CHAPTER VI

PROBLEMS OF MANAGEMENT OF TANK IRRIGATION

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CHAPTER VI

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The State has invested large sums of money in construction of minor irrigation tanks in the district during the last 30 years, and it is also claimed that a considerable area has been provided with irrigation facilities. However, providing irrigation water can hardly be an end in itself. It is only an apparatus for increasing land productivity.

It is apparent in the preceding chapter that the irrigation tanks are a weak impact resource and the returns on investment in tanks are not very satisfactory. One is apt to quote from the Sixth Five Year Plan that, "Inspite of the large investment made in the irrigation sector and the phenomenal growth of irrigation during the past 30 years, the return from the investment both in terms of yield as well as finance are very disappointing." \(^1\)

This state of affairs can be attributed mainly to the poor management of irrigation system. Because, application of water to the crops in proper time and right quantity adds to the productivity of soil whereas the unmanaged "excessive

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An attempt has been made, in this chapter, to point out the problems associated with tank irrigation in Baster district. In this connection, the existing system of tank irrigation and the factors affecting the efficient management of tank irrigation have been discussed in the following pages.

6.1 THE EXISTING SYSTEM

At present the responsibility of managing irrigation tanks lies with the state Department of Irrigation. The water stored in the tanks is made available to the farmers for irrigation by this Department. The adequate storage in the tank is subject to adequate rainfall. Hence, whenever the monsoon deceives, the storage in the tanks falls down and the Irrigation Department has to exercise special care in the supply of water.

The Department appoints a 'Choukidar' (watch-man) for the tanks on daily wages during the monsoon season. The duty of the choukidar is to watch the bund, tank sluice and the waste-weir. He keeps the daily record of tank-gauge showing the level of water in the tank. He operates the sluice-gates to release the water in accordance with the directives of the irrigation officers. The Irrigation

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Department, however, appoints choukidars only for a few tanks owing to shortage of funds.

The 'Amin-Patwari' of the Irrigation Department has a distinct role in management of irrigation. It is he who goes to the cultivator's field. He keeps the record of irrigation for each cultivator and assesses water charges on them. Normally one Amin looks-after all the schemes in that irrigation sub-division. Only in Charama, Kanker and Jagdalpur sub-division, there are more than one Amins because of the excessive burden of work due to large number of irrigation schemes concentrated in these sub-divisions.

Over the Amin, there is in-charge Sub-Engineer who is responsible for the regular maintenance of the tank and equitable distribution of water in the commanded area.

Irrigation is provided to the cultivators either on five yearly agreement basis or on demand. When the cultivators of any village execute the agreement for irrigation, water is made available to them each year without their formal requisition, and water charges are levied on them at concessional rates. But, as the tank water is required mainly to protect the crop in the years of rainfall failure, the cultivators show their reluctance for agreement. They dislike to pay water charges in the good rainfall years. Hence, 'irrigation on demand' is preferred by them. Out of sample tanks, Siharinalla, Sirsida, Chitrakote, Janakpur and Chhindgaon tanks were operating under agreement, whereas Bakulwahi, Bhopalpattanam, Surdoner, Ramaram and Degalras tanks were providing irrigation on demand.
The Irrigation Department bears the responsibility of delivering water up to the outlet only. Below the outlet it is the responsibility of the irrigators to carry water to their fields. There is no provision of field channels. The irrigation is done by crude field-to-field system. The farmers let the water go to the fields without caring for the size of the field, type of soil and level of the field. During the irrigation season the Amin is engaged in touring village to village and it is not practically possible for him to be physically present at every tank site. The sluice once opened, is hardly regulated and the water flows almost continuously through the supply channel irrespective of its need for irrigation.

6.2 CULTIVATOR'S VIEW POINT

During field investigation an attempt was made to collect information regarding cultivator's view point on the existing irrigation system. It was not surprising that many of the sample farmers were not aware of the demerits of the field-to-field irrigation. They are the traditional farmers and use negligible amount of modern inputs; whereas it is with the modern agricultural technology that the demerits of field-to-field irrigation become more visible.

Due to the prevalent system of irrigation some farmers receive plenty of water and make wasteful use of
it while others do not get their legitimate share of water. This results in a mixed opinion regarding the present irrigation system. The cultivator's responses have been summarized in the table 6.1.

It is evident from the table that the cultivators were ignorant about many of the problems put before them. They were not aware of the damages caused by field-to-field irrigation. Over 72 percent of the reporting cultivators expressed their ignorance regarding fertilizer or soil effect of field-to-field irrigation. Over 51 percent of the cultivators were receiving timely irrigation and tank water was available to them at various stages of crop growth; but as mentioned earlier, this availability of water was subject to adequate storage in the tanks. Over 56 percent of the cultivators reported that they had no security of water supply from the tanks. 20 percent of the reporting cultivators favoured field-to-field system while a little over 43 percent of cultivators opined against it. However, almost 37 percent cultivators were neutral to this question. 44 percent of the cultivators were satisfied with the existing irrigation system while a little over 47 percent of cultivators had a distinct dislike for it. The cultivators, in general, did not complain against the influence of powerful farmers in water distribution. But, they welcomed the idea of water organisation at village level.
### TABLE 6.1
**CULTIVATOR'S VIEW ON PRESENT IRRIGATION SYSTEM**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Item</th>
<th>Number of Reporting Cultivators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Do you receive water at various stages of crop growth?</td>
<td>Yes (49) No (45) Don't Know (01) Total (95)</td>
</tr>
<tr>
<td>2.</td>
<td>Do you have security of water supply?</td>
<td>Yes (39) No (54) Don't Know (02) Total (95)</td>
</tr>
<tr>
<td>3.</td>
<td>Is field-to-field system an effective system of irrigation?</td>
<td>Yes (19) No (41) Don't Know (25) Total (95)</td>
</tr>
<tr>
<td>4.</td>
<td>Does the present system create problems like, washing-away fertilizers, washing-away soil etc.?</td>
<td>Yes (17) No (09) Don't Know (69) Total (95)</td>
</tr>
<tr>
<td>5.</td>
<td>Are you satisfied with the present system?</td>
<td>Yes (42) No (45) Don't Know (08) Total (95)</td>
</tr>
<tr>
<td>6.</td>
<td>Do you think that water organisation at village level will improve the situation?</td>
<td>Yes (75) No (06) Don't Know (14) Total (95)</td>
</tr>
<tr>
<td>7.</td>
<td>Do you think that some powerful farmers (socially, economically or politically) affect the water distribution?</td>
<td>Yes (20) No (59) Don't Know (16) Total (95)</td>
</tr>
</tbody>
</table>

Note: Figures in brackets indicate percentage with total.
Almost 79 percent of the reporting cultivators opined that such organisation like 'Sinhaï-Panchayat' could go a long way in improving the water distribution system.

6.3 FACTORS AFFECTING THE EFFICIENT MANAGEMENT

On the basis of the information collected from the cultivators and the irrigation officials, coupled with the observations made during the course of field investigation, the main constraints in the efficient management of tank irrigation may be enumerated as here under:

6.3.1 Poor Maintenance of Tanks:

A tank is an artificial obstacle in the natural flow of water. Hence, occurrence of breaches in the tank is a common phenomenon unless it is maintained regularly. Tank is the source from where the water reaches to the thirsty fields. Maintenance of tanks means maintenance of its storage capacity. It is essential, therefore, that proper maintenance and upkeep of the tank is done regularly.

It was observed that the irrigation tanks, in the district, were very carelessly maintained and there was an absolute absence of regular maintenance. The ill-maintained tanks prove the common saying that "our engineers are more construction-minded rather than maintenance-minded."
As stated earlier in the fourth chapter, the defective sluice gates of Bakulwahi, Chitrakote, Ramaram and Degalras tanks, and the ill-maintained bund of Chhindgaon tank clearly tell the story of neglectful maintenance of these tanks. A considerable quantity of the stored water runs waste due to lack of maintenance.

Siltation is another problem associated with tank irrigation which continuously reduces the capacity of the tanks. Although dead storage is provided in tanks to accommodate silt deposits, due to excessive soil erosion in the catchments, the actual rate of siltation is much more than the estimated rate. Among the sample tanks, Janakpur tank was found silted considerably but no desiltation programme was proposed for the restoration of the tank so far. The cultivators under this tank suggested that the height of the tank bund or the level of waste-weir should be raised so that more water could be stored in the tank. The officials of the Irrigation Department however, opined that this was not feasible technically. The height of the bund and the level of waste-weir corresponds to a particular strength of the foundation. The strengthening of the foundation involves heavy cost and such works could not be undertaken as a regular maintenance work.
6.3.2 The Ill-Maintained Supply Channels:

The supply channel is the artery of the tank irrigation project. It is an earthen canal excavated to convey water from the sluice up to the outlets. Maintenance of supply channel is a pre-requisite for efficient, timely and reliable conveyance of water. The proper upkeep of the channel may help in improving water distribution even without any drastic change in the existing design of the distribution system. But it seems to be the most neglected aspect of the 'neglected water management' in the district.

During field investigation it was disclosed that in many cases the alignment of the canals and outlets were poor due to insufficient investigation of the topography. Even, these under-engineered canals were found silted and at several places necessary structures to regulate the flow were either not constructed or were broken. The cultivators reported that the weeds growing on the canal-bed were not cleared before releasing the water into the canals. At many places the farmers had tampered with the canal banks to carry water to their fields. In the present condition of the channels much of the water released for irrigation is lost by seepage, percolation and wastage. This simply increases the unreliability of the already unreliable distribution system.
6.3.3 Lack of Field Channels:

Managing distribution of water below the outlet was considered to be the farmer's responsibility until recently. This was realised only during the seventies that "improved water availability, control and management are vital to agricultural development and expansion of food supplies in most poor nations." With the advent of high yielding varieties of seeds water management has received added importance. "water management for high yielding varieties has transformed irrigation from being protective to being productive."

But this philosophy of water management has no room in the existing irrigation system of Bastar. The system lacks field channels to supply water to the individual fields. The field-to-field irrigation by continuous flooding creates various problems of water distribution. This causes over-irrigation at the upper reaches and water shortage for the tail-end farmers. The head reach farmers allow the water passing through their fields only after flooding their own fields; and create externality for the


farmers at the farther reach. The system reduces the water conveyance efficiency due to heavy losses in transportation. The bulk of the loss is due to evaporation and seepage-cum-percolation. This, again, affects adversely the water availability to the tail-enders. "Thus the three basic requirements of good irrigation facility — quantity, assurity and timing of water — are completely denied to the tail-enders."5

There are chances for water stealing or unauthorised irrigation also. It is practically impossible for the Amin to patrol efficiently to apprehend unauthorised users, if any, due to excessive burden of work on him.

However, a plus point may be observed here in connection with the loss discussed above regarding seepage-cum-percolation. A big proportion of the water released for irrigation, which seems to be lost due to seepage and percolation, in fact, adds greatly to the recharge of the ground water. "Thus, the so-called canal losses become a beneficial external economy to the users of ground water."6 To recoup such losses, ground water withdrawals through dug-wells can be promoted. These supplementary wells not only improve the quantity and quality of irrigation water to the beneficiaries of tank irrigation but also provide a

dependable source of irrigation during the periods of water scarcity in the tank.

6.3.4 Maintenance Grant:

Discussions with the Officials of the State Department of Irrigation revealed that the Department was aware of the problem of management. But, the shortage of maintenance fund inhibits them from undertaking regular repair and maintenance work. The annual maintenance grant is Rs. 20.00 per acre (Rs. 50.00 per hectare) of the commanded area, which is certainly inadequate for the purpose. Further, only a part of this inadequate grant is made available to the local irrigation officers, and as such, the actual grant available for the maintenance of tank and supply channel comes to the rate of Rs. 12.00 per acre. The balance of Rs. 8.00 is held with the Superintending Engineer/Chief Engineer. Due to the rising prices of materials and upward revision of wages, it becomes difficult to undertake timely maintenance work, and appoint choukidar on each tank, with this meagre maintenance grant. This is due to the fact that the amount spent on maintenance was normally far below the admissible limit (Annexure 6.1).

The irrigation officials disclosed that the maintenance grant of Rs. 50.00 per hectare may be sufficient
for major and medium irrigation projects. Such schemes enjoy certain economies of large scale operation and due to extensive commanded area a huge maintenance fund is accrued. In minor irrigation, they added, with a small commanded area, the project authority is often short of maintenance fund. They were of the opinion that the minimum maintenance grant should be raised to Rs. 75.00 per hectare.

6.3.5 Water Rates And Revenue Collection:

Another factor which worsens the situation is the prevailing low water rates together with the poor revenue collection. The Irrigation Department assesses water charges either on 'occupier's rate' or on 'agreement rate'. The occupier's rate is a fixed rate charged for the area actually irrigated which varies with the nature of the crop. Agreement rate is also charged on the basis of area irrigated but it is fixed for a certain period of years, and is charged irrespective of the fact whether the irrigation is availed of or not. The latter rate is charged when the cultivators execute five-yearly agreement for irrigation.

For demand irrigation, however, the former rate is charged. The current water rates for kharif paddy, in Madhya-Pradesh,

is Rs. 22.00 per acre for agreement rate and Rs. 24.00 per acre for the occupier's rate. In addition to the water rate - an irrigation cess is also charged @ Rs. 10.00 per acre for the entire commanded area.

From the strict economic considerations these rates seem to be very low as they are not based on any principles of cost recovery. But, there are social functions of a water price policy also, such as income redistribution, economic stability, development of backward areas and to encourage investment in agriculture by the beneficiaries. This social justifiability demands that the water rates should be low and differential for the small and marginal farmers.

The subsidised water rates are favoured for promoting irrigation utilisation also. It is argued that "once the project has been executed, the relevant cost to the economy is only the cost of operating it. The money costs on account of fixed investment in it are no longer relevant. It would promote to maximum welfare only when it is put to full capacity use."


With an objective of promoting irrigation utilisation in tribal areas, the Government of Madhya Pradesh announced special concessions in water rates in 1983. According to this, the scheduled-caste and scheduled-tribe cultivators who have lands within the land ceiling, and other cultivators who have land holdings up to five acres, have been exempted from water rates for the first five years in newly constructed schemes in tribal districts. In the sixth year one-third rate and in seventh and eighth year two-third rate is to be charged. Full water rates are to be charged only after nine years of completion of the scheme.

Fixation of water rates is a controversial issue in economic literature. In Bastar district the policy of low and subsidised water rates may be accepted for it's wide social objective function. But it should not be forgotten that the fixed and lowered water rates result in wasteful use of water by the top-end farmers which drastically curtails the due share of the tail-enders. Further, the low water rates ultimately lower the quality of irrigation service via

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(C) Asopa, V.N. - Op. cit., p. 60
shrinkage in the maintenance fund. The poor maintenance of the project, inter alia, distorts the objectives already set in the project reports.

It is painful to find that no proper collection programme is launched by the concerned department to collect the water charges and irrigation-cess. The cultivators under Chitrakote and Chhindgaon tank reported that they did not pay water charges as no-body approached them for collection. In other places where some efforts were made for revenue collection, the interference of local politicians marred its progress. (Annexure 6.2)

6.3.6 Locational Factor:

Over-lapping of the commanded area of various schemes is also an important factor affecting the efficient management of tank irrigation. Many irrigation schemes are located so close to each other that the commanded area of one scheme is over-lapped by the other. A considerable portion of the area commanded by Ramaram and Bakulwahi tanks was served also by the lift irrigation schemes. This makes the full utilisation of the potential impracticable. If the area served by lift irrigation is subtracted from the tank command area, the designed potential of the tank will certainly be far less.
6.3.7 Levelling and Bunding of Fields:

Levelling, shaping and bunding of fields are also very important in water management. In order to make the best use of tank water, fields must be properly levelled and shaped so that water may reach to the distant fields evenly. The progress, in this direction, is indeed very disappointing. Bunding of fields is imperative for paddy cultivation, so that water could be stored in the fields. But it was observed that considerable acreage, under the command of tanks, was lying 'tikara' which was neither levelled nor bunded. This hinders the efficient utilisation of the available water and creates utilisation lag.

The levelling and bunding is expensive operation and the poor cultivators can not afford it by themselves. "It requires a great deal of technical competence, large financial outlays and willing co-operation of the farmers concerned.Only the agencies like 'Command Area Development Authority' could be trusted upon to play any satisfactory role in this direction. However, no such efforts are made so far in Bastar district.

6.3.8 Agricultural Extension Service:

Irrigation can yield best results only when the modern agricultural technology is adopted. It is seen in

chapter five that the Benefit Cost Ratio was positive in Bhopalpattanam tank only because the cultivators, under this tank, were using improved methods of cultivation with the modern inputs. In the remaining tanks the use of modern inputs was negligible mainly due to the lack of technical guidance in application of these inputs on the one hand and uncertain supply of water from the tanks on the other. Timely irrigation is essential for adopting modern practices. The irregular supply from the tanks leads to half-hearted efforts in farming and keeps the cultivators always under suspense, tension and risk.

The tribal cultivator is suspicious also because of some sad experiences in the past, especially in connection with the repayment of loans. He is not ready to accept anything new unless his leaders in the village (Patel or Manjhi) adopt it in their fields. Agricultural Extension Services may play a vital role in improving the water use efficiency on the farms by winning over the confidence of the tribal cultivators and inducing their leaders to adopt modern practices in farming and water management. But the extension assistance available to the farmers, however poor it may be, has been almost totally on a single item basis, e.g., improved seeds, fertilizers or pesticides etc. There is no overall extension component packaged as a 'farm water management advice. The incomplete package given to the cultivators

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does not help in increasing the productivity of land. The lethargy of the extension bureaucracy and lack of any strong farmers organisation, seem to be responsible for this sorry state of affairs.

To sum up, it can be said that the whole situation of management of tank irrigation in Bastar has a close resemblance to the view presented by the Irrigation team of the Planning Commission—"...small irrigation schemes receive much less attention, both technical and organisational with regard to their planning, execution, operation and maintenance, than that would appear commensurate with the contribution they make."14