SOCIAL ORGANIZATION FOR IMPROVED SYSTEM MANAGEMENT AND SUSTAINABLE IRRIGATED AGRICULTURE IN SMALL DAMS

An Action Research Program

Supported by
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Conducted by
the International Irrigation Management Institute
in Collaboration with
the Water Resources Research Institute of
the National Agriculture Research Centre
and the Small Dams Organization of
the Punjab Irrigation and Power Department

INCEPTION REPORT

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This Inception Report attempts to clarify and synthesize a number of project related ideas, statements, quotes, concepts and facts extracted from several sources. In most instances, the sources have been specifically mentioned in the text. Where direct references could not be made, the material was taken from information gathered during many discussions held with collaborating partners and professional colleagues associated with the project, and from concepts and methodologies generated by IIMI's other on-going social organization pilot projects in the Punjab and the Sindh. In this regard, the support received from Dr. Shahid Ahmed, Director, and Mr. Mohammad Aslam, Scientific Officer, of the Water Resources Research Institute of the National Agriculture Research Centre in Islamabad, and the senior staff of the Small Dam Organization of the Punjab Irrigation and Power Department, is gratefully appreciated.

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Project Leader
1. **INTRODUCTION**

There is a growing concern about the persistently low return on investment of irrigation in developing countries. Tracing the cause of this problem to a possible institutional deficiency, the governments of these countries, encouraged by their respective donors, are becoming increasingly interested in finding solutions associated with some form of institutional reform. Many countries are considering, among the various institutional options, the participatory mechanisms in which water users would take some responsibility in a decentralized system of irrigation management. Participatory mechanisms imply a considerable change in the character of existing institutions for irrigated agriculture, as participation would require the irrigation-related government agencies to share their power and responsibility with the water users.

In Pakistan, too, the policy authorities are actively considering major institutional changes in the irrigated agriculture sector. The intent of these changes is to achieve some improvement in the equity and efficiency of the country’s water resources management performance. This policy initiative follows the country’s two decades of experience in water users associations at the watercourse level, the tertiary part (subsystem) of the complex canal irrigation system. However, in Pakistan, as elsewhere in developing countries, very little research has been done to date on the actual impact of interventions to establish water users associations. Similarly, not much research has been done on the processes required for such interventions. Therefore, an action research approach is considered useful for this work, in which some pilot trials of institutional development are undertaken initially so that research could feed into a well considered policy and a well planned implementation strategy depending on the research results.

During discussions with senior agency staff and policy makers in Pakistan, a suggestion has often been made that some experimentation of water users’ involvement in management should be first carried out in the country’s small dam irrigation systems, before major policy decisions are taken towards the transfer of management responsibility of large irrigation systems to water users. Recently, the National Consultative Committee in Pakistan for the International Irrigation Management Institute (IIMI) confirmed these views and requested IIMI to study the viability of water users organizations taking greater responsibility for managing the small dams. Following this policy level interest, IIMI and the Water Resources Research Institute (WRRI) of Pakistan’s National Agricultural Research Centre (NARC) agreed to collaborate in launching a study on some selected small dams. On the basis of a proposal for a collaborative action research on small dams presented by IIMI and WRRI, the Overseas Development Administration (ODA) of UK agreed to provide some funds through its Holdback Facility.

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1. The nature of this collaboration, as it was developed during subsequent deliberations, is described in Section 6.2 of this report.
The present action research project is an attempt to give effect to these multiple interests. The timing of this proposed research is particularly opportune because there is greater interest in institutional experimentation and reform in Pakistan than has previously been the case. Many senior policy makers recognize the need for change, but wish they had firmly grounded options to avoid making serious errors. Therefore, the proposed research is likely to provide valuable support to policy.

This Inception Report is intended to provide some basic information about the proposed action research on small dams, including the background to the action research effort, its objectives and underlying concepts, and the chosen methodologies. This report also gives some details of the project’s implementation plan and the progress of activities conducted since the project’s inception on 1 April 1996 up to 30 September 1996.

2. BACKGROUND

The importance of agriculture in Pakistan’s socio-economic environment cannot be overstated. The country’s fertile culturable land serves as the mainstay of sustenance for its 130 million people, nearly 75 percent of whom live in rural areas and are mostly involved in agricultural pursuits. Agriculture employs a little over half of the total labor force and accounts for more than a quarter of the country’s export earnings. Although agriculture’s share of the GDP has been declining, its present level remains at 26 percent compared to its share of 53 percent in 1950. Pakistan also has a long tradition of agriculture, which is closely woven into its social fabric, and to date, particularly irrigated agriculture plays a very significant role in the country’s political economy. Productivity and sustainability of irrigated agriculture, therefore, are matters of great concern to many in Pakistan.

Of Pakistan’s four Provinces, the Punjab, meaning the land of five rivers, accounts for the largest share (almost 70 percent) of the country’s cropped area (Figure 1). The Punjab has a total geographical area of 20.6 million hectares, about one-fourth of the country’s size. Of the province’s 14.8 million hectares of cropped area in the 1990-91 cropping year, an area of 12.6 million hectares was irrigated by various means; of this extent, 8.3 million hectares was irrigated by large canal irrigation systems, (Agricultural Statistics of Pakistan, 1991-92: 111 and 117). Part of the overall irrigated land is served by the water supplies from small dams, which are located in the "barani" tract, or what has generally been known as rain-fed areas.

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2 Portions of the contents for this report have been taken from the project proposal presented to the ODA in December 1995.
Figure 1

IIMI PROJECT SITES IN PAKISTAN

PROJECT SITES
* LAHORE HEADQUARTERS
• HYDERABAD OFFICE
• FIELD STATIONS
Most of the small dams in the Punjab Province are located in the Potwar area which lies between the Jhelum and Indus rivers in the Rawalpindi Division of the Punjab Province. Deteriorating land resources and fragmented land holdings with limited water resources characterize the Potwar area. The rivers flowing through the area have a seasonal flow pattern with peak discharges during July-August, fed by an annual precipitation ranging from about 1,000 mm in the northeast to about 350 mm in the southwest. The topography of the area is undulating and gradually sloping from the northeast to the southwest with deep incised river valleys.

The area has limited groundwater, as the substantial water that flows through the rocky area in the rainy season flows downstream to the Jhelum and Indus rivers, carrying with it the fertile top soil. The only method of developing water resources for agricultural purposes in this area is to build reservoirs of small and medium size.

The investigations for small dams were first started in 1954 by the Irrigation Department. A separate Small Dams Organization headed by a Chief Engineer was established in 1960, which, from 1962 to 1972, operated as part of the (now defunct) West Pakistan Agricultural Development Corporation. Later, the responsibility for small dams in the Punjab Province were again transferred to the Provincial Irrigation Department, which is also responsible for the large canal irrigation systems in the Province.

Between 1961 and 1987, the Small Dams Organization had constructed 20 dams to provide irrigation to about 10,000 acres. In 1988, the Punjab Economic Research Institute (PERI) conducted a survey of 22 potential dam sites. While recommending some of them for construction, PERI specifically mentioned the institutional need for establishing water users associations so that the users would be able to exert greater control over water management of the completed systems. The Government of Pakistan started to construct 12 more dams with financial support from the Asian Development Bank. Of these, 8 small dams have been completed and are operational.

Around the area of these small dams, the WRRI is already engaged through its Fateh Jang field station in research related to rainfall, runoff management, erosion control and water use efficiency. The research results are being disseminated to the farmers in collaboration with line departments under the Second Barani Area Development Project (SBADP) in the Potwar area. The agency for Barani Area Development (ABAD) which administers the SBADP will be a valuable partner in developing the necessary institutional structure for the management of small dam irrigation systems.

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3 See location maps in Figure 1 and Figure 2
4 The information given in these paragraphs is extracted from a paper prepared by A. H. Zaidi.

4
Location of IIMI Sample Small Dam Sites in District Attock

Figure 2
One major drawback of the small dam projects has been the poor utilization of their water storage.

While physical construction work was carried out by the Department, no further follow up work on physical improvements, command area development, or in institutional development work was undertaken. Only the dam operations and water releases were continued as a routine activity by the PID. Consequently, the farmers whose experience was limited to rainfed cultivation, were very slow in adopting proper irrigation practices. With no organized behavior among them, there was hardly any coordinated effort in developing any system of rules for water allocation and use. At present, as an average for all of the small dams in the Punjab, only about 30% of the total commandable area is irrigated. Thus, the existing water storages are not fully utilized due to inappropriate land use systems and irrigation practices. Another concern is the deteriorating storage capacity due to heavy sediment loads in the runoff water arising from erosion in the catchment area, which can only be arrested by appropriate collective action by an enlightened group of users of these land and water resources.

This situation offers an opportunity for an organized water users group to attempt replacing the existing nominal government control over a small dam by a completely farmer-managed irrigation system. If such an institutional arrangement becomes viable, it will provide valuable illustrative experiences regarding social organization in Pakistan's irrigated agriculture sector. The experience can be used by policy makers and implementation agencies in designing and implementing appropriate participatory irrigation management approaches for large canal irrigation systems.

3. **OBJECTIVES**

3.1 **Research Questions**

The context of this project, as outlined above, raises a number of research questions about the viability of farmer-managed irrigated agriculture in small dams. Some of the major questions that can be addressed during this study are:

* What are the causes of present low levels of management under small dams in the Punjab Province of Pakistan?

* Can this situation be remedied and the performance improved by organizing water users so that they would undertake a greater responsibility for operation and maintenance (O&M) of the small dam systems?
* To what extent can this strategy improve agricultural production in small dam command areas?

* What is the most appropriate method of organizing water users under the conditions prevailing in the small dam areas?

3.2 Specific Objectives

Based on these questions, the following main objectives have been formulated for the project:

(1) Identify the extent of current problems related to the system of management and command area development in selected small dams;

(2) Facilitate the formation of an appropriate water users organization in each of the selected small dam pilot areas:

(3) Assist the organization to become as functional as possible in the management of operation and maintenance (O&M), as well as command area development, with an emphasis on improved irrigated agricultural practices;

(4) Develop methodologies for establishing water users organizations under the given technical, socio-economic and institutional conditions; and

(5) Assess the viability of these chosen social organization strategies and their short-term effects on the operation and maintenance of small dam systems and on their command area development.

4. PROJECT CONCEPTS

As is the case for any pilot project, this social organization action research pilot project is also based on a number of theoretical concepts and assumptions. Some of them are discussed in the following sections.

4.1 Re-orientation of Attitudes

Both government officials and farmers are happy to have these small dam projects for developing infrastructure. To most of them, the needed maintenance and the systematic use of such infrastructure are usually the secondary issues. However, the problems of the end-users of any service or commodity, such as water, are attributable to defects in the management of its distribution. 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 post-construction management for efficient and equitable distribution of water is as important as the acquisition of water in ensuring good overall irrigation performance. The assumption here is that collective action and effective coordination among the various actors may bring about an attitudinal re-orientation, with a shift of emphasis from "things" to "people" that is currently needed.

4.2 Socio-Technical Linkages

While recognizing the need expressed above, it should also be noted that the social sub-system in an irrigation system does not operate in isolation from its 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.

4.3 Benefits of Organized Behavior

Collective action is believed to be more effective and efficient than individual action in sorting out social issues related to equitable resource allocation and sustainable resource management. 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 distribution of a scarce resource. For instance, the strength of a Water Users Organization (WUO) would depend on its ability to both improve the reliability of water supply, as well as effect sanctions on members who commit irrigation offences, and prevent widespread anti-social conduct in water distribution.

4.4 Shared Responsibility for Organization

Organizing farmers, who are part of the local community, is essentially a local responsibility, which should not be attempted alone by outsiders. Generally, 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 for engaging in such work. IIIMI should play a catalyst's role, and mobilize the interests and support of local people, national institutes and operating agencies for this work. Suitable community-based opinion leaders can play a significant role in sharing the responsibility for organizing farmers.

4.5 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.

4.6 Consultation for Consensus

Consultation among the various actors (water users, agency staff, professionals in research institutes, and others who have some interest in this project) would be for the purpose of developing a consensus on the decisions to be taken for achieving a common set of objectives related to the welfare of the community under consideration.

4.7 Participatory Action Research

For the purpose of this project, the term "participatory action research" is understood as a method for social organization, involving awareness building, social action, and research for producing scientific knowledge (Wignaraja, 1989). All of these elements are to be accomplished in harmony with nature, with the people and for the people. The idea is basically to enhance the creative potential of the people, particularly to build on the latent capacity of the poor and the oppressed, on the basis of an understanding that liberalization of people's initiatives is the means, as well as the goal, of development.

4.8 Decentralization and Participation vs Privatization

This pilot project is not perceived as an effort in privatizing the irrigation systems (i.e. transferring government-owned assets to the private sector). Rather, it is seen as an effort towards assisting the organized water users groups to participate in the management of small dams irrigation systems, and as part of a strategy on decentralizing the management of irrigation systems. The term "participation" is defined as a process in which those with legitimate interests in the project influences, or takes part in, the decisions that affect them (World Bank, 1991).

4.9 Some Constraints

In formulating objectives and developing a methodology for this project, the following aspects were also considered as factors possibly affecting the establishment of effective water users organizations in the small dams command areas:

- Socio-economic constraints on interventions aimed at social organization for irrigated agriculture management;
- Lack of reliable information on tested methodologies and processes of organizing water users in Pakistan;
- Lack of information on thorough impact evaluations related to water users associations in Pakistan, and the so called "irrigation management transfers" to water users elsewhere; and

- Weaknesses of the present government-dominated approaches for achieving management transfers to the water users.

The abovementioned items of concepts, assumptions and constraints do not form an exhaustive list, but are mentioned as some elements of a conceptual basis for the project's action research work and the methodologies to be followed. While most of the abovementioned assumptions serve as guiding principles for the action research activities, some of them are also the propositions to be tested further during the project. The project proposes, as one of its overall objectives, to test the social and economic viability of having water users' organizations take over the responsibility of O&M in the selected small dam systems.

The present conditions of operational neglect and long overdue maintenance of physical aspects seem to suggest that any arrangement to attend to these requirements would improve the returns to the investments already made. However, several uncertainties and doubts arise when a strategy of social organization is attempted as a solution to the present performance deficiencies. Some of these uncertainties are linked with the resource capacity of the farmers in small dam command areas to fully accomplish the required tasks of O&M management. This uncertainty is also associated with the farmers' ability to decide on a selected set of functions to undertake, while leaving some responsibility for maintenance (particularly those related to the dam) to the constructing agency. Also, it will be useful to identify the conditions under which complete turnover would be possible, including assessing the appropriate timing.

5. METHODOLOGY

The methodology chosen for this action research project is based on the context and the concepts of the project outlined above, and in sum, is characterized by the following main features:

* Participatory Approach;
* Slow Step-Wise Process;
* Small Field Team of Social Organizers;
* Involvement of Community-Based Volunteers; and
* Non-Physical Incentives.
5.1 Participation as a Continuing Feature

The methodology adopted in this project includes a participatory approach in most of its field work. Participation will be both the means and the end, in that it will be the main methodological feature for all of the steps in the process of establishing water users organization, and also in the subsequent organizational actions [for definitions, see Sections 4.7 and 4.8 above]. The decisions related to social organization, including those regarding the form and structure of organizations and their legitimate functions, will eventually be taken by the water users themselves. All other partners in this effort, including IIMI, act as facilitators in the water users' decision-making process to assist them in taking progressive and implementable decisions.

5.2 Steu-wise Process

The experience of IIMI's other social organization pilot projects elsewhere in Pakistan suggests that the iterative process in developing relationships and having interactions with the community has been a strong and useful methodological feature. 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 external 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 the outsiders interacting with them. Adopting a step-wise approach, and building on the steps already taken, the process advances towards mutual trust, sharing information, consulting for consensus, developing options, and implementing an appropriate organizational design.

5.3 Community-Based Social Organization Volunteers

The project design was to deploy a very small field team recruited by IIMI. Towards the end of the initial social organization activities, which are the main tasks for IIMI’s field staff, the project’s field team was to be expanded to include some field staff contribution from WRRI, particularly to interface the social organization activities with the needed technical inputs.

IIMI’s two-member social organization field team interacts with selected key informants initially to obtain preliminary data and establish a rapport with the community. Following this step, the team will identify a group of volunteers from the community to proceed with a series of dialogues within the community. Given the limitations of minimum staff resources that can be deployed within the limited project resources, the concept of using community based Social Organization Volunteers (SOVs) becomes an important methodological strategy.
In an attempt to extensively reach the water users, any member of the water users community, who is adequately informed and prepared to assist the field teams, would be a suitable volunteer for this purpose. The SOVs will essentially serve as a link between field teams and the community, and will in effect form part of the team, or act as its agents. Some of the main criteria for selecting a SOV would be that:

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

* The person is non-controversial, is not known to be a trouble maker or an exploiter, and not an anti-social person in any way;

* The person should be 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 should be motivated to help others and should see value in collective behavior for the common good;

* The person should have the potential for acquiring some basic training to become a community-based social organizer, and be part of the extended field team; and

* The person having an ability for public speaking along with a good capacity to listen would be an added advantage.

The SOV need not necessarily be a "farmer leader", a "big landowner", or even a person to "represent" the water users, or a potential office bearer of the proposed Water Users Organization. Unemployed educated youth willing to gain experience in social organization will be specially considered. There will be no pre-conceived plan to select a specific number of SOVs for each pilot site; the intention is to find a sufficient number of friendly, helpful people willing to assist the field teams in reaching the entire water users community in the pilot area.

The involvement of an NGO will be considered to facilitate this process by training selected SOVs in social organization methods. IIIMI has already been in contact with some NGOs, but this involvement will depend on the availability of an NGO with an appropriate field approach to social organization that would fit well with the chosen methodology.
The decision to mobilize key informants was prompted by an IIIMI field team’s experience in some preliminary fact-finding activities conducted in the Hakra 6-R Distributary in the Punjab. Similarly, the methodology of deploying SOVs is currently adopted in IIIMI’s other pilot projects in the Punjab and Sindh Provinces of Pakistan (a brief description of IIIMI’s other pilot projects on social organization in Pakistan is given in Annex-1). Some concepts underlying these action research pilot projects were outlined in a note prepared in 1994, an extract of which is given in Annex-2. At the end of these projects, IIIMI will be able to assess the viability of using community-based human resources for a more broad-based effort in social organization for irrigated agriculture in Pakistan. A format prepared for use in identifying suitable SOVs in the Hakra 4-R Distributary pilot project in the Punjab, which is adapted for use in this action research project, is given in Annex-3.

5.4 Incentives for Social Organization

In many donor-assisted projects in which social organization was a component, an incentive for organization was provided in terms of improvements in the physical system. However, the effect of these incentives was generally found to be temporary, as in the case of watercourse level WUAs in which the motivation for organization lasted only until the short-term objectives of watercourse improvement work were achieved.

Considering this experience, the project has not included any subsidies or funds for physical improvements. In place of monetary or physical infrastructure incentives, an attempt will be made to convince the water users of the need to have longer term objectives of achieving increased reliability and timeliness of water delivery, more equitable water distribution, and improved irrigation practices, all aimed at increased productivity of irrigation water.

The field team’s main effort in this project is based on strategies for promoting collective action on effectively managing maintenance and operation of the small dam irrigation system and improving its command area for increased agricultural production. 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, are expected to motivate the farmers on a long-term basis.

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 team will be equipped with information on the technical sub-system, which the water users will be willing to discuss initially. This will also enable good rapport to be established between the field teams and the farmers.
The motivational effort will also be to engage the water users in building awareness, confidence and mutual trust, with an emphasis on training and information sharing through a series of "dialogue" meetings. Another important motivating strategy to be tested is the introduction of self-evaluation by the group (and individuals) of the actions taken by them.

An integrated package of interventions is planned for this pilot effort. During the second half of the project duration, Social organization interventions will proceed hand-in-hand with activities aimed at improving irrigation and agricultural practices. These in turn will be supplemented by a set of performance monitoring activities. In order to try and achieve sustainability of this work and institutionalizing the implementation of positive outcomes of pilot efforts, appropriate mechanisms will be sought for ensuring continued involvement of the local partners, particularly WRRI and SDO.

5.5 Irrigated Agriculture Advisory Services

Even if equitable water distribution is achieved, it does not ensure that the users will use 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 can assist in the initial stages, but the project needs to develop an institutional arrangement on a more permanent basis for subsequent replication of pilot project results (if they happen to be significantly positive), and for serving as a group providing irrigation and agriculture advisory services to the water users organizations. The sustainability of WUOs would depend on the facilitating and motivating functions of this irrigated agriculture advisory services group.

5.6 Location of Pilot Sites

According to the project design, the proposed action research was primarily to explore the viability and usefulness of generating a local interest and demand for participating in the management responsibility for small dam irrigation systems. For this purpose, pilot efforts using social organization was to be tried in at least two small dams within the first two years of the suggested three-year project period. Initiating action research in a third site was to be attempted during the third year, so that the collaborating partners would play a greater role in implementation. Details of the selected sites are given in Section 8.2 below.

5.7 Data Collection

Preliminary field data collection is done in several stages by adopting different methods, so that information can be extracted and collected more comprehensively on a progressive manner.
(1) Initial Mapping

A walk-through will be conducted along the irrigation canal and its branches to meet any farmer or informant and obtain general information on the small dam's command area and water users. The physical condition of the dam site and the canal system (their structures, layout, lined and unlined portions, the number of water users, etc.) are collected at this stage. The lists of water users, chak map, and water allocation method are collected for each pilot site. A few "key informants" will be identified during this stage, with whom more in-depth interviews will be held during the second stage of interactions to collect more information and also to select the SOVs.

(2) Semi-Structured Interviews (SSI)

This method is being adopted to gain flexibility in the interview, particularly to include probing questions depending on initial responses. SSI is to be conducted with selected informants, using an interview guide or a check-list.

(3) Process Documentation

During the visits to the dam command areas, the team members will observe the processes of irrigation and farming practices and, if necessary, make some field measurements, and also collect additional information from the informants. This information is recorded immediately in a "field notebook" and later transferred into a "clean notebook", which will be used to compile reports on the processes observed.

(4) Agency Information

Information will be collected from agency staff of the Irrigation Department's SDO, Agriculture Extension, and On Farm Water Management, and also any other field personnel working in the area. Project documents, evaluation and research reports, charts, maps, etc., will be collected. Interviews will be conducted with selected agency personnel.

(5) Supplementary Data

Finally, supplementary data will be collected through a short structured questionnaire. After a preliminary data analysis of the information gathered through the first four steps, a short questionnaire will be developed and administered to capture information that would supplement the knowledge base already generated to compile socio-economic baseline information.

(6) Technical Baseline Survey

A technical baseline survey will be conducted by taking appropriate field measurements by a team of trained persons.
6. PROJECT IMPLEMENTATION

The project is designed to be implemented with minimum resource support from IIIMI and WRRI. This support will essentially be in the form of facilitation in a process of mobilizing the latent capacity of the community, and the existing resources of the Irrigation Department's Small Dam Organization (SDO) and other agencies working in the area.

6.1 Role of IIIMI

Of the three collaborating partners, IIIMI concentrates on the social organization activities of the project. For this purpose, IIIMI uses the resources made available to it from the ODA Holdback Facility to obtain the minimum staff and the supplies and services required. The work involved includes the training of social organizers, social organization volunteers and water users groups; developing the processes of organizing water users; organizing the water users; training the water users organizations; process documentation; and assessing the short-term effects of water users organizations on the operation and maintenance (O&M) of pilot small dams.

IIIMI has identified a small team of resource persons to be deployed on this project. This team will work in very close collaboration with the other partners. The team consists of:

* An Irrigation Institutional Specialist from IIIMI's international staff located in Lahore, who will contribute staff time on the basis of 3 months per year,

* A Sociologist from IIIMI's locally recruited staff located in Lahore (3 months per year), and

* Two Social Organizers located at Fateh Jang (full time).

The staff located in Lahore will be on a regular visiting basis, staying in the study area for short time periods to support the two Social Organizers on the concepts and design of the study activities.

After the initial period of this project, IIIMI will also involve a few other individual local experts, including an NGO, through contract research for conducting the technical baseline survey of the command areas, the training of social organizers, SOVs, and water users groups.
6.2 Role of the Water Resources Research Institute (WRRI)

The Water Resources Research Institute (WRRI) of Pakistan's National Agriculture Research Centre (NARC) of Islamabad will provide research and development support to this project through its inputs in participatory watershed management, water use and agriculture production aspects. The Mirwal and Shahpur dams have already been selected for research studies. For example, the monitoring of groundwater recharge from Shahpur dam is an activity undertaken by WRRI outside the scope of this project, but closely linked with its objectives. Similarly, the WRRI will be initiating studies for high efficiency irrigation practices under the Mirwal dam. The following aspects will be the focus of these studies:

- existing irrigation and cropping practices in the command area;
- improving irrigation practices for orchards, field crops and fodder;
- monitoring of water storage in the dam reservoir, water flows to the command area, etc.;
- arranging field training and demonstrations on efficient water use, operation and maintenance of the irrigation system, etc.

For this purpose, the WRRI (along with the SDO) will prepare a separate project proposal for funding from the government of Pakistan, or from a donor. As a social organization basis is considered a prerequisite for initiating effective technological interventions for the small dams, these inputs are planned to be provided towards the second half of the project duration. An additional advantage of this strategy is that the technological interventions can be designed on the basis of field demands to be articulated by the ODA supported IIIMI action research on social organization.

Meanwhile, the WRRI support will be provided to IIIMI for initiating the proposed project activities in the pilot areas. The Institute’s current activities will cover both the Shahpur dam and Mirwal dam command areas, so that IIIMI's social organization activities for these two dam areas will be recognized as part of a program in collaboration with the government. The WRRI has agreed to arrange for one of its engineers to work as a liaison between the collaborating partners, WRRI, SDO and IIIMI.
6.3 Role of Small Dam Organization (SDO)

The SDO staff associated with the selected dams for pilot studies will provide collaborative support in field activities to WRRI and IIMI, including the necessary information required for research work. The SDO’s Deputy Director (Planning and Design) will work as the main resource person representing the SDO. An agreement in principle on these supportive actions was reached at a meeting held on 18 October 1995, in Islamabad.

The major role of the SDO will be to assist the other two partners in evaluating existing activities related to operation and maintenance of small dams, and incorporating ways and means of involving the water users in more effective and participatory O & M management and improved command area development of the small dams. As mentioned above, a separate funding proposal, jointly with the WRRI, will be submitted to the government for this purpose.

6.4 Project Activities

The Activity Chart gives a set of broadly defined project activities, distributed within the project period of three years from 1 April 1996 and 31 March 1997. These activities are related to four main phases, which reflect the step-wise process adopted in the project’s methodology (see Section 5.2 above). The four phases are:

(I) Support Mobilization Phase;

(II) Diagnostic Analysis Phase;

(III) Organizational Development Phase; and

(IV) Organizational Action Phase.

Each phase has a number of activities to be undertaken collaboratively by different actors, some of which, depending on the situational factors, may spill over to other phases. The process has been developed on the basis that each of the four phases prepares the participating water users in a progressive manner towards the goal of taking over management responsibility for the pilot small dam and its command area, the initial focus being placed on the management of operation and maintenance so that other management functions will be built around this core responsibility (Skogerboe et al, 1993).

Annex-4 gives the inter-linkages of the major activities as distributed within these four phases. As inherent in any action research program, some of these activities and their sequence are likely to be changed, as the program activities progress.
### ACTIVITY CHART

#### Year 1: April 1996/March 1997

<table>
<thead>
<tr>
<th>Activity</th>
<th>A</th>
<th>M</th>
<th>J</th>
<th>J</th>
<th>A</th>
<th>S</th>
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</thead>
<tbody>
<tr>
<td>1. Search, select and train field team</td>
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<tr>
<td>2. Negotiate institutional arrangements</td>
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<td>3. Select two pilot sites</td>
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<td>4. Conduct initial walk-through and identify key informants</td>
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<td>5. Collect basic field information</td>
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<td>6. Identify project coordination group</td>
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<td>7. Develop process for pilot project</td>
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<td>8. Develop questionnaire and conduct socio-economic baseline survey</td>
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<td>9. Conduct technical baseline survey</td>
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<td>10. Conduct awareness-building meetings</td>
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<tr>
<td>11. Preliminary data analysis of baseline surveys</td>
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<td>12. Final report of baseline surveys</td>
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#### Year 2: April 1997/March 1998

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<th>J</th>
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<th>J</th>
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</thead>
<tbody>
<tr>
<td>13. Prepare report of the diagnostic analysis</td>
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<td>14. Conduct semi-formal consultation meetings</td>
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<td>15. Arrange formal water users meetings to select organizational leaders</td>
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<td>16. Assist in conducting meetings and collective action for maintenance</td>
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<td>17. Assist in reviewing allocation rules</td>
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<tr>
<td>18. Establish water users organizations in two pilot sites</td>
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<tr>
<td>19. Conduct training on O&amp;M and improved irrigated agricultural practices</td>
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#### Year 3: April 1998/March 1999

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<tbody>
<tr>
<td>20. Develop plan of action for O&amp;M</td>
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<td>21. Arrange for Joint Management Agreement</td>
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<tr>
<td>22. Training WUO leaders on organizational, financial and management aspects</td>
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<tr>
<td>23. Assist in implementing plan of action on O&amp;M</td>
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<td>24. Evaluate short-term effects of WUO</td>
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<td>25. Refine plan of action and internalize implementation strategies</td>
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<td>26. Assist in establishing third small dam pilot project</td>
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<td>27. Final report and seminar</td>
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</table>

**Note:** The above time-line information reflects the adjustments made in the project period since the submission of the proposal.
7. OUTPUTS AND IMPACTS

The knowledge that will be generated through regular interactions, process documentation and participant observation, particularly relating to water users organizations as users of extension and other delivery services, will be of great value in developing a policy for Small Dams in Pakistan.

Section 3.2 above refers to three specific objectives of the action research pilot projects, which will be realized at different stages of the project implementation. In addition to these, three project outputs were mentioned in the project proposal document. The time bound targets can be given for all of these items as described below.

7.1 Time Bound Targets for Realizing the Five Objectives

Objective 1: Identify the current problems related to the system management and command area development in selected small dams. A report describing the results of all diagnostic activities under the project will be prepared by 31 May 1997, following the Activity No. 13 given in the Activity Chart.

Objective 2: Facilitate the formation of an appropriate water users Organization in each of the selected small dam pilot areas. By 31 December 1997, following the Activity No. 18 given in the Activity Chart, two water users organizations in the first two selected small dam pilot areas are expected to be formalized.

Objective 3: Assist the organization to be as functional as possible in the management of O&M and command area development, with an emphasis on improved irrigated agricultural practices. By 31 October 1998, following the Activity No. 23 given in the Activity Chart, the project intends to have two water users organizations engaged in implementing an agreed plan of action.

Objective 4: Develop methodologies for establishing water users organizations under the given technical, socio-economic and institutional conditions. By 30 November 1998, the project will finalize a report describing the processes and methodologies which can be used as guidelines in establishing water users organizations for undertaking O&M of small dams on a wider scale.

Objective 5: Assess the viability of these chosen social organization strategies and their short-term effects on the operation and maintenance of small dam systems and on their command area development. By 30 November 1998, following the completion of Activity No. 24 given in the Activity Chart, the project will prepare a preliminary report based on the short-term effects of two water users organizations established by then. A final report on the social and economic viability of the project’s strategies and objectives will be ready at the end of the project period, i.e. in March 1999, taking into account the experience of WUO’s for a reasonable period of time in conducting O&M activities.
7.2 **Time Bound Targets for the Three Project Outputs**

Out of the three small dam pilot projects of users take-over of system management and command area development, water users organizations for two pilot sites will be finalized by 31 December **1997**. However, the attempts to consolidate these two organizational efforts for undertaking system operation, maintenance and command area development will be tested fully only by the end of October **1998**, and the formation of the third organization for this purpose by an appropriate agency will be finalized by the end of March **1999**.

Similarly, two of the three pilot efforts of pre-seasonal planning by water users and related actors (suppliers, extension staff, irrigation services staff in case PID retains some responsibility), will be finalized by **31 May 1998**, and the third by about December **1998** depending on the outcome of the first two efforts.

A Process documentation report on the action research effort, which will include the results from field-testing of methodologies and capacity building, will be presented by **31 March 1999**, along with the completion of the project.

7.3 **Environmental Impacts**

The environmental impact of restoring neglected small dams into their full potential is expected to be a positive one. Full utilization of captured water, reduction of fallow and poorly cultivated land, and the resulting motivation on the part of farmers to improve agro-ecological conditions will also result in reduced health hazards such as malaria and bowel diseases, increased family incomes, decreased soil erosion, runoff, and waterlogging in the command area. Since the proposed project activities are not associated with new irrigation development, the environmental impact resulting from new dams does not arise as an issue here.

7.4 **Interventions and Expected Impact**

Table I gives the impact related interventions, their purposes, and the proposed measurement indicators, including the bio-metric evaluation that is needed\(^6\).

The interventions were selected as important in the context of present farmer behavior in the small dam irrigation systems in Pakistan. The reservoir capacity is not fully utilized for irrigation as the farmers still prefer to follow barani land cultivation practices. Building a reservoir has not been accompanied by a natural shift from these traditional practices. Reduced conflicts along with improved irrigation and agricultural practices, are the most important purposes behind this proposal.

---

\(^6\) This chart was prepared with the assistance received from Dr. Chris Perry of IIMI Headquarters, Colombo, Sri Lanka
<table>
<thead>
<tr>
<th>Intervention</th>
<th>Purpose</th>
<th>Impact</th>
<th>Measurement</th>
</tr>
</thead>
</table>
| Establish agreed farmer-run mechanisms for discussion of land and water related issues and conflicts | Provide open mechanisms for conflict resolution | Reduced number of water/land disputes | a) Total number of disputes  
b) Proportion of disputes resolved through agreed mechanisms |
| Farmer Organization (FO) attends to land preparation in the command area |                                                                         |                                                                         | Irrigation/Cropping intensities seasonally assessed                           |
| Train farmers on irrigated agriculture                                     |                                                                         |                                                                         | Area under HYV & Yield per ha                                              |
| Assist FO to develop water rights and related allocation rules             |                                                                         |                                                                         | Inter-quartile Ratio along main channel                                      |
| FO attends to maintenance of small dam and canal system                   | Effective maintenance                                                   | More reliable irrigation: Reduced Government Expenditures              | No. of Irrigations missed per season: Annual Govt. Exp. on maintenance       |
| Train farmers on agricultural practices                                     | Create interest among farmers regarding improved methods                | Better yields                                                          | Yield/ha  
Yield/unit of water                                                        |
8. INCEPTION ACTIVITIES UP TO 30 SEPTEMBER 1996

8.1 Agreement between IIIMI and ODA

The project proposal was developed by IIIMI in collaboration with WRRI during 1995, and was dispatched to ODA on 22 December 1995. After review and other processing formalities, ODA sent the formal Agreement inadvertently to WRRI, and the Director of WRRI, by his letter dated 21 March 1996, pointed out the error and returned the documents to ODA. The amended Agreement was finally signed by ODA and IIIMI in May 1996. The project was made effective for a period of three years from 1 April 1996 to 31 March 1999.

8.2 Selection of Pilot Action Research Sites

Three dam sites (Mirwal, Shahpur and Bhughtal) were selected during the project development stage. The selection was based on a rapid appraisal conducted by IIIMI and WRRI, using a number of selection criteria including size, number of water users, present level of command area development, and the potential for increased irrigation supplies. The three dams represented a relatively well developed, a moderately developed and a very low cropping intensity system, respectively.

Of these three sites, emphasis was to be placed on the Mirwal dam, as it was already the site proposed for WRRI's research interventions. The Mirwal dam, which was completed in 1990, is located in the Jand Tehsil of the Attock District, about 42 kilometers from the town of Fateh Jang on the Kohat road. Fateh Jang was considered as a suitable location for IIIMI's field station, considering its proximity to the Shahpur dam, the second pilot site selected for the study. For the same reason of proximity, IIIMI's field team started field work first in the Shahpur dam command area, and has proceeded ahead of its work in Mirwal (see Section 8.8 below).

The basic information related to the three selected dams are given in Table 2.
TABLE 2: Basic Information on Three Selected Small Dam Systems.

<table>
<thead>
<tr>
<th>Item of Information</th>
<th>Name of Small Dam</th>
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<tr>
<td></td>
<td>Mirwal</td>
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<tr>
<td></td>
<td>Shahpur</td>
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<tr>
<td></td>
<td>Bughtal</td>
</tr>
<tr>
<td>Name of Stream</td>
<td>Dubran Kas</td>
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<td></td>
<td>Nadna Khas</td>
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<td></td>
<td>Sirli Nallah</td>
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<tr>
<td>Storage Capacity</td>
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<tr>
<td>Live</td>
<td>3.36 MCM (2726 AF)</td>
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<td></td>
<td>5.1 MCM (4095 AF)</td>
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<tr>
<td></td>
<td>0.8 MCM (675 AF)</td>
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<tr>
<td>Dead</td>
<td>1.26 MCM (1039 AF)</td>
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<td></td>
<td>12.6 MCM (10241 AF)</td>
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<td></td>
<td>0.6 MCM (465 AF)</td>
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<tr>
<td>Design Discharge</td>
<td>0.31 m3/sec (11 cusecs)</td>
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<td></td>
<td>1.21 m3/sec (43 cusec)</td>
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<td></td>
<td>0.25 m3/sec (9 cusec)</td>
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<tr>
<td>Design Command Area</td>
<td>711 ha (1,050 acres)</td>
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<tr>
<td></td>
<td>1,346 ha</td>
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<td></td>
<td>406 ha (600 acres)</td>
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<td>Year of Completion</td>
<td>1990</td>
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<td>1986</td>
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<td>O &amp; M Cost</td>
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<td>Number of Water Users</td>
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</tbody>
</table>

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6 Information in this table was collected with the help of Dr. Shahid Ahmed and Mr. Mohammad Aslam of WRRI.
8.3 Selecting and Training the Field Team

Interviews for selecting two Social Organizers were held on 5 June 1996 at the WRRI premises. Arrangements for this interview were made by WRRI and the panel consisted of Dr. Shahid Ahmed, Director, WRRI, Mr. Mohammad Aslam, Scientific Officer, WRRI, and Dr. M. Asghar Cheema on behalf of IIMI.

Of the 7 candidates invited to appear for the interview, 6 reported, of whom 4 were with Agriculture Engineering and two were with Sociology backgrounds. The two sociologists were both working in some other community development projects and were looking for better remuneration. Finally, the panel could select only one out of the 4 Agriculture Engineers, who had some experience in community-based work. Subsequently, through a search in the University of Agriculture Faisalabad, another person with an M.Sc. Agriculture (Agronomy) was selected.

The two selected persons were invited to the IIMI Pakistan office in Lahore, for an orientation program on 11 July 1996. After the first day’s orientation program, the Agriculture Engineer had to return to Islamabad as he was offered a position with a government institute. Later, he decided to accept that offer. The remaining Social Organizer (Mr. Muhammad Akram) was sent for field training to IIMI’s Haroonabad Field Station, which is engaged in social organization activities for the pilot project associated with the Hakra 4-R Distributary command area.

Two other persons with Agriculture Engineering backgrounds were interviewed, but each of them declined to accept the employment offer after visiting the project area. Since further attempts to attract a suitably qualified person for the other Social Organizer’s position were not fruitful, on a suggestion by Dr. Shahid Ahmed, Mr. Muhammad Hussain, a person from a village close to Fateh Jang was selected as an assistant to Mr. Akram. On 16 August 1996, IIMI was able to recruit the second social Organizer, Mr. Shabir Ahmed, who had just completed his M.A. Economics at the University of Agriculture, Faisalabad.

Along with this field-based personnel, IIMI has mobilized a few other members of IIMI’s professional staff based in Lahore. IIMI’s current team for this project include the following:

International Staff

Mr. D. J. Bandaragoda. Senior Management Specialist, IIMI Pakistan - (Project Leader)

Professor Gaylord V. Skogerboe, Director, IIMI Pakistan - (guidance on process development and O&M training)
National Staff

Dr. Muhammad Asghar Cheema, Sociologist
Mr. Muhammad Akram, Social Organizer
Mr. Shabir Ahmed, Social Organizer
Mr. Mohammad Hussain, Assistant Social Organizer

8.4 Establishing a Field Station at Fateh Jang

The field station was established at Fateh Jang on 13 August 1996, and the field team started work with a field orientation for one week (during the third week of August, 1996).

8.5 Preliminary Field Activities

The field team started to collect basic information in the Shahpur Dam command area on the basis of a check list. The following items of data are being collected through selected key informants:

* Number of shareholders in the command area;
* Their landholdings in terms of irrigated and non-irrigated land;
* Total population and the number of people involved in agriculture;
* Major problems in small dam irrigation systems;
* Cropping intensity and cropping pattern;
* Average yields of major crops grown in the area; and
* Detailed map of the area.

The two Social Organizers have decided to divide the four villages in the command area between them, and one is concentrating on Dhok Baloch and Shahpur mouzas (villages), while the other is concentrating on Karima and Amir Khan mouzas.

8.6 Institutional Arrangements

The activity of exploring institutional support for the pilot project started during the project development stage. Preliminary discussions aimed at reaching a consensus on the idea for an action research pilot project were held with the main collaborating partners at a meeting held in the Small Dam Organization (SDO) office in Islamabad on 18 October 1995. The SDO was represented by four senior officials including the Project Director (Small Dams). The Chief Executive Officer of the Agency for Barani Area Development (ABAD) and Deputy Director (Development) of ABAD attended the meeting and showed a keen interest in the pilot project's concepts. Others who participated in the discussions were two Extra Assistant Directors of Agriculture Extension, the Director of WRRI, and the Senior Management Specialist of IIMI. The discussion included a brief presentation of on-going and proposed WRRI activities in
the small dams area, and the case for some experimentation with social organization for the management of small dams. There was a general consensus on the need for a pilot trial in water users organizations in a few selected small dams, and also an expression of support for such a pilot project.

IIMI’s collaboration with the WRRI of NARC started with the decision of Pakistan’s National Consultative Committee for IIMI (see Section 1). Proposal development, staff recruitment, arrangements with other agencies such as ABAD and SDO and collection of basic information are the main activities which have directly benefited from this collaboration. While the planning and supervision of social organization activities in the field will be mainly the responsibility of IIMI, the monitoring of water related information in the project areas and other technical aspects of water management will be part of this collaborative relationship with WRRI (see Section 6.2).

After the inception activities, the collaborating partners will meet again along with the Chief Executive of ABAD, and discuss the workplan as presented in the Inception Report. One major objective of this meeting will be to decide on some appropriate coordination mechanism to assist and monitor the pilot project activities, and to discuss the ways and means of developing close collaborative arrangement with the SDO for promoting and participating in pilot project activities.

8.7 Procurement and Administrative Issues

Several visits were made by IIMI staff from Lahore to the project area for selecting a place for the field station. There were difficulties in locating a suitable house to be taken on rent for the field station close to the Mirwal Dam command area, as facilities in that area were not adequate. Finally, a house was located in the small town of Fateh Jang, which was chosen as a focal point between the two pilot sites, Mirwal and Shahpur, and the nearest city, Rawalpindi. Yet, only Shahpur is within 5 kms from Fateh Jang, which is about 42 kms from Mirwal and 50 kms from Rawalpindi. For the reason of distances alone, the priority of the field work schedule shifted from Mirwal to Shahpur.

Since the vehicles were not included in the Project’s capital budget for equipment, two motor cycles were obtained on hire through the supplies and services component of the budget. During the next month, when the field team will start work in Mirwal, the team will have to use a combination of public transport (to cover 42 kms between Fateh Jang and Mirwal along the Kohat road) and the two motor cycles (within the Mirwal dam command area).

The IIMI Field Station at Fateh Jang is now located in a reasonably good accommodation, but it has no access to a telephone. The procedure for acquiring a new telephone connection is long and arduous. The absence of telephone facilities makes the Field Station still more remote from IIMI’s main office in Lahore.
8.8 Preliminary Discussions with Water Users

The first few meetings between IIMI's study team and some of the water users in the area became the usual grievance mechanisms. The following issues emerged during these initial meetings in the two pilot project areas (Mirwal and Shahpur):

* Only a small portion of the irrigation channels in both the small dams (Mirwal and Shahpur) is lined, and the unlined portion is not well-maintained. Most of the water users thought that the material used in lining of water channels was not of good quality, and the resultant water seepage was causing waterlogging.

* Problems of land development were raised by many farmers in both the small dams. Just about one-third of the command area was considered developed so far for irrigation purposes. The farmers believe that the Government of Pakistan having spent such a large amount of money for the construction of small dams, remains obligated to complete the land development of the command areas.

* They lamented that the equipment meant for developing dams' command areas often remained unserviceable. Even when they were in working condition, the equipment was most often used for developing the land owned by influential landholders, and the needs of the small shareholders were generally ignored.

* Almost everyone complained about the government agencies providing less water and charging more abiana, even when dam water was not used.

* The existing water allocation method is some form of kacha warbandi, an informal water rotation, resulting in many water-related disputes among the water users.

* Cooperative societies do exist in some villages but are non-functional.

* Village roads off-taking from the main road are not paved and not properly maintained.

* Non-existence of proper arrangement of medical and educational facilities is a major cause for the people to migrate to other areas.

* The small dam project area is different from the major canal irrigation areas in the Punjab. The land is fairly undulating and uneven, and the fields are of different shapes (not the usual squares found in the canal irrigation area) making water management a difficult task.
The majority of the water users own small landholdings. After discussion with some of these shareholders, it appeared that they were eager to form organizations at small dam level. However, they all, including some medium size landowners, tended to be cautious about the possible influence from some quarters against a successful organization for the management of small dams.

8.9 Workplan for Next Six Months

The activities to be accomplished during the period from 1 October 1996 to 31 March 1997 are shown in the Activity Chart on page 19.

During October 1996, collection of basic information will continue in the Mirwal Dam command area. In addition to information already collected in Shahpur, the field teams will concentrate on developing lists of shareholders in this site. This activity will be started in the Mirwal command area in November 1996, with the recruitment of another Social Organizer Assistant selected from the project area itself.

A series of awareness building meetings will be conducted, and in the initial set of these meetings, some community-based social organization volunteers (SOVs) will be identified from both the pilot project areas.

Two other major activities during this period will be the completion of socio-economic and technical baseline surveys in both the sites.
References


Mehmood ul Hassan, Zafar Iqbal Mirza and D. J. Bandaragoda. 1996. Mobilizing social organization volunteers: an initial methodological step towards establishing effective water users organizations


Zaidi, A. H. Institutional and management issues in the development of irrigation with small dams. Mirneo.
Annex-I

IIMI’S INITIATIVES ON PARTICIPATORY IRRIGATION MANAGEMENT
IN PAKISTAN

Extract from a Briefing Note Prepared by
D. J. Bandaragoda and Gaylord V. Skogerboe
for the EDI/MWP Workshop at Burhan, Pakistan
1-4 October 1995

INTRODUCTION

In developing interventions on social organization, IIMI brings the experience it has
gained in other countries such as Sri Lanka, Nepal, Philippines and Nigeria, and also
the knowledge distilled from others’ experiences in countries such as Mexico and
Colombia. However, the emphasis of IIMI’s approach to establishing pilot projects on
participatory irrigation management in Pakistan has been to learn more about the
processes involved in establishing effective social organization for managing irrigation
systems. IIMI expects that the intensive process documentation that accompanies this
effort would benefit the country’s policy initiatives in this area. Apart from this emphasis
on "learning how to establish effective water users organizations", IIMI also plans to
study the impact of pilot projects in terms of their contribution to performance
improvement in the irrigated agriculture sector.

This note is meant to provide some information regarding IIMI’s recent social
organization initiatives and a few proposed activities which are under consideration by
the government of Pakistan and the donors.

ON-GOING ACTIVITIES

1. Three Pilot Projects on Distributary Level Water Users Organizations in the
Fordwah Easter Sadaia Area of the Puniab Province (Financial Support from the
Royal Netherlands Government)

This activity is a part of IIMI’s study project, "Managing Irrigation for
Environmentally Sustainable Agriculture in Pakistan", which was approved on 19
May 1955, but for funding purposes became effective on 1 October 1994. Under
this activity, IIMI is associated with three pilot distributary commands in which
participatory irrigation management will be attempted.

7 Senior Management Specialist and Director, respectively, of the International
irrigation Management Institute (IIMI), 12 KM. Multan Road, Thokar Niaz Baig,
Lahore, Pakistan.

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As the first site for this pilot trial, IIIMI selected Distributary No, 4-R in the Hakra Branch canal system within the Fordwah Eastern Sadiqia (South) - FES(S) irrigation system. One of the reasons for selecting this site is the fact that a number of national research institutes and agencies are working in the same area under the World Bank-funded FES(S) Irrigation and Drainage Project.

Prior to starting work in Hakra 4-R Distributary, IIIMI undertook a rapid appraisal of the present organizational status in the Hakra 6-R Distributary command area, which was one of Punjab's several sub-projects under the Command Water Management Project (CWMP). The main purpose of this exercise was to train the team of field staff selected for social organization work, and to gain some understanding on the CWMP interventions on forming water users associations. With the background knowledge gained through this work, IIIMI intends to use Hakra 6-R Distributary as a second pilot project site for participatory irrigation management. The effort, however, will be with an emphasis on encouraging the operating agencies to take the initiative in organizing water users, and will be launched after reaching some degree of maturity in the interventions at Hakra 4-R Distributary.

The third is the Sirajwah Distributary pilot effort in the (World Bank-funded) Fordwah Eastern Sadiqia (South) Irrigation and Drainage Project, Punjab, for which IIIMI gives only advisory assistance to the Punjab's On-Farm Water Management Directorate (OFWMD). The "Integrated Irrigated Agriculture Management" component of the FES(S) Project is executed by the OFWMD of Punjab, and as part of this component, the OFWMD is to introduce participatory irrigation management in two pilot distributary commands. For this purpose, OFWMD selected Bhukan and Sirajwah distributaries. The Bhukan distributary has only 8 watercourses, whereas the Sirajwah distributary is typically a large sub-system with over 100 watercourses. IIIMI has provided an advisory service to the OFWMD in its planning effort for these pilot trials, but intends to be closely associated with the implementation of this work at the Sirajwah site.

With effect from 1 July 1995, IIIMI started an activity in collaboration with the Department of Agricultural Engineering and Water Management of the Government of Sindh to launch three pilot projects on water users organizations. The major objectives of these pilot projects are: (1) to test the viability of farmers'
managing parts of the irrigation systems so that more efficient and equitable allocation of water can be achieved; and (2) to make recommendations on future extensions from the results of the pilot projects. Three distributaries/minors are to be selected in the LBOD Project area, one in each of the three districts of Nawabshah, Sanghar and Mirpurkhas.

The field approach involves the placing of social organizers in selected communities to interact and slowly catalyze the farmers to identify their own problems, solutions, leaders, organization, financing, budgeting, and management. For each distributary/minor command area, a Water Users Organization Team will be deployed, consisting of one Supervisory Social Organizer, two Social Organizers and two Field Research Assistants. The Field Research Assistants (new Engineering graduates) will provide the necessary technical support to the Social Organizers (MAs in Sociology).

The necessary field staff (3 SSOs, 6 SOs and 6 FRAs) have been recruited and given a training in the AKRSP training center in Gilgit. The professional and office staff have also been recruited, and the Senior Irrigation Sociologist who will lead IIMI’s team at Hyderabad and in the field has started work. After an initial rapid appraisal of about nine distributaries, which will start on 8 October 1995, a decision will be taken in collaboration with Irrigation and OFWM departments in Sindh to select the three pilot distributaries/minors.
Rationale for Organization of Water Users in Pakistan

The three main management constraints of water shortage, poor maintenance and a centralized static administrative system are further compounded by problems associated with waterlogging, soil salinity and capacity limitations of the conveyance system. The combined effect of these problems imposes an increasing inequity in the distribution and use of irrigation water, a decreasing concern for rules and regulations, and consequently, a growing mistrust between water users and agency staff.

The present inequity is, primarily, the cumulative effect of past deficiencies in maintenance and persistent deviations from the designed operational procedure. Maintenance is basically a support activity to facilitate operating the irrigation system, and the two activities need to go hand in hand for the system to perform according to its design parameters (Skogerboe et al 1993). The original design of Pakistan's irrigation systems, as well as of the institutional arrangements for their operation and maintenance was characterized by features aimed at equitable water distribution. With the gradual decline in the quality of physical and management conditions, this design stage objective of equity steadily eroded, leading to the present situation of near anarchy in the irrigation environment. Today, the equitable water distribution has been replaced by a blatant behavior of water misappropriation. Some water users appropriate the share of the others by taking advantage of the deterioration in both physical and management conditions in the system.

Laxity in canal operations also promotes anarchy in the field; there are many instances of breaching of canal bunds, installing unauthorized outlets, pumping and siphoning of canal water, and tampering with outlets and other canal structures. These acts in turn exacerbate the maintenance problems. In the overall, the effect of this "free rider" behavior, in which some individuals try to get more than their due share at the expense of the others, is that the tail-end sections of the canal system suffer from water shortage. Both under normal supply and shortage conditions, generally the upstream water users receive more water than their due share, while those in the tail reaches of the canal command receive less (Vander Velde and Murray-Rust 1992).
Surprisingly, there are also instances where the tail-end watercourses in some canals have been reported as receiving more water than their head-end watercourses. This unusual inequitable situation observed in Puran and Nari distributaries in the Punjab is attributed to an overall over-supply of water to the canals (Gleason et al. 1993). A similar anomaly was seen in an IIIM study in the Lower Swat Canal in the North West Frontier Province, where its downstream Sheik Yousaf Minor was drawing more excess water relative to the design discharge than its upstream Distributary No. 3, and the same reason was identified for explaining the unusual reversed inequity (Bandaragoda et al. 1993). It is reasonable to believe that an over-supply under conditions of general shortage of water in the system can occur only with more than just tacit involvement by the operating staff.

The present problems of irrigation management in Pakistan typically call for such institutional solutions. The main reason for this thinking is the understanding that, hitherto, the country’s irrigation development has been overly technology-oriented, and pursued with a pre-occupation in expanding the resource base.

The commendable work done so far in technology application and resource base expansion is now clearly facing a decline in its productive value. Yields of main crops under irrigated agriculture in Pakistan are either stagnant, or declining. The Pakistan National Conservation Strategy, a recently published government document, points out that Pakistan’s average yields of all main crops are considerably less than the average yields achieved by other countries; wheat yield is 44% of that in Mexico, rice yield is 43% of that in Egypt, maize yield is 33% of that in Turkey, cotton yield is 75% of that in Mexico, and sugarcane is 66% of that in India. The 1990 Water Sector Investment Plan of Pakistan predicts a shortfall of about 10% by the year 2000 and 25% by 2013 in the country’s future food and fiber production needs, even if the Plan’s proposed targets of resource base and performance improvements are met. This represents an increase in the food deficit from 24% to 36% during this period. Thus, the low productivity of irrigated agriculture in Pakistan represents a major threat to the country’s food security.

Institutional Development Among Water Users

Organized water users can form an essential part of the institutional framework for irrigated agriculture. An appropriate short definition of the word "institution" in this instance is the one chosen by John R. Commons in 1934; "an institution is collective action in control of individual action". The word "control", which is used in a broader connotation here, means a number of measures which a group collectively takes relating to individual action for the purpose of improving the group's overall benefit. Generally, the group tries to enhance individual action, but considering the fact that some persons' enhanced actions can adversely affect the welfare of the others, the group also has to restrain individual action whenever necessary. Thus, as derived from the above short definition, "an institution is collective action in restraint, liberation and expansion of individual action" (Parsons 1984:28).
The view of water users association (WUA) as an institution, based on the definition adopted above, is of special relevance to the context in which WUAs have to be considered in Pakistan's irrigation systems. With the management conditions prevailing in Pakistan, any useful collective action at the watercourse or distributary canal level should necessarily mean a combination of both the liberation and the restraint of individual action. For example, while individual action has to be expanded for undertaking maintenance work, and liberated for realizing individual rights and effectively interacting with officials, it also has to be restrained for reducing anti-social and "free-rider" behavior among themselves. Therefore, based on the spirit of the definition used by Commons, the WUAs can serve as a very valuable institutional remedy to address the present situation in Pakistan's irrigated agriculture.

However, for a WUA to be an institution, it has to persist and develop to the point where it is commonly perceived as valuable and useful (Merrey 1993). A WUA formed for short-term objectives is merely a structure of identified roles accomplished by a few selected individuals, such as the president, secretary and treasurer. At best it can be referred to as an organization, but often it is limited to an ad-hoc group of few people working together to achieve a temporary task. Once the short-term objectives are achieved, such WUAs can, and usually do, disappear.

A WUA, which starts as some form of an organization, can eventually grow into an institution only when it establishes persistent patterns of norms and behavior commonly accepted as valuable and useful to the membership. By then, it will have established accepted sets of rules and procedures for various functions of collective action. Such a system of rules cannot just happen, or spring up on administrative fiat, but it has to evolve over time. Only at this mature stage can a WUA exercise successful collective action to both liberate and restrain individual action for the benefit of the group as whole. The relevance of this explanation is that the acceptability of the WUA by a substantial majority of its membership is an essential characteristic that determines its effectiveness in undertaking continuing tasks such as channel maintenance, water distribution and conflict resolution.

Viewed this way, an effective water users association should be able, not only to mobilize its individual members for expanding and liberating their production-oriented action, but also to agree for restraining their action to ensure equity-oriented behavior. An appropriate combination of the two functions would then serve to increase the overall benefit of the group. Within a channel command, there can be even a small group of people who tend to exploit the others. An important issue is whether they can be absorbed into collective action for common benefit? The possibility lies in what Gandhi once said. "Exploitation of the poor can be extinguished not by effecting the destruction of a few millionaires, but by removing the ignorance of the poor and teaching them how to resist the actions of their exploiters. That will convert the exploiters also."
Institutionalizing WUAs: A Relatively Neglected Aspect

Often, the policy-makers and implementing agencies commonly disregard that agricultural development does not depend solely on improving the physical resource base. They rarely acknowledge the equally important need to enhance the capacity of human resources for effectively making use of the improved physical resources.

Taking increased control over physical nature has two different tasks. First is the modification of nature for physical infrastructure development, including the building of reservoirs, canals and diversion structures, and their subsequent rehabilitation. This has proved a relatively easy task when compared with the second, the task of modifying human behavior to suit the increased or changed operation and maintenance requirements of the developed infrastructure. The growth of physical infrastructure development has not proceeded hand in hand with the growth of human resources development in irrigated agriculture. As a part of this long neglect, a conspicuous deficiency can be seen in the present status of the rural people who are involved in irrigated agriculture, and of their organizations. Considering that the irrigation water users constitute a significant proportion of the total working population in Pakistan, it is unusual that they have remained, and unreasonable that they have been left, unorganized for so long, when compared with many other relatively more organized sections of the working people.

Looking for reasons for this neglect, it has been a popular practice among commentators to place the blame on engineering and technical groups involved in development work, and indict them for having an apathetic attitude towards the non-physical aspects of irrigation management. Very often, reference is made to the engineers’ reluctance to appreciate the need for such matters as, organization of water users, farmer participation and agency-farmer coordination.

Contrary to this popular notion, the lack of appreciation of these non-physical aspects appears to be a much more wide-spread attitude, which can be seen as affecting a larger section of the people involved in irrigation management, than just the engineers. This is an important consideration in formulating policy and developing strategies for social organization in irrigated agriculture.

What Can the Organized Water Users Do?

Past experience in state sponsored interventions in organizing the water users can be associated with this bias towards the more tangible, target-oriented and engineering-related activities by the water users. Once this limited involvement in lining and improving watercourses, a task that was purportedly used as an incentive for social organization, was accomplished the “WUA” that was formed for the purpose collapsed. In fact, the activity itself was a doubtful incentive for the farmers to organize themselves for collective action. The task could be undertaken with minimum organized behavior
by the individuals, and did not lead to sustainable organizations. Studies on Swabi Irrigated Agriculture Project (SIAP) activities in the North West Frontier Province concluded that lining of watercourses is hardly seen by the farmers as a strong incentive for collective action. However, further research on this aspect is necessary to make firm conclusions.

An organization of water users implies that the water use itself is an important task to be gainfully accomplished through collective action by the organization. This assumption has not been tested yet in Pakistan, but underlies the conceptual framework outlined in this paper. One of the important objectives of any future interventions in organizing water users in Pakistan should be to try this particular task and test the validity of this proposition. Can organized water users manage water more productively and more equitably, if they were to be given the responsibility, not only at watercourse level, but also at distributary canal level? So far, the answer has been negative, but only based on conventional wisdom. Many other countries, particularly those in Latin America, Europe and Far East have tried organizing farmers for water management with some degree of success.

**WHO Should Organize Water Users?**

The political nature of participation requires that the policy on social organization should essentially be indigenous, or should finally be determined by the local people alone, and not by any donor or foreign expert. However, external assistance can be a very useful catalyst in the process of policy formulation, problem analysis and implementation strategies.

In Pakistan, this policy interest has already been expressed. Two extensive state sponsored programs, On Farm Water Management and Command Water Management, represent a clear expression of policy interest in social organization, which is further supported by the laws established for water users associations and their federations. What is lacking however, is a firm commitment on the part of both policy and management to pursue this effort beyond the program-based obligations to the donors. Once a favorable policy environment has been established, ideally, the need for WUAs should be felt by the water users themselves, and the organization and development of WUAs should be on their own initiative and interest.

The present research effort will help to develop a general awareness regarding the field response to the past policy initiatives, to rekindle the interest among policy and implementation levels for undertaking more meaningful measures towards lasting institutional development among water users, and to identify the conditions for effective social organization. Contextually appropriate action research efforts will follow the initial "learning" phase, on the basis that external assistance can be effective only in playing a facilitating or a catalytic role. Action research on this theme has to be essentially collaborative. With this requirement in view, the present research effort will also endeavor to explore the development of appropriate extension mechanisms and training strategies for collaboration with government agencies, NGOs and water users.
Main Research Issues Relating to Water Users Associations

1. **Inequity**: It is conventional wisdom that rural people genuinely believe in cooperation. If they cannot easily translate this belief into action, one of the possible reasons can be the inequity that exists among them, be it an inequity in terms of their literacy, income and wealth, and social status or political power. This reason seems to suggest why a greater degree of cooperation can be seen in more egalitarian societies. It can be hypothesized, therefore, that the skewed nature of the socio-economic structure of Pakistan’s irrigated agriculture sector is a major impediment to the growth of cooperative behavior among the water users, and the emergence of effective water users associations. This is an issue that needs to be explored more thoroughly with in-depth studies including both quantitative and qualitative assessments of the existing inequity, and to relate them with both the past experiences of social organization in this regard, as well as the potential for future interventions.

The physical location of outlets and water users were mentioned as factors influencing equitable distribution and use of water. How do the water users perceive this phenomenon? Is there a variability in their perceptions in terms of their location along the distributary, and along the watercourse, regarding the potential for, and the value of water users associations?

2. **Incentives for Collective Action**: Very much related to the inequity issue is the assumption that it is not logical to expect any individual to join collective action unless the individual sees a net personal benefit arising from it. Often, little value is attached to this seemingly simple, but factually undeniable, theoretical concept. What is the potential, in this particular context, of generating a long term net benefit to the whole group, as well as to each individual who joins the group for collective action? Once identified, how can it be articulated?

3. **Water Users’ Evaluation of Past Interventions**: Pakistan has more than two decades of experience in establishing water users associations. Several evaluations on this effort have not been positive. What are the real reasons for these rather disappointing results of past interventions? What are the water users’ perceptions on this? Among these reasons, or further to them, could there be any cultural, socio-economic or environmental factors that tend to foster or inhibit the development of organizations and institutions among water users?
4. **Farmer-Bureaucracy Interactions:** The actual relationship *between* the official and the water user under the present conditions in Pakistan's canal systems has not been clearly explored. The obvious reason has been the difficulty of extracting accurate information on some of the sensitive aspects of this issue. Yet, it is worth trying, in any given opportunity, to find out more about this relationship. How do the "free riders" interact with the irrigation official relating to whatever they do against the law? What is the nature and scope of these formal and informal interactions?

5. **Governance:** Of the possible reasons for the success or failure of interventions promoting **WUAs**, governance is an important factor and deserves special attention. Governance refers to the allocation of power and authority in the society. The system in Pakistan can be described as a centralized form of governance for irrigation management, and therefore, can have a great influence on the establishment of **WUAs** as sustainable organizations. This proposition needs to be tested to consider possible policy changes in the present system.
References


Hart, H. 1978. Anarchy, paternalism, or collective responsibility under the canals, Economic and Political Weekly 13, Bombay, India.


Pakistan National Conservation Strategy. 1992. The Pakistan national conservation strategy: where we are, where we should be, and how to get there. Environment and Urban Affairs division, Government of Pakistan.

Parsons, K. H. 1984. The place of agrarian reform in rural development policies, in Studies on Agrarian Reform and Rural Poverty, FAO Economic and Social Development Series, No. 27.


FORMAT FOR IDENTIFYING SOCIAL ORGANIZATION VOLUNTEERS

WATERCOURSE __________________ CHAK NO.__________________________

NAME OF THE CONTACT FARMER ________________________________

FATHER’S NAME ________________________________

SIZE OF HOLDING _____________CULTIVATION STATUS______________

CAST ________________________________

EDUCATION ________________________________

ADDRESS ________________________________

________________________________________

Please read the statements carefully and for each statement give a score of 1 to 5. A score of 1 is the lowest and a score of 5 is the highest.

Note: If score is (1) and (5), please comment
1. The person is well motivated and has initiative for working for the community

2. Participation in some social/community work

3. Well informed of area, socio-economic factors, irrigation and agriculture
   Over all score
   Know more about the area?
   Know more about the community, caste, traditions, etc.
   Know more about crops, problems of irrigated agriculture, etc.
   Know more about who can solve their water related problems?

4. Honest and trustworthy?

5. Is he believed to be an anti-social element

6. Ability to communicate well with you

7. Ability to communicate with the farming community?

8. Experience in working with the community

9. Does he seem reasonable and intelligent to you?

10. Affiliation to some political party?

11. Commitment to work for improvement in the situation?

12. Is there a political conflict in the area? Yes/No; if yes, how seriously is the person involved?
Total **persons** met _____ favored ________ opposed ________

OTHER OBSERVATIONS __________________________________________

________________________________________________________________

DECISION: ______________________________________________________

**NAME(S) OF THE TEAM MEMBERS**

1 ____________________________________________________________ 2

SIGNATURES: ________________________________________________

DATE: / /
PROPOSED PROCESS FOR CREATING SUSTAINABLE WATER USERS ORGANIZATIONS IN SMALL DAM PILOT PROJECTS

1. **Setup Mobilisation Phase**
   - Negotiate institutional Arrangements
   - Establish Field Committee

2. **Diagnostic Analysis Phase**
   - Collect Basic Information
   - Assess Community Characteristics
   - Assess Technical Characteristics

3. **Organisational Development Phase**
   - Formulation of Water Users Organizations

4. **Organisational Action Phase**
   - Develop a Plan of Action
     - Agreement on Joint Management Responsibilities
     - Implement Plan of Action

5. **Monitoring, Evaluation and Feedback Program**

6. **Turnover to Farmer-Managed Irrigation Subsystem**
Phase I: SUPPORT MOBILIZATION

SDO
- Discuss Potential Collaboration for WUOs Program

IMM
- Prepare Proposed Pilot Program for Water Users Organizations
- Begin Process Documentation

WRRI
- Discuss Potential Collaboration for WUOs Program

SOD
Negotiate Institutional Arrangements for a Pilot Program on Establishing Water Users Organizations (WUOs)

Establish Field Implementation Coordination Committee with Representatives from Participating Organizations

Prepare Criteria for Selecting Pilot Sites

Develop Methodology for Selecting Pilot Sites

Select Pilot Sites

Begin Program Implementation at Selected Pilot Sites

Develop Training Program for Field Teams Including Social Organizers

Search and Recruit Social Organizers (SOS) and other Field Staff

Conduct Training for Field Staff
Phase II: DIAGNOSTIC ANALYSIS

Water Users

Social Organization Field Team (SOFT)

Conduct Initial "Walk-Thru"

Nominate Persons as Key Informants

Assess the Suitability of Nominated Persons as Key Informants

Select Key Informants

Key Informants Provide Basic Information

Collect Basic Information

Develop Shareholders Lists

Assist in Developing Questionnaire

Key Informants Assist in Preparing Water Turn Lists

Pretest Questionnaire

Conduct Socio-Economic Baseline Survey

Water Users Assist in Water Management

Conduct Technical Baseline Survey

Assist in Calibration of Irrigation Structures

Nominate Persons as SOVs

Conduct Awareness Meetings and Identify Persons as SOVs

[Preliminary Data Analysis of Baseline Surveys] of

Assist in Developing Process for Social Organization
Phase III: ORGANIZATIONAL DEVELOPMENT

Water Users

1. Assist in Selecting SOVs
2. Assistance to Water Users by SOVs
3. Exchange of Information
4. Discussion Among Farmers About Joint Management Organizational Structures and Operating Practices (Share System)
5. Discussion of Potential Organizational Boundaries
6. Decisions on Organizational Boundaries
7. Discussions of Organizational Levels, Structures, By-Laws and Rules
8. Election of Officers by Farmers
9. Send Officers for Training

Choronomical Organizational Activities

1. Awareness Meetings by SOVs and SOFT
2. Assess Community Characteristics
3. Consultation Meetings
4. Begin Formation of Water Users Organizations
   - 1. Organizational Levels
   - 2. Organizational Structures
   - 3. By-Laws
   - 4. Rules

Social Organization Field Team (SOFT)

1. Select SOVs
2. Assistance to Water Users by SOFT
3. Continues Process Documentation
4. Train SOVs
5. Study Socio-Economic Baseline Report
6. Plan Consultation Meetings
7. Advise on Organizational Levels, Structures, By-Laws and Rules
8. Leadership Training
9. Provide Trainers
Phase IV: ORGANIZATIONAL ACTION

Water Users

Choronomological Organizational Activities

Social Organization Field Team (SOFT)

Water Users Leaders Participate in M&O "Walk-Thru" Surveys and Developing a Plan of Action

Meeting of Farmers to Discuss Proposed Plan of Action

Negotiations by Leaders of Water Users Organizations

Consensus by Farmers to a Plan of Action

Select Farmers for Training

Select Farmers for Training

Provide Inputs as Agreed Upon
1. Labor
2. Kind
3. Cash

Develop A Plan of Action
1. Essential Structural Maintenance (ESM)
   a. Conduct Operations Control Maintenance Survey
   b. Develop ESM Plan
2. Operations
   a. Conduct Hydraulic Survey
   b. Develop Operations Plan
3. Deferred Maintenance
   a. Conduct Diagnostic "Walk-Thru" Maintenance Survey
   b. Prioritize Deferred Maintenance Needs
   c. Develop "Catch-up" Maintenance Plan

Agreement on Joint Management Responsibilities

Financial Management Training

System Management Training

Implement the Plan of Action
1. Implement ESM
2. Implement Water Delivery Schedules to Each Water Users Organization (WUO) According to Share System

Continue Process Documentation

Provide Trainers

All Pilot Project Field Staff Participate in Training, Including M&O "Walk-Thru" Surveys and Developing a Plan of Action

Arrange for Commitment of Resources by SDO

Arrange for Negotiations by SDO Agencies Field Staff

Provide Training

Provide Training

Continues Process Documentation

Arrange SDO to Provide Inputs as Agreed Upon

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# IIMI-PAKISTAN PUBLICATIONS

## PLANNING REPORTS

<table>
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<td>P-1</td>
<td>Pilot Project for Farmer-Managed Irrigated Agriculture under the Left Bank Outfall Drain Stage I Project, Pakistan: Inception Report and Implementation Plan</td>
<td>IIMI-PAKISTAN (Project Leader D.J. Bandaragoda)</td>
<td>Oct 1995</td>
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<tr>
<td>P-2</td>
<td>Research Opportunities in Canal Irrigation Management in Malik Subdivision, Sadiqia Canal Division, Bahawalnaaar: Inception Report</td>
<td>M. Shabbir Haider Mushtaq Khan</td>
<td>March 1996</td>
</tr>
<tr>
<td>P-3</td>
<td>Managing Irrigation for Environmentally Sustainable Agriculture in Pakistan: Plan of Operations</td>
<td>IIMI-PAKISTAN (Project Leader G. V. Skogerboe)</td>
<td>May 1996</td>
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