

# Inclusive aquaculture - business at the bottom of the aquatic pyramid

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**B**ottom of the Pyramid – the term coined by C.K.Prahalad in his landmark book “The Fortune at the Bottom of the Pyramid” – refers to the opportunities for business investment in providing goods and services to the poor and generating profits whilst creating social and economic good. This approach, according to Bill Gates, “offers an intriguing blueprint for how to fight poverty with profitability” and setting the scene for the emergence of social impact investment that we see growing fast today.

Through a SIDA -funded project on small-scale fisheries FAO and partners have been supporting WorldFish Center research into small-scale aquaculture investment. Studies of projects in Bangladesh, India and Indonesia suggest significant outcomes from investment, and start to show the potential for new avenues for investment in aquaculture that have potential to deliver not only aquaculture products and profitable businesses for smallholders, but also social and economic goals. Some of the highlights are provided below.

Investments in Indonesia, India and Bangladesh  
In Indonesia, US\$ 1.9 million of donor investments was estimated to be made in a technical and organizational assistance program in the Province of Aceh during 2007-2010, to support rehabilitation of aquaculture infrastructure after the earthquake and tsunami disaster of 2004. Over 95 percent of aquaculture farmers in the province are small-scale, owning or operating brackishwater shrimp and fish ponds of around 1 ha per household. Technical assistance supported adoption of better management practices (such as

stocking of healthy shrimp seed, improved pond management), and organizational support to rebuild and strengthen farmer groups. Forty seven volunteer farmers joined the program in 2007 – in 2010 that number had risen to over 2600, creating significant improvements in income in this poor region of Indonesia. Total income generated from all participating farms from 2007 – 2010 was US\$ 2.39 million, with a total net profit of US\$ 1.44 million, not yet returning all the investments made, but with trends towards overall profitability in 2010 (Table 1).

In India, investments made from 2002-2006 by MPEDA and NACA into small-scale commercially-oriented shrimp farm improvements were investigated. An estimated US\$ 191 000 was invested into wide dissemination of better management practices to small-scale shrimp farmers through local technical services and farmer groups. Five farmers volunteered to this initiative in 2002. The number grew to 730 in 2006 (and beyond that to 17,147 farmers under NaCSA in 2011). Better management practices, building farmer networks and delivery of technical advice through village-based extension staff created significant economic outcomes; US\$ 8.9 M of revenue from farm gate shrimp sales and US\$ 3.52 M of profits to farmers during 2002-2006, a substantial return on the investments made (Table 1).

Bangladesh provides the most significant value creation among the case studies. The USAID-funded project “Greater Harvest and Economic Returns from Shrimp” (GHERS) provided

**Table 1**

Outcomes from technical and organizational investments through three aquaculture projects

	Aceh (Indonesia)	India	Bangladesh	Methodological notes
Years	2007-2010	2002-2006	2008-2011	Project start and finish years for analysis
Number of farmers	47 > 2,639	5 > 730	2,772 – 22,670	Number of farmers voluntarily engaged in the programs/projects from first to final year
Total investment (US\$ million)	\$ 1.90 M	\$ 0.19 M	\$0.84 M	Cumulative investment in US\$ over in technical/organizational assistance of project
Total farm revenue (US\$ million)	\$ 2.39 M	\$ 8.90 M	\$52.5 M	Total revenue from sale of aquaculture products during project period
Total farm profit (US\$ million)	\$ 1.44 M	\$ 3.52 M	\$20.6 M	Total profit from sale of aquaculture products (excluding baseline year) during project period
Profit/investment ratio	0.73	18.5	24.5	Ratio of total farm profit divided by total project investment
Farmer income (US\$ revenue from sales)	\$215 – \$684	\$1,113- \$6,621	\$1,500 - \$2,498	Income per farmer per year in US\$ in start and finish years, over baselines (India baseline is from 2001)
Farmer profit (US\$)	\$73 > \$435	\$278 – \$2,648	\$356 – \$1,104	Profit per farmer per year in US\$ in start and finish years, over baselines (household labor excluded) (India baseline is from 2001)

Source: WorldFish Center. 2012. Investing in small aquaculture enterprises (Manuscript in preparation)

technical and organizational assistance from 2008 to 2011 to mostly small-scale shrimp and fish farmers. The intent of this project was to improve shrimp and fish farm management in the southern coastal areas of Bagerhat, Khulna and Shatkhira districts. Total investment over two years in technical and organizational assistance to small-scale farmers, farmer groups and local services was US\$ 841 713. This investment helped scale out the project to include 22,670 farmers and generated \$USD 52.5m in income and \$USD 20.6m in profits in 2011. (Table 1).

### Lessons learned

The cases showed significant economic returns from the investments made. While more such analyses are required, from a commercial perspective, they start to show the significant values that, under the right conditions, might be created by investments into small-scale aquaculture. Some key points arising from these experiences are as follows.

The critical first step is to identify those areas in each country in which farmers have **common burning issues (drivers)** such as poor yields, disease problems, environmental constraints, hurdles to market access or other constraints that would gain the most from the provision of consistent and relevant improvement. Typically, such areas have low productivity, poor management systems and no farmer support mechanism. Interventions associated with each case study generated improved pond productivity and profitability and began to build incentives for farmers to engage.

Second, having **farmer-oriented services**, comprising local teams with technical and organizational skills, were a crucial part of each project. Such technical help was provided by grant funding, but for sustainability, a business-oriented approach to servicing would be better. Our analysis shows that there is a business case for such services, but it takes time to generate a return and scale out.

Third, **collective action** through group approaches is necessary to reach large numbers of farmers. Economies of scale and knowledge transfer are among the advantages of collective action, but group organization and capacity building takes time. Research on business models and investment strategy is needed to understand the costs and returns of such investments. Our experience suggests opportunities for investing through cooperatives and other producer organisations.

Four, **market connections** to input suppliers (seed, feed) provides groups with bargaining power for better prices. Benefits to farmers in the cases examined were largely achieved through scaling out simple management and organizational improvements, with some limited integration of seed and feed suppliers; market connections are still developing. Longer-term, market connections could provide opportunities for cooperative or group businesses to harness more efficiencies and profits for members.

Five, *financing is essential*. Small-scale household farms are not well served by credit, and potential growth can be stifled by underfunding. Economic outcomes from investment can be substantial, but financing systems that provide time for building scale and capacity are needed. A viable business model needs to be at the core of the enterprise.

Six, *local conditions* are important. Aquaculture is very site and country specific; one size does not fit all. Stakeholder numbers vary, but more importantly social and cultural context, institutional frameworks, value chain structure and efficiencies, power relations among stakeholder groups and governance also vary. Understanding local context, and local service teams accepted by local stakeholders, appear key to successful investment.

Seven, *it takes time* to achieve reasonable returns on investment. So it requires patience, focus, and dedicated and consistent efforts to achieve the goals and profitability on investments made.

### Moving forward

These case studies provide insights into the substantial economic and social added value that can be created by investment in the small-scale aquaculture sector. The cases also provide evidence of conditions for successful commercial investment. Sharing more of such experiences needs to be encouraged, as is building coalitions of partners to extend and scale-up successful models. There does appear to be business at the bottom of aquaculture's pyramid, which could generate positive economic, social and environmental outcomes. The key now is in moving forward towards implementation.

<sup>1</sup>Prahalad, C. K. 2010. The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits. Revised and Updated Fifth Anniversary Edition. Prentice Hall, Upper Saddle River, New Jersey 07458, USA. 2010. 407 pp.

<sup>2</sup>Swedish International Development Cooperation Agency

<sup>3</sup>Padiyar, P. A., Phillips, M.J., Ravikumar, B., Wahju, S., Muhammad, T., Currie, D.J., Coco, K. and Subasinghe, R. P. 2011. Improving aquaculture in post-tsunami Aceh: experiences and lessons in better management and farmer organizations. Aquaculture Research. Online edition. 13 Oct. 2011 <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2109.2011.02986.x/abstract>

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<sup>6</sup>Umesh, N.R., Mohan, A.B.C., Ravibabu, G., Padiyar, P.A., Phillips, M.J., Mohan, C.V. and Bhat, B.V. 2009. Shrimp farmers in India: empowering small-scale farmers through a cluster-based approach, pp 43-68. In: S.S. De Silva and F.B. Davy (eds.), Success Stories in Asian Aquaculture, Success Stories in Asian Aquaculture. [http://web.idrc.ca/openbooks/461-1/#page\\_43](http://web.idrc.ca/openbooks/461-1/#page_43)

<sup>7</sup>National Center for Sustainable Aquaculture – <http://nacsampeda.org>

<sup>8</sup>The term “projects” is used, but in Aceh at least the investments were made by multiple donor projects, but within an integrated program.



### [Continued from page 31](#)

- Twitter trends show which topics are most commonly tweeted about at a particular moment. Twitter Trends can be viewed worldwide or by particular geographical regions. Though sometimes frivolous, Twitter trends are important to monitor as they can reveal activity around a particular events. For example, during the FAO conference to elect a new Director-General, FAO was one of the most tweeted topics worldwide.
- Aquaculture Hub: @aquaculturehub
- International Collective in Support of Fishworkers Europe: @ICSF\_EU
- The World Fish Center: @WorldFishCenter
- Maria Damanaki, European Commission on Maritime Affairs and Fisheries: @MariaDamanakiEU
- United States Fisheries and Wildlife Service: @USFWSfisheries
- US National Oceanic and Atmospheric Administration: @usfisheriesgov

Other examples of fisheries and aquaculture related pages on Twitter include:

### [Continued on page 53](#)