

# ADDRESSING UNDERNUTRITION THROUGH SUSTAINABLE AQUACULTURE DEVELOPMENT IN SOUTHEAST ASIA

## INTRODUCTION

The United Nations Food and Agriculture Organization (FAO) estimates that nearly 795 million people suffered from undernourishment from 2014-2016, with the significant majority living in developing nations. Hunger is concentrated in developing nations and especially affects women and children in poor, rural environments.

Fish comprise a substantial portion of high quality protein in diets globally, and currently makes up over 50% of the animal protein consumed in several developing countries in Asia, including Cambodia, Vietnam, and Bangladesh. Aquaculture contributes nearly half of the global fish supply and as demand for animal-source protein continues to grow, aquaculture stands out as an efficient, sustainable, and affordable method of food production. According to the FAO, aquaculture is the fastest growing animal food production sector globally, increasing annually by about 7% in the last decade.



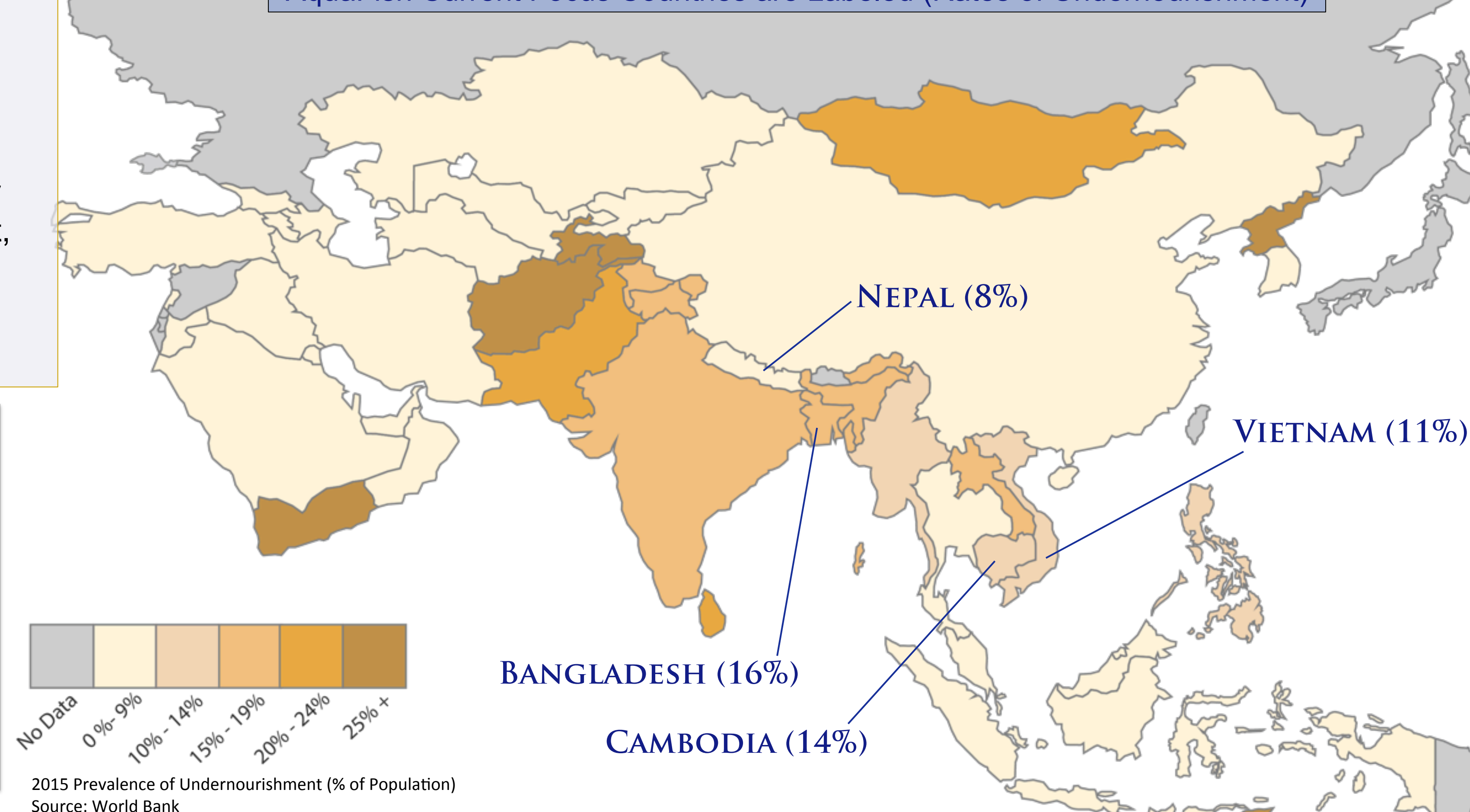
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## PREVALENCE OF UNDERNOURISHMENT IN ASIA

AquaFish Current Focus Countries are Labeled (Rates of Undernourishment)



## RESEARCH HIGHLIGHTS: BANGLADESH

*Increasing household nutrition and income of rural farmers through integrated mola, prawn, and vegetable culture*

### Methods

- Tested the culture of mola (*Amblypharyngodon mola*), a small fish high in vitamin A and micronutrients, with freshwater prawn to increase pond production.
- Evaluated mola-prawn pond mud as a fertilizer for crops grown on the pond dyke.
- Conducted a survey to assess the nutritional benefits and economic returns for rural households practicing integrated aquaculture versus those not practicing integrated culture.

### Results

- Cultivation of nutrient-rich mola was successfully demonstrated, overall pond production increased, and the integrated farming enhanced the production of prawn.
- The integration of vegetable farming on prawn-mola pond dykes increased vegetable production.
- Mola consumption was dramatically higher, as was overall nutrient consumption from fish and vegetable cultivation for households who participated in the study.
- Mola can be continuously harvested to meet household nutritional needs, while prawn can be sold as a cash crop to increase income.



## ROLE OF AQUAFISH

The Feed the Future Innovation Lab for Collaborative Research on Aquaculture & Fisheries (AquaFish Innovation Lab), funded by the United States Agency for International Development (USAID) and partnering institutions, works to enrich livelihoods and promote health through multidisciplinary partnerships that advance science, research, education, and outreach in aquaculture and fisheries. Partnerships with host country individuals and institutions results in research and extension that are focused in-country, creating opportunities to develop locally-relevant technologies, and to build capacity and transfer updated technology where it is needed most.

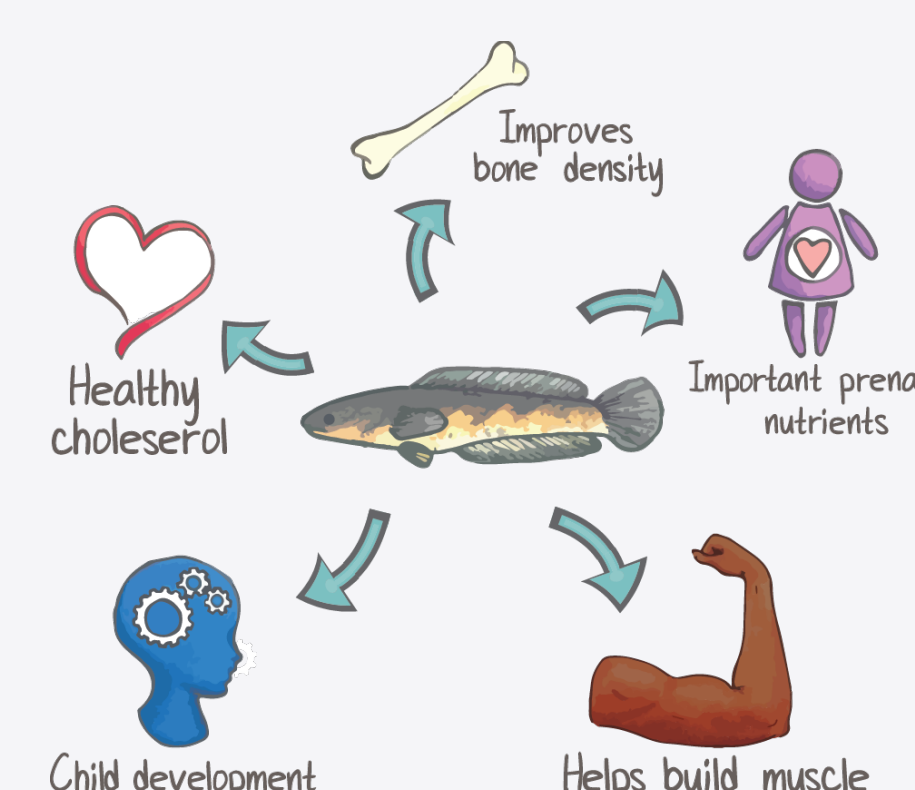
Current research and capacity building in Asia aims to address poverty and hunger through advancing sustainable aquaculture practices in Cambodia, Vietnam, Bangladesh, and Nepal.



## RESEARCH STRATEGIES

*Developing technologies and Best Management Practices (BMPs) in order to:*

- **Integrate production of nutrient-dense, small-sized fish.** When eaten whole, these fish are rich in essential vitamins and minerals critical to human health and development, including:
  - Fat-soluble vitamins (A, D and E)
  - Water-soluble vitamins (B complex)
  - Minerals (calcium, phosphorus, iron, iodine, zinc, selenium)
- **Increase protein production and reduce costs** by optimizing the culture of species that require fewer feed inputs, such as:
  - Tilapia (*Oreochromis niloticus*)
  - Carp (*Cyprinus carpio*)
  - Catfish (*Clarias gariepinus* and *Pangasius*)



*Evaluating and addressing nutritional needs, particularly for women and children by:*

- **Assessing end-user needs through techniques such as:**
  - Interviews
  - Survey
  - Focus groups
- **Transferring knowledge via training activities, including:**
  - Workshops
  - On-farm trials and trainings
  - Engagement of women's fish farming groups to train women and communities

## RESEARCH HIGHLIGHTS: CAMBODIA & VIETNAM

*Enhancing food security and household nutrition of women and children through aquaculture and fisheries*

### Methods

- Collected dietary intake data through interviews with 300 women and 343 preschoolers in three Cambodian provinces to identify commonly consumed fish using a single 24-hour recall period.
- Determined nutritional value (energy, micronutrients, and macronutrients) of intake using the ASEAN Food Composition Table.

### Results

- Fish play a significant role in food and nutrition among Cambodian women and children, comprising 17% of the total diet intake of women and 11% for preschool children.
- Fish contribute a substantial portion of the animal-source nutrients to women's diets, including 80% of protein, 74% of iron, 83% of calcium, and 87% of vitamin A.
- 212 participants (155 women) attended a series of workshops to learn survey results, and they provided recommendations for better nutrition in women and children.
- 1200 fact sheets and policy briefs were delivered to the surveyed women, IFRDI/FIA staff, scientists, researchers, government officers, and NGOs.

## ACKNOWLEDGEMENTS

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