

Impact of Participatory Watershed Management in Drought Prone Area

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Introduction: A watershed is the most scientific unit for efficient management of soil and water which are most important natural resources. It is an interaction of these two resources that provides the basis of plant and animal life. The concept of optimum utilization of soil and water on watershed basis was adopted for the Drought Prone Area Programme, started in 1974-75 by the Government of India in 74 districts of the country. After the inception of Guidelines for Watershed Development by the Government of India in 1994-95, the focus was on the participatory and decentralized process of planning and implementation of the watershed project. Keeping in view the importance of participatory approach of watershed management, the study was undertaken with the following objective.

Objective: This paper discusses impact of participatory watershed management among the villagers.

Methodology: The study was conducted in the Tibna Watershed which is located in Jodhpur district of Rajasthan in India. It covers three villages (Tibna, Bhoja Ka Bas and Fateh Singh Ka Bas) with an area of 3957 hectares. The implementation agency was a non-government organization (NGO). Thirty-eight beneficiaries of the watershed were respondents. Open-ended questions were put to the respondents to know about the benefits from the following agricultural practices implemented in the watershed area: (1) Soil and water conservation practices, (2) Sand dune stabilization, (3) Improved breed of the buck of goat, (4) Solar light. A content analysis of the responses was done.

Finding:

Soil and Water Conservation Practices: Anicut, checkdam, loose stone checkdam and river training were made under the watershed project, Benefits from these to community have been presented below.

Anicut was made in Fateh Singh Ka Bas, Its foremost benefit, as reported by 42 percent respondents, was raising of the ground water which is very deficient in the area. The respondents said that rainwater was collected in the anicut and remained there four to five months and moved in to the ground slowly and ground water rose. Evidence to support it was

given by them. According to a respondent, five years before the anicut no water was found while digging a hand pump 180 feet deep, but two years after the construction of the anicut, water was found at 180 depth near the anicut. A few respondents reported rise of water level in wells and hand pumps. The water flowed easily and consistently from the hand pumps. Earlier they used to get tired while using the hand pumps as the water did not flow consistently.

One-fourth of the respondents (26%) said that water was used by animals and birds four five months. One-tenth respondents (13%) revealed that trees and grass grew near the anicut because of more moisture. The author noticed that goats and camels were grazing in the shade of trees. About one-fifth respondents (18%) disclosed that the speed of rainwater was controlled and one-tenth (13%) reported that soil erosion was checked.

River training work (RTW) was under taken to control seasonal flood. Under the RTW bund was made by stone locally available in the area. It controlled the seasonal flood. A few respondents reported that earlier water used to enter into the houses of *Kumhar* community near the stream and they were forced to go to hillocks near their houses. Now there is no such danger.

A few respondents reported that rain water went into the soil and since it followed slowly, water level rose. One-fifth respondents (18%) reported of growing of grass in the field due soil erosion control, Cows, goats and camel grazed for three-four months in a year.

One-fourth respondents (24%) reported that there was no soil erosion as rain water flowed slowly because of the checkdam. One-tenth respondents (13%) reported growing of grass on the soil deposited near the checkdam. The respondents said that the loose stone checkdam gave the same benefits as provided by the checkdam.

Sand dune stabilization: Trees have been planted to stabilize sand dunes under the watershed programme. Almost all respondents (95%) said that goat and camel got fodder from trees planted on the sand dune. The author noticed that goats and camels were grazing from the trees growing on sand dunes. The villagers collected pods from trees to feed animals. Now less *Khejri* leaves were given to the goats as they grazed fodder on the sand dunes. One-tenth respondents (13%) reported more milk from goats due to the availability of fodder. This shows that trees on sand dunes have become a good source of fodder for the

goats and camels. All most all farmers (92%) keep goats with an average of seven goats per family.

Another benefit is availability of fire wood from dried trees as reported by the one – fourth of the respondents (27%). An important point is that one fourth respondents (29%) reported that sand stopped blowing to the fields due to the trees growing on the sand dunes. The sand blown affects the crops adversely. Further, according to a few respondents houses near the sand dunes got less sand now. The women have to do a lot of work in removing sand from houses when sand storms come to the area.

A little more than half of the respondents (58%) reported stabilization of the sand dunes due to the plantation of trees. A few respondents reported that villagers got employment under the programme because of the nursery raising, planting trees, watering trees, and tree plantation.

There are also intangible benefits namely pure air, green area and cool environment. The sand dune was not the same as that was before. The sand dunes look very beautiful because of the tall trees there. The respondents emphasised that this natural beauty was better than other kinds of the beauty. Although these benefits have been reported by very small percentage of the respondents, yet these have a great relevance. Thus trees on the sand dunes have brought a change and improvement in the area. Therefore the villagers do not cut down them now. They have taken a joint decision that any one cutting the trees would be punished. It was noticed that trees were not cut down and they grew very tall. This clearly shows that the sand dune, considered a menace, can become an asset to socioeconomic improvement through adoption the sand dune stabilization technique.

Improved breed of the buck of goat: Eight improved breed of the buck of goat were procured from Government Goat Farm and placed in three villages.

The respondents were highly impressed with the growth of the he – goats of the improved breed. Half of them said that the growth of the he – goat of the improved breed was more than that of the *Desi* breed. A little more than half the respondents (58%) said that he – goat of the improved breed had red colour while *Desi* had black colour. Twenty four respondents sold 99 he- goats of the improved breed for Rs 2,22,000. The average number of

the he-goats sold was 4 and the average amount was Rs 2,245. The average price of the local he-goat was Rs 1,199.

Solar light: Two hundred solar lights were provided to the villagers. Twenty four beneficiaries of the programme were interviewed. The response of the respondents to solar light was very enthusiastic as it affected their life. Solar light has distinct advantage over the electricity power, According to one-third of the respondents (36%) the electric power could stop at any time but the solar light bulb continued giving light. This was observed by the author during his stay in the village. Electricity power stopped at 10 P.M. due high wind speed. The villagers immediately switched on the solar light bulbs and kept their things inside his house. Another benefit according to one-fourth respondent was that it was much cheaper. It also saved electricity and oil consumption. Very importantly it could be taken to other places like *Dhani* – houses located away from the village. If electricity is provided there more expenditure is required.

It has been used in houses for different purposes. One-third respondents (32%) used it running television and fan. A few respondents reported that children read in the solar light and it was borrowed by the villagers during marriage. The solar light has been used in agriculture also. About one-tenth (12%) took it to the field during crop season from July to October for protection from animals and snakes. Battery of tractor and the car were charged by it. There was no problem in maintaining it,

Conclusion: The participatory watershed management managed natural resources properly and provided benefits to the villagers: the seasonal floods were controlled, more water, fuel wood, fodder, employment and income were available now, the environment was improved with more greenery and solar light, the environment became healthier and scenic. Effective planning and implementation of the watershed project made all this possible. This is being discussed below so that it can be adopted for watershed management by others.

The Project Leader of the Tibna Watershed developed a close rapport with the research institutes of Jodhpur. The research institutes provided guidance in selection of the watershed, design of engineering structure, survey of the watershed and selection of the appropriate agricultural practices. A watershed committee was formed at the village level in which the members were from the villagers. They implemented activities of the watershed

and managed finance of the watershed project. A lottery system was adopted for selection of beneficiaries of the watershed project. This removed causes of potential conflict. The NGO placed a great stress in educating the villagers about the watershed through various extension methods. The villagers had great faith in the NGO.