INSTITUTIONAL REFORMS IN IRRIGATION SECTOR - A SUCCESS STORY

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ABSTRACT

In light of the past experiences and future options, State Agricultural University (Dr. PDKV) Akola, Irrigation Division, Akola and Sinchan Sahyog, (Voluntary organization) Akola are continuously working jointly from last 5 to 6 years to modernize the existing irrigation systems operations through the network of Water Users' Associations mainly in the command of Katepurna Irrigation Project and also other irrigation projects in the Akola district. Initially with poor water utilization scenario, efforts were made to identify worst affected situation. Accordingly strategies have been finalized and adopted to solve the problems and to improve the water utilization scenario in the Katepurna river Irrigation Project and also in other irrigation projects in Akola district, step by step. In Akola district the total irrigation potential is around 21,530 ha with live storage of 199.25 Mm^3. At present in the district, 38 registered WUAs are working, covering the area to the tune of 9203 ha which is 43 per cent of the total command area. The irrigated area in Akola district is increased from 6626 ha to 122269 ha with water saving of around 15.50 Mm^3. This could only be possible due to the improvement in the irrigated systems operations, involvement of WUAs and awareness created amongst the beneficiaries. On the strength of achievements in the Akola district, it is inferred that irrigation management transfer to the project beneficiaries will lead to sustainable agriculture, efficient and economic use of water. Considering the outcome of these efforts Government of Maharashtra has reformed the irrigation sector by bringing in force the new irrigation act as," Participatory Irrigation Management by the farmers in Maharashtra State-2005."

INTRODUCTION

Historians have recorded about the voluntary participation of farmers in management of irrigation systems constructed during 13^{th} – 16^{th} century A.D. on Tungabhadra river in Vijaynagar Empire. During the British period modern Western system and practices came to prevail in the sphere of governance. The Government expanded its role and

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took over many functions, which were earlier performed by the community. This later led to the perception that only Government is capable of managing irrigation system, especially large ones. However, in the part decade there has been a growing recognition of the need for reviving growing recognition of the need for reviving active participatory of the farmers irrigation management, which is now popularly known as management, which is now popularly known as participatory irrigation management (PIM). Those irrigation systems, whose management has been taken over by the legally constituted farmers, association, have shown significant improvement in their functioning. When the farmers clearly become the owners of the physical system, they have strong incentive to protect the system to reduce their management costs. Once irrigation management gets improved with user involvement, they may be

willing to pay more for improved services. In light of these past experiences and future options of these past experiences and future options efforts are being made to irrigation management transfer (IMT) to the farmers. Through the network of WUA's in the command. The strategies adopted by involving the farmers and the achievements of this joint venture of Agriculture University, (Dr PDKV, Akola) State Irrigation Deptt. and Sinchan sahyog, Akola (Voluntary Organization) over the period of 5 to 6 years have been discussed in this paper.

NEED AND PERSPECTIVES

Water resources development such as formulation, evaluation, gradation, scheduling, operation and management must have two way interaction between end users and specialized agencies in all the stages of development. This is essential because the planner may have to select the plans according to the practicability, ground truths and aspirations of the people to satisfy requirements of the community. It is also essential that the end users should be aware of the various alternatives that the government or the planner have and what their implications are? The public input by way of ideas, opinion and value judgement in the water resources sector has been rather slow. Involving NGO's in the decision making process would ensure and impartial advice to the government on many intricate problems besides inspiring confidence which is at present lacking to tackle various issues particularly related to the environment

It is also essential to involve common people in various water related activities to overcome various social and environmental problems in it's proper development and management. Thus the people can be involved in the process of generating information base of the rural resources like field identification and verification through a guided exposure. Then the exercise itself may give an insight, for the people regarding the problems in a society and the present land use system and interactions. People's involvement in the process of monitoring the natural resources through such service motivate them to arrest drift resulting from the defective interactions. It can be a positive people's programme.

Normally there is scarcity of intelligence people taking interest in the project from the point of view of public. Hence their contribution at a desired level is not expected to come automatically. For increasing the efficiency of water resources project to society and for larger interest of the project, mechanism has to be developed to involve more

people who can think and contribute. The might of thinking people should be harnessed by channelisation and organized efforts to get them interested. Things can not be left to initiation and enthusiasm of individuals for positive progress.

Those irrigation systems, whose management has been taken over by the legally constituted farmers, associations have shown significant improvement in their functioning. When the farmers clearly become the owner of the physical system, they have strong incentive to protect the system to reduce their management costs. Once irrigation management gets improved with users involvement, they may be willing to pay more to improved services. Contributing to these goals, purpose of this study is to strengthen the knowledge based on water-agriculture environment and promote its use in developing consensus on investment strategies.

STRATEGIES ADOPTED

ENGINEERING MEASURES

REPAIRS OF CANAL SYSTEM

Canal system rapairs were carried out systematically as per priority according to, availability of funds with irrigation department and beneficiarie's requirements. At the outset bottlenecks were removed, important canal structures such as syphon, other heavy leaking structures were repaired, selective canal lining was carried out for short length, service road were also repaired for better transportation.

IRRIGATION SCHEDULING

Earlier, there was no control on irrigation rotation, farmers at head, used to take water as and when required and tail enders had to suffer. This practice led to improper distribution, waste of water and disharmony among farmers. Irrigation scheduling, prepared with tail enders to receive water first and head reach farmer at the end. The scheduling has been followed strictly. Scheduling was prepared by considering water requirement and soil type. This practice enabled farmers to have assured, adequate and timely supply of water. Earlier, beneficiaries were not taking water in night, leading to heavy wastage of water. Now night irrigation is made compulsory and practiced strictly, due to which huge quantity of water is saved.

VOLUMETRIC MEASUREMENT OF FLOW

Earlier, water rates were charged on area basis, thus there was no tendency on farmers side to use water efficiently. Now the flow measuring devices are installed at the head of canal for measurement of the canal discharge. The supply of water to water user association is being made on volumetric basis, with □ubsidized water rate structure, which resulted in efficient, effective and economic use of water. A two days training program was organized during 28^{th}-29^{th} Jan. 2000 for irrigation officers and irrigators on flow measurement in collaboration with Water and Land Management Institute, Aurangabad.

IMPROVED SURFACE IRRIGATION METHODS

Considerable wastage of water occurs due to wild flooding and other uncontrolled surface methods. The on-farm irrigation efficiency could be as low as 40 to 50%. In such cases use of proper irrigation layouts is essential. The farmers are trained and encouraged by demonstrating the efficiency of such border, furrow, basin etc. layout to farmers by conducting on farm training. As a result now farmers in command are adopting improved surface irrigation methods properly and effectively.

AGRONOMIC MEASURES

Integrated approach of irrigation and Agricultural University at field and administrative level is adopted which helped in water saving.

APPLICATION OF WATER AT CRITICAL GROWTH STAGES OF CROPS.

With the support of agricultural University farmers were educated in the application of right amount of water at right time which has reduced the number of rotations and ultimately minimized over application of irrigation water which is further found useful to maintain the proper drainage of the land under command.

CROP DIVERSIFICATION

ON FARM DEMONSTRATIONS

Katepurna command constitutes around 39% of cotton crop but farmers were reluctant to practice irrigation for cotton. With integrated efforts of Agricultural University, Agriculture and Irrigation department promoted farmers to take pre monsoon cotton. It has given 1.5 to 2 times higher yield than traditional cotton growing and now there is trend set for pre monsoon cotton growing among farmers.

ON STATION DEMONSTRATIONS OF COTTON AND OTHER CROPS (AKOLA COTTON DEMONSTRATION PROJECT)

During the year 1996-97 one of the prestigious Akola Cotton Demonstration Project was also launched at University farm in the command of the Katepurna River Irrigation Project on 120 ha and in the command of the Morna River Irrigation Project on 86 ha, in collaboration with Government of Maharashtra and Israeli experts. The water management technique for pre monsoon cotton through drip irrigation was demonstrated to about 1 lakhs farmers of Maharashtra State and out side.

Due to on farm and on station integrated efforts the area 352 ha sown under pre-monsoon cotton in the Katepurna River Irrigation Project during the year 1998-99 was increased up to 413 and up to 474 ha during the year 1999-2000.

SOIL AND WATER TESTING LABORATORY

The Agricultural University and Irrigation Division Akola, established the separate soil and water testing laboratories and providing the testing facilities to the farmers to know soil and water properties, so as to plan the cropping system and water management practices scientifically.

MANAGEMENT MEASURES

PROMOTION OF PARTICIPATORY IRRIGATION MANAGEMENT (PIM) BY FORMULATING WATER USER'S ASSOCIATION (WUA)

Katepurna River Irrigation Project's beneficiaries were motivated, trained and convinced towards importance and need of water user associations. The special privileges are given to form WUA's appropriate and proper situations and atmosphere has been created to form the WUA's as a result water management in 87 per cent area of the command taken over by the WUA's.

IMPROVED MANAGEMENT AND OPERATION OF IRRIGATION SYSTEMS.

Better and reliable, irrigation management and operation practices followed, considering limitations of the system, farmers' requirement and efficient use of water. Field level, minor & distributory level and project level co-ordination between project authorities and farmers striked to enable improved management. Project level co-ordination committee has been formed with the representatives of WUA's to plan, co-ordinate and monitor irrigation programme. Beneficiaries were involved in decision making and real management of project.

INVOLVEMENT OF WOMEN IN IRRIGATION MANAGEMENT

For sustainable agriculture, involvement of women farmer is essential. Various studies indicated that for promoting water savings on the farm, women involvement is must. Two days on farm women's training program. 3rd -4th January 2001 has been conducted on water application techniques, management of water distribution system, Water user's associations formulation and functioning etc. Women farmer has shown enthusiasm to hold the responsibility of the Water User's Association.

TRAINING/CAPACITY BUILDING

Capacity building of project personnel as well as farmer is imperative for better co-ordination, implementation, operation and management of irrigation systems. Adequate training and motivation imparted to irrigation personnel and farmers representative with the help of Agricultural University, Akola, Water and Land Management Institute, Aurangabad as well as Sinchan Sahyog, Akola. Incentives were given to Irrigation officers as well as to WUA's for their better contribution. On-farm training were conducted for both farmers and project personnel. Field visit were organized to share experiences of successful Water User,s Association.

Lectures were delivered to the primary school teachers towards strategies to be adopted to conserve water and for judicious use of water. About 1000 primary teachers from Akola districts were attended the lectures at their respective taluka places. Teachers were requested to decimate the information for the knowledge of the primary students.

PUBLIC AWARENESS AND INVOLVEMENT

Awareness regarding the need for water conservation/ saving should be promoted involving all stakeholders including community group, political leader, farmers and specially school children mass education through media, posters, Video tapes, public debater, T.V., Radio, New papers is found to be effective in motivating people to reduce water wastages. An attempt has been made by conducting/performing following programs.

ESTABLISHMENT OF NON-GOVERNMENT ORGANIZATION "SINCHAN SAHYOG" TO PROMOTE EFFICIENT

USE OF WATER

'Sinchan Sahyog' is a non-Government organization established at Akola to promote efficient use of water. Sinchan Sahyog is established with inspiration and guidance from Dr. Madhavrao Chitale, Ex Secretary General, ICID. The authors have taken lead in establishment of Sinchan sahyog, at Akola. The authors are shouldering responsibility as a office bearer of Sinchan Sahyog, Akola. Sinchan Sahyog working committee having representatives from agriculture, irrigation engineer, agricultural industrialist, seeds experts, economist, socialist, member of legislative assembly, media personnel and farmers. Broad objectives of the organization are to promote strategies of the efficient and effective use of available water resources, to undertake training program, to encourage people participation in irrigation management. The Akola center has contributed in educating training and providing solutions to framers. Sinchan Sahyog has taken active participation in promoting farmers to forms WUA and to adopt improved irrigation practices. Sinchan Sahyog, Akola had taken a drive in water literacy by organizing small workshop for farmers by demonstrating, educating water measurement and water accounting. To propagate Sinchan Sahyog mission on large scale, Sinchan Sahyog, Akola, a web site is hosted **www.sinchansahyog.org .**

AWARENESS CAMPAIGN

Formation of water user association and need of the efficient water utilization was propagated through newspaper, radio, exhibitions, pamphlets, posters to encourage farmers to participate in irrigation management Slogans on participatory irrigation management and efficient use of water were written on compound wall, canal structure, offices and public places, so as to promote collective action

KATEPURNA RIVER IRRIGATION PROJECT SILVER JUBILEE FUNCTION

A novel function was organized by beneficiaries of Katepurna river irrigation project, on eve of silver jubilee of the project. The beneficiaries felicitated the project-affected people for their sacrifice, engineers for their contributions. The project beneficiaries also felicitated the government, for giving the project, which had changed their lives, Indebtness ceremony on eve of Katepurna Silver Jubilee function was organized by beneficiaries to show sense of gratitude and attachment towards the project. It was unique gathering of society, government and media. Hon. Chief Minister of Maharashtra State chaired the function and congratulated for organizing a novel function. The Chief Minister also called for organizing such program at other project site to honour contribution of project in national development and to reiterate sense of part of the project. This function was appreciated from all corners of state. The author has played key role in conceiving and arranging the novel function.

CULTURAL GROUP

To motivate irrigators, cultural groups are formed from the irrigation department staff members and cultural program (songs, drama etc.) arranged at village level.

YOUTH AWARENESS

A four-day workshop was organized under National social service program in command area to educate students towards water literacy, canal operation and maintenance and Management etc. The awareness among youngsters could lead to better future in water saving.

ORGANIZATION OF MAHARASHTRA IRRIGATION CONFERENCE 2001

A two day state level conference was organized at Akola during 20th to 21st January 2001, with theme 'Irrigation in 2000'. The conference was devoted to irrigation management, development in farming system, water literacy and women participation. The conference attended by Hon. Ministers, Vice Chancellor's of State Agriculture Universities, Secretaries, Policy makers, Scientist, Irrigation engineers, Agricultural officers and farmers. The attendance for conference was overwhelming with around 500 participants from different disciplines on one platform. The message of water conservation was wide spread in region after conclusion of conference. It was for the first time such a large gathering was organized in region on issues of water conservation.

AUDIO CASSETTE/C.D./ BULLETINS

Title as "Way to prosperity" the audiocassette comprising of song on efficient use of water, crop diversification, participatory irrigation management released on professional level. The song were written and sung by staff members themselves. The cassette has been proved very effective in propagating message among farmers, as it is prepared in local language and traditions. The bulletins were written and distributed amongst the farmers which gives the information about the new irrigation act regarding the

participatory irrigation management by the farmers in Maharashtra State - 2005 with other need base related technical information about irrigation and drainage systems to be adopted, water measurement on volumetric basis, application of right amount of water at right time as per the need of the crop, etc.

FILM ON SUCCESS STORY OF PIM IN KATEPURNA

A film was made on "Success Story of Katepurna Irrigation Project", highlighting participation of beneficiaries in irrigation management could lead to miracle. The film was displayed during village level meeting as well as through cable network and state television network. This film proved to be very useful in convincing the beneficiaries of other project to form WUA to save water and earn more.

IMPACT / ACHIEVEMENTS

Information depicted in table 1 and 2 indicates the significant change in the water utilization efficiency and the area under irrigation particularly after persistent strategic efforts towards modernization of the irrigation system operations and participatory irrigation management from the year 1996-97 and onwards. If we look critically to the data on table-2 it is observed that from the year 1997-98 onwards average area under irrigation in the command of Katepurna irrigation project increased from 2027 ha to 3646 ha. with yearly water saving of around 7.71 Mm^3 . Data in Table-3 also indicates that during the year 2000-01 there is a record irrigation of 5940 ha with almost complete utilization of irrigation water in the Katepurna reservoir. From the year 1975-76 to 2000-01 data in table 2 indicates that the project achieved irrigation potential equal to its present potential with 86 percent of the live storage in the reservoir. The benefits were extended from 2000 to 3970 number of beneficiaries. During the year 2000-01 the yield of cotton and wheat crop in the command area were satisfactory, to the tune of 1.2 billion which is very high than the previous years. Government of Maharashtra took the serious note of the strategic movement implemented in Katepurna Irrigation project and decided to focus the facts to the other projects in the state. Katepurna Irrigation Project is now declared as a 'Pilot Project' in the state. Looking to the achievement of these strategic efforts Government has made the institutional changes and reforms in irrigation sector by bringing the new act as," Participatory Irrigation Management by the farmers in Maharashtra State-2005."

Table1: Year wise irrigation and water used in Katepurna Project

Sr.No.	Year	Season wise irrigation in ha.				Season wise water used for irrigation in Mm^3				Non irrigation water use Mm^3	Max. storage in project Mm^3	Water balance of the end of year. Mm^3
		Kharip	Rabi	Hot-weather	Total	Kharip	Rabi	Hot-weather	Total			
1	**2**	**3**				**4**				**5**	**6**	**7**
1	75-76	2	1485	2	1489	0	9	1	10	0.46	86.35	49.96
2	76-77	111	1745	267	2123	2.25	13.95	8.01	24.21	2.62	86.35	56.81
3	77-78	9	1213	289	1511	0.50	9.70	7.17	17.37	10.06	86.35	58.76
4	78-79	5	656	93	754	0.30	5.25	2.79	8.34	12.04	86.35	35.09
5	79-80	0	532	10	542	0	4.26	0.03	4.29	12.57	86.35	68.86
6	80-81	0	1209	9	1218	0	9.67	0.03	9.70	12.46	86.35	63.09
7	81-82	0	1624	40	1664	0	15.99	0.17	16.16	12.32	86.35	16.08
8	82-83	13	1677	347	2037	1.19	15.09	22.28	38.56	12.54	86.35	14.77
9	83-.84	0	954	387	1341	0	13.65	27.07	40.72	12.73	86.35	29.40
10	84-85	0	0	0	0	0	0	0	0	13.77	19.11	5.4
11	85-86	79	1515	355	2317	1-90	21-55	7.02	30.47	18.49	81.25	0.79
12	86-87	372	2936	1126	4434	4.76	38.05	25.03	67.84	15.97	79.50	13.22
13	87-88	175	3706	108	3989	5.00	30.00	1.00	36.00	21.06	62.34	11.94
14	88-89	0	1530	1313	2843	0	24.10	18.16	42.26	18.55	86.35	41.35
15	89-90	0	1150	764	1914	0	28.59	14.90	43.49	17.34	86.35	2.94
16	90-91	0	737	853	1765	0	11.43	17.99	29.42	15.19	86.35	14.5
17	91-92	2000	433	126	2559	10.77	1.39	4.00	16.16	19.55	41.50	16.05
18	92-93	0	999	1074	2073	0	22.08	22.41	44.49	15.19	86.35	6.27
19	93-94	0	1419	700	2119	0	20.66	20.85	41.51	14.35	78.78	28.88
20	94-95	0	2511	791	3302	0	30.27	14.54	44.81	15.71	86.35	17.22
21	95-96	70	1791	130	1991	0.50	12.71	2.47	15.68	17.51	34.34	1.09
22	96-97	0	1739	830	2569	0	14.83	16.50	31.33	16.68	84.89	22.99
23	97-98	142	1295	630	2067	0.47	9.18	13.05	22.70	18.56	59.27	22.63
24	98-99	0	1454	882	2336	0	10.17	21.53	31.70	21.93	81.99	43.90
25	99-00	0	2098	595	2693	0	13.83	12.83	26.66	20.26	86.35	31.75
26	2000-01	1501	4081	327	5909	5.75	23.44	5.77	34.96	24.00	74.26	2.15

Table 2: Impacts of the modernization of systems operations and PIM.

Sr. No.	Particulars	Average Irrigation	Average Duty
1	Scenario during 1976-1997	2027 ha.	75.20 ha./Mm3
2	Scenario during 1998-2000	3646 ha.	117.20 ha./Mm3
3	Net increase in average Irrigation .	3646-2027 = 1619 ha.	
a)	Water requirement with previous duty.	1619/75.20 = 21.53 Mm^3	
b)	Water requirement with improved duty.	1619/117.20 = 13.82 Mm^3	
c)	Yearly average saving of water (a-b)	21.53-13.82 = 7.71 Mm^3	

STRATEGY IMPLEMENTED BY GOVERNMENT OF MAHARASHTRA STATE -

The new act includes the following few main strategies,

(1) Irrigation water will only be allotted to the WUA's on volumetric basis.

(2) A non member farmer of WUA's is not entitled to get water for irrigation in his individual capacity.

(3) Existing on farm (from minor onward) water distribution system should be get repaired first and then handed over to the respective WUA's. A maximum provision is of amount Rs. 2500 per hectare has been made for necessary repairs.

(4) WUA's who will pay the water charges before due date shall entitled for 5 percent rebate on the total cost of water.

(5) Area development project sponsored by Central Government and related cooperative WUA's will get Rs. 225 from Central Government and Rs. 225 from State Government for managerial expenditure. And associatations without area development projects will get Rs. 450 per hectare for managerial expenditure.

(6) For efficient and effective working of the co-operative WUA's Chief engineer and Deputy Secretary of the State Irrigation Department will act as a co-ordinator for respective divisions.

(7) Distributory in the area of co-operative WUA's will be managed and maintained by themselves. For this, for first five years, Rs. 60/- per hectare per year and then after up to 6^{th} year Rs. 50/- per hectare, on 7^{th} year Rs. 40 per hectare and on 8^{th} year Rs. 30 per hectare and ninth year Rs. 20 per hectare rate substitute will be given by Government to the WUA's.

(8) The existing rules and regulation as regard irrigation management transfer (IMT) and other related issues as per the irrigation act, 1976 has been modified in 2005.

IMPACT ON OTHER IRRIGATION PROJECTS IN AKOLA DISTRICT

The activities are also being undertaken in other projects in the district by the State Department of Irrigation, Akola. In Akola district major and medium in all 25 project are there having the irrigation potential of 21,530 ha. with live storage of 199.25 Mm^3. At present in the Akola district 38 water user associations are formed covering the area to the tune of 9203 ha which is 43 per cent of the total area. The actual irrigated area is increased from 6626 ha to 12229 ha with water saving of around 15.50 Mm^3 because of only the improvement in the irrigation system operations management transfer (Involvement of water user associations on large scale) and awareness created amongst the beneficiaries.

In second phase of the project it is planned to increase the present 43 percent area covered by water user associations up to 60 per cent of the total command area.

STAKE HOLDER PARTICIPATION

This movement of 'Sinchan Sahyog' is a joint venture of agricultural university, state irrigation and agriculture departments and other incline departments, chanellised and implemented by the 'Sinchan Sahyog' (NGO). All these stake holders including beneficiaries are actively participated with 'Sinchan Sahyog' (NGO) in modernization of irrigation system operations and reforms in irrigation sector in Akola district.

SUSTAINABILITY

In future the strategic achievements and developments observed with the various agencies and Sinchan Sahyog will help in piloting the extension of such activities in the similar areas of the state. The Maharashtra State Government has already envisaged this activity and made efforts in the right direction for modernization of irrigation system operations and reforms in irrigation sector. This comprehensive assessment of water management in command areas not only help in enlightening the importance of PIM but the water saved may help in increasing the irrigation potential in the command areas.

COMMITMENT

Organizations involved are totally working for the benefits of the farmers and creating general awareness amongst the users, youths, women and children with the view to economize the water use and increase the irrigation potential and conservation of natural resources.

ORIGINALITY AND INNOVATIVE IDEAS

Create awareness regarding water management keeping the objective of optimum utilization, directly and indirectly increase the irrigated area with increase in irrigation efficiency and crop productivity. Throsugh, which it is possible to enhance socio economic status of the farmers.

CONCLUSION

In light of above the outcome of the efforts made by the organization are concluded as under: Normally, there is scarcity of intelligent people taking interest in the project from the point of view of public. Hence, their contribution at the desired level is not expected to come automatically. For increasing the efficiency of water resources project to society and for larger interest of the project, mechanism has to be developed to involve more people who can think and contribute. The might of thinking people should be harnessed by channelisation and organized effort to get them interested. Things can not be left to initiation and enthusiasm of individuals for positive progress. In India enormous human resource is available which has never been taken into account for base level planning and development. Now, this is the right time to motivate people in water resources projects. Government agencies have failed to achieve their original target in every water resources development project only because of lack of accounting. Village people if properly motivated, are the most productive force for management and development. The motivation is possible by proper non government (NGO) activism with sound vision and knowledge. Impact of the activities of Sinchan Sahyog is found to be effective in motivating the people to reduce the water wastage and appropriate management of water resources.