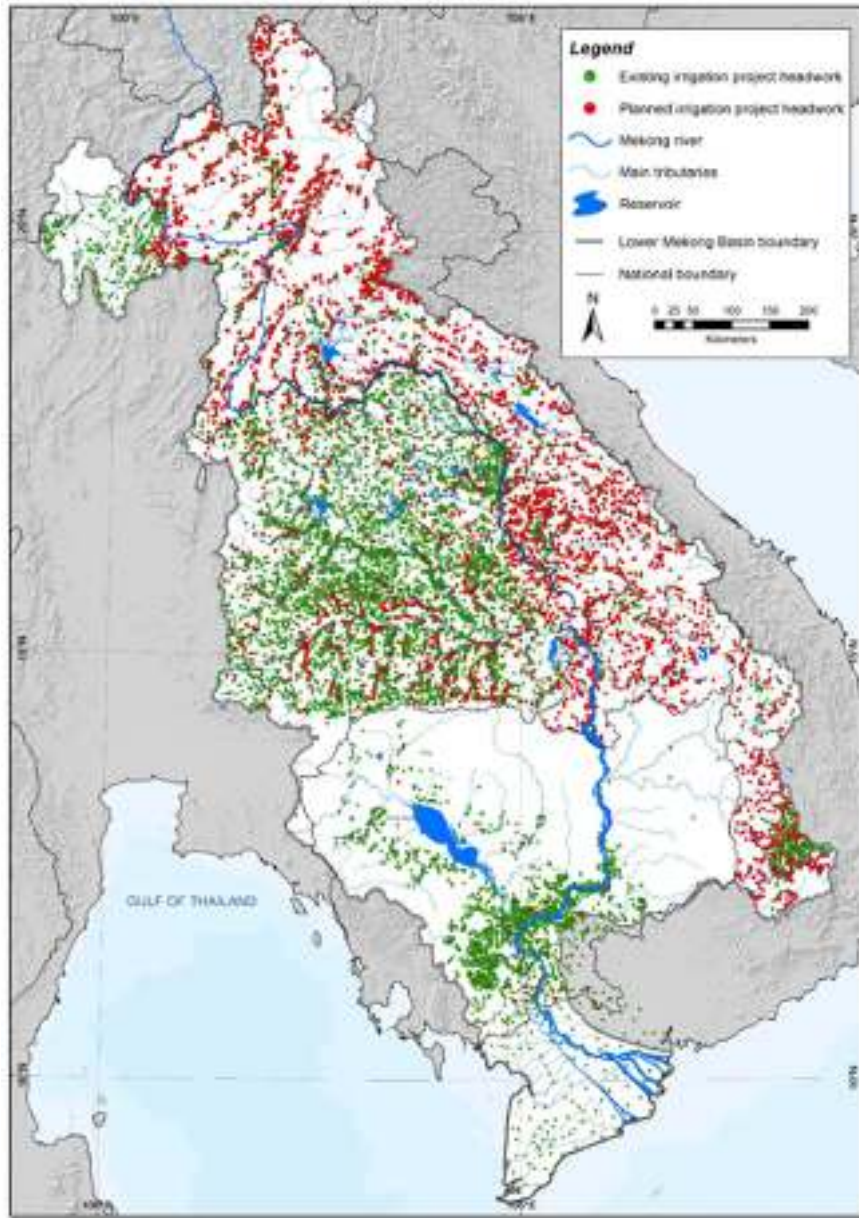
Senior Researcher

Gulbali Institute, Charles Sturt University

[jconallin@csu.edu.au](mailto:jconallin@csu.edu.au)



Need for Fish Passage is obvious – but **locally led** research-training-education on solutions lacking at the scale needed





# So how do you build the **best fishway** in the best **place**, the **best way** for the **best reasons**?

- We have taken a collaborative Learning by Doing Approach - Capacity Building through Research
  - You need good support and advocacy
  - And dedicated fish passage In-country Champions



**FishTech:** Integrating technical fisheries solutions into river development programs across South-East Asia

# FishTech: Integrating technical fisheries solutions into river development programs across South-East Asia

- Focus on improved biodiversity and resilience outcomes for food and nutrition security and livelihood outcomes (Fish Passage Focus)
- Funded by Australian Centre for International Agricultural Research (ACIAR)/Department of Foreign Affairs & Trade (DFAT)
- Construction of fishways linked to research to:
  - Evidence for fishway local success
  - Build capacity of local researchers
  - Now includes regulators-researchers-academics-decision makers





# Currently - Online Short Course, Masterclass and Graduate Certificate Approach to collaborative fishway design and Construction

- **Short Online Introduction (FAO accredited short course) – 2.5 hours (Accredited)**
- **Fish Passage Masterclass (In-country) - (Non Accredited )**
  - Classroom Based Training with Field Components – 3-5 days
- **Graduate Certificate – 16 weeks (Australia) - (Accredited)**
  - Curriculum based (with electives)
  - Field components to test and grow classroom knowledge at local sites



# Participants within SE Asia

## Masterclasses

- 14 Masterclasses
- 400 Participants
- 5 SE Countries (Indonesia, Myanmar, Lao PDR, Thailand and Cambodia)
- Curriculum is set - adjusted as needed (Hourly to Daily)
- Teaching style also flexible – Depends on Participants

### Outcomes

1. Have an improved understanding of migratory fish ecology
2. Consider the social and economic impact of fishways on community livelihoods
3. Understand **the principles and key criteria** of fishway design

## Graduate Certificate

- 2 SE Asian Focused 1 Grad cert and 1 year Fellowship year

6 in Grad Cert, 15 in Fellowships

SE Asian Countries (Indonesia, Lao PDR, Cambodia)

### Outcomes

1. Demonstrate and apply knowledge and skills of current and new trends in fish conservation and management
2. Critically analyse, evaluate and apply fish conservation and management theories in the context of professional practice
3. Effectively communicate fish conservation and management concepts and solutions in a variety of professional settings.

# Key attributes of the Masterclasses (Example)

## The Big 5 - *Key Criteria for Fish Passage*

The Big 5 Key Criteria are:

### 1. Entrance Location

- *Fish must be able to find the entrance*

### 2. Tailwater Range

- *Determines the depth of the fishway entrance*

### 3. Headwater Range

- *Determines the range of operation of the fishway*

### 4. Fishway Dimensions

- *Determines if fish can pass through the fishway*

### 5. Exit location

- *Determines if fish can access the river upstream*

Conducted in a way that at end of class, each group has designed a locally based effective fishway from these principles





# What is Required (Cambodia)

## Vision

- Building in-country Fish Friendly Infrastructure (FFI) professionals for the future

## Need

- High demand for local FFI experts
- Regional institute at Tonle Sap (Siem Reap)
- 100+ graduates per year required by industry
- Major legacy of ACIAR-DFAT Investment with a strategy for sustainable in-country expertise

## Structure

- Siem Reap-based, linked to national and regional local universities, institutes and CSU and outdoor research centres (Angkor Gulbai Research Institute)
- Offers Masterclasses, Specialisations, Graduate Certificates, and R&D, undergraduate curriculum development
- Supports lecturer exchanges and twinning programs

## Training Model

- Hybrid approach: online, in-class, and onsite training
- Accredited online courses and masterclasses
- Pathway to MSc and PhD, with an FFI focus

## Future Development

- Secure funding (Aus Aid, ADB, EU)
- Establish high-level delegations for program sustainability





# Cambodia Vision - Building in-country Fish Friendly Infrastructure (FFI) professionals for the future – *Foundation to meet Vision*





**វិទ្យាស្ថានសេដ្ឋកិច្ច និង ហិរញ្ញវត្ថុ**  
**Economics and Finance Institute**



**Charles Sturt University**  
**Gulbali Institute**  
Agriculture Water Environment



# Building Fish Passage Professionals into the future - *Research-Education-Training Hybrid Model (Example)*



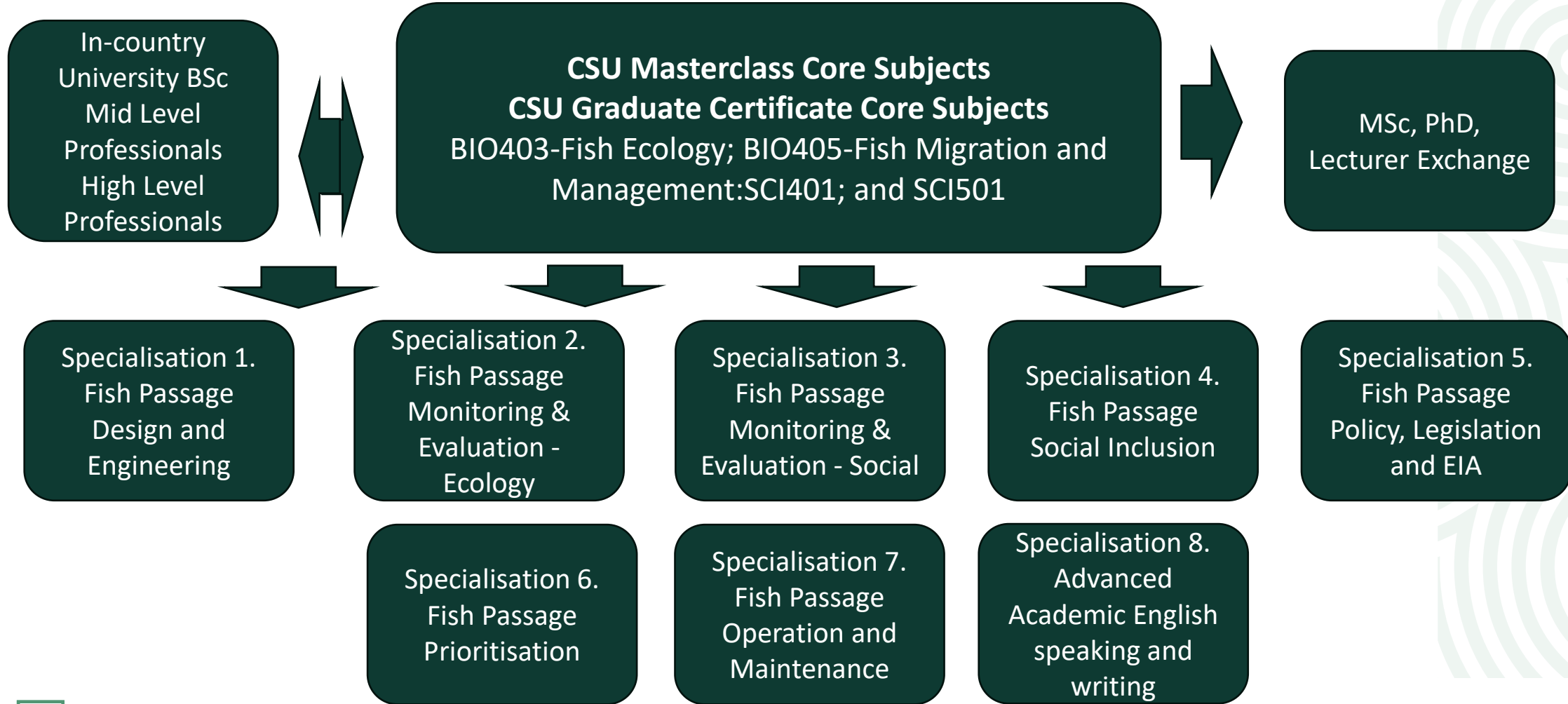
In-country Demand is high for Research- Education-Training at all levels and modalities

- Researcher-Regulators-Academics-Policy focussed
- In-country Model needed
  - Build online short courses
  - Provide specialisation's for both masterclasses and grad certificate
  - MSc and PhD improved Pathways
  - Twinning Program between Australian and In-country experts
  - Strengthen research at demo fishways linked to curricula-training (Sleng research centre)
  - Curriculum development within existing in-country universities and institutes



# Specialisations and Linkages to other modes of Learning

## Masterclass and Graduate Certificate



# Angkor Gulbali Research Institute

## Vision

- Building in-country Fish Friendly Infrastructure (FFI) professionals for the future

## Need

- High demand for local FFI experts
- Regional institute at Tonle Sap (Siem Reap)
- 100+ graduates per year required by industry
- Major legacy of ACIAR-DFAT Investment with a strategy for sustainable in-country expertise

## Structure

- Siem Reap-based, linked to national and regional local universities, institutes and CSU and outdoor research centres
- Offers Masterclasses, Specialisations, Graduate Certificates, and R&D, undergraduate curriculum development
- Supports lecturer exchanges and twinning programs

## Training Model

- Hybrid approach: online, in-class, and onsite training
- Accredited online courses and masterclasses
- Pathway to MSc and PhD, with an FFI focus

## Future Development

- Secure funding (Aus Aid, ADB, EU)
- Establish high-level delegations for program sustainability

