

TRADITIONAL WAY OF PARTICIPATORY IRRIGATION MANAGEMENT FOR SUSTAINABLE DEVELOPMENT

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ABSTRACT

Ancient civilization developed along the banks of rivers and water bodies. The ancestors had a great wisdom to harness the gift of nature. Several periods of prosperity are quite discernible on the history of India. History reveals that the prosperity at that time was depend upon well conceived water planning and wisdom in water management. Numerous documentary and field evidences are extent in different part of India. The country was ruled by various dynasties and all of them were very much particular in promoting the Rain water harvesting and irrigation development. They were providing financial aids for construction of water harvesting devices for holding water both on ground surface and under ground surface. The water management and Ownership was lies with the community. Repairs and water management were totally in the hands of the community. The ancestors were far ahead in field water management. They were taking almost care for equitable distribution of water harvested and stored in water bodies. Therefore the techniques and the system were last for centuries to gather. Unearthing the wise principle can give guide lines to the water user in the present period also. This paper deals with one of the best methods of participatory approach and wise full irrigation management used by the ancestors in arid part of the county.

Keywords: Diversion Weir, irrigation, water management, Water distribution policy, Farmers participation, equitable distribution, crop management

1. INTRODUCTION

The history of India has left a considerably large legacy in the sector of water conservation and wise full management of available water resources. The dictum “wherever there is water, there will be a habitation” is the very beginning of the legacy. Innumerable inspiring examples such as the millennium-old canales off taking from Kavari river near Tanjavur in Tamilnadu state, The water supply system existing in the empire of Vijayanagar Kingdom, The phad irrigation system ensuring equitable distribution of water in Khandesh area of Maharashtra state are spread all over India. Water management system of ancient and medieval period had been in the operation for

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thousand of years on nominal financial provision. Even today at some of places out of those, the life of the peoples is dependent solely on these very system. In this paper we are discussing the thousand years old community managed Phad irrigation system, which is prevalent in northwest Maharashtra i.e. part of Dhule and Nasik districts. The system is in operation in the three rivers basins. The rivers are Panjhra, Mosam, Kan and Aram. They originate from the Sahyadri hill ranges. In their first reach they travel to wards the east. Then they meet to the Tapi River. Tapi River is the major and west flowing river. Series of weir were well built across these rivers. These weirs are called as Bandharas. Weirs were constructed to divert the river water for agriculture use. Each independent Phad system comprises of a diversion weir, a canal on the bank and distributaries for irrigation.

2. AVERAGE RAINFALL

The average rainfall in this area is 674 mm. Most of them receive in between June to September. The temperature in summer days is very hot. The day time temperature some time touches to 45 degree centigrade, and winter days are not very cold. The lands are fertile.

3. PHAD IRRIGATION SYSTEM

Surface irrigation is boon for this area. A Weir/Bandhara may supplies water to more than one village. The right to water has been fixed by tradition, which is strictly adhering to. Each system consists of one diversion weir, canals, distributaries, field channels, and the command area. King or Ruler supported the capital costs for construction of weirs. The distribution network is to be prepared by the irrigators. The maintenance works were the collective responsibility of the irrigators. And they had performed in such a way that the system runs years to gather. The wisdom in the management is very attractive.



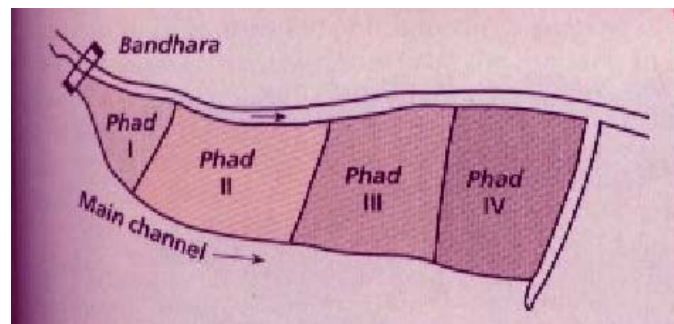
4. DIVERSION WEIR: The strata in this region are percolating type. After the rainy season, the underground water gets accumulated in the river. Thus the rivers were having flow throughout the year. To take the benefits of this Geographic situation, there was a tradition to construct weirs across the perennially flowing rivers. The technique of construction of weirs and diverting the river water for irrigation were developed form

the dynast Morya's period (300 BC). Construction of the weir was the communal activity.

Diversion weirs were raised at different locations. The river water is diverted in to the canal. Diverted water is brought to the field through canal and distributaries. Length of the canal varied from 2 -12 km. Each canal has a uniform discharge capacity of about 450 litres/second. Distributaries are built to feed water from canal to different area of Phad. Field channels are built to carry water from distributaries to individual field. Escapes are provided along the canal and distributaries to drain away the excess water.

5. MANAGEMENT OF IRRIGATION

The irrigation management of the available water in the weir is said as one of the best system of management. The water distribution practice and the management rules are so framed that they sustains for a long period.



The command area is divided in to four parts. Each part is called as Phad. The size of the Phad may vary from 10 to 200 ha. Each Phad has number of beneficiaries. But only one type of crop is grown in each Phad, in a season.

5.1. WISDOM IN PHAD MANAGEMENT

Every village has an effective system of management. A village level committee is formed by the irrigators. The members of the committee are elected mostly by consensus in the general body meeting. The elections are generally held once in every two to four years. The general body also chose the chair person. The chair person may continue for several years. The number of committee members not fixed. It varies from place to place to place and village to village.

5.1.1. Functions of Committee

- They have to Protect, Supervise, and Administrate the irrigation system.
- They have to employ supervisors, Canal inspectors and water guards for irrigation.
- They have to solve the dispute and impose fine to the offenders.
- They have to decide the cropping pattern

- They have to decide sequence of irrigation of the field in a Phad.
- They have to call an annual general body meeting. Generally this meeting is held on Akshy tritiya i.e. in the month of March/April.

5.1.2. Functions of Irrigators

- They have to elect the committee members and decide the chairperson.
- They have to maintain the field channels and distributaries.
- They have to take part in collective annual maintenance of the irrigation canal.
- The operations like tillage, sowing, removing weeds from the fields, applying fertilizers, applying pesticides and harvesting are to be done by the irrigators.
- They have to sow that type of crop as decided by the committee.
- They have not to interfere in the working of the irrigation staff.
- They are not allowed to decide the quantity of water for irrigation to be applied to their field.

5.1.3. Function of Supervisor

- He has to supervise the work of canal inspectors and water guards.
- Timely inform the farmers about the period of tilling, sowing, applying fertilizers and pesticides, removing weeds, and harvesting etc.
- He has to maintain the contact with the farmers and inform them about the condition of the crops.
- Inform the farmers about the cleaning of field channels and distributaries.

5.1.4. Functions of Canal inspectors

- He has to patrol and up keeps the canal.
- He has to ensure timely supply of water.
- He has to attend the minor repair of the canal.
- He has to remove the grass and accumulated silt from the canal.
- He has to inform the committee about the general condition of the canal, water flows and seepages to ensure speedy remedial actions.

5.1.5. Functions of Water guards

- He has to irrigate the crops.
- He has to ensure water flow from one field to other as per the schedule given by the committee.
- He has to insure that all the area in the field gets sufficient irrigation to optimize the yield.
- He has to guard the crop.
- He has to inform the supervisor in case of any problems pertaining to water flow or field channel.

5.1.6. Payments to the staff

The staffs engaged are paid in cash and kind. Wages are calculated on the basis of number of irrigators per unit area of land and by crop season. They also get share in the produce from each individual field. More the yield more will be their share. This type of incentive makes them to work hard and maximize the yield in every field.

5.2. LAND OWNER SHIP

The average land holding is about 0.22 hecter. In previous days all the irrigators were having their land in the entire four Phads. Thus they were equally interested in the entire Phad.

5.2.1. Working of the system

Irrigators have to pay maintenance charges as decided by the committee. The committee directs the staff regarding water distribution. Many times disputes occur. The committee has to settle the disputes. The committee may collect fine from the defaulter. The amount may range from Rs. 100 to 200 in a year. However fines are not the preferred way to maintain the disciplines. Special pressure is usually used against the offenders. The conflicts are few. The committee sells the grass in the area of common interest. The amount of the fines, selling of the grass and maintenance charges collected is to be put in front of the general body meeting. Every farmer is free to check the account at any time. Irrigators can not order or influence the staff except through the committee. The complain both from the irrigators and the staff are entertains by the committee. It meets once in two to three months to discuss the administrative problems like water distribution, enforcement of discipline, Water supply, Grazing by animals, and tapping of water by upstream villages. The committee on Akshya Tritiya i.e. in March/April calls a meeting of all the irrigators, once in a year. Announcement of the date for the annual farmer's assembly is made by beating the drums. Usually a major item of the agenda is to decide upon the crops to be grown, for which the availability of water in the next season is taken in to account.

5.2.2. Crop management in Phad

The command area of a diversion weir is divided in to four equal parts, called as Phad. Each Phad has to grow only one type of crop in a season. Cropping pattern is decided so wisely that a) It helps in utilizing the available water efficiently. b) Equality in water

distribution is maintained. c) Productivity of land is maintained. d) No water logging though under long run irrigation. e) No salinity of the land. f) Easy to farmers. h) Sustainable use of land.

5.2.3. Crop rotation in Phad

The first Phad may have a perennial crop, Second may have a two seasonal crop, Third may have a one seasonal crop and fourth may be fallow or may have a crop if water is available. Each Phad has a provision to raise perennial crop in every four years. The crops in the Phad are kept rotating one after the other. The rotation of the crops is given in the table below.

Year (Rabi)	Phad no one	Phad no two	Phad no three	Phad no four
I	Wheat	cotton	Gram	Fallow
II	Fallow	Wheat	cotton	Gram
II	Gram	Fallow	Wheat	Cotton
III	cotton	Gram	Fallow	Wheat

From the above table it is observed that every Phad has an opportunity to grow all types of crops by rotation. The composition of the committee increased or decreased according to the needs and dedication of the members. The committee memberships are renewed regularly. The new members generally have dynamic relationship with the village power structure. The staff performs irrigation operations and farmers are not allowed to interfere. The farmers need not to worry about the irrigation and guarding the crops in their field. The irrigation staffs do their best, as they have to get share from the individual field produce. Maintenance is a group function. All farmers contribute equally both in labor and eldership. Discipline is strictly enforced. The Phad system has continued to survive in spite of political changes taken places during the last three centuries. The system shows government influences is not necessary for making self-management possible.

6. CONCLUSION

The Phad system shows that small farmers can organize themselves and can form a sustainable irrigation system. The system ensures equitable distribution of available water resources among the beneficiaries. The water management is very easy with fewer complications. There is no need of Government to interfere in the water distribution. Watering to a field is not a headache to a farmer. The crops are rotated from one Phad to another and frequently one Phad is kept fallow in rotation. Because of frequent non-irrigation and crop rotation the lands neither get water logged nor get saline. Thus fertility of the lands is maintained. Crop yields are optimized. Water is used efficiently.

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