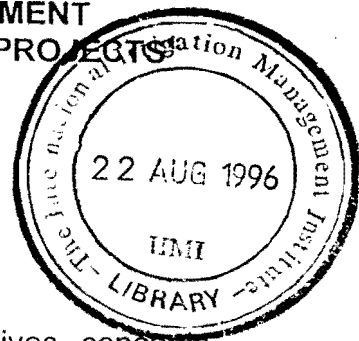


WATER USERS' PARTICIPATION IN IRRIGATION MANAGEMENT AT DISTRIBUTARY CANAL LEVEL: ISSUES FROM IIMI'S PILOT PROJECTS

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Introduction

The purpose of this paper is to present some salient aspects of objectives, concepts, methodologies and results of an on-going action research program by IIMI on social organization for irrigated agriculture. The research is being conducted in four locations in the Punjab and Sindh Provinces of Pakistan. As for results so far achieved, the paper focuses on the Punjab pilot project.

Action Research Sites

The first site for this pilot study program is the Distributary 4-R in the Hakra Branch canal within the Fordwah Eastern Sadiqia South (FESS) irrigation system. The action research activity at this pilot site is part of the institutional development component of IIMI's Dutch-funded study project, "Managing Irrigation for Environmentally Sustainable Agriculture in Pakistan". One of the reasons for selecting this site is that other components of the project are all located in the same area. The decision to select this site was also supported by the presence of a number of national research institutes and agencies working in the same area under another project, the World Bank-funded FESS Irrigation and Drainage Project. The site also met the following criteria developed during project inception:

- (1) Working in a distributary within the FESS project area can help IIMI to associate this work closely with the pilot projects undertaken by the OFWM Directorate for similar work under the World Bank funded FESS Project;
- (2) Preferably, the selected distributary should not be too small or not very large so that the pilot effort will be with average physical and socio-economic conditions;
- (3) Selecting a distributary where IIMI or any other agency or research institute had not intervened recently will provide a more receptive farmer group;
- (4) The distributary should preferably have farmers of a mixed background: a mixture of local people, old and recent settlers;

¹ Paper presented at the National Seminar on Participatory Irrigation Management in Pakistan, held in Lahore during 11-13 August 1996, organized by the Federal Water Management Cell of the Ministry of Food, Agriculture and Livestock, Islamabad, and the On-Farm Water Management Programme of Punjab, Lahore.

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- (5) A distributary having a number of hydraulic structures would help the water user groups to monitor the discharges in terms of space and time;
- (6) A distributary in which watercourses had not been completely improved under the OFWM program, would allow the water users to see the need for physical improvement as an incentive for organization as WUAs at watercourse level; and
- (7) A distributary having a sizable minor would allow two secondary systems to be used for pilot experimentation within the same distributary command area.

The main 4-R Distributary has five drop structures at RD 24, 46, 72, 82 and 107. About 16 culverts/bridges have been constructed on the main distributary at different places to facilitate easy crossing. Two minors 1-RA Labsingh and 1-R Badruwala off-take from the main system at RD 23,200/R and 72,100/R respectively. Some details of the 4-R Distributary system are given in Table 1.

Table 1 : Some Details of 4-R Distributary

Channel	Length (kms)	Design Discharge (Cusecs)	No. of Outlets	CCA (acres)	No. of Landowners
4-R main distributary	36	193	73	28,000	2,765
1-RA minor Labsingh	7	22	15	6,000	565
1-R minor Badruwala	15	43	32	10,300	1,393

The overall 4-R distributary canal system has 120 irrigation outlets, serving a total canal command area of about 44,300 acres with a design discharge of 193 cusecs (1 cusec/230 acres).

The other three pilot sites of IIMI's social organization action research are in Mirpurkhas, Sanghar and Nawabshah districts in the LBOD Project Area of the Sindh Province. These pilot efforts are part of the study project, "Farmer-Managed Irrigated Agriculture at the Distributary/Minor Level", which is conducted in collaboration with the Department of Agricultural Engineering and Water Management of the Government of Sindh, with financial support from the Swiss Development Cooperation and the World Bank.

In consultation with representatives of the irrigation-related agencies of the area, and using an agreed set of criteria, one distributary or minor was selected for each of the three districts. Some details of the three selected sites are given in Table 2.

Table 2: Some Details of the Three LBOD Pilot Sites

District	Distributary/ Minor	Total Length kms	Discharge (cusecs)	No. of Outlets	CCA (acres)	No. of landowners
Sanghar	Hiran	14	58	31	15,400	539
Mirpurkhas	Bareji	12.5	34.2	24	14,318	197
Nawabshah	Doro Naro	10.4	51.6	26	13,382	421

Study Objectives

The major objectives of these pilot projects are: (1) to test the viability of organized water users in managing parts of the irrigation systems so that more efficient and equitable allocation and use of water can be achieved; and (2) to make recommendations on future extensions from the results of the pilot projects.

The general objective of the institutional development component of the study on "Managing Irrigation for Environmentally Sustainable Agriculture in Pakistan" is to assist in enhancing the existing institutional capacity, while maximizing the role of farmers in irrigation management, for adopting improved management strategies aimed at both reducing environmental problems, as well as increasing agricultural production.

As a short-term objective, the project envisages to learn "how" to organize farmers as Water Users Organizations at the minor and distributary level, and in the long-term, to develop appropriate procedures for wider application of viable organizational mechanisms for irrigated agriculture. These short-term and long-term objectives imply that the major thrust of this component is on the development of institutional options for irrigation management strategies that involve a greater participation by the water users.

Obviously, this approach implies a focused research perspective of **assessing whether the effort in organizing farmers would be accomplished in the "right way"**, leaving the impact evaluation of **whether "it is the right thing to do under the given conditions"** as a secondary effort as an evaluation of pilot project results. This emphasis and the distinction made in the research perspectives is inherent in conducting pilot projects.

Towards the above objectives, the work undertaken by IIMI in the pilot projects will aim:

- (1) to gain an understanding of the ground situation in the pilot distributaries by way of collecting baseline information on physical, socio-economic and institutional aspects relating to the existing systems in operation;
- (2) to use this knowledge to cordially interact with the water users in the pilot distributary command area with a view to discussing with them the possible management strategies for improved productivity and sustainability of irrigated agriculture in the area;
- (3) to mobilize the necessary institutional support for assisting the water users in selected pilot distributaries and catalyzing their interest to establish appropriate water users organizations;
- (4) to facilitate interactions between water users and operating agencies;
- (5) to assist in setting in motion a series of institutional development activities to support these newly established water users organizations to undertake responsibility for maintenance and operation of secondary and tertiary levels of the canal irrigation system for improved water distribution;
- (6) to document the processes of action research in the pilot distributary; and
- (7) to provide information that will be useful for developing policies and methodologies related to future replication of this pilot effort on social organization for irrigation management on a wider basis.

Pilot Project Concepts

As with any other action research effort, these social organization pilot projects are based on a number of theoretical assumptions and principles, some of which are mentioned below:

- (1). **Benefits of Organized Behavior:** The assumption is that collective action is more effective than individual action in sorting out social issues related to equitable resource allocation and sustainable resource management. This is particularly true for water distribution in irrigated agriculture, as irrigation systems are inherently socio-technical systems. Conceptually, the underlying principle is that collective action is not only able to liberate individuals' actions, but also to restrain them. These twin actions are necessary to improve equitable water distribution. For instance, the

strength of a Farmer Organization would depend on its ability to effect sanctions on members who commit irrigation offences, and prevent widespread anti-social conduct in water distribution.

- (2) **Benefits of Water Users Organizations:** In many instances in the past, WUOs have been promoted to take over part of the responsibility for managing irrigation and drainage systems with a view to reducing the government's share of O&M costs, improving equity in water distribution, managing groundwater levels, and improving system performance. For the present pilot projects, all these objectives remain, but in addition, they are taken as tentative propositions which will further be tested through the results of pilot efforts.
- (3) **Joint Responsibility:** Organizing farmers, who are part of the local community, is essentially a local responsibility, which should not be attempted alone by an international institute like IIMI. Organizing people for popular participation has a political implication, which can best be handled by a local group of people who have access to appropriate authority to engage in such work. IIMI should play a catalyst's role, and mobilize the interests and support of the operating agencies for this work. Suitable community-based opinion leaders can play a significant role in sharing responsibility for organizing farmers.
- (4) **Motivation for Sustainable Effort:** Improving existing physical conditions or providing new infrastructure cannot be considered a sufficient condition for effective social organization; nor is the device of cost-sharing for rehabilitation or capital works. Similarly, the delivery of an extension package is insufficient and also tends to make the farmers dependent on those who "deliver". All these interventions have a temporary influence on social organization. A continuous engagement in some productive activity by the water users as a group is more likely to provide a greater incentive to keep the organizations alive. Therefore, the work by the field teams is based on strategies for promoting collective action on effectively managing maintenance and operation of the irrigation distributary sub-system. An awareness on water-related technical and socio-economic issues in terms of quantity, quality, as well as economic and environmental impact of water used for irrigation, along with an opportunity to have some control over these issues would motivate the farmers on a long-term basis.
- (5) **Socio-Technical Linkage:** The social sub-system in an irrigation system, does not operate in isolation. It always works in association with the physical or technical sub-system (obviously, the converse is true, too). For this reason, social organization cannot be effectively accomplished independently, or without reference to the technical aspects of irrigation

management. The water users in an irrigation system pay considerable attention to a discussion on problems and solutions related to their technical sub-system. Normally, rural people are not very much impressed by the outsiders who hasten to discuss their social issues. Therefore, as a strategy, the field teams should be well equipped with information on the technical sub-system, which the water users will be willing to discuss initially. This will also enable an initial rapport to be established between the field teams and the farmers.

- (6) **Mutual Trust:** Literature on irrigation management is rampant with references to lack of mutual trust between farmers and irrigation officials. The mistrust on the part of farmers extends to any group that tries to interact with them in the field. To clear this initial cultural barrier, the field teams would benefit by proceeding slowly, but steadily, in the process of trust-building, allowing sufficient time for farmers to air their views, understand the need for change, and identify the genuineness of outsiders interacting with them.
- (7) **Sense of Involvement:** The decisions related to social organization, including those regarding the form and structure of distributary or minor level organizations and their legitimate functions, should eventually be taken by the water users themselves. All other partners in this effort, including IIMI, should act as facilitators in the water users' decision-making process to assist them in taking progressive and implementable decisions.
- (8) **Upstream Abundance and Downstream Shortage:** Like in the case of famines which are not necessarily caused by a shortage of food alone, but also by mal-distribution², the problems of the end-users of any service or commodity, such as water, are attributable to defects in the distribution system. Acquisition of a large quantity of water by building dams does not necessarily mean that the user will have access to his water requirement (or his entitlement), so easily, or equitably as expected. Therefore, the equitable distribution of water is as important as the acquisition of water in overall irrigation performance. In an attitudinal re-orientation among the persons involved in managing water delivery services, the human interactions will be tested for their real value in bringing about increased productivity through more equitable water distribution.

² Work done by the renowned economist, Dr. A. K. Sen, on famines in Ethiopia and Bengal, explains that famines are not necessarily caused by a shortage of food alone. Problems of access to the available food resources through a lack purchasing power and uneven distribution make many poor people vulnerable. Sen's "entitlement" theory could easily find relevance in the field of irrigation water management.

- (9) **Improved Irrigation Practices:** Even if the equitable water distribution is effected, it does not ensure that the users will consume the water properly. Collective action by an organized group of farmers is expected to facilitate the needed transfer of technology for improved irrigated agriculture by improved management of the combined irrigation and drainage facilities. The field teams in the case of these pilot projects (and a similar institutional arrangement on a more permanent basis for subsequent replication of pilot project results, if they happen to be significantly positive), would serve as a group providing irrigation and agriculture advisory services to the WUOs. The sustainability of WUOs during the initial period would depend on the facilitating and motivating functions of this irrigated agriculture advisory services group. Conceptually, this advisory role of the government agencies is seen as a continuing need even after the establishment of WUOs.
- (10) **Decentralization vs Privatization:** IIMI's present approach in these pilot projects is not linked with any policy concept of privatizing the irrigation systems. Rather it perceives the effort in transferring some irrigation management functions related to a distributary canal command from government agencies to organized water users groups as part of a strategy on decentralizing the management of irrigation systems.

The above items of assumptions and principles do not form an exhaustive list, but are mentioned as guidelines for a conceptual foundation for our work and the methodologies to be followed.

Methodologies

The field approach involves the placing of social organizers in selected communities to interact with and slowly catalyze the farmers to identify their own problems, solutions, leaders, organization, financing, budgeting, and management. For each pilot command area, a Field Team of five members was deployed initially, consisting of one Team Leader of social science background and four members (two social organizers and two technical research assistants).

A major feature of the methodology adopted in this action research program is the use of "contact farmers" (or "social organization volunteers"). The contact farmers essentially serve as a link between our field team and the community, and in effect form part of our social organization team. Some of the main criteria for selecting a contact farmer were that:

- * The person was well informed about the area, its people, traditions, geographical details, water and land resources and generally about its irrigated agriculture;

- * The person was non-controversial, was not known to be a trouble maker, an exploiter, an anti-social person in any way;
- * The person was able and willing to communicate freely with all sections of the local community, and also with the outsiders who come to collaborate with the local people in community development activities;
- * The person showed sufficient motivation to help others and saw value in collective behavior for common good;
- * The person had the potential for acquiring some basic training to become a community-based social organizer, and be part of our extended field team; and
- * The person having an ability in public speaking was an added advantage.

Another important feature of the methodology adopted for this work was the iterative process of the social organization exercise. The process developed for this purpose has the following four phases:

- Phase I - Support Mobilization (Negotiation with collaborating partners and concerned agencies regarding the necessary assistance for pilot projects)
- Phase II - Initial Organization (Assessing community characteristics through baseline surveys, developing the processes for social organization and generating initial awareness among the water users in the pilot area)
- Phase III - Organization Consolidation (Developing action plans, training, reaching agreements with agencies for joint management)
- Phase IV - Organizational Action (Implementation of the Action Plan for O&M in close collaboration with the concerned agencies, and monitoring and evaluation of the action phase)

Each of these phases prepares the participants in a progressive manner towards the goal of a WUO taking over some agreed functions of irrigation management at the distributary level.

The major activities planned for the 4-R Distributary pilot project are shown in Table 3.

Table 3: ACTIVITIES					
	1994	1995	1996	1997	1998
1.	Select social organization field team	Develop the process for pilot program on water users organization	Joint visits by farmers & agency representatives to F.M.I.S areas and other research sites	19. Initiate action to establish formal WUOs at distributary/minor level	24. Continue training on O&M, irrigation practices and WUO administration and financial management
2.	Conduct preliminary investigation in project area using the opportunity to train the field team.	8. Select pilot project sites	14. Conduct initial organization activities, identifying organizational levels and structures and potential leaders	20. Conduct training on O&M and irrigation practices and conduct "walk-thru" surveys	25. Implement plan of action for joint management of pilot distributary/minor
3.	Conduct planning meetings and negotiate institutional arrangements for pilot program	9. Conduct baseline survey in selected pilot area	15. Conduct training on watercourse improvement and agricultural practices	21. Develop plan of action by WUOs and agencies for O&M and monitoring of pilot distributary/minor	26. Evaluate short-term effects of WUOs
4	Identify persons for Field Implementation Committees	10. Conduct preliminary analysis of baseline data, assess community characteristics and identify sub-systems in the distributary	16. Review warabandi schedules in pilot area	22. Arrange for Agreement between WUO and agencies on O&M	27. Prepare final report on WUOs
5.	Arrange for consultancy inputs	11. Along with agency resource persons and contact farmers, conduct a series of initial meetings to build up rapport with water users and identify their critical needs	17. Organize WUOs at distributary/minor or and watercourse level	23. Train WUO office bearers and selected farmers on financial and system management	28. Conduct seminar for dissemination
6.	Develop criteria for selection of pilot project	12. Conduct a series of consultation meetings with water users to discuss feasible options for organization.	18. Consult WUOs on changes in the legal framework		

Some Actions and Results

1. Selection and Training of Field Teams

The field staff was given an initial orientation of the program and its focus, and a carefully planned training with the assistance of the PATA project of Saidu Sharif and the AKRSP project of Gilgit.

The special character of responsibilities assigned to the Haroonabad field team, as compared with the more technical issues handled by IIMI's other field teams in Punjab, is reflected in the name given to it, the "Social Organization Field Team (*SOFTWARE*)".

2. Baseline Socio-Economic Survey

The data analysis has been finished, and the report is under preparation. The survey was conducted on a sample of 367 respondents selected from 13 out of the 120 watercourse commands in the 4-R distributary system. Some of the findings of this survey are given below:

- The average family size was 9, out of which school going children were 2;
- About 69% of the respondents felt that the unsatisfactory water distribution situation could be solved by the agency staff, if they wished to do so;
- About 45% of the respondents reported inequity between distributaries, and of this 23% attributed the problem to the "influentials";
- About 80% referred to inequity within the distributary, and this number ranged from 67% in the head reaches to 84% in the tail reaches; most of the respondents attributed the problem to big landlords and irrigation officials;
- None reported inequity within the watercourse;
- The respondents showed considerable organized behavior; 94% had participated in collective action in maintaining or constructing the village mosque, 90% in maintaining the watercourse, and 20% in desilting the distributary; and
- The cropping intensity was 122%, higher at the head reaches (147%) compared with the tail reaches (97%); and
- The average farm income was Rs. 78,963 for an average operated area of 13.25 acres as reported by the respondents.

3. Baseline Technical Survey

The outlets were calibrated and discharge measurements were taken. The calibration report is being finalized.

- In a water measurement test conducted in the last week of October 1995, the 4-R Distributary received a discharge of 232.7 cusecs as against a sanctioned discharge of 193 cusecs, roughly a 21% increase.

4. Contact Farmers (later termed as Social Organization Volunteers- SOVs)

A total of 146 SOVs were selected after consulting 486 water users through small group interviews conducted throughout the distributary command area. Details are given in Table 4.

Sub-system	Number of Villages	Number of W/Courses	Number of Water Users Contacted	Number of Persons Referred as SOVs	Number of Persons Selected as SOVs
1	9	23	146	159	30
2	9	23	132	120	31
3	8	27	63	108	33
4	4	15	83	28	13
5	9	32	61	140	39
Total	39	120	486	555	146

The selected SOVs were given a short training on social organization. They also participated in a series of small group semi-structured interviews. The first few interviews provided a number of issues that seemed to interest the SOVs in general, and this set of issues were discussed during the interviews that followed. Careful note keeping by the field team provided a good database on the perceptions of SOVs, some of which are given in Table 5.

TABLE 5: SOME PERCEPTIONS OF SOVs

	MIDDLE REACH			TWO MINORS			TOTAL		
	Yes	No Com	No Com	Yes	No Com	No Com	Yes	No Com	No Com
LESS IRRIGATION AT PEAK DEMAND AND ABUNDANCE DURING SLACK	6	0	11	29	4	4	35 (65)	4	15
DISTY DOES NOT RUN AT DESIGN CAPACITY	1	1	15	10	1	26	11 (20)	2	41
WATER PROBLEM DUE TO CORRUPTION	10	0	6	23	1	13	34 (63)	1	20
ILLITERACY, POVERTY ARE MAIN PROBLEMS IN ORGANIZING FARMERS	2	0	15	4	0	33	6 (13)	0	48
PILOT PROJECT NOT HARMFUL	11	0	6	23	1	13	34 (63)	1	19
UNION IS STRENGTH	12	0	5	29	2	6	41 (75)	2	11
WATER USERS PARTICIPATION WILL IMPROVE EXISTING SITUATION	12	1	4	32	2	3	44 (82)	3	7
WATER USERS ARE SUSPICIOUS BECAUSE OF FOREIGNERS IN THE TEAM & IN THE AREA	10	0	7	14	0	23	24 (44)	0	30
READY TO HELP IIMI IN ORGANIZING PEOPLE	16	0	1	29	0	8	45 (83)	0	9

Note: Figures in parenthesis are percentages of the total.

Main Issues

At this stage, the following main issues are under consideration by IIMI staff, collaborating partners and SOVs:

- Initial motivation of farmers for organization needs to be identified and assessed; the expected costs and benefits of joining an organization, quantified at least on a hypothetical basis, need to be used in interacting with water users groups;
- Several important aspects of the status of the water users organizations need to be clarified-
 - Objectives and functions of WUOs
 - Cost-benefit potential of the WUO
 - Legal status of the WUO
 - Financial and technical help (to be given by whom?)
 - Type of membership (who decides?)
 - Selection/election procedure for office bearers;
- Accountability of WUO as a whole, and of its ordinary members, office bearers, and the interfacing agency staff should be well defined and understood by all;
- Liaison mechanisms needs to be developed between agencies and WUOs;
- Follow up procedures and the functionaries responsible for monitoring and evaluating the functioning of WUOs should be made clear;and
- There should be some wider appreciation regarding the difference that exists between the government's policy on proposed organizational changes involving the agencies in the irrigation sector, and the on-going pilot projects on social organization aimed at water users' involvement at distributary level irrigation management. The confusion that is developing regarding the creation of PIDAs and AWBs, and the PIM policies on water users organizations, appears to be an impediment to successful pilot project implementation.
- The WUOs are expected to focus on water-related issues at the beginning. However, the water users are basically agriculturalists, and their interest is to enhance their agricultural income. Therefore, the WUOs are unlikely to become dynamic rural organizations, unless the people can see a good potential for WUOs' sustainability in terms of their contribution to individual incomes, in terms of the individual costs towards managing and financing WUOs, and finally the social acceptance for WUOs.

Conclusion

In concluding this presentation, reference can be made to some overall findings. IIMI's research conducted in a number of countries to date suggests the following conditions for sustainable local management:

- * Clearly recognized water rights
- * Appropriate infrastructure to suit local management capacities
- * Clearly defined responsibility and authority for different management functions
- * Supportive accountability and incentive mechanisms
- * Adequate resources (financial, information, human)

In the context of the above, the results of IIMI's pilot projects to date, part of which is mentioned in this paper, can come to the following tentative conclusions regarding the viability of WUOs:

- 1 Objectives of organizing farmers should be very clear to all involved in this exercise;
- 2 The success of establishing WUOs and their sustainability will depend on their environment such as legal, social, resource endowment and distribution, law and order, and governance;
- 3 Motivation of the participants is a major determinant of WUOs' success;
- 4 The capacity of the community to absorb these new changes and take the responsibility for which they agree will be another crucial factor; and
- 5 The process of organizing the water users' community is seldom seen as an important element in the overall programs of social organization. The pilot projects offer good evidence that a well planned out process is of extreme value.
