

ROLE OF COMMUNITY IN IRRIGATION MANAGEMENT: SUSTAINABILITY OF
TRADITIONAL WATER HARVESTING PRACTICES IN SOUTH INDIA

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ABSTRACT

Many of the developing countries including India are endowed with a variety of natural resources which have helped in crop diversity and growth. In India a substantial share of budgetary resources apart from Private Investments have been made on irrigation development each year. Historically also many of the rulers, kings and local leaders have evinced keen interest in developing irrigation structures. Statistics show that the overall irrigated area in the world rose from an estimated 8 million hectares in the year 1800 to 260 million hectares in 1994. India and China have contributed to as much as 40 per cent of the increase from developing countries. But the productivity per unit of water is very low in India due to various management factors.

Since there is a natural limit on the water availability for irrigation, due to decrease in the annual rainfall and other factors, efforts must be made towards conserving water. In most of the areas the problem with minor irrigation is that of the receding water table. Of late the policy makers have realised the need for reviving traditional irrigation structures. In the recent past many tanks have become defunct and those which are functional have reduced capacity to irrigate owing to the bad management practices. In scanty rainfall areas the water from seasonal streams are harvested by constructing pickups at suitable locations and it is very popular in coconut belts of Karnataka.

This study examines the institutional factors responsible for the deterioration of tank irrigation, the community management practices for tanks and pickups and an assessment of the sustainability of the management practices towards rehabilitating the tanks for irrigation.

Introduction

In the medieval India there was no absolute ownership of lands and water sources either by the state or citizens. The kings and Zamindar, were only custodians of land and water resources. All the water resources were essentially community assets and to be collectively managed locally.

After the abolition of Zamindari system, the cultivators were issued individual pattas and the lands were privatised. The ownership of surface water shifted to the State.

Historically tanks and ponds have special significance. Many kings and rulers realised the importance of such storage structures. The records indicate that between 11th and 14th Century, Hoysalas built nearly 204 new tanks and renovated about 50 tanks in Karnataka state.

A major portion of the Karnataka state is in the hard rocks area and the aquifers are not productive. The annual natural ground water recharge in a normal year ranges from 10 to 15 per cent of the rainfall in the humid region to 5 per cent or less in the semi arid and arid regions, the distribution pattern and quantum of rainfall is varying over the years which has a bearing on ground water recharge. For example in Kolar district alone over the past 25 years the depth of availability of ground water has increased from 40 to 400 feet.

What is a tank?

The tank taken as a physical unit include the embankment, the water spread, the catchment and the command area. The tank foreshore area and the immediate catchment was used as community land to grow grasses and fuelwood. Many structures such as kunte and katte were constructed in the catchment and foreshore areas to regulate the flow of water

into the tank and hold back the possibility of silt flowing into the tank. Entire community participated in the conservation programmes. One of the features of the tank system is that none of the tanks irrespective of size and function was a property of individuals. It was always the community and every member in the community irrespective of class and caste had a right to every structure, the resources grown or available.

Historical perspective

Karnataka State has 36,605 tanks of various sizes. Nearly 38 per cent of these tanks are having a command area of less than 4 hectares. Large tanks having more than 200 hectares account for only 1.4 per cent. Bulk of the tanks (80%) are having commands less than 20 hectare.

Traditionally in the tank rich state of Karnataka water management was taken care of by two social institutions namely Panchayats' and 'Nirganti's, the Panchayat (local body) was a social institution in the command area of the tank. It was responsible for the management of physical structure of the tank, its canals and distributors. It had a linkage to water management 'on the field' in allocating the quantum of water impounded in the tank equally to all the beneficiaries. The quantum of water to be distributed was dependent on the availability of water in the tank and type of crops in the command. The responsibility of allocating

water also gave a right to supervise the functioning of the Nirganti's. Apart from desilting activity, the Panchayats were responsible to prevent misutilization abuse and diversion of water from the command areas. By way of custom, these Panchayats have developed a system of rules and procedures much of such rules are practices handed down through generation.

The Panchayats were responsible for the physical maintenance of canals and distributions. Either the beneficiaries of the command area are asked to desilt or repair the structures as part of the canal (distributor) that is situated next to one's own field. The remaining part was to be desilted by the Nirganti's.

With the amendment of the irrigation Act of 1932, since 1965 the control and management of the tank got transferred from the Revenue Department to the Public work Department. The traditional system of management by Panchayat was suspended and replaced by an Irrigation Committee for the entire taluk.

Unlike the Panchayats, these tank level irrigation committees did not motivate the farmers to desilt the canals or the distributories. Due to the increased emphasis for large dams the budgetary allocations for tanks was not even sufficient to meet the administrative expenses of tank maintenance. With the replacement of community management

by various departments, each department regarded tank as a source for revenue.

The non-recognition of Panchayats for water management by the Government has led to a conflict between individual right vs. rights of the community. This has resulted in wastage of water and consequently in many tank commands it has not been possible to grow even on crop during Kharif. One of the major problems in tank irrigation is silting up of tanks mainly due to lack of co-operation of the people owing to the transfer of tanks to the State administration. Further, bad land practices, foreshore cultivation and denudation of natural vegetation in the catchment. All these have contributed to continuous erosion of soil. Past and present experience have shown that all possible tank sites have been exploited and there is no scope for constructing new tanks. In addition the cost of investment per hectare of irrigation by construction of new tanks ranges from Rs. 22,234 to Rs.33,341 which is on par with providing medium or large irrigation.

The emphasis on tank irrigation has decreased as evidenced from Table 1. Though the area irrigated by tanks has remained over 2,50,000 hectares, the per cent share has decreased from 52 to 12 over a period of 9 decades and the cumulative growth rate is -1.3 per cent. The share of wells and canals have considerably increased owing to Government Subsidies. Ground water became a resource that can be

exploited through privately owned wells without any restrictions, resulting in over exploitation of ground water. However, with all these policies and programmes the total irrigated area is just 22.67 per cent of the net sown area. Around 31 per cent of the tanks are not in use and most of the tanks have decreased capacity to irrigate as compared to the potential created (Table 2).

Due to the increased cost of providing alternative irrigation many organizations and Governments have taken keen interest in reviving tanks and conserving rain water. For the sustainability of such tank rehabilitation programmes the participation of the community is a must. In this direction the entire tank management is transferred to the "Water Management Committee" (WMC) of the village. This paper is a modest attempt to document the process of tank rehabilitation in Kasarghatta Village located in Nalamangala Taluk of Bangalore District and the role of pickups in soil and water conservation. This tank is 70 to 80 years old and had a capacity to irrigate two crops of paddy in a year. The maintenance of the tank was the responsibility of the community.

Pickups for soil and water conservation

In the dry tracts of Karnataka the major problem is that of conserving soil and water using suitable structures. The soil and water losses were arrested by constructing pickups at strategic locations across the seasonal and

perennial streams. Later they served as common place for washing and religious functions of the entire community. Agroforestry is strengthened all along the periphery of the pickup. Though these pickups are constructed by individuals or Government, they are considered as common property of the village. The villagers can collect the silt but not pumping of water directly. The pickup should serve as percolation structure and the individual farmers can dig seepage tanks in their private lands to pump water. These pickups are popular in coconut growing areas hence the name coconut pickups.

Factors responsible for deterioration of traditional administration

During the post-independence period due to political and administrative changes, the maintenance of the irrigation tanks was passed on to the irrigation department. However, unlike many other tanks the community participation did exist till 1977. Due to the land reform policy of the Government the 120 acres of common grazing land in the catchment was distributed to bonded labourers (35 families). Most these families were wood cutters by profession without any knowledge of scientific agriculture. The entire grazing land was put to cultivation after clearing the tree crops. Moreover, the poor soil management practices led to soil erosion and silting of the tank. On the other hand to augment food grain production of the country, policies were framed for supplying cheap agricultural inputs viz., irrigation, credit, fertilizer, etc. and the community

participation gradually decreased along all spheres. Silt application and organic manure use was replaced by chemical fertilizers. The private irrigation by digging wells became more popular. This led to complete break down of the institutional set up.

The revival of community participation

As the village is located in hardrock area, the water availability in the wells also decreased due to insufficient ground water recharge. The farmers were unable to take up even a single crop of paddy or any light irrigated crop under the tank command. Maintenance of livestock itself became a problem without adequate water availability. At this juncture most of the rural development programmes of the Government failed and the farmers attributed this to the non availability of water in the tank.

At that time an NGO by name Institute for Youth and Development (IYD) had initiated various skill development programmes for the village youth. Also in the nearby village a tank was already desilted by the efforts of the locals and IYD. Hence, the Kasaraghatta villagers also wanted their tank to be rehabilitated.

The rehabilitation planning

A historical action plan was developed by prioritizing the issues mentioned by the villagers. In the entire planning process the IYD acted as a catalyst leaving the

decisions to the community. As a consequence the entire command and catchment families became members of the WMC. By adopting participatory rural appraisal (PRA), the resource base of the village was appraised and action plan was prepared.

Sustainability and equity issues in tank rehabilitation and management

Unlike the rehabilitation work in other tanks, the process adopted here is unique wherein the families of entire catchment and command areas participated. Though the catchment farmers do not get any direct benefit of rehabilitation, they have realised that it is important to treat the catchment for arresting tank siltation. This included bunding, treatment of drainage and nalas, construction of check dams and gully checks and afforestation of both private and common land. Open grazing was discouraged through social control. The entire village participated in the tank rehabilitation process by contributing their labour and purchasing silt at nominal price. The command farmers agreed to clean the irrigation channels and cropping decision through common consensus. The action plan has given due weightage for intra and interfamily equity issues in terms of involvement of the entire family in decision making and programme to improve the income levels of landless and marginal farmers.

Carpus fund

For any organization to be successful it must rely on own funds. Similarly, the WMC has collected Rs.400 per acre from command farmers and membership fee from catchment farmers as well. The money realised from the sale of silt, grass grown on bunds and pisciculture was to be maintained in the WMC. The future plans includes fish seed production, raising horticultural nursery and advancing credit to catchment farmers on priority basis for dryland agriculture/horticulture. Considering the self reliance and group coherence it is believed that such community venture can be more stable and efficient in managing common property resources viz., land and water. It is interesting to note that due to the group strength there is no case of encroachment in this tank, though it is a major problem in other tanks. The positive benefits of rehabilitation are already evident in terms of ground recharge and yield improvements on the farm.

Tanks and pickups are the two important traditional common property structures to meet the most pressing problem of water requirement of the village community. The functioning of such structures depend on the community participation in the management and upkeep decisions.