

Participatory market chain approach: An unidentified sustainable supply chain model to boost fish nurseries

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Technical knowledge sharing with Aqua extension worker.

Aquaculture, fish seed and participatory market chain approaches

In Nepal, unlike other developing nations, the prevalence of low quality and seasonal access to fish seed is an important restriction on the development of the aquaculture sector. Commercialisation of fish farming cannot progress rapidly in the absence of critical inputs and a regular supply of quality fish seed are an integral requirement for the transition of fish farming from a subsistence activity to a commercial enterprise.

Fish are a symbol of fertility, strength and prosperity in Nepal. With a wide range of aquatic habitats, from tropical lowland waters to cold highland rivers and a diverse array of fish species, Nepal offers many and varied prospects for fisheries and aquaculture development in the country (Gurung, 2003). Fishing is a long-standing tradition and customary activity in Nepalese society. However, in contrast to terrestrial agriculture, aquaculture is a relatively new and dynamic sector in Nepal (APP, 1995).

Fish breeding in Nepal started with common carp in 1960 (FAO, 2014). At present there are 52 private fish hatcheries, 13 public fish hatcheries and 123 private fish nurseries in operation within the country. However, hatchery production of carp seed, for which there is high demand, is still insufficient to meet the need of industry. Almost 77% of the carp seed in Nepal is produced by the private sector (Mishra, 2013). Overall, carps represent over 95% of national aquaculture production and approximately 70% of this figure is comprised of exotic carps.

Participatory market chain approaches (PMCA) are a key tool for the social and economic improvement of farmers and other market actors in a common platform with a dynamic solution in a joint supply chain modality (Staritz, 2012). A limited supply and monopoly market for inputs hinders the resilience of fishery sector both qualitatively and quantitatively in Nepal. We realised that a pocket-level fish thematic group concept would be very fruitful in ensuring progress by representing village and cluster-level problem solving arena among different actors, stakeholders and lead farmers. The



Calculating fish seed price in Bangladesh visit.

concept would improve the availability of quality inputs by facilitating a mutual trust-building environment over a wider area in a participatory way. This would contribute to a supply chain of quality products and improve livelihood opportunities and income as well (Stoian et al., 2012).

Value chain modality based on PMCA, developed by the European Union funded Agriculture and Nutrition Extension Project (ANEP), has been found to be quite effective in the context of rural resource poor farmers, where both farmers and villages are scattered and timely access to resources is constrained.

The approach has helped improve aquaculture development in two districts of Nepal where conditions had otherwise proven difficult. The production of fish seed by service providers of ANEP in both Rupandehi and Nawalparasi districts were 21%, 32% and 47% of total production in 2012, 2013 and 2014 respectively, an improvement of more than double that achieved previously. Similarly, the total sale of fish seeds by ANEP project service providers in both districts was

18%, 30% and 52% of total sales in 2012, 2013 and 2014 respectively, which was also nearly double that of previous transactions of the local supply chain system (ANEP 2014).

Gender participation and fish nursery business

In aquaculture activities, gender equity is generally neglected, although female participation in the aquaculture workforce seems equally important, as illustrated by the case of Mrs Chitrarekha Tharu.

Before her involvement with ANEP Mrs Tharu was a housewife in Sapahi Village of Patkhauli VDC in Rupandehi District in the southern plains of Nepal. Being a member of a fish-loving Terai ethnic community, she was already well acquainted with fisheries. After her involvement as a group member in ANEP in 2012, she transformed her 0.32 ha of farmland into fish nursery pond and some growout ponds of her own volition.

The way she transformed her farm into an aquaculture business is a remarkable story. Two years after her husband returned from work as a labourer in a gulf country there was no particular income source for her household besides traditional farming practices. When the ANEP project entered the area she instantly became involved in a fishery group, joined capacity building training courses and participated in exposure visits. Up until then she had been reluctant to try new things due to a prior failure from her poultry business. At the initial period of second year, she got a chance to visit Bangladesh through ANEP. Immediately after her visit, she decided to take up fish nursing with technical assistance from the project team. She constructed two small nursery ponds along with two growout ponds in 2013 and started her business. In this campaign ANEP took the responsibility of contacting core as well as value chain households in the whole district using PMCA as a tool. Fish thematic group members of the PMCA tool helped her in establishing links to other beneficiaries of the value chain. As a result, she was rewarded with the success of her enterprise. In 2014, she felt

encouraged and constructed an additional three ponds. Over time she has become recognised as a prominent fish farmer not only locally and in the district, but nationally.

How PMCA drives business success

Before 2012, there were no systematic supply chain for fish seed in the Dhakdhahi cluster where Mrs Tharu lives. Seasonal unavailability of fish seeds created headaches amongst farmers, as the nearest fish hatchery was located miles away and could not fulfil their needs. Moreover, fish seed vendors from over the border with India used to deceive them by selling them low-quality fish seed. Farmers had hidden and unheard complaints about the fish seed quality, which reduced their productivity accordingly.

When the ANEP project mobilised in the area and created a better management system for fish farming activities with the participation of the local communities. For the development of a better supply chain of fish seed, a cluster-based fish thematic group operating under the umbrella of PMCA was



Delivery of fish seeds in packed bag from outside.

formed with the participation of leading farmers from each village. Mrs Tharu was elected as chairperson of thematic group of her cluster. Monthly meetings and situation based meetings started and helped to unite them at first. Participants put their views amongst the assembly, sharing problems and constraints in fish farming activities as well as solutions for common problems.

Mrs Tharu started to visit district-based fishery development centers and agriculture offices with team mates and started lobbying for development of effective aquaculture operations in their territory. She started to make requests for collection of the fingerlings in her area in regular discussion with leading farmers.

In 2013, she was nominated for a technical training cum exposure visit to Bangladesh sponsored by the Worldfish Center, one of the consortium partner of ANEP project. After the two week long visit, she realised and rectified some of the mistakes made during the course of management of her business. Afterwards she started to give more time and attention to her business than before. Through her sincere control and supervision, she produced appropriate advanced sized fish seeds in her nursery and started to sell among the farmers. The demand collection process in fish thematic meetings assures that all team members and other farmers will have a reliable supply of quality seed, improving farmer confidence.

Mrs Tharu Rs. 175,000 net profit from sale of fingerlings in 2013. Her family was highly motivated and encouraged by the result and now all members take a share of the work in the business. By the end of 2014 she had nearly doubled the income from her activities to Rs. 342,000. She has begun monitoring water quality parameters using electronic devices with training and extension support from the project.

Due to her increasing recognition and remarkable contribution in this sector Mrs Tharu has been again nominated as a member of the district fishery association and also as an executive member in the national level fishery entrepreneurs' association. Recently, she has started a home delivery system taking fish seed directly to the doorstep of farmers. This helps her to improve communication with the farmers, identify the real problems and understand their needs. Therefore she has established a high demand for her product and service and attained remarkable social prestige. She has become a successful entrepreneur cum service provider in fishery sector of Nepal.

Conclusion

For decades, farmers have been unable to improve aquaculture productivity in absence of quality fish seed inputs in Nepal. Although very fertile water resources are available for aquaculture, the linkage and coordination of input supplies was not systematic or effective for the promotion of aquaculture in these districts. The establishments of farmers groups, thematic groups under PMCA tool developed by ANEP, has united farmers. Their capability has been strengthened through continuous training, interaction, on-farm and off-farm visits and development of the supply chain. Over the past three years the farmers have been increasingly mobilised and empowered with positive impacts on their livelihoods and social and economic status.

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