

## Traditional Water Systems of Eastern Vidarbha-II: Current status

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The remarkable community-led water management system of Zadipatti evolved during the reign of Gond Kingdom. Though it was a decentralized system, it evolved in the feudal administrative system. After Independence, Abolition of Proprietary Rights Act was enacted in 1951 attempting to eliminate Malguzari and Zamindari of this area. The management of the malguzari tanks was then overtaken by the Revenue Department, Government of Maharashtra and they were divided between State Irrigation Department and Zilla Parishad (ZP) after the creation of Maharashtra State in 1960.

### Current Management of Tanks

Tanks with irrigation capacity of 0.1 to 100 acres (1 hectare= 2.47 acres) are under the jurisdiction of Zilla Parishad, those with 100.01 to 250 acres capacity are under Local Sector of Irrigation Dept, while those with capacities between 250.01 to 1000 acres are under the jurisdiction of Medium Projects of Irrigation Dept. Tanks with irrigation capacities above 1000.01 acres and above are under the jurisdiction of Major Projects of Irrigation Department.

The ZP tanks are allocated to Gram Panchayat for management, which forms a water distribution committee looking over the distribution system. Most of the ZP tanks are traditional tanks. **People have 'Nistar Rights' over these tanks which include rights of irrigation, water for cattle and domestic use.** Due to these rights people get free water for irrigation. Nistar is a priority but currently it is assumed as monopoly of irrigation. The unrecorded uses of tanks are considered as secondary. Rights of fishing, which is the second biggest use after irrigation are not included in Nistar Patrak and hence ignored by the farmers.

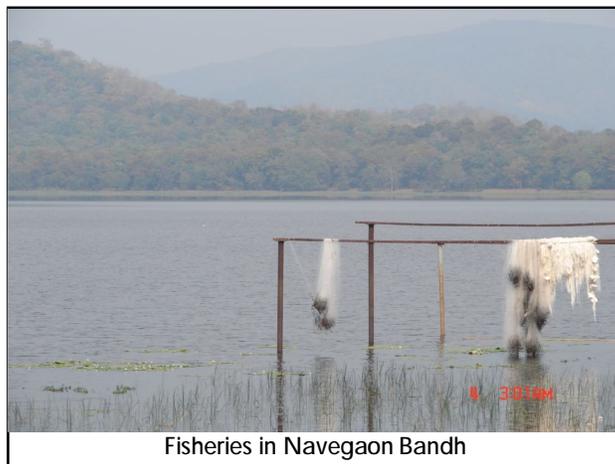
Irrigation Dept manages tanks entrusted to it and distributes water through irrigation cooperatives of farmers.

**Revenue from Tank and its Systems** There are 116 fishing cooperative societies in Bhandara district and 134 societies in Gondia district. Each society functions in the average area of 5 sq.km. The fishing cooperative societies have the priority in acquiring lease of all tanks in their jurisdiction area. Each society has 5 to 10 tanks, most of which are seasonal. Lease for using these tanks for five years is given by the Panchayat Samiti through

auction. In absence of the claim of fishing society, the tank is leased out to traders.

The tank is leased out for five years and the lease amount has to be paid every year. The lease amount is calculated over the area of tank that is mentioned in village level revenue records.

The revenue generated from leasing of tanks for fishing is distributed equally between Fishery and the ZP or Irrigation dept.



Generally seasonal tanks are used as nursery of fishes by Fishing Societies. Eggs are released in this tank and reared, while fingerlings are released in a perennial tank. For tanks which cover 40 to 50 hectares, fishing is restricted to 1-2 months. Traders purchase the catch at the site itself. Societies deduct total expenses of the year from the amount of sale and distribute the remaining amount equally between the registered members (share holders). In case of bigger tanks, fishing goes on throughout the year. Societies only collect a fixed sum of Rs 15/- per kg of the catch from the fishermen.

Table. Department wise Tanks

District	Irrigation Dept	Zilla Parishad	Other Tanks*	Total
Bhandara	73	1,476	4,472	6,021
Gondia	66	1,266	5752	7,084
Grant Total				13,105

(\*This category includes the private tanks and the small tanks constructed by different departments under different schemes, most of them are classified as 'Bodi' in local language)

Apart from fishing, tanks are also leased out by the Gram Panchayat/ Panchayat Samiti for *Khus* extraction (Vetiver grass) and *Shingada* (water chestnut) production. *Khus* extraction is completely controlled by the traders who get the lease and extract *khus* through local labourers. *Shingada* harvesting is done by indigenous *Dhiwar* (fishermen) community. Till date there is no system in place for lotus roots extraction. Traders purchase these at a price of around Rs 6-8/- per kg from locals.

**Management of tanks post independence** Post independence, water was declared as a public good and brought under the centralized management of government.

But in the case of Eastern Vidarbha this decision has not been very beneficial from the government’s point of view. In this region, Government owns the tanks but due to Nistar rights, it cannot collect charges from the water users of tanks for irrigation. The agencies are also required to look after maintenance work but do not get any returns. No wonder then that the government has been ignoring these systems and their upkeep.

Interestingly, these high yield species are herbivores and the local indigenous fish species are carnivores.

**Obviously, local fish devoured the newly released eggs and fingerlings of the introduced species. In response, Fisheries Department declared local fish as threats and ordered their massacre for getting more production from water under the ‘Blue Revolution’.**

**Earlier management of tank systems was addressed as a whole by the community. In today’s scenario, part of the catchment of the tank often lies in the forest, and falls under forest department, management of the actual tank is with Irrigation Department or Zilla Parishad, the irrigated area falls under Revenue Department, which involves works from the Agricultural Department, area around the tank falls under Revenue Department, while Fisheries Department manages the actual water and fish in the tanks! All these departments have their own plans and schemes. All have their own perception and policies, rules and regulations and at times, diametrically opposite different views towards resource management and development in general. No wonder then that the current management of tanks is fraught with conflicts and confusions.**

The Agriculture Department has also initiated “Green Revolution” by introducing hybrid and high yielding crop varieties and promoting use of chemical fertilizers and pesticides. Huge subsidies were also given for promotion of these items.

There has been a wave for improving productivity of all the natural resources. This resulted in monoculture and excessive use of subsidized resources like pesticides. All the concerned departments related to natural resources planned and designed their schemes and programmes for resource development in an isolated manner, without considering ecosystem linkages.

**Today’s Picture** Perhaps such isolated efforts at natural resource management were well intentioned, but the resultant interventions changed the picture drastically.

**Recent changes** Irrigation Department and Zilla Parishad have made many changes in the tank systems. **Most notably, they have constructed the new waste weirs by removing the old ones with only slopes.**

The old *tudum* (gates) were also removed and sophisticated gates were constructed. Further Irrigation Department has given contracts for *khus* grass extraction to contractors.

**The Forest Department** has demarcated its boundaries by constructing trenches on the border. Trenches were further deepened to obstruct livestock to entering forest area and control free grazing.

**The Fisheries Department** has introduced high yielding species of fishes to improve fish production. Originally, tanks have always been rich in fish food like phyto plankton, zooplankton and various water plants. Carp species were introduced, which competed with local and indigenous fish varieties. Initially, because of their separate feeding strata, there was no competition between these species.

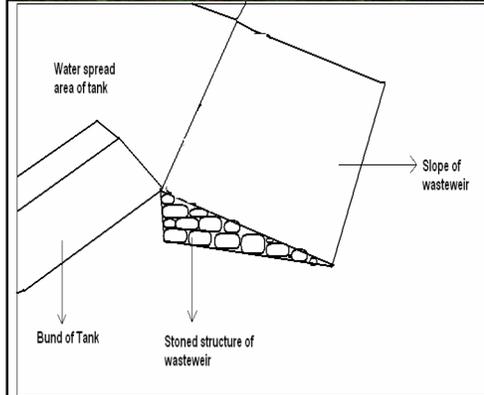


Figure 1- Traditional Sloped wasteweir of tank  
**Top:** Tank with Weirs  
**Above:** Original sloping outlets

Today it is experienced that relation of catchment and tank is broken due to numerous trenches diverting water coming from the forests into the tanks. The fertile alluvium, nutrient and humus that flowed with this water is also being trapped in the trenches. These elements were instrumental in the productivity and ecological balance of the tanks.

The fertilizers and pesticides from fields now flow with water into the tanks, deteriorating water quality. This has affected the aquatic flora and also the growth of fish in the tanks.

**The traditional waste weirs helped maintain fish stock in the tanks. During spawning period some fish species swim against current and their eggs are released at the highest possible climb for them. The slopes of waste weir helped them to enter in the tank and go further in the upper streams. But the present design of waste weir prevents them from entering the tank, disrupting the natural cycle, laying additional burden of stocking expenses on the fishing cooperative societies.**

The **design of the newly established gates** is also alien for the people. It has a sheet of metal, which goes up and down. Rubber packing is used for easy operations of the gates. After some years the packing gets damaged due to contact of water and sunlight, and the tank leaks. This cannot be repaired or replaced by the villagers, who had rich traditional knowledge about repairs and maintenance of their tanks. They now are dependent on the department for repairs, which are often not timely, also resulting in water loss.

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The **introduction of high yield species of fishes** resulted in increased production till natural fish food was available in the tanks. Year after year the fishing continued, but the aspect of fish food was neglected. Today after 30-40 years of continuous production, the major problem for the Fisheries cooperatives is drastically falling production of high yield species. The fish which used to reach to 1-1½ kg in a year now do not grow over 200 gms in a year.

Other hazard that has stricken the fish production is the contagious disease known as **Ulcerative syndrome**, which was unknown to local fishermen. It spread through the seeds of new species and has now attacked the local species. Many local species of fish are now near extinction despite the fact that they are an important component in the ecological cycle and also fetch prices as high as three times the new species. For this disease, remedy suggested by the Fisheries Department is use of Lime 200-600 kg per hectare. After this treatment, the

entire aquatic flora from the tank gets wiped out. So though the fish are cured, their food chain is destroyed.

With a remarkable number of traditional tanks (as stated above, more than 13000), this area of Vidarbha has large proportion of nomadic and scheduled tribes dependant on fisheries which are directly affected by these changes. These communities were not traditional farmers and have very little agricultural land and have to work mostly as landless labourers. Any fall in fish production affects them severely.

Encroachments on tanks by rich farmers and influential people in the region, is now emerging as a new challenge.

These encroachers have been purposefully damaging waste weirs, so that water level is reduced and more land is available. This is affecting both the downstream farmers and the fishermen.

**In this scenario the first important step needed is for communities to reclaim their ownership of these tanks and take the initiative for managing their water resources in which they were so remarkably skilled, just a few decades back. At the same time, it is imperative that the concerned government departments, which are currently functioning like isolated islands should make an effort at integrated management of natural resources.**

**Tanks in other parts of the country** Many parts of the country are rich in natural or manmade wetlands which have been used for irrigation, biodiversity and fisheries for centuries. The man-made lakes and wetlands galore in Rajasthan. Uttar Pradesh, Bihar and Assam boast of natural wetlands created by the meandering channels of the silt-laden rivers like Ganga, Kosi, Gandaki, Yamuna and Brahmaputra. Besides being one of the most productive ecosystems, these wetlands support fisheries, drinking water supply, subsistence farming and irrigation.

**Chairs in North Bihar:** The Indo Gangetic region of north Bihar is characterized by palaeo levees, swamps, ox bow lakes, cut off loops or flood basins locally called "Chairs". The Chairs are excellent breeding ground for local species of fish and migratory birds and the best example of this is the Kanvar Jheel in the district of Begusarai, lying between Burhi Gandak, Old Bhagmati and Kareh rivers. The lake is formed by the meandering action of Gandak River and is now a residual ox-bow lake, one of the thousands in Bihar and Uttar Pradesh flood plains. As the water level recedes in summer, over 2800 ha of the exposed mudflats of the Kanvar Jheel are converted into rice (paddy) fields. Water from the Chairs is drained by making a water canal or a micro drainage line which meets the river. Several small check dams are built in the drainage line to store water for irrigation when the water recedes in the Chairs in summer. This in turn sustains major crops in the region: rice, maize and wheat. The Chairs are a common property resource for the farmers whose land falls in these wetlands. Depending upon the numbers of farmers and the area falling under the Chairs a user group of the farmers is formed. Use of the wetland is governed by local customary laws. Ponds are (locally called as "maan") made in the deeper parts of the Chairs and are used for rearing fish and fresh water prawns. These wetlands provide habitat for different species of fish (Inland fisheries), especially the Asian cat fish (*Clarias batrachus*, locally known as Magur fish), which is hugely popular in Bihar and UP and fetches higher prices than the regular carps. (<http://begusarai.bih.nic.in/dp.htm> and Parimal Chandra, Aga Khan Foundation, Patna)



Shringar Bodi in Bhandara, rich in aquatic flora, biodiversity & fisheries

We, as a part of the Bhandara Nisarga va Sanskruti Abhyas Mandal, have been engaged in dialogues with the fishermen and traditional water managers of the area. On the basis of these iterations, we have come to the conclusion that following measures should be taken for sustainability of this system and to protect the livelihood of dependent communities.

- The traditional knowledge of communities on water management, fishery and inter linkages of aquatic resources should be **respected** and a management of tanks should be based on a **wise synthesis** of traditional and modern knowledge.
- Traditional eco friendly and cheap practices for controlling problems like fish disease should be **scientifically tested** and adapted as necessary.
- The **local fish species should be protected** and promoted. They are an important part of the biodiversity, nutritionally and economically superior to their high yielding counterparts.
- The aquatic resources near the tanks should be managed in keeping with the Biodiversity Act 2002, through community participation. The rights of collection, processing and marketing of the aquatic resources, used for economical gains, should be given on priority to the Fishing Cooperative Societies.
- Tanks which are degraded and do not support aquatic flora should be restored on priority, utilizing funds from Mahatma Gandhi National Rural Employment Guarantee Act and Maharashtra Rural

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- According to the MREGS, 80% of proposed work should be related to water conservation. But deepening of existing tanks and construction of farm ponds are the only available options. The rates for plantation of aquatic plants should be fixed through the pilot plots and should be incorporated in the rate list of MREGS, so preparation of proposals at local level will be possible after that.

- During tank deepening process the excavated silt is deposited on the bund or outside the tank. The

upper layer of this silt (six inches) with seeds and tubers of the aquatic plants should be maintained and spread over the tank bed after desiltation to maintain productivity.

- The encroachments in the tank should be removed, and strict actions should be taken

against offenders.

- The field channels of many tanks are destroyed or encroached. In such situations the Nistar right holders use electric motors to draw water, depriving legitimate tail-enders from their share. The encroachments over canals should be removed and

repair work of these canals should be undertaken on priority.

- The regulations related to maintaining the dead stock should be implemented.

- All concerned departments should design their schemes and programs to address water management holistically.

***Unlike the rest of the country, Vidarbha region still showcases a beautiful living synergy arising out of managing water resources in a participatory and decentralized manner. It strongly demonstrates the links between communities and their ecosystems and how economically viable systems can function without causing ecological losses. Let us strive towards protecting these systems and traditions as blue prints which can be used by communities across the country.***

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