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IMPROVING WATER-EFFICIENT IRRIGATION: PROSPECTS AND DIFFICULTIES OF WAGHAD WATER USERS SOCIETY

V. B. Kale
Assistant Professor, Department of Geography, K. R. T. Arts, B. H. Commerce and A. M. Science (KTHM) College, Nashik, Maharashtra, India. dr.vinayak_kale@rediffmail.com

Abstract-
Worldwide there is huge development in the field of Irrigation. Israel, USA, Australia and Russia have great contribution in this field. India is an agricultural country. 85 percent farmers using traditional and regular irrigation methods to irrigate the land. Irrigation means artificial supply of water to the crops. Only irrigation is not important but improved and efficient irrigation is required to get more production. Improving irrigation efficiency aims at minimizing water use within the agricultural sector while continuing to maintain optimal crop productivity rates. Efficient use of water is the need of time. Because there is decrease in the availability of water resources and increase of population. Technology of irrigation methods like drip irrigation and sprinkler irrigation supports to minimise the over use of water. Water release can be controlled so that crops receive only the amount needed. Self-propelled wireless sensors and GPS technology is site specific which match the needs of the soil and crop. Irrigation efficiency can be improved by crop rotation and conservation tillage. Regular and controlled monitoring system, repairing damages/leakages in irrigation system also improve irrigation efficiency. In addition, operational and legislative changes, creating incentives for efficient use and water–right laws also be effective in promoting irrigation efficiency. **Irrigation efficiency** refers to the amount of water removed from the water source that is used by the crop. This value is determined by irrigation system management, water distribution characteristics, crop water use rates, weather and soil conditions.

Among all these, Water User Societies have a dominant role. A Water Users Association (WUA) is a co-operative association of individual water users who wish to undertake water-related activities for their mutual benefit. Waghad Water User Society has played a vital role in the improved and efficient use of water. This society has formed a role model for other water user societies. This society act as an interface between the farmers and the main system management, equal water distribution, maintenance of the irrigation and drainage system, collection of water charges and resolve the problems amongst members. This also mitigate the conflicts between members and non-members. It also maintain commercial, financial and water accounting records. It design and construct new work as well as rehabilitation of canals and structures. But there are some challenges of this Association. This paper tries to find out prospects and difficulties of Waghad Water User Association.

Keywords- WUA, irrigation, water distribution, policy, efficient, members**.**

Introduction-

Irrigation efficiency refers to the amount of water removed from the water source that is used by the crop. This value is determined by irrigation system management, water distribution characteristics, crop water use rates, weather and soil conditions. (Bill Kranz) Maharashtra ranks first in number of dams in India. There are 1820 notable dams in Maharashtra across different rivers. Maharashtra has a history of very innovative and some of the pioneering examples of community managed irrigation systems. Phad system of irrigation, Pani Panchayat Movement, Ralegaon Siddhi, Hivre Bazar are some of the ideal examples of successful community based irrigation management. Even Government of Maharashtra took initiatives to develop Jalyukta Shivar which enforces people to participate in the development of management. Many NGO's like Pani Foundation and NAAM also contributing their role in the

management of irrigation. Latest addition to this list is Waghad Project located in Dindori tahsil in Nasik District. This is one of the largest and very successful examples of Participatory Irrigation Management in the country. This is the role model and ideal example of WUA. Maharashtra, especially Western Maharashtra has a big network of large and medium irrigation projects but most of them are not working efficiently and have never achieved their irrigation potential due to various reason. Farmers in the tail end of the canal are the main sufferers in this whole scenario. Maintenance, leakages, revenue collection, control of authority, over use of water are the problems of WUA. Farmers in Wahad project have overcome these challenges and are successfully managing the entire Waghad dam project themselves.

Study Area-

Waghad dam was constructed on Kolwan river in Dindori district in 1984-85. The maximum height of the dam wall is 47m. and the total live storage capacity of the dam is 72.20 M. Cum (2550 MCFT). Two canals are constructed on this dam to provide water for irrigation. The two irrigation canals in this dam, right bank and left bank canal, are 45 km and 15 km respectively. The total cultivable command area is 9642 Hectare while total irrigable command area is 6750 Hectare. After its completion the dam could irrigate a small proportion of its actual irrigation potential and in the mid 80's dam was irrigating only about 30-35 Hectare land near the head area of the canals. The farmers in the tail area were not receiving any water

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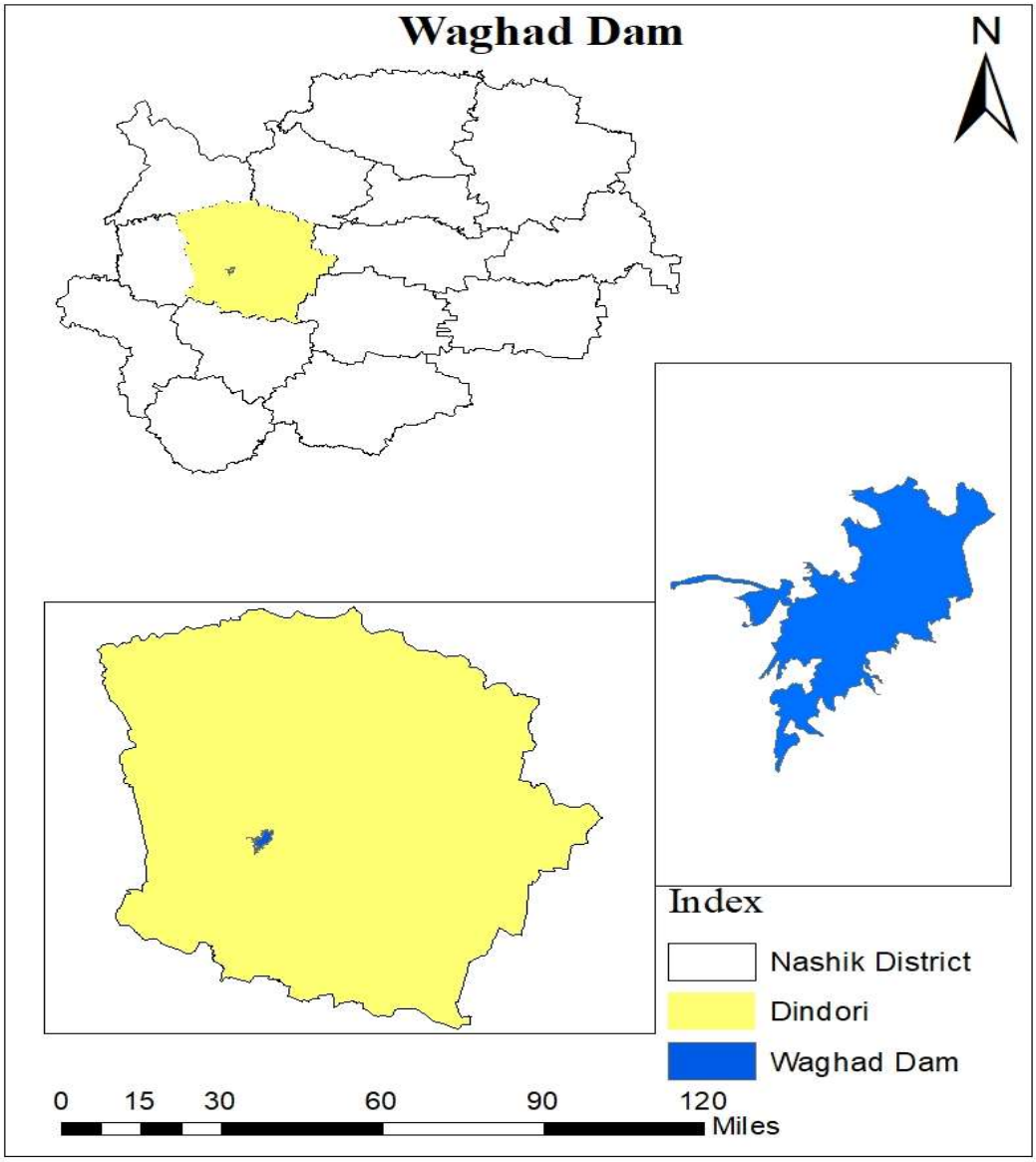

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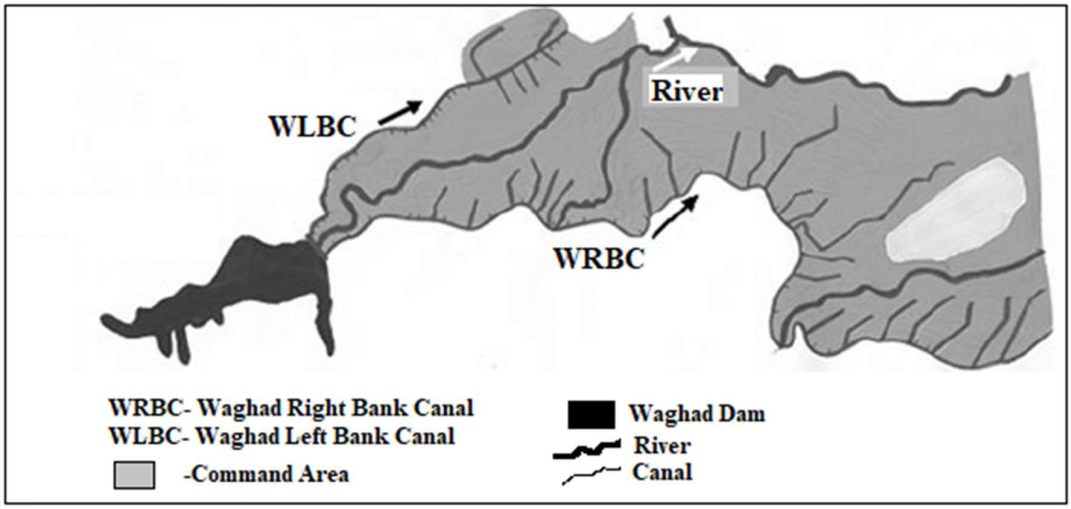

Methodology-

Field work and interviews of experts in WUA has been conducted. Researcher obtains information of the Waghad Water User Association in the target area. Field work has been carried out in left and right bank canal. Data is collected from farmers in the head and tail of the command area. Actual rotation and need of the water to the crop has been recorded. Researcher studied the rotation system and distribution of water and its management. This management is studied for both the seasons. i. e. Kharif and Rabi.

Result and Discussion-

How to use water for irrigation? What amount of water is essential to particular crop at what time? Are the common issues of each farmer. Many issues raised due to unequal distribution of water from Waghad Project. Considering all these things in mind, Mr. Bapu Upadhye of Samaj Parivartan Kendra organised the local farmers and aware them to come together and fight for their water quota. They formed a Water User Association (WUA) of tail end farmers of the canal under a circular issued by Ministry of Water Resources, Government of India, emphasizing the need for collective efforts by farmers for water management. The farmers made an agreement with the government on Rs. 100 stamp paper about assured water allotment. Since it is an 8 month system, the farmers are assured of water in Kharif and Rabi only. WUA decided that farmers will get water twice or thrice in Kharif and four times in Rabi season. After this, if some water is available in the dam, then it will be used for summer crops. This had led to establish the faith among the farmers and soon the farmers formed three water user associations, Banganga, Yogeshwar and Mahatma Phule in the tail end villages. Samaj Parivartan Kendra continued the farmers' mobilization and formed 24 WUAs in both canals and brought the whole command area of dam under WUAs network. Soon after, all WUAs were federated and on 1st November, 2003 management of Waghad Dam was transferred to the WUAs Federation. At present 15000 farmers are member of 24 WUAs and are irrigating 10000 hectare land. There is an election of Management body after every five year.

Waghad management has built new philosophy among the farmers i.e. water has a value, and it has to be utilized judiciously and for that its distribution and use needs a close monitoring. A detail water monitoring system is developed wherein the water is released through the canal, minor channels and field channels to the individual farms. The water level in the dam is monitored and based on the available live stock of water the crop and other distribution details are finalized. At every step there are water measuring devices installed and released water is measured and monitored closely. At the field level the water is measured through Gauge scale or 'V' notch and based on this the water tax is measured. Similarly, the water level in the wells is monitored every month to understand the canals contribution in

well recharge. There is increase in the underground water level in the command area..

Benefits to the Government and Farmers-

The first and important principle of Waghad Project is "Irrigation on the basis of water availability and not the land availability". Water is measured and on the basis of use of water every farmer is charged with water tax. There is no any partiality among the farmers. The water user association decides the rate for water use and each and every farmer pays accordingly. Water is charged on hourly basis. Presently each farmer is getting water for 5 hours for 1 Ha of his land. In Rabi season the water charges are Rs. 50-70/hour. Prior to Federation tacking over the charge of Waghad dam, Government was getting water tax of about 1.5 lakh per year. Today, federation is paying about 25 – 27 lakh water tax to Government from this project every year. The farmers are also equally benefited from this project and their returns have increased significantly. In the beginning when irrigation department was supplying water to farmers, their average income was `3 Waghad Project around Rs. 2700/-per Ha. Today because of assurance of supply of water farmers are using innovative methods in the agriculture and their returns have gone significantly up to Rs. 1.5 -1.75 lakh per Ha. The Number of beneficiaries from the dam has also increased after the dam management is taken over by federation because now the remotest of farmers sitting in the tail end of the canal is getting assured and timely irrigation for its crops.

Innovative Practices-

The project is a grand success today because of the innovative vision of people associated with the project. The first concept that was defined by this project was that Water has some value. Once the farmer realizes the economic value of water they automatically starts respecting it and saving it. Although this is surface water project, all aspects of water use including groundwater are considered in the project. The water tax is collected on the basis of water use; it may be direct or indirect. The farmers who had wells and were benefitted by increased water level in the wells due to canals were also charged. A proper survey of all wells was done and on the basis of increase in the water level and duration of well water use, the farmer is charged. Farmer has also realized the importance of structures like percolation tanks and farm ponds. They are making a full use of these structures for recharging their wells. Since this is eight month system, this well water is used in summer for their crops. There are around 1000 wells and bore wells in the command area and almost all these wells are benefited after the project. Therefore, no new dug wells or bore wells are constructed in the last 15 years. Every year, on 15th October, a review is done of total available water in the dam. On the basis of this farmers do the water budgeting and crop planning for the Rabi season. If the water is available after Rabi season then again a review is done on 28th February, for summer crop planning. As the farmers are aware about the fact that each and every drop of water saved will be made available to them in summer, they are using the water more judiciously and carefully. More and more farmers are using drip and sprinklers in their farms. Almost 300 Ha of land is under grapes which are totally irrigated by drip. Farmers are increasingly growing vegetables, soya bean, wheat through drip and sprinkler. Farmers are also keeping their field channels clean and free of garbage since it affects the efficiency of irrigation and are savings huge quantity of water.

Action against defaulters-

There is a very well defined procedure to deal with the defaulters. Those who are not paying the water tax or are not following the system of water distribution are punished. Initially, social pressure is built on the defaulter. However, if that doesn't work then the person is fined. Most of the times the problem is solved after discussion as the farmers have also realized the importance of the system.

Administration-

The water committee consists of 9 members including 2 women members. The duration of the

committee is of 6 years and after every two years the chairman is re-elected. This gives equal chance and opportunity to every member to lead the committee. The most important achievement of the project is the implementation of Management of Irrigation Systems by the Farmers Act, 2005, in Maharashtra. This Act has equipped the farmers to come together and manage their irrigation sources through WUAs. It was recognition of the fact that farmers themselves can manage their water resources and was a positive step towards Participatory Irrigation Management. Waghad project team, along with other like-minded organisations has actively campaigned for bringing this Act in Maharashtra. The live successful example of Waghad Project also played very crucial role in passing the above said Act in the state.

Challenges-

As the dam has provided assured water supply, farmers are going for water intensive crops like flowers, sugarcane and orchards. In future, if for a year the dam fails to supply water, there is likely to be overexploitation of groundwater as that will be the only available source. Farmers have made huge investments like construction of poly houses, green houses. In the water crisis situation people will invest in wells and bore wells as most of the farmers are well off and the stakes are high. Sometimes members of WUA doing the politics in the election and create the problems.

Conclusion-

Waghad Water User Association is an ideal water user society. The functioning and utilization of water is properly done by society. The water user become friendly with the rule and regulations formed by society. Most important aspect is revenue is collected on the basis of ratio of water used by farmers. Ground level finding of this work is this water user society create awareness among the farmers about water. The economic value and importance of water is realised by people. They are using the water as a precious resource. Every drop of water is used efficiently. So this water user society become a role model for other water user society.

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