

# ENHANCING ECONOMIC AND TRADE OPPORTUNITIES IN AQUACULTURE MARKETS TO ALLEVIATE POVERTY AND INCREASE FOOD SECURITY IN AFRICA, ASIA, AND LATIN AMERICA

Ford Evans\*, Stephanie Ichien, and Hillary Egna

aquafishcrsp.oregonstate.edu | aquafish@oregonstate.edu

## INTRODUCTION

Over 92% of global aquaculture production occurs in developing countries where it not only plays an important role in food security through local consumption, but also in reducing poverty through job creation and income generation. The value of cultured food fish produced in developing countries is estimated at US\$84 billion annually and, globally, aquaculture is responsible for the employment of approximately 23.4 million people. As a result, advances in the aquaculture sector that create access to resources, cooperatives/community farms, extension pathways, and other market opportunities can have a positive impact on livelihoods in less developed countries.

The Aquaculture & Fisheries Collaborative Research Support Program (AquaFish CRSP), managed by Oregon State University and funded by the United States Agency for International Development (USAID), strives to enrich livelihoods and promote health through international multidisciplinary partnerships that advance science, research, education, and outreach in aquatic resources. The AquaFish CRSP supports research on all aspects of aquaculture and the nexus between aquaculture and small-scale fisheries in developing countries, including issues surrounding marketing, economic risk assessment, and trade.

AquaFish CRSP researchers are studying economic aspects of aquaculture and fisheries in developing countries, including farm-level profitability, market trends, market access, availability of financial resources, and the development of group marketing systems. Also of particular interest are the constraints across value chains in local, regional, and international markets, especially as these constraints affect competitiveness, demand, and the availability of resources.

This poster showcases AquaFish CRSP investigations where US and host country researchers have worked together to study economic opportunities and constraints in aquaculture and fisheries to alleviate poverty and increase food security in Kenya, Uganda, Cambodia, Vietnam, the Philippines, and Guyana.



Tilapia on display and ready to grill at a restaurant in Kisumu, Kenya.



A street vendor selling tilapia on the outskirts of Lake Victoria in Kenya.



Women fish processors preparing fish for the smoker in Cambodia.



Fermented fish of various kinds provide a value added product in Cambodia.



Women at a fish buying station along the Tri An Reservoir in Vietnam

LEAD US INSTITUTION: NORTH CAROLINA STATE UNIVERSITY

### Implications of export market opportunities for tilapia farming practices in the Philippines

- Researchers identified 4 characteristics affecting export and other market opportunities: product size and volume, seasonality and market windows, product form, and product destination.
- Researchers recommended the formation of producer/marketing organizations, access to low-interest loans for small farmers, and development of storage, processing, and refrigeration infrastructure.

LEAD US INSTITUTION: PURDUE UNIVERSITY

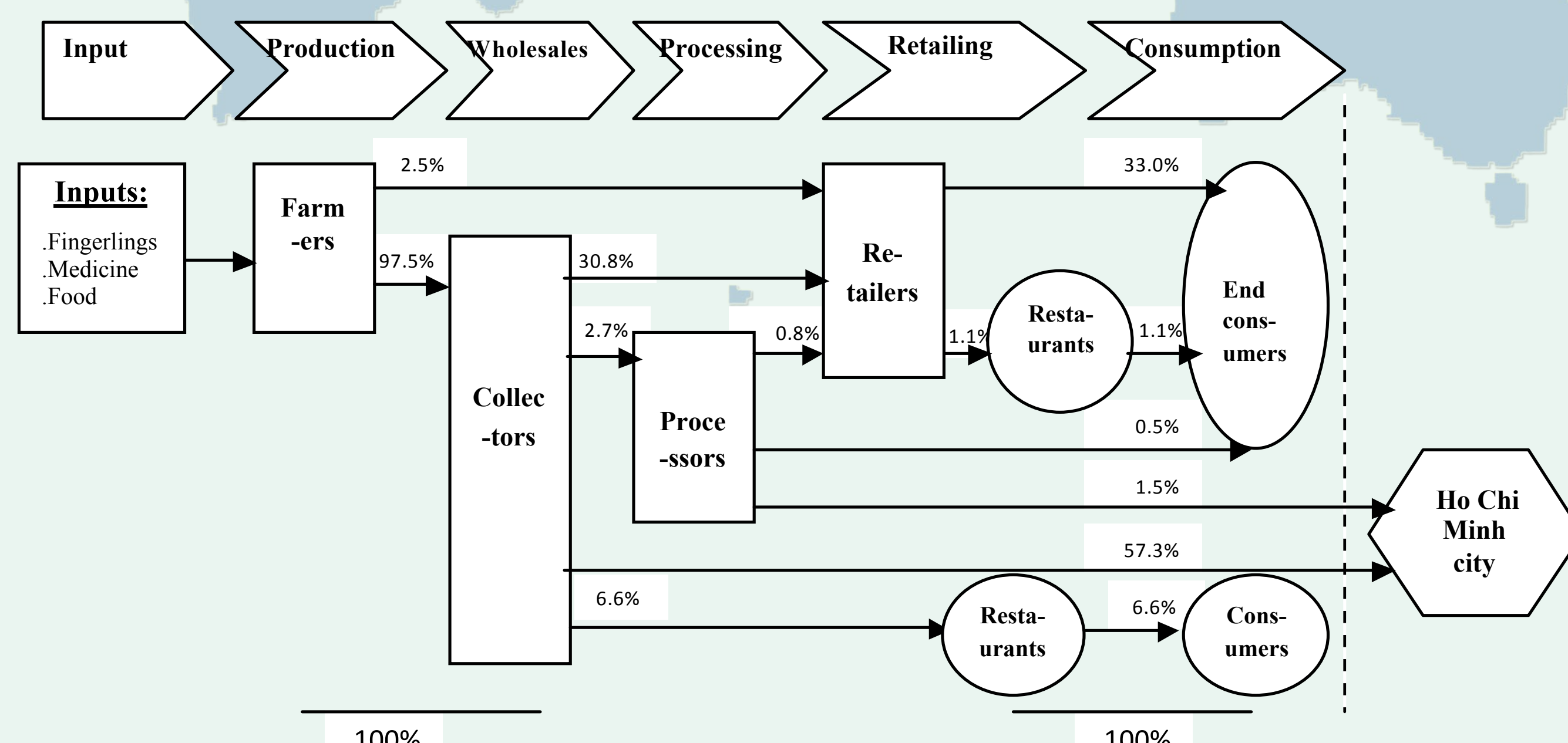
### Developing supply chain and group marketing systems for fish farmers in Ghana and Kenya

- The arrangement for marketing farmed fish in the two countries varies, and was found to include both short supply chains from farm gate to neighboring markets and long supply chains to distant markets.
- Researchers suggested improving volume and supply consistency and further development of existing cluster farming systems.

LEAD US INSTITUTION: UNIVERSITY OF CONNECTICUT

### Competition and impacts between use of low value/trash fish for aquaculture feed versus use for human food (Vietnam and Cambodia)

- This investigation provided better understanding of the current status and trends of supply/demand for small prolific fish species and the impacts on food security/livelihoods.
- Findings revealed snakehead culture is profitable. However it creates competition for the small sized/low value wild caught fish, which is relied upon for both aquaculture fish feed and human consumption.



Value chain map for cultured snakehead in Vietnam.

LEAD US INSTITUTION: PURDUE UNIVERSITY

### Value Chain Development for Tilapia and Catfish Products: Opportunities for Female Participation in Kenya

- Findings suggest that high initial costs of fish farming, including land, training, and construction are among the major constraints to increased female participation in fish production. SWOT analysis indicated a need for more information sharing, highlighting the benefits of being close to urban markets.

LEAD US INSTITUTION: AUBURN UNIVERSITY

### Market assessment and profitability analysis of aquaculture enterprises in Uganda

- Researchers found a need for improved market access and infrastructure, development of value-added products, and enhanced regulation enforcement.

LEAD US INSTITUTION: UNIVERSITY OF ARIZONA

### Expansion of Tilapia and Indigenous Fish Aquaculture in Guyana: Opportunities for Women.

- This investigation provided marketing training to farmers in Guyana to improve sales of farmed fish and shrimp both domestically and internationally. Markets have since been established in the interior of Guyana and overseas, including retailers in the United States.

LEAD US INSTITUTION: UNIVERSITY OF CONNECTICUT

### Value chain analysis of snakehead fish in the Lower Mekong Basin of Cambodia and Vietnam

- In Vietnam, 10 significant market channels were identified (illustrated at right), with the highest profit going to the collectors.
- In Cambodia, 11 significant market channels were identified, with 25% of the wild-caught snakehead going directly from fishers to end users.
- In Vietnam, wholesalers made about 90% of the total profits, while farmers made about 6% of the profits in the system. Retailers make the greatest profit per kg, but only account for a small percentage of total profits in the system due to the small number of kg that each retailer handles.

LEAD US INSTITUTION: NORTH CAROLINA STATE UNIVERSITY

### Improving supply chain opportunities for tilapia in the Philippines.

- Researchers found that the tilapia industry supply chain in the Philippines includes hatchery and nursery farms that provide improved brood stocks to fish farms, which, in turn, provide improved quality tilapia fishes for end-users such as consumers and institutional buyers.
- Researchers offered several suggestions, including: intensify technology transfer to farmers; motivate small farmers to participate in supply chains; institutionalize an accreditation program for quality assurance of products and services; and provide capital windows to improve facilities and reduce logistics and transaction costs in the entire supply chains of tilapia.