

# Pro-Poor Intervention Strategies in Irrigated Agriculture in India

*R.K. Patil and S.N. Lele*

## INTRODUCTION

Before we proceed, let us first clarify who the poor are in the context of irrigation area: In general, poor people are identified on the basis of nonavailability of some well-defined norms of food, clothing and shelter. With respect to irrigated areas, this definition may not be of much value.

The crux of poverty in the irrigable area lies in the nonavailability of water to those whose lands lie within the irrigable areas (irrespective of the landholding). Viewed this way tail-enders who are the disadvantaged in irrigable areas are the major segment of the poor. Similarly, even in the head and middle reaches of the canal, socially disadvantaged landowners may also be deprived of water and can be included in the category of 'poor.'

There is a third category in the area who could be considered as poor, namely, landless laborers. With better irrigation, the job opportunities for the landless increase and hence their poverty status is indirectly linked to irrigation.

There is a reference to 'equitable economic growth' in the context of 'goals' and objectives' of the proposed study on *Pro-poor intervention strategies in irrigated agriculture in Asia*. One has to be clear as to the meaning of 'equity.' Equity does not mean 'equality.' In a society of disparate endowments of natural resources and a variety of land ownership and tenures, equal allotment to water either on the basis of area or population may not be conducive to equitable economic growth. For need /demand (and hence quantity) for water depends on many factors such as types of soil, climatic conditions, varieties of crops, etc. There are wide variations in these factors and a centralized agency is incapable of doing justice. These issues would have to be resolved at the local level.

## INTERVENTION STRATEGIES

Currently, the strategy of water management and distribution is decided and implemented by the Irrigation Department, on the theory that the Government is the sole and neutral arbiter of water disputes arising within the farming community. However, in practice, the strategy is biased in favor of the influential segments in the irrigation sector who are also well represented in the governance (i.e., ruling party). Under these circumstances, any strategy framed at the Government level is not likely to become pro-poor in practice.

Therefore, at first, all the powers of water distribution should be handed over to the WUAs. Behind such devolution of power is the assumption that the individual users at the local level are willing and capable to ensure equity in water distribution and thus protect the interest of the poor.

If, in practice, this does not happen, then the question of 'pro-poor' intervention arises. There are many ways in which such an intervention can be designed as to ensure equity in water distribution. Therefore, the first step would be to transfer management responsibilities to the community (i.e., people) and then to supervise the community activities to see that the poor are not deprived of their dues (regulation). In short, the Irrigation Department should shed the executive responsibilities below the distributary level and substitute these by quasi judicial procedures to protect the interests of the poor.

## **SLIPPAGE OF PRACTICE FROM GOALS**

The irrigation projects are by definition and design constructed to improve the quality of life of the rural population particularly the farmers directly through additional crop areas and higher productivity, and the farm labor (landless persons) through increased job opportunities in the area.

However, the experience shows very clearly that these objectives are not fulfilled, especially in large and medium projects, where large pockets of low productivity areas have remained and would continue to remain in the near future. A large number of poor people remain poor around a few very rich farmers or islands of prosperity.

This is not a new discovery but a hard truth, which has been discussed, debated continuously among the irrigation planners, management experts and social scientists. A number of interventions, packages and practices were suggested from time to time to change the situation. Constructing field channels up to last farms, providing field drains, lateral drains to remove excess water, land leveling, constructing roads to connect villages to the market-yards, etc., are considered as physical infrastructure, and on the other hand, enforcing cropping pattern, introducing warabandi, training of farmers, direct linkage between agriculture research services and farmers, are called institutional interventions. All these interventions are provided as packages under the Command Area Development(CAD) Program. But even after nearly three decades of launching the CAD program, the problem of low productivity, lack of guaranteed, reliable and equitable supply of water to all the farmers in the command have not been fully resolved.

The irrigation agency cannot provide high degree of service directly to all the farmers to supply water equitably, reliably, as per the crop water demands of thousands of farmers in the command. It was therefore thought that the involvement of farmers in all aspects of irrigation, and particularly in operation and management is essential. This Participatory Irrigation Management is now initiated in a few states. The impact of Participatory Irrigation Management on removing the pockets of low productivity, and equitable distribution of water to all the farmers can be seen only after a couple of years.

## PRODUCTIVITY

This brings us back to square one. Let us therefore take a fresh look at the irrigated agriculture in general and that under major/medium irrigation projects in particular. The productivity of agriculture crops depends up on a number of factors. The farmers have to take high risk in each of these. Some of these factors are:

- Availability of good quality, high potency seeds
- Appropriate fertilizers and adequate farm manure
- Timely availability of pesticides
- Labor
- Reliable, timely and predictable irrigation water supplies

These are controllable and can be managed with efficient and highly responsible management. Besides, the incidence of pests and diseases, climatological factors such as low temperatures, hail storms, high and continuous rainfall are natural and uncontrolled risk factors. All these risks influence the productivity. Water availability is the principal risk.

It is understood that, when the major risk involved in timely, adequate, and reliable supplementation of water is reduced or minimized, through irrigation, farmers can *afford to* take high risks in other areas to get higher productivity. The question therefore revolves on one single factor of providing efficient irrigation service to all the farmers.

Before we go into the possible solutions, let us again take a quick look at the existing services under major/medium irrigation projects, the constrains, inherent deficiencies of the physical system along with the drawbacks in the existing water management practices.

## THE CONSTRAINTS

- The canals are designed and constructed with upstream control. The response time is high; (3-4 days, in major systems) due to filling time. The water once released cannot be stored/conserved or retrieved, but will have to be supplied through outlets or wasted though escapes.
- The irrigation supply cannot be done to various subcommands/minors *on-demand*. A certain type of scheduling on/off or rotational supply to be followed.
- All farmers cannot get water simultaneously at any time. The farmers have to take water by rotation or as per certain system under the outlets in a cyclic order either head to tail or tail to head.

- The canals cannot supply water to all the crops as per their actual water demands. The frequency of supply can be tuned to one or two principal crops and all farmers can get water at the critical stages of these crops, only if, sowing/planting is done by the farmers in a cyclic order as per the order of receiving water.

## **INTERVENTIONS**

By now we have experimented with physical interventions such as lining of canals, modernization of systems, increasing canal capacities, extending canals/field channels, improving controls, but these interventions have not improved the equity or reliability of supply nor have they led to conservation, saving or judicious use of water. Hence institutional interventions need to be organized on priority. After improving the management, possibly further interventions in physical structure of canals would be able to bring about the desired effects like judicious water use and high productivity.

## **EQUITY IN SUPPLY/ACCESS TO IRRIGATION BY TAIL ENDERS**

The government agency cannot bring equity in water supply so long as the agency is responsible to allocate and supply water to individual farmers. Involvement of farmers, entrusting O&M at a certain level, like minors/distributary to the farmer organizations with the clear responsibility of providing water to all farmers is essentially a prerequisite to this tail-end/deprived farmers' problems.

Further, the equity will not be the same in different projects and will change according to the water availability, landholding and land-use pattern. The equity issue will have to be addressed by the general body of the WUAs and rules for water allocation/supply framed by majority.

## **GUARANTEE/RELIABILITY**

In order to assure certain quantity of water to each WUA; the irrigation agency will have to take the responsibility of allocating/supplying water equitably to all WUAs. Based on the available water in a normal year, allocation needs to be made to each WUA, or a quota of water needs to be determined proportionate to the CCA of each WUA.

The water availability will change from season to season according to the rainfall. Based on probability, as well as actual observations, the quantity/quota which will be supplied will have to be made known to the WUA before commencing irrigation in that season. The number of irrigation/rotations will have to be decided by the irrigation agency and the Apex body of all WUAs, so that the water users can plan the crops and crop area precisely.

## **CROP PLANNING**

Based on water availability and the number of irrigations, the WUAs will have to identify the crops which can be grown (within the water quota) and the crop area as well as the period of water supply (rotation schedule) to match critical crop stages for higher productivity.

Once the crops and crop areas are fixed, the WUAs will have to allocate the water to individual farmers based on equity defined by the WUAs and thereafter plan sowing/planting of crops in the cyclic order as per the irrigation rotations from head to tail/or tail to head.

## **JUDICIOUS USE OF WATER**

Water saving/conservation or judicious use of water is essential to ensure that all WUAs actually get the sanctioned quota. To achieve this following steps/intervention are essential.

- Volumetric supply
- Incentives for water saving by way of carry-over of water not utilized in a season to the next season.
- Storing water on ground through en-route storages, service reservoirs, farm ponds or underground storage through recharge of water in the ground when not needed by crops.

## **FLEXIBILITY IN IRRIGATION SCHEDULING**

Process of continuous dialogue/exchange of information between irrigation agency/ agriculture extension, Apex body of WUAs and farmers, needs to be initiated before each irrigation season for planning, implementation, and monitoring water deliveries. The long dry spells in the monsoon need to be identified and additional rotation planned quickly. Similarly, the period of heavy rains, winter rains need to be utilized for storing water, increasing area in Rabi or providing additional rotations if needed later on for increasing productivity.

## **CONJUNCTIVE USE OF GROUNDWATER**

When farmers get organized, participate in water management and undertake responsibility of O&M, the WUAs should be able to control groundwater for equitable distribution. The government should empower them with legal back up so that the WUAs' Apex bodies can undertake various measures for recharging rain/canal water (if not needed by the crops) in

the ground and make arrangements to lift and supply this water equitably to all farmers on a community basis for increasing irrigation, or increase frequency of supply to sensitive/delicate crops, which cannot be grown only on canal water with low frequency supply.