

A Dam Good Option

Small-scale fishing in the reservoir of the Dimbhe dam in Maharashtra, India, has been a boon for displaced families

In 2000, the Dimbhe dam in the Indian State of Maharashtra became operational, flooding 2,202 ha of tribal land and displacing 1,253 families. Eleven villages were submerged and 13 partially affected to irrigate 36,552 ha of land through the Right Bank and Left Bank canals and produce five mw of power. The remaining water is supplied to the Yedgaon dam. The families who have had to shift to the hill upstream have little livelihood options on the stony slopes. Twenty-five to 40 of the families took to fishing in the reservoir, using rubber tubes of truck tyres. But their meagre catch was inadequate for their own nutrition, let alone as a source of livelihood.

Enter the non-profit, Shashwat. The organization worked to help local communities develop small-scale fishing activities in the reservoir and improve agricultural production while conserving forests. Shashwat's holistic development plan for the area includes enabling communities to not only start small-scale livelihood activities such as fishing in the reservoir, but also enabling them to manage resources sustainably. Shashwat was awarded the Equator Prize as well as the prestigious Special Recognition Award for Freshwater Resource Management by the Equator Initiative of the United Nations Development Programme (UNDP) at the RIO+20 United Nations Conference on Sustainable Development at Rio de Janeiro, Brazil, on 20 June 2012.

Shashwat helped the tribals of 19 villages living around the dam organize themselves and develop fishing in the reservoir. In 2003,

with advice from fishers of the Bargi Dam Displaced and Affected People's Association, some 900 km away in the neighbouring State of Madhya Pradesh, the Dimbhe community formed an association, which was later registered as a co-operative society in 2006, with 157 members, including 15 women. Membership to the Dimbhe Jalashay Shramik Adivasi Machhimar Sahakari Society Maryadit was based on payment of a token fee. The co-operative has members from all 19 villages

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around the reservoir. Soon after the formation of the association, three boats made of galvanized iron sheets fixed over wooden frames were introduced in 2003. These were a hit. Today there are some 150 such boats plying the reservoir waters.

Training programme

The next step was to get the State agencies on board. The revenue, fisheries, co-operation, irrigation, tribal and forest departments needed to be involved. The Tribal Development Department provided funds for the training-cum-production programme of making boats and purchasing fishing nets, while the Fisheries Department subsidized the boats made by the co-operative's members, and helped the women get trained in ornamental fish culture. The

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Revenue Department pitched in by giving ration cards to access food subsidies, and the Irrigation Department reduced its charges for draw-down irrigation permits, among others.

In the first two years of the dam's existence, the Irrigation Department emptied the dam twice, leading to the death of all the fish in the reservoir. Then, in 2003, the reservoir was given to a private contractor for fishing, for a period of five years. The contractor did not stock the reservoir adequately and when it was time to harvest the fish, he brought

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In the first year, 2006-2007, the catch was 3,670 kg of *catla* (Indian carp) and 16,860 kg of *chela* (Indian glass barb) in 72 fishing days. The catch has seen ups and downs, including a low total catch of 6,625 kg in 2010. In 2012-2013, the catch had increased to 31,117 kg while the fishing days had gone up to 290 days.

Indian major carps form the bulk of the catch as a result of the aggressive stocking of these, as recommended by the Central Institute of Fisheries Education (CIFE). In 2007, the community also undertook cage culture of carps. CIFE again came to the aid of the co-operative, providing them with floating cages as well as the necessary technical advice and training. The contract required the co-operative to stock the reservoir with 900,000 fingerlings (25-35 mm in size) annually.

However, on the ground, experience has found that such small fingerlings have a survival rate of just 10-15 per cent once released into such a large reservoir (average area: 1,278 ha). The cage culture meant the co-operative could fulfil this condition, in spite of setbacks ranging from loss of fish seed to breakage of equipment and lack of training and proper equipment. Later, CIFE provided 16 more cages. Most of the stocking done in Dimbhe since then has been with advanced fingerlings of size 100-150 mm, which increases the survival rate to 85-90 per cent.

Self-help groups

The tribal women, having formed 32 self-help groups (SHGs), were looking for a means to enhance their livelihood. They approached CIFE which suggested ornamental fish culture. The women were trained in such culture and began to rear goldfish. The National Fisheries Development Board (NFDB) has recently sanctioned 16 cages for a two-year project through CIFE in which the women are given training in ornamental fish rearing. NFDB has also provided 32 cages for the fishers to rear fingerlings for stocking the reservoir.

in fishers from outside the State. The Dimbhe tribals protested against that step. In addition, the private contractor, it was found, had violated contractual conditions. This led to the Fisheries Department cancelling his contract in June 2006.

Following the protest against the private contractor, the Fisheries Department offered the co-operative the fishing contract. The co-operative, with difficulty, collected about two-thirds of the money required, from the entrance fee of Rs201 (1 US\$ = Rs61.6) and the fee for extra shares (Rs800) collected from members.

The contract was valued at Rs157,360, which included a security deposit of Rs36,360. For the rest, with Shashwat's help, a zero-interest loan of Rs50,000 was secured. Once the contract was awarded, the co-operative tackled the problem of stocking the reservoir.

Using grants from the tribal development department and SWISSAID, the reservoir was stocked with 909,000 fingerlings. This first attempt by the co-operative at stocking the reservoir was, however, a long-drawn affair as the Fisheries Department took three years to supply all the fish seed.

By 2008, the women had formed a federation of 29 SHGs named Ghod Bubra Mahila Sangh.

Between 2009 and 2012, the community and Shashwat also tried their hand at pen culture but with mixed results. In 2009, Bendharwadi village was the site of this experiment where a four-m-high nylon net was tied across a depression in the fields at the reservoir's edge. The net was supported by bamboo and wooden poles. When the water level rose, and water entered the penned area, 33,000 fish seed were released. Unfortunately, that year the dam did not fill to capacity so the water level in the pen was just two to three feet. The water level then dipped further as water was released for irrigation, giving the fish seed hardly 21 days to grow. The slightly larger fish seed of up to 70 mm size were then released into the reservoir. In the next year, the dam water overtopped the pen at Savarli by about 30 cm for two to three days. The community has, thus, found that though pen culture is cheaper than cage culture, there is an element of uncertainty since the water levels are unpredictable.

The co-operative reserves 25 per cent of the catch sales for local vendors as a means to ensure the local community's nutrition needs are met. The rest is sold to the wholesale buyer who now comes to the dam site to buy the catch. Payment to the fishers is made weekly on Sundays. To ensure transparency, fishers from the villages share the responsibility of checking accounts, and someone is always present when financial transactions are made. The co-operative also has regulations on mesh size and closed seasons, which are zealously enforced. There have been cases of nets being confiscated and fines imposed on erring fishers. The members of the co-operative also made a resolution way back in 2003 not to use poisons or explosives for fishing.

In Maharashtra, the offset price for fishing lease of a reservoir is decided by the estimated annual fish production, the market rate of fish (Rs25/kg, according to the

government), and a percentage of the total value of fish production (one per cent, as decided by the State). In 2005-06, the offset price for Dimbhe was fixed at Rs54,000. The next year it had jumped to Rs121,000. But this offset price of Rs121,000 was based on the highest earlier bid and not on the production level. Shashwat and the co-operative suggested that the offset price for Dimbhe be fixed according to the 2002 circular of the government, which would make it Rs54,000 annually, and that the formula be revised. They suggested that the price be based on the actual fish production in nearby, similarly sized reservoirs. After three years of multiple representations, the government, in 2009, resorted to old lease amounts but the formula revision was not taken up.

Thanks to CIFE, the co-operative took steps to improve the aquatic productivity of the dam. In 2006, CIFE conducted a preliminary survey of the dam and found that aquatic productivity was just 50 per cent. It noted that zooplanktons were scanty. In consultation with CIFE, Shashwat and the co-operative took up planting of the green manure crop, *taag/dhencha* in the draw-down land. As the water levels rose and the crop was submerged, they formed feed for

BUDHAI DAMSE



Fishermen with their catch at Dimbhe reservoir in the Indian State of Maharashtra. They have resolved not to use poisons or explosives for fishing

TIFFANY FRANKE



Tribal women engaged in rearing ornamental fish in floating cages in the Dimbhe reservoir in Maharashtra, India

the carp. Later, when the water level dropped, farmers sowed wheat in this draw-down land. The farmers found their yield to be substantially higher than before the planting of *dhencha*. With NFDB support, *dhencha* planting was taken up in a larger area.

In spite of several setbacks, the community has persevered; in the rainy season of 2008, a pest attack caused teak trees around the reservoir to shed their leaves. The green leaves got washed down in the reservoir water with the rains, forming a sticky mass that glued the nets when deployed. Undoing this damage would take a few hours of hard scrubbing with detergent. In addition, in 2009 and 2012 the dam did not fill to capacity, reducing the water volume available for fish growth. In 2011, due to heavy rains, the five gates of the dam were opened for a day and a half. The next day, Shashwat reports that one could see people lined up downstream collecting the fish which had died from the 72-m fall down the spillway. Similarly, in August 2013, four to five truckloads of large fish were lost on the first day of opening the dam gates.

However, with the support of Shashwat and the government's fisheries and tribal development departments, and institutions like CIFE and NFDB, the community has overcome these problems. The

catchment area being well-forested, and with hardly any chemical fertilizers being used, a high price for the fish caught in Dimbhe was expected. Yet this is not the case since the quantity of fish caught is not enough to justify a separate market and the co-operative does not have access to markets in the cities.

Unfortunately, the focus on carps has led to decline in 16 local species. These have also slowly lost their market value. In spite of these drawbacks, the fishers are looking forward to ensuring self-sufficiency in managing the fishery; in 2012-13, the co-operative recorded a profit. Some of its future plans include building an ice plant, acquiring another motor boat for transporting the catch, providing boats to less fortunate members, and raising working capital for the women's ornamental fish business. The ice plant has been approved by CIFE, which has also helped the co-operative to install a mini-hatchery from which the first fish seed of *rohu* was produced in August 2013. ❦

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