

## **Minor Irrigation in Madhya Pradesh**

*Water, like religion and ideology, has the power to move millions of people. Since the very birth of human civilization, people have moved to settle close to it. People move when there is too little of it. People move when there is too much of it. People journey down it. People write, sing and dance about it. People fight over it. And all people, everywhere and every day, need it.*

**- Mikhail Gorbachev,**



### **Background & Objectives**

Water is essential for crop production, indeed for survival itself. Madhya Pradesh, one of the largest states in the country, suffers from inadequate availability of irrigation water, mainly because of its undulating topography, high surface runoff, and lack of surface storage facilities. Out of its total geographical area of 307.74 lakh hectares, the net sown area is only 150.74 lakh hectares. The net irrigated area in the state by all sources is 64.18 lakh hectares, which accounts for only 42.57% of total cultivated land. The average annual rainfall in the state is 857.70 mm and as estimated 60% of rain water is wasted as run off.

Of the total irrigated area in the State, canals contribute 10.51%, well and tube wells 42.56%, other sources 9.73% and tanks a mere 1.38%.

Thus despite all efforts to increase irrigated area by way of constructing big irrigation dams, so far only 10.51 lakh ha area has been brought under irrigation through dams and canals. Moreover, dams can only irrigate land in specific areas downstream of the dam by way of canal irrigation. Therefore, remote areas where no rivers flow are deprived of irrigation facilities.

To remedy the situation, the State started Minor Irrigation Schemes (Tube wells) and Micro Minor Irrigation Schemes (Micro Minor Irrigation Tank (MIT) & Percolation Tanks (PT) and during 10<sup>th</sup> Five Year Plan, 128 MIT and 763 percolation tanks were constructed which brought additional 101341.28 ha under irrigation. However, the size of the State Sector Scheme in 10<sup>th</sup> Five Year Plan was Rs 6025.28 lakhs, which was too small to benefit the large number of farmers.

## **Intervention**

Small and medium irrigation works have an important role to play in developing irrigation in the country. They have many advantages. They provide a large amount of dispersed employment. They involve smaller outlay and can be executed in a comparatively shorter period.

Historically, development of irrigation in Madhya Pradesh started with construction of water storage tanks long back in the 1st century A.D. by Chandel Kings in Khajuraho (Chhatapur district). Similarly tanks have also been constructed by Kalchuri dynasty in Bilaspur district during 1120-35 A.D. A tank may be defined as a reservoir of any specific size. In the uneven and comparatively rocky plateau of Peninsular India, tank irrigation is popular. In this procedure, a small dam that is constructed across a stream impounds water that is led through slender channels to cultivated lands

Percolation tanks, which are based on principles similar to those of *nala* bunds, are among the most common runoff harvesting structures in India. A percolation tank is an artificially created surface water body submerging a highly permeable land area so that the surface runoff is made to percolate and recharge the ground water storage. These are generally constructed across streams and bigger gullies in order to impound a part of the run-off water. This water, in due course, finds its way into subsoil and recharges the ground water and leads to better recuperation of wells in the downstream areas. They differ from *nalah* bunds in having larger reservoir areas. They are not provided with sluices or outlets for discharging water from the tank for irrigation or other purposes. They may, however, be provided with arrangements for spilling away surplus water so as to avoid over-topping of the tank bund.

Since Rahrtriya Krishi Vikas Yojana (RKVY) started in the year 2007-08, percolation tanks and micro minor irrigation tanks have been taken up as one of the flagship projects of the State. So far the number of micro irrigation tanks and percolation tanks constructed under RKVY from 2007-08 to 2011-12, including those that are ongoing, is 621 and 1017, respectively. The corresponding number of beneficiaries is 13986 and 8136. The overall area brought under irrigation is 26995 ha with a total outlay of Rs 22074.98 lakhs during the 11<sup>th</sup> Five Year Plan.

## **Outcome**

Case studies of Micro Minor Irrigation Tanks- ManaPipaliya & Bhoodha

Village Mana Pipaliya comes in Bagli Block of Dewas district. This block lies in the near critical zone of underground water availability. The ground water utilization in this block is 45 to 75%.

The MIT was constructed in this village in the year 2009-10 in survey number 142. Its submergence area is spread over 2.60 hectare and storage capacity is 63047 cu metres of water. Sixteen farmers of Mana Pipaliya village are using the water through lifting

devices. Overall 15 hectares of area has now been converted into irrigated land.

The cropping system has since changed radically. Before construction of the MIT, the main crops were rainfed wheat and gram, with productivity of 10 quintals & 5 quintals per hectare, respectively. Due to the irrigation made possible after construction of MIT, the productivity of wheat and gram has increased to 35 and 8 quintals per ha, respectively, in the cropping season of 2010-11.

Village Bhoodha comes in Rithi Block of Katni district which was also approaching towards semi-critical zone of underground water availability. The ground water utilization in this block is also 45 to 75%. The MIT was constructed in this village in the year 2009-10 in survey number 287/1. The length of structure is 275 meter and the height is 7.5 meter. The submerged area of MIT is spread over 4.1 hectare which accumulates 175400 cu meter of water. Thirty two farmers are using water by their own lifting devices and overall 40 hectares has been converted into irrigated land.

Earlier the main crops were rain-fed rice and wheat, with productivity of 1.2 quintals and 10 quintals per hectare, respectively. After construction of the MIT, during the cropping season of 2010-11, the productivity of rice and wheat has increased to 2.1 and 18 quintals per ha respectively because of irrigation.



As per the survey conducted by ASCO Dewas & Katni, benefited farmers in both areas have given feedback that due to construction of this structure the water level of Dug Well and Tube wells in the downstream area has also increased and remained for comparatively longer time, a phenomenon which has occurred mainly because of recharging. Farmers are enjoying higher incomes due to increased production.

Research has already proved that irrigation has a vital role in enhancing crop productivity & thereby production. It is anticipated that 15-20 % increase occurs by virtue of providing irrigation. The overall status of production & productivity of major crops in Madhya Pradesh has recorded significant increase since implementation of this RKVY intervention began in 2007-08.

By 2011, paddy, despite recording a marginal decrease in area cultivated by 2010-11 registered an increase in production of 33% overall with a productivity increase of 36.81% per ha.

As for wheat, the area under cultivation showed an increase of 11.48%. The total increase in production was 34.29% and in productivity the increase was an impressive 20.47%.

As regards pulses the area cultivated recorded an increase of 17.89%. Production grew by 27% and productivity by 7.73%.

Area under oilseeds grew by 7.11%, production by 30.36% and productivity by 18.14%.

Anupam Mishra, one of the most respected chroniclers of the tank system in northern and central India says (Mishra, 1993 and 1995), historically, tanks have been an integral part of life across the country. Most of the tanks were built by local rulers or community and all were maintained by the community. The tradition of tank building in different parts of Indian society created and sustained the tanks in difficult terrain for many centuries. Tanks were part of social culture, customs, rituals, norms and in

various places they also had religious significance. The tanks had respect in society.

This reflects the wisdom of our forefathers who had made water harvesting and water management an integral part of community life and these practices were performed by the common man and his community as their duty and social responsibility and part of good local self-governance. This “water-wisdom” ensured adequate availability of water for communities and fostered development and prosperity. The need of the hour is to revive the age-old practices of community based water management for the benefit and progress of our people, especially the India that lives in villages. This intervention in Madhya Pradesh is an important step in that direction!