Encouraging smallholders to build their own tanks to conserve monsoon rainwater for irrigation has reaped widespread benefits in one area of Madhya Pradesh.

The Opportunity

Irrigation has long been at the centre of agricultural development strategy in India. However, despite major investment in panoply of measures, only 40 percent of the net sown area in the country is currently irrigated. Where irrigation does take place, the dependence on groundwater has increased to the extent that more than 60 percent of the net irrigated area in India as a whole relies on it. In the absence of any effective regulation or monitoring of extraction, subsurface water tables in several parts of the country have been falling, in some places at the rate of more than one meter per year. There are even areas of the country which have been declared “dark” where no further exploitation of groundwater is permitted.

In Madhya Pradesh, a number of existing tubewells have gone dry and efforts to install new ones or deepen existing wells have either yielded no water or a limited supply of poor quality water unfit for irrigation. The water tables in some parts of the region have over the years declined to almost 200-300 feet below ground level.

Fast Facts

- Often called the Heart of India, Madhya Pradesh is a state in Central India. Its capital is Bhopal and Indore is the largest city.
- Until 1 November 2000, Madhya Pradesh was the largest state in India. It borders the states Uttar Pradesh, Chhattisgarh, Maharashtra, Gujarat and Rajasthan.
- The state has an area of 308,252 km².

Main Findings

More than 4000 tanks have now been constructed in Dewas District without any financial assistance from the government. Initially, farmers with larger holdings built tanks that varied in size from 0.5 to 10.0 acres with a depth ranging from 6 to 25 feet.
The primary reason for investing in water harvesting structures is to store rainwater available during the wet (monsoon) Kharif season and use the water for crop irrigation in the dry Rabi season. This water can also be used for supplemental irrigation of Kharif crops during long dry spells between rainy days in the wet season. Now, the proportion of area cultivated during Rabi has increased from about 23% to 95%.

Better irrigation brings an increase in cultivation patterns, so farmers have more to do in the time available. This has often led to switching the methods for land preparation and sowing from bullocks to tractors, both owned or hired.

Farmers with livestock, have been using extra profits to invest in improving the quality of their herd, replacing existing low milk yielding stock with better milkers. Milk production in Khategaon has increased by about 34% and by 11% in Tonk Khurd.

For those farmers who have not invested in rainwater harvesting, the barriers are neither technical feasibility nor financial viability. The principle reasons for their reluctance to build their own tank are as follows:

• Most farmers have only a small area of land and a large family to support. They find it difficult to part with a portion of their cultivable land for a large pond.
• For the majority of farmers, the costs are prohibitive and they have no access to either owned or borrowed capital for investment.
• Although there is a Government grant available for up to 50% of the cost of construction, this can act as a constraint. There is a cap on how many such grants can be given in a year and so many farmers find they have to wait a year for their turn.

In addition, there has been a substantial increase in wildlife such as deer, wolf and other similar large animals, and birds, including peacocks, ducks and wildfowl, and the return of migratory birds to the region. This is because the construction of water tanks has brought about a change in the micro-environment.

Finally, drinking water is becoming more readily available from open wells, which is an indication that there has been a small rise in groundwater tables.

In order to increase the availability of irrigation water and improving farming practices, farmers who have invested in water harvesting structures, have seen real increases in both crop yields and their incomes.

Potential impact
By increasing the availability of irrigation water and improving farming practices, farmers who have invested in water harvesting structures, have seen real increases in both crop yields and their incomes. Providing access to loans, subsidy and technical support will enable more farmers to benefit from harvesting the rainwater that falls on their land in the monsoon season.

Benefit-Cost Analysis of Investing in Water Harvesting Structures

• Varies between 1.48 and 1.92 with no government subsidy.
  Pay back period 2.5 to 3.1 years
• With government subsidy of Rs 80000, B-C Ratio varies between 1.72 to 2.39 payback 1.9 to 2.6 years

Show farmers the benefits of building their own tanks and give them the relevant information.

Garner the support of the district administration. A responsive, understanding, and supportive local level bureaucracy is absolutely essential.

Provide access to loan capital.

Offer an appropriate subsidy. To partially compensate the farmers for the high cost of building water harvesting structures the government subsidy should be increased and made easily available.

Provide technical support such as engineering expertise and construction advice.