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Farmed Fish for Small Farmers

a mini case study

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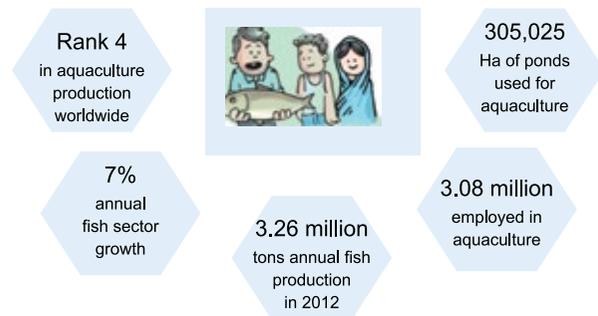
Bangladesh is a global player in aquaculture production as a fourth largest producer in the world. Fish plays a significant role as protein supplier for the country's poor households as it is relatively inexpensive to cultivate and to purchase. Due to the sustained growth in demand, Katalyst has been working in farmed fish sector since 2004. Sector growth and productivity were impeded by the lack of quality inputs such as fingerlings, commercial feed or aqua chemicals, outdated stock and weak management practices at hatcheries, and limited knowhow and investment capacities of small fish farmers.

Katalyst helped hatchery associations to import quality brood. Earlier high-value Tilapia, Koi and Pangus fry are mostly bought by lead farmers only while small farmers use low-yielding local species. A breakthrough was reached during project Phase 2, when hatcheries started marketing high-yielding fish fingerlings to small farmers. The promotion included pond management and cultivation improvements that further increased farmers' productivity. Since 2014, large fish feed and aqua chemical companies as well as dealers and nurseries along the fish value chain joined in targeting their products to smallholders.

Addressing the challenges

Fish accounts for more than 60% of the animal food intake in Bangladesh. It is estimated that the demand for fish will double by 2020. Traditionally, small farmers have been rearing carp species in small ponds for household consumption and local market supply. Farmers able to buy fry from different hatcheries country-wide often experience high mortality rates and low productivity. The brood stock of high-yielding varieties such as Koi, Tilapia and Pangus, im-

Bangladesh Fish Sector at a Glimpse



The Project

The Agri-business for Trade Competitiveness Project, branded as Katalyst, is one of the largest market development initiatives in Bangladesh. Working together with various market actors, the project generates new income opportunities for small and poor farmers across the country.

Katalyst is co-funded by the UK Government, Swiss Development Cooperation (SDC) and Danida, and implemented by Swisscontact under the umbrella of the Ministry of Commerce, Government of Bangladesh.

ported in the 1980s, was outdated and needed replenishment.

Katalyst identified that main constraints for high-value fish production were inbreeding, low quality of brood fish, and hatchery management, and a lack of technical know-how and communication between hatcheries and farmers.

To upgrade the low-quality brood stock, Katalyst in cooperation with the government and the Bangladesh Fisheries and Research Forum helped hatcheries import quality brood from Vietnam and the Philippines in 2011.

The imported brood produced better quality fingerlings of high-value fish species. These fingerlings have lower mortality and faster growth rates than local species. Koi, Tilapia and Pangus are therefore considered high-value species. Their faster growth rate helps the fish gain 200-250 gm weight within 3-6 months, providing farmers an option for two culture cycles and two harvests



a year. In comparison, local species take 1-1.5 years to harvest, often disrupting farmers' cash-flow.

The imported brood stock had low pro-poor impact because the high-quality fry were mostly bought by lead farmers. Small farmers continued culturing low-yielding local species within their investment capacity.

In 2008-2009, five feed and aqua-chemical companies initiated a promotional campaign on Koi, Tilapia, Pangus species. The promotional

campaign was conducted among dealers and lead farmers based on the assumption that they will disseminate suitable fish culturing know-how to smallholder farmers. In reality, only trained dealers shared proper fish culturing know-how necessary for expanding business. The lead farmers did not do so as they did not have any incentive to share information with their low-income peers. Therefore, the campaign did not achieve its expected results.



Vision for Farmed Fish Sector in Phase 3

Small fish farmers increase their income by diversifying into more profitable species and practices.



Bringing about change

Katalyst took an initiative to work with small-holder farmers. As a result, Katalyst convinced hatcheries to market 30% of their production to small farmers while hatcheries sold 70% of their fingerlings to lead and commercial farmers. Katalyst developed a campaign through hatcheries that promoted Green Pond Technology (GPT) and a mixed culture of Tilapia and Carp. Small farmers began to realize that Tilapia can be cultured without additional feed if the pond is biologically fertilised with more plankton and extra aqua medical products that increases fish's capacity to digest feed.

As feed is the most important cost factor in aquaculture, GPT helped persuade small farmers to try high-value species which, until then, had been the domain of lead farmers. By the end of phase II, 15 hatcheries promoted GPT to small farmers with ponds of less than 100 decimal area.

According to a Katalyst impact study, a mixed culture of Tilapia with Carp resulted in an additional annual income per farmer of BDT 11,000. If properly cultured, a Tilapia farmer with a 100 decimal pond can attain an additional income of BDT 11,300 - 29,900 compared to local carp cultures at BDT 4,000 - 5,300.

Scaling up

After realizing the profitability aspect, five fish feed and aqua-chemical companies started including smallholder farmers into their promotional campaign. The campaign included trainings, cost-benefit analyses, pond management and demonstrations on proper usage of feed and aqua chemicals.

Typically, 80% of the participants in the campaign were farmers and 20% dealers and nurseries. Dealers sell feed and aqua chemicals, and nurseries grow fry for 2-3 weeks which reduces the mortality rate by 10-15%. Therefore, farmers often prefer to buy fingerlings from nurseries even though the price is higher. In 2014, dealers and nurseries began to include smallholders in their customer base.

The business model shows proven success. The agro-veterinarian division of Eskayef Bangladesh Ltd, one of the partner companies, claims a 90% increase of sales within a year, as a result of including smallholder farmers in its marketing strategy. The company has therefore extended its campaign to remote areas. Other companies are changing their marketing towards small farmers as well. In Phase 3, Katalyst intends an outreach of 48,000 fish farmers who will benefit from this intervention, generating an additional income of USD 13.60 million.

1 decimal = 435.60 sq ft.



"I Learned about proper feeding techniques, maintaining water quality, and how to identify and cure fish diseases from Azahar Ali, a trained fish nursery owner. In addition, I got help from feed companies and gradually began cultivating tilapia, pangas and other profitable species of fish. Soon, I earned BDT 600,000 a year from fish farming alone. With this increased income, my family and I can now regularly eat more nutritious food and I have built a better house with a sanitary latrine. I also bought 5,5 acres of land for cultivating rice and other crops. "

Masud Rana, Fish Farmer



Evidence of impact

During project Phase 2 and 3, Katalyst has been contributing significantly to bridge the gap between supply and demand of fish. Thousands of additional farmers access to quality inputs and technical know-how enables them to earn higher yields and productivity.

Most of all, small farmers benefitted from the changes the project helped induce. Aiming at poverty reduction by overcoming market constraints in cooperation with the government and the private sector, the following evidence of impact could be observed:

- ✓ Smallholder farmers have included Tilapia into their existing culture practice. They have started practicing poly-culture, which helped them to gain more additional income.
- ✓ Hatcheries who promoted GPT to smallholder farmers enjoyed an increased sales of Tilapia fingerlings.
- ✓ District-level hatcheries put quality fingerlings on the market for lead farmers, and from 2011 on, to smallholders as well.
- ✓ Fifteen hatcheries started promoting Green

Pond Technology to small farmers. In 2012, this resulted in an additional annual income per farmer of BDT 11,000.

- ✓ Until 2015, 60 hatcheries has promoted GPT for mixed Tilapia and Carp cultivation, as well as Koi and Pangus to smallholders.
- ✓ Since 2014, the intervention was scaled up from hatcheries to five major feed and aqua chemical companies: Eskayef Pvt Ltd, Fishtech BD Ltd, Uttara Feed Ltd, Krishibid Pvt Ltd and NAAFCO.
- ✓ The companies provided training on cost-benefit analyses, pond management and demonstrations on proper usage of feed and aqua chemicals for dealers, nurseries and smallholder farmers.
- ✓ Eskayef Bangladesh Ltd claims a 90% increase of sales within little more than a year as a result of its inclusion of smallholder into marketing strategy. The company has therefore extended its campaign to remote areas.
- ✓ Other companies are changing their marketing strategies towards small farmers as well.

Improved services for smallholder fish farmers

