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Participatory approach for socially and Environmentally Sustainable Modernisation of Existing Irrigation and Drainage Schemes in India

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ABSTRACT

The environment is treated as a marginal issue while it is actually key to sustainable water management. Socially and Environmentally sustainable development and management of Irrigation and Drainage Scheme is a critical and complex issue for both rich and poor countries. To meet the demand of water users, management of water resources demands an integrated and participatory approach. Active participation of farmers without gender bias and their contribution in any water conservation and management programme is absolute necessity in present time. Information dissemination, Education and Training is key to success of Water conservations and management programmes. This paper presents a critical review of ongoing projects undertaken by Government and non government agencies for socially and environmentally sustainable development of water sector in India based on Integrated and participatory approach.

Key words: Participatory Approach, Environmentally Sustainable Development, Water Management

1. Introduction

Water is the basic requirement for human survival and crucial for most human activities, economic development and socio-economic changes. There is a growing concern and realization among the prime stakeholder i.e. the farmers and the Government that old organization setup on the pattern of early British India is no longer appropriate and a paradigm shift in irrigation management is needed. In present situation, it is difficult to keep record of water distribution, number of water deliveries, revenue collection and conflict management of such a large group of farmers by irrigation department. Therefore it is the need of time to develop a strategy for equitable and optimal utilization of Canal Irrigation Water for better productivity through Community Participation and now days it is widely accepted that promoting community participation through Water Users Association can be the best strategy for long term sustainability of Irrigated agriculture. Participatory Irrigation Management (PIM) refers to the involvement of irrigation users in all aspects and all levels of irrigation management. "All aspects" includes the initial planning and design of new irrigation projects or modernization of existing projects, as well as the construction, supervision, and financing, decision rules, operation, maintenance, monitoring, and evaluation of the system. In India, Participatory Irrigation Management (PIM) is introduced by various states Government to reduce their financial demands with ensuring sustainability of irrigation systems. Many states like Madhya Pradesh, Rajasthan, and Andhra Pradesh have passed Participatory Irrigation Management (PIM) Act. Goa has

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also passed Command area development act in 1997 in line of PIM act. Presently Madhya Pradesh, Rajasthan, Andhra Pradesh, Uttar Pradesh, Gujarat, Bihar, Maharashtra, Tamil Nadu, Orissa etc are planning to strengthen Water Users Associations. Several unforeseen environmental problems emerge under irrigation system. These problems if neglected can cause considerable damage to irrigated agriculture and to the local population. Excessive use of water, improper response to rainfall, inadequate maintenance of field channels and drains lead to water stagnation conditions in pockets and lead to salt accumulation and water logging conditions are created which favour the proliferation of pests and epidemically of water related diseases to crops, animals, and human beings. It is therefore, necessary that the WUAs and farmers should be aware of the problems that threaten the system, health of soils, and crops in the command area. Such problems are best tackled in early stages. Any negligence in this respect is only at the cost of poor and vulnerable group of farmers.
The objective of this paper is to study various schemes under water sector in different part of country which are based on participatory methods and to understand role of Water Users Associations to promote and secure distribution of water, knowledge of adequate maintenance of the irrigation system, for efficient and economical utilisation of water to optimise agricultural production to protect the environment and to ensure ecological balance inculcating a sense of ownership of the irrigation system in accordance with the water budget and the operational plan.

2. Material and Method

The main objective of this review paper is to understand application and importance of participatory methods (PRA technique) for socially and environmentally sustainable development in water sector.
The material for the study consisted of the case studies of ongoing projects under taken by Govt. and Non- Govt. Organisations to manage water resources for the benefit of its users. The water users, namely farmers and wives of male farmers have been involved in the project as organized associations i.e. water Users Associations (WUA). It has been tried to understand, how the WUA are involved in each step of the projects right from the planning stage to the implementation and Operations and maintenance stage. Participatory methods aim to involving people for understanding their own problems, suggest their remedies in every development programmes for sustainable change in the society.

The following case studies constituted the sample:

1. **Case Study –I : Uttar Pradesh Water Sector Restructuring Project (UPWSRP)**
2. **Case Study –II : Madhya Pradesh**
3. **Case Study –III : India-Canada Environment Facility support Project in MP**
4. **Case Study –IV : Gujarat State**

Let us now analyse functioning in each case to understand participatory frame work to manage water resources and protect environment

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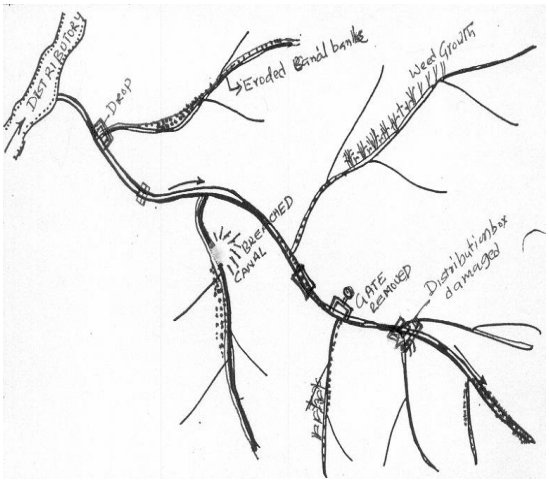
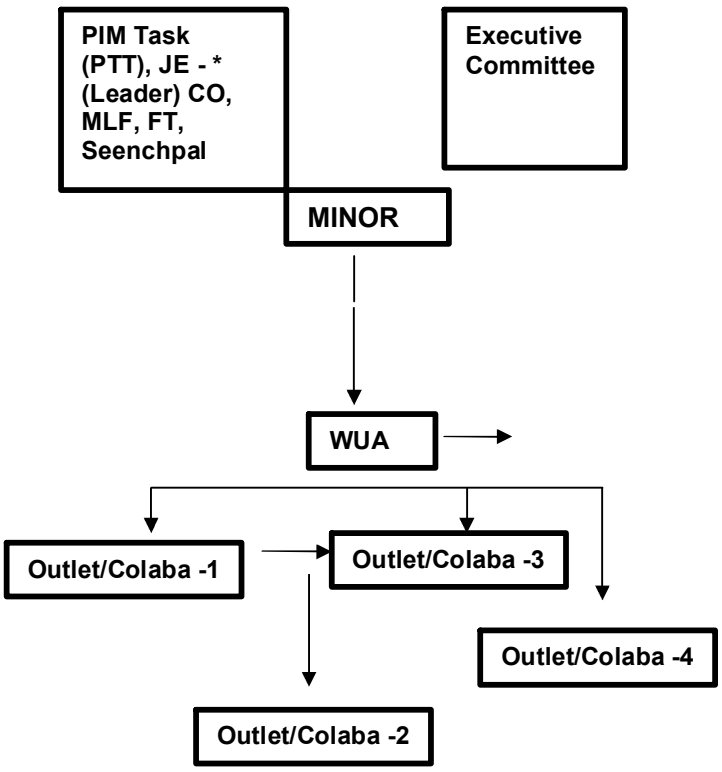
2.1 Case Study –I: Uttar Pradesh Water Sector Restructuring Project (Uttar Pradesh Water Sector Restructuring Project)



Map for Joint Walkthrough



PIM Task Team

Figure 1: Joint walk through process

This pilot project was launched in 2003-04 with the aid of World Bank through Irrigation Department, Uttar Pradesh. The participatory model of this project is as given below-

1 Water Users Associations are formed in command of every minor canal.

2. For implementing the Participatory Irrigation Management (PIM) programme, a PIM Task team (PTT) is constituted, which is headed by Junior Engineer (JE) of the Irrigation department alongwith representative of NGOs as community organizers (CO) and a field trainer from Water and Land Management Institute (WALMI) and Seenchpal of the irrigation department.

3. The PIM Task team (PTT) will be supervised by the Executive Engineer (EE) of the Irrigation department at the division and assisted by Assistant Engineers (AEs), and members from WALMI, UPDASP, and others.

4. WUA has been involved in identifying and pin pointing the problems and deficiencies in physical system of canal in joint walkthrough process. Their suggestions are taken for understanding background of the problems and its remedies.

5. Special emphasis on Environmental issues like water logging, salinity, weed growth, depletion of useful flora and fauna , drainage problem, accumulation of water in old borrow areas, siltation of canal and drainage and damaged canal and dam structures with poor service roads were given due

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consideration in this project. WUA with assistance of PTT and CO have been involved in mitigating these environmental problems.

2.2 Case Study –II: Madhya Pradesh

MP-Farmer Participation in Irrigation Management (MPFPIM) Act came into force since 1999.
Under this act the structure of participatory model is as below:

1. The WUAs are constituted over a population of 100-1000 water users. WUA has a general body including farmer and wives of male farmers who are members of the general body of the WUAs.
2. It is important to distinguish between the member of the WUA general body including in particular women members and a member of the Management Committee (MC) of the WUA.
3. The demographic area covered by a WUA will be a 'hydrological boundary' ranging from 100 to 2000 Ha.
4. The number and the boundary of a WUA are notified by the District Collector in accordance with the President and Territorial Constituency members (ranging from 4 to 10) depending on the WUA.
5. The medium irrigation schemes have a two tier system in which WUA are involved with Project Committees.
6. In the major irrigation schemes, WUAs are involved with a three tier committee consisting of Distibutory Committees and Project Committees (PC).
7. A State level Apex Committee headed by the Minister of WRD consists of representatives of Project Committees across the State.
8. All these committees and WUA-MCs work in partnership and share different responsibilities.
9. The WUAs are expected to work in close partnership with other stakeholders like WRD, Agriculture and other relevant line departments with Panchayati Raj Institutions (PRIs), for financial and other help.

The major purpose of each WUA is

- To promote and secure equitable water distribution among its users,
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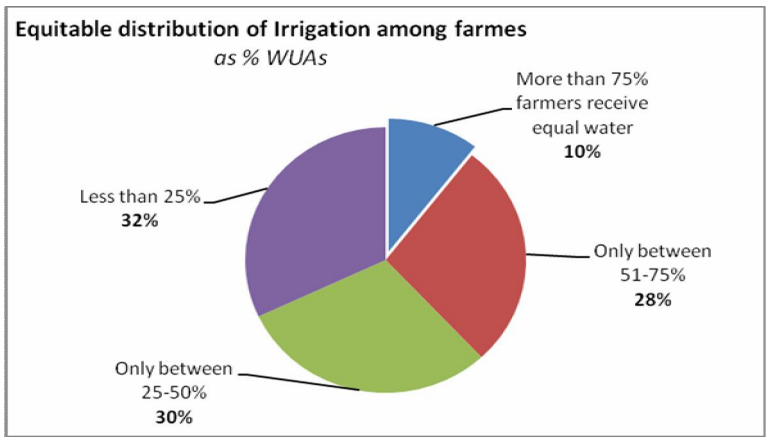

Figure 2: Present Status of Equitable distribution of Irrigation among farmers

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- Adequate maintenance of irrigation systems,

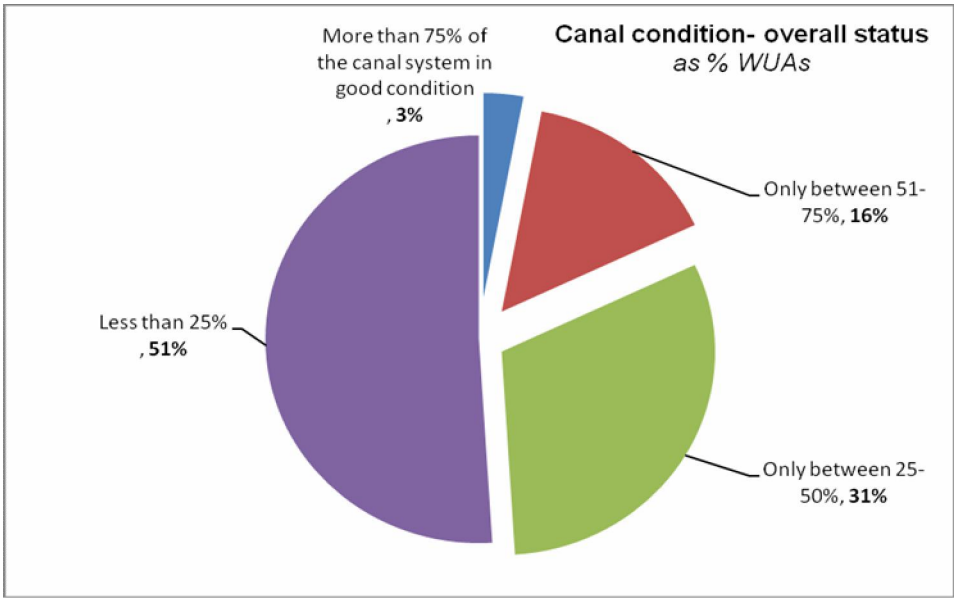

Figure 3: Status of Canal Condition in M.P.

- Efficient and economic utilization of water to optimize agriculture production,

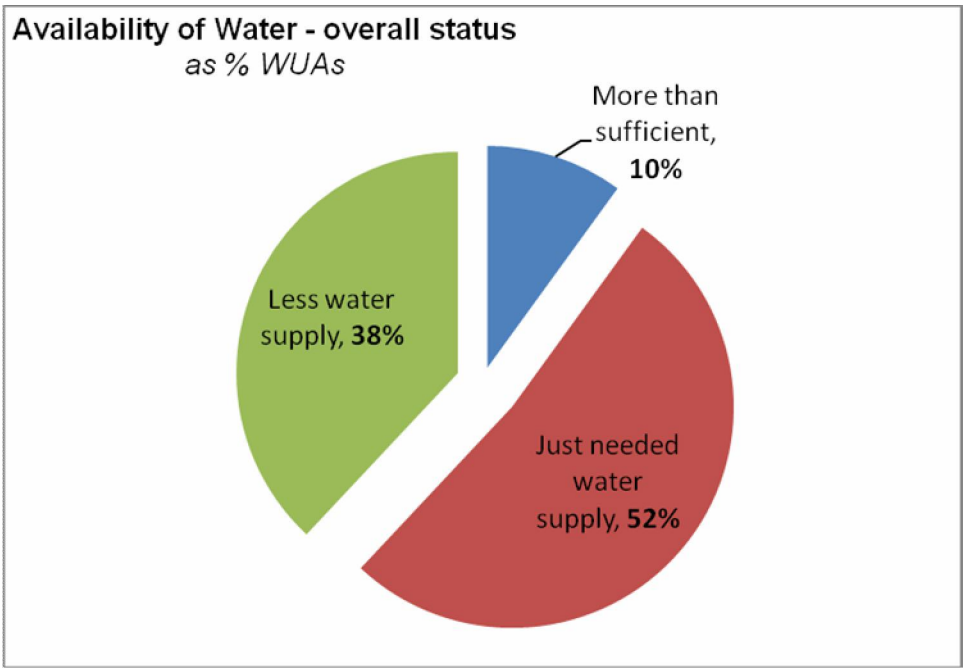

Figure 4: Status of availability of water in M.P.

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- To promote appropriate ***environmental practices*** and

- To gradually enable and empower its members to manage and sustain water resources in their area.

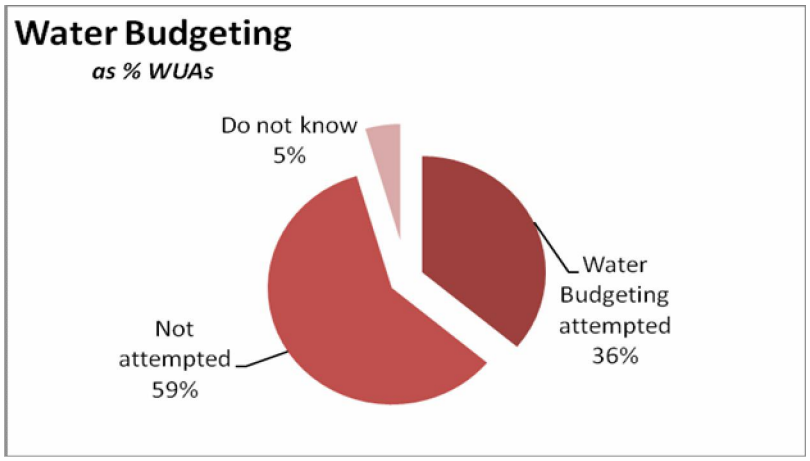

Figure 5: Status of Water Budgeting adopted by WUAs

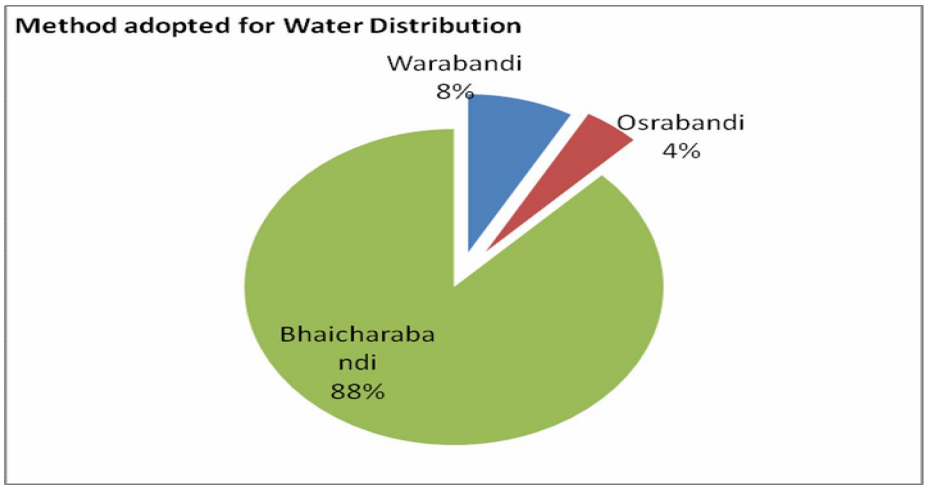

Figure 6: Method adopted for water distribution in M.P.

- To enhance the women's participation in WUAs

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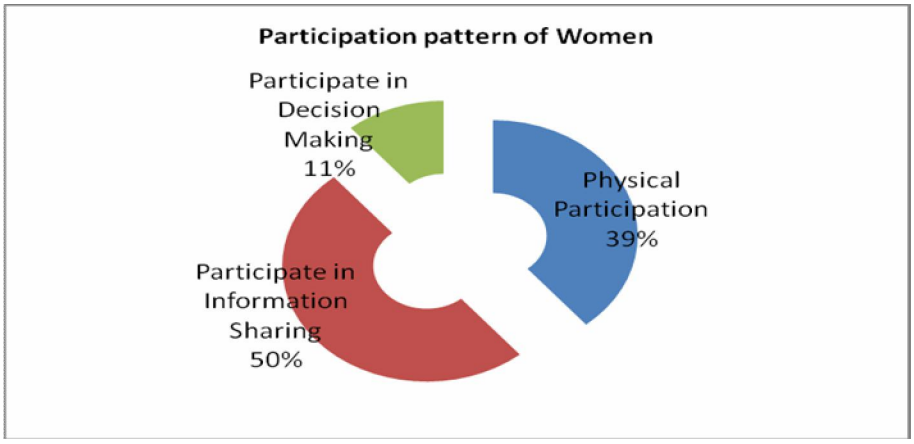

Figure 7: Participation pattern of Women in WUAs

Impact of training of the members of the WUAs clearly visible in the progress achieved due to better management at field level in Hoshangabad District. In Hoshangabad District the production of wheat has gone up to 3145 kg / ha in 2004-05 as compared to2440 kg/ ha in 2003-04, similarly cultivated area has increased from 100 thousand ha to 165 thousand ha. Economic condition of farmers can be seen from April 2003 to December 2003 when 1629 tractors and 719 trolleys have been purchased by farmers

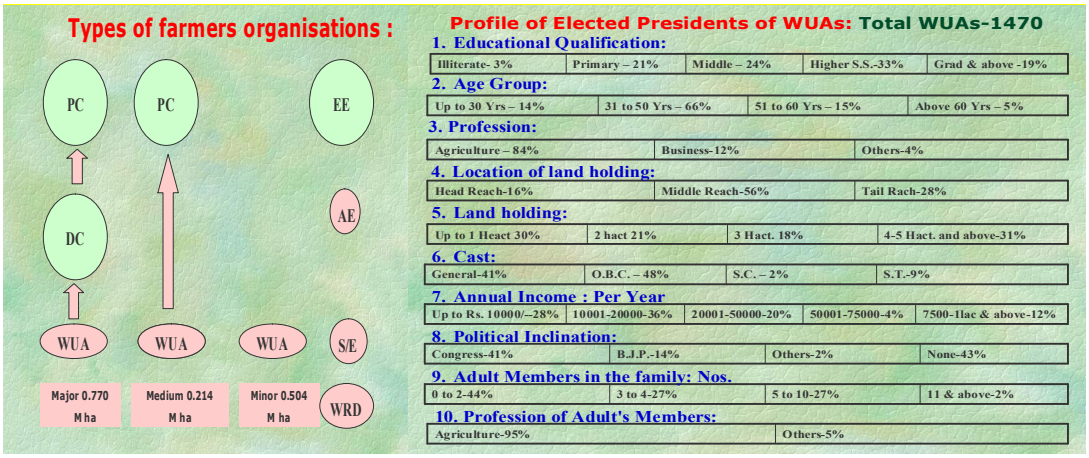

Figure 8: Profile of Elected President of WUAs

2.3 Case Study –III: India-Canada Environment Facility support Project in Madhya Pradesh

MPWRD has been implementing the India-Canada Environment Facility (ICEF) supported PIM project in seven different locations in the State and implemented in active partnership with four selected NGOs. This project has demonstrated the feasibility of getting WUAs/farmer communities to contribute up to 30% of capital cost of system rehabilitation. The ICEF supported project has built the capacity and perspective of WUAs as well as WRD officers and staff about what is feasible through

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carefully facilitated partnerships. Participating NGOs have played a significant role in facilitating and strengthening these partnerships for effective implementation. There is considerable potential for learning for WUA- MC and general body members and MPWRD engineers and staff from this ICEF experience and this could be undertaken through exposure visits to the ICEF project sites. One of the sites Madhopura Village is located 10 km from Vidisha district where Sunpura WUA is working on left minor 1 of distributory 2 of RBC of Samrat Ashok Sagar Major Irrigation Project. NGO ***"SRIJAN"*** is involved to facilitate this project under ICEF. They have mobilized farmers and promoted WUA for rehabilitating non functional canal system by collecting Rs 70 thousands as part of share of WUA to be invested for rehabilitation work. WUA has implemented the balance work of canal amounting to Rs. 3.2 lacs except work of end connection at ch 18 of Aqueduct. After 20 years, farmers of LM-1 will be able to irrigate about 500 ha land which is a big achievement of any participatory approach.

2.4 Case Study –IV: Gujarat State

This case study pertaining to Gujarat State is another example of participatory irrigation management. In this process, PIM is supported by a Development Support Centre (DSC), Ahemadabad, which is a largest NGO involved in the field of PIM covering 56800 ha command area in North Gujarat. DSC has a team of multidisciplinary professionals who are involved in capacity building of farmer's organizations, key-functionaries of government and NGOs through training and provide on-line field support. This DSC support PIM projects is an example and inspiration for the other projects of the country.

It promotes decision making through capacity building among male and female farmers. Dharoi Irrigation Project has a command area where area under designed irrigation was 6732 ha and out of this area irrigated 2482 ha in 1994-95 before PIM was introduced for Rabi crops and same was increased to 3658 ha after PIM in 2003-04 i.e. 47 % of designed area. In Gujarat, responsibility of revenue collection is with WUA and WUA can collect addition rate which is a saving of WUA. This excess money has been invested by WUAs as their share in rehabilitation work. Female farmers have constructed bathing ghats as their priority need on canal and generated their own funds for the same. This additional feature is making farmers organization financially sound and reliable to deliver the required discharge and to fulfil their demands.

3. Results and Discussion

The analysis of these four studies enables us to understand the principle and application of participatory approach for development scheme protecting environment and bringing a sustainable change in society. The specific advantages to farmers (Water Users) through participatory irrigation management are visible and are as given below –

1. Privilege and satisfaction of self-reliance in managing the system by themselves, so that all farmers in the system are benefited,
2. Participate in rehabilitation work for improving the physically degraded environmental system and suggest mitigative intervention measures for issues like water logging, weed growth, degraded infrastructures, salinity and sodicity in command etc.
3. Enable them to grow crops, which would give them increased production and incomes within the available water.
4. They can regulate or adjust frequencies of water deliveries and quantities as needed by crops,
5. Assurance and reliability in getting water as per agreement on a long-term basis from the irrigation agency helps them to plan investments on a long-term basis,

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6. Freedom of distribution of water among farmers as per consensus among the farmers group,
7. Increase in areas under irrigation through water saved ,
8. Ability to promote conjunctive use of water, Less water fees to be paid to Government if water is used economically,
9. In case of shortage of water on account of less replenishment in the system, advance information to take appropriate measures,
10. Better conflict management,
11. Participate in rehabilitation work for improving the micro-system for efficient use of water,
12. Suggest modifications / modernisation in main system management and water delivery schedules and thus participate in decision making at the project level; and Take up maintenance activity along with water management.

These specific advantages can be obtained when there are ideal conditions for implementation of the projects. Experience has shown that there are certain conditions which prevent the optimal development under these schemes e.g. it is impossible to provide satisfactory service to individual farmers, because of the poor and deteriorated infrastructure, and vague and inadequate operation and maintenance procedures. The situation is further complicated because of interference of large number of water users with varying extents of landholdings and having different socio economic interests. To remedy this situation, involvement of farmers and their participation in the management of the system along with Irrigation Department staff is now recognized as imperative. Participatory irrigation management (PIM) provides the farmers to come together and work, as a group with the concerned irrigation authorities so that, they, as a group may be able to serve individual farmers' needs better. It should not appear that involvement of farmer is to please the external agencies for seeking financial support or to support influential farmers for personal gains and political favours by development agencies.

4. Conclusion

On the basis of the analysis of results and discussion we can conclude that participatory approach is a key to success of developmental schemes in water sector and to protect environment and maximize benefits of schemes. The study of these projects serves as a lesson for other sectors to promote participatory methods for socially and environmentally sustainable projects.

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