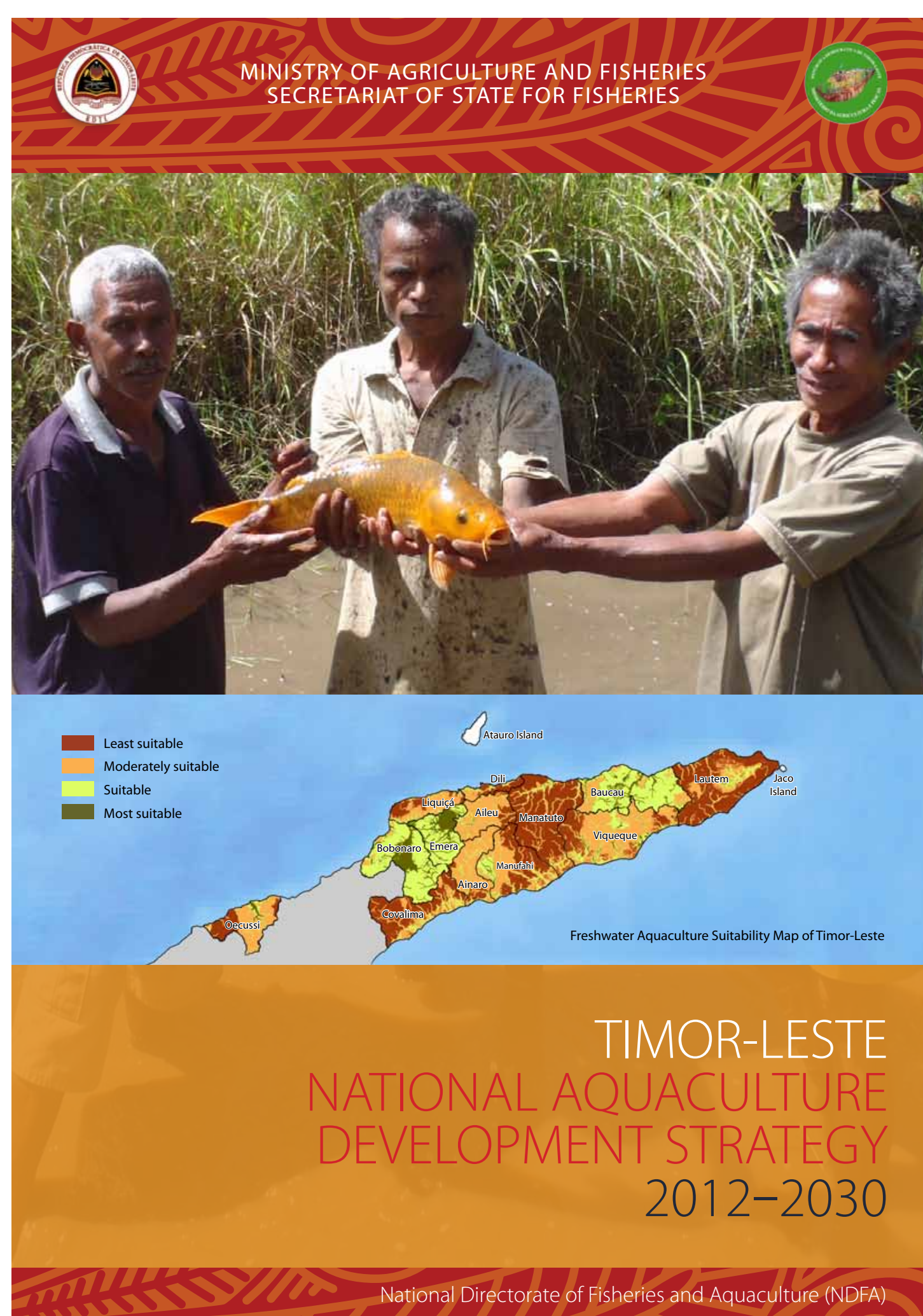
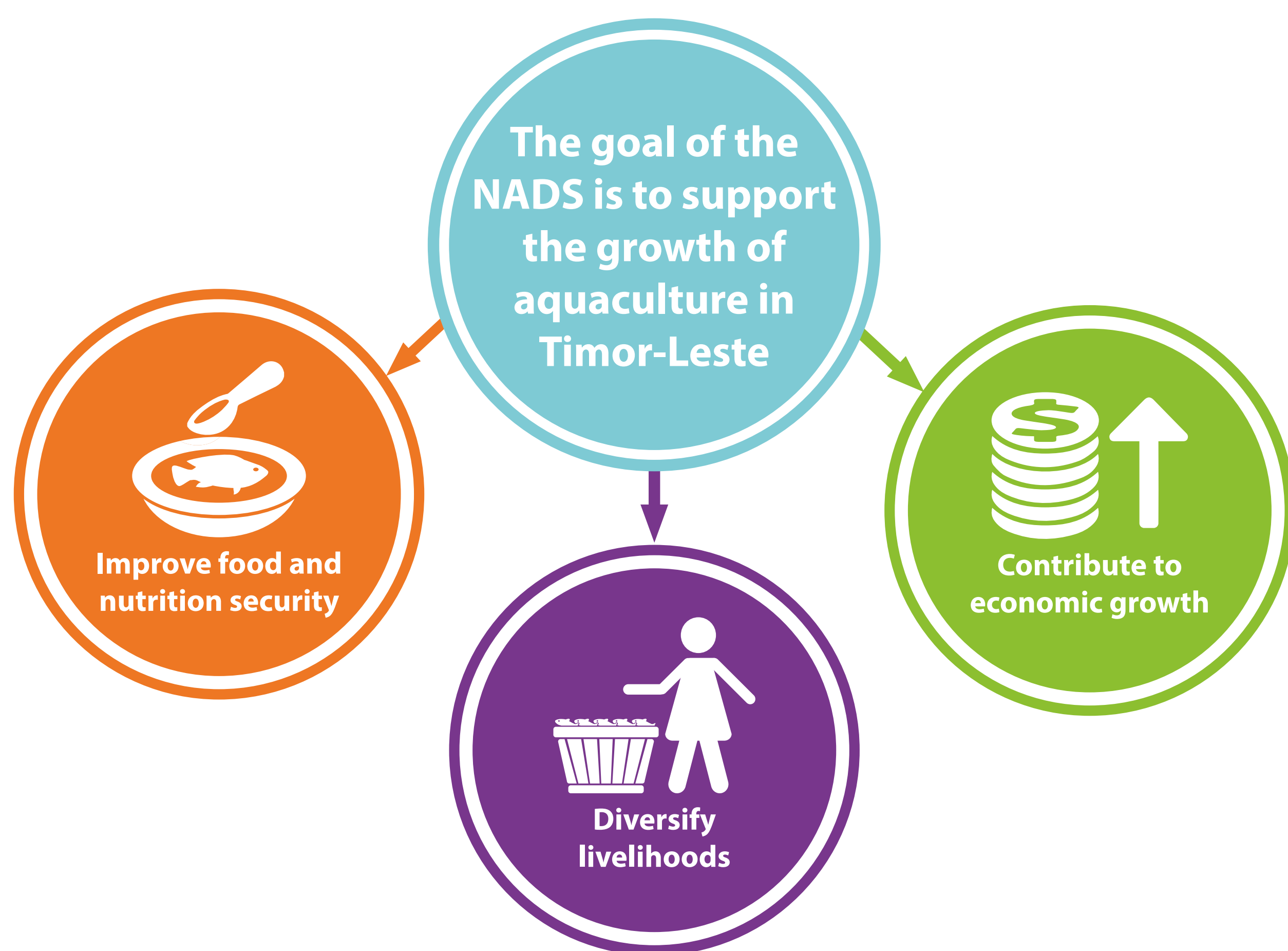


# Partnership for Aquaculture Development in Timor-Leste (PADTL)

Development of a sustainable aquaculture industry to reduce poverty and malnutrition and diversify rural livelihoods

## Timor-Leste National Aquaculture Development Strategy (NADS)

In 2012, the National Directorate of Fisheries and Aquaculture (NDA), Ministry of Agriculture and Fisheries (MAF) Timor-Leste developed the National Aquaculture Development Strategy (NADS) 2012-2030 with technical assistance from WorldFish.



## PADTL project: Key achievements

The New Zealand Aid Programme funded a 5-year project to support development activities identified within the NADS. The National Directorate of Aquaculture (NDA) takes a pivotal role in implementing the project, with WorldFish providing technology and training/mentoring support. The project, following a holistic approach, aims to greatly increase the amount of fish produced by aquaculture in Timor-Leste. Increasing supply will reduce the price of fish, making it more affordable for rural and urban poor.

### Seed



- Upgraded government hatchery at Gleno with enhanced capacity to produce, maintain stock and distribute fingerlings of superior Genetically Improved Farmed Tilapia (GIFT) since 2016.
- Private hatchery established through public-private partnership (PPP) at Leohitu of Suco Balibo in Bobonaro municipality started its operation in April 2019 to complement government hatchery in GIFT fingerlings production for wider distribution to farmers.

### Feed and Pond Fertilization



- Four feed formulations based on locally available ingredients tested on-farm and promoted in combination with greening of pond water through manure and fertilizer application resulted in 3-fold increase in fish yield.

### Better Management Practices (BMP) & Technology Transfer

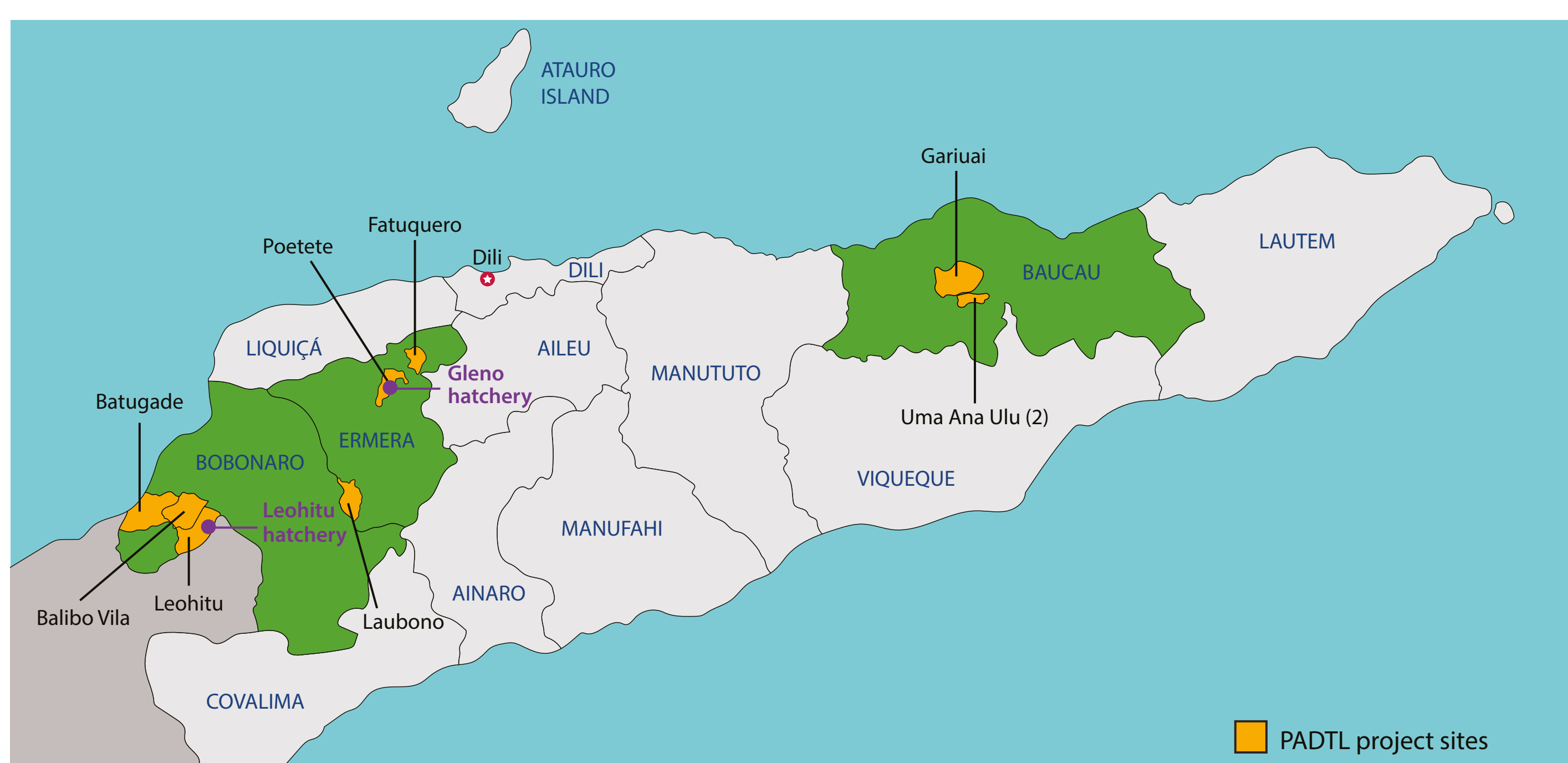


- A suite of better management practices (BMP) appropriate for farming GIFT in Timor-Leste developed, tested and validated on-farm following a farmer field schools (FFS) approach — a group-based learning using participatory tools and techniques and published for dissemination.
- Nine GIFT FFS clusters trained and functioning as self-help groups in Baucau, Bobonaro and Ermera municipalities.

### Capacity Building



- NDA staff trained and mentored (both in-country and overseas) at central and local levels.
- Online hatchery database system established for NDA.
- Opportunities availed to locals for advanced hatchery and grow-out management training at the Asian Institute of Technology in Thailand.



# Partnership for Aquaculture Development in Timor-Leste (PADTL)

## Increasing the supply of high quality tilapia seed to support a growing aquaculture industry

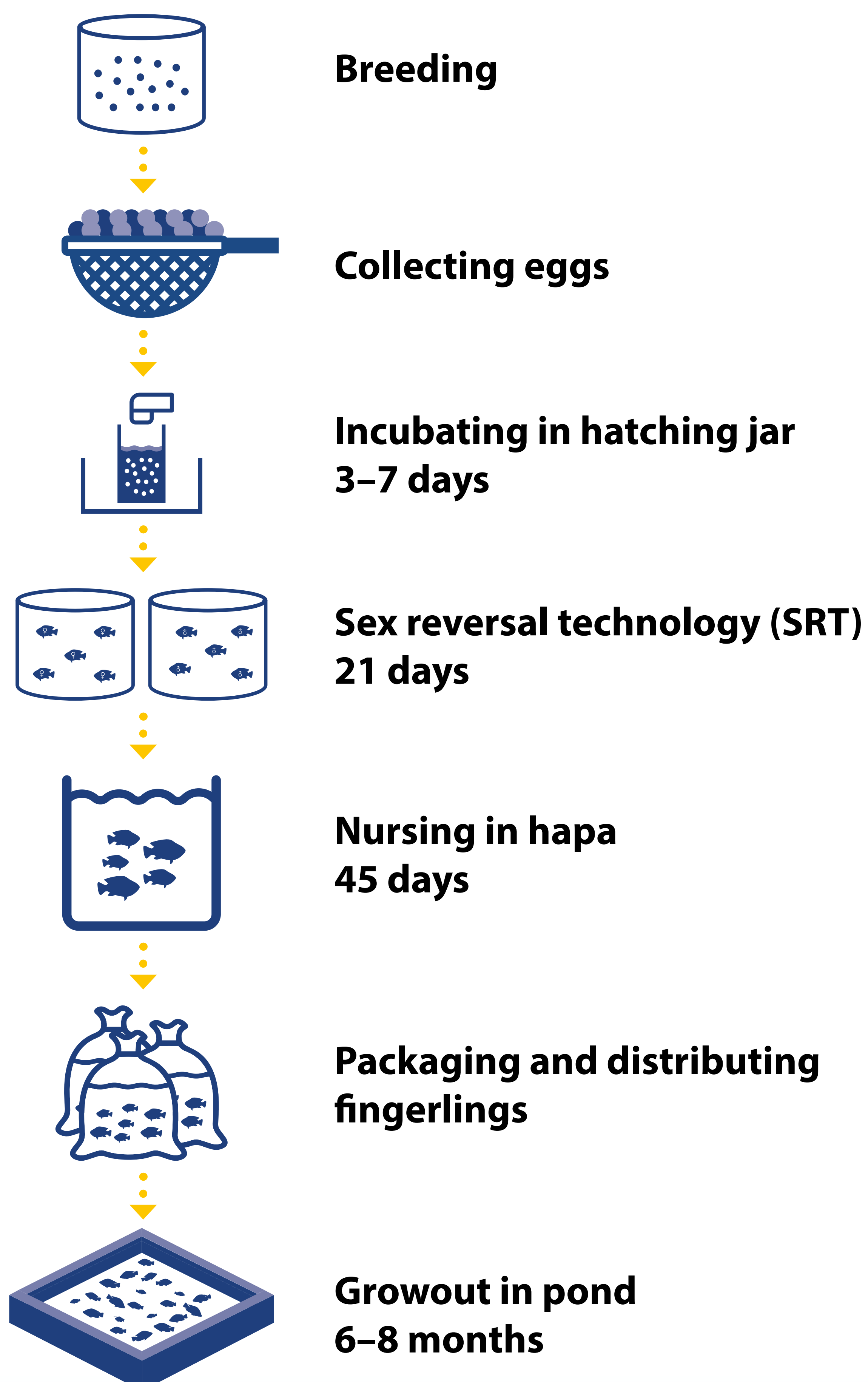
Assured supply of quality seed is key to sustainable intensification of tilapia production in Timor-Leste. Enhanced availability of and improved access to seed hinge upon the establishment of a network of government and private hatcheries and nurseries for widespread distribution to farmers.

The PADTL project lays the foundation for developing a sustainable seed production system to support the expansion of tilapia production in Timor-Leste:

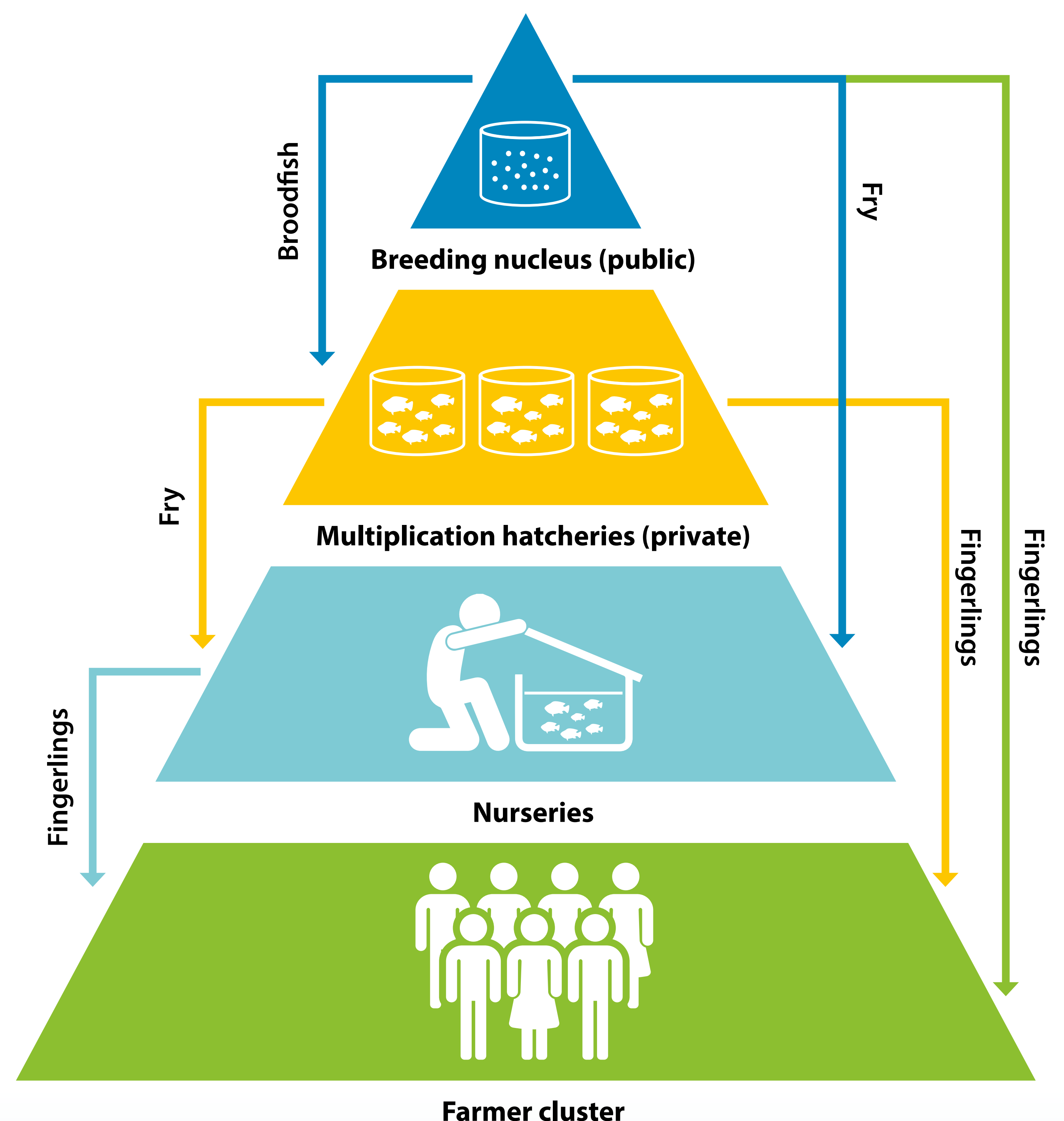
- Four cohorts of Genetically Improved Farmed Tilapia (GIFT) were introduced from Malaysia in April 2015.
- The government-run hatchery in Gleno was refurbished and technical capacity enhanced to receive, multiply and maintain the high quality GIFT broodstock.
- By end of 2018 1.5 million GIFT fingerlings were distributed to more than 800 farmers across 11 municipalities.
- A private hatchery established at Leohitu in April 2019 with PADTL support receives broodstock from Gleno for enhancing fingerling production to meet growing demand.



A systematic seed production process was implemented to ensure the supply of quality GIFT monosex fingerlings to farmers.

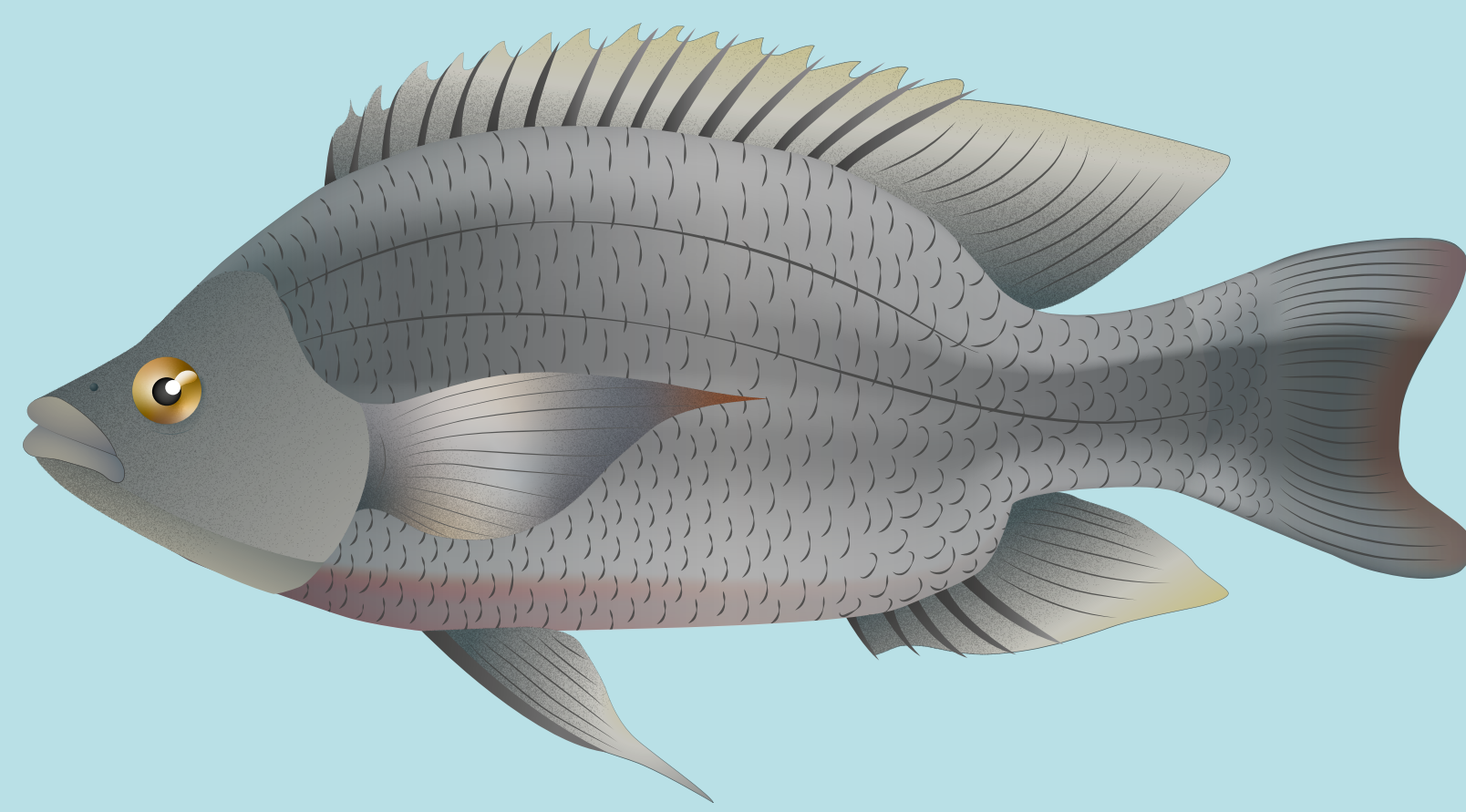


The complementary roles of the Gleno and Leohitu hatcheries mark the beginning of developing a network of hatcheries and nurseries through public-private partnerships (PPP) that constitutes an effective and reliable seed distribution system to support a sustainable aquaculture industry for Timor-Leste.



# Partnership for Aquaculture Development in Timor-Leste (PADTL)

**Feeding for better tilapia yields**  
**Good seed + Good feed = Good yield**



## Tilapia gets its food

- Directly from feed. Tilapia accepts various kinds of feed (commercial or farm-made feed pellets) so farmers can choose the types depending on costs and local availability.
- Indirectly from natural food (phytoplankton and zooplankton) in green water in pond.

## Feed

### Good feed must be

- Nutritious and liked by tilapia.
- Easy to find the ingredients, benign to environment, does not compete with other uses (eg, human food) and easy to make in the farm.
- Cost-effective.

**PADTL has developed 4 types of farm-made feed formulations combining cost-effective and easily available materials in the farm/local areas:**

<b>1</b>		+		+		+	
	32% Cornmeal		57% Leucaena leaf meal		10% Cassava		1% NaCl (salt)
<b>2</b>		+		+		+	
	29% Cornmeal		60% Taro leaf meal		10% Cassava		1% NaCl (salt)
<b>3</b>		+		+		+	
	26% Rice bran		63% Leucaena leaf meal		10% Cassava		1% NaCl (salt)
<b>4</b>		+		+		+	
	25% Rice bran		64% Taro leaf meal		10% Cassava		1% NaCl (salt)

## Green Water

Green water contains micro-organisms (algae and plankton) that are natural food for tilapia produced in-situ.



Liming the pond



+ Adding manure and fertilizer encourages green water.



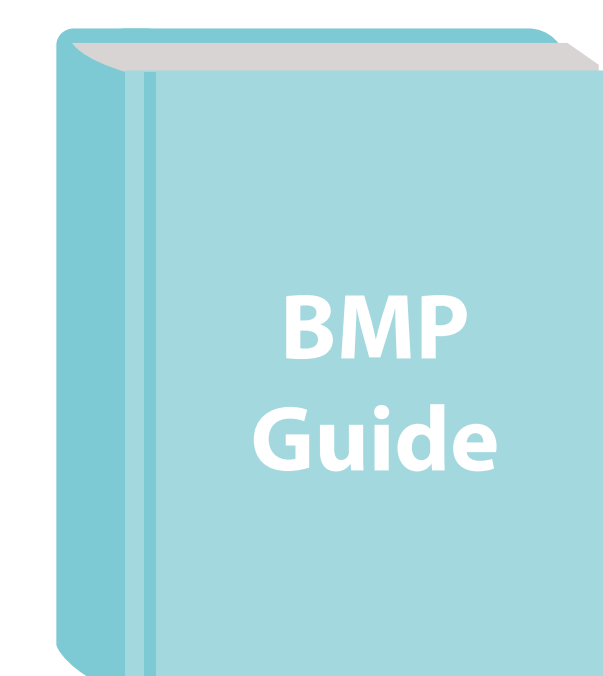
Installing bamboo substrates into the pond encourages periphyton (micro organisms) to grow on them, which is a good source of natural food for tilapia.

Combination of feed and green water technology improves feeding efficiency.

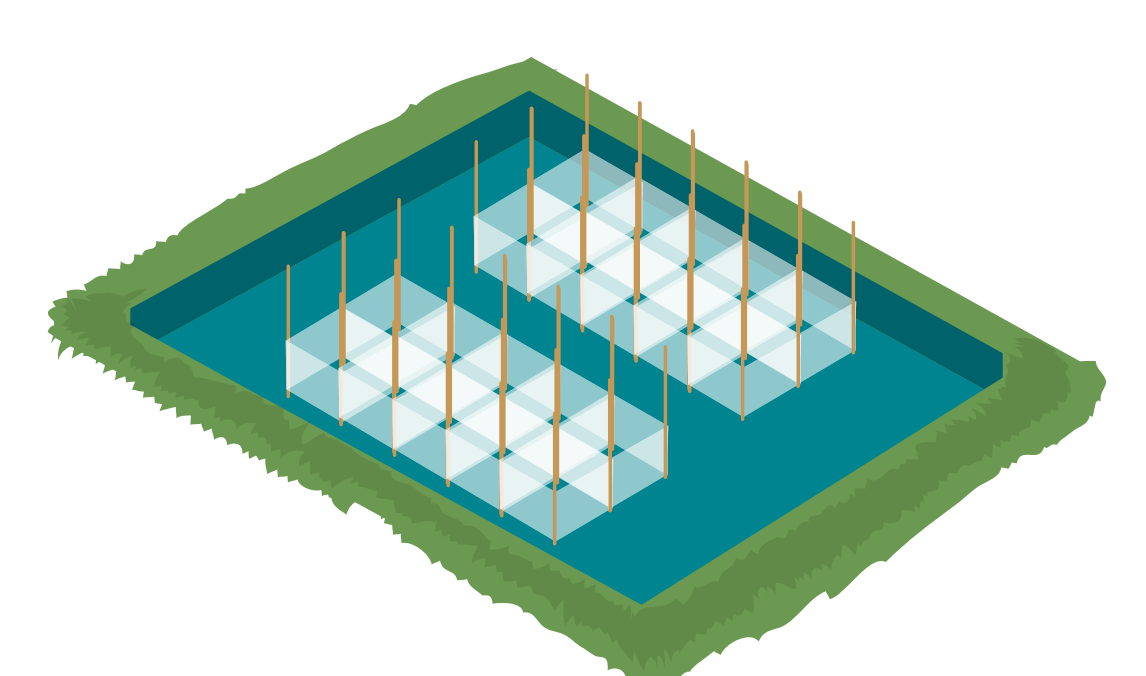
## How much and when to feed and fertilize



Talk with your local fisheries officer and other farmers



Refer to the BMP Guide for Tilapia Farming in Timor-Leste



Take the opportunity to attend farmer field schools