

'How our river changed in front of our eyes': Impacts of Adan Dam on Fisheries in Maharashtra

Flow of the river is its master variable which affects many other variables like water quality, sedimentation, biodiversity, etc. Dams profoundly affect this natural flow. Unfortunately, in India there are very few studies which systematically analyse impacts of a dam on a river and its biodiversity in the pre and post dam situation. This is especially true for dams built in 1960s, 70s and 80s. We have limited database and nearly no biodiversity studies of river richness prior to and after a dam. In this scenario, local interviews, discussions with village elders as well as communities which are linked to the river like the fishermen and boatmen can be revealing and valuable. In the era of scientific, peer reviewed research papers, this collective reality is often neglected. Dr. Nilesh Heda, who heads NGO Samwardhan in Washim, has been working closely with river communities for over a decade and here, he puts together impressions of communities about the river after Adan Dam came up on the Adan River in 1977. He also strengthens these arguments with his research.

Background River Adan, a principal tributary of the Painganga lies between Long 770.22' Lat 200.17' to long 780.21' Lat 190.9' in Washim district of Maharashtra. This 209.21 km long river meets Painganga River in Yavatmal district. The river Arunavati joins Adan before its confluence with Painganga. The valley of Adan ranges from 10 km to 22 km in width. The river ceases to flow in the summer, though pools are left in the latter part of its course. Three dams have been built on Adan; one at its origin near Sonala village other near Karanja (Lad) city and third, Gokhi dam is built on a small tributary. The river flows through scrubland and degraded type of dry deciduous forest with extensive agriculture.

Study area :Dhamani village is situated at the bank of river Adan in Washim district of Vidarbha in Maharashtra. Dhamani is



Bhoi Fisherman fishing in Adan River
All Photos by the Author

heterogeneous village with a substantial population of traditional fishermen from the Bhoi community. Dhamani has 25 families of fishermen and a population of 200 people completely dependent on fish

of river Adan. Bhois are adept in various river fishing methods and are regularly employed for fishing in larger tanks. Their livelihood is closely intertwined with the river: they grow Singade (water chestnuts) in tanks and melons, cucumbers and vegetables on sandy stretches along the banks of streams.

Adan Dam In 1977 Adan dam was built in the middle stretch of river Adan for irrigation and for providing drinking water for Karanja Lad city. Height of the dam is 30.13 m and length 755 m (2,477 ft), with gross storage capacity of 18,789.97 m³. Adan dam, located at 20°24'28.90"N, 77°32'42.69"E, is an earthfill and rockfill dam.

In the course of our work on the river through Samvardhan, we witnessed a number of impacts of the dam on local livelihoods. We initiated discussions with local fishermen on the river and livelihoods and were shocked to see the extent of damage that a dam can do to a river and its people. Words of a senior fisherman Mr. Subhash Bavane sum it all. He says "*The dam changed the entire structure of river and its flora and fauna. It transformed us from being the kings of the river to being the slaves of the dam.*" Like agricultural land is an asset of farmers, river is our asset and source of livelihood, but even when the dam came up and affected us so profoundly, we received no compensation, unlike the farmers. Our livelihood is crumbling." Habitat transformation is the principal effect of Adan dam. Bhois of Adan now fish in stretch of 23 kms upstream of the dam, as

the water levels are too low in the downstream river for most of the year.

Fish in the river congregate in river pools. Each and every pool has a name and a story behind it. Fish are found in these pools throughout the year, even when the river goes dry. However, according to local fishermen, after dam construction, river flow reduced drastically, pools were filled with silt & fishing became & and more difficult. Accumulated silt led to unchecked growth of hydrophytes which not only resulted in increased evapotranspiration losses, but also caused intense itching during fishing.

Habitat transformation and sedimentation led the Bhois to abandon traditional fishing practises like Isor, which is installing a mesh-like structure of branches at riffles for fishing. Traditionally place of each Isor was fixed for a particular family and its ownership was inherited. Such traditional practises are not only intuitive, but also sustainable. Bundless agriculture, deforestation in the basin area, unchecked water extraction contributed to low flows and resultant siltation in pools. As an example, Bhan Doh is an ancient river pool and, according to Gulabrao aged 80, one of the senior most member of the community, this pool did not go dry even in the devastating drought of 1972. However, now, the pool is dry and silted most of the year.

Effect on fishes: Most immediate effect of the dam is on the availability of fish. Both diversity and abundance of fish has changed dramatically in the post dam scenario. Round the year availability of



fishes, is now confined to few monsoon months. The fish like *Eutropiichthys vacha* (Hamilton-Buchanan), *Anguilla bengalensis bengalensis* (Gray, 1831), *Barilius* sps, *Tor khudree* (Sykes), *Tor mussullah* (Sykes, 1838), *Gonoproktopterus kolus* (Sykes), fish of family Balitoridae (Loaches) have been completely wiped out from the upside dam area of river. At the same time, the abundance of the fishes like **Garra mulya** (Sykes, 1841), **Rasbora daniconius** (Hamilton-Buchanan, 1822), *Amblypharyngodon mola* (Hamilton - Buchanan), fishes of family BAGRIDAE, CHANNA SPS has reduced drastically. These species of fishes are popular among the fish consumers of the area and fishermen get good market price for them.

At the same time, species which tolerate water fluctuation, but are not prized as edible fish are increasing, e.g. *Puntius sophore* (Hamilton - Buchanan, 1822), *Puntius ticto* (Hamilton - Buchanan, 1822), *Chanda nama* (Hamilton- Buchanan, 1822), *Parambassis ranga* (Hamilton- Buchanan, 1822), *Osteobrama cotio cotio* (Hamilton-Buchanan), *Osteobrama cotio peninsularis* (Hamilton-Buchanan) are increasing.

Volume of catch before and after dam is also a matter of concern. According to the locals, fish catch ranged from 10 to 20 kg per head per day and after the dam, this has come down to an average of 1 to 2 kg per head per day, which provides merely Rs 100 per day. The consequences of this phenomenon are impinging directly on the economics, health and well-being of the family.

Effect of the Dam on biodiversity

According to knowledgeable elders of the community, Otters, which were abundant in the river, stand exterminated. Along with



Bhoi woman working on fishing net

fish species like black prawns, crabs, tortoises were also consumed and sold. The abundance of these species has fallen sharply in the post dam scenario due to changes in flows and silt regime. Siltation of the dam has resulted in choking of crab burrows and affected tortoises. Riparian vegetation is affected by stagnant water in the upstream and reduced water in the downstream of the dam. The medicinal plants which were once abundant along and in the river like *Pan Kanda*, *Denali grass*, trees of *Ajani*, *Khadkya Raj*, *Sanjivani*, *Amarvel*, *Pen Ghagra*, *Mirchi kand*, *Nark Kand* are now depleted. *Denali grass* sticks were used by the local fishermen to anchor fishing nets, now these are replaced by thermocol.

Shifting the ownership In 1977, when work on Adan dam was completed, local fishermen were assured fishing rights in the reservoir. They registered a cooperative society in anticipation. However, local leaders, wealthy businessmen and government officials created a situation where year after year fishing contracts went to politically strong mafia. This contractor now hires local fishermen and provides wages per kg. Local people do not have right to fish in the reservoir and few km

above it.

'Exotic' threat Every year, Adan reservoir is stocked with culture fishes, especially major carps. However, the fish seeds imported from the Bengal are often contaminated with seeds of invasive alien species like *Oreochromis mossambicus*, African magur (*Clarias gariepinus*), grass carp (*Ctenopharyngodon idella*), silver carp (*Hypophthalmichthys molitrix*), common carp (*Cyprinus carpio*) and so on. These fish are not consumed and crowd out the local species.

What did Adan Dam give? After construction of Adan Dam, farmers came together and formed a cooperative Mungsaji Sugar factory in the command area. Cropping pattern shifted from mixed cropping to sugarcane, irrigated by the dam waters. However, as years went by, water holding capacity of the dam has been decreasing due to siltation and repeated droughts in the area. The sugar factory is now defunct. So the actual benefits of the dam were limited to initial years, that too only to a handful of farmers, contractors, politicians and powerful fishing contractors. River dependent communities lost their livelihoods and the river is losing her biodiversity.

Adan's Story is not new, unfortunately it is an oft repeated tale in India where a dam is announced, promising to transform the region, but eventually leaves behind irreparable scars on the ecosystem and river dependent communities. These impacts are neither taken into account before building the dam, nor are recorded afterwards. In the entire exercise, majority dams do not even provide intended benefits. The fate of river dependent communities is indeed bleak, as they have no say in the current planning and decision making around rivers. NGOs like Samvardhan are striving to change this picture, empowering fishing communities, undertaking basin wide restoration work and linking livelihoods with ecological restoration. There is need for more such efforts.

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Tor mussullah, Sykes, 1839

Hembla river

Tor Mussulah, Mahseer fish, completely wiped out from Adan after the Dam

