

Participatory Irrigation Management as Tools for Improving Water Use Efficiency- Success story of Implementation of PIM in Gujarat State.

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KEYWORDS

PIM-Participatory Irrigation Management, WUA-Water Users Association, Water Management, Community Participation, water distribution, water charges etc.

ABSTRACT

Water is a vital resource for agricultural, domestic use and industries. Productivity of agricultural sectors, economy of rural and urban and changes in environment depends upon the development and management of water resources. Management of Ground Water is not a daunting task but a challenge in the areas due to varied factors like social, political and technical reasons. To have a good water management for all sector of life is a very important but difficult task. To increase agricultural product more useful and approachable water management system must be implemented for the betterment of farmers and end users and for this more irrigation facilities have to be developed.

As per an estimate about the requirement of food for the country, it seems that more than 500 million tons of food will be required for huge population of India by about 2050, which is double than the present production and in this contest more requirement of water resources. This is not an easy task and to achieve this forecasted food quantity farmers need to double the production, beginning from today, this means more requirement of water resources. To meet the demand of water users, management of water resources demands an integrated and participatory approach. Active participation of farmers is absolute necessity in the present scenario.

Therefore it is the need of time to develop a strategy for water resources management for better productivity through various community participation. This thought took a construction of irrigation management system to participation of all the stake holders and it is well known as PIM-Participatory Irrigation Management throughout the Country. It refers to the involvement of irrigation users in all aspects and all levels of irrigation management. Here all aspects means inclusion of the initial Planning and design of new irrigation projects or modernization of existing projects as well as the cost of supervision and financial decision, rules, operation, maintenance, monitoring and evaluation of the system.

The basic reason to go for this important PIM system is due to-Scarcity of irrigation water availability, need of increase in agricultural production, tail end farmers are not getting irrigation water timely & in sufficient quantity, problem of fiscal availability, low water application, maintenance & repair works of canal structure are not carried out timely and adequately etc.

Many states have passed PIM Act and Gujarat is one of them. Under this PIM Act.-2007, Water User's Association (WUA) is formed from amongst the beneficiaries' farmer's in command area of an irrigation projects. 90% of cost for community mobilization is borne by the Government. Rehabilitation of Canals is completed by the Government before handing over to WUAs. The WUA contributes 10 % of the rehabilitation cost. Preference is given WUA to carry out rehabilitation by them. Advance payment of the order of 1/3 rd of the estimated cost is given to WUA for starting the work.

The foresight of the politicians, planners, technocrats, engineers, educationalist & NGO gave a beautiful shape of this Act to make development in the field of irrigation and its management through participation of end users and due to the good implementation of this Act and coordination amongst the various section of community and robust efforts made by them, one can see the good result in the field of irrigation system in the state and sense of ownership is developed amongst the beneficiary farmers. Tail end farmers are getting sufficient & timely water. It becomes easy of irrigation management to timely and proper repairing work of canals. Most important benefit can be named as very less dispute in distribution of water and if it there it can be resolved easily due to PIM.

The experience of the PIM programme in Gujarat point of view, fact shows that farmers' involvement in water distribution and maintenance of system has indeed led to an improvement in resolving irrigation conflicts. The farmers of Gujarat are also happy due to increase in production of crop and their lives become enjoyable. We hope that India will become the largest food producer in the world in the coming years.

1-INTRODUCTION:-

Water is a vital resource for agricultural, domestic use and industries. Productivity of agricultural sectors, economy of rural and urban and changes in environment depends upon the development and management of water resources. Management of Ground Water is not a daunting task but a challenge in the areas due to varied factors like social, political and technical reasons.

Considering the situation of various water resources management aspects, techniques, programs and distribution system of water, and few drawbacks in the existing system, Government of India decided about the participation of farmers in water distribution and management of tertiary system early in the year 1985, and this concept ultimately took an important role in the water policies after 1985 and become an Act, many issues has been included in the Act and new suggestions from various Institutions, NGOs and knowledgeable persons were incorporated. The new water policy is developed and as such more benefits have been achieved.

1.1 Provision in National Water Policy (2002):-

Following modification were made in the National Water Policy (2002) regarding the participatory approach to water resources management.

“Management of the water resources for diverse uses should incorporate a participatory approach: by involving not only the various government agencies but also the users’ and other stakeholders, in an effective and decisive manner, in various aspects of planning, design, development and management of the water resources schemes. Necessary legal and institutional changes should be made at various levels for the purpose, duly ensuring appropriate role for women. Water Users’ Association and local bodies such as municipalities and Gram-Panchayats should particularly be involved in the operation, maintenance and management of water infrastructures/facilities at appropriate levels progressively, with a view to eventually transfer the management of such facilities to the user groups/local bodies.”

1.2 Provision in PIM Acts National Level:-

1.2.1 Water Users’ Associations- will have delimited command area on hydraulic basins, which shall be administratively viable. Generally WUA would cover a group of outlets or a minor.

1.2.2 Distributory Committee- will be of 5 or more WUAs. All the presidents of WUA will comprise general body of the distributor committee.

1.2.3 Project Committee- will be an apex committee of an irrigation system and presidents of the distributory committee in the projects shall constitute general body of the committee.

1.3 What exactly is PIM?

It is the irrigation management by participation of the beneficiary farmers. Right from the planning of irrigation in the command area to canal maintenance & repairs, actual irrigation of water to the fields, collection of water charges, maintaining water and finalized accounts etc. farmers are involved with the formation of water users’ association-WUAs.

1.4 Necessity of PIM :-

1. The main reason for the requirement or necessity of PIM is need of increase in agricultural production:-
Because the human as well as bovine population has been increasing all over the world and more so in India. As such the need of food, fibers, fuel, fodders etc. has also been increasing with fast rate and these ultimately leads for increase in agricultural production. Hence proper management of already created water resources development structures is extremely essential, since the farmers are the real stakeholders, they have to come forward through their association to look after their interest so that they get water from the system according to their predetermined time and space for planning their crops.
2. Second one reason is the problem of fiscal availability:-
There is severe budgetary competition at the government level under different sectors, the ratio of financial outlay for irrigation sector to the total outlay is coming down year after year. Due to less availability of fund farmers have to take up the responsibility themselves in order to avoid over-burdening of the government exchequer and to become self-dependent.
3. Scarcity of irrigation water availability
4. Tail end farmers are not getting irrigation water timely & in sufficient quantity
5. Low water application
6. Maintenance & repair works of canal structure are not carried out timely and adequately etc.

1.5 The main objectives of PIM can be listed below:-

1. To create a sense of ownership of water resources and the irrigation system among the users, so as to promote economy in water use and preservation of the system.
2. To improve service deliveries through better operation and maintenance.
3. To achieve optimum utilization of available resources through sophisticated deliveries, precisely as per crop needs.
4. To achieve equity in water distribution and few more objectives were sought principally.
5. To facilitate the users to have a choice of crops, cropping sequence, timing of water supply, period of supply and also frequency of supply, depending on soils, climate and other infrastructure facilities available in the commands such as roads, markets cold storage etc. so as to maximize the income and returns.
6. To increase production per unit of water, where water is scarce and to increase product per unit of land where water is adequate.
7. To make best use of natural precipitation and ground water in conjunction with flow irrigation for increasing irrigation and cropping intensity.
8. To encourage collective and community responsibility on the farmers to collect water charges and payment to irrigation agency.
9. To create healthy atmosphere between irrigation agency personnel and the users.

2-IMPLEMENTATION OF PIM IN GUJARAT:-

Considering the facts about the availability of water source for Gujarat, we can found that Gujarat mainly depends on surface water and the state has 185 River Basins and the available quota of water in state is 50100 MCM, out of which, 38100 MCM is surface water with unequal distribution all over the state.

Out of the total 125 lakhs hector of cultivatable land in the Gujarat state, 18 lakhs hector is under the surface water irrigation, 18 lakhs hector is under Sardar Sarovar Yojna, 9 lakhs hector is under the Sujlam Suflam project and check dams, 20 lakhs hector is under the underground water irrigation and about 60 lakhs hector land depends on rain fall.

Looking to the fact about the availability of land to be sown, we can find that about 60% of the total 125 lakh hector area under irrigation is depends on rainfall and as such water harvesting of the rain water and the distribution of water to farmers through canals is a major consideration for the policy makers and officials of Government of Gujarat.

2.1 PIM Act-2007 of Gujarat:-

Considering the facts about all, the Government of Gujarat has taken up initiative to involve beneficiaries and stake holders in irrigation management by enacting PIM Act-2007.

Under this Act, Water User's Association (WUA) is formed from amongst the beneficiaries farmer's in command area of an irrigation projects. 90% of cost for community mobilization is borne by the government. Rehabilitation of Canals is completed by the government before handing over to WUAs. The WUA contributes 10 % of the rehabilitation cost. Preference is given WUA to carry out rehabilitation by them. Advance payment of the order of 1/3 rd of the estimated cost is given to WUA for starting the work.

As per PIM Act-2007, if not less than 51% of the farmers in numbers and not less than 51% of the land holders (not less than 51% of land of declared minor canal service area and its area is expected between 150ha. and 400 ha.) applies for registration as Water Users Association (WUA) to the Superintending Engineer of the Project. Concerned SE being a Registering Authority grants sanction to the application to be registered as WUA.

Irrigation department determine the irrigable command area of all outlets of a minor and declare the same in Official Gazette as a minor canal service area. Share capital depending upon the area is collected and members of WUA are made by collection of membership fee.

In first general meeting President and members of the Managing Committee (maximum 11) are elected in such a way that farmers from initial, middle and tail reaches are equally represented. In addition maximum 4 nos. of members can be co-opted in the Managing Committee who are not land holders but have interest to promote and strengthen WUA & PIM. Also Assistant Engineer / Additional Assistant Engineer as a head of that section is a permanent member to the WUA. However, the Co-opted members as well as AE/AEE does not have Voting Rights.

Members of the managing committee shall be elected by the members of WUA. Area of operation of WUA is divided into three exclusive areas as head, middle and tail reach territorial constituency. Members of the managing committee shall be elected from these territorial constituencies. On constitution of managing committee its first general meeting is called within stipulated time period for the election of chairperson. The chair person shall be elected by the simple majority from amongst the elected members of managing committee.

WUA is authorized for collecting Government water charges, retention of 50% for O.& M. permitted, rest goes to the Government, deciding water rates higher than Government charges, retaining entire additional amount and increasing women's participation in WUA.

2.2 Benefits of PIM:-

1. Tail-enders are now getting sufficient and timely water.
2. Area under irrigation has been increased.
3. Government is getting almost all water charges timely..

4. Irrigation management is possible with less number of staff
5. Crop production has increased.
6. Irrigation water distribution related disputes are reduced.
7. Sufficient rebate on water charges has made WUA financially sound and become successful management agencies.

3-ROLE OF WALMI:-Water and Land Management Institute

WALMI was established in the year 1981, and is a premier state Training Institute to impart multi disciplinary training in the field of irrigated agriculture and working as an autonomous body under Gujarat Irrigation Management Society-GIMS since-1985. The ultimate goal of training is to achieve a desired level of projects efficiency by implementing latest technologies in the irrigation management in participation with farmers and concerned Government organization.

3.1 Training and Capacity Building:-

The need of the hour was to explain and make the process known in its entirety to all direct and indirect stakeholders in the exercise. The reform process to yield projected results needed to be understood by the agency staff itself and by the farmers who were now expected to play a more proactive role in the entire process. Capacity building and awareness programs are basic to mould and prepare the stakeholders for the changed conditions and contexts.

Water Resources Department through Water & Land Management Institute (WALMI) initiated systematic and intensive training courses and orientation programs for all stakeholders at each level. Preparation of detailed training modules, training of the trainers, training for all elected WUA presidents in workshops, training of Government staff, creation of Trainer's manual, continued and repeated training corresponding to needs were few of the basic focus of the capacity building exercise. Training modules on all subject areas were developed to make the stakeholders aware and conversant with related aspects in the reform agenda. Training of district and sub-district level functionaries through training of district level trainers who went on to transfer this to lower levels, extending the WUA presidents training subsequently to include all the members was followed to ensure that the training was expanded and decentralized gradually to include a wide variant of stakeholders.

3.2 Training & Capacity Building Approaches:-

To achieve the objectives of the water sector reforms program it is necessary to build the capacities of the farmers' organizations. Percolation and dissemination of the changes unfolding at the highest institutional level have to be understood and ingrained into the system at all levels to attain the designed improvements in the system. Orientation of the system towards the systemic objectives and projections becomes imperative in a reform process that is decentralizing roles and responsibilities and institutionalizing user participation into the system.

Keeping these prerequisites in mind the department has integrated capacity building of the various stakeholders as an important constituent of the reform agenda to enable the WUAs undertake reform activities effectively.

The key identified objectives of these capacity building activities include:

1. Creating a sense of ownership of water resources and the irrigation system among the farmers
2. Creating good coordination between the WUAs and the Water Resources Department engineers

3. Improving irrigation service deliveries through better operation & maintenance of the irrigation system
4. Encouraging collective and community responsibility on the farmers to collect water charges
5. Increasing agricultural production per unit of water
6. Achieving equitable distribution of irrigation water

A range of approaches and activities were identified for the implementation of the training and capacity building of the WUAs and other stakeholders in the reform process. Most of the interventions and measures for building up the capacities of the stakeholders were devised keeping the nature and chronological order of the activities and the responsibilities assigned to the WUAs in mind.

A brief introduction is given about each of the identified approaches in the discussion below.

3.3 Creating Awareness at Village Level

1. Village level meetings (Gram Sabha) are conducted either by the Irrigation Department staff or the NGOs. To promote PIM Government of Gujarat (GoG) has created policy of engaging the NGOs (with financial aid to NGOs) for creating awareness among farmers, preparing them for forming and successful running of WUAs.
2. In addition GoG has also appointed Community Organizers (appointed on contract basis for three years) specifically for creating awareness and preparing farmers for the formation of WUA and successfully running the same. In such meetings it is explained what is PIM, its purpose, benefits of PIM is also explained and information is also given to farmers to adopt PIM.
3. Video shows are arranged showing the working of successful Water User Associations.
4. One day awareness programs are arranged for farmers by Water and Land Management Institute (WALMI) explaining the benefits of PIM and good practices in agriculture for water saving and enhancing the crop production.
5. Four days exposure visits to successfully working WUAs are arranged by WALMI Gujarat for the officials of newly formed WUAs.
6. One week exposure visits to the WUAs in the neighbouring States are also arranged by WALMI.
7. Distribution of print material explaining the PIM, purpose of PIM, benefits of PIM and steps to adopt PIM.
8. Personal meeting by irrigation staff ranging from Work Assistant to Chief Engineer to motivate farmers.
9. Radio and TV talks for PIM motivation are arranged by Officers. Radio and TV advertisement for promotion of PIM by short plays are broadcasted in agriculture related programs.

3.4 WUA Self Assessment

A calendar for PIM activities is prepared and widely publicized from amongst WUAs. Performance of each of the WUAs shall be judged based on indicators shown in the calendar. It is also under consideration to give incentive to the best performing WUA every-year.

3.5 -Some Intensives by the state Government:-

Planning of irrigation water is done with the association in advance and as per planning, Government is bound to supply water in agreed amount and at agreed time. If the Government is unable to supply water and due to this there is loss in the crop production to farmers more than 25% than the planned production, then Govt. shall make good the loss beyond 25%.

Government has introduced simple working procedure to simplify implementation of rehabilitation works. All aspects of work considered here and simplified, so that work entrusted to WUA can be implemented speedily and satisfactory. Association has to carry out normal repair & maintenance of canal, Government returns 30% of the water rates to the Association.

Recovery of 100% within stipulated time limit Government give incentive and return 20 % of the water rated to accommodate administrative expenditures. Association has to supply water to non-members on their demand, for that association can fix separate water rates, which shall not be more than 30% above the rates applicable to its members.

Looking to the present scenario we can find that more than 17.14 lakh hector of irrigation potential has been generated. Round about 1939 WUA for area more than 5,23,030 hector has been registered, and out of this about 1590 WUA for area about 4,30,000 hector has been handed over for irrigation management. Government has also made provision for distributor/Branch level federation and projects level federation and some federations are founded in pilot basis.

The experience of the PIM programme in Government point of fact shows that farmers' involvement in water distribution and maintenance of system has indeed led to an improvement in resolving irrigation conflicts. The farmers of Gujarat are also happy due to increase in production of crop and their lives become enjoyable. We hope that India will become the largest food producer in the world in the coming years.

Some photographs are attached herewith regarding PIM activities in Gujarat state.







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REFERENCES:

The website: www.gswan.gov.in , www.walmi.gov.in , www.dscindia.org/pim.htm
 Status of PIM in India-Policy initiatives taken & emerging issues-article from website,
 PIM practise in Gujarat –Authors-Shri. J.C. Chuahan, Shri. K.P.Patel, Shri D.K.Patel & Shri S.U.Chauhan-
 paper published in the conference India Water Week-2012,