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Farmers' Perceptions of the Social Mobilization of Water User Organizations in the Sindh, Pakistan

Ralf Starkloff



Working Paper 33

**FARMERS' PERCEPTIONS OF THE
SOCIAL MOBILIZATION OF WATER
USER ORGANIZATIONS IN THE
SINDH, PAKISTAN**

Ralf Starkloff

International Water Management Institute

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SUMMARY

In the context of the institutional reform of Pakistan's irrigation and drainage sector, a study of farmers' perceptions of the experience of social mobilization for participatory irrigation management was carried out. To test the viability of farmers' participation in irrigation management, the Pakistan Program of the International Irrigation Management Institute (IIMI¹) had organized 3 Water User Federations (WUF) and 80 Water User Associations (WUA) at the Bareji and Heran Distributaries and the Dhoro Naro Minor of the Left Bank Outfall Drain (LBOD) Project area in the Sindh Province between 1995 and 1997.

Objectives of the study

1. To provide a voice to farmers' perceptions about their experience of social mobilization for participatory irrigation management.
2. To assess water users' perceptions of the short-term impacts of the Water User Organizations facilitated by IIMI's pilot project in the LBOD area, with particular emphasis on their intra-organizational capacity and culture, as well as inter-organizational relations with government agencies.
3. To provide recommendations for the expansion of IIMI's pilot project and for similar projects elsewhere.

The study's ability to assess impacts was limited by the fact that the project fell short of its objective to achieve the experimental transfer of irrigation management responsibilities to farmers. Nevertheless, it assessed the impact of social mobilization by focusing on the organization and capacity building process among one of the key stakeholder groups. It looks at the development and constraints of the farmer organizations' functional capacity, particularly with regard to equity, reliability, empowerment, participation, intra-organizational activities and inter-organizational relations.

¹ Some years ago, IIMI changed its name to IWMI (International Water Management Institute) to reflect the broadening of the scope of its research concerns. The author has retained IIMI here, an acronym well established and widely used among Pakistan's irrigation establishment.

Research method

Open-ended, structured and in-depth interviews were carried out at three pilot sites among a quota sample of 167 water users at both, the grassroots and leadership levels. Quantitative and qualitative information were combined to achieve a sufficiently representative response and at the same time provide meaningful insights into the thinking and experience of the farmers.

Findings

The data are presented in 51 tables, as well as through quotes from and summaries of open-ended responses. The key findings of the study can be summarized as follows:

1. Organization of Meetings

- Regular general assembly and executive committee meetings were held at both the grassroots and leadership levels as long as IIMI mobilized the Water User Organization (WUO).
- Once IIMI's project closed, meetings were no longer held and organizational activity collapsed. This indicates that the WUOs were not yet sustainable. In assessing this fact, the circumstances of the failure of Joint Management Agreements (JMAs) between the three WUFs and the Sindh Irrigation and Drainage Authority at the time of project closure must be kept in mind.
- The participation in meetings at the grassroots level was comparatively weak, while the leadership maintained a high level of activity, as IIMI field staff persistently mobilized them.
- Recognition and maintenance of minutes of meetings, which are a key accountability mechanism, was weaker at the grassroots level.
- Democratic values do not easily take root in the rural Sindh's highly stratified and authoritarian society. Although consensus-based decision-making is both, preferred and practiced in the WUOs, influential community leaders tend to dominate consensus processes.

2. Maintenance of organizational records

- Record keeping among the WUAs remained weak and failed to serve accountability functions, especially with regard to financial transactions undertaken.
- Even among the WUFs, record keeping was of little concern to a considerable minority, although a higher level of record-keeping activity is indicated by the data.
- A regular and reliable habit of record keeping serving transparency and accountability has yet to develop among the WUOs at all three sites. The internal discussion and scrutiny of records requires improvement to be acceptable within the SIDA framework of irrigation management.

3. Recognition and observance of rules

- Among the Bareji and Dhoru Naro sites the adoption and observance of bylaws/rules is weak. The respondents appear not to identify with the purpose of the WUOs and the rights and responsibilities of their members.
- At Heran, the adoption of bylaws has been achieved. This suggests that the WUO members at all levels, supported by the social mobilizers, placed emphasis on rule-bound behavior and discussed, understood and committed themselves to bylaws.
- Rule violations most frequently pertain to the distribution of water and financial commitments.
- Rule-bound behavior has not been sufficiently internalized to allow WUAs to manage without negative sanctioning.
- Rule-bound behavior cannot be enforced, as there is no legal framework empowering the WUOs.

4. Selection of leadership

- The majority of respondents perceived the modus of leadership selection as consensus based.
- The predominantly stated criteria for selecting leadership were performance and capacity, rather than power and status. Given the field staff's reports about internal power struggles and the domination of consensus by community leaders, these responses may be rationalizations of prevailing power relations.

- The leadership's level of education reflects that of the population of water users, with the exception of Heran, where the leaders' level of education is markedly higher than average.
- The leadership is dominated by non-cultivating landlords, in keeping with the feudal structure of property relations in Sindh. While owner-cultivators tend to be under-represented, tenants are by and large excluded from participation.
- Among the leadership all property size classes are fairly evenly represented, with Heran displaying the most favorable degree of representation of smaller landowners.
- The WUOs have become a significant forum for communication between leaders and grassroots in which issues of common concern are debated and activities initiated. Farmers started to collectively negotiate with Irrigation Department personnel.

5. Capacity building

- Capacity building training was provided to farmer leaders to enable them to assume specialized functions within the executive committees;
- Training for measurement of the flow and distribution of water reached a wider constituency and generated a high level of interest, as the farmers sought to know the actual level of inequity in their subsystems; and
- The training activities did not target a large enough group of recipients to ensure widespread dissemination of knowledge at the grassroots level and a sufficiently sizeable group of potential new leaders.

6. Water resource supply and distribution

- Most farmers interviewed were not satisfied with the situation of water resource distribution. Inequity on account of irrigation offenses and rent seeking by irrigation personnel prevail.
- While de-silting activities made a difference to the quantity, reliability and equity of water supplies at some sites and distributary reaches, the WUOs were prevented from reorganizing irrigation management and bringing about improvements.

- The WUOs appear to have had a positive effect on the incidence of irrigation offences by means of illegal pipes and outlets as well as placing of obstacles. Outlet tampering remained a common practice among water users seeking to increase water supplies illegally.
- Among many water users, the WUOs were perceived as having made a difference in the level of conflict. However, significant impact on the root causes of conflict, i.e. relative water scarcity and illegal appropriation of water resources, was not achieved. The WUOs remain without the power to sanction the behavior of water users and have not yet been able to institutionalize conflict resolution mechanisms, which are mutually recognized by all members.

7. Maintenance activities

- Contributions to maintenance, particularly in the form of labor, have been a well-entrenched feature of irrigation management and were successfully extended by the pilot projects' efforts from the watercourse to the distributary level.
- Raising cash funds appears most difficult at two of the sites (Bareji and Heran), but appears to be accepted, if not well practiced, at Dhoru Naro.
- Farmers trust that their contributions are used properly and are willing to continue this practice in the future.

8. Inter-organizational relations

- Inter-organizational relations between the WUOs and other institutions are difficult and fraught with disappointments and suspicion.
- Relations with the Irrigation Department are particularly adverse, since most of its staff is perceived as corrupt and opposed to the empowerment of water user organizations.
- IIMI has received almost unanimous support among the WUO leadership, a perception, which is not shared by all grassroots members.

9. Water users' self-assessment

- The majority of respondents, particularly at the leadership level, considered their efforts for WUO activities to be useful, as it enabled them to increase their knowledge and

cooperation, to resolve some of their water problems, and to increase their links with other farmers and government officials.

- Without empowerment, cooperation by government officials and sustained organizational activity, these efforts, however, would be disappointed.
- The farmers' willingness to cooperate had increased with the establishment of WUOs, but an increase of effort, and reward for the same, is required, to sustain the process in the future.
- Farmers consider the non-cooperative attitude of irrigation personnel as the main obstacle to the sustainability of the WUOs.
- With the formation of WUOs, farmer representatives experienced an increase in self-respect and confidence, which enabled them to interact with government officials on less unequal status terms.
- The farmers do not feel capable of continuing their organizational efforts without support by IIMI's social mobilization staff.

10. Transfer of irrigation management responsibilities

- The majority of water users supported the assumption of responsibilities for distributary management as stipulated in the JMAs between the pilot-WUFs and SIDA.
- They expected an improvement of the financial and management situation at their distributaries. The need to develop trust and improved skills among water user representatives was noted.
- The failure of the joint management agreements between WUFs and SIDA undermined the objectives of the pilot-project and the sustainability of the WUOs.
- The farmers recognized that under the SIDA Act irrigation personnel would lose opportunities for rent seeking and identified this as the central cause of the failure of the JMAs and the pilot-projects

Conclusions

1. The social mobilization process accomplished the development of organizational structures with a representative leadership and raised

their capacity for participatory irrigation management.

2. Participation of grassroots members and organizational record keeping was relatively weak. Accountability and rule observance require strengthening and may be expected to take considerable time in a culture of rule violation.
3. The WUOs were able to undertake several self-help maintenance activities, which improved the water supply conditions in their subsystems. The mobilization of labor for maintenance has become an entrenched feature of irrigation culture and was successfully extended to the distributary/minor level.
4. Attempts to improve subsystem operation failed due to the lack of cooperation by irrigation personnel and the failure of the joint management agreement.
5. The majority of farmers are dissatisfied with conventional irrigation management practices marred by rent seeking.
6. While farmers have adopted collective means of decision-making, which were identified as consensus-based, their representative structures exclude tenants. Consensus decisions tend to be monopolized by landlords from dominant political and kin-groups. Democratic structures are not easily established in the rural Sindh's feudal society.
7. The project raised farmers' consciousness about the functional and ethical values of equity, but, without their empowerment, equitable distributary operation cannot be implemented.
8. The WUOs have become an important communication forum among farmers at the grassroots and leadership levels. Collective negotiations with the state actors have increased the status and capacity of farmers.
9. The social mobilizers failed to wean the organized water users from their support activities. The farmers' ownership of the organizational process was too weak to withstand the opposition to reform among the irrigation staff and their own ranks.

The study identifies the following **obstacles and constraints** to sustainable farmer organizations and the success of the institutional reform:

- In a situation of relative water-scarcity and conflict over water resources, competition for water by illicit means weakens farmers' capacities to adopt collective and rule-bound behavior.
- The dominance of the landlord class causes the exclusion or under-representation of other water user groups and impedes democratic values.
- Accountability and transparency in irrigation management are weakened by the lack of an organizational culture, which values and understands rational procedures.
- The lack of a comprehensive and conducive legal framework makes the introduction of participatory irrigation management impossible.
- Most Irrigation Department personnel lack ownership of the institutional reform of the irrigation sector and refuse cooperation with irrigators. They thereby have caused the failure of experimental participatory irrigation management in the Sindh.
- The findings of the farmers' perceptions survey and of a parallel study of the perceptions of irrigation personnel suggest, that the irrigation officers' rent seeking behavior and defense of their status positions are among the major causes of the failure of the institutional reform.

Recommendations

1. It is recommended to halt further social mobilization projects in the irrigation sector of Pakistan until a firm commitment to reform among all key stakeholders is achieved. The broken promises of social mobilization undermine the legitimacy of the reform as well as the status of the mobilizing agency in the eyes of the water users. After the failed projects are abandoned, farmers tend to be left to their own devices and potentially have to cope with the punitive actions of angered irrigation officers.
2. A thorough study of the root causes of resistance to reform among irrigation staff is required now and a strategy for change of their organizational culture needs to be developed and implemented.

3. All the stakeholders of irrigated agriculture need to be integrated in a participatory process of formation and review of policies and action plans. Therefore, a broad and long-lasting public debate about irrigation reform in Pakistan is needed to base the reform process on genuine participation and to generate support and momentum. Debate and review must be sustained throughout the process of experimentation in pilot projects.
4. Successful project implementation should not be viewed as the imposition of one stakeholder group's interests at the expense of another. Rather, success is interpreted as the reorganization of social relations and management institutions in irrigated agriculture in such a way, that the interests of the stakeholders and the need for rational goal achievement are balanced, and all participants gain improved conditions for the pursuit of their livelihoods.

1. INTRODUCTION

From 1995 to 1997 the International Irrigation Management Institute (IIMI), in collaboration with the Government of the Sindh Province, carried out the 'Pilot Project for Farmer-Managed Irrigated Agriculture under the Left Bank Outfall Drainage Stage I Project' with financial support from the World Bank and the Swiss Development Cooperation. The project established three Water User Federations (WUF) and 80 Water User Associations (WUA) at three distributaries/minors in the Mirpurkhas, Sanghar and Nawabshah Districts, located in the LBOD project area. It aimed at testing the viability of farmer management of their irrigation subsystems and sought to provide recommendations for future farmer participation projects.

Despite considerable achievements, such as organization and capacity building measures among the target populations, and the improvement of irrigation system maintenance through self-help campaigns, the project eventually failed and the organizations became non-sustainable. The Government of Sindh declined to devolve power for subsystem management to the WUFs, although the Sindh Irrigation and Drainage Authority and the Secretary of Irrigation of the Sindh had agreed to a joint management agreement with the farmers' organizations. Consequently, the pilot project could not test the farmers' capacity for irrigation management and organizational activities subsided after the closure of the project.

This study investigates the perception of farmers of their experience and seeks to clarify the short-

term impacts of social mobilization on the functional capacity of farmer organizations' efforts. It deliberately emphasizes the perspective of the farmers, whose voice had hitherto not been considered and published.

In section 2, the report discusses the mobilization process from the perspective of the project, based on its own reports and project documentation. The rationale for the institutional reform of the irrigation sector and the objectives of the pilot project are summarized. The pilot sites are introduced and the project process described. Then the findings and conclusions of the project's process documentation and the final project evaluation are presented in summary form.

Section 3 discusses the limitations of conventional impact analysis in light of the project experience and clarifies the opportunities for impact assessment utilized in this study. In section 4 the methodology of the study is presented, including the key research questions, methods and sampling procedure.

Section 5 presents the findings of the farmer's perceptions survey. It is organized by 10 topics, spanning from organizational management, leadership selection, and capacity building, to operation and maintenance activities, inter-organizational relations and irrigation management transfer.

In section 6, conclusions based on the findings are discussed and in section 7 recommendations for implementation of the institutional reform of the irrigation sector are presented.

2. THE PROJECT'S PERSPECTIVE

2.1 Support to the Institutional Reform of Irrigation Management

The irrigation and drainage sector of Pakistan is undergoing a process of institutional reform. This process was initiated in the 1980s, when several projects, such as the On Farm Water Management Projects I and II and the Command Water Management Program, introduced farmer participation in irrigation management on a limited scale. For the first time, it was realized that improved irrigation management requires not only interventions in the physical infrastructure of irrigation systems, but also institutional-managerial innovations, including the participation of the users of irrigation services.

The recognition that these early institutional innovations had remained non-sustainable prompted donors and policy makers to introduce comprehensive institutional reforms during the 1990s. In 1994, the World Bank proclaimed the need for an encompassing new legal and institutional framework to overcome deficits in financing, maintenance and operation of the Indus Basin Irrigation System. The report of two World Bank missions to Pakistan² identified the following causes of the irrigation and drainage sector crisis:

- Expenditure for O&M fell short of funding requirements by 25 to 30 percent during the early 1990s.
- Recoveries of O&M expenditures for the canal system experienced a deficit of 45 percent in the same period. Including SCARP tubewells, the recovery rate was less than 30 percent. If drainage is taken by itself, recoveries were estimated to have been less than 20 percent.
- By the mid-decade the gap between expenditure and recoveries had risen to about 70 percent in the Punjab Province and 88 percent in the Sindh Province.
- The system has low delivery efficiencies, as only 35 to 40 percent of the water issued at the canal head reaches the root zone.
- The distribution of water resources is inequitable and adversely affects the tail reaches.

- Water deliveries are supply based and prevent the economical allocation of scarce resources. There is a mismatch between water supplies and crop water requirements.
- Waterlogging and salinity are spreading throughout the Indus Basin due to insufficient drainage. 30 percent of the GCA of the Indus Basin is waterlogged.
- Over-exploitation of fresh groundwater causes declining water tables and intrusion of saline water.
- Water is under-priced, which encourages rent seeking and leads to revenue loss and inequity.
- The performance of irrigation personnel has declined considerably.

The Bank' proposals for a comprehensive reorganization of the entire sector, including privatization, irrigation management turn-over to farmer organizations, the establishment of autonomous public utilities and the legal facilitation of water markets, met with considerable resistance and skepticism among Pakistan's irrigation managers and government officials. To generate acceptance of the reform process, the debate among policy makers, donors and experts shifted towards the concepts of decentralization and participatory irrigation management.³ Being in the forefront of the reform movement, the International Irrigation Management Institute (IIMI) proposed to undertake pilot-projects to test whether farmer participation, based on an innovative approach to social mobilization of farmer organizations, would be a viable and sustainable means of improved irrigation management. These pilot projects would create 'demand from below' for the advancement of reform measures, in particular the development of a legal framework permitting the participation of farmer organizations in distributary level irrigation management.

In 1995, the Government of Sindh and IIMI agreed to undertake the **Pilot Project for Farmer-Managed Irrigated Agriculture under the Left Bank Outfall Drainage Stage I Project** with financial support of the World Bank and the Swiss Development Cooperation. The project facilitated the social mobilization of water users at the distributary/minor level for 30 months from July

² World Bank, 1994.

³ Bandaragoda, Skogerboe and Memon, 1997.

1995 to December 1997. Three Water User Federations and 80 Water User Associations were established in the LBOD project area at the Dhoru Naro Minor in Nawabshah District, the Bareji Distributary in Mirpurkhas District, and the Heran Distributary in Sanghar District.

The pilot project was undertaken with the following objectives:

1. To test the viability of farmer's managing part of the irrigation systems so that more efficient and equitable allocation of water can be achieved.
2. To make recommendations on future extension from the results of the pilot project.⁴

These were further specified to entail:

- The mobilization of water user organizations (WUO), which would be responsible for operation and maintenance of their distributaries/minors and the management of groundwater levels;
- The mobilization of institutional support from government agencies, including the enactment of an appropriate legal framework;
- The eventual accountability of the WUOs for water received at the distributaries/minors' head regulators and its equitable distribution among the member WUAs;
- Agreements between WUOs, government agencies and water users on water charges and O&M costs for irrigation and drainage facilities in the respective command areas; and
- The assessment and collection of these charges by the WUOs.⁵

A number of significant **assumptions** were made by the project:

- The concerned government agencies would empower the pilot WUOs and cooperate with them within the framework of participatory irrigation management;
- The government would assist the WUOs to enforce their internal rules by designing and enacting a legal framework;

- Being organized would provide farmers with economic advantages; and
- Farmers would be able to improve equity in water distribution despite social pressures exerted by traditional feudal power holders within the community of irrigators.⁶

2.2 The Pilot Sites

The pilot sites are located within the area of the Left Bank Outfall Drain (LBOD) Stage I Project (see Location Map). From 1973, this project has developed drainage facilities in the command area of the irrigation system on the left bank of the Indus, which is supplied with water resources via the Sukkur Barrage. The irrigation system was established in the 1930s, to provide perennial water supply for the cotton (*kharif* season) and wheat (*rabi* season) crops, among others, in northern Sindh. Drainage facilities were not considered at the time, as they required costly investments and water tables were still sufficiently low. By 1960s it became apparent that water tables had risen to a critical level and investment in drainage had become indispensable. The LBOD Stage I project covers the Nawabshah, Sanghar and Mirpurkhas Districts. In each of these, a pilot site for IIMI's farmer organization projects was chosen.

The mean annual precipitation in the project area ranges from 200 to 250 mm, with summer rainfall between 32 and 46 mm. The summers are very hot with 38 to over 50 degrees Celsius.

The **Bareji Distributary** is located in the Mirpurkhas District and off-takes from the Jamrao Canal, which is supplied by the Nara Canal. The Bareji Distributary is 12 km long, has 24 outlets, 7 lined and 17 unlined watercourses, and a design discharge of 41.5 cusecs. The CCA is 5,648 hectares. At 8 watercourses lift irrigation is practiced due to the low level of the channels relative to the command area. 3 sub-drains, 1 branch drain and a spinal drain, as well as sub-surface drains are operational. There are about 350 landowners, of which 155 are owner cultivators. 787 tenants are engaged in cultivation. The total population is 6,800 lives in 1,150 households and 55 villages or hamlets.

⁴ IIMI Pakistan, 1995; Bandaragoda and Memon, 1997.

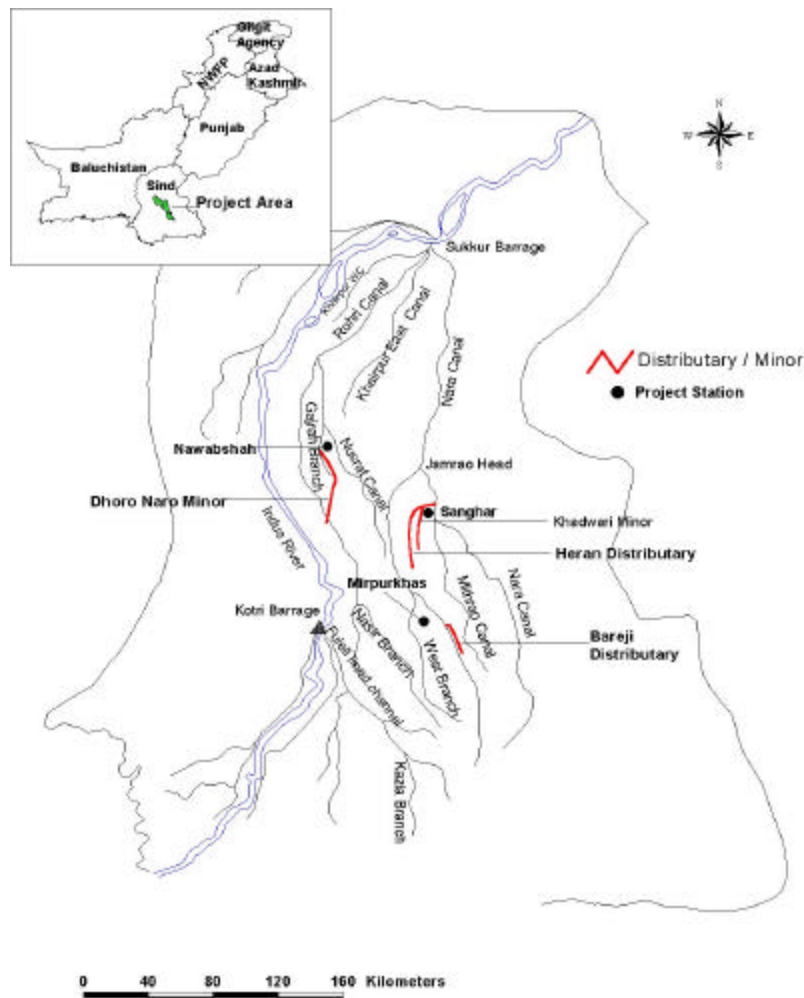
⁵ Memon, Hassan and Bandaragoda, 1997; Bandaragoda, Skogerboe and Memon, 1997.

⁶ Bandaragoda, Skogerboe and Memon, 1997.

The **Heran Distributary** is located in the Sanghar District and off-takes from the Nara Canal. The distributary is 10.6 km long, has 24 outlets, 23 lined and 1 unlined watercourses, and a design discharge of 58 cusecs. The CCA is 4,994 hectares. 3 surface drains and 8 tubewells provide drainage facilities. The **Khadwari Minor** off-takes from Heran Distributary and is 5.12 km long, with 7 outlets, 4 lined and 3 unlined watercourses and a design discharge of 10.62 cusecs. Its CCA is 3,074 acres. 16 scavenger wells are used and 1 surface drain is available. There are altogether 718 landowners in the Heran Distributary command area, of which 290 are owner cultivators and 433 tenants. The total population is approximately 26,800, living in 3,150 households and 44 villages or hamlets.

The **Dhoro Naro Minor** is located in the Nawabshah District and off-takes from the tail end of the Garth Branch Canal, which is supplied by the Rohr Canal via the Nasrat Branch Canal. The Dhoro Naro Minor is 10.4 km long, has 25 outlets, 16 lined and 9 unlined watercourses, and a design discharge of 51.62 cusecs. The GCA is 6,100 hectares and the CCA 5,418 hectares. There are 14 private tubewells in the command area. The Gujrah Branch Drain, another sub-drain, as well as 9 saline tubewells and 8 disposal/sub-disposal channels also service the command area. There are about 500 water users (i.e. landowners) in the command area. Ca. 700 sharecrop tenants are involved in cultivation. A total population of 20,000 lives in 2,500 households spread over 147 villages and hamlets.

Figure 1: Location Map of Pilot Sites



2.3 The Project Process

Aiming at sustainable Water User Organizations⁷, it was anticipated that the irrigation system at the distributary level would be transformed from a completely agency managed system to one managed by farmers in collaboration with government agencies. This process would proceed from the negotiation of institutional arrangements, through community organization efforts, development of a joint management agreement, to the implementation of joint management and final subsystem turnover. The main government collaborators included the Sindh Irrigation Department, the On-Farm Water Management Directorate and the Agricultural Extension Directorate of the Sindh Agriculture Department.

The **methodology of community mobilization** employed by IIMI involved the following components:

- In its three field stations IIMI set up small field teams for social mobilization whose members had a local background.
- Community based social organization volunteers (SOV) were mobilized with the help of and from among the water users, to contact their communities, diagnose the socio-technical issues on the ground, and to build rapport with the community.
- The deliberate minimum use of outside funds for physical improvements and an emphasis on knowledge and skills transfer (training, organizing) was to avoid dependency on continuous external funding, and consequently non-sustainability.
- In the first phase of support mobilization, field teams were recruited, trained and set up. Support from relevant agencies and NGOs was institutionalized. Baseline information was collected through a sample survey.
- The initial organization building and consolidation phases comprised a stepwise process following five dialogic steps

⁷ To clarify the use of terminology: At the watercourse level, water user associations (WUA), and at the distributary level, water user federations (WUF) were formed. The generic term to refer to organizations at any level is water user organization (WUO). The SIDA Act and proposed subsidiary rules and regulations refer to farmer organizations (FO) and watercourse associations (WCA). Since the legal framework for these organizations has not been enacted, the project immanent terminology is retained in this study.

(familiarization, rapport building, consultation, selection and federation), during which increasingly larger groups of water users became involved. The social organizers encouraged mutual trust, sharing of information, consultation for consensus, as well as development of options for and implementation of an appropriate organization design.

- Finally, the outcome of the organizational process was the implementation of participatory irrigation management.
- IIMI's action research program aimed at a participatory mode of social mobilization, replicability of the approach, equal opportunity for participation, democratic and consensus-based leadership selection, and the formation of an 'economic organization' (contrasted to a 'welfare group').⁸

IIMI's approach to action research was iterative, i.e. it progressively moved from analysis based on research to action based on community decisions, and back to feedback based on research and subsequent re-orientation of action, and so forth.

To promote linkages between Water User Organizations (WUO), government service agencies and non-government organizations, which are expected to be the participants and owners of the joint management and transfer process, a **Field Implementation Coordination Committee (FICC)** was constituted. It comprised the Irrigation Department, OFWM, WAPDA, Agricultural Extension, Forest Department, National Rural Support Program, some private companies, the WUOs and IIMI. At the policy level a **Project Implementation Coordination Committee (PICC)** involving senior government actors was convened to address the issues of legal recognition of WUOs and to develop a Joint Management Agreement.

In the pilot project, **80 Water User Associations (WUA)** were formed at the watercourse level. **3 Water User Federations (WUF)** were constituted at three distributaries with representatives from these associations. At each representative body, the membership selected a committee of office bearers, including president, vice-president, general secretary, joint secretary, finance secretary and committee members. The process of social organization was completed by

⁸ Bandaragoda, Skogerboe and Memon, 1997; Bandaragoda and Memon, 1997.

December 1997. The WUOs were registered with the Directorate of On-Farm Water Management (OFWM) under the Sindh Irrigation Water Users Association Ordinance 1982.

To promote capacity building among organized water users, IIMI provided training to farmer representatives and collaborating agencies on the following topics:

- Organizational management;
- Motivation and communication;
- Financial management;
- The role of water users organizations in improved irrigation practices;
- Optimum use of irrigation water;
- Improved agricultural practices; and
- Monitoring of water levels, flow and distribution.

A walk-through survey of the distributary to identify maintenance needs was undertaken as well. The main physical improvement and maintenance activities carried out through WUO initiatives and management included:

- Desilting of distributaries in 1997 and 1998;
- Construction of culverts across watercourses and distributaries to improve transport facilities;
- Stabilization of banks;
- Construction of buffalo ponds;
- Repair of a head regulator; and
- Construction and repair of federation offices.

Development works, such as the construction of culverts, were financed through a matching-fund scheme, involving cost sharing between farmer-mobilized resources and IIMI's project development fund. The water users had obtained the agreement of the Irrigation Department and supervised the construction activities themselves.

To improve the socio-economic conditions of water users, other collaborative activities with government service agencies, NGOs and private companies were undertaken at the request of water users. These activities included vaccination of farm animals, health camps, exposure trips to agricultural demonstration sites, and tree planting.

IIMI field teams carried out monitoring and evaluation activities at the three pilot distributaries. They documented the pre-transfer water delivery

and distribution situation to assess the reliability, equity and adequacy of irrigation services and to identify maintenance needs. This information proved to be significant in the negotiation of the Joint Management Agreement. Similarly, monitoring of the drainage system in the command area of each distributary was carried out to document the operational performance of the system and its impact on ground water levels.

The Sindh Irrigation and Drainage Authority (SIDA) Act was formally enacted in 1997. Accordingly, the Provincial Irrigation and Power Department would be transformed into the Sindh Irrigation and Drainage Authority (SIDA) in charge of the management of provincial barrages, inter-river link canals and water delivery services to canal head works, as well as of provincial main drains. At the level of canal commands, Area Water Boards (AWB) would be established to manage canal operation and maintenance, and branch drains. At the distributaries, minors and sub-drains, Farmer Organizations (FO), constituted by irrigators, would be responsible for their operation and maintenance. These new organizations were intended to function as autonomous and eventually self-financing entities. Water delivery services and their financing would be governed by contractual agreements between SIDA, AWBs and FOs.⁹

However, during the project process the Act remained largely non-operational, due to the failure of the province to enact its draft rules and regulations as a legal basis for the transfer of distributaries to farmer organizations. To allow the pilot WUOs to test their capacities after organization development, the Sindh Irrigation and Drainage Authority (SIDA) and the three WUFs negotiated and signed **Joint Management Agreements (JMA)** which permitted the temporary transfer of management to the water users.

According to the JMA, the WUFs would:

- Assess and collect water charges from the irrigators;
- Assume full responsibility for distributary/minor O&M;
- Distribute water equitably among watercourses;
- Employ field staff; and

⁹ Government of Sindh, 1997.

- Pay SIDA an agreed fee for the delivery of water at the distributary/minor head.

SIDA in turn agreed to:

- Supply water at the head regulator based on average deliveries of the past two to three years;
- Consult the WUFs on eventual rotation programs;
- Place the *beldars* (canal workers) in the WUFs' subsystems at the farmer organizations' disposal; and
- Release all data concerning the subsystems to the WUFs.

The then Chief Minister of the province prevented the implementation of the JMAs. To date, the WUFs have barely been able to implement the anticipated O&M activities.

The project ended in December 1997 without completing all of its phases. Thus far, irrigation management transfer at the distributary level has not been achieved in the Sindh Province. The farmer organizations became inactive until project activities were restarted in 1999.

2.4 Process Documentation and Project Evaluation: Findings and Conclusions

Based on its project experiences and research, which were recorded persistently in its process documentation, IIMI's project staff discussed several important **findings** in the final project report.¹⁰ The technical operation of the system was characterized as follows:

- Cropping intensities had increased considerably since the design of the system in the 1930s. While design cropping intensities were 81 percent, actual intensities in 1997/98 were at about 110 to 121 percent for the 3 sites. This indicates both, a positive response to increased water availability and an intensified competition for water.
- Discharges were generally found to be above the 1930s design at all 3 sites, except in some tail reach watercourses at Dhoro Naro and Bareji.

- The spatial coefficient of variability at outlets of the 3 pilot distributaries/minors for the *kharif* season of 1997 (0.75, 0.45 and 0.5 for Dhoro Naro, Heran and Bareji, respectively) indicates a 'very high degree of inequity in water distribution'.¹¹ This was due to an inordinate extent of outlet tampering and, at Bareji, the use of lift pumps, which were drawing water above allocated discharges.
- Although all 3 sites have adequate drainage facilities, only some are fully operational and therefore drainage services are below desirable levels. The Dhoro Naro minor does not experience drainage problems due to a water table depth of 5-7 feet.
- Maintenance at the Dhoro Naro minor and Heran distributary was inadequate, causing significant siltation and insufficient water supply to their tail reaches. The Bareji distributary had been remodeled through the LBOD Project and was no longer affected by deferred maintenance.
- Farmers persistently complained about the unreliability of water supplies.

The poor performance of the irrigation and drainage system was attributed primarily to **social factors**:

- Highly inequitable distribution of land: 20 percent of the farmers in the LBOD area own 80 percent of the land;
- High degree of land fragmentation: 80 percent of water users own/cultivate less than 10 hectares of land each;
- High incidence of poverty and illiteracy: 64 percent of respondents to IIMI's baseline survey are illiterate;
- Lack of information among the majority of water users;
- A centralized irrigation administration lacking accountability to users of water services;
- Widespread rent-seeking and neglect of operation and maintenance procedures; and
- A high degree of **political interference** in irrigation management.
- The project staff concluded that 'the irrigation system is operated to maximize the rent

¹⁰ Bandaragoda, Skogerboe and Memon, 1997.

¹¹ Bandaragoda, Skogerboe and Memon, 1997, p. 42.

extorted from farmers, rather than agricultural productivity¹².

Given the difficult socio-technical conditions in the environment in which IIMI intervened, the achievements of the project were considered remarkable, while the constraints and shortfalls were not unexpected.

The authors of the Final Report argued in 1997, that the WUOs established were socially viable, considering the establishment of 80 WUAs and 3 WUFs on the basis of democratic representation. Further evidence of success was perceived in the distributary maintenance campaigns carried out during the canal closure periods of 1997 and 98, which raised funds and mobilized labor among farmers, with some matching funds provided by IIMI. The actual costs of maintenance remained below the estimates of the Irrigation Department. Due to non-availability of government funds, the Irrigation Department would have deferred maintenance. Furthermore, the WUOs established their offices and bank accounts, persistently raised funds for their own expenses, held regular meetings and participated in field research on the water supply situation. The WUOs were considered to have improved the flow of information to and among farmers, reduced the frequency of breaches in the distributaries, and, through desilting improved the water flow to tail reaches.

However, once the WUOs and IIMI attempted to improve the equity of the distribution of irrigation water, by redesigning and guarding outlets, their efforts were undermined by the indefinite postponement of the Joint Management Agreements (JMA) between the SIDA and the WUOs. The legal framework for joint management is still under review within the government approval machinery and the implementation of the SIDA Act is still pending. This non-supportive institutional environment is the consequence of resistance among irrigation staff and influential feudal farmers, who seek to protect the illicit but significant water resources they have accessed by manipulating the conventional system of irrigation management. The reform would jeopardize such illegal privileges and benefits.

Nevertheless, the authors concluded, that replication of the pilot project on a broader scale was possible within the given socio-political

context of the Sindh Province. They assumed that the organization building process could even be accelerated. In particular, the deployment of small and locally recruited teams of social organizers in combination with social organizing volunteers from among the target communities was considered cost-effective and easily adaptable. Initial research and rapport building were seen as the key to successful mobilization under local conditions. The authors viewed their approach as demand based and superior to top-down strategies.

Yet, the project was unable to achieve its objective because of the institutional and political constraints encountered in its social environment. Joint management was never practiced, conditions for increased equity could not be established, and more cost-effective and efficient management structures could not be implemented. Therefore capacity building and organizational consolidation remained ineffective, since the beneficiaries were not allowed to practice the skills acquired within the structures and roles they had designed.

The project therefore concluded with recommendations to expedite the legal reforms, to transfer the pilot distributaries, to establish the pilot Area Water Board (AWB) mandated under the SIDA Act and to expand the social mobilization program inside the command area of the AWB. In addition, several measures to integrate the project in its institutional context were proposed.

An evaluation mission of the Swiss Development Cooperation stated in its November 1997 report, that IIMI's staff had been able to demonstrate the feasibility of organizing water users through a participatory, democratic and consensus-oriented process. It commended the 'professionalism and esprit de corps among the staff' and the 'excellent documentation of its work'. However, it clearly recognized that the failure of the JMA was a serious constraint in achieving the project's objectives:

Unless the agreement becomes effective, the objective of the project to show wider lessons useful for policy cannot be demonstrated. Implementing the agreement and testing it in the field should remain a major goal of the project in the next phase.¹³

The evaluation mission attributed the JMA's failure in part to IIMI's insufficient cooperation and liaison work with the relevant government agencies right

¹² Bandaragoda, Skogerboe and Memon, 1997, p. 46.

¹³ Mulk and Kamal, 1997.

from the project's inception. The Revenue and Irrigation Departments were crucial stakeholders who raised the most severe objections. The mission stressed that government agency representatives required capacity building just as much as the water users, to raise their level of knowledge and willingness to become enabling rather than obstructive players.

When the present study was conducted, IIMI's project activities had come to a close. Although IIMI intended to extend and expand the project on the recommendations of the project evaluation mission, governmental approval of the new project phase was delayed for 17 months. The intermittent demise of project activities provided an opportunity for testing the viability of the organizations established.

Meanwhile, the new project phase commenced by mid-1999 and the initial 3 pilot WUOs were re-mobilized along with ten additional distributaries in the command area of the Nara Canal Area Water Board. After one-and-a-half years, this new phase of the project was terminated prematurely as well, for lack of financial and policy support by the Government of the Sindh Province, and IIMI permanently closed its field stations in the LBOD area.

There remains an omission of an important aspect in all of the reports cited above. The **perception of water users** of the social mobilization process and the problems encountered is rarely, if at all, discussed. The key stakeholders, in response to whose supposed demand social mobilization was attempted, were conspicuously silent in the public discourse of IIMI's pilot projects in the LBOD area. One of the objectives of the study report is to give a voice to farmers' perceptions and narratives of their experience.

3. IMPACT ANALYSIS: LIMITATIONS AND OPPORTUNITIES

The interest of IIMI Pakistan in this study was an analysis of the impact of its project activities in the LBOD area. Generally, the study of impacts intends to assess whether beneficial project outcomes can be demonstrated and investments are justified. Conventionally, impact assessment in irrigation management turnover projects focuses on the measurement of the following kinds of impacts:

- Cost of irrigation to government and farmers,
- Financial sustainability of turnover unit organizations,
- Quality of irrigation operations,
- Physical sustainability of the irrigation infrastructure,
- Agricultural productivity, and
- Economic productivity.¹⁴

This focus requires, of course, that the irrigation management transfer or joint management of a clearly defined canal subsystem has taken place and that the post-turnover or joint management phase is long enough to make meaningful measurements and observations possible. Neither was the case in the LBOD pilot projects. In addition, the measurement of agricultural and economic productivity is a somewhat tenuous matter, because joint management activities are usually not the only and not necessarily the most significant impacts on productivity. In this regard, the fluctuations of the market and policy environment tend to be more significant than micro-level organizational interventions.

Furthermore, and in the present context perhaps most importantly, IIMI's 1996 impact assessment framework does not consider the assessment of the organization and capacity building process among the relevant stakeholders in irrigation management itself. It ignores how functional capacity with regard to equity, reliability, empowerment, participation, intra-organizational activity and inter-organizational relations, among others, is built and absorbed or accepted by the stakeholders.

Given the aborted joint management process at LBOD, a comprehensive assessment of possible impacts listed above is hardly possible. In

particular, objective external measurement is constrained by the absence of observable/measurable experiences under reformed management conditions. Impact assessment, therefore, is limited to ascertaining how the experiences gained so far have affected the stakeholders' perceptions with regard to irrigation management and whether viable organizational structures are emerging. It can, furthermore, investigate how the adverse conditions in the social context of participatory irrigation management in the Sindh have affected the stakeholders' and particularly the farmers' willingness and capacity to pursue the process further.

The present study focuses on the perceptions of participating farmers at the three pilot sites. It investigates their understanding of the utility and impact of the social mobilization efforts undertaken, and ascertains their preparedness for joint management and the transfer of responsibilities.¹⁵ Farmers' perceptions of their capacities and of the constraints experienced in their WUOs are a significant variable in generating motivation among water users to engage in sustained organizational activity.

Based on these considerations, the study team formulated the following **research objectives**:

1. To provide a voice to farmers' perceptions about their experience of social mobilization for participatory irrigation management.
2. To assess water users' perceptions of the short-term impacts of the Water User Organizations facilitated by IIMI's pilot project in the LBOD area, with particular emphasis on their intra-organizational capacity and culture, as well as inter-organizational relations with government agencies.
3. To provide recommendations for the expansion of IIMI's pilot project and for similar projects elsewhere.

¹⁴ Irrigation Management Reform Group, IIMI, 1996.

¹⁵ A study of irrigation personnel's perceptions of the reform and farmer organization mobilization process was carried out as well and is analyzed in a separate paper (Starkloff, Ralf, 1999).

4. METHODOLOGY

In light of the overall objective of the IIMI pilot-project to test the viability of the WUOs established in the LBOD area, the study is guided by the following **research questions**:

- Did the water users at the three pilot sites develop and maintain the organizational structures and functions introduced and facilitated by IIMI's social mobilization process?
- Have the WUOs successfully contributed towards the efficient and equitable operation, maintenance and development of their irrigation subsystems, i.e. watercourses and distributaries?
- Have democratic and equity oriented values taken root in the organizations' culture?
- Have the WUO members achieved effective means and practices of communication within their organizations and with other organizations?
- Do the organized water users experience a sense of ownership of their WUOs?
- What obstacles and constraints were experienced in meeting the objectives implied in these questions?

The study provides answers to these questions by probing into respondents' explanations of why or why not these objectives were attained. The research procedure adopted has a participatory function, providing an opportunity for water users' opinions to influence and reorient project design. Closed and open-ended, structured in-depth interviews, in which respondents recollect and evaluate their experiences, were selected as the **research method**.

The interview schedule was constructed to address the following **research topics**:

- Organization of Meetings
- Maintenance of organizational records
- Recognition and observance of rules
- Selection of leadership
- Capacity building
- Water resource supply and distribution
- Maintenance activities
- Inter-organizational relations
- Water users' self-assessment

- Transfer of irrigation management responsibilities

Quantitative data on the basic social characteristics of respondents and the standard replies (yes/no, alternatives etc.) to the questionnaire were tabulated and analyzed. The spread of perceptions within the sample population and variations within sub-populations based on mainly two variables, farm location (head, middle, tail of distributaries) and membership status (grassroots / leadership), were ascertained. Significant differences in organizational activity and perceptions between the WUF and WUA levels became evident during preliminary data analysis and motivated the presentation and discussion of the data according to the leadership / grassroots comparison. The representatives of WUAs and WUFs, including WUF general and executive committee members were conceptualized as 'leadership', while the WUA members including their office bearers were considered 'grassroots.' Questions regarding the state of water resource supply and distribution required differentiation according to farm location.

However, since this quantitative exercise produces a broad, but relatively shallow analysis, it was combined with qualitative data analysis. The open-ended nature of questions probing explanations and meanings (why / how / why not / example) of the standard replies permitted an in-depth understanding of respondents' experiences.

The **sampling** procedure adopted in this study was quota sampling, where the sample is drawn from predetermined proportions of purposely-selected sub-populations among the population to be researched, in order to ensure the representation of particular characteristics.¹⁶

The selection criteria for interviewees were as follows. The total populations or sampling frames consist of all listed members of WUAs¹⁷ on each of the three distributaries, i.e. 354 in Bareji/Mirpurkhas, 504 in Dhoro Naro/Nawabshah and 718 in Heran/Sanghar. These include general members and executive committee members of

¹⁶ Bernard, 1988.

¹⁷ All respondents are male, with the exception of one female executive committee member of one pilot WUF. The participation of women in a public forum is generally not appreciated in male-dominated Pakistan.

these WUAs, as well as general members and the executive committee members of WUFs, representing their WUAs. The selected members of WUFs comprise 52 percent of the total sample, although they constitute only 8.2 percent, 5.6 percent and 4 percent, respectively, of the total populations. Moreover, all eleven executive committee members of each WUF are included. This deliberate over-representation is based on the considerations that WUF members and leaders are most frequently involved in the activities of the Water User Organizations, and that the establishment of viable federations was a primary objective of the pilot project. Furthermore, they are the most significant link of all water users on the three distributaries to government actors in irrigated agriculture. To keep the interviewing procedure economical, WUF members were interviewed about WUF activities only. The remaining 48 percent of the sample were drawn from the WUA level, where two thirds represent the general membership and one-third the executive committee members not involved in WUFs.

A total of 167 interviews were conducted with farmers. Their distribution among the distributaries and organizational levels is indicated in Table 1.

With the exception of the WUF executive committees, where the total sub-population is included in the sample, quotas were drawn from the head, middle and tail reaches at the distributary and watercourse levels. One watercourse each was selected at the head, middle and tail of the distributary. Within each watercourse, at least one water user in each head, middle and tail reach needed to be the owner of no more than 50 acres, to ensure a reasonable representation of small farmers. All other selections within these parameters were made randomly. The quotas for the various population characteristics to be represented per distributary are provided in Table 2.

The sample is relatively small compared to the total population, i.e. 16, 11 and 8 percent respectively. Two factors, the limited time and resources available and the interest in carrying out in-depth interviews determined this choice. A trade-off between overall representation and depth of the information was inevitable. The choice of quota sampling as a procedure acts as a corrective.

Table 1. LBOD Farmers' Perceptions Survey Sample.

Distributary	WUA	WUF	Total
Bareji	27	29	56
Heran ¹⁸	26	29	55
Dhoro Naro	27	29	56
Total	80	97	167

Table 2. Quota sampling key for each distributary.

Tier	Membership level	Head	Middle	Tail	Total
WUA	General Members	6	6	6	18
	Executive Committee members	3	3	3	9
WUF	General Members	6	6	6	18
	Executive Committee Members	--	--	--	11
All					56

¹⁸ At Heran one respondent could not be contacted, which explains the variance between the sample design and the actual number of respondents interviewed. At the same site, two WUF executive office bearers were not available for interviews and two general members were substituted.

5. FARMERS' PERCEPTIONS

5.1 Organization of Meetings

Meetings are the most important mechanism of participatory management, providing organization's members with information and opportunities for deliberation and decision-making. The pilot-WUOs' general assembly meetings are to be held twice a year, and executive committee meetings monthly. Holding of regular meetings is a key indicator of the viability of a water user organization.

Table 3 indicates the **regularity of general assembly meetings** at the WUA and WUF level as reported by the respondents. They were asked to compare the frequency of meetings during the time of mobilization by IIMI staff and after the closure of the project. The results show that with IIMI's facilitation, meetings were held regularly at the WUF level at all three pilot sites. However, at the grassroots level, a strong minority of respondents indicated that they either did not know or that meetings were not held.

After IIMI staff no longer facilitated organizational activities, the situation changed radically. At the leadership level, a vast majority reported that meetings were no longer held. Some declined to answer or had no knowledge. Only 6 out of 97 respondents stated that regular meetings continued to be held. At the WUA level, the situation was similar, with about half stating that no meetings were held and the rest professing no knowledge or declining to answer.

Table 4 indicates the **regularity of executive committee meetings** at the WUA and WUF levels as reported by the respondents from among executive committee members. Again, the respondents were asked to compare the frequency of meetings during the time of mobilization by IIMI staff and after the closure of the project.

Regular executive committee meetings were reported by the majority of respondents at all sites at both the grassroots and leadership levels. Again, this changed significantly as IIMI terminated its project activities. Only among the leadership respondents at Bareji, 67 percent claimed to have continued meeting regularly.

These results demonstrate that with the possible exception of the Bareji WUF, organizational activities collapsed without the persistent presence

of IIMI field staff. The WUOs had remained entirely dependent on IIMI and were unable to sustain their motivation once the facilitators withdrew. IIMI had not fostered the independence of the farmers, who did not appear to perceive organized action as a means of pursuing their common interests. The circumstances of IIMI's withdrawal and the collapse of organizational activities are significant in this respect. The failure of the joint management agreements between SIDA and the WUFs was demoralizing and appears to have turned many farmers' opinions against social mobilization, as will be discussed below.

Asked about their **participation in meetings**, a minority of the grassroots members (41 percent or less) reported to have attended general assembly meetings (Table 5). A significant number declined to answer. Participation at the WUF general assembly meetings was comparatively higher, as most respondents stated to have attended most or all meetings.

Among the executive committee members of WUAs a fairly high level of attendance of executive committee meetings was reported by above 50 percent (Table 6). At all three sites, all WUF office leaders claimed to have attended most or all meetings.

The respondents indicated that they had by and large been notified about WUO meetings, as shown in Table 7. It may be concluded that organizational activities were more regular and generated far more interest among the leadership than among the grassroots respondents, although the WUA executive committee meetings were better attended than WUA general meetings. The results indicate that the interface between the leadership and the general membership of farmers at the watercourses may be constrained by the latter's lack of participation. IIMI's mobilization efforts were indeed concentrated at the leadership levels for reasons of time economy. The small field teams targeted primarily the leadership for organization and capacity building measures.

Asked whether their organizations maintained **minutes of meetings**, only about 50 percent of the WUA level respondents at Bareji and Heran and 26 percent at Dhoro Naro answered affirmatively (Table 8). The remainder had no knowledge about minutes keeping. Yet another mechanism, by which information flow and accountability between office bearers and the

membership would be ensured, did not function. At the WUF level, 93 percent of the Heran respondents and 69 percent at the other two sites stated that their organizations maintained minutes of meetings. Among the latter, about one-third were still uninformed. The significance accorded to minutes keeping may be considered somewhat low, which indicates insufficient understanding of a key accountability mechanism among the organizations' members.

The survey asked respondents about the **actual and preferred method of decision-making** within the water user organizations, to see whether democratic mechanisms were taking root among the membership. The actual modus of decision-making reported most frequently was 'consensus' (Table 9). About three-quarters of the WUA members at Bareji and Heran reported consensus, while the rest failed to answer. At Dhoro Naro, only half had the same opinion, while the rest had no knowledge. The WUF representatives also clearly stated that consensus was the actually practiced modus of decision-making.

When queried about the preferred modus of decision-making, responses varied (Table 10). At the WUA level, Bareji respondents clearly desired consensus. However, at Heran and Dhoro Naro, 58 and 11 percent, respectively, preferred decision-making by leaders. At Dhoro Naro, a majority still preferred consensus. The situation is similar at the WUF level. About half of the Heran respondents preferred their leaders to decide. However, three-quarters of WUF respondents at the other two sites favored consensus. Only 16 or 9.5 percent of the total sample desired decisions by majority vote.

The preference of consensus reflects a cultural orientation, which does not necessarily indicate democratic values. The farmers and social organizers know that to ensure participation in organizational action and collective implementation of decisions, they have to take into account the interests of various factions (political, kin-groups, dominant landlords) and in particular their honor. By balancing divergent interests and forging compromises between factions, cooperation could be achieved, while alienation, conflict and violation of anyone's honor was avoided. Majority vote, the democratic method of decision-making, would have risked alienating losers, thus jeopardizing cooperation.

Furthermore, consensus does not imply that all interests were considered equally. In a hierarchical and authoritarian society, such as the rural Sindh, dominant feudal landlords and political leaders seek to determine decisions and impose their interests. The majority of the WUO constituencies tend to accept, however grudgingly, the realities of local power and status relations. Thus, according to the reports of IIMI field staff, consensus processes more often than not involved the frequently difficult, conflict-ridden and lengthy negotiation of compromises between factions of 'strong-men' and their followers. They especially bargained over office bearer positions in executive bodies. As one faction or other tended to threaten non-participation, IIMI field staff had to take on the role of mediator and bring the factions back to the negotiation table, until a mutually satisfactory compromise could be found. Therefore, what is glossed as consensus, turns out to be decision-making by leaders. The explicit preference of 33 respondents or 20 percent of the total sample for decision-making by leaders is therefore not surprising. Respondents stated that once they had selected leaders, they considered them empowered to make decisions on their behalf. They also considered the leaders selected to be more knowledgeable and therefore capable of making 'beneficial' decisions.

The above results notwithstanding, a majority at all sites and levels of representation judged the **overall atmosphere at meetings** as friendly and cooperative (Table 11). Only very few indicated angry confrontations. This may be owed to the fact that in a society placing a premium on honor and 'face saving'; publicly admitting to conflict is generally avoided. Furthermore, once the office bearer positions were distributed and the local power hierarchies were affirmed, cooperation became possible and conflict was avoided.

The analysis of responses regarding the organization of meetings reveals a number of significant outcomes:

- Regular general assembly and executive committee meetings were held at both the grassroots and leadership levels as long as IIMI mobilized the Water User Organization (WUO).
- Once IIMI's project closed, meetings were no longer held and organizational activity collapsed. This indicates that the WUOs were not yet sustainable. In assessing this fact, the circumstances of the failure of Joint

Management Agreements (JMAs) between the three WUFs and the Sindh Irrigation and Drainage Authority at the time of project closure must be kept in mind.

- The participation in meetings at the grassroots level was comparatively weak, while the leadership maintained a high level of activity, as IIMI field staff persistently mobilized them.
- Recognition and maintenance of minutes of meetings, which are a key accountability

mechanism, was weaker at the grassroots level.

- Democratic values do not easily take root in the rural Sindh's highly stratified and authoritarian society. Although consensus-based decision-making is both, preferred and practiced in the WUOs, influential community leaders tend to dominate consensus processes.

Table 3. Holding of Regular General Assembly Meetings.

Bareji								
	WUA				WUF			
	With IIMI		After IIMI		With IIMI		After IIMI	
	No.	%	No.	%	No.	%	No.	%
Yes	12	44.44	0	0.00	29	100.00	2	6.90
No	9	33.33	14	51.85	0	0.00	26	89.66
Don't know	6	22.22	1	3.70	0	0.00	0	0.00
No answer	0	0.00	12	44.44	0	0.00	1	3.45
Heran								
	WUA				WUF			
	With IIMI		After IIMI		With IIMI		After IIMI	
	No.	%	No.	%	No.	%	No.	%
Yes	16	61.54	1	3.85	23	79.31	1	3.45
No	2	7.69	15	57.69	2	6.90	21	72.41
Don't know	8	30.77	1	3.85	4	13.79	0	0.00
No answer	0	0.00	9	34.62	0	0.00	7	24.14
Dhoro Naro								
	WUA				WUF			
	With IIMI		After IIMI		With IIMI		After IIMI	
	No.	%	No.	%	No.	%	No.	%
Yes	21	87.50	1	3.70	28	96.55	3	10.34
No	1	4.17	14	51.85	0	0.00	24	82.76
Don't know	5	20.83	9	33.33	1	3.45	2	6.90
No answer	0	0.00	3	11.11	0	0.00	0	0.00

Table 4. Holding of Regular Executive Committee Meetings (EC Members only).

Bareji								
	WUA				WUF			
	With IIMI		After IIMI		With IIMI		After IIMI	
	No.	%	No.	%	No.	%	No.	%
Yes	7	77.78	1	11.11	9	100.00	6	66.67
No	2	22.22	4	44.44	0	0.00	2	22.22
Don't know	0	0.00	0	0.00	0	0.00	0	0.00
No answer	0	0.00	4	44.44	0	0.00	1	11.11

Heran								
	WUA				WUF			
	With IIMI		After IIMI		With IIMI		After IIMI	
	No.	%	No.	%	No.	%	No.	%
Yes	9	100.00	2	22.22	11	100.00	4	36.36
No	0	0.00	7	77.78	0	0.00	7	63.64
Don't know	0	0.00	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00	0	0.00

Dhoro Naro								
	WUA				WUF			
	With IIMI		After IIMI		With IIMI		After IIMI	
	No.	%	No.	%	No.	%	No.	%
Yes	6	66.67	1	11.11	11	100.00	1	9.09
No	2	22.22	6	66.67	0	0.00	8	72.73
Don't know	1	11.11	1	11.11	0	0.00	0	0.00
No answer	0	0.00	1	11.11	0	0.00	2	18.18

Table 5. Participation in General Assembly Meetings.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Attended all	3	11.11	11	37.93
Attended most	4	14.81	14	48.28
Missed most	4	14.81	2	6.90
Missed all	0	0.00	2	6.90
No answer	16	59.26	0	0.00

Heran				
	WUA		WUF	
	No.	%	No.	%
Attended all	10	38.46	21	72.41
Attended most	1	3.85	0	0.00
Missed most	1	3.85	2	6.90
Missed all	6	23.08	1	3.45
No answer	8	30.77	5	17.24

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Attended all	2	7.41	3	10.34
Attended most	9	33.33	26	89.66
Missed most	5	18.52	0	0.00
Missed all	4	14.81	0	0.00
No answer	7	25.93	0	0.00

Table 6. Participation in Executive Committee Meetings (EC Members only).

Bareji				
	WUA		WUF	
	No.	%	No.	%
Attended all	2	22	3	33
Attended most	5	56	6	67
Missed most	-	-	-	-
Missed all	-	-	-	-
No answer	2	22	-	-
Heran				
	WUA		WUF	
	No.	%	No.	%
Attended all	-	-	6	55
Attended most	6	67	5	45
Missed most	3	33	-	-
Missed all	-	-	-	-
No answer	-	-	-	-
Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Attended all	2	22	3	27
Attended most	3	33	8	73
Missed most	1	11	-	-
Missed all	1	11	-	-
No answer	2	22	-	-

Table 7. Notification about WUO Meetings.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	23	85.19	26	89.66	49	87.50
No	4	14.81	3	10.34	7	12.50
No answer	0	0.00	0	0.00	0	0.00
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	20	76.92	25	86.21	45	81.82
No	6	23.08	4	13.79	10	18.18
No answer	0	0.00	0	0.00	0	0.00
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	18	66.67	29	100.00	47	83.93
No	8	29.63	0	0.00	8	14.29
No answer	1	3.70	0	0.00	1	1.79

Table 8. Keeping of Minutes of WUO Meetings.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Yes	14	51.85	20	68.97
No	0	0.00	0	0.00
Don't know	13	48.15	9	31.03

Heran				
	WUA		WUF	
	No.	%	No.	%
Yes	14	53.85	27	93.10
No	1	3.85	0	0.00
Don't know	11	42.31	2	6.90

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Yes	7	25.93	20	68.97
No	1	3.70	0	0.00
Don't know	19	70.37	9	31.03

Table 9. Actual Modus of Decision-Making.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Consensus	20	74.07	20	68.97
Majority Vote	0	0.00	1	3.45
Other	1	3.70	2	6.90
Don't know	6	22.22	6	20.69
No answer	0	0.00	0	0.00

Heran				
	WUA		WUF	
	No.	%	No.	%
Consensus	22	84.62	26	89.66
Majority Vote	0	0.00	2	6.90
Other	0	0.00	0	0.00
Don't know	4	15.38	1	3.45
No answer	0	0.00	0	0.00

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Consensus	13	48.15	28	96.55
Majority Vote	1	3.70	0	0.00
Other	0	0.00	1	3.45
Don't know	13	48.15	0	0.00
No answer	0	0.00	0	0.00

Table 10. Preferred Method of Decision-Making.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Consensus	26	96.30	21	72.41
Leaders decide	0	0.00	1	3.45
Majority vote	1	3.70	5	17.24
Other	0	0.00	2	6.90
No answer	0	0.00	0	0.00

Heran				
	WUA		WUF	
	No.	%	No.	%
Consensus	10	38.46	14	48.28
Leaders decide	15	57.69	14	48.28
Majority vote	1	3.85	1	3.45
Other	0	0.00	0	0.00
No answer	0	0.00	0	0.00

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Consensus	20	74.07	21	72.41
Leaders decide	3	11.11	1	3.45
Majority vote	2	7.41	6	20.69
Other	2	7.41	1	3.45
No answer	0	0.00	0	0.00

Table 11. Overall Atmosphere during WUO Meetings.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Angry confrontations	0	0.00	1	3.45
Friendly cooperation	20	74.07	25	86.21
Neutral	0	0.00	1	3.45
Other	6	22.22	1	3.45
No answer	1	3.70	1	3.45

Heran				
	WUA		WUF	
	No.	%	No.	%
Angry confrontations	0	0.00	0	0.00
Friendly cooperation	18	69.23	28	96.55
Neutral	0	0.00	0	0.00
Other	2	7.69	0	0.00
No answer	6	23.08	1	3.45

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Angry confrontations	1	3.70	0	0.00
Friendly cooperation	15	55.56	21	72.41
Neutral	1	3.70	0	0.00
Other	8	29.63	8	27.59
No answer	2	7.41	0	0.00

5.2 Maintenance of Organizational Records

Regular and accurate record keeping is important to achieve transparency and accountability within WUOs. Their legitimacy in the estimation of various stakeholders, including the membership, depends in part on the information contained in organizational records.

Table 12 demonstrates that at the WUA level there is considerable ignorance about **financial records**, although the WUA members had made financial contributions for membership fees or construction and maintenance activities. At Heran and Bareji, about half of the respondents and at Dhoro Naro only 18.5 percent, were informed about the maintenance of financial records. Among the leadership, one-third of the respondents at two sites had no knowledge about the maintenance of financial records.

The **presentation of the financial records** by the organizations' finance secretaries was affirmed by only 50 percent of respondents at Heran's WUAs (Table 13). Otherwise, the majority of grassroots members had no knowledge or the financial records were not presented. At the WUF level, opinions were split, which indicates again, that the status of knowledge about the presentation of records was uncertain. A slight majority at Bareji and Heran affirmed.

Tables 14 and 15 indicate that the situation was similar for the **maintenance of attendance and correspondence records**. The majority of WUA respondents were uninformed or reported that no records were maintained. The majority of WUF respondents affirmed the maintenance of records, but a considerable minority at each site dissented or was uninformed. A majority at Heran could not confirm the maintenance of correspondence records.

The following may be concluded from the above data:

- Record keeping among the WUAs remained weak and failed to serve accountability functions, especially with regard to financial transactions undertaken.
- Even among the WUFs, record keeping was of little concern to a considerable minority, although a higher level of record-keeping activity is indicated by the data.
- A regular and reliable habit of record keeping serving transparency and accountability has yet to develop among the WUOs at all three sites. The internal discussion and scrutiny of records requires improvement to be acceptable within the SIDA framework of irrigation management.

Table 12. Maintenance of Financial Records.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Yes	14	51.85	19	65.52
No	1	3.70	0	0.00
Don't know	12	44.44	10	34.48
Heran				
	WUA		WUF	
	No.	%	No.	%
Yes	15	57.69	26	89.66
No	1	3.85	1	3.45
Don't know	10	38.46	2	6.90
Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Yes	5	18.52	19	65.52
No	3	11.11	1	3.45
Don't know	19	70.37	9	31.03

Table 13. Presentation of the Financial Record by Finance Secretary.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Yes	3	11.11	15	51.72
No	10	37.04	6	20.69
Don't know	13	48.15	7	24.14
No answer	1	3.70	0	0.00

Heran				
	WUA		WUF	
	No.	%	No.	%
Yes	13	50.00	15	51.72
No	2	7.69	9	31.03
Don't know	11	42.31	5	17.24
No answer	0	0.00	0	0.00

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Yes	6	22.22	12	41.38
No	11	40.75	13	44.83
Don't know	9	33.33	4	13.79
No answer	1	3.70	0	0.00

Table 14. Maintenance of Attendance Records.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Yes	13	48.15	18	62.07
No	0	0.00	2	6.90
Don't know	14	51.85	9	31.03

Heran				
	WUA		WUF	
	No.	%	No.	%
Yes	8	30.77	14	48.28
No	7	26.92	11	37.93
Don't know	11	42.31	4	13.79

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Yes	7	25.93	20	68.97
No	1	3.70	0	0.00
Don't know	19	70.37	9	31.03

Table 15. Maintenance of Correspondence Records.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Yes	3	11.11	18	62.07
No	9	33.33	1	3.45
Don't know	15	55.56	10	34.48
Heran				
	WUA		WUF	
	No.	%	No.	%
Yes	0	0.00	5	17.24
No	13	50.00	17	58.62
Don't know	13	50.00	7	24.14
Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Yes	5	18.52	20	68.97
No	1	3.70	0	0.00
Don't know	21	77.78	9	31.03

5.3 Recognition and Observance of Rules

The respondents were asked whether they recognized a mutually shared set of rules, such as bylaws, or rules and regulations issued by a regulatory agency, such as SIDA. Model bylaws had been drafted by an IMI consultant and read and discussed among water users.¹⁹ WUF-internal bylaws are not legally binding, since the suspension of the JMA prevented the legalization of WUFs. Nevertheless, the recognition and observance of such rules would indicate the capacity of the WUOs to bind the membership to a shared set of rules.

The data in Table 16 indicate low recognition of **rules** among the WUAs at Bareji and Dhoro Naro. At Heran, a vast majority stated that their WUAs had indeed adopted a set of rules. The same applies to the WUFs at all sites. Asked, whether the members followed the rules, only the Heran WUAs and WUF affirmed, while almost all WUA respondents at Bareji and Dhoro Naro failed to answer. Among the WUF members at the same two sites considerable disagreement prevailed (Table 17).

Accordingly, **rule-violations** continued to be prevalent. The most frequently cited violation was

water theft and lack of equitable distribution. The second most frequent violation was the refusal of individuals and WUAs at watercourses to make financial contributions (membership fees, construction works). Without the authority to apply sanctions against rule violations, the culture of rule evasion will continue.

The data warrant the following conclusions:

- Among the Bareji and Dhoro Naro sites the adoption and observance of bylaws/rules is weak. The respondents appear not to identify with the purpose of the WUOs and the rights and responsibilities of their members.
- At Heran, the adoption of bylaws has been achieved. This suggests that the WUO members at all levels, supported by the social mobilizers, placed emphasis on rule-bound behavior and discussed, understood and committed themselves to bylaws.
- Rule violations most frequently pertain to the distribution of water and financial commitments.
- Rule-bound behavior has not been sufficiently internalized to allow WUAs to manage without negative sanctioning.
- Rule-bound behavior cannot be enforced, as there is no legal framework empowering the WUOs.

¹⁹ Bandaragoda, Skogerboe and Memon, 1997.

Table 16. Existence of WUO-Internal Rules.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Yes	5	18.52	20	68.97
No	10	37.04	6	20.69
Don't know	12	44.44	3	10.34
No answer	0	0.00	0	0.00

Heran				
	WUA		WUF	
	No.	%	No.	%
Yes	25	96.15	28	96.55
No	0	0.00	1	3.45
Don't know	1	3.85	0	0.00
No answer	0	0.00	0	0.00

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Yes	4	14.81	25	86.21
No	7	25.93	2	6.90
Don't know	15	55.56	2	6.90
No answer	1	3.70	0	0.00

Table 17. Observance of WUO-Internal Rules.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Yes	3	11.11	8	27.59
No	2	7.41	8	27.59
Don't know	0	0.00	0	0.00
No answer	22	81.48	13	44.83

Heran				
	WUA		WUF	
	No.	%	No.	%
Yes	25	96.15	28	96.55
No	0	0.00	1	3.45
Don't know	0	0.00	0	0.00
No answer	1	3.85	0	0.00

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Yes	4	14.81	14	48.28
No	1	0.00	11	37.93
Don't know	1	3.70	0	0.00
No answer	22	81.48	4	13.79

5.4 Selection of Leadership

The selection of leadership is a central process of organization building and the most significant interaction between the grassroots and the leadership, especially where the functional capacity of WUAs is relatively weak. The results of querying the selection process are presented and some basic socio-economic characteristics of the leaders are discussed.

The **modus of leadership selection** was perceived as consensus-based by the majority of respondents (Table 18). Between 55.5 and 96.5 percent among all sites and levels selected 'consensus'. It is already argued in section 5.1, that what was viewed as consensus entailed the distribution of offices among established factions of community leaders and their followers, and affirmed entrenched power and status relations.

Table 19 gives an overview of the **criteria for representative and office bearer selection** considered by all respondents. They are ranked by the frequency of their indication. Honesty and ability to work hard and efficiency were most appreciated at Bareji, followed by the candidates' level of education, their ability to spend time, sincerity and impartiality. At Heran, hardworking and efficient representatives with the ability to spend sufficient time were preferred. Their level of education along with experience, problem-solving capacity and kin-group membership was considered. At Dhoro Naro, hard work and efficiency, education and honesty were the most sought after characteristics, followed by influence, experience, ability to spend time, boldness and problem solving capacity.

The most frequently chosen criteria, such as honesty, ability to spend time, education and a hardworking disposition, are highly pertinent in the selection of leaders with the potential for undertaking the demanding tasks of irrigation management. Traditional criteria, such as kin-groups membership and influence were less important, but remained relevant. Some criteria, such as in what reach of the irrigation subsystem a candidate resides, age, capacity for cooperation, responsible behavior or closeness to the community were rarely chosen, if at all. The criteria selected may be viewed as ideal images and desires of respondents. In how far they reflect actual choices, rather than rationalizations of the process of juggling the interests of various factions, is hard to discern.

The **level of education** among leaders is highest at Heran, where all representatives interviewed had achieved the middle level, 86 percent had attained 10th grade (matric) or higher level degree, and 42 percent had completed a bachelor's degree, as shown in Table 20. At Bareji, 49 percent of the leaders held a matric or higher degree, but 14 percent were illiterate and 35 percent had primary education only. At Dhoro Naro, the group of leaders with 10th grade or a higher level of education was smallest, 38 percent, while one-third had primary education only. Although level of education had ranked highest as a leadership selection criterion among respondents from Dhoro Naro, the actual level of education among the leadership was comparatively lower. Only at Heran did the membership manage to elect a leadership whose level of education was considerably higher than among the grassroots membership.

Table 21 shows the **tenancy status** of the leadership and the general membership. The vast majority of survey respondents are non-cultivating landowners. At Heran, 34.5 percent of leaders are owner-cultivators, which is close to the 40 percent owner-cultivators in the total population of Heran. At Bareji, owner-cultivators are 44 percent of the total population and they are therefore underrepresented in the sample.²⁰ No comparative data are available for Dhoro Naro.

The number of landowners among the leadership exceeds their average number among all respondents' at all three sites, indicating the dominance of the most powerful group. Owner cultivators are underrepresented in the leadership. Tenants are not represented at all in the WUFs, and only one tenant each was found among the Heran and Dhoro Naro grassroots. The landowners group had consciously decided to exclude tenants from WUO membership, unless their landlords expressly permitted them to join on their behalf.²¹

Table 22 indicates a fairly even representation of all **landholding strata** among the leadership. At Bareji and Dhoro Naro, the sample shows a slight over-representation of the above 100-acre category. At Heran, land ownership is less unequal, none of the respondents own more than 100 acres, and the smaller landowners are well represented.

²⁰ Bandaragoda and Memon, 1997.

²¹ Bandaragoda and Memon, 1997, p. 40.

To gauge the functioning of the **leadership / grassroots interface**, the respondents were asked whether the members raised important issues with the leadership. Of altogether 167 respondents, 123 replied, of which 97 had raised issues in meetings or had direct contacts with farmer leaders. The farmers' open-ended responses revealed that the WUOs had indeed become a forum for raising critical issues. Of foremost concern was the competition over relatively scarce water resources and the attempt to stop access to extra water by illegal means. Those who saw no need to discuss their concerns with the leadership stated that they had no faith in the leaders' problem solving capacity, mainly due to the lack of empowerment of the WUOs:

People considered that the WUF had no power. People became disheartened and so communication was disturbed. (Farmer)²²

Of 93 respondents, 83 confirmed that the leadership had dealt with the issues raised by the membership. However, due the lack of empowerment their efforts yielded limited results. An important achievement was the initiation of collective discussions and negotiations with Irrigation Department personnel at the local level, which led to collective maintenance and rehabilitation activities, such as de-silting campaigns, reinforcement of canal banks and the construction of culverts across channels.

91 of 122 respondents stated that the leadership had communicated important issues, including the availability of benefits to farmers, downward to the grassroots. Here they mainly considered de-silting campaigns, construction of culverts, and the collection of membership fees, as well as tree planting campaigns aiming at lowering water tables and increasing fuel wood resources. A

minority remained suspicious of the leaders' capacity to attract benefits in their own interest. Generally, respondents at the WUF level appeared better informed and more likely to stress their active involvement in communicating with the general membership.

The data on leadership selection yield the following results:

- The majority of respondents perceived the modus of leadership selection as consensus based.
- The predominantly stated criteria for selecting leadership were performance and capacity, rather than power and status. Given the field staff's reports about internal power struggles and the domination of consensus by community leaders, these responses may be rationalizations of prevailing power relations.
- The leadership's level of education reflects that of the population of water users, with the exception of Heran, where the leaders' level of education is markedly higher than average.
- The leadership is dominated by non-cultivating landlords, in keeping with the feudal structure of property relations in Sindh. While owner-cultivators tend to be under-represented, tenants are by and large excluded from participation.
- Among the leadership all property size classes are fairly evenly represented, with Heran displaying the most favorable degree of representation of smaller landowners.
- The WUOs have become a significant forum for communication between leaders and grassroots in which issues of common concern are debated and activities initiated. Farmers started to collectively negotiate with Irrigation Department personnel.

²² All quotes in section 5 are statements made by farmers during the interviews. To protect their identities, their names and the location of their irrigation sources are not revealed.

Table 18. Modus of Selection of Representatives and Office Bearers.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Consensus	22	81.48	18	62.07
Majority Vote	0	0.00	2	6.90
Other	2	7.41	9	31.03
Don't know	3	11.11	0	0.00
No answer	0	0.00	0	0.00

Heran				
	WUA		WUF	
	No.	%	No.	%
Consensus	18	69.23	20	68.97
Majority Vote	0	0.00	8	27.59
Other	0	0.00	1	3.45
Don't know	8	30.77	0	0.00
No answer	0	0.00	0	0.00

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Consensus	15	55.56	28	96.55
Majority Vote	0	0.00	0	0.00
Other	0	0.00	1	3.45
Don't know	12	44.44	0	0.00
No answer	0	0.00	0	0.00

Table 19. Criteria for the Selection of Representatives and Office Bearers.

	Bareji		Heran		Dhoro Naro	
	No.	Rank	No.	Rank	No.	Rank
Honesty	12	1	0		9	3
Hardworking & Efficient	11	2	17	1	17	1
Level of Education	8	3	5	3	12	2
Ability to spend time	7	4	12	2	5	6
Sincerity	5	5	0		3	
Impartial/Neutral	4	6	0		6	5
Wisdom & Ability	3		0		3	
Influential	3		0		7	4
Experienced	3		3	4	5	6
Problem solving capacity	2		12	2	4	7
Bold/daring	2		0		5	6
Biraderi/kin-group membership	0		2	5	1	

Table 20. Level of Education.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Illiterate	5	18.52	4	13.79	9	16.07
Primary	12	44.44	10	34.48	22	39.29
Middle	0	0.00	1	3.45	1	1.79
Matric	4	14.81	3	10.34	7	12.50
F.A./F.Sc.	4	14.81	5	17.24	9	16.07
B.A./B.Sc.	2	7.41	4	13.79	6	10.71
M.A./M.Sc.	0	0.00	2	6.90	2	3.57
Other	1	3.33	4	16.00	5	9.09
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Illiterate	3	11.54	0	0.00	3	5.45
Primary	3	11.54	0	0.00	3	5.45
Middle	6	23.08	3	10.34	9	16.36
Matric	9	34.62	7	24.14	16	29.09
F.A./F.Sc.	1	3.85	2	6.90	3	5.45
B.A./B.Sc.	4	15.38	12	41.38	16	29.09
M.A./M.Sc.	0	0.00	4	13.79	4	7.27
Other	0	0.00	1	3.45	1	1.82
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Illiterate	4	14.81	1	3.45	5	8.93
Primary	10	37.04	9	31.03	19	33.93
Middle	2	7.41	5	17.24	7	12.50
Matric	3	11.11	4	13.79	7	12.50
F.A./F.Sc.	3	11.11	5	17.24	8	14.29
B.A./B.Sc.	1	3.70	2	6.90	3	5.36
M.A./M.Sc.	0	0.00	0	0.00	0	0.00
Other	4	14.81	3	10.34	7	12.50

Table 21. Tenancy Status.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Landowner	19	70.37	25	86.21	44	78.57
Lessee	0	0.00	0	0.00	0	0.00
Tenant	0	0.00	0	0.00	0	0.00
Owner Cultivator	8	29.63	2	6.90	10	17.86
Manager	0	0.00	1	3.45	1	1.79
Other	0	0.00	0	0.00	0	0.00
No answer	0	0.00	1	3.45	1	1.79
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Landowner	14	53.85	19	65.52	33	60.00
Lessee	1	3.85	0	0.00	1	1.82
Tenant	1	3.85	0	0.00	1	1.82
Owner Cultivator	10	38.46	9	31.03	19	34.55
Manager	0	0.00	0	0.00	0	0.00
Other	0	0.00	0	0.00	0	0.00
No answer	0	0.00	1	3.45	1	1.82
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Landowner	13	48.15	17	58.62	30	53.57
Lessee	1	3.70	1	3.45	2	3.57
Tenant	1	3.70	0	0.00	1	1.79
Owner Cultivator	9	33.33	3	10.34	12	21.43
Manager	0	0.00	2	6.90	2	3.57
Other	0	0.00	0	0.00	0	0.00
No answer	3	11.11	6	20.69	9	16.07

Table 22. Size of Landholdings.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
10 acres & below	4	14.8	4	13.8	8	14.3
11 to 20 acres	6	22.2	8	27.6	14	25
21 to 50 acres	9	33.3	6	20.7	15	26.8
51 to 100 acres	5	18.5	1	3.4	6	10.7
101 to 200 acres	1	3.7	4	13.8	5	8.9
201 to 500 acres	2	7.4	3	10.3	5	8.9
Above 500 acres	0	0	1	3.4	1	1.8
No answer	0	0	2	6.9	2	3.5

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
10 acres & below	3	11.5	7	24.1	10	18
11 to 20 acres	7	27	6	20.7	13	23.6
21 to 50 acres	6	23	11	38	17	31
51 to 100 acres	2	7.6	1	3.4	3	5.5
101 to 200 acres	0	0	0	0	0	0
201 to 500 acres	0	0	0	0	0	0
Above 500 acres	0	0	0	0	0	0
No answer	8	30.8	4	13.8	12	21.8

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
10 acres & below	4	14.8	3	10.3	7	12.5
11 to 20 acres	3	11.1	5	17.3	8	14.3
21 to 50 acres	8	29.6	7	24.1	15	26.8
51 to 100 acres	6	22.2	1	3.4	7	12.5
101 to 200 acres	2	7.4	3	10.3	5	8.9
201 to 500 acres	1	3.7	2	6.9	3	5.4
Above 500 acres	0	0	1	3.4	1	1.8
No answer	3	11.1	7	24.1	10	17.9

5.5 Capacity Building

Capacity building to prepare the farmers' for organizational and distributary management was organized by IIMI staff in the form of **training activities**. These included financial and organizational management, measurement of water distribution, maintenance walk-through surveys, O&M practices and improved irrigation and agricultural practices.

Table 23 demonstrates that training was mainly targeted towards the leadership. Specific topics

were of relevance to particular office bearers, rather than the membership at large. Among the WUA level respondents, less than a quarter had participated in training, with the exception of training in piezometer reading at Heran, which had been a fairly large and popular exercise. Farmers were keen to learn how to assess the water supply situation in their subsystems. At the WUF level, Heran shows the highest overall participation rate in training activities. Organizational management, piezometer reading, walk-through surveys and

improved agricultural practices were attended by more than half of the respondents.

The critical issue remains, whether the leadership-oriented training would eventually reach the general membership. Especially topics such as improved on-farm irrigation and agricultural practices would need to be disseminated widely among the grassroots to help alleviate pressure on relatively scarce water resources. Furthermore, in the interest of broadening skills and capacities, it is necessary to ensure that potential future leaders from among the general membership are capable of taking on leadership roles without requiring extensive training.

- Capacity building training was provided to farmer leaders to enable them to assume specialized functions within the executive committees;
- Training for measurement of the flow and distribution of water reached a wider constituency and generated a high level of interest, as the farmers sought to know the actual level of inequity in their subsystems; and
- The training activities did not target a large enough group of recipients to ensure widespread dissemination of knowledge at the grassroots level and a sufficiently sizeable group of potential new leaders.

Table 23. Participation in Training.

Bareji						
	WUA (n=27)		WUF(n=29)		Total (n=56)	
	No	(%)	No	(%)	No	(%)
Financial management	3	11.11	5	17.24	8	14.29
Organizational Management	3	11.11	10	34.48	13	23.21
Piezometer Reading	0	0.00	5	17.24	5	8.93
Flow measurement	0	0.00	0	0.00	0	0.00
Walk thru maintenance survey	0	0.00	4	13.79	4	7.14
Operation and Maintenance	0	0.00	2	6.90	2	3.57
Improved irrigation practices	4	14.81	6	20.69	10	17.86
Improved agricultural practices	2	7.41	9	31.03	11	19.64
Heran						
	WUA (n=26)		WUF(n=29)		Total (n=55)	
	No	(%)	No	(%)	No	(%)
Financial management	2	7.69	5	17.24	7	12.73
Organizational Management	1	3.85	15	51.72	16	29.09
Piezometer Reading	8	30.77	16	55.17	24	43.64
Flow measurement	0	0.00	1	3.45	1	1.82
Walk thru maintenance survey	3	11.54	20	68.97	23	41.82
Operation and Maintenance	1	3.85	8	27.59	9	16.36
Improved irrigation practices	0	0.00	9	31.03	9	16.36
Improved agricultural practices	1	3.85	19	65.52	20	36.36
Dhoro Naro						
	WUA (n=27)		WUF (n=29)		Total (n=56)	
	No	(%)	No	(%)	No	(%)
Financial management	0	0.00	5	17.24	5	8.93
Organizational Management	0	0.00	0	0.00	0	0.00
Piezometer Reading	3	11.11	12	41.38	15	26.79
Flow measurement	0	0.00	0	0.00	0	0.00
Walk thru maintenance survey	0	0.00	11	37.93	11	19.64
Operation and Maintenance	1	3.70	14	48.28	15	26.79
Improved irrigation practices	0	0.00	2	6.90	2	3.57
Improved agricultural practices	0	0.00	6	20.69	6	10.71

5.6 Water Resource Supply and Distribution

The improvement in supply and distribution of water is a central objective of social mobilization and organization building among water users in the irrigation sector. Although the WUOs were only able to have a limited impact due to the failure of participatory irrigation management in Sindh, the respondents were queried about the potential impact of organizational activity on water management in their subsystems.

The analysis of perceptions about the state of water distribution, irrigation offenses and conflict was differentiated according to farm location (head, middle and tail of distributaries), since perceptions can be expected to be closely associated with experiences in respondents' immediate environment.

The respondents were asked about their level of **satisfaction with the prevailing system of water distribution** in their distributaries. Table 24 shows that among farmers in the head reaches satisfaction was most widespread, although only among half of the interviewees, while towards the mid-reach and definitely among tail-enders dissatisfaction predominated. At Bareji, the level of satisfaction was highest, although opinions were split. At the other two sites, farmers in the head reach were divided in their perception and a clear majority in the middle and tail sections was in favor of changing the distribution system.

The data suggest that most farmers are not satisfied, as they generally perceive disadvantages in the current practices of system management. The most frequent complaint is that in the head reach especially cultivators tend to appropriate water above their entitlements, by paying bribes to irrigation officers and tampering/widening their outlets or installing additional outlets.

The head watercourses get more water by paying money. There should be equal distribution through mutual cooperation. (Farmer)

Even at the tail, more water can be obtained by paying an illegal fee, which ensures increased discharges to the distributary at the head-regulator.

Farmers feared that the establishment of WUOs would reduce current levels of water supply. At Dhoro Naro respondents claimed that the Irrigation Department officials had reduced discharges to

the sanctioned design, because the irrigators had organized themselves to attain equitable distribution. The WUF had attempted to redesign outlets on the basis of prevailing (above design) discharges at the head regulator, while resisting the payment of bribes. They reported that they had to suffer reduction of discharges to design levels.

If we change the current system the water supply will be dried up. Now we have double the water by paying Rs.15, 000. We have a 10-inch outlet now. The Irrigation Department will not cooperate with the water user organization. (Farmer)

Today the tail also gets water, but when we started the organization they reduced the water and the tail faced shortages. (Farmer)

We are not getting our right, because the present distribution is not fair. (Farmer)

Irrigators complain that the illegal payments are systematic and well organized. They stated that at the beginning of each growing season demands for illicit payments are made to each watercourse, which are proportional to the size of its CCA.²³ The interviewees reported that after the closure of IIMI's pilot project, they saw themselves forced to fully revert to the system of illicit payments to ensure water supply that would meet their 'demand'. Collective action had proven to be an unreliable means of achieving a 'fair' system of distribution. Although a clear majority would prefer a reformed and legitimate system, farmers were unable to collectively alter the power relations in irrigation management. This would require empowerment and legal entitlement of water users to enforce the laws and internal rules and decisions.

The respondents were asked whether they perceived a **change in the quantity, reliability and equity of the irrigation water supply** since the establishment of their WUOs. Table 25 shows that the head and mid-reach respondents at Bareji indicated no change, while 60 percent of the tail-enders perceived an improvement for all three variables. At Heran (Table 26) the head and the tail agreed that the situation had improved, but the mid-reach overwhelmingly felt that the situation had remained the same. At Dhoro Naro (Table 27), only a minority at all locations perceived an improvement, while the majority thought that the situation had not improved or even worsened.

²³ For a detailed account of the practice of and motivation for rent seeking behavior, see Starkloff, 1999.

The improvement perceived at sections of Heran and Bareji may be owed to the successful desilting activities in cooperation with the Irrigation Department, which made a considerable difference to tail-enders in particular. At Dhoro Naro, a more pessimistic mood prevailed, since the respondents had been particularly upset by the perceived punishment of their organizational activity. They saw no option but to conform to inequitable and unreliable distribution by illicit means, once social mobilization activities had ceased.

The sample of water users was also asked about **changes in the incidence of irrigation offenses** by various methods since WUO establishment, to gauge whether they thought that organized action had made an improvement in the law and order situation at the distributaries.

Only few respondents at all three sites perceived a worsening of **outlet tampering** (Table 28). At Dhoro Naro a majority reported a decline of tampering, while at the other sites most indicated no change. An exception is the tail section at Heran, where a two-third reported a decline in outlet tampering.

The majority of respondents at Bareji and Dhoro Naro reported that the use of **illegal pipes** had declined (Table 29). At Heran, illegal pipes were indicated to be a non-issue, and therefore no answers were provided.

The **placement of obstacles** in the distributary to raise the head of flow and increase supply to adjacent watercourses was perceived to have declined by the majority at Dhoro Naro and Bareji (Table 30). Especially the head reach respondents claimed an improvement, as they had been mainly responsible for this illegal act and WUO activity had de-legitimized this practice successfully. At Heran, most interviewees provided no answer, while about 55 percent of the tail-enders reported an improvement.

The use of **illegal outlets** also declined in the opinion of most respondents at Bareji and Dhoro Naro, according to Table 31. At the latter, however, about half of the tail-enders perceived no improvement or a worsening situation. Heran respondents declined to answer.

The data suggest that WUO establishment and organized collective action was able to reduce the incidence of illegal pipes and outlets and of placing of obstacles to some appreciable degree. Outlet tampering is the most common and least

visible practice. It is therefore continues to be used widely.

Intense competition for water and the use of illegal means to acquire extra water can be expected to cause considerable conflict. To ascertain whether the WUOs had been able to provide a viable conflict resolution mechanism, the respondents were asked whether they had experienced **change in the level of conflict** since WUO establishment. Furthermore, they were asked about the **preferred mechanisms of conflict resolution** before and after WUO establishment.

According to Table 32, the majority of interviewees at Bareji perceived no change in the level of conflict. At Heran, a slight majority of the WUA respondents indicated no change, while the WUF members and a sizable minority among WUAs perceived a decline of conflict. Most of the grassroots members at Dhoro Naro reported no change, but among the federation representatives about half perceived an increase in conflict, while one third saw an improvement.

Therefore, the impact of the WUOs on the level of conflict was appreciable but not decisive. The root causes of conflict, relative water scarcity and illegal appropriation of extra water, could not be addressed without empowerment of the WUOs. At Dhoro Naro, organizational activity had intensified conflict among the leadership, as they struggled with the difficult choice between giving in to the pressure by Irrigation Department staff and the social pressure arising from the ethics of just irrigation management introduced by IIMI. Organization building bears the potential for improved conflict management, which cannot be realized as long as the WUOs are not adequately empowered.

Before the establishment of WUOs, the *panchayat* (council of community elders) and government institutions (Irrigation Department, police and courts) were the most commonly used mechanisms to resolve irrigation related conflicts (Table 33).

Table 34 indicates that the WUOs had not evolved institutional means of conflict resolution. The vast majority of respondents at Bareji declined to answer altogether. At Heran, most interviewees consulted their WUO leaders, but were not forming and using committees with a mandate for conflict resolution. At Dhoro Naro, most WUA respondents declined to answer and 55 percent of WUF members preferred other mechanisms, such as

informal means or the mediation services of IIMI staff.

The data reviewed suggest the following:

- Most farmers interviewed were not satisfied with the situation of water resource distribution. Inequity on account of irrigation offenses and rent seeking by irrigation personnel prevail.
- While de-silting activities made a difference to the quantity, reliability and equity of water supplies at some sites and distributary reaches, the WUOs were prevented from reorganizing irrigation management and bringing about improvements.
- The WUOs appear to have had a positive effect on the incidence of irrigation offences by means of illegal pipes and outlets as well as placing of obstacles. Outlet tampering remained a common practice among water users seeking to increase water supplies illegally.
- Among many water users, the WUOs were perceived as having made a difference in the level of conflict. However, significant impact on the root causes of conflict, i.e. relative water scarcity and illegal appropriation of water resources, was not achieved. The WUOs remain without the power to sanction the behavior of water users and have not yet been able to institutionalize conflict resolution mechanisms, which are mutually recognized by all members.

Table 24. Satisfaction with the Current Water Distribution System in the Distributary.

Bareji								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	11	47.83	12	66.67	7	46.67	30	53.57
No	11	47.83	6	33.33	8	53.33	25	44.64
No answer	1	4.35	0	0.00	0	0.00	1	1.79
Heran								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	9	50.00	7	36.84	5	27.78	21	38.18
No	9	50.00	12	63.16	13	72.22	34	61.82
No answer	0	0.00	0	0.00	0	0.00	0	0.00
Dhoro Naro								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	9	45.00	4	25.00	6	33.33	19	33.93
No	11	55.00	12	75.00	14	77.78	37	66.07
No answer	0	0.00	0	0.00	0	0.00	0	0.00

Table 25. Supply of Irrigation Water since WUO Establishment.

Bareji								
Quantity								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	3	13.04	5	27.78	9	60.00	17	30.36
Less	0	0.00	1	5.56	0	0.00	1	1.79
Same	20	86.96	10	55.56	4	26.67	34	60.71
No answer	0	0.00	2	11.11	2	13.33	4	7.14
Reliability								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	3	13.04	5	27.78	9	60.00	17	30.36
Less	0	0.00	1	5.56	0	0.00	1	1.79
Same	20	86.96	10	55.56	4	26.67	34	60.71
No answer	0	0.00	2	11.11	2	13.33	4	7.14
Equity								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	3	13.04	5	27.78	9	60.00	17	30.36
Less	0	0.00	1	5.56	0	0.00	1	1.79
Same	20	86.96	10	55.56	4	26.67	34	60.71
No answer	0	0.00	2	11.11	2	13.33	4	7.14

Table 26. Supply of Irrigation Water since WUO Establishment.

Heran								
Quantity								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	11	61.11	3	15.79	13	72.22	27	49.09
Less	1	5.56	0	0.00	0	0.00	1	1.82
Same	6	33.33	16	84.21	5	27.78	27	49.09
No answer	0	0.00	0	0.00	0	0.00	0	0.00
Reliability								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	11	61.11	3	15.79	13	72.22	27	49.09
Less	1	5.56	0	0.00	0	0.00	1	1.82
Same	6	33.33	16	84.21	5	27.78	27	49.09
No answer	0	0.00	0	0.00	0	0.00	0	0.00
Equity								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	11	61.11	3	15.79	13	72.22	27	49.09
Less	1	5.56	0	0.00	0	0.00	1	1.82
Same	6	33.33	16	84.21	5	27.78	27	49.09
No answer	0	0.00	0	0.00	0	0.00	0	0.00

Table 27. Supply of Irrigation Water since WUO Establishment.

Dhoro Naro								
Quantity								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	1	5.00	6	37.50	2	11.11	9	16.07
Less	7	35.00	4	25.00	10	55.56	21	37.50
Same	12	60.00	6	37.50	8	44.44	26	46.43
No answer	0	0.00	0	0.00	0	0.00	0	0.00
Reliability								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	3	15.00	5	31.25	2	11.11	10	17.86
Less	6	30.00	3	18.75	9	50.00	18	32.14
Same	11	55.00	8	50.00	9	50.00	28	50.00
No answer	0	0.00	0	0.00	0	0.00	0	0.00
Equity								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	2	10.00	5	31.25	0	0.00	7	12.50
Less	4	20.00	3	18.75	10	55.56	17	30.36
Same	14	70.00	8	50.00	10	55.56	32	57.14
No answer	0	0.00	0	0.00	0	0.00	0	0.00

Table 28. Incidence of Irrigation Offences since WUO Establishment: Outlet Tampering.

Bareji								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	2	8.70	0	0.00	0	0.00	2	3.57
Less	3	13.04	4	22.22	3	20.00	10	17.86
Same	15	65.22	9	50.00	7	46.67	31	55.36
No answer	3	13.04	5	27.78	5	33.33	13	23.21
Heran								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	0	0.00	0	0.00
Less	5	27.78	3	15.79	12	66.67	20	36.36
Same	13	72.22	16	84.21	6	33.33	35	63.64
No answer	0	0.00	0	0.00	0	0.00	0	0.00
Dhoro Naro								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	1	5.00	0	0.00	5	27.78	6	10.71
Less	13	65.00	10	62.50	9	50.00	32	57.14
Same	6	30.00	5	31.25	6	33.33	17	30.36
No answer	0	0.00	1	6.25	0	0.00	1	1.79

Table 29. Incidence of Irrigation Offences since WUO Establishment: Illegal Pipes.

Bareji								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	0	0.00	0	0.00
Less	16	69.57	12	66.67	10	66.67	38	67.86
Same	2	8.70	0	0.00	0	0.00	2	3.57
No answer	5	21.74	6	33.33	5	33.33	16	28.57

Heran								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	0	0.00	0	0.00
Less	0	0.00	0	0.00	0	0.00	0	0.00
Same	0	0.00	0	0.00	0	0.00	0	0.00
No answer	18	100.00	19	100.00	18	100.00	55	100.00

Dhoro Naro								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	5	27.78	5	8.93
Less	15	75.00	10	62.50	9	50.00	34	60.71
Same	4	20.00	2	12.50	6	33.33	12	21.43
No answer	1	5.00	4	25.00	0	0.00	5	8.93

Table 30. Incidence of Irrigation Offences since WUO Establishment: Placement of Obstacles.

Bareji								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	1	6.67	1	1.79
Less	16	69.57	10	55.56	8	53.33	34	60.71
Same	2	8.70	2	11.11	1	6.67	5	8.93
No answer	5	21.74	6	33.33	5	33.33	16	28.57

Heran								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	0	0.00	0	0.00
Less	3	16.67	1	5.26	10	55.56	14	25.45
Same	3	16.67	5	26.32	4	22.22	12	21.82
No answer	12	66.67	13	68.42	4	22.22	29	52.73

Dhoro Naro								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	5	27.78	5	8.93
Less	16	80.00	11	68.75	9	50.00	36	64.29
Same	4	20.00	2	12.50	6	33.33	12	21.43
No answer	0	0.00	3	18.75	0	0.00	3	5.36

Table 31. Incidence of Irrigation Offences since WUO Establishment: Illegal Outlets.

Bareji								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	0	0.00	0	0.00
Less	17	73.91	12	66.67	10	66.67	39	69.64
Same	1	4.35	0	0.00	0	0.00	1	1.79
No answer	5	21.74	6	33.33	5	33.33	16	28.57

Heran								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	0	0.00	0	0.00
Less	0	0.00	0	0.00	0	0.00	0	0.00
Same	0	0.00	0	0.00	0	0.00	0	0.00
No answer	18	100.00	19	100.00	18	100.00	55	100.00

Dhoro Naro								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	4	22.22	4	7.14
Less	16	80.00	11	68.75	9	50.00	36	64.29
Same	4	20.00	2	12.50	6	33.33	12	21.43
No answer	0	0.00	3	18.75	1	5.56	4	7.14

Table 32. Level of Conflict since WUO Establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Increase	0	0.00	0	0.00	0	0.00
Decrease	2	7.41	8	27.59	10	17.86
Same	19	70.37	15	51.72	34	60.71
No conflict	0	0.00	0	0.00	0	0.00
Don't know	0	0.00	0	0.00	0	0.00
No answer	6	22.22	6	20.69	12	21.43

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Increase	0	0.00	0	0.00	0	0.00
Decrease	10	38.46	20	68.97	30	54.55
Same	12	46.15	9	31.03	21	38.18
No conflict	1	3.85	0	0.00	1	1.82
Don't know	0	0.00	0	0.00	0	0.00
No answer	3	11.54	0	0.00	3	5.45

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Increase	4	14.81	15	51.72	19	33.93
Decrease	3	11.11	10	34.48	13	23.21
Same	18	66.67	2	6.90	20	35.71
No conflict	1	3.70	1	3.45	2	3.57
Don't know	0	0.00	0	0.00	0	0.00
No answer	1	3.70	1	3.45	2	3.57

Table 33. Preferred Conflict Resolution Agency before WUO establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Panchayat	23	85.19	17	58.62	40	71.43
Wadera	4	14.81	3	10.34	7	12.50
Govt.	0	0.00	4	13.79	4	7.14
Others	0	0.00	1	3.45	1	1.79
Don't know	0	0.00	2	6.90	2	3.57
No answer	0	0.00	2	6.90	2	3.57
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Panchayat	21	80.77	18	62.07	39	70.91
Wadera	0	0.00	0	0.00	0	0.00
Govt.	0	0.00	8	27.59	8	14.55
Others	2	7.69	2	6.90	4	7.27
Don't know	0	0.00	0	0.00	0	0.00
No answer	3	11.54	1	3.45	4	7.27
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Panchayat	5	18.52	2	6.90	7	12.50
Wadera	1	3.70	0	0.00	1	1.79
Govt.	4	14.81	19	65.52	23	41.07
Others	0	0.00	6	20.69	6	10.71
Don't know	0	0.00	0	0.00	0	0.00
No answer	17	62.96	0	0.00	17	30.36

Table 34. Preferred Conflict Resolution Agency since WUO establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Committee formed	0	0.00	1	3.45	1	1.79
WUO leaders consulted	0	0.00	2	6.90	2	3.57
Referred to govt. agency	0	0.00	0	0.00	0	0.00
Others	2	7.41	5	17.24	7	12.50
Don't know	0	0.00	1	3.45	1	1.79
No answer	25	92.59	20	68.97	45	80.36

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Committee formed	3	11.54	1	3.45	4	7.27
WUO leaders consulted	17	65.38	23	79.31	40	72.73
Referred to govt. agency	2	7.69	4	13.79	6	10.91
Others	0	0.00	1	3.45	1	1.82
Don't know	3	11.54	0	0.00	3	5.45
No answer	1	3.85	0	0.00	1	1.82

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Committee formed	0	0.00	5	17.24	5	8.93
WUO leaders consulted	1	3.70	6	20.69	7	12.50
Referred to govt. agency	1	3.70	1	3.45	2	3.57
Others	3	11.11	16	55.17	19	33.93
Don't know	5	18.52	1	3.45	6	10.71
No answer	17	62.96	0	0.00	17	30.36

5.7 Maintenance Activities

Participatory irrigation management is particularly interested in mobilizing labor and financial contributions from water users for system maintenance and development. These reduce the chronic financial deficits in irrigation management and improve the physical state of the system. As IIMI's social mobilization activities put much emphasis on self-help maintenance and farmer-controlled construction, the survey investigated the level of participation and contributions.

Before the establishment of WUOs, **watercourse maintenance** was already a widespread and socially accepted activity among water users. The Sindh Irrigation Act of 1879 considers farmers as owners of watercourses and obligates them to maintain watercourses 'in a fit state'.²⁴ Table 35

demonstrates that almost all water users interviewed affirmed that they had participated in watercourse maintenance before WUO establishment. Since WUO establishment this practice has continued, as indicated by Table 36. Only at Dhoro Naro, a few respondents stated that they did no longer participate. In general, there is little difference between grassroots and leadership level participation.

The **maintenance of distributaries** is not formally the responsibility of water users, but rather that of the provincial Irrigation Departments. However, occasional mobilization of labor and other resources from farmers has been practiced to attend to urgent maintenance needs despite the poor resource endowments of the Irrigation Department. Thus, Table 37 shows that at Bareji 100 percent of respondents claimed participation in distributary maintenance before WUO formation. At Heran and Dhoro Naro, about half of

²⁴ Ali and Ali (eds.), 1996.

the respondents had also participated in these activities. The level of participation reported was slightly higher at the grassroots level. Since WUO formation, the majority of respondents confirmed their participation in distributary maintenance (Table 38). While the WUF members indicated 100 percent participation, a few WUA members stated that they had failed to attend.

Table 39 describes contributions to maintenance by type. **Labor** contributions are the most common and accepted form of contribution. At Bareji and Heran almost all of the grassroots and leadership provided labor. The same goes for the WUF members at Dhoro Naro, while among WUA respondents about three-quarters contributed labor. Contributions often took the form of landlords sending laborers or tenants.

Cash contributions are more difficult to mobilize as already indicated in the section discussing rule violations. Many farmers failed to make the agreed investment to obtain matching funds from IIMI for the construction of culverts and other improvements of the distributaries. At Bareji, only 7.4 percent of the WUA level and 31 percent of the WUF level respondents made cash contributions. At Heran, 35 percent of the grassroots and only 10 percent of the leaders contributed cash. Raising sufficient cash was only possible at Dhoro Naro, where 67 percent of grassroots and 86 percent of

leadership respondents made contributions. In **kind** contributions (tractors, tools, cement) were negligible at Bareji and Heran, while substantial at Dhoro Naro.

The overwhelming majority of all interviewees (90 percent) stated that their contributions had been used properly. The benefit of increased water due to de-silting was mentioned most often, while cooperation, establishment of WUF offices and reduction of breaches were considered significant as well. Table 40 demonstrates that a majority of respondents at all sites (83 to 100 percent) considered it worthwhile to make more contributions in the future.

Accordingly, the following results may be noted:

- Contributions to maintenance, particularly in the form of labor, have been a well-entrenched feature of irrigation management and were successfully extended by the pilot projects' efforts from the watercourse to the distributary level.
- Raising cash funds appears most difficult at two of the sites (Bareji and Heran), but appears to be accepted, if not well practiced, at Dhoro Naro.
- Farmers trust that their contributions are used properly and are willing to continue this practice in the future.

Table 35. Participation in Maintenance of Watercourses before WUO Establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	27	100.00	29	100.00	56	100.00
No	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	26	100.00	27	93.10	53	96.36
No	0	0.00	0	0.00	0	0.00
No answer	0	0.00	2	6.90	2	3.64
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	26	96.30	29	100.00	55	98.21
No	1	3.70	0	0.00	1	1.79
No answer	0	0.00	0	0.00	0	0.00

Table 36. Participation in Maintenance of Watercourses since WUO Establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	27	100.00	29	100.00	56	100.00
No	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	26	100.00	29	100.00	55	100.00
No	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	24	88.89	28	96.55	52	92.86
No	3	11.11	1	3.45	4	7.14
No answer	0	0.00	0	0.00	0	0.00

Table 37. Participation in Maintenance of Distributary before WUO Establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	27	100.00	29	100.00	56	100.00
No	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	17	65.38	8	27.59	25	45.45
No	1	3.85	1	3.45	2	3.64
No answer	8	30.77	20	68.97	28	50.91
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	14	51.85	14	48.28	28	50.00
No	13	48.15	15	51.72	28	50.00
No answer	0	0.00	0	0.00	0	0.00

Table 38. Participation in Maintenance of Distributary since WUO Establishment.

	Bareji					
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	27	100.00	29	100.00	56	100.00
No	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00

	Heran					
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	21	80.77	29	100.00	50	90.91
No	1	3.85	0	0.00	1	1.82
No answer	4	15.38	0	0.00	4	7.27

	Dhoro Naro					
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	22	81.48	29	100.00	51	91.07
No	5	18.52	0	0.00	5	8.93
No answer	0	0.00	0	0.00	0	0.00

Table 39. Contributions to Maintenance.

	Bareji					
	WUA (n=27)		WUF (n=29)		Total (n=56)	
	No.	%	No.	%	No.	%
Labor	26	96.30	28	96.55	54	96.43
Cash	2	7.41	9	31.03	11	19.64
Kind	0	0.00	3	10.34	3	5.36
None	0	0.00	0	0.00	0	0.00
No answer	0	0.00	1	3.45	1	1.79

	Heran					
	WUA (n=26)		WUF (n=29)		Total (n=55)	
	No.	%	No.	%	No.	%
Labor	25	96.15	29	100.00	54	98.18
Cash	9	34.62	3	10.34	12	21.82
Kind	4	15.38	6	20.69	10	18.18
None	1	3.85	0	0.00	1	1.82
No answer	0	0.00	0	0.00	0	0.00

	Dhoro Naro					
	WUA (n=27)		WUF (n=29)		Total (n=56)	
	No.	%	No.	%	No.	%
Labor	21	77.78	29	100.00	50	89.29
Cash	18	66.67	25	86.21	43	76.79
Kind	8	29.63	22	75.86	30	53.57
None	4	14.81	0	0.00	4	7.14
No answer	0	0.00	0	0.00	0	0.00

Table 40. Willing to Contribute to Maintenance in the Future.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	24	88.89	27	93.10	51	91.07
No	3	11.11	2	6.90	5	8.93
Don't know	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	24	92.31	29	100.00	53	96.36
No	2	7.69	0	0.00	2	3.64
Don't know	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	24	88.89	24	82.76	48	85.71
No	2	7.41	4	13.79	6	10.71
Don't know	1	3.70	0	0.00	1	1.79
No answer	0	0.00	1	3.45	1	1.79

5.8 Inter-Organizational Relations

The pilot project sought the collaboration of governmental and non-governmental organizations for institutional support. Especially the cooperation of the Irrigation Department, OFWM, WAPDA and other government departments concerned with natural resource management was considered essential for the success of the WUOs. Relations with private agencies, such as farm input suppliers, were also sought. These organizations were invited to join the **Field Implementation Coordination Committee** for mutual information and coordination of joint activities. The farmers in the survey sample were asked, how relations with these actors had developed as a result of the project.

About 52 to 68 percent of respondents at the three sites stated that relations with the **Irrigation Department** had deteriorated (Table 41). Between 18 and 41 percent refused to answer. This estimation would be particularly influenced by the failure of the JMA, despite the fact that some irrigation officers had cooperated with the WUFs.

At Bareji, the judgment about relations with the **other agencies** was fairly harsh, as the majority of the disappointed farmers considered them to have worsened. At Heran, respondents were divided in their opinions and a relatively high number (30 to 95 percent) abstained from any statement. At Dhoro Naro, the majority of respondents did not care to answer, while the remainder indicated improved relations.

The data indicate that relations between the organized farmers and their institutional context are based on mistrust and uncertainty. The Irrigation Department in particular is perceived as an adversary of the WUOs and the main cause for the failure of the JMA and participatory irrigation management. 45 and 68 percent of respondents at Heran and Dhoro Naro, respectively, identified corruption as their main difficulty with Irrigation Department staff. 22 and 52 percent, respectively, saw irrigation personnel's power and status as a problem. The remainder of respondents declined to comment on their relations with agency staff.

In such a situation, it is hard to imagine how cooperative relations can develop. It is therefore not surprising that few farmers indicated the

agency from which they would expect the provision of support services for participatory irrigation management (Table 42). Only IIMI's field staff had earned some trust among the farmers, which, at Dhoro Naro, in particular, was not unanimous as well. Expectations were highest for support services in WUO management and system operation, as here most farmers had made positive experiences.

When asked explicitly about the usefulness of IIMI's activities with the WUOs, the leadership at all three sites affirmed the experience as useful (80 to 96.5 percent). Among the grassroots only half of the respondents shared this impression (Table 43). IIMI's main focus on leadership

development led to a lower level of familiarity with IIMI's work and the irrigation reform at the WUA level.

- Inter-organizational relations between the WUOs and other institutions are difficult and fraught with disappointments and suspicion.
- Relations with the Irrigation Department are particularly adverse, since most of its staff is perceived as corrupt and opposed to the empowerment of water user organizations.
- IIMI has received almost unanimous support among the WUO leadership, a perception, which is not shared by all grassroots members.

Table 41. Relationship between Farmers and Government / Other Agencies since WUO Establishment.

Bareji (n=56)								
	Improved		Worse		Same		No answer	
	No.	%	No.	%	No.	%	No.	%
Irrigation Dept.	8	14.29	38	67.86	0	0.00	10	17.86
OFWM	4	7.14	41	73.21	1	1.79	10	17.86
WAPDA	21	37.50	26	46.43	0	0.00	9	16.07
Livestock Department	18	32.14	28	50.00	0	0.00	10	17.86
Agricultural Extension	10	17.86	36	64.29	0	0.00	10	17.86
Forest Department	1	1.79	44	78.57	1	1.79	10	17.86
Private Business	1	1.79	44	78.57	1	1.79	10	17.86
Heran (n=55)								
	Improved		Worse		Same		No answer	
	No.	%	No.	%	No.	%	No.	%
Irrigation Dept.	0	0.00	36	65.45	0	0.00	19	34.55
OFWM	24	43.64	14	25.45	0	0.00	17	30.91
WAPDA	9	16.36	15	27.27	0	0.00	31	56.36
Livestock Department	26	47.27	9	16.36	0	0.00	20	36.36
Agricultural Extension	27	49.09	8	14.55	0	0.00	20	36.36
Forest Department	25	45.45	6	10.91	0	0.00	24	43.64
Private Business	1	1.82	2	3.64	0	0.00	52	94.55
Dhoro Naro (n=56)								
	Improved		Worse		Same		No answer	
	No.	%	No.	%	No.	%	No.	%
Irrigation Dept.	4	7.14	29	51.79	0	0.00	23	41.07
OFWM	9	16.07	0	0.00	0	0.00	47	83.93
WAPDA	7	12.50	0	0.00	0	0.00	49	87.50
Livestock Department	11	19.64	0	0.00	0	0.00	45	80.36
Agricultural Extension	12	21.43	0	0.00	0	0.00	44	78.57
Forest Department	7	12.50	0	0.00	0	0.00	49	87.50
Private Business	3	5.36	0	0.00	0	0.00	53	94.64

Table 42. Agencies Expected to Provide Support Services to the WUO in the Future.

Bareji (n=55)										
	Operation		Maintenance		WUO Management		Finance/Credit		Conflict Mediation	
	No.	%	No.	%	No.	%	No.	%	No.	%
PID	6	10.71	2	3.57	2	3.57	1	1.79	0	0.00
Police	0	0.00	0	0.00	0	0.00	0	0.00	1	1.79
Govt.	5	8.93	2	3.57	1	1.79	7	12.50	7	12.50
Legal System	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
WAPDA	0	0.00	0	0.00	0	0.00	1	1.79	0	0.00
Revenue Dept.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Banks/NGOs	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
ADBP	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
OFWM	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
IIMI	31	55.36	6	10.71	36	64.29	22	39.29	4	7.14

Heran (n=53)										
	Operation		Maintenance		WUO Management		Finance/Credit		Conflict Mediation	
	No.	%	No.	%	No.	%	No.	%	No.	%
PID	4	7.27	2	3.64	0	0.00	0	0.00	0	0.00
Police	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Govt.	0	0.00	1	1.82	0	0.00	0	0.00	0	0.00
Legal System	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
WAPDA	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Revenue Dept.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Banks/NGOs	0	0.00	0	0.00	0	0.00	1	1.82	0	0.00
ADBP	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
OFWM	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
IIMI	20	36.36	8	14.55	34	61.82	6	10.91	15	27.27

Dhoro Naro (n=35)										
	Operation		Maintenance		WUO Management		Finance/Credit		Conflict Mediation	
	No.	%	No.	%	No.	%	No.	%	No.	%
PID	5	8.93	3	5.36	0	0.00	1	1.79	0	0.00
Police	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Govt.	2	3.57	0	0.00	0	0.00	2	3.57	1	1.79
Legal System	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
WAPDA	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Revenue Dept.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Banks/NGOs	0	0.00	0	0.00	0	0.00	2	3.57	0	0.00
ADBP	0	0.00	0	0.00	0	0.00	9	16.07	0	0.00
OFWM	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
IIMI	14	25.00	12	21.43	28	50.00	17	30.36	18	32.14

Table 43. Usefulness of Social Mobilization Activities by IIMI.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	13	48.15	23	79.31	36	64.29
No	11	40.74	4	13.79	15	26.79
Don't know	2	7.41	1	3.45	3	5.36
No answer	1	3.70	1	3.45	2	3.57

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	13	50.00	27	93.10	40	72.73
No	6	23.08	2	6.90	8	14.55
Don't know	7	26.92	0	0.00	7	12.73
No answer	0	0.00	0	0.00	0	0.00

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	15	55.56	28	96.55	43	76.79
No	8	29.63	1	3.45	9	16.07
Don't know	4	14.81	0	0.00	4	7.14
No answer	0	0.00	0	0.00	0	0.00

5.9 Water Users' Self-assessment

Social mobilization for organized collective action in water resource management was a new and highly unusual experience for the participating farmers. Therefore, their self-assessment of the changes it caused in their lives would yield interesting insights about their willingness to sustain the process.

Table 44 describes farmers' **assessment of the usefulness of their efforts** for WUOs. Among the leadership between 72.5 to 96.5 percent at the three sites affirmed clearly. At Bareji, the WUA level respondents remained divided, with only about one-third considering their efforts worthwhile. Another third declined to answer and the rest were either unsure or did not know. The Heran and Dhoro Naro responses are more favorable, as a clear majority affirms the usefulness of WUA activities.

The respondents indicated a number of reasons for considering their efforts useful, such as

- Increased knowledge about agriculture and irrigation;

- Knowledge about actual water discharges in various subsystem sections;
- Planned and collective action to solve problems;
- Solution of problems through discussion, instead of the persistence of conflict;
- Increased assertiveness in communication with irrigation personnel through the unity of watercourse residents;
- Information about water users' rights,
- Increase of water availability due to de-silting and channel lining (at Heran);
- Reduction of breaches of the distributary banks;
- Development of links with one another and agency staff; and
- Increase in social relations among farmers.

However, many respondents made it clear that they considered the usefulness of collective action to be conditional on the future fulfillment of the promises of social mobilization. If the WUOs remained without powers, and equity and reliability of water distribution could not be achieved, their

efforts would be considered useless. The skeptics and critics among the respondents argued likewise. They considered WUO activities 'a waste of time', deplored the culture's 'lack of civic sense' and the failure of many head and middle reach residents to cooperate, and considered the work done to be incomplete. If the lack of activity among the WUOs indicated in section 5.1 continues and the reform efforts fail, more farmers may be expected to adopt this attitude. Furthermore, they will be forced to revert to conventional and often illicit means to manage their relations with the irrigation system and its officers. Whether this is the intention of the irrigation personnel and their influential allies in the provincial government, is a compelling question.

The sample was asked to assess **farmers' willingness to cooperate**. Very few respondents thought that their willingness to cooperate had decreased. Two thirds of the Bareji leadership considered the willingness to cooperate to have increased, while one third saw no change. Among the grassroots this pattern of replies was reversed. At Heran, the grassroots' majority perceived an improvement as well, a view shared overwhelmingly by the leadership. At Dhoro Naro, opinions were divided between improvement and no change. Generally, the leadership appeared more optimistic about others' willingness to cooperate, as they had experienced a higher level of activity supported by the facilitation efforts of the social mobilizers. At all sites and levels of membership the respondents thought that the **efforts of the WUO should be increased**, as demonstrated by Table 46.

These attitudes indicate that farmers consider collective action a necessary and an established component of their social setup. However, for a successful institutionalization of WUOs to occur, more effort and rewards of efforts in the form of farmers' empowerment and changes in irrigation management will be necessary.

The survey asked the water users to specify the main **difficulties** they had **experienced during the social mobilization process**, to gain an understanding about de-motivating factors. As Table 47 demonstrates, the level of response was comparatively low (at maximum around 50 percent).

The higher levels of response among WUA members indicate problems with the time and effort spent on organizational activities, the members' lack of familiarity with the relevant

issues and activities, and the spreading of rumors to discredit the WUOs. At the WUFs, a comparatively high level of respondents shared these concerns. Indeed, the organizing process makes appreciable demands on people's time, which will only be considered worthwhile if the benefits justify the efforts. Lack of familiarity is of course always an issue during the initial phases of a social process, but should abate if organizational action can be successfully institutionalized. The data presented so far, show that the farmers believe that their efforts were useful and worthwhile and that there is a good chance that institutionalization will occur, if the social context shifts to cooperation. However, the significance of discrediting rumors shows that this shift has yet to occur.

When we could not satisfy people, problems came up and people were not ready to cooperate. Rumors affected us much when the Irrigation Department threatened to dry up the minor. Then people became non-cooperative. Our main problem is water and we became organized to deal with it. When water became short, people said, the WUF couldn't solve this problem. So they paid money to the Irrigation Department. If the Irrigation Department cooperates, the WUOs can be successful. (Farmer)

The farmers were also asked whether the WUO activities had changed their **sense of self-respect and confidence**. The data in Table 48 suggest that the majority of the leadership had gained an increased sense of confidence. The grassroots response shows that at Bareji no difference was experienced by most, but at the other sites about half perceived an increase in confidence and self-respect.

The importance of this matter is captured by the open-ended replies of some respondents. Being organized and speaking as a group or with the backing of a group increased the status of the farmers in relation to government officials, who were reported to have disregarded individual farmers.

Due to organization, our respect in the government offices increased. When we meet them now as a delegation they give us a response, which increases our respect. (Farmer)

In the past, when we visited government officers in their offices they were not ready to meet us. After organizing the WUOs, they came to our meetings and discussed with us. I raised the issue of non-cooperation of an executive engineer at LBOD during a meeting in front of

him. When I visited him, he did not even bother to meet me. He was ashamed by my statement in front of all the farmers and some foreigners. So our confidence increased and we talked with these officials. (Farmer)

The issue of shame reveals the significance attached by the local setting to status. In the incidence quoted, status was achieved by the manipulation of honor (*izzat*). The attention paid to the farmers and the establishment of an organized forum for meetings and discussion raised the status of the farmers, while the public shaming of the official lowered his. He was forced to discuss with farmers on even terms, which was not so before the establishment of the WUOs. Incidences, such as this, provide important indicators for the understanding of the dynamics of resistance among government staff. The organized farmers and their supporters threaten their honor (*izzat*) and status.

The positive impact of social mobilization was temporary, as farmers were deeply disappointed by the closure of the project after the failure of the JMA.

Initially we thought that the distributary would be given to the farmers. We were happy and thought our irrigation problems would be reduced. The farmers took an interest in the activities of the federation. But when IIMI left and the distributary was not given to the farmers, people felt disheartened and no longer took an interest in the activities of the federation. (Farmer)

Table 49 clearly demonstrates that the respondents at all sites and levels considered themselves unable to continue WUO activities without IIMI's support. The closure of the social mobilization project occurred at a time of severe disappointment of expectations. The JMAs had been signed by the XENs of the local Irrigation Department divisions and supported by the provincial Secretary of Irrigation. Yet, joint management was undermined by the then Chief Minister of the Province.

Although the continuation of IIMI's project after 1997 was not ensured, the organization did not prepare farmers for a more independent pursuit of their organizational activities. The state of

development of the project necessitated the continuation of IIMI's support services until the WUOs had developed sufficient skills for independent irrigation management. The experience shows that farmer mobilization projects for participatory irrigation management require both, the unstinting cooperation of the government and reliable support by social mobilization staff over an extended period of time. The relatively short-term pilot-projects raised many expectations, which turned into disappointments and possibly resentment, once the objectives of the projects could no longer be met.

The findings of this section may be summarized as follows:

- The majority of respondents, particularly at the leadership level, considered their efforts for WUO activities to be useful, as it enabled them to increase their knowledge and cooperation, to resolve some of their water problems, and to increase their links with other farmers and government officials.
- Without empowerment, cooperation by government officials and sustained organizational activity, these efforts, however, would be disappointed.
- The farmers' willingness to cooperate had increased with the establishment of WUOs, but an increase of effort, and reward for the same, is required, to sustain the process in the future.
- Farmers consider the non-cooperative attitude of irrigation personnel as the main obstacle to the sustainability of the WUOs.
- With the formation of WUOs, farmer representatives experienced an increase in self-respect and confidence, which enabled them to interact with government officials on less unequal status terms.
- The farmers do not feel capable of continuing their organizational efforts without support by IIMI's social mobilization staff.

Table 44. Usefulness of Farmers' efforts for the WUO.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	10	37.04	21	72.41	31	55.36
No	4	14.81	7	24.14	11	19.64
Don't know	3	11.11	0	0.00	3	5.36
No answer	10	37.04	1	3.45	11	19.64

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	16	61.54	28	96.55	44	80.00
No	6	23.08	0	0.00	6	10.91
Don't know	4	15.38	1	3.45	5	9.09
No answer	0	0.00	0	0.00	0	0.00

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	19	70.37	25	86.21	44	78.57
No	4	14.81	4	13.79	8	14.29
Don't know	4	14.81	0	0.00	4	7.14
No answer	0	0.00	0	0.00	0	0.00

Table 45. Willingness of Other Farmers to Cooperate.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Improved	8	29.63	20	68.97	28	50.00
Decreased	1	3.70	0	0.00	1	1.79
No change	17	62.96	9	31.03	26	46.43
No answer	1	3.70	0	0.00	1	1.79

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Improved	18	69.23	27	93.10	45	81.82
Decreased	0	0.00	0	0.00	0	0.00
No change	8	30.77	2	6.90	10	18.18
No answer	0	0.00	0	0.00	0	0.00

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Improved	11	40.74	17	58.62	28	50.00
Decreased	1	3.70	2	6.90	3	5.36
No change	14	51.85	9	31.03	23	41.07
No answer	1	3.70	1	3.45	2	3.57

Table 46. The Efforts of the WUO should be Increased.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	25	92.59	26	89.66	51	91.07
No	1	3.70	2	6.90	3	5.36
Don't know	1	3.70	1	3.45	2	3.57
No answer	0	0.00	0	0.00	0	0.00
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	23	88.46	28	96.55	51	92.73
No	0	0.00	0	0.00	0	0.00
Don't know	3	11.54	1	3.45	4	7.27
No answer	0	0.00	0	0.00	0	0.00
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	24	88.89	26	89.66	50	89.29
No	1	3.70	3	10.34	4	7.14
Don't know	2	7.41	0	0.00	2	3.57
No answer	0	0.00	0	0.00	0	0.00

Table 47. Main Difficulties Experienced while Participating in the WUO.

	Bareji					
	WUA (n=27)		WUF (n=29)		Total (n=56)	
	No	(%)	No	(%)	No	(%)
Too much time & effort spent	6	22.22	13	44.83	19	33.93
Members are unfamiliar	6	22.22	9	31.03	15	26.79
Too much money needed	3	11.11	1	3.45	4	7.14
Too much effort needed	3	11.11	8	27.59	11	19.64
Rumors spread to discredit	4	14.81	9	31.03	13	23.21
Personality conflicts	1	3.70	4	13.79	5	8.93
Members engaged in corruption	0	0.00	2	6.90	2	3.57
Political conflict	0	0.00	2	6.90	2	3.57
Conflict between baradri	1	3.70	0	0.00	1	1.79
Corruption by influential farmer	1	3.70	1	3.45	2	3.57
	Heran					
	WUA (n=26)		WUF(n=29)		Total (n=55)	
	No	(%)	No	(%)	No	(%)
Too much time & effort spent	7	26.92	14	48.28	21	38.18
Members are unfamiliar	13	50.00	20	68.97	33	60.00
Too much money needed	1	3.85	4	13.79	5	9.09
Too much effort needed	6	23.08	12	41.38	18	32.73
Rumors spread to discredit	11	42.31	20	68.97	31	56.36
Personality conflicts	2	7.69	4	13.79	6	10.91
Members engaged in corruption	8	30.77	12	41.38	20	36.36
Political conflict	0	0.00	0	0.00	0	0.00
Conflict between baradri	1	3.85	1	3.45	2	3.64
Corruption by influential farmer	0	0.00	1	3.45	1	1.82
	Dhoro Naro					
	WUA (n=27)		WUF (n=29)		Total (n=56)	
	No	(%)	No	(%)	No	(%)
Too much time & effort spent	1	3.70	5	17.24	6	10.71
Members are unfamiliar	4	14.81	7	24.14	11	19.64
Too much money needed	1	3.70	6	20.69	7	12.50
Too much effort needed	1	3.70	3	10.34	4	7.14
Rumors spread to discredit	3	11.11	12	41.38	15	26.79
Personality conflicts	3	11.11	2	6.90	5	8.93
Members engaged in corruption	2	7.41	1	3.45	3	5.36
Political conflict	0	0.00	2	6.90	2	3.57
Conflict between baradri	1	3.70	1	3.45	2	3.57
Corruption by influential farmer	0	0.00	3	10.34	3	5.36

Table 48. Level of Self-respect and Confidence since WUO Establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Increased	5	18.52	21	72.41	26	46.43
No difference	22	81.48	8	27.59	30	53.57
No answer	0	0.00	0	0.00	0	0.00
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Increased	15	57.69	28	96.55	43	78.18
No difference	11	42.31	1	3.45	12	21.82
No answer	0	0.00	0	0.00	0	0.00
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Increased	14	51.85	19	65.52	33	58.93
No difference	9	33.33	9	31.03	18	32.14
No answer	4	14.81	1	3.45	5	8.93

Table 49. Ability to Continue WUO Activities after Closure of IIMI's Social Mobilization Project.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	3	11.11	3	10.34	6	10.71
No	23	85.19	25	86.21	48	85.71
Don't know	0	0.00	0	0.00	0	0.00
No answer	1	3.70	1	3.45	2	3.57
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	1	3.85	4	13.79	5	9.09
No	19	73.08	24	82.76	43	78.18
Don't know	6	23.08	1	3.45	7	12.73
No answer	0	0.00	0	0.00	0	0.00
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	4	14.81	4	13.79	8	14.29
No	16	59.26	25	86.21	41	73.21
Don't know	7	25.93	0	0.00	7	12.50
No answer	0	0.00	0	0.00	0	0.00

5.10 Transfer of Irrigation Management Responsibilities

The ultimate goal of the social mobilization of water users is the transfer of irrigation management responsibilities to their organizations. These entail both governance and management functions, where elected representative bodies and committees supervise and to some extent carry out O&M activities. A staff of management employees and canal workers attends to the daily functions of operation and maintenance of the WUFs' subsystems. In participatory irrigation management the WUFs coordinate with and consult the Irrigation Department personnel.

A necessary precondition for irrigation management transfer in subsystems, such as minors or distributaries, is the existence of a legal framework, which entitles water user organization to assume responsibilities for clearly defined functions. Secondly, it requires the cooperation of professional irrigation managers and field staff, both at the subsystem and higher levels (branch and main canals, barrages, reservoirs), whose management systems are institutionalized as Area Water Boards and Provincial Irrigation And Drainage Authorities. Thirdly, participatory irrigation management requires the willingness of farmers to assume such responsibilities, which require skill, time and effort, and behavior in accordance with laws, rules and regulations.

The survey inquired into the farmers' willingness to assume responsibility for the **collection and assessment of *abiana*** (irrigation fees). The responsible and rule-conform handling of organizational funds, aiming at the financial sustainability of distributary level management and ultimately of the Indus Basin Irrigation System (IBIS) as a whole, is a key objective of the institutional reform of the irrigation sector. The pilot projects had aimed at testing farmers' capability of handling the financial management of irrigation services with the cooperation of AWBs and PIDAs. The issue greatly worried all stakeholders since the necessary trust, reliability and skill had yet to be generated. Furthermore, the agencies in charge of financial management, the Revenue, Finance and Irrigation Departments, were reluctant to transfer the control of significant though mismanaged financial resources.

A clear majority at all sites professed an interest in assuming the responsibility for *abiana* collection and assessment, according to Table 50. Only at Bareji, a slight majority of WUA members were reluctant. Everywhere else opponents or undecided respondents were in the minority.

The opponents at Bareji feared that farmers would not pay up and they would be unable to raise sufficient funds. They did not expect that farmers would entrust other farmers with the authority to collect their financial contributions and assumed that the activity would be too time-consuming.

They will eat the money. Even if people went to Medina, I would never trust them. The fee should go directly to the bank. (Farmer)

This will be a very difficult task. Conflict may arise. (Farmer)

Some argued that under WUO management the leniency of the current system would no longer be acceptable and support for financial management by those farmers seeking unfair advantages would not be forthcoming.

Proponents maintained that the chance for a substantial part of their funds to be used for the benefit of their distributaries was higher. Some stated that it would reduce the opportunities of irrigation officers to demand extra payments. Contrary to the argument of opponents, they expect that farmers can demand proper payment from their fellow irrigators more easily.

The data indicate that a solid majority of respondents favors the assumption of one of the key responsibilities in participatory irrigation management, despite the doubts and fears this may occasion.

The respondents were also cautiously positive about the **joint management agreements** signed between SIDA and the WUFs. Table 51 indicates that at the WUA level about half of the respondents declined to share their opinion about the JMAs and their fate. Between 37 and 46 percent of the grassroots respondents at all sites supported the agreements. The majority of the leadership clearly endorsed the JMAs, while about a quarter or less were opposed, remained unsure or declined to answer.

Several farmers observed that putting the JMA in 'abeyance' undermined the objectives of the pilot projects. They aptly identified the causes

for the subsequent decline of organizational activities.

If the JMA had been implemented we would have knowledge about the capacity of the WUF. Either it would operate the distributary or fail. Since it was not implemented, the interest of the WUF members decreased. (Farmer)

With the implementation of the JMA there would have been a real test. However, the Irrigation Department was not in favor of handing the distributary over to the farmers and they failed it. (Farmer)

It was a loss for us and was harmful. Due to the failure of the JMA conflict increased between the WUF and the Irrigation Department. They won and we became weak. (Farmer)

Although the formal reason advanced by the then Chief Minister for the indefinite postponement of the JMAs was the lack of a proper legal framework, the farmers had no illusions about what they regarded as the actual reasons for failing the JMA.

The Irrigation Department failed the JMA because they knew that their money would be stopped. (Farmer)

If the JMA had been implemented we would have been freed from the demands for bribes by the *darogars* (supervisory canal worker). (Farmer)

The Irrigation Department's bribes were at risk. So they cancelled the JMA. (Farmer)

The Irrigation Department people felt threatened by the JMA and therefore failed it. (Farmer)

Irrigation Department officials cried, became hostile towards the farmers and decreased water discharges. (Farmer)

The Irrigation Department earns illegal money from the farmers. They don't want these types of changes in the system and therefore failed the JMA. (Farmer)

The data suggest that the farmers are only too familiar with the practices of the Irrigation Department and understand that the financial interests of the irrigation personnel would suffer

with the alteration of powers and responsibilities at the distributaries. Rent seeking, of course, requires the willing or coerced collusion of the farmers. The widespread support of the JMA, however, indicates that a majority of farmers prefer to manage their irrigation systems without illicit demands for money. IIMI's social mobilization drive was able to galvanize a real interest among farmers in more equitable, rule-bound and effective irrigation management.

The sense of failure and disappointment among farmers ran deep, as they saw themselves being forced to return to the old practices of irrigation management. The prospect of IIMI's return to the area for continuation of the project after a 17 months lull actually created considerable skepticism.

How much power does IIMI have? How much power do we farmers have? Can you stop the demands for bribes? Can you stop the lowering of the head regulator gates? We know that if we pay up, we get water. If we side with IIMI, we don't know if we get enough water. (Farmer)

The findings of this section can be summarized as follows:

- The majority of water users supported the assumption of responsibilities for distributary management as stipulated in the JMAs between the pilot-WUFs and SIDA.
- They expected an improvement of the financial and management situation at their distributaries. The need to develop trust and improved skills among water user representatives was noted.
- The failure of the joint management agreements between WUFs and SIDA undermined the objectives of the pilot-project and the sustainability of the WUOs.
- The farmers recognized that under the SIDA Act irrigation personnel would lose opportunities for rent seeking and identified this as the central cause of the failure of the JMAs and the pilot-projects.

Table 50. Assumption of Responsibility for Assessment and Collection of *Abiana* by WUF.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	10	37.04	22	75.86	32	57.14
No	14	51.85	6	20.69	20	35.71
Don't know	2	7.41	0	0.00	2	3.57
No answer	1	3.70	1	3.45	2	3.57

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	25	96.15	26	89.66	51	92.73
No	0	0.00	3	10.34	3	5.45
Don't know	1	3.85	0	0.00	1	1.82
No answer	0	0.00	0	0.00	0	0.00

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	18	66.67	25	86.21	43	76.79
No	4	14.81	2	6.90	6	10.71
Don't know	5	18.52	1	3.45	6	10.71
No answer	0	0.00	1	3.45	1	1.79

Table 51. Acceptance of Joint Management Agreement (JMA) at the Distributary Level.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Accept	10	37	26	89.6	36	64.3
Don't accept	1	3.7	2	6.9	3	5.4
Don't know	1	3.7	0	0	1	1.8
No answer	15	55.5	1	3.5	16	28.5

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Accept	12	46.2	21	72.5	33	60
Don't accept	2	7.6	3	10.3	5	9
Don't know	0	0	3	10.3	3	5.5
No answer	12	46.2	2	6.9	14	25.5

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Accept	12	44.5	25	86.2	37	66.1
Don't accept	2	7.4	2	6.9	4	7.1
Don't know	0	0	0	0	0	0
No answer	13	48.1	2	6.9	15	26.8

6. CONCLUSIONS

Based on the research findings the research questions posed in section 4 can now be addressed.

- Did the water users at the three pilot sites develop and maintain the organizational structures and functions induced and facilitated by IIMI's social mobilization process?

The development of organizational structures was by and large successful although organizational development must be viewed as an ongoing and after 2 ½ years by no means completed process. The WUOs conducted regular meetings with the support of IIMI's field staff, selected a leadership through consensus, underwent capacity building activities, and made considerable efforts to assume O&M responsibilities. The WUF leaders strengthened their relations and negotiation position with the irrigation department and developed self-confidence and respect, as well as a commitment to organized action and participatory irrigation management. They successfully negotiated and finalized a joint management agreement with the Sindh Secretary of Irrigation, SIDA and the local irrigation authorities.

However, participation of grassroots members in meetings remained relatively weak, as was the maintenance of records of meetings, financial transactions, correspondence and attendance. At the WUF level the situation was appreciably better, but all in all transparent organizational management requires strengthening. The same applies to the recognition and observance of rules. The WUOs were built in a culture of weak rule-observance and it is difficult to foster rational and just procedures. The institutionalization of effective conflict resolution mechanisms was not achieved, but informal means within WUOs appear to have reduced the level of conflicts among farmers.

- Have the WUOs successfully contributed towards the efficient and equitable operation, maintenance and development of their irrigation subsystems, i.e. watercourses and distributaries?

Within the limits of the pre-reform irrigation management structures, the WUOs attempted to improve the efficiency and equity of O&M, with some considerable results. They received training in O&M activities, assessed maintenance needs

and mobilized financial and labor resources for channel de-silting and other maintenance works, which improved water availability. The mobilization of labor among water users was a widely accepted and entrenched feature of irrigation culture, while financial contributions were given with considerable reluctance.

The attempts to improve the equity of operation by means of outlet resizing failed due to the lack of WUO empowerment and the non-cooperation by irrigation officials. Despite this setback, the WUOs and IIMI were able to increase the awareness of irrigators about the importance of a more functional distribution system. The majority of farmers expressed dissatisfaction about the conventional distribution practices marred by rent seeking. The incidence of irrigation offenses by various means, except rampant outlet tampering, was reportedly reduced since the inception of mobilization activities.

- Have democratic and equity oriented values taken root in the organizations' culture?

The WUOs have developed democratic though limited structures of representation. At the watercourse and distributary levels, leaders and representatives were selected in open meetings, through a process of discussion and negotiation. The outcomes of elections and other decision-making processes were perceived as consensus based. However, the exclusion of tenants, the under-representation of owner-cultivators in the leadership and the dominance of non-cultivating landlords limit the reach of democratic governance. Within the dominant class of landowners the representation of various property size strata was fairly even, with the most favorable representation of small holders at the Heran distributary. Consensus tended to be forged between dominant political and/or kin groups and accepted by the wider constituency, thus affirming entrenched power and status relations. Democratic values do not easily take root in the rural Sindh's highly stratified and authoritarian society.

The value and necessity of increased equity has been widely debated among the organized water users and their facilitators. An interest in rule-observation and rational management has been germinated. Given the lack of empowerment, the practices required for rule-bound and equitable system operation cannot be implemented. Social

pressure and rational insight remain weak if they are not backed by effective means of enforcement and sanctioning.

- Have the WUO members achieved effective means and practices of communication within their organizations and with other organizations?

The WUOs were becoming an important forum of discussion among leaders and the grassroots. Survey participants reported that concerns and issues were successfully communicated between the various organizational levels. The WUO leaders also started to negotiate their concerns and grievances with the Irrigation Department personnel collectively and achieved increased resonance and respect from the irrigation officers. However, these achievements became non-sustainable as the failure of the JMA caused the deterioration of both, intra- and inter-organizational relations.

- Do the organized water users experience a sense of ownership of their WUOs?

The success of the social mobilization and organization building activities remained highly dependent on the presence and efforts of IIMI's social mobilizers. Although the WUO members had developed a sense of identification with their organizations and objectives, these collapsed with the closure of the project and with the failure of JMA. It must therefore be concluded that the water users' dependency was too high and their sense of ownership too fragile to withstand the conflict-ridden environment of irrigation reform in the Sindh.

- What obstacles and constraints were experienced in meeting the objectives implied in these questions?

The following **key obstacles and constraints** can be identified:

- In a situation of relative water-scarcity and conflict over water resources, competition by illicit means weakens farmers' capacities to adopt collective and rule-bound behavior.
- The dominance of the landlord class leads to the exclusion of a rather large group of tenants and the under-representation of owner-cultivators, and impedes democratic values.
- Accountability and transparency are weakened by the lack of an organizational

culture, which values rational office procedures.

- The lack of a comprehensive and conducive legal framework makes the introduction of participatory irrigation management impossible.
- The lack of cooperation and ownership of the ongoing institutional reform of the irrigation sector by Irrigation Department personnel caused the failure of experimental participatory irrigation management.
- The findings of the survey and of a parallel study of irrigation personnel suggest, that the irrigation officers' rent seeking behavior and defense of their status would be among the major causes of the failure of the pilot project, the WUOs and possibly the irrigation reform in the Sindh Province.

Consequently, the legitimacy of social mobilization and farmer controlled irrigation management has suffered a severe blow and the willingness of irrigators to rejoin the reform process remains questionable. They now face a serious dilemma.

If they once again join IIMI and the reform movement, they risk the disapproval of irrigation personnel. The respondents interviewed had a keen sense of the power relations involved. Given the power constellations between reformers and their opponents, water users are unsure of the ability of IIMI and the WUOs to implement the objectives of the reform and to safeguard farmers' need for sufficient water supply to sustain their livelihoods. Considering that the powers to manage their irrigation subsystem have not been devolved, they have reasonable cause to worry that cooperation with the reformers would lead to inadequate services and reduction in discharges by the irrigation personnel.

On the other hand, the farmers know that compliance with rent seeking and committing irrigation offences leads to somewhat predictable water supplies at higher than design levels. However, by reverting to this management pattern, they would forfeit the opportunity to realize their interest in gaining collective control of their irrigation subsystem. The majority of the farmers want to avoid illegal means of procuring water resources, prefer reliable and adequate services, and seek to maintain their system in a state that ensures their livelihood for years to come. They realize that while they can cope in the old system in the short run, their long-term survival depends

on decisive and far-reaching changes in the system of irrigation management.

The impact of IIMI's project must be assessed as limited and problematic. IIMI has been able to successfully establish farmer organizations and prepare them for the assumption of management responsibilities under the SIDA Act. It facilitated a learning process among farmers and generated a level of motivation for collective action, which had previously been considered impossible. However, the inability to engage the Irrigation Department and other state actors in a constructive process of experimentation with the reform frustrated the efforts of the farmers and social mobilizers. It has left the organized farmers without rewards for their

investments in organization development and exposed them to the punitive actions of the irrigation staff. The de-legitimization of the institutional reform among farmers is likely, as neither the legal framework for their empowerment, nor sufficient policy support within the Government of Sindh was secured to sustain the promises of the pilot project. The project invested insufficient resources in generating a comprehensive understanding of the causes of the resistance of irrigation staff to reform and was, therefore, unable to target its mobilization strategy accordingly. The social mobilization of farmers needs to be complemented by systematic efforts to change the organizational culture of irrigation managers.

7. RECOMMENDATIONS

To achieve the transformation of irrigation management and not to frustrate the expectations of farmers, who have taken appreciable risks, the continuation of social mobilization projects cannot be recommended without a clear commitment to reform among all stakeholders, including the staff of irrigation departments. This would entail the firm acceptance and enactment of a legal framework, which empowers farmer organizations to carry out O&M of their distributaries and minors.

Furthermore, policy and decision-makers, as well as implementers and experts, need to focus their reform efforts on farmers and irrigation personnel simultaneously. It is not enough to mobilize farmers only and then see the reform fail, because the capacity of other stakeholders has not been built. However, by simply raising the level of information of irrigation personnel or by coercing them to join the reform, little, but intensified resistance will be achieved. The root causes of resistance need to be better understood and the contention of farmers, that rent-seeking behavior is a central issue, needs to be tested.

Finally, the understanding of reform needs to be built among Pakistan's the general public. The transformation of structures, roles and functions of the management system of Pakistan's most important resource base, is not a matter, which can be debated and decided by experts and administrators only. The general public has a right to know and debate, and will, once they have come to understand and own the process, support and advance it.

All stakeholders must in this context consider the requirements and grievances of the parties involved. A better understanding of irrigation staff's motivation for resistance could then lead to the resolution of grievances among this important stakeholder group.

The reform process and debates are not sufficiently participatory and open. They must be highlighted in the media and in public forums in the localities where the reform is to be tested, i.e. where Area Water Boards and FOs are being established. Experiences with public sector reforms the world over demonstrate that compromises, consensus and win-win resolutions to conflict can only be achieved if the society as a whole engages in the process, shapes it and eventually owns its outcomes.

If the institutional context is not ready, there is no point in subjecting more farmer organizations to the risks of intensified conflict and repeated failure, and to jeopardize the reform as a whole. The details of social mobilization and organization and capacity building do require important improvements, such as a strategy for weaning FOs from dependency on facilitators, an improved grassroots / leadership interface, or enhanced commitment to rules and ethical principles. However, for these to succeed a favorable institutional environment must be in place.

To this end, the following recommendations are provided:

- Study the causes of resistance to institutional reform among irrigation personnel.
- Target measures for the social mobilization of irrigation personnel on the bases of the findings of the proposed study.
- Integrate all stakeholders, including other government departments concerned with resource management in irrigated agriculture, in a participatory process of formation and review of policies and action plans, to prepare the institutional context for reform implementation.
- Mobilize a public debate on the institutional reform of the irrigation sector to generate public understanding and support of the reform.
- Promote and achieve a firm commitment to a secure and comprehensive legal framework for participatory irrigation management.
- Maintain the process of public review and debate throughout the period of testing of the reform to refine the design of the structures and responsibilities and to secure support for the eventual outcomes of the reform process.
- Based on my studies of pilot testing of irrigation reform at field level²⁵, I am convinced that the recommended actions are prerequisites to the success of Pakistan's institutional reform of the irrigation and drainage sector.

²⁵ Starkloff, 1999; Starkloff and Zaman, 1999 a & b; Starkloff, Bandaragoda, Cheema and Bhatti, 1999; Starkloff, Upadhyay, Hemchuri and Prasad, 1999.

It may be noted, that success here is not defined as a win-lose outcome, where one stakeholder group imposes its interests at the expense of another. Rather, success is interpreted as the reorganization of social relations and management

institutions in irrigated agriculture in such a way, that the interests of the stakeholders and the need for rational goal achievement are balanced, and all participants gain from the pursuit of their livelihoods.

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SUMMARY

In the context of the institutional reform of Pakistan's irrigation and drainage sector, a study of farmers' perceptions of the experience of social mobilization for participatory irrigation management was carried out. To test the viability of farmers' participation in irrigation management, the Pakistan Program of the International Irrigation Management Institute (IIMI¹) had organized 3 Water User Federations (WUF) and 80 Water User Associations (WUA) at the Bareji and Heran Distributaries and the Dhoro Naro Minor of the Left Bank Outfall Drain (LBOD) Project area in the Sindh Province between 1995 and 1997.

Objectives of the study

1. To provide a voice to farmers' perceptions about their experience of social mobilization for participatory irrigation management.
2. To assess water users' perceptions of the short-term impacts of the Water User Organizations facilitated by IIMI's pilot project in the LBOD area, with particular emphasis on their intra-organizational capacity and culture, as well as inter-organizational relations with government agencies.
3. To provide recommendations for the expansion of IIMI's pilot project and for similar projects elsewhere.

The study's ability to assess impacts was limited by the fact that the project fell short of its objective to achieve the experimental transfer of irrigation management responsibilities to farmers. Nevertheless, it assessed the impact of social mobilization by focusing on the organization and capacity building process among one of the key stakeholder groups. It looks at the development and constraints of the farmer organizations' functional capacity, particularly with regard to equity, reliability, empowerment, participation, intra-organizational activities and inter-organizational relations.

¹ Some years ago, IIMI changed its name to IWMI (International Water Management Institute) to reflect the broadening of the scope of its research concerns. The author has retained IIMI here, an acronym well established and widely used among Pakistan's irrigation establishment.

Research method

Open-ended, structured and in-depth interviews were carried out at three pilot sites among a quota sample of 167 water users at both, the grassroots and leadership levels. Quantitative and qualitative information were combined to achieve a sufficiently representative response and at the same time provide meaningful insights into the thinking and experience of the farmers.

Findings

The data are presented in 51 tables, as well as through quotes from and summaries of open-ended responses. The key findings of the study can be summarized as follows:

1. Organization of Meetings

- Regular general assembly and executive committee meetings were held at both the grassroots and leadership levels as long as IIMI mobilized the Water User Organization (WUO).
- Once IIMI's project closed, meetings were no longer held and organizational activity collapsed. This indicates that the WUOs were not yet sustainable. In assessing this fact, the circumstances of the failure of Joint Management Agreements (JMAs) between the three WUFs and the Sindh Irrigation and Drainage Authority at the time of project closure must be kept in mind.
- The participation in meetings at the grassroots level was comparatively weak, while the leadership maintained a high level of activity, as IIMI field staff persistently mobilized them.
- Recognition and maintenance of minutes of meetings, which are a key accountability mechanism, was weaker at the grassroots level.
- Democratic values do not easily take root in the rural Sindh's highly stratified and authoritarian society. Although consensus-based decision-making is both, preferred and practiced in the WUOs, influential community leaders tend to dominate consensus processes.

2. Maintenance of organizational records

- Record keeping among the WUAs remained weak and failed to serve accountability functions, especially with regard to financial transactions undertaken.
- Even among the WUFs, record keeping was of little concern to a considerable minority, although a higher level of record-keeping activity is indicated by the data.
- A regular and reliable habit of record keeping serving transparency and accountability has yet to develop among the WUOs at all three sites. The internal discussion and scrutiny of records requires improvement to be acceptable within the SIDA framework of irrigation management.

3. Recognition and observance of rules

- Among the Bareji and Dhoru Naro sites the adoption and observance of bylaws/rules is weak. The respondents appear not to identify with the purpose of the WUOs and the rights and responsibilities of their members.
- At Heran, the adoption of bylaws has been achieved. This suggests that the WUO members at all levels, supported by the social mobilizers, placed emphasis on rule-bound behavior and discussed, understood and committed themselves to bylaws.
- Rule violations most frequently pertain to the distribution of water and financial commitments.
- Rule-bound behavior has not been sufficiently internalized to allow WUAs to manage without negative sanctioning.
- Rule-bound behavior cannot be enforced, as there is no legal framework empowering the WUOs.

4. Selection of leadership

- The majority of respondents perceived the modus of leadership selection as consensus based.
- The predominantly stated criteria for selecting leadership were performance and capacity, rather than power and status. Given the field staff's reports about internal power struggles and the domination of consensus by community leaders, these responses may be rationalizations of prevailing power relations.

- The leadership's level of education reflects that of the population of water users, with the exception of Heran, where the leaders' level of education is markedly higher than average.
- The leadership is dominated by non-cultivating landlords, in keeping with the feudal structure of property relations in Sindh. While owner-cultivators tend to be under-represented, tenants are by and large excluded from participation.
- Among the leadership all property size classes are fairly evenly represented, with Heran displaying the most favorable degree of representation of smaller landowners.
- The WUOs have become a significant forum for communication between leaders and grassroots in which issues of common concern are debated and activities initiated. Farmers started to collectively negotiate with Irrigation Department personnel.

5. Capacity building

- Capacity building training was provided to farmer leaders to enable them to assume specialized functions within the executive committees;
- Training for measurement of the flow and distribution of water reached a wider constituency and generated a high level of interest, as the farmers sought to know the actual level of inequity in their subsystems; and
- The training activities did not target a large enough group of recipients to ensure widespread dissemination of knowledge at the grassroots level and a sufficiently sizeable group of potential new leaders.

6. Water resource supply and distribution

- Most farmers interviewed were not satisfied with the situation of water resource distribution. Inequity on account of irrigation offenses and rent seeking by irrigation personnel prevail.
- While de-silting activities made a difference to the quantity, reliability and equity of water supplies at some sites and distributary reaches, the WUOs were prevented from reorganizing irrigation management and bringing about improvements.

- The WUOs appear to have had a positive effect on the incidence of irrigation offences by means of illegal pipes and outlets as well as placing of obstacles. Outlet tampering remained a common practice among water users seeking to increase water supplies illegally.
- Among many water users, the WUOs were perceived as having made a difference in the level of conflict. However, significant impact on the root causes of conflict, i.e. relative water scarcity and illegal appropriation of water resources, was not achieved. The WUOs remain without the power to sanction the behavior of water users and have not yet been able to institutionalize conflict resolution mechanisms, which are mutually recognized by all members.

7. Maintenance activities

- Contributions to maintenance, particularly in the form of labor, have been a well-entrenched feature of irrigation management and were successfully extended by the pilot projects' efforts from the watercourse to the distributary level.
- Raising cash funds appears most difficult at two of the sites (Bareji and Heran), but appears to be accepted, if not well practiced, at Dhoru Naro.
- Farmers trust that their contributions are used properly and are willing to continue this practice in the future.

8. Inter-organizational relations

- Inter-organizational relations between the WUOs and other institutions are difficult and fraught with disappointments and suspicion.
- Relations with the Irrigation Department are particularly adverse, since most of its staff is perceived as corrupt and opposed to the empowerment of water user organizations.
- IIMI has received almost unanimous support among the WUO leadership, a perception, which is not shared by all grassroots members.

9. Water users' self-assessment

- The majority of respondents, particularly at the leadership level, considered their efforts for WUO activities to be useful, as it enabled them to increase their knowledge and

cooperation, to resolve some of their water problems, and to increase their links with other farmers and government officials.

- Without empowerment, cooperation by government officials and sustained organizational activity, these efforts, however, would be disappointed.
- The farmers' willingness to cooperate had increased with the establishment of WUOs, but an increase of effort, and reward for the same, is required, to sustain the process in the future.
- Farmers consider the non-cooperative attitude of irrigation personnel as the main obstacle to the sustainability of the WUOs.
- With the formation of WUOs, farmer representatives experienced an increase in self-respect and confidence, which enabled them to interact with government officials on less unequal status terms.
- The farmers do not feel capable of continuing their organizational efforts without support by IIMI's social mobilization staff.

10. Transfer of irrigation management responsibilities

- The majority of water users supported the assumption of responsibilities for distributary management as stipulated in the JMAs between the pilot-WUFs and SIDA.
- They expected an improvement of the financial and management situation at their distributaries. The need to develop trust and improved skills among water user representatives was noted.
- The failure of the joint management agreements between WUFs and SIDA undermined the objectives of the pilot-project and the sustainability of the WUOs.
- The farmers recognized that under the SIDA Act irrigation personnel would lose opportunities for rent seeking and identified this as the central cause of the failure of the JMAs and the pilot-projects

Conclusions

1. The social mobilization process accomplished the development of organizational structures with a representative leadership and raised

their capacity for participatory irrigation management.

2. Participation of grassroots members and organizational record keeping was relatively weak. Accountability and rule observance require strengthening and may be expected to take considerable time in a culture of rule violation.
3. The WUOs were able to undertake several self-help maintenance activities, which improved the water supply conditions in their subsystems. The mobilization of labor for maintenance has become an entrenched feature of irrigation culture and was successfully extended to the distributary/minor level.
4. Attempts to improve subsystem operation failed due to the lack of cooperation by irrigation personnel and the failure of the joint management agreement.
5. The majority of farmers are dissatisfied with conventional irrigation management practices marred by rent seeking.
6. While farmers have adopted collective means of decision-making, which were identified as consensus-based, their representative structures exclude tenants. Consensus decisions tend to be monopolized by landlords from dominant political and kin-groups. Democratic structures are not easily established in the rural Sindh's feudal society.
7. The project raised farmers' consciousness about the functional and ethical values of equity, but, without their empowerment, equitable distributary operation cannot be implemented.
8. The WUOs have become an important communication forum among farmers at the grassroots and leadership levels. Collective negotiations with the state actors have increased the status and capacity of farmers.
9. The social mobilizers failed to wean the organized water users from their support activities. The farmers' ownership of the organizational process was too weak to withstand the opposition to reform among the irrigation staff and their own ranks.

The study identifies the following **obstacles and constraints** to sustainable farmer organizations and the success of the institutional reform:

- In a situation of relative water-scarcity and conflict over water resources, competition for water by illicit means weakens farmers' capacities to adopt collective and rule-bound behavior.
- The dominance of the landlord class causes the exclusion or under-representation of other water user groups and impedes democratic values.
- Accountability and transparency in irrigation management are weakened by the lack of an organizational culture, which values and understands rational procedures.
- The lack of a comprehensive and conducive legal framework makes the introduction of participatory irrigation management impossible.
- Most Irrigation Department personnel lack ownership of the institutional reform of the irrigation sector and refuse cooperation with irrigators. They thereby have caused the failure of experimental participatory irrigation management in the Sindh.
- The findings of the farmers' perceptions survey and of a parallel study of the perceptions of irrigation personnel suggest, that the irrigation officers' rent seeking behavior and defense of their status positions are among the major causes of the failure of the institutional reform.

Recommendations

1. It is recommended to halt further social mobilization projects in the irrigation sector of Pakistan until a firm commitment to reform among all key stakeholders is achieved. The broken promises of social mobilization undermine the legitimacy of the reform as well as the status of the mobilizing agency in the eyes of the water users. After the failed projects are abandoned, farmers tend to be left to their own devices and potentially have to cope with the punitive actions of angered irrigation officers.
2. A thorough study of the root causes of resistance to reform among irrigation staff is required now and a strategy for change of their organizational culture needs to be developed and implemented.

3. All the stakeholders of irrigated agriculture need to be integrated in a participatory process of formation and review of policies and action plans. Therefore, a broad and long-lasting public debate about irrigation reform in Pakistan is needed to base the reform process on genuine participation and to generate support and momentum. Debate and review must be sustained throughout the process of experimentation in pilot projects.
4. Successful project implementation should not be viewed as the imposition of one stakeholder group's interests at the expense of another. Rather, success is interpreted as the reorganization of social relations and management institutions in irrigated agriculture in such a way, that the interests of the stakeholders and the need for rational goal achievement are balanced, and all participants gain improved conditions for the pursuit of their livelihoods.

1. INTRODUCTION

From 1995 to 1997 the International Irrigation Management Institute (IIMI), in collaboration with the Government of the Sindh Province, carried out the 'Pilot Project for Farmer-Managed Irrigated Agriculture under the Left Bank Outfall Drainage Stage I Project' with financial support from the World Bank and the Swiss Development Cooperation. The project established three Water User Federations (WUF) and 80 Water User Associations (WUA) at three distributaries/minors in the Mirpurkhas, Sanghar and Nawabshah Districts, located in the LBOD project area. It aimed at testing the viability of farmer management of their irrigation subsystems and sought to provide recommendations for future farmer participation projects.

Despite considerable achievements, such as organization and capacity building measures among the target populations, and the improvement of irrigation system maintenance through self-help campaigns, the project eventually failed and the organizations became non-sustainable. The Government of Sindh declined to devolve power for subsystem management to the WUFs, although the Sindh Irrigation and Drainage Authority and the Secretary of Irrigation of the Sindh had agreed to a joint management agreement with the farmers' organizations. Consequently, the pilot project could not test the farmers' capacity for irrigation management and organizational activities subsided after the closure of the project.

This study investigates the perception of farmers of their experience and seeks to clarify the short-

term impacts of social mobilization on the functional capacity of farmer organizations' efforts. It deliberately emphasizes the perspective of the farmers, whose voice had hitherto not been considered and published.

In section 2, the report discusses the mobilization process from the perspective of the project, based on its own reports and project documentation. The rationale for the institutional reform of the irrigation sector and the objectives of the pilot project are summarized. The pilot sites are introduced and the project process described. Then the findings and conclusions of the project's process documentation and the final project evaluation are presented in summary form.

Section 3 discusses the limitations of conventional impact analysis in light of the project experience and clarifies the opportunities for impact assessment utilized in this study. In section 4 the methodology of the study is presented, including the key research questions, methods and sampling procedure.

Section 5 presents the findings of the farmer's perceptions survey. It is organized by 10 topics, spanning from organizational management, leadership selection, and capacity building, to operation and maintenance activities, inter-organizational relations and irrigation management transfer.

In section 6, conclusions based on the findings are discussed and in section 7 recommendations for implementation of the institutional reform of the irrigation sector are presented.

2. THE PROJECT'S PERSPECTIVE

2.1 Support to the Institutional Reform of Irrigation Management

The irrigation and drainage sector of Pakistan is undergoing a process of institutional reform. This process was initiated in the 1980s, when several projects, such as the On Farm Water Management Projects I and II and the Command Water Management Program, introduced farmer participation in irrigation management on a limited scale. For the first time, it was realized that improved irrigation management requires not only interventions in the physical infrastructure of irrigation systems, but also institutional-managerial innovations, including the participation of the users of irrigation services.

The recognition that these early institutional innovations had remained non-sustainable prompted donors and policy makers to introduce comprehensive institutional reforms during the 1990s. In 1994, the World Bank proclaimed the need for an encompassing new legal and institutional framework to overcome deficits in financing, maintenance and operation of the Indus Basin Irrigation System. The report of two World Bank missions to Pakistan² identified the following causes of the irrigation and drainage sector crisis:

- Expenditure for O&M fell short of funding requirements by 25 to 30 percent during the early 1990s.
- Recoveries of O&M expenditures for the canal system experienced a deficit of 45 percent in the same period. Including SCARP tubewells, the recovery rate was less than 30 percent. If drainage is taken by itself, recoveries were estimated to have been less than 20 percent.
- By the mid-decade the gap between expenditure and recoveries had risen to about 70 percent in the Punjab Province and 88 percent in the Sindh Province.
- The system has low delivery efficiencies, as only 35 to 40 percent of the water issued at the canal head reaches the root zone.
- The distribution of water resources is inequitable and adversely affects the tail reaches.

- Water deliveries are supply based and prevent the economical allocation of scarce resources. There is a mismatch between water supplies and crop water requirements.
- Waterlogging and salinity are spreading throughout the Indus Basin due to insufficient drainage. 30 percent of the GCA of the Indus Basin is waterlogged.
- Over-exploitation of fresh groundwater causes declining water tables and intrusion of saline water.
- Water is under-priced, which encourages rent seeking and leads to revenue loss and inequity.
- The performance of irrigation personnel has declined considerably.

The Bank's proposals for a comprehensive reorganization of the entire sector, including privatization, irrigation management turn-over to farmer organizations, the establishment of autonomous public utilities and the legal facilitation of water markets, met with considerable resistance and skepticism among Pakistan's irrigation managers and government officials. To generate acceptance of the reform process, the debate among policy makers, donors and experts shifted towards the concepts of decentralization and participatory irrigation management.³ Being in the forefront of the reform movement, the International Irrigation Management Institute (IIMI) proposed to undertake pilot-projects to test whether farmer participation, based on an innovative approach to social mobilization of farmer organizations, would be a viable and sustainable means of improved irrigation management. These pilot projects would create 'demand from below' for the advancement of reform measures, in particular the development of a legal framework permitting the participation of farmer organizations in distributary level irrigation management.

In 1995, the Government of Sindh and IIMI agreed to undertake the **Pilot Project for Farmer-Managed Irrigated Agriculture under the Left Bank Outfall Drainage Stage I Project** with financial support of the World Bank and the Swiss Development Cooperation. The project facilitated the social mobilization of water users at the distributary/minor level for 30 months from July

² World Bank, 1994.

³ Bandaragoda, Skogerboe and Memon, 1997.

1995 to December 1997. Three Water User Federations and 80 Water User Associations were established in the LBOD project area at the Dhoro Naro Minor in Nawabshah District, the Bareji Distributary in Mirpurkhas District, and the Heran Distributary in Sanghar District.

The pilot project was undertaken with the following objectives:

1. To test the viability of farmer's managing part of the irrigation systems so that more efficient and equitable allocation of water can be achieved.
2. To make recommendations on future extension from the results of the pilot project.⁴

These were further specified to entail:

- The mobilization of water user organizations (WUO), which would be responsible for operation and maintenance of their distributaries/minors and the management of groundwater levels;
- The mobilization of institutional support from government agencies, including the enactment of an appropriate legal framework;
- The eventual accountability of the WUOs for water received at the distributaries/minors' head regulators and its equitable distribution among the member WUAs;
- Agreements between WUOs, government agencies and water users on water charges and O&M costs for irrigation and drainage facilities in the respective command areas; and
- The assessment and collection of these charges by the WUOs.⁵

A number of significant **assumptions** were made by the project:

- The concerned government agencies would empower the pilot WUOs and cooperate with them within the framework of participatory irrigation management;
- The government would assist the WUOs to enforce their internal rules by designing and enacting a legal framework;

- Being organized would provide farmers with economic advantages; and
- Farmers would be able to improve equity in water distribution despite social pressures exerted by traditional feudal power holders within the community of irrigators.⁶

2.2 The Pilot Sites

The pilot sites are located within the area of the Left Bank Outfall Drain (LBOD) Stage I Project (see Location Map). From 1973, this project has developed drainage facilities in the command area of the irrigation system on the left bank of the Indus, which is supplied with water resources via the Sukkur Barrage. The irrigation system was established in the 1930s, to provide perennial water supply for the cotton (*kharif* season) and wheat (*rabi* season) crops, among others, in northern Sindh. Drainage facilities were not considered at the time, as they required costly investments and water tables were still sufficiently low. By 1960s it became apparent that water tables had risen to a critical level and investment in drainage had become indispensable. The LBOD Stage I project covers the Nawabshah, Sanghar and Mirpurkhas Districts. In each of these, a pilot site for IIMI's farmer organization projects was chosen.

The mean annual precipitation in the project area ranges from 200 to 250 mm, with summer rainfall between 32 and 46 mm. The summers are very hot with 38 to over 50 degrees Celsius.

The **Bareji Distributary** is located in the Mirpurkhas District and off-takes from the Jamrao Canal, which is supplied by the Nara Canal. The Bareji Distributary is 12 km long, has 24 outlets, 7 lined and 17 unlined watercourses, and a design discharge of 41.5 cusecs. The CCA is 5,648 hectares. At 8 watercourses lift irrigation is practiced due to the low level of the channels relative to the command area. 3 sub-drains, 1 branch drain and a spinal drain, as well as sub-surface drains are operational. There are about 350 landowners, of which 155 are owner cultivators. 787 tenants are engaged in cultivation. The total population is 6,800 lives in 1,150 households and 55 villages or hamlets.

⁴ IIMI Pakistan, 1995; Bandaragoda and Memon, 1997.

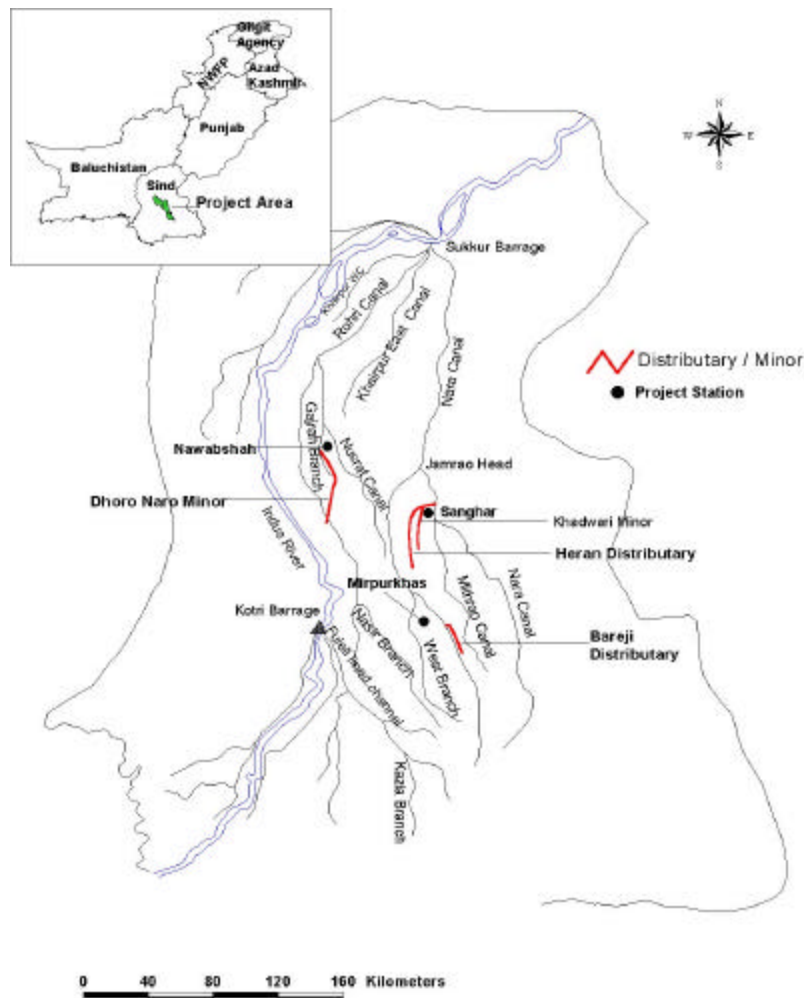
⁵ Memon, Hassan and Bandaragoda, 1997; Bandaragoda, Skogerboe and Memon, 1997.

⁶ Bandaragoda, Skogerboe and Memon, 1997.

The **Heran Distributary** is located in the Sanghar District and off-takes from the Nara Canal. The distributary is 10.6 km long, has 24 outlets, 23 lined and 1 unlined watercourses, and a design discharge of 58 cusecs. The CCA is 4,994 hectares. 3 surface drains and 8 tubewells provide drainage facilities. The **Khadwari Minor** off-takes from Heran Distributary and is 5.12 km long, with 7 outlets, 4 lined and 3 unlined watercourses and a design discharge of 10.62 cusecs. Its CCA is 3,074 acres. 16 scavenger wells are used and 1 surface drain is available. There are altogether 718 landowners in the Heran Distributary command area, of which 290 are owner cultivators and 433 tenants. The total population is approximately 26,800, living in 3,150 households and 44 villages or hamlets.

The **Dhoro Naro Minor** is located in the Nawabshah District and off-takes from the tail end of the Garth Branch Canal, which is supplied by the Rohr Canal via the Nasrat Branch Canal. The Dhoro Naro Minor is 10.4 km long, has 25 outlets, 16 lined and 9 unlined watercourses, and a design discharge of 51.62 cusecs. The GCA is 6,100 hectares and the CCA 5,418 hectares. There are 14 private tubewells in the command area. The Gujrah Branch Drain, another sub-drain, as well as 9 saline tubewells and 8 disposal/sub-disposal channels also service the command area. There are about 500 water users (i.e. landowners) in the command area. Ca. 700 sharecrop tenants are involved in cultivation. A total population of 20,000 lives in 2,500 households spread over 147 villages and hamlets.

Figure 1: Location Map of Pilot Sites



2.3 The Project Process

Aiming at sustainable Water User Organizations⁷, it was anticipated that the irrigation system at the distributary level would be transformed from a completely agency managed system to one managed by farmers in collaboration with government agencies. This process would proceed from the negotiation of institutional arrangements, through community organization efforts, development of a joint management agreement, to the implementation of joint management and final subsystem turnover. The main government collaborators included the Sindh Irrigation Department, the On-Farm Water Management Directorate and the Agricultural Extension Directorate of the Sindh Agriculture Department.

The **methodology of community mobilization** employed by IIMI involved the following components:

- In its three field stations IIMI set up small field teams for social mobilization whose members had a local background.
- Community based social organization volunteers (SOV) were mobilized with the help of and from among the water users, to contact their communities, diagnose the socio-technical issues on the ground, and to build rapport with the community.
- The deliberate minimum use of outside funds for physical improvements and an emphasis on knowledge and skills transfer (training, organizing) was to avoid dependency on continuous external funding, and consequently non-sustainability.
- In the first phase of support mobilization, field teams were recruited, trained and set up. Support from relevant agencies and NGOs was institutionalized. Baseline information was collected through a sample survey.
- The initial organization building and consolidation phases comprised a stepwise process following five dialogic steps

(familiarization, rapport building, consultation, selection and federation), during which increasingly larger groups of water users became involved. The social organizers encouraged mutual trust, sharing of information, consultation for consensus, as well as development of options for and implementation of an appropriate organization design.

- Finally, the outcome of the organizational process was the implementation of participatory irrigation management.
- IIMI's action research program aimed at a participatory mode of social mobilization, replicability of the approach, equal opportunity for participation, democratic and consensus-based leadership selection, and the formation of an 'economic organization' (contrasted to a 'welfare group').⁸

IIMI's approach to action research was iterative, i.e. it progressively moved from analysis based on research to action based on community decisions, and back to feedback based on research and subsequent re-orientation of action, and so forth.

To promote linkages between Water User Organizations (WUO), government service agencies and non-government organizations, which are expected to be the participants and owners of the joint management and transfer process, a **Field Implementation Coordination Committee (FICC)** was constituted. It comprised the Irrigation Department, OFWM, WAPDA, Agricultural Extension, Forest Department, National Rural Support Program, some private companies, the WUOs and IIMI. At the policy level a **Project Implementation Coordination Committee (PICC)** involving senior government actors was convened to address the issues of legal recognition of WUOs and to develop a Joint Management Agreement.

In the pilot project, **80 Water User Associations (WUA)** were formed at the watercourse level. **3 Water User Federations (WUF)** were constituted at three distributaries with representatives from these associations. At each representative body, the membership selected a committee of office bearers, including president, vice-president, general secretary, joint secretary, finance secretary and committee members. The process of social organization was completed by

⁷ To clarify the use of terminology: At the watercourse level, water user associations (WUA), and at the distributary level, water user federations (WUF) were formed. The generic term to refer to organizations at any level is water user organization (WUO). The SIDA Act and proposed subsidiary rules and regulations refer to farmer organizations (FO) and watercourse associations (WCA). Since the legal framework for these organizations has not been enacted, the project immanent terminology is retained in this study.

⁸ Bandaragoda, Skogerboe and Memon, 1997; Bandaragoda and Memon, 1997.

December 1997. The WUOs were registered with the Directorate of On-Farm Water Management (OFWM) under the Sindh Irrigation Water Users Association Ordinance 1982.

To promote capacity building among organized water users, IIMI provided training to farmer representatives and collaborating agencies on the following topics:

- Organizational management;
- Motivation and communication;
- Financial management;
- The role of water users organizations in improved irrigation practices;
- Optimum use of irrigation water;
- Improved agricultural practices; and
- Monitoring of water levels, flow and distribution.

A walk-through survey of the distributary to identify maintenance needs was undertaken as well. The main physical improvement and maintenance activities carried out through WUO initiatives and management included:

- Desilting of distributaries in 1997 and 1998;
- Construction of culverts across watercourses and distributaries to improve transport facilities;
- Stabilization of banks;
- Construction of buffalo ponds;
- Repair of a head regulator; and
- Construction and repair of federation offices.

Development works, such as the construction of culverts, were financed through a matching-fund scheme, involving cost sharing between farmer-mobilized resources and IIMI's project development fund. The water users had obtained the agreement of the Irrigation Department and supervised the construction activities themselves.

To improve the socio-economic conditions of water users, other collaborative activities with government service agencies, NGOs and private companies were undertaken at the request of water users. These activities included vaccination of farm animals, health camps, exposure trips to agricultural demonstration sites, and tree planting.

IIMI field teams carried out monitoring and evaluation activities at the three pilot distributaries. They documented the pre-transfer water delivery

and distribution situation to assess the reliability, equity and adequacy of irrigation services and to identify maintenance needs. This information proved to be significant in the negotiation of the Joint Management Agreement. Similarly, monitoring of the drainage system in the command area of each distributary was carried out to document the operational performance of the system and its impact on ground water levels.

The Sindh Irrigation and Drainage Authority (SIDA) Act was formally enacted in 1997. Accordingly, the Provincial Irrigation and Power Department would be transformed into the Sindh Irrigation and Drainage Authority (SIDA) in charge of the management of provincial barrages, inter-river link canals and water delivery services to canal head works, as well as of provincial main drains. At the level of canal commands, Area Water Boards (AWB) would be established to manage canal operation and maintenance, and branch drains. At the distributaries, minors and sub-drains, Farmer Organizations (FO), constituted by irrigators, would be responsible for their operation and maintenance. These new organizations were intended to function as autonomous and eventually self-financing entities. Water delivery services and their financing would be governed by contractual agreements between SIDA, AWBs and FOs.⁹

However, during the project process the Act remained largely non-operational, due to the failure of the province to enact its draft rules and regulations as a legal basis for the transfer of distributaries to farmer organizations. To allow the pilot WUOs to test their capacities after organization development, the Sindh Irrigation and Drainage Authority (SIDA) and the three WUFs negotiated and signed **Joint Management Agreements (JMA)** which permitted the temporary transfer of management to the water users.

According to the JMA, the WUFs would:

- Assess and collect water charges from the irrigators;
- Assume full responsibility for distributary/minor O&M;
- Distribute water equitably among watercourses;
- Employ field staff; and

⁹ Government of Sindh, 1997.

- Pay SIDA an agreed fee for the delivery of water at the distributary/minor head.

SIDA in turn agreed to:

- Supply water at the head regulator based on average deliveries of the past two to three years;
- Consult the WUFs on eventual rotation programs;
- Place the *beldars* (canal workers) in the WUFs' subsystems at the farmer organizations' disposal; and
- Release all data concerning the subsystems to the WUFs.

The then Chief Minister of the province prevented the implementation of the JMAs. To date, the WUFs have barely been able to implement the anticipated O&M activities.

The project ended in December 1997 without completing all of its phases. Thus far, irrigation management transfer at the distributary level has not been achieved in the Sindh Province. The farmer organizations became inactive until project activities were restarted in 1999.

2.4 Process Documentation and Project Evaluation: Findings and Conclusions

Based on its project experiences and research, which were recorded persistently in its process documentation, IIMI's project staff discussed several important **findings** in the final project report.¹⁰ The technical operation of the system was characterized as follows:

- Cropping intensities had increased considerably since the design of the system in the 1930s. While design cropping intensities were 81 percent, actual intensities in 1997/98 were at about 110 to 121 percent for the 3 sites. This indicates both, a positive response to increased water availability and an intensified competition for water.
- Discharges were generally found to be above the 1930s design at all 3 sites, except in some tail reach watercourses at Dhoro Naro and Bareji.

- The spatial coefficient of variability at outlets of the 3 pilot distributaries/minors for the *kharif* season of 1997 (0.75, 0.45 and 0.5 for Dhoro Naro, Heran and Bareji, respectively) indicates a 'very high degree of inequity in water distribution'.¹¹ This was due to an inordinate extent of outlet tampering and, at Bareji, the use of lift pumps, which were drawing water above allocated discharges.
- Although all 3 sites have adequate drainage facilities, only some are fully operational and therefore drainage services are below desirable levels. The Dhoro Naro minor does not experience drainage problems due to a water table depth of 5-7 feet.
- Maintenance at the Dhoro Naro minor and Heran distributary was inadequate, causing significant siltation and insufficient water supply to their tail reaches. The Bareji distributary had been remodeled through the LBOD Project and was no longer affected by deferred maintenance.
- Farmers persistently complained about the unreliability of water supplies.

The poor performance of the irrigation and drainage system was attributed primarily to **social factors**:

- Highly inequitable distribution of land: 20 percent of the farmers in the LBOD area own 80 percent of the land;
- High degree of land fragmentation: 80 percent of water users own/cultivate less than 10 hectares of land each;
- High incidence of poverty and illiteracy: 64 percent of respondents to IIMI's baseline survey are illiterate;
- Lack of information among the majority of water users;
- A centralized irrigation administration lacking accountability to users of water services;
- Widespread rent-seeking and neglect of operation and maintenance procedures; and
- A high degree of **political interference** in irrigation management.
- The project staff concluded that 'the irrigation system is operated to maximize the rent

¹⁰ Bandaragoda, Skogerboe and Memon, 1997.

¹¹ Bandaragoda, Skogerboe and Memon, 1997, p. 42.

extorted from farmers, rather than agricultural productivity¹².

Given the difficult socio-technical conditions in the environment in which IIMI intervened, the achievements of the project were considered remarkable, while the constraints and shortfalls were not unexpected.

The authors of the Final Report argued in 1997, that the WUOs established were socially viable, considering the establishment of 80 WUAs and 3 WUFs on the basis of democratic representation. Further evidence of success was perceived in the distributary maintenance campaigns carried out during the canal closure periods of 1997 and 98, which raised funds and mobilized labor among farmers, with some matching funds provided by IIMI. The actual costs of maintenance remained below the estimates of the Irrigation Department. Due to non-availability of government funds, the Irrigation Department would have deferred maintenance. Furthermore, the WUOs established their offices and bank accounts, persistently raised funds for their own expenses, held regular meetings and participated in field research on the water supply situation. The WUOs were considered to have improved the flow of information to and among farmers, reduced the frequency of breaches in the distributaries, and, through desilting improved the water flow to tail reaches.

However, once the WUOs and IIMI attempted to improve the equity of the distribution of irrigation water, by redesigning and guarding outlets, their efforts were undermined by the indefinite postponement of the Joint Management Agreements (JMA) between the SIDA and the WUOs. The legal framework for joint management is still under review within the government approval machinery and the implementation of the SIDA Act is still pending. This non-supportive institutional environment is the consequence of resistance among irrigation staff and influential feudal farmers, who seek to protect the illicit but significant water resources they have accessed by manipulating the conventional system of irrigation management. The reform would jeopardize such illegal privileges and benefits.

Nevertheless, the authors concluded, that replication of the pilot project on a broader scale was possible within the given socio-political

context of the Sindh Province. They assumed that the organization building process could even be accelerated. In particular, the deployment of small and locally recruited teams of social organizers in combination with social organizing volunteers from among the target communities was considered cost-effective and easily adaptable. Initial research and rapport building were seen as the key to successful mobilization under local conditions. The authors viewed their approach as demand based and superior to top-down strategies.

Yet, the project was unable to achieve its objective because of the institutional and political constraints encountered in its social environment. Joint management was never practiced, conditions for increased equity could not be established, and more cost-effective and efficient management structures could not be implemented. Therefore capacity building and organizational consolidation remained ineffective, since the beneficiaries were not allowed to practice the skills acquired within the structures and roles they had designed.

The project therefore concluded with recommendations to expedite the legal reforms, to transfer the pilot distributaries, to establish the pilot Area Water Board (AWB) mandated under the SIDA Act and to expand the social mobilization program inside the command area of the AWB. In addition, several measures to integrate the project in its institutional context were proposed.

An evaluation mission of the Swiss Development Cooperation stated in its November 1997 report, that IIMI's staff had been able to demonstrate the feasibility of organizing water users through a participatory, democratic and consensus-oriented process. It commended the 'professionalism and esprit de corps among the staff' and the 'excellent documentation of its work'. However, it clearly recognized that the failure of the JMA was a serious constraint in achieving the project's objectives:

Unless the agreement becomes effective, the objective of the project to show wider lessons useful for policy cannot be demonstrated. Implementing the agreement and testing it in the field should remain a major goal of the project in the next phase.¹³

The evaluation mission attributed the JMA's failure in part to IIMI's insufficient cooperation and liaison work with the relevant government agencies right

¹² Bandaragoda, Skogerboe and Memon, 1997, p. 46.

¹³ Mulk and Kamal, 1997.

from the project's inception. The Revenue and Irrigation Departments were crucial stakeholders who raised the most severe objections. The mission stressed that government agency representatives required capacity building just as much as the water users, to raise their level of knowledge and willingness to become enabling rather than obstructive players.

When the present study was conducted, IIMI's project activities had come to a close. Although IIMI intended to extend and expand the project on the recommendations of the project evaluation mission, governmental approval of the new project phase was delayed for 17 months. The intermittent demise of project activities provided an opportunity for testing the viability of the organizations established.

Meanwhile, the new project phase commenced by mid-1999 and the initial 3 pilot WUOs were re-mobilized along with ten additional distributaries in the command area of the Nara Canal Area Water Board. After one-and-a-half years, this new phase of the project was terminated prematurely as well, for lack of financial and policy support by the Government of the Sindh Province, and IIMI permanently closed its field stations in the LBOD area.

There remains an omission of an important aspect in all of the reports cited above. The **perception of water users** of the social mobilization process and the problems encountered is rarely, if at all, discussed. The key stakeholders, in response to whose supposed demand social mobilization was attempted, were conspicuously silent in the public discourse of IIMI's pilot projects in the LBOD area. One of the objectives of the study report is to give a voice to farmers' perceptions and narratives of their experience.

3. IMPACT ANALYSIS: LIMITATIONS AND OPPORTUNITIES

The interest of IIMI Pakistan in this study was an analysis of the impact of its project activities in the LBOD area. Generally, the study of impacts intends to assess whether beneficial project outcomes can be demonstrated and investments are justified. Conventionally, impact assessment in irrigation management turnover projects focuses on the measurement of the following kinds of impacts:

- Cost of irrigation to government and farmers,
- Financial sustainability of turnover unit organizations,
- Quality of irrigation operations,
- Physical sustainability of the irrigation infrastructure,
- Agricultural productivity, and
- Economic productivity.¹⁴

This focus requires, of course, that the irrigation management transfer or joint management of a clearly defined canal subsystem has taken place and that the post-turnover or joint management phase is long enough to make meaningful measurements and observations possible. Neither was the case in the LBOD pilot projects. In addition, the measurement of agricultural and economic productivity is a somewhat tenuous matter, because joint management activities are usually not the only and not necessarily the most significant impacts on productivity. In this regard, the fluctuations of the market and policy environment tend to be more significant than micro-level organizational interventions.

Furthermore, and in the present context perhaps most importantly, IIMI's 1996 impact assessment framework does not consider the assessment of the organization and capacity building process among the relevant stakeholders in irrigation management itself. It ignores how functional capacity with regard to equity, reliability, empowerment, participation, intra-organizational activity and inter-organizational relations, among others, is built and absorbed or accepted by the stakeholders.

Given the aborted joint management process at LBOD, a comprehensive assessment of possible impacts listed above is hardly possible. In

particular, objective external measurement is constrained by the absence of observable/measurable experiences under reformed management conditions. Impact assessment, therefore, is limited to ascertaining how the experiences gained so far have affected the stakeholders' perceptions with regard to irrigation management and whether viable organizational structures are emerging. It can, furthermore, investigate how the adverse conditions in the social context of participatory irrigation management in the Sindh have affected the stakeholders' and particularly the farmers' willingness and capacity to pursue the process further.

The present study focuses on the perceptions of participating farmers at the three pilot sites. It investigates their understanding of the utility and impact of the social mobilization efforts undertaken, and ascertains their preparedness for joint management and the transfer of responsibilities.¹⁵ Farmers' perceptions of their capacities and of the constraints experienced in their WUOs are a significant variable in generating motivation among water users to engage in sustained organizational activity.

Based on these considerations, the study team formulated the following **research objectives**:

1. To provide a voice to farmers' perceptions about their experience of social mobilization for participatory irrigation management.
2. To assess water users' perceptions of the short-term impacts of the Water User Organizations facilitated by IIMI's pilot project in the LBOD area, with particular emphasis on their intra-organizational capacity and culture, as well as inter-organizational relations with government agencies.
3. To provide recommendations for the expansion of IIMI's pilot project and for similar projects elsewhere.

¹⁴ Irrigation Management Reform Group, IIMI, 1996.

¹⁵ A study of irrigation personnel's perceptions of the reform and farmer organization mobilization process was carried out as well and is analyzed in a separate paper (Starkloff, Ralf, 1999).

4. METHODOLOGY

In light of the overall objective of the IIMI pilot-project to test the viability of the WUOs established in the LBOD area, the study is guided by the following **research questions**:

- Did the water users at the three pilot sites develop and maintain the organizational structures and functions introduced and facilitated by IIMI's social mobilization process?
- Have the WUOs successfully contributed towards the efficient and equitable operation, maintenance and development of their irrigation subsystems, i.e. watercourses and distributaries?
- Have democratic and equity oriented values taken root in the organizations' culture?
- Have the WUO members achieved effective means and practices of communication within their organizations and with other organizations?
- Do the organized water users experience a sense of ownership of their WUOs?
- What obstacles and constraints were experienced in meeting the objectives implied in these questions?

The study provides answers to these questions by probing into respondents' explanations of why or why not these objectives were attained. The research procedure adopted has a participatory function, providing an opportunity for water users' opinions to influence and reorient project design. Closed and open-ended, structured in-depth interviews, in which respondents recollect and evaluate their experiences, were selected as the **research method**.

The interview schedule was constructed to address the following **research topics**:

- Organization of Meetings
- Maintenance of organizational records
- Recognition and observance of rules
- Selection of leadership
- Capacity building
- Water resource supply and distribution
- Maintenance activities
- Inter-organizational relations
- Water users' self-assessment

- Transfer of irrigation management responsibilities

Quantitative data on the basic social characteristics of respondents and the standard replies (yes/no, alternatives etc.) to the questionnaire were tabulated and analyzed. The spread of perceptions within the sample population and variations within sub-populations based on mainly two variables, farm location (head, middle, tail of distributaries) and membership status (grassroots / leadership), were ascertained. Significant differences in organizational activity and perceptions between the WUF and WUA levels became evident during preliminary data analysis and motivated the presentation and discussion of the data according to the leadership / grassroots comparison. The representatives of WUAs and WUFs, including WUF general and executive committee members were conceptualized as 'leadership', while the WUA members including their office bearers were considered 'grassroots.' Questions regarding the state of water resource supply and distribution required differentiation according to farm location.

However, since this quantitative exercise produces a broad, but relatively shallow analysis, it was combined with qualitative data analysis. The open-ended nature of questions probing explanations and meanings (why / how / why not / example) of the standard replies permitted an in-depth understanding of respondents' experiences.

The **sampling** procedure adopted in this study was quota sampling, where the sample is drawn from predetermined proportions of purposely-selected sub-populations among the population to be researched, in order to ensure the representation of particular characteristics.¹⁶

The selection criteria for interviewees were as follows. The total populations or sampling frames consist of all listed members of WUAs¹⁷ on each of the three distributaries, i.e. 354 in Bareji/Mirpurkhas, 504 in Dhoro Naro/Nawabshah and 718 in Heran/Sanghar. These include general members and executive committee members of

¹⁶ Bernard, 1988.

¹⁷ All respondents are male, with the exception of one female executive committee member of one pilot WUF. The participation of women in a public forum is generally not appreciated in male-dominated Pakistan.

these WUAs, as well as general members and the executive committee members of WUFs, representing their WUAs. The selected members of WUFs comprise 52 percent of the total sample, although they constitute only 8.2 percent, 5.6 percent and 4 percent, respectively, of the total populations. Moreover, all eleven executive committee members of each WUF are included. This deliberate over-representation is based on the considerations that WUF members and leaders are most frequently involved in the activities of the Water User Organizations, and that the establishment of viable federations was a primary objective of the pilot project. Furthermore, they are the most significant link of all water users on the three distributaries to government actors in irrigated agriculture. To keep the interviewing procedure economical, WUF members were interviewed about WUF activities only. The remaining 48 percent of the sample were drawn from the WUA level, where two thirds represent the general membership and one-third the executive committee members not involved in WUFs.

A total of 167 interviews were conducted with farmers. Their distribution among the distributaries and organizational levels is indicated in Table 1.

With the exception of the WUF executive committees, where the total sub-population is included in the sample, quotas were drawn from the head, middle and tail reaches at the distributary and watercourse levels. One watercourse each was selected at the head, middle and tail of the distributary. Within each watercourse, at least one water user in each head, middle and tail reach needed to be the owner of no more than 50 acres, to ensure a reasonable representation of small farmers. All other selections within these parameters were made randomly. The quotas for the various population characteristics to be represented per distributary are provided in Table 2.

The sample is relatively small compared to the total population, i.e. 16, 11 and 8 percent respectively. Two factors, the limited time and resources available and the interest in carrying out in-depth interviews determined this choice. A trade-off between overall representation and depth of the information was inevitable. The choice of quota sampling as a procedure acts as a corrective.

Table 1. LBOD Farmers' Perceptions Survey Sample.

Distributary	WUA	WUF	Total
Bareji	27	29	56
Heran ¹⁸	26	29	55
Dhoro Naro	27	29	56
Total	80	97	167

Table 2. Quota sampling key for each distributary.

Tier	Membership level	Head	Middle	Tail	Total
WUA	General Members	6	6	6	18
	Executive Committee members	3	3	3	9
WUF	General Members	6	6	6	18
	Executive Committee Members	--	--	--	11
All					56

¹⁸ At Heran one respondent could not be contacted, which explains the variance between the sample design and the actual number of respondents interviewed. At the same site, two WUF executive office bearers were not available for interviews and two general members were substituted.

5. FARMERS' PERCEPTIONS

5.1 Organization of Meetings

Meetings are the most important mechanism of participatory management, providing organization's members with information and opportunities for deliberation and decision-making. The pilot-WUOs' general assembly meetings are to be held twice a year, and executive committee meetings monthly. Holding of regular meetings is a key indicator of the viability of a water user organization.

Table 3 indicates the **regularity of general assembly meetings** at the WUA and WUF level as reported by the respondents. They were asked to compare the frequency of meetings during the time of mobilization by IIMI staff and after the closure of the project. The results show that with IIMI's facilitation, meetings were held regularly at the WUF level at all three pilot sites. However, at the grassroots level, a strong minority of respondents indicated that they either did not know or that meetings were not held.

After IIMI staff no longer facilitated organizational activities, the situation changed radically. At the leadership level, a vast majority reported that meetings were no longer held. Some declined to answer or had no knowledge. Only 6 out of 97 respondents stated that regular meetings continued to be held. At the WUA level, the situation was similar, with about half stating that no meetings were held and the rest professing no knowledge or declining to answer.

Table 4 indicates the **regularity of executive committee meetings** at the WUA and WUF levels as reported by the respondents from among executive committee members. Again, the respondents were asked to compare the frequency of meetings during the time of mobilization by IIMI staff and after the closure of the project.

Regular executive committee meetings were reported by the majority of respondents at all sites at both the grassroots and leadership levels. Again, this changed significantly as IIMI terminated its project activities. Only among the leadership respondents at Bareji, 67 percent claimed to have continued meeting regularly.

These results demonstrate that with the possible exception of the Bareji WUF, organizational activities collapsed without the persistent presence

of IIMI field staff. The WUOs had remained entirely dependent on IIMI and were unable to sustain their motivation once the facilitators withdrew. IIMI had not fostered the independence of the farmers, who did not appear to perceive organized action as a means of pursuing their common interests. The circumstances of IIMI's withdrawal and the collapse of organizational activities are significant in this respect. The failure of the joint management agreements between SIDA and the WUFs was demoralizing and appears to have turned many farmers' opinions against social mobilization, as will be discussed below.

Asked about their **participation in meetings**, a minority of the grassroots members (41 percent or less) reported to have attended general assembly meetings (Table 5). A significant number declined to answer. Participation at the WUF general assembly meetings was comparatively higher, as most respondents stated to have attended most or all meetings.

Among the executive committee members of WUAs a fairly high level of attendance of executive committee meetings was reported by above 50 percent (Table 6). At all three sites, all WUF office leaders claimed to have attended most or all meetings.

The respondents indicated that they had by and large been notified about WUO meetings, as shown in Table 7. It may be concluded that organizational activities were more regular and generated far more interest among the leadership than among the grassroots respondents, although the WUA executive committee meetings were better attended than WUA general meetings. The results indicate that the interface between the leadership and the general membership of farmers at the watercourses may be constrained by the latter's lack of participation. IIMI's mobilization efforts were indeed concentrated at the leadership levels for reasons of time economy. The small field teams targeted primarily the leadership for organization and capacity building measures.

Asked whether their organizations maintained **minutes of meetings**, only about 50 percent of the WUA level respondents at Bareji and Heran and 26 percent at Dhoro Naro answered affirmatively (Table 8). The remainder had no knowledge about minutes keeping. Yet another mechanism, by which information flow and accountability between office bearers and the

membership would be ensured, did not function. At the WUF level, 93 percent of the Heran respondents and 69 percent at the other two sites stated that their organizations maintained minutes of meetings. Among the latter, about one-third were still uninformed. The significance accorded to minutes keeping may be considered somewhat low, which indicates insufficient understanding of a key accountability mechanism among the organizations' members.

The survey asked respondents about the **actual and preferred method of decision-making** within the water user organizations, to see whether democratic mechanisms were taking root among the membership. The actual modus of decision-making reported most frequently was 'consensus' (Table 9). About three-quarters of the WUA members at Bareji and Heran reported consensus, while the rest failed to answer. At Dhoro Naro, only half had the same opinion, while the rest had no knowledge. The WUF representatives also clearly stated that consensus was the actually practiced modus of decision-making.

When queried about the preferred modus of decision-making, responses varied (Table 10). At the WUA level, Bareji respondents clearly desired consensus. However, at Heran and Dhoro Naro, 58 and 11 percent, respectively, preferred decision-making by leaders. At Dhoro Naro, a majority still preferred consensus. The situation is similar at the WUF level. About half of the Heran respondents preferred their leaders to decide. However, three-quarters of WUF respondents at the other two sites favored consensus. Only 16 or 9.5 percent of the total sample desired decisions by majority vote.

The preference of consensus reflects a cultural orientation, which does not necessarily indicate democratic values. The farmers and social organizers know that to ensure participation in organizational action and collective implementation of decisions, they have to take into account the interests of various factions (political, kin-groups, dominant landlords) and in particular their honor. By balancing divergent interests and forging compromises between factions, cooperation could be achieved, while alienation, conflict and violation of anyone's honor was avoided. Majority vote, the democratic method of decision-making, would have risked alienating losers, thus jeopardizing cooperation.

Furthermore, consensus does not imply that all interests were considered equally. In a hierarchical and authoritarian society, such as the rural Sindh, dominant feudal landlords and political leaders seek to determine decisions and impose their interests. The majority of the WUO constituencies tend to accept, however grudgingly, the realities of local power and status relations. Thus, according to the reports of IIMI field staff, consensus processes more often than not involved the frequently difficult, conflict-ridden and lengthy negotiation of compromises between factions of 'strong-men' and their followers. They especially bargained over office bearer positions in executive bodies. As one faction or other tended to threaten non-participation, IIMI field staff had to take on the role of mediator and bring the factions back to the negotiation table, until a mutually satisfactory compromise could be found. Therefore, what is glossed as consensus, turns out to be decision-making by leaders. The explicit preference of 33 respondents or 20 percent of the total sample for decision-making by leaders is therefore not surprising. Respondents stated that once they had selected leaders, they considered them empowered to make decisions on their behalf. They also considered the leaders selected to be more knowledgeable and therefore capable of making 'beneficial' decisions.

The above results notwithstanding, a majority at all sites and levels of representation judged the **overall atmosphere at meetings** as friendly and cooperative (Table 11). Only very few indicated angry confrontations. This may be owed to the fact that in a society placing a premium on honor and 'face saving'; publicly admitting to conflict is generally avoided. Furthermore, once the office bearer positions were distributed and the local power hierarchies were affirmed, cooperation became possible and conflict was avoided.

The analysis of responses regarding the organization of meetings reveals a number of significant outcomes:

- Regular general assembly and executive committee meetings were held at both the grassroots and leadership levels as long as IIMI mobilized the Water User Organization (WUO).
- Once IIMI's project closed, meetings were no longer held and organizational activity collapsed. This indicates that the WUOs were not yet sustainable. In assessing this fact, the circumstances of the failure of Joint

Management Agreements (JMAs) between the three WUFs and the Sindh Irrigation and Drainage Authority at the time of project closure must be kept in mind.

- The participation in meetings at the grassroots level was comparatively weak, while the leadership maintained a high level of activity, as IIMI field staff persistently mobilized them.
- Recognition and maintenance of minutes of meetings, which are a key accountability

mechanism, was weaker at the grassroots level.

- Democratic values do not easily take root in the rural Sindh's highly stratified and authoritarian society. Although consensus-based decision-making is both, preferred and practiced in the WUOs, influential community leaders tend to dominate consensus processes.

Table 3. Holding of Regular General Assembly Meetings.

Bareji								
	WUA				WUF			
	With IIMI		After IIMI		With IIMI		After IIMI	
	No.	%	No.	%	No.	%	No.	%
Yes	12	44.44	0	0.00	29	100.00	2	6.90
No	9	33.33	14	51.85	0	0.00	26	89.66
Don't know	6	22.22	1	3.70	0	0.00	0	0.00
No answer	0	0.00	12	44.44	0	0.00	1	3.45
Heran								
	WUA				WUF			
	With IIMI		After IIMI		With IIMI		After IIMI	
	No.	%	No.	%	No.	%	No.	%
Yes	16	61.54	1	3.85	23	79.31	1	3.45
No	2	7.69	15	57.69	2	6.90	21	72.41
Don't know	8	30.77	1	3.85	4	13.79	0	0.00
No answer	0	0.00	9	34.62	0	0.00	7	24.14
Dhoro Naro								
	WUA				WUF			
	With IIMI		After IIMI		With IIMI		After IIMI	
	No.	%	No.	%	No.	%	No.	%
Yes	21	87.50	1	3.70	28	96.55	3	10.34
No	1	4.17	14	51.85	0	0.00	24	82.76
Don't know	5	20.83	9	33.33	1	3.45	2	6.90
No answer	0	0.00	3	11.11	0	0.00	0	0.00

Table 4. Holding of Regular Executive Committee Meetings (EC Members only).

Bareji								
	WUA				WUF			
	With IIMI		After IIMI		With IIMI		After IIMI	
	No.	%	No.	%	No.	%	No.	%
Yes	7	77.78	1	11.11	9	100.00	6	66.67
No	2	22.22	4	44.44	0	0.00	2	22.22
Don't know	0	0.00	0	0.00	0	0.00	0	0.00
No answer	0	0.00	4	44.44	0	0.00	1	11.11

Heran								
	WUA				WUF			
	With IIMI		After IIMI		With IIMI		After IIMI	
	No.	%	No.	%	No.	%	No.	%
Yes	9	100.00	2	22.22	11	100.00	4	36.36
No	0	0.00	7	77.78	0	0.00	7	63.64
Don't know	0	0.00	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00	0	0.00

Dhoro Naro								
	WUA				WUF			
	With IIMI		After IIMI		With IIMI		After IIMI	
	No.	%	No.	%	No.	%	No.	%
Yes	6	66.67	1	11.11	11	100.00	1	9.09
No	2	22.22	6	66.67	0	0.00	8	72.73
Don't know	1	11.11	1	11.11	0	0.00	0	0.00
No answer	0	0.00	1	11.11	0	0.00	2	18.18

Table 5. Participation in General Assembly Meetings.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Attended all	3	11.11	11	37.93
Attended most	4	14.81	14	48.28
Missed most	4	14.81	2	6.90
Missed all	0	0.00	2	6.90
No answer	16	59.26	0	0.00

Heran				
	WUA		WUF	
	No.	%	No.	%
Attended all	10	38.46	21	72.41
Attended most	1	3.85	0	0.00
Missed most	1	3.85	2	6.90
Missed all	6	23.08	1	3.45
No answer	8	30.77	5	17.24

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Attended all	2	7.41	3	10.34
Attended most	9	33.33	26	89.66
Missed most	5	18.52	0	0.00
Missed all	4	14.81	0	0.00
No answer	7	25.93	0	0.00

Table 6. Participation in Executive Committee Meetings (EC Members only).

Bareji				
	WUA		WUF	
	No.	%	No.	%
Attended all	2	22	3	33
Attended most	5	56	6	67
Missed most	-	-	-	-
Missed all	-	-	-	-
No answer	2	22	-	-

Heran				
	WUA		WUF	
	No.	%	No.	%
Attended all	-	-	6	55
Attended most	6	67	5	45
Missed most	3	33	-	-
Missed all	-	-	-	-
No answer	-	-	-	-

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Attended all	2	22	3	27
Attended most	3	33	8	73
Missed most	1	11	-	-
Missed all	1	11	-	-
No answer	2	22	-	-

Table 7. Notification about WUO Meetings.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	23	85.19	26	89.66	49	87.50
No	4	14.81	3	10.34	7	12.50
No answer	0	0.00	0	0.00	0	0.00

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	20	76.92	25	86.21	45	81.82
No	6	23.08	4	13.79	10	18.18
No answer	0	0.00	0	0.00	0	0.00

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	18	66.67	29	100.00	47	83.93
No	8	29.63	0	0.00	8	14.29
No answer	1	3.70	0	0.00	1	1.79

Table 8. Keeping of Minutes of WUO Meetings.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Yes	14	51.85	20	68.97
No	0	0.00	0	0.00
Don't know	13	48.15	9	31.03

Heran				
	WUA		WUF	
	No.	%	No.	%
Yes	14	53.85	27	93.10
No	1	3.85	0	0.00
Don't know	11	42.31	2	6.90

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Yes	7	25.93	20	68.97
No	1	3.70	0	0.00
Don't know	19	70.37	9	31.03

Table 9. Actual Modus of Decision-Making.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Consensus	20	74.07	20	68.97
Majority Vote	0	0.00	1	3.45
Other	1	3.70	2	6.90
Don't know	6	22.22	6	20.69
No answer	0	0.00	0	0.00

Heran				
	WUA		WUF	
	No.	%	No.	%
Consensus	22	84.62	26	89.66
Majority Vote	0	0.00	2	6.90
Other	0	0.00	0	0.00
Don't know	4	15.38	1	3.45
No answer	0	0.00	0	0.00

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Consensus	13	48.15	28	96.55
Majority Vote	1	3.70	0	0.00
Other	0	0.00	1	3.45
Don't know	13	48.15	0	0.00
No answer	0	0.00	0	0.00

Table 10. Preferred Method of Decision-Making.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Consensus	26	96.30	21	72.41
Leaders decide	0	0.00	1	3.45
Majority vote	1	3.70	5	17.24
Other	0	0.00	2	6.90
No answer	0	0.00	0	0.00

Heran				
	WUA		WUF	
	No.	%	No.	%
Consensus	10	38.46	14	48.28
Leaders decide	15	57.69	14	48.28
Majority vote	1	3.85	1	3.45
Other	0	0.00	0	0.00
No answer	0	0.00	0	0.00

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Consensus	20	74.07	21	72.41
Leaders decide	3	11.11	1	3.45
Majority vote	2	7.41	6	20.69
Other	2	7.41	1	3.45
No answer	0	0.00	0	0.00

Table 11. Overall Atmosphere during WUO Meetings.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Angry confrontations	0	0.00	1	3.45
Friendly cooperation	20	74.07	25	86.21
Neutral	0	0.00	1	3.45
Other	6	22.22	1	3.45
No answer	1	3.70	1	3.45

Heran				
	WUA		WUF	
	No.	%	No.	%
Angry confrontations	0	0.00	0	0.00
Friendly cooperation	18	69.23	28	96.55
Neutral	0	0.00	0	0.00
Other	2	7.69	0	0.00
No answer	6	23.08	1	3.45

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Angry confrontations	1	3.70	0	0.00
Friendly cooperation	15	55.56	21	72.41
Neutral	1	3.70	0	0.00
Other	8	29.63	8	27.59
No answer	2	7.41	0	0.00

5.2 Maintenance of Organizational Records

Regular and accurate record keeping is important to achieve transparency and accountability within WUOs. Their legitimacy in the estimation of various stakeholders, including the membership, depends in part on the information contained in organizational records.

Table 12 demonstrates that at the WUA level there is considerable ignorance about **financial records**, although the WUA members had made financial contributions for membership fees or construction and maintenance activities. At Heran and Bareji, about half of the respondents and at Dhoro Naro only 18.5 percent, were informed about the maintenance of financial records. Among the leadership, one-third of the respondents at two sites had no knowledge about the maintenance of financial records.

The **presentation of the financial records** by the organizations' finance secretaries was affirmed by only 50 percent of respondents at Heran's WUAs (Table 13). Otherwise, the majority of grassroots members had no knowledge or the financial records were not presented. At the WUF level, opinions were split, which indicates again, that the status of knowledge about the presentation of records was uncertain. A slight majority at Bareji and Heran affirmed.

Tables 14 and 15 indicate that the situation was similar for the **maintenance of attendance and correspondence records**. The majority of WUA respondents were uninformed or reported that no records were maintained. The majority of WUF respondents affirmed the maintenance of records, but a considerable minority at each site dissented or was uninformed. A majority at Heran could not confirm the maintenance of correspondence records.

The following may be concluded from the above data:

- Record keeping among the WUAs remained weak and failed to serve accountability functions, especially with regard to financial transactions undertaken.
- Even among the WUFs, record keeping was of little concern to a considerable minority, although a higher level of record-keeping activity is indicated by the data.
- A regular and reliable habit of record keeping serving transparency and accountability has yet to develop among the WUOs at all three sites. The internal discussion and scrutiny of records requires improvement to be acceptable within the SIDA framework of irrigation management.

Table 12. Maintenance of Financial Records.

	Bareji			
	WUA		WUF	
	No.	%	No.	%
Yes	14	51.85	19	65.52
No	1	3.70	0	0.00
Don't know	12	44.44	10	34.48
	Heran			
	WUA		WUF	
	No.	%	No.	%
Yes	15	57.69	26	89.66
No	1	3.85	1	3.45
Don't know	10	38.46	2	6.90
	Dhoro Naro			
	WUA		WUF	
	No.	%	No.	%
Yes	5	18.52	19	65.52
No	3	11.11	1	3.45
Don't know	19	70.37	9	31.03

Table 13. Presentation of the Financial Record by Finance Secretary.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Yes	3	11.11	15	51.72
No	10	37.04	6	20.69
Don't know	13	48.15	7	24.14
No answer	1	3.70	0	0.00

Heran				
	WUA		WUF	
	No.	%	No.	%
Yes	13	50.00	15	51.72
No	2	7.69	9	31.03
Don't know	11	42.31	5	17.24
No answer	0	0.00	0	0.00

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Yes	6	22.22	12	41.38
No	11	40.75	13	44.83
Don't know	9	33.33	4	13.79
No answer	1	3.70	0	0.00

Table 14. Maintenance of Attendance Records.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Yes	13	48.15	18	62.07
No	0	0.00	2	6.90
Don't know	14	51.85	9	31.03

Heran				
	WUA		WUF	
	No.	%	No.	%
Yes	8	30.77	14	48.28
No	7	26.92	11	37.93
Don't know	11	42.31	4	13.79

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Yes	7	25.93	20	68.97
No	1	3.70	0	0.00
Don't know	19	70.37	9	31.03

Table 15. Maintenance of Correspondence Records.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Yes	3	11.11	18	62.07
No	9	33.33	1	3.45
Don't know	15	55.56	10	34.48
Heran				
	WUA		WUF	
	No.	%	No.	%
Yes	0	0.00	5	17.24
No	13	50.00	17	58.62
Don't know	13	50.00	7	24.14
Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Yes	5	18.52	20	68.97
No	1	3.70	0	0.00
Don't know	21	77.78	9	31.03

5.3 Recognition and Observance of Rules

The respondents were asked whether they recognized a mutually shared set of rules, such as bylaws, or rules and regulations issued by a regulatory agency, such as SIDA. Model bylaws had been drafted by an IMI consultant and read and discussed among water users.¹⁹ WUF-internal bylaws are not legally binding, since the suspension of the JMA prevented the legalization of WUFs. Nevertheless, the recognition and observance of such rules would indicate the capacity of the WUOs to bind the membership to a shared set of rules.

The data in Table 16 indicate low recognition of **rules** among the WUAs at Bareji and Dhoro Naro. At Heran, a vast majority stated that their WUAs had indeed adopted a set of rules. The same applies to the WUFs at all sites. Asked, whether the members followed the rules, only the Heran WUAs and WUF affirmed, while almost all WUA respondents at Bareji and Dhoro Naro failed to answer. Among the WUF members at the same two sites considerable disagreement prevailed (Table 17).

Accordingly, **rule-violations** continued to be prevalent. The most frequently cited violation was

water theft and lack of equitable distribution. The second most frequent violation was the refusal of individuals and WUAs at watercourses to make financial contributions (membership fees, construction works). Without the authority to apply sanctions against rule violations, the culture of rule evasion will continue.

The data warrant the following conclusions:

- Among the Bareji and Dhoro Naro sites the adoption and observance of bylaws/rules is weak. The respondents appear not to identify with the purpose of the WUOs and the rights and responsibilities of their members.
- At Heran, the adoption of bylaws has been achieved. This suggests that the WUO members at all levels, supported by the social mobilizers, placed emphasis on rule-bound behavior and discussed, understood and committed themselves to bylaws.
- Rule violations most frequently pertain to the distribution of water and financial commitments.
- Rule-bound behavior has not been sufficiently internalized to allow WUAs to manage without negative sanctioning.
- Rule-bound behavior cannot be enforced, as there is no legal framework empowering the WUOs.

¹⁹ Bandaragoda, Skogerboe and Memon, 1997.

Table 16. Existence of WUO-Internal Rules.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Yes	5	18.52	20	68.97
No	10	37.04	6	20.69
Don't know	12	44.44	3	10.34
No answer	0	0.00	0	0.00

Heran				
	WUA		WUF	
	No.	%	No.	%
Yes	25	96.15	28	96.55
No	0	0.00	1	3.45
Don't know	1	3.85	0	0.00
No answer	0	0.00	0	0.00

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Yes	4	14.81	25	86.21
No	7	25.93	2	6.90
Don't know	15	55.56	2	6.90
No answer	1	3.70	0	0.00

Table 17. Observance of WUO-Internal Rules.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Yes	3	11.11	8	27.59
No	2	7.41	8	27.59
Don't know	0	0.00	0	0.00
No answer	22	81.48	13	44.83

Heran				
	WUA		WUF	
	No.	%	No.	%
Yes	25	96.15	28	96.55
No	0	0.00	1	3.45
Don't know	0	0.00	0	0.00
No answer	1	3.85	0	0.00

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Yes	4	14.81	14	48.28
No	1	0.00	11	37.93
Don't know	1	3.70	0	0.00
No answer	22	81.48	4	13.79

5.4 Selection of Leadership

The selection of leadership is a central process of organization building and the most significant interaction between the grassroots and the leadership, especially where the functional capacity of WUAs is relatively weak. The results of querying the selection process are presented and some basic socio-economic characteristics of the leaders are discussed.

The **modus of leadership selection** was perceived as consensus-based by the majority of respondents (Table 18). Between 55.5 and 96.5 percent among all sites and levels selected 'consensus'. It is already argued in section 5.1, that what was viewed as consensus entailed the distribution of offices among established factions of community leaders and their followers, and affirmed entrenched power and status relations.

Table 19 gives an overview of the **criteria for representative and office bearer selection** considered by all respondents. They are ranked by the frequency of their indication. Honesty and ability to work hard and efficiency were most appreciated at Bareji, followed by the candidates' level of education, their ability to spend time, sincerity and impartiality. At Heran, hardworking and efficient representatives with the ability to spend sufficient time were preferred. Their level of education along with experience, problem-solving capacity and kin-group membership was considered. At Dhoro Naro, hard work and efficiency, education and honesty were the most sought after characteristics, followed by influence, experience, ability to spend time, boldness and problem solving capacity.

The most frequently chosen criteria, such as honesty, ability to spend time, education and a hardworking disposition, are highly pertinent in the selection of leaders with the potential for undertaking the demanding tasks of irrigation management. Traditional criteria, such as kin-groups membership and influence were less important, but remained relevant. Some criteria, such as in what reach of the irrigation subsystem a candidate resides, age, capacity for cooperation, responsible behavior or closeness to the community were rarely chosen, if at all. The criteria selected may be viewed as ideal images and desires of respondents. In how far they reflect actual choices, rather than rationalizations of the process of juggling the interests of various factions, is hard to discern.

The **level of education** among leaders is highest at Heran, where all representatives interviewed had achieved the middle level, 86 percent had attained 10th grade (matric) or higher level degree, and 42 percent had completed a bachelor's degree, as shown in Table 20. At Bareji, 49 percent of the leaders held a matric or higher degree, but 14 percent were illiterate and 35 percent had primary education only. At Dhoro Naro, the group of leaders with 10th grade or a higher level of education was smallest, 38 percent, while one-third had primary education only. Although level of education had ranked highest as a leadership selection criterion among respondents from Dhoro Naro, the actual level of education among the leadership was comparatively lower. Only at Heran did the membership manage to elect a leadership whose level of education was considerably higher than among the grassroots membership.

Table 21 shows the **tenancy status** of the leadership and the general membership. The vast majority of survey respondents are non-cultivating landowners. At Heran, 34.5 percent of leaders are owner-cultivators, which is close to the 40 percent owner-cultivators in the total population of Heran. At Bareji, owner-cultivators are 44 percent of the total population and they are therefore underrepresented in the sample.²⁰ No comparative data are available for Dhoro Naro.

The number of landowners among the leadership exceeds their average number among all respondents' at all three sites, indicating the dominance of the most powerful group. Owner cultivators are underrepresented in the leadership. Tenants are not represented at all in the WUFs, and only one tenant each was found among the Heran and Dhoro Naro grassroots. The landowners group had consciously decided to exclude tenants from WUO membership, unless their landlords expressly permitted them to join on their behalf.²¹

Table 22 indicates a fairly even representation of all **landholding strata** among the leadership. At Bareji and Dhoro Naro, the sample shows a slight over-representation of the above 100-acre category. At Heran, land ownership is less unequal, none of the respondents own more than 100 acres, and the smaller landowners are well represented.

²⁰ Bandaragoda and Memon, 1997.

²¹ Bandaragoda and Memon, 1997, p. 40.

To gauge the functioning of the **leadership / grassroots interface**, the respondents were asked whether the members raised important issues with the leadership. Of altogether 167 respondents, 123 replied, of which 97 had raised issues in meetings or had direct contacts with farmer leaders. The farmers' open-ended responses revealed that the WUOs had indeed become a forum for raising critical issues. Of foremost concern was the competition over relatively scarce water resources and the attempt to stop access to extra water by illegal means. Those who saw no need to discuss their concerns with the leadership stated that they had no faith in the leaders' problem solving capacity, mainly due to the lack of empowerment of the WUOs:

People considered that the WUF had no power. People became disheartened and so communication was disturbed. (Farmer)²²

Of 93 respondents, 83 confirmed that the leadership had dealt with the issues raised by the membership. However, due the lack of empowerment their efforts yielded limited results. An important achievement was the initiation of collective discussions and negotiations with Irrigation Department personnel at the local level, which led to collective maintenance and rehabilitation activities, such as de-silting campaigns, reinforcement of canal banks and the construction of culverts across channels.

91 of 122 respondents stated that the leadership had communicated important issues, including the availability of benefits to farmers, downward to the grassroots. Here they mainly considered de-silting campaigns, construction of culverts, and the collection of membership fees, as well as tree planting campaigns aiming at lowering water tables and increasing fuel wood resources. A

minority remained suspicious of the leaders' capacity to attract benefits in their own interest. Generally, respondents at the WUF level appeared better informed and more likely to stress their active involvement in communicating with the general membership.

The data on leadership selection yield the following results:

- The majority of respondents perceived the modus of leadership selection as consensus based.
- The predominantly stated criteria for selecting leadership were performance and capacity, rather than power and status. Given the field staff's reports about internal power struggles and the domination of consensus by community leaders, these responses may be rationalizations of prevailing power relations.
- The leadership's level of education reflects that of the population of water users, with the exception of Heran, where the leaders' level of education is markedly higher than average.
- The leadership is dominated by non-cultivating landlords, in keeping with the feudal structure of property relations in Sindh. While owner-cultivators tend to be under-represented, tenants are by and large excluded from participation.
- Among the leadership all property size classes are fairly evenly represented, with Heran displaying the most favorable degree of representation of smaller landowners.
- The WUOs have become a significant forum for communication between leaders and grassroots in which issues of common concern are debated and activities initiated. Farmers started to collectively negotiate with Irrigation Department personnel.

²² All quotes in section 5 are statements made by farmers during the interviews. To protect their identities, their names and the location of their irrigation sources are not revealed.

Table 18. Modus of Selection of Representatives and Office Bearers.

Bareji				
	WUA		WUF	
	No.	%	No.	%
Consensus	22	81.48	18	62.07
Majority Vote	0	0.00	2	6.90
Other	2	7.41	9	31.03
Don't know	3	11.11	0	0.00
No answer	0	0.00	0	0.00

Heran				
	WUA		WUF	
	No.	%	No.	%
Consensus	18	69.23	20	68.97
Majority Vote	0	0.00	8	27.59
Other	0	0.00	1	3.45
Don't know	8	30.77	0	0.00
No answer	0	0.00	0	0.00

Dhoro Naro				
	WUA		WUF	
	No.	%	No.	%
Consensus	15	55.56	28	96.55
Majority Vote	0	0.00	0	0.00
Other	0	0.00	1	3.45
Don't know	12	44.44	0	0.00
No answer	0	0.00	0	0.00

Table 19. Criteria for the Selection of Representatives and Office Bearers.

	Bareji		Heran		Dhoro Naro	
	No.	Rank	No.	Rank	No.	Rank
Honesty	12	1	0		9	3
Hardworking & Efficient	11	2	17	1	17	1
Level of Education	8	3	5	3	12	2
Ability to spend time	7	4	12	2	5	6
Sincerity	5	5	0		3	
Impartial/Neutral	4	6	0		6	5
Wisdom & Ability	3		0		3	
Influential	3		0		7	4
Experienced	3		3	4	5	6
Problem solving capacity	2		12	2	4	7
Bold/daring	2		0		5	6
Biraderi/kin-group membership	0		2	5	1	

Table 20. Level of Education.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Illiterate	5	18.52	4	13.79	9	16.07
Primary	12	44.44	10	34.48	22	39.29
Middle	0	0.00	1	3.45	1	1.79
Matric	4	14.81	3	10.34	7	12.50
F.A./F.Sc.	4	14.81	5	17.24	9	16.07
B.A./B.Sc.	2	7.41	4	13.79	6	10.71
M.A./M.Sc.	0	0.00	2	6.90	2	3.57
Other	1	3.33	4	16.00	5	9.09
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Illiterate	3	11.54	0	0.00	3	5.45
Primary	3	11.54	0	0.00	3	5.45
Middle	6	23.08	3	10.34	9	16.36
Matric	9	34.62	7	24.14	16	29.09
F.A./F.Sc.	1	3.85	2	6.90	3	5.45
B.A./B.Sc.	4	15.38	12	41.38	16	29.09
M.A./M.Sc.	0	0.00	4	13.79	4	7.27
Other	0	0.00	1	3.45	1	1.82
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Illiterate	4	14.81	1	3.45	5	8.93
Primary	10	37.04	9	31.03	19	33.93
Middle	2	7.41	5	17.24	7	12.50
Matric	3	11.11	4	13.79	7	12.50
F.A./F.Sc.	3	11.11	5	17.24	8	14.29
B.A./B.Sc.	1	3.70	2	6.90	3	5.36
M.A./M.Sc.	0	0.00	0	0.00	0	0.00
Other	4	14.81	3	10.34	7	12.50

Table 21. Tenancy Status.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Landowner	19	70.37	25	86.21	44	78.57
Lessee	0	0.00	0	0.00	0	0.00
Tenant	0	0.00	0	0.00	0	0.00
Owner Cultivator	8	29.63	2	6.90	10	17.86
Manager	0	0.00	1	3.45	1	1.79
Other	0	0.00	0	0.00	0	0.00
No answer	0	0.00	1	3.45	1	1.79
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Landowner	14	53.85	19	65.52	33	60.00
Lessee	1	3.85	0	0.00	1	1.82
Tenant	1	3.85	0	0.00	1	1.82
Owner Cultivator	10	38.46	9	31.03	19	34.55
Manager	0	0.00	0	0.00	0	0.00
Other	0	0.00	0	0.00	0	0.00
No answer	0	0.00	1	3.45	1	1.82
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Landowner	13	48.15	17	58.62	30	53.57
Lessee	1	3.70	1	3.45	2	3.57
Tenant	1	3.70	0	0.00	1	1.79
Owner Cultivator	9	33.33	3	10.34	12	21.43
Manager	0	0.00	2	6.90	2	3.57
Other	0	0.00	0	0.00	0	0.00
No answer	3	11.11	6	20.69	9	16.07

Table 22. Size of Landholdings.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
10 acres & below	4	14.8	4	13.8	8	14.3
11 to 20 acres	6	22.2	8	27.6	14	25
21 to 50 acres	9	33.3	6	20.7	15	26.8
51 to 100 acres	5	18.5	1	3.4	6	10.7
101 to 200 acres	1	3.7	4	13.8	5	8.9
201 to 500 acres	2	7.4	3	10.3	5	8.9
Above 500 acres	0	0	1	3.4	1	1.8
No answer	0	0	2	6.9	2	3.5

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
10 acres & below	3	11.5	7	24.1	10	18
11 to 20 acres	7	27	6	20.7	13	23.6
21 to 50 acres	6	23	11	38	17	31
51 to 100 acres	2	7.6	1	3.4	3	5.5
101 to 200 acres	0	0	0	0	0	0
201 to 500 acres	0	0	0	0	0	0
Above 500 acres	0	0	0	0	0	0
No answer	8	30.8	4	13.8	12	21.8

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
10 acres & below	4	14.8	3	10.3	7	12.5
11 to 20 acres	3	11.1	5	17.3	8	14.3
21 to 50 acres	8	29.6	7	24.1	15	26.8
51 to 100 acres	6	22.2	1	3.4	7	12.5
101 to 200 acres	2	7.4	3	10.3	5	8.9
201 to 500 acres	1	3.7	2	6.9	3	5.4
Above 500 acres	0	0	1	3.4	1	1.8
No answer	3	11.1	7	24.1	10	17.9

5.5 Capacity Building

Capacity building to prepare the farmers' for organizational and distributary management was organized by IIMI staff in the form of **training activities**. These included financial and organizational management, measurement of water distribution, maintenance walk-through surveys, O&M practices and improved irrigation and agricultural practices.

Table 23 demonstrates that training was mainly targeted towards the leadership. Specific topics

were of relevance to particular office bearers, rather than the membership at large. Among the WUA level respondents, less than a quarter had participated in training, with the exception of training in piezometer reading at Heran, which had been a fairly large and popular exercise. Farmers were keen to learn how to assess the water supply situation in their subsystems. At the WUF level, Heran shows the highest overall participation rate in training activities. Organizational management, piezometer reading, walk-through surveys and

improved agricultural practices were attended by more than half of the respondents.

The critical issue remains, whether the leadership-oriented training would eventually reach the general membership. Especially topics such as improved on-farm irrigation and agricultural practices would need to be disseminated widely among the grassroots to help alleviate pressure on relatively scarce water resources. Furthermore, in the interest of broadening skills and capacities, it is necessary to ensure that potential future leaders from among the general membership are capable of taking on leadership roles without requiring extensive training.

- Capacity building training was provided to farmer leaders to enable them to assume specialized functions within the executive committees;
- Training for measurement of the flow and distribution of water reached a wider constituency and generated a high level of interest, as the farmers sought to know the actual level of inequity in their subsystems; and
- The training activities did not target a large enough group of recipients to ensure widespread dissemination of knowledge at the grassroots level and a sufficiently sizeable group of potential new leaders.

Table 23. Participation in Training.

Bareji						
	WUA (n=27)		WUF(n=29)		Total (n=56)	
	No	(%)	No	(%)	No	(%)
Financial management	3	11.11	5	17.24	8	14.29
Organizational Management	3	11.11	10	34.48	13	23.21
Piezometer Reading	0	0.00	5	17.24	5	8.93
Flow measurement	0	0.00	0	0.00	0	0.00
Walk thru maintenance survey	0	0.00	4	13.79	4	7.14
Operation and Maintenance	0	0.00	2	6.90	2	3.57
Improved irrigation practices	4	14.81	6	20.69	10	17.86
Improved agricultural practices	2	7.41	9	31.03	11	19.64
Heran						
	WUA (n=26)		WUF(n=29)		Total (n=55)	
	No	(%)	No	(%)	No	(%)
Financial management	2	7.69	5	17.24	7	12.73
Organizational Management	1	3.85	15	51.72	16	29.09
Piezometer Reading	8	30.77	16	55.17	24	43.64
Flow measurement	0	0.00	1	3.45	1	1.82
Walk thru maintenance survey	3	11.54	20	68.97	23	41.82
Operation and Maintenance	1	3.85	8	27.59	9	16.36
Improved irrigation practices	0	0.00	9	31.03	9	16.36
Improved agricultural practices	1	3.85	19	65.52	20	36.36
Dhoro Naro						
	WUA (n=27)		WUF (n=29)		Total (n=56)	
	No	(%)	No	(%)	No	(%)
Financial management	0	0.00	5	17.24	5	8.93
Organizational Management	0	0.00	0	0.00	0	0.00
Piezometer Reading	3	11.11	12	41.38	15	26.79
Flow measurement	0	0.00	0	0.00	0	0.00
Walk thru maintenance survey	0	0.00	11	37.93	11	19.64
Operation and Maintenance	1	3.70	14	48.28	15	26.79
Improved irrigation practices	0	0.00	2	6.90	2	3.57
Improved agricultural practices	0	0.00	6	20.69	6	10.71

5.6 Water Resource Supply and Distribution

The improvement in supply and distribution of water is a central objective of social mobilization and organization building among water users in the irrigation sector. Although the WUOs were only able to have a limited impact due to the failure of participatory irrigation management in Sindh, the respondents were queried about the potential impact of organizational activity on water management in their subsystems.

The analysis of perceptions about the state of water distribution, irrigation offenses and conflict was differentiated according to farm location (head, middle and tail of distributaries), since perceptions can be expected to be closely associated with experiences in respondents' immediate environment.

The respondents were asked about their level of **satisfaction with the prevailing system of water distribution** in their distributaries. Table 24 shows that among farmers in the head reaches satisfaction was most widespread, although only among half of the interviewees, while towards the mid-reach and definitely among tail-enders dissatisfaction predominated. At Bareji, the level of satisfaction was highest, although opinions were split. At the other two sites, farmers in the head reach were divided in their perception and a clear majority in the middle and tail sections was in favor of changing the distribution system.

The data suggest that most farmers are not satisfied, as they generally perceive disadvantages in the current practices of system management. The most frequent complaint is that in the head reach especially cultivators tend to appropriate water above their entitlements, by paying bribes to irrigation officers and tampering/widening their outlets or installing additional outlets.

The head watercourses get more water by paying money. There should be equal distribution through mutual cooperation. (Farmer)

Even at the tail, more water can be obtained by paying an illegal fee, which ensures increased discharges to the distributary at the head-regulator.

Farmers feared that the establishment of WUOs would reduce current levels of water supply. At Dhoro Naro respondents claimed that the Irrigation Department officials had reduced discharges to

the sanctioned design, because the irrigators had organized themselves to attain equitable distribution. The WUF had attempted to redesign outlets on the basis of prevailing (above design) discharges at the head regulator, while resisting the payment of bribes. They reported that they had to suffer reduction of discharges to design levels.

If we change the current system the water supply will be dried up. Now we have double the water by paying Rs.15, 000. We have a 10-inch outlet now. The Irrigation Department will not cooperate with the water user organization. (Farmer)

Today the tail also gets water, but when we started the organization they reduced the water and the tail faced shortages. (Farmer)

We are not getting our right, because the present distribution is not fair. (Farmer)

Irrigators complain that the illegal payments are systematic and well organized. They stated that at the beginning of each growing season demands for illicit payments are made to each watercourse, which are proportional to the size of its CCA.²³ The interviewees reported that after the closure of IIMI's pilot project, they saw themselves forced to fully revert to the system of illicit payments to ensure water supply that would meet their 'demand'. Collective action had proven to be an unreliable means of achieving a 'fair' system of distribution. Although a clear majority would prefer a reformed and legitimate system, farmers were unable to collectively alter the power relations in irrigation management. This would require empowerment and legal entitlement of water users to enforce the laws and internal rules and decisions.

The respondents were asked whether they perceived a **change in the quantity, reliability and equity of the irrigation water supply** since the establishment of their WUOs. Table 25 shows that the head and mid-reach respondents at Bareji indicated no change, while 60 percent of the tail-enders perceived an improvement for all three variables. At Heran (Table 26) the head and the tail agreed that the situation had improved, but the mid-reach overwhelmingly felt that the situation had remained the same. At Dhoro Naro (Table 27), only a minority at all locations perceived an improvement, while the majority thought that the situation had not improved or even worsened.

²³ For a detailed account of the practice of and motivation for rent seeking behavior, see Starkloff, 1999.

The improvement perceived at sections of Heran and Bareji may be owed to the successful desilting activities in cooperation with the Irrigation Department, which made a considerable difference to tail-enders in particular. At Dhoro Naro, a more pessimistic mood prevailed, since the respondents had been particularly upset by the perceived punishment of their organizational activity. They saw no option but to conform to inequitable and unreliable distribution by illicit means, once social mobilization activities had ceased.

The sample of water users was also asked about **changes in the incidence of irrigation offenses** by various methods since WUO establishment, to gauge whether they thought that organized action had made an improvement in the law and order situation at the distributaries.

Only few respondents at all three sites perceived a worsening of **outlet tampering** (Table 28). At Dhoro Naro a majority reported a decline of tampering, while at the other sites most indicated no change. An exception is the tail section at Heran, where a two-third reported a decline in outlet tampering.

The majority of respondents at Bareji and Dhoro Naro reported that the use of **illegal pipes** had declined (Table 29). At Heran, illegal pipes were indicated to be a non-issue, and therefore no answers were provided.

The **placement of obstacles** in the distributary to raise the head of flow and increase supply to adjacent watercourses was perceived to have declined by the majority at Dhoro Naro and Bareji (Table 30). Especially the head reach respondents claimed an improvement, as they had been mainly responsible for this illegal act and WUO activity had de-legitimized this practice successfully. At Heran, most interviewees provided no answer, while about 55 percent of the tail-enders reported an improvement.

The use of **illegal outlets** also declined in the opinion of most respondents at Bareji and Dhoro Naro, according to Table 31. At the latter, however, about half of the tail-enders perceived no improvement or a worsening situation. Heran respondents declined to answer.

The data suggest that WUO establishment and organized collective action was able to reduce the incidence of illegal pipes and outlets and of placing of obstacles to some appreciable degree. Outlet tampering is the most common and least

visible practice. It is therefore continues to be used widely.

Intense competition for water and the use of illegal means to acquire extra water can be expected to cause considerable conflict. To ascertain whether the WUOs had been able to provide a viable conflict resolution mechanism, the respondents were asked whether they had experienced **change in the level of conflict** since WUO establishment. Furthermore, they were asked about the **preferred mechanisms of conflict resolution** before and after WUO establishment.

According to Table 32, the majority of interviewees at Bareji perceived no change in the level of conflict. At Heran, a slight majority of the WUA respondents indicated no change, while the WUF members and a sizable minority among WUAs perceived a decline of conflict. Most of the grassroots members at Dhoro Naro reported no change, but among the federation representatives about half perceived an increase in conflict, while one third saw an improvement.

Therefore, the impact of the WUOs on the level of conflict was appreciable but not decisive. The root causes of conflict, relative water scarcity and illegal appropriation of extra water, could not be addressed without empowerment of the WUOs. At Dhoro Naro, organizational activity had intensified conflict among the leadership, as they struggled with the difficult choice between giving in to the pressure by Irrigation Department staff and the social pressure arising from the ethics of just irrigation management introduced by IIMI. Organization building bears the potential for improved conflict management, which cannot be realized as long as the WUOs are not adequately empowered.

Before the establishment of WUOs, the *panchayat* (council of community elders) and government institutions (Irrigation Department, police and courts) were the most commonly used mechanisms to resolve irrigation related conflicts (Table 33).

Table 34 indicates that the WUOs had not evolved institutional means of conflict resolution. The vast majority of respondents at Bareji declined to answer altogether. At Heran, most interviewees consulted their WUO leaders, but were not forming and using committees with a mandate for conflict resolution. At Dhoro Naro, most WUA respondents declined to answer and 55 percent of WUF members preferred other mechanisms, such as

informal means or the mediation services of IIMI staff.

The data reviewed suggest the following:

- Most farmers interviewed were not satisfied with the situation of water resource distribution. Inequity on account of irrigation offenses and rent seeking by irrigation personnel prevail.
- While de-silting activities made a difference to the quantity, reliability and equity of water supplies at some sites and distributary reaches, the WUOs were prevented from reorganizing irrigation management and bringing about improvements.
- The WUOs appear to have had a positive effect on the incidence of irrigation offences by means of illegal pipes and outlets as well as placing of obstacles. Outlet tampering remained a common practice among water users seeking to increase water supplies illegally.
- Among many water users, the WUOs were perceived as having made a difference in the level of conflict. However, significant impact on the root causes of conflict, i.e. relative water scarcity and illegal appropriation of water resources, was not achieved. The WUOs remain without the power to sanction the behavior of water users and have not yet been able to institutionalize conflict resolution mechanisms, which are mutually recognized by all members.

Table 24. Satisfaction with the Current Water Distribution System in the Distributary.

Bareji								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	11	47.83	12	66.67	7	46.67	30	53.57
No	11	47.83	6	33.33	8	53.33	25	44.64
No answer	1	4.35	0	0.00	0	0.00	1	1.79
Heran								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	9	50.00	7	36.84	5	27.78	21	38.18
No	9	50.00	12	63.16	13	72.22	34	61.82
No answer	0	0.00	0	0.00	0	0.00	0	0.00
Dhoro Naro								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	9	45.00	4	25.00	6	33.33	19	33.93
No	11	55.00	12	75.00	14	77.78	37	66.07
No answer	0	0.00	0	0.00	0	0.00	0	0.00

Table 25. Supply of Irrigation Water since WUO Establishment.

Bareji								
Quantity								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	3	13.04	5	27.78	9	60.00	17	30.36
Less	0	0.00	1	5.56	0	0.00	1	1.79
Same	20	86.96	10	55.56	4	26.67	34	60.71
No answer	0	0.00	2	11.11	2	13.33	4	7.14
Reliability								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	3	13.04	5	27.78	9	60.00	17	30.36
Less	0	0.00	1	5.56	0	0.00	1	1.79
Same	20	86.96	10	55.56	4	26.67	34	60.71
No answer	0	0.00	2	11.11	2	13.33	4	7.14
Equity								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	3	13.04	5	27.78	9	60.00	17	30.36
Less	0	0.00	1	5.56	0	0.00	1	1.79
Same	20	86.96	10	55.56	4	26.67	34	60.71
No answer	0	0.00	2	11.11	2	13.33	4	7.14

Table 26. Supply of Irrigation Water since WUO Establishment.

Heran								
Quantity								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	11	61.11	3	15.79	13	72.22	27	49.09
Less	1	5.56	0	0.00	0	0.00	1	1.82
Same	6	33.33	16	84.21	5	27.78	27	49.09
No answer	0	0.00	0	0.00	0	0.00	0	0.00
Reliability								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	11	61.11	3	15.79	13	72.22	27	49.09
Less	1	5.56	0	0.00	0	0.00	1	1.82
Same	6	33.33	16	84.21	5	27.78	27	49.09
No answer	0	0.00	0	0.00	0	0.00	0	0.00
Equity								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	11	61.11	3	15.79	13	72.22	27	49.09
Less	1	5.56	0	0.00	0	0.00	1	1.82
Same	6	33.33	16	84.21	5	27.78	27	49.09
No answer	0	0.00	0	0.00	0	0.00	0	0.00

Table 27. Supply of Irrigation Water since WUO Establishment.

Dhoro Naro								
Quantity								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	1	5.00	6	37.50	2	11.11	9	16.07
Less	7	35.00	4	25.00	10	55.56	21	37.50
Same	12	60.00	6	37.50	8	44.44	26	46.43
No answer	0	0.00	0	0.00	0	0.00	0	0.00
Reliability								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	3	15.00	5	31.25	2	11.11	10	17.86
Less	6	30.00	3	18.75	9	50.00	18	32.14
Same	11	55.00	8	50.00	9	50.00	28	50.00
No answer	0	0.00	0	0.00	0	0.00	0	0.00
Equity								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	2	10.00	5	31.25	0	0.00	7	12.50
Less	4	20.00	3	18.75	10	55.56	17	30.36
Same	14	70.00	8	50.00	10	55.56	32	57.14
No answer	0	0.00	0	0.00	0	0.00	0	0.00

Table 28. Incidence of Irrigation Offences since WUO Establishment: Outlet Tampering.

Bareji								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	2	8.70	0	0.00	0	0.00	2	3.57
Less	3	13.04	4	22.22	3	20.00	10	17.86
Same	15	65.22	9	50.00	7	46.67	31	55.36
No answer	3	13.04	5	27.78	5	33.33	13	23.21
Heran								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	0	0.00	0	0.00
Less	5	27.78	3	15.79	12	66.67	20	36.36
Same	13	72.22	16	84.21	6	33.33	35	63.64
No answer	0	0.00	0	0.00	0	0.00	0	0.00
Dhoro Naro								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	1	5.00	0	0.00	5	27.78	6	10.71
Less	13	65.00	10	62.50	9	50.00	32	57.14
Same	6	30.00	5	31.25	6	33.33	17	30.36
No answer	0	0.00	1	6.25	0	0.00	1	1.79

Table 29. Incidence of Irrigation Offences since WUO Establishment: Illegal Pipes.

Bareji								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	0	0.00	0	0.00
Less	16	69.57	12	66.67	10	66.67	38	67.86
Same	2	8.70	0	0.00	0	0.00	2	3.57
No answer	5	21.74	6	33.33	5	33.33	16	28.57

Heran								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	0	0.00	0	0.00
Less	0	0.00	0	0.00	0	0.00	0	0.00
Same	0	0.00	0	0.00	0	0.00	0	0.00
No answer	18	100.00	19	100.00	18	100.00	55	100.00

Dhoro Naro								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	5	27.78	5	8.93
Less	15	75.00	10	62.50	9	50.00	34	60.71
Same	4	20.00	2	12.50	6	33.33	12	21.43
No answer	1	5.00	4	25.00	0	0.00	5	8.93

Table 30. Incidence of Irrigation Offences since WUO Establishment: Placement of Obstacles.

Bareji								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	1	6.67	1	1.79
Less	16	69.57	10	55.56	8	53.33	34	60.71
Same	2	8.70	2	11.11	1	6.67	5	8.93
No answer	5	21.74	6	33.33	5	33.33	16	28.57

Heran								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	0	0.00	0	0.00
Less	3	16.67	1	5.26	10	55.56	14	25.45
Same	3	16.67	5	26.32	4	22.22	12	21.82
No answer	12	66.67	13	68.42	4	22.22	29	52.73

Dhoro Naro								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	5	27.78	5	8.93
Less	16	80.00	11	68.75	9	50.00	36	64.29
Same	4	20.00	2	12.50	6	33.33	12	21.43
No answer	0	0.00	3	18.75	0	0.00	3	5.36

Table 31. Incidence of Irrigation Offences since WUO Establishment: Illegal Outlets.

Bareji								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	0	0.00	0	0.00
Less	17	73.91	12	66.67	10	66.67	39	69.64
Same	1	4.35	0	0.00	0	0.00	1	1.79
No answer	5	21.74	6	33.33	5	33.33	16	28.57

Heran								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	0	0.00	0	0.00
Less	0	0.00	0	0.00	0	0.00	0	0.00
Same	0	0.00	0	0.00	0	0.00	0	0.00
No answer	18	100.00	19	100.00	18	100.00	55	100.00

Dhoro Naro								
	Head		Middle		Tail		Total	
	No.	%	No.	%	No.	%	No.	%
More	0	0.00	0	0.00	4	22.22	4	7.14
Less	16	80.00	11	68.75	9	50.00	36	64.29
Same	4	20.00	2	12.50	6	33.33	12	21.43
No answer	0	0.00	3	18.75	1	5.56	4	7.14

Table 32. Level of Conflict since WUO Establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Increase	0	0.00	0	0.00	0	0.00
Decrease	2	7.41	8	27.59	10	17.86
Same	19	70.37	15	51.72	34	60.71
No conflict	0	0.00	0	0.00	0	0.00
Don't know	0	0.00	0	0.00	0	0.00
No answer	6	22.22	6	20.69	12	21.43

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Increase	0	0.00	0	0.00	0	0.00
Decrease	10	38.46	20	68.97	30	54.55
Same	12	46.15	9	31.03	21	38.18
No conflict	1	3.85	0	0.00	1	1.82
Don't know	0	0.00	0	0.00	0	0.00
No answer	3	11.54	0	0.00	3	5.45

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Increase	4	14.81	15	51.72	19	33.93
Decrease	3	11.11	10	34.48	13	23.21
Same	18	66.67	2	6.90	20	35.71
No conflict	1	3.70	1	3.45	2	3.57
Don't know	0	0.00	0	0.00	0	0.00
No answer	1	3.70	1	3.45	2	3.57

Table 33. Preferred Conflict Resolution Agency before WUO establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Panchayat	23	85.19	17	58.62	40	71.43
Wadera	4	14.81	3	10.34	7	12.50
Govt.	0	0.00	4	13.79	4	7.14
Others	0	0.00	1	3.45	1	1.79
Don't know	0	0.00	2	6.90	2	3.57
No answer	0	0.00	2	6.90	2	3.57
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Panchayat	21	80.77	18	62.07	39	70.91
Wadera	0	0.00	0	0.00	0	0.00
Govt.	0	0.00	8	27.59	8	14.55
Others	2	7.69	2	6.90	4	7.27
Don't know	0	0.00	0	0.00	0	0.00
No answer	3	11.54	1	3.45	4	7.27
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Panchayat	5	18.52	2	6.90	7	12.50
Wadera	1	3.70	0	0.00	1	1.79
Govt.	4	14.81	19	65.52	23	41.07
Others	0	0.00	6	20.69	6	10.71
Don't know	0	0.00	0	0.00	0	0.00
No answer	17	62.96	0	0.00	17	30.36

Table 34. Preferred Conflict Resolution Agency since WUO establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Committee formed	0	0.00	1	3.45	1	1.79
WUO leaders consulted	0	0.00	2	6.90	2	3.57
Referred to govt. agency	0	0.00	0	0.00	0	0.00
Others	2	7.41	5	17.24	7	12.50
Don't know	0	0.00	1	3.45	1	1.79
No answer	25	92.59	20	68.97	45	80.36

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Committee formed	3	11.54	1	3.45	4	7.27
WUO leaders consulted	17	65.38	23	79.31	40	72.73
Referred to govt. agency	2	7.69	4	13.79	6	10.91
Others	0	0.00	1	3.45	1	1.82
Don't know	3	11.54	0	0.00	3	5.45
No answer	1	3.85	0	0.00	1	1.82

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Committee formed	0	0.00	5	17.24	5	8.93
WUO leaders consulted	1	3.70	6	20.69	7	12.50
Referred to govt. agency	1	3.70	1	3.45	2	3.57
Others	3	11.11	16	55.17	19	33.93
Don't know	5	18.52	1	3.45	6	10.71
No answer	17	62.96	0	0.00	17	30.36

5.7 Maintenance Activities

Participatory irrigation management is particularly interested in mobilizing labor and financial contributions from water users for system maintenance and development. These reduce the chronic financial deficits in irrigation management and improve the physical state of the system. As IIMI's social mobilization activities put much emphasis on self-help maintenance and farmer-controlled construction, the survey investigated the level of participation and contributions.

Before the establishment of WUOs, **watercourse maintenance** was already a widespread and socially accepted activity among water users. The Sindh Irrigation Act of 1879 considers farmers as owners of watercourses and obligates them to maintain watercourses 'in a fit state'.²⁴ Table 35

demonstrates that almost all water users interviewed affirmed that they had participated in watercourse maintenance before WUO establishment. Since WUO establishment this practice has continued, as indicated by Table 36. Only at Dhoro Naro, a few respondents stated that they did no longer participate. In general, there is little difference between grassroots and leadership level participation.

The **maintenance of distributaries** is not formally the responsibility of water users, but rather that of the provincial Irrigation Departments. However, occasional mobilization of labor and other resources from farmers has been practiced to attend to urgent maintenance needs despite the poor resource endowments of the Irrigation Department. Thus, Table 37 shows that at Bareji 100 percent of respondents claimed participation in distributary maintenance before WUO formation. At Heran and Dhoro Naro, about half of

²⁴ Ali and Ali (eds.), 1996.

the respondents had also participated in these activities. The level of participation reported was slightly higher at the grassroots level. Since WUO formation, the majority of respondents confirmed their participation in distributary maintenance (Table 38). While the WUF members indicated 100 percent participation, a few WUA members stated that they had failed to attend.

Table 39 describes contributions to maintenance by type. **Labor** contributions are the most common and accepted form of contribution. At Bareji and Heran almost all of the grassroots and leadership provided labor. The same goes for the WUF members at Dhoro Naro, while among WUA respondents about three-quarters contributed labor. Contributions often took the form of landlords sending laborers or tenants.

Cash contributions are more difficult to mobilize as already indicated in the section discussing rule violations. Many farmers failed to make the agreed investment to obtain matching funds from IIMI for the construction of culverts and other improvements of the distributaries. At Bareji, only 7.4 percent of the WUA level and 31 percent of the WUF level respondents made cash contributions. At Heran, 35 percent of the grassroots and only 10 percent of the leaders contributed cash. Raising sufficient cash was only possible at Dhoro Naro, where 67 percent of grassroots and 86 percent of

leadership respondents made contributions. In **kind** contributions (tractors, tools, cement) were negligible at Bareji and Heran, while substantial at Dhoro Naro.

The overwhelming majority of all interviewees (90 percent) stated that their contributions had been used properly. The benefit of increased water due to de-silting was mentioned most often, while cooperation, establishment of WUF offices and reduction of breaches were considered significant as well. Table 40 demonstrates that a majority of respondents at all sites (83 to 100 percent) considered it worthwhile to make more contributions in the future.

Accordingly, the following results may be noted:

- Contributions to maintenance, particularly in the form of labor, have been a well-entrenched feature of irrigation management and were successfully extended by the pilot projects' efforts from the watercourse to the distributary level.
- Raising cash funds appears most difficult at two of the sites (Bareji and Heran), but appears to be accepted, if not well practiced, at Dhoro Naro.
- Farmers trust that their contributions are used properly and are willing to continue this practice in the future.

Table 35. Participation in Maintenance of Watercourses before WUO Establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	27	100.00	29	100.00	56	100.00
No	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	26	100.00	27	93.10	53	96.36
No	0	0.00	0	0.00	0	0.00
No answer	0	0.00	2	6.90	2	3.64
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	26	96.30	29	100.00	55	98.21
No	1	3.70	0	0.00	1	1.79
No answer	0	0.00	0	0.00	0	0.00

Table 36. Participation in Maintenance of Watercourses since WUO Establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	27	100.00	29	100.00	56	100.00
No	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	26	100.00	29	100.00	55	100.00
No	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	24	88.89	28	96.55	52	92.86
No	3	11.11	1	3.45	4	7.14
No answer	0	0.00	0	0.00	0	0.00

Table 37. Participation in Maintenance of Distributary before WUO Establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	27	100.00	29	100.00	56	100.00
No	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	17	65.38	8	27.59	25	45.45
No	1	3.85	1	3.45	2	3.64
No answer	8	30.77	20	68.97	28	50.91
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	14	51.85	14	48.28	28	50.00
No	13	48.15	15	51.72	28	50.00
No answer	0	0.00	0	0.00	0	0.00

Table 38. Participation in Maintenance of Distributary since WUO Establishment.

	Bareji					
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	27	100.00	29	100.00	56	100.00
No	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00

	Heran					
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	21	80.77	29	100.00	50	90.91
No	1	3.85	0	0.00	1	1.82
No answer	4	15.38	0	0.00	4	7.27

	Dhoro Naro					
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	22	81.48	29	100.00	51	91.07
No	5	18.52	0	0.00	5	8.93
No answer	0	0.00	0	0.00	0	0.00

Table 39. Contributions to Maintenance.

	Bareji					
	WUA (n=27)		WUF (n=29)		Total (n=56)	
	No.	%	No.	%	No.	%
Labor	26	96.30	28	96.55	54	96.43
Cash	2	7.41	9	31.03	11	19.64
Kind	0	0.00	3	10.34	3	5.36
None	0	0.00	0	0.00	0	0.00
No answer	0	0.00	1	3.45	1	1.79

	Heran					
	WUA (n=26)		WUF (n=29)		Total (n=55)	
	No.	%	No.	%	No.	%
Labor	25	96.15	29	100.00	54	98.18
Cash	9	34.62	3	10.34	12	21.82
Kind	4	15.38	6	20.69	10	18.18
None	1	3.85	0	0.00	1	1.82
No answer	0	0.00	0	0.00	0	0.00

	Dhoro Naro					
	WUA (n=27)		WUF (n=29)		Total (n=56)	
	No.	%	No.	%	No.	%
Labor	21	77.78	29	100.00	50	89.29
Cash	18	66.67	25	86.21	43	76.79
Kind	8	29.63	22	75.86	30	53.57
None	4	14.81	0	0.00	4	7.14
No answer	0	0.00	0	0.00	0	0.00

Table 40. Willing to Contribute to Maintenance in the Future.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	24	88.89	27	93.10	51	91.07
No	3	11.11	2	6.90	5	8.93
Don't know	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	24	92.31	29	100.00	53	96.36
No	2	7.69	0	0.00	2	3.64
Don't know	0	0.00	0	0.00	0	0.00
No answer	0	0.00	0	0.00	0	0.00
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	24	88.89	24	82.76	48	85.71
No	2	7.41	4	13.79	6	10.71
Don't know	1	3.70	0	0.00	1	1.79
No answer	0	0.00	1	3.45	1	1.79

5.8 Inter-Organizational Relations

The pilot project sought the collaboration of governmental and non-governmental organizations for institutional support. Especially the cooperation of the Irrigation Department, OFWM, WAPDA and other government departments concerned with natural resource management was considered essential for the success of the WUOs. Relations with private agencies, such as farm input suppliers, were also sought. These organizations were invited to join the **Field Implementation Coordination Committee** for mutual information and coordination of joint activities. The farmers in the survey sample were asked, how relations with these actors had developed as a result of the project.

About 52 to 68 percent of respondents at the three sites stated that relations with the **Irrigation Department** had deteriorated (Table 41). Between 18 and 41 percent refused to answer. This estimation would be particularly influenced by the failure of the JMA, despite the fact that some irrigation officers had cooperated with the WUFs.

At Bareji, the judgment about relations with the **other agencies** was fairly harsh, as the majority of the disappointed farmers considered them to have worsened. At Heran, respondents were divided in their opinions and a relatively high number (30 to 95 percent) abstained from any statement. At Dhoro Naro, the majority of respondents did not care to answer, while the remainder indicated improved relations.

The data indicate that relations between the organized farmers and their institutional context are based on mistrust and uncertainty. The Irrigation Department in particular is perceived as an adversary of the WUOs and the main cause for the failure of the JMA and participatory irrigation management. 45 and 68 percent of respondents at Heran and Dhoro Naro, respectively, identified corruption as their main difficulty with Irrigation Department staff. 22 and 52 percent, respectively, saw irrigation personnel's power and status as a problem. The remainder of respondents declined to comment on their relations with agency staff.

In such a situation, it is hard to imagine how cooperative relations can develop. It is therefore not surprising that few farmers indicated the

agency from which they would expect the provision of support services for participatory irrigation management (Table 42). Only IIMI's field staff had earned some trust among the farmers, which, at Dhoro Naro, in particular, was not unanimous as well. Expectations were highest for support services in WUO management and system operation, as here most farmers had made positive experiences.

When asked explicitly about the usefulness of IIMI's activities with the WUOs, the leadership at all three sites affirmed the experience as useful (80 to 96.5 percent). Among the grassroots only half of the respondents shared this impression (Table 43). IIMI's main focus on leadership

development led to a lower level of familiarity with IIMI's work and the irrigation reform at the WUA level.

- Inter-organizational relations between the WUOs and other institutions are difficult and fraught with disappointments and suspicion.
- Relations with the Irrigation Department are particularly adverse, since most of its staff is perceived as corrupt and opposed to the empowerment of water user organizations.
- IIMI has received almost unanimous support among the WUO leadership, a perception, which is not shared by all grassroots members.

Table 41. Relationship between Farmers and Government / Other Agencies since WUO Establishment.

Bareji (n=56)								
	Improved		Worse		Same		No answer	
	No.	%	No.	%	No.	%	No.	%
Irrigation Dept.	8	14.29	38	67.86	0	0.00	10	17.86
OFWM	4	7.14	41	73.21	1	1.79	10	17.86
WAPDA	21	37.50	26	46.43	0	0.00	9	16.07
Livestock Department	18	32.14	28	50.00	0	0.00	10	17.86
Agricultural Extension	10	17.86	36	64.29	0	0.00	10	17.86
Forest Department	1	1.79	44	78.57	1	1.79	10	17.86
Private Business	1	1.79	44	78.57	1	1.79	10	17.86
Heran (n=55)								
	Improved		Worse		Same		No answer	
	No.	%	No.	%	No.	%	No.	%
Irrigation Dept.	0	0.00	36	65.45	0	0.00	19	34.55
OFWM	24	43.64	14	25.45	0	0.00	17	30.91
WAPDA	9	16.36	15	27.27	0	0.00	31	56.36
Livestock Department	26	47.27	9	16.36	0	0.00	20	36.36
Agricultural Extension	27	49.09	8	14.55	0	0.00	20	36.36
Forest Department	25	45.45	6	10.91	0	0.00	24	43.64
Private Business	1	1.82	2	3.64	0	0.00	52	94.55
Dhoro Naro (n=56)								
	Improved		Worse		Same		No answer	
	No.	%	No.	%	No.	%	No.	%
Irrigation Dept.	4	7.14	29	51.79	0	0.00	23	41.07
OFWM	9	16.07	0	0.00	0	0.00	47	83.93
WAPDA	7	12.50	0	0.00	0	0.00	49	87.50
Livestock Department	11	19.64	0	0.00	0	0.00	45	80.36
Agricultural Extension	12	21.43	0	0.00	0	0.00	44	78.57
Forest Department	7	12.50	0	0.00	0	0.00	49	87.50
Private Business	3	5.36	0	0.00	0	0.00	53	94.64

Table 42. Agencies Expected to Provide Support Services to the WUO in the Future.

Bareji (n=55)										
	Operation		Maintenance		WUO Management		Finance/Credit		Conflict Mediation	
	No.	%	No.	%	No.	%	No.	%	No.	%
PID	6	10.71	2	3.57	2	3.57	1	1.79	0	0.00
Police	0	0.00	0	0.00	0	0.00	0	0.00	1	1.79
Govt.	5	8.93	2	3.57	1	1.79	7	12.50	7	12.50
Legal System	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
WAPDA	0	0.00	0	0.00	0	0.00	1	1.79	0	0.00
Revenue Dept.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Banks/NGOs	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
ADBP	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
OFWM	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
IIMI	31	55.36	6	10.71	36	64.29	22	39.29	4	7.14

Heran (n=53)										
	Operation		Maintenance		WUO Management		Finance/Credit		Conflict Mediation	
	No.	%	No.	%	No.	%	No.	%	No.	%
PID	4	7.27	2	3.64	0	0.00	0	0.00	0	0.00
Police	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Govt.	0	0.00	1	1.82	0	0.00	0	0.00	0	0.00
Legal System	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
WAPDA	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Revenue Dept.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Banks/NGOs	0	0.00	0	0.00	0	0.00	1	1.82	0	0.00
ADBP	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
OFWM	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
IIMI	20	36.36	8	14.55	34	61.82	6	10.91	15	27.27

Dhoro Naro (n=35)										
	Operation		Maintenance		WUO Management		Finance/Credit		Conflict Mediation	
	No.	%	No.	%	No.	%	No.	%	No.	%
PID	5	8.93	3	5.36	0	0.00	1	1.79	0	0.00
Police	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Govt.	2	3.57	0	0.00	0	0.00	2	3.57	1	1.79
Legal System	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
WAPDA	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Revenue Dept.	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Banks/NGOs	0	0.00	0	0.00	0	0.00	2	3.57	0	0.00
ADBP	0	0.00	0	0.00	0	0.00	9	16.07	0	0.00
OFWM	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
IIMI	14	25.00	12	21.43	28	50.00	17	30.36	18	32.14

Table 43. Usefulness of Social Mobilization Activities by IIMI.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	13	48.15	23	79.31	36	64.29
No	11	40.74	4	13.79	15	26.79
Don't know	2	7.41	1	3.45	3	5.36
No answer	1	3.70	1	3.45	2	3.57

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	13	50.00	27	93.10	40	72.73
No	6	23.08	2	6.90	8	14.55
Don't know	7	26.92	0	0.00	7	12.73
No answer	0	0.00	0	0.00	0	0.00

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	15	55.56	28	96.55	43	76.79
No	8	29.63	1	3.45	9	16.07
Don't know	4	14.81	0	0.00	4	7.14
No answer	0	0.00	0	0.00	0	0.00

5.9 Water Users' Self-assessment

Social mobilization for organized collective action in water resource management was a new and highly unusual experience for the participating farmers. Therefore, their self-assessment of the changes it caused in their lives would yield interesting insights about their willingness to sustain the process.

Table 44 describes farmers' **assessment of the usefulness of their efforts** for WUOs. Among the leadership between 72.5 to 96.5 percent at the three sites affirmed clearly. At Bareji, the WUA level respondents remained divided, with only about one-third considering their efforts worthwhile. Another third declined to answer and the rest were either unsure or did not know. The Heran and Dhoro Naro responses are more favorable, as a clear majority affirms the usefulness of WUA activities.

The respondents indicated a number of reasons for considering their efforts useful, such as

- Increased knowledge about agriculture and irrigation;

- Knowledge about actual water discharges in various subsystem sections;
- Planned and collective action to solve problems;
- Solution of problems through discussion, instead of the persistence of conflict;
- Increased assertiveness in communication with irrigation personnel through the unity of watercourse residents;
- Information about water users' rights,
- Increase of water availability due to de-silting and channel lining (at Heran);
- Reduction of breaches of the distributary banks;
- Development of links with one another and agency staff; and
- Increase in social relations among farmers.

However, many respondents made it clear that they considered the usefulness of collective action to be conditional on the future fulfillment of the promises of social mobilization. If the WUOs remained without powers, and equity and reliability of water distribution could not be achieved, their

efforts would be considered useless. The skeptics and critics among the respondents argued likewise. They considered WUO activities ‘a waste of time’, deplored the culture’s ‘lack of civic sense’ and the failure of many head and middle reach residents to cooperate, and considered the work done to be incomplete. If the lack of activity among the WUOs indicated in section 5.1 continues and the reform efforts fail, more farmers may be expected to adopt this attitude. Furthermore, they will be forced to revert to conventional and often illicit means to manage their relations with the irrigation system and its officers. Whether this is the intention of the irrigation personnel and their influential allies in the provincial government, is a compelling question.

The sample was asked to assess **farmers’ willingness to cooperate**. Very few respondents thought that their willingness to cooperate had decreased. Two thirds of the Bareji leadership considered the willingness to cooperate to have increased, while one third saw no change. Among the grassroots this pattern of replies was reversed. At Heran, the grassroots’ majority perceived an improvement as well, a view shared overwhelmingly by the leadership. At Dhoro Naro, opinions were divided between improvement and no change. Generally, the leadership appeared more optimistic about others’ willingness to cooperate, as they had experienced a higher level of activity supported by the facilitation efforts of the social mobilizers. At all sites and levels of membership the respondents thought that the **efforts of the WUO should be increased**, as demonstrated by Table 46.

These attitudes indicate that farmers consider collective action a necessary and an established component of their social setup. However, for a successful institutionalization of WUOs to occur, more effort and rewards of efforts in the form of farmers’ empowerment and changes in irrigation management will be necessary.

The survey asked the water users to specify the main **difficulties** they had **experienced during the social mobilization process**, to gain an understanding about de-motivating factors. As Table 47 demonstrates, the level of response was comparatively low (at maximum around 50 percent).

The higher levels of response among WUA members indicate problems with the time and effort spent on organizational activities, the members’ lack of familiarity with the relevant

issues and activities, and the spreading of rumors to discredit the WUOs. At the WUFs, a comparatively high level of respondents shared these concerns. Indeed, the organizing process makes appreciable demands on people’s time, which will only be considered worthwhile if the benefits justify the efforts. Lack of familiarity is of course always an issue during the initial phases of a social process, but should abate if organizational action can be successfully institutionalized. The data presented so far, show that the farmers believe that their efforts were useful and worthwhile and that there is a good chance that institutionalization will occur, if the social context shifts to cooperation. However, the significance of discrediting rumors shows that this shift has yet to occur.

When we could not satisfy people, problems came up and people were not ready to cooperate. Rumors affected us much when the Irrigation Department threatened to dry up the minor. Then people became non-cooperative. Our main problem is water and we became organized to deal with it. When water became short, people said, the WUF couldn’t solve this problem. So they paid money to the Irrigation Department. If the Irrigation Department cooperates, the WUOs can be successful. (Farmer)

The farmers were also asked whether the WUO activities had changed their **sense of self-respect and confidence**. The data in Table 48 suggest that the majority of the leadership had gained an increased sense of confidence. The grassroots response shows that at Bareji no difference was experienced by most, but at the other sites about half perceived an increase in confidence and self-respect.

The importance of this matter is captured by the open-ended replies of some respondents. Being organized and speaking as a group or with the backing of a group increased the status of the farmers in relation to government officials, who were reported to have disregarded individual farmers.

Due to organization, our respect in the government offices increased. When we meet them now as a delegation they give us a response, which increases our respect. (Farmer)

In the past, when we visited government officers in their offices they were not ready to meet us. After organizing the WUOs, they came to our meetings and discussed with us. I raised the issue of non-cooperation of an executive engineer at LBOD during a meeting in front of

him. When I visited him, he did not even bother to meet me. He was ashamed by my statement in front of all the farmers and some foreigners. So our confidence increased and we talked with these officials. (Farmer)

The issue of shame reveals the significance attached by the local setting to status. In the incidence quoted, status was achieved by the manipulation of honor (*izzat*). The attention paid to the farmers and the establishment of an organized forum for meetings and discussion raised the status of the farmers, while the public shaming of the official lowered his. He was forced to discuss with farmers on even terms, which was not so before the establishment of the WUOs. Incidences, such as this, provide important indicators for the understanding of the dynamics of resistance among government staff. The organized farmers and their supporters threaten their honor (*izzat*) and status.

The positive impact of social mobilization was temporary, as farmers were deeply disappointed by the closure of the project after the failure of the JMA.

Initially we thought that the distributary would be given to the farmers. We were happy and thought our irrigation problems would be reduced. The farmers took an interest in the activities of the federation. But when IIMI left and the distributary was not given to the farmers, people felt disheartened and no longer took an interest in the activities of the federation. (Farmer)

Table 49 clearly demonstrates that the respondents at all sites and levels considered themselves unable to continue WUO activities without IIMI's support. The closure of the social mobilization project occurred at a time of severe disappointment of expectations. The JMAs had been signed by the XENs of the local Irrigation Department divisions and supported by the provincial Secretary of Irrigation. Yet, joint management was undermined by the then Chief Minister of the Province.

Although the continuation of IIMI's project after 1997 was not ensured, the organization did not prepare farmers for a more independent pursuit of their organizational activities. The state of

development of the project necessitated the continuation of IIMI's support services until the WUOs had developed sufficient skills for independent irrigation management. The experience shows that farmer mobilization projects for participatory irrigation management require both, the unstinting cooperation of the government and reliable support by social mobilization staff over an extended period of time. The relatively short-term pilot-projects raised many expectations, which turned into disappointments and possibly resentment, once the objectives of the projects could no longer be met.

The findings of this section may be summarized as follows:

- The majority of respondents, particularly at the leadership level, considered their efforts for WUO activities to be useful, as it enabled them to increase their knowledge and cooperation, to resolve some of their water problems, and to increase their links with other farmers and government officials.
- Without empowerment, cooperation by government officials and sustained organizational activity, these efforts, however, would be disappointed.
- The farmers' willingness to cooperate had increased with the establishment of WUOs, but an increase of effort, and reward for the same, is required, to sustain the process in the future.
- Farmers consider the non-cooperative attitude of irrigation personnel as the main obstacle to the sustainability of the WUOs.
- With the formation of WUOs, farmer representatives experienced an increase in self-respect and confidence, which enabled them to interact with government officials on less unequal status terms.
- The farmers do not feel capable of continuing their organizational efforts without support by IIMI's social mobilization staff.

Table 44. Usefulness of Farmers' efforts for the WUO.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	10	37.04	21	72.41	31	55.36
No	4	14.81	7	24.14	11	19.64
Don't know	3	11.11	0	0.00	3	5.36
No answer	10	37.04	1	3.45	11	19.64

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	16	61.54	28	96.55	44	80.00
No	6	23.08	0	0.00	6	10.91
Don't know	4	15.38	1	3.45	5	9.09
No answer	0	0.00	0	0.00	0	0.00

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	19	70.37	25	86.21	44	78.57
No	4	14.81	4	13.79	8	14.29
Don't know	4	14.81	0	0.00	4	7.14
No answer	0	0.00	0	0.00	0	0.00

Table 45. Willingness of Other Farmers to Cooperate.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Improved	8	29.63	20	68.97	28	50.00
Decreased	1	3.70	0	0.00	1	1.79
No change	17	62.96	9	31.03	26	46.43
No answer	1	3.70	0	0.00	1	1.79

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Improved	18	69.23	27	93.10	45	81.82
Decreased	0	0.00	0	0.00	0	0.00
No change	8	30.77	2	6.90	10	18.18
No answer	0	0.00	0	0.00	0	0.00

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Improved	11	40.74	17	58.62	28	50.00
Decreased	1	3.70	2	6.90	3	5.36
No change	14	51.85	9	31.03	23	41.07
No answer	1	3.70	1	3.45	2	3.57

Table 46. The Efforts of the WUO should be Increased.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	25	92.59	26	89.66	51	91.07
No	1	3.70	2	6.90	3	5.36
Don't know	1	3.70	1	3.45	2	3.57
No answer	0	0.00	0	0.00	0	0.00
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	23	88.46	28	96.55	51	92.73
No	0	0.00	0	0.00	0	0.00
Don't know	3	11.54	1	3.45	4	7.27
No answer	0	0.00	0	0.00	0	0.00
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	24	88.89	26	89.66	50	89.29
No	1	3.70	3	10.34	4	7.14
Don't know	2	7.41	0	0.00	2	3.57
No answer	0	0.00	0	0.00	0	0.00

Table 47. Main Difficulties Experienced while Participating in the WUO.

Bareji						
	WUA (n=27)		WUF (n=29)		Total (n=56)	
	No	(%)	No	(%)	No	(%)
Too much time & effort spent	6	22.22	13	44.83	19	33.93
Members are unfamiliar	6	22.22	9	31.03	15	26.79
Too much money needed	3	11.11	1	3.45	4	7.14
Too much effort needed	3	11.11	8	27.59	11	19.64
Rumors spread to discredit	4	14.81	9	31.03	13	23.21
Personality conflicts	1	3.70	4	13.79	5	8.93
Members engaged in corruption	0	0.00	2	6.90	2	3.57
Political conflict	0	0.00	2	6.90	2	3.57
Conflict between baradri	1	3.70	0	0.00	1	1.79
Corruption by influential farmer	1	3.70	1	3.45	2	3.57
Heran						
	WUA (n=26)		WUF(n=29)		Total (n=55)	
	No	(%)	No	(%)	No	(%)
Too much time & effort spent	7	26.92	14	48.28	21	38.18
Members are unfamiliar	13	50.00	20	68.97	33	60.00
Too much money needed	1	3.85	4	13.79	5	9.09
Too much effort needed	6	23.08	12	41.38	18	32.73
Rumors spread to discredit	11	42.31	20	68.97	31	56.36
Personality conflicts	2	7.69	4	13.79	6	10.91
Members engaged in corruption	8	30.77	12	41.38	20	36.36
Political conflict	0	0.00	0	0.00	0	0.00
Conflict between baradri	1	3.85	1	3.45	2	3.64
Corruption by influential farmer	0	0.00	1	3.45	1	1.82
Dhoro Naro						
	WUA (n=27)		WUF (n=29)		Total (n=56)	
	No	(%)	No	(%)	No	(%)
Too much time & effort spent	1	3.70	5	17.24	6	10.71
Members are unfamiliar	4	14.81	7	24.14	11	19.64
Too much money needed	1	3.70	6	20.69	7	12.50
Too much effort needed	1	3.70	3	10.34	4	7.14
Rumors spread to discredit	3	11.11	12	41.38	15	26.79
Personality conflicts	3	11.11	2	6.90	5	8.93
Members engaged in corruption	2	7.41	1	3.45	3	5.36
Political conflict	0	0.00	2	6.90	2	3.57
Conflict between baradri	1	3.70	1	3.45	2	3.57
Corruption by influential farmer	0	0.00	3	10.34	3	5.36

Table 48. Level of Self-respect and Confidence since WUO Establishment.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Increased	5	18.52	21	72.41	26	46.43
No difference	22	81.48	8	27.59	30	53.57
No answer	0	0.00	0	0.00	0	0.00
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Increased	15	57.69	28	96.55	43	78.18
No difference	11	42.31	1	3.45	12	21.82
No answer	0	0.00	0	0.00	0	0.00
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Increased	14	51.85	19	65.52	33	58.93
No difference	9	33.33	9	31.03	18	32.14
No answer	4	14.81	1	3.45	5	8.93

Table 49. Ability to Continue WUO Activities after Closure of IIMI's Social Mobilization Project.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	3	11.11	3	10.34	6	10.71
No	23	85.19	25	86.21	48	85.71
Don't know	0	0.00	0	0.00	0	0.00
No answer	1	3.70	1	3.45	2	3.57
Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	1	3.85	4	13.79	5	9.09
No	19	73.08	24	82.76	43	78.18
Don't know	6	23.08	1	3.45	7	12.73
No answer	0	0.00	0	0.00	0	0.00
Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	4	14.81	4	13.79	8	14.29
No	16	59.26	25	86.21	41	73.21
Don't know	7	25.93	0	0.00	7	12.50
No answer	0	0.00	0	0.00	0	0.00

5.10 Transfer of Irrigation Management Responsibilities

The ultimate goal of the social mobilization of water users is the transfer of irrigation management responsibilities to their organizations. These entail both governance and management functions, where elected representative bodies and committees supervise and to some extent carry out O&M activities. A staff of management employees and canal workers attends to the daily functions of operation and maintenance of the WUFs' subsystems. In participatory irrigation management the WUFs coordinate with and consult the Irrigation Department personnel.

A necessary precondition for irrigation management transfer in subsystems, such as minors or distributaries, is the existence of a legal framework, which entitles water user organization to assume responsibilities for clearly defined functions. Secondly, it requires the cooperation of professional irrigation managers and field staff, both at the subsystem and higher levels (branch and main canals, barrages, reservoirs), whose management systems are institutionalized as Area Water Boards and Provincial Irrigation And Drainage Authorities. Thirdly, participatory irrigation management requires the willingness of farmers to assume such responsibilities, which require skill, time and effort, and behavior in accordance with laws, rules and regulations.

The survey inquired into the farmers' willingness to assume responsibility for the **collection and assessment of *abiana*** (irrigation fees). The responsible and rule-conform handling of organizational funds, aiming at the financial sustainability of distributary level management and ultimately of the Indus Basin Irrigation System (IBIS) as a whole, is a key objective of the institutional reform of the irrigation sector. The pilot projects had aimed at testing farmers' capability of handling the financial management of irrigation services with the cooperation of AWBs and PIDAs. The issue greatly worried all stakeholders since the necessary trust, reliability and skill had yet to be generated. Furthermore, the agencies in charge of financial management, the Revenue, Finance and Irrigation Departments, were reluctant to transfer the control of significant though mismanaged financial resources.

A clear majority at all sites professed an interest in assuming the responsibility for *abiana* collection and assessment, according to Table 50. Only at Bareji, a slight majority of WUA members were reluctant. Everywhere else opponents or undecided respondents were in the minority.

The opponents at Bareji feared that farmers would not pay up and they would be unable to raise sufficient funds. They did not expect that farmers would entrust other farmers with the authority to collect their financial contributions and assumed that the activity would be too time-consuming.

They will eat the money. Even if people went to Medina, I would never trust them. The fee should go directly to the bank. (Farmer)

This will be a very difficult task. Conflict may arise. (Farmer)

Some argued that under WUO management the leniency of the current system would no longer be acceptable and support for financial management by those farmers seeking unfair advantages would not be forthcoming.

Proponents maintained that the chance for a substantial part of their funds to be used for the benefit of their distributaries was higher. Some stated that it would reduce the opportunities of irrigation officers to demand extra payments. Contrary to the argument of opponents, they expect that farmers can demand proper payment from their fellow irrigators more easily.

The data indicate that a solid majority of respondents favors the assumption of one of the key responsibilities in participatory irrigation management, despite the doubts and fears this may occasion.

The respondents were also cautiously positive about the **joint management agreements** signed between SIDA and the WUFs. Table 51 indicates that at the WUA level about half of the respondents declined to share their opinion about the JMAs and their fate. Between 37 and 46 percent of the grassroots respondents at all sites supported the agreements. The majority of the leadership clearly endorsed the JMAs, while about a quarter or less were opposed, remained unsure or declined to answer.

Several farmers observed that putting the JMA in 'abeyance' undermined the objectives of the pilot projects. They aptly identified the causes

for the subsequent decline of organizational activities.

If the JMA had been implemented we would have knowledge about the capacity of the WUF. Either it would operate the distributary or fail. Since it was not implemented, the interest of the WUF members decreased. (Farmer)

With the implementation of the JMA there would have been a real test. However, the Irrigation Department was not in favor of handing the distributary over to the farmers and they failed it. (Farmer)

It was a loss for us and was harmful. Due to the failure of the JMA conflict increased between the WUF and the Irrigation Department. They won and we became weak. (Farmer)

Although the formal reason advanced by the then Chief Minister for the indefinite postponement of the JMAs was the lack of a proper legal framework, the farmers had no illusions about what they regarded as the actual reasons for failing the JMA.

The Irrigation Department failed the JMA because they knew that their money would be stopped. (Farmer)

If the JMA had been implemented we would have been freed from the demands for bribes by the *darogars* (supervisory canal worker). (Farmer)

The Irrigation Department's bribes were at risk. So they cancelled the JMA. (Farmer)

The Irrigation Department people felt threatened by the JMA and therefore failed it. (Farmer)

Irrigation Department officials cried, became hostile towards the farmers and decreased water discharges. (Farmer)

The Irrigation Department earns illegal money from the farmers. They don't want these types of changes in the system and therefore failed the JMA. (Farmer)

The data suggest that the farmers are only too familiar with the practices of the Irrigation Department and understand that the financial interests of the irrigation personnel would suffer

with the alteration of powers and responsibilities at the distributaries. Rent seeking, of course, requires the willing or coerced collusion of the farmers. The widespread support of the JMA, however, indicates that a majority of farmers prefer to manage their irrigation systems without illicit demands for money. IIMI's social mobilization drive was able to galvanize a real interest among farmers in more equitable, rule-bound and effective irrigation management.

The sense of failure and disappointment among farmers ran deep, as they saw themselves being forced to return to the old practices of irrigation management. The prospect of IIMI's return to the area for continuation of the project after a 17 months lull actually created considerable skepticism.

How much power does IIMI have? How much power do we farmers have? Can you stop the demands for bribes? Can you stop the lowering of the head regulator gates? We know that if we pay up, we get water. If we side with IIMI, we don't know if we get enough water. (Farmer)

The findings of this section can be summarized as follows:

- The majority of water users supported the assumption of responsibilities for distributary management as stipulated in the JMAs between the pilot-WUFs and SIDA.
- They expected an improvement of the financial and management situation at their distributaries. The need to develop trust and improved skills among water user representatives was noted.
- The failure of the joint management agreements between WUFs and SIDA undermined the objectives of the pilot-project and the sustainability of the WUOs.
- The farmers recognized that under the SIDA Act irrigation personnel would lose opportunities for rent seeking and identified this as the central cause of the failure of the JMAs and the pilot-projects.

Table 50. Assumption of Responsibility for Assessment and Collection of *Abiana* by WUF.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	10	37.04	22	75.86	32	57.14
No	14	51.85	6	20.69	20	35.71
Don't know	2	7.41	0	0.00	2	3.57
No answer	1	3.70	1	3.45	2	3.57

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	25	96.15	26	89.66	51	92.73
No	0	0.00	3	10.34	3	5.45
Don't know	1	3.85	0	0.00	1	1.82
No answer	0	0.00	0	0.00	0	0.00

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Yes	18	66.67	25	86.21	43	76.79
No	4	14.81	2	6.90	6	10.71
Don't know	5	18.52	1	3.45	6	10.71
No answer	0	0.00	1	3.45	1	1.79

Table 51. Acceptance of Joint Management Agreement (JMA) at the Distributary Level.

Bareji						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Accept	10	37	26	89.6	36	64.3
Don't accept	1	3.7	2	6.9	3	5.4
Don't know	1	3.7	0	0	1	1.8
No answer	15	55.5	1	3.5	16	28.5

Heran						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Accept	12	46.2	21	72.5	33	60
Don't accept	2	7.6	3	10.3	5	9
Don't know	0	0	3	10.3	3	5.5
No answer	12	46.2	2	6.9	14	25.5

Dhoro Naro						
	WUA		WUF		Total	
	No.	%	No.	%	No.	%
Accept	12	44.5	25	86.2	37	66.1
Don't accept	2	7.4	2	6.9	4	7.1
Don't know	0	0	0	0	0	0
No answer	13	48.1	2	6.9	15	26.8

6. CONCLUSIONS

Based on the research findings the research questions posed in section 4 can now be addressed.

- Did the water users at the three pilot sites develop and maintain the organizational structures and functions induced and facilitated by IIMI's social mobilization process?

The development of organizational structures was by and large successful although organizational development must be viewed as an ongoing and after 2 ½ years by no means completed process. The WUOs conducted regular meetings with the support of IIMI's field staff, selected a leadership through consensus, underwent capacity building activities, and made considerable efforts to assume O&M responsibilities. The WUF leaders strengthened their relations and negotiation position with the irrigation department and developed self-confidence and respect, as well as a commitment to organized action and participatory irrigation management. They successfully negotiated and finalized a joint management agreement with the Sindh Secretary of Irrigation, SIDA and the local irrigation authorities.

However, participation of grassroots members in meetings remained relatively weak, as was the maintenance of records of meetings, financial transactions, correspondence and attendance. At the WUF level the situation was appreciably better, but all in all transparent organizational management requires strengthening. The same applies to the recognition and observance of rules. The WUOs were built in a culture of weak rule-observance and it is difficult to foster rational and just procedures. The institutionalization of effective conflict resolution mechanisms was not achieved, but informal means within WUOs appear to have reduced the level of conflicts among farmers.

- Have the WUOs successfully contributed towards the efficient and equitable operation, maintenance and development of their irrigation subsystems, i.e. watercourses and distributaries?

Within the limits of the pre-reform irrigation management structures, the WUOs attempted to improve the efficiency and equity of O&M, with some considerable results. They received training in O&M activities, assessed maintenance needs

and mobilized financial and labor resources for channel de-silting and other maintenance works, which improved water availability. The mobilization of labor among water users was a widely accepted and entrenched feature of irrigation culture, while financial contributions were given with considerable reluctance.

The attempts to improve the equity of operation by means of outlet resizing failed due to the lack of WUO empowerment and the non-cooperation by irrigation officials. Despite this setback, the WUOs and IIMI were able to increase the awareness of irrigators about the importance of a more functional distribution system. The majority of farmers expressed dissatisfaction about the conventional distribution practices marred by rent seeking. The incidence of irrigation offenses by various means, except rampant outlet tampering, was reportedly reduced since the inception of mobilization activities.

- Have democratic and equity oriented values taken root in the organizations' culture?

The WUOs have developed democratic though limited structures of representation. At the watercourse and distributary levels, leaders and representatives were selected in open meetings, through a process of discussion and negotiation. The outcomes of elections and other decision-making processes were perceived as consensus based. However, the exclusion of tenants, the under-representation of owner-cultivators in the leadership and the dominance of non-cultivating landlords limit the reach of democratic governance. Within the dominant class of landowners the representation of various property size strata was fairly even, with the most favorable representation of small holders at the Heran distributary. Consensus tended to be forged between dominant political and/or kin groups and accepted by the wider constituency, thus affirming entrenched power and status relations. Democratic values do not easily take root in the rural Sindh's highly stratified and authoritarian society.

The value and necessity of increased equity has been widely debated among the organized water users and their facilitators. An interest in rule-observation and rational management has been germinated. Given the lack of empowerment, the practices required for rule-bound and equitable system operation cannot be implemented. Social

pressure and rational insight remain weak if they are not backed by effective means of enforcement and sanctioning.

- Have the WUO members achieved effective means and practices of communication within their organizations and with other organizations?

The WUOs were becoming an important forum of discussion among leaders and the grassroots. Survey participants reported that concerns and issues were successfully communicated between the various organizational levels. The WUO leaders also started to negotiate their concerns and grievances with the Irrigation Department personnel collectively and achieved increased resonance and respect from the irrigation officers. However, these achievements became non-sustainable as the failure of the JMA caused the deterioration of both, intra- and inter-organizational relations.

- Do the organized water users experience a sense of ownership of their WUOs?

The success of the social mobilization and organization building activities remained highly dependent on the presence and efforts of IIMI's social mobilizers. Although the WUO members had developed a sense of identification with their organizations and objectives, these collapsed with the closure of the project and with the failure of JMA. It must therefore be concluded that the water users' dependency was too high and their sense of ownership too fragile to withstand the conflict-ridden environment of irrigation reform in the Sindh.

- What obstacles and constraints were experienced in meeting the objectives implied in these questions?

The following **key obstacles and constraints** can be identified:

- In a situation of relative water-scarcity and conflict over water resources, competition by illicit means weakens farmers' capacities to adopt collective and rule-bound behavior.
- The dominance of the landlord class leads to the exclusion of a rather large group of tenants and the under-representation of owner-cultivators, and impedes democratic values.
- Accountability and transparency are weakened by the lack of an organizational

culture, which values rational office procedures.

- The lack of a comprehensive and conducive legal framework makes the introduction of participatory irrigation management impossible.
- The lack of cooperation and ownership of the ongoing institutional reform of the irrigation sector by Irrigation Department personnel caused the failure of experimental participatory irrigation management.
- The findings of the survey and of a parallel study of irrigation personnel suggest, that the irrigation officers' rent seeking behavior and defense of their status would be among the major causes of the failure of the pilot project, the WUOs and possibly the irrigation reform in the Sindh Province.

Consequently, the legitimacy of social mobilization and farmer controlled irrigation management has suffered a severe blow and the willingness of irrigators to rejoin the reform process remains questionable. They now face a serious dilemma.

If they once again join IIMI and the reform movement, they risk the disapproval of irrigation personnel. The respondents interviewed had a keen sense of the power relations involved. Given the power constellations between reformers and their opponents, water users are unsure of the ability of IIMI and the WUOs to implement the objectives of the reform and to safeguard farmers' need for sufficient water supply to sustain their livelihoods. Considering that the powers to manage their irrigation subsystem have not been devolved, they have reasonable cause to worry that cooperation with the reformers would lead to inadequate services and reduction in discharges by the irrigation personnel.

On the other hand, the farmers know that compliance with rent seeking and committing irrigation offences leads to somewhat predictable water supplies at higher than design levels. However, by reverting to this management pattern, they would forfeit the opportunity to realize their interest in gaining collective control of their irrigation subsystem. The majority of the farmers want to avoid illegal means of procuring water resources, prefer reliable and adequate services, and seek to maintain their system in a state that ensures their livelihood for years to come. They realize that while they can cope in the old system in the short run, their long-term survival depends

on decisive and far-reaching changes in the system of irrigation management.

The impact of IIMI's project must be assessed as limited and problematic. IIMI has been able to successfully establish farmer organizations and prepare them for the assumption of management responsibilities under the SIDA Act. It facilitated a learning process among farmers and generated a level of motivation for collective action, which had previously been considered impossible. However, the inability to engage the Irrigation Department and other state actors in a constructive process of experimentation with the reform frustrated the efforts of the farmers and social mobilizers. It has left the organized farmers without rewards for their

investments in organization development and exposed them to the punitive actions of the irrigation staff. The de-legitimization of the institutional reform among farmers is likely, as neither the legal framework for their empowerment, nor sufficient policy support within the Government of Sindh was secured to sustain the promises of the pilot project. The project invested insufficient resources in generating a comprehensive understanding of the causes of the resistance of irrigation staff to reform and was, therefore, unable to target its mobilization strategy accordingly. The social mobilization of farmers needs to be complemented by systematic efforts to change the organizational culture of irrigation managers.

7. RECOMMENDATIONS

To achieve the transformation of irrigation management and not to frustrate the expectations of farmers, who have taken appreciable risks, the continuation of social mobilization projects cannot be recommended without a clear commitment to reform among all stakeholders, including the staff of irrigation departments. This would entail the firm acceptance and enactment of a legal framework, which empowers farmer organizations to carry out O&M of their distributaries and minors.

Furthermore, policy and decision-makers, as well as implementers and experts, need to focus their reform efforts on farmers and irrigation personnel simultaneously. It is not enough to mobilize farmers only and then see the reform fail, because the capacity of other stakeholders has not been built. However, by simply raising the level of information of irrigation personnel or by coercing them to join the reform, little, but intensified resistance will be achieved. The root causes of resistance need to be better understood and the contention of farmers, that rent-seeking behavior is a central issue, needs to be tested.

Finally, the understanding of reform needs to be built among Pakistan's the general public. The transformation of structures, roles and functions of the management system of Pakistan's most important resource base, is not a matter, which can be debated and decided by experts and administrators only. The general public has a right to know and debate, and will, once they have come to understand and own the process, support and advance it.

All stakeholders must in this context consider the requirements and grievances of the parties involved. A better understanding of irrigation staff's motivation for resistance could then lead to the resolution of grievances among this important stakeholder group.

The reform process and debates are not sufficiently participatory and open. They must be highlighted in the media and in public forums in the localities where the reform is to be tested, i.e. where Area Water Boards and FOs are being established. Experiences with public sector reforms the world over demonstrate that compromises, consensus and win-win resolutions to conflict can only be achieved if the society as a whole engages in the process, shapes it and eventually owns its outcomes.

If the institutional context is not ready, there is no point in subjecting more farmer organizations to the risks of intensified conflict and repeated failure, and to jeopardize the reform as a whole. The details of social mobilization and organization and capacity building do require important improvements, such as a strategy for weaning FOs from dependency on facilitators, an improved grassroots / leadership interface, or enhanced commitment to rules and ethical principles. However, for these to succeed a favorable institutional environment must be in place.

To this end, the following recommendations are provided:

- Study the causes of resistance to institutional reform among irrigation personnel.
- Target measures for the social mobilization of irrigation personnel on the bases of the findings of the proposed study.
- Integrate all stakeholders, including other government departments concerned with resource management in irrigated agriculture, in a participatory process of formation and review of policies and action plans, to prepare the institutional context for reform implementation.
- Mobilize a public debate on the institutional reform of the irrigation sector to generate public understanding and support of the reform.
- Promote and achieve a firm commitment to a secure and comprehensive legal framework for participatory irrigation management.
- Maintain the process of public review and debate throughout the period of testing of the reform to refine the design of the structures and responsibilities and to secure support for the eventual outcomes of the reform process.
- Based on my studies of pilot testing of irrigation reform at field level²⁵, I am convinced that the recommended actions are prerequisites to the success of Pakistan's institutional reform of the irrigation and drainage sector.

²⁵ Starkloff, 1999; Starkloff and Zaman, 1999 a & b; Starkloff, Bandaragoda, Cheema and Bhatti, 1999; Starkloff, Upadhyay, Hemchuri and Prasad, 1999.

It may be noted, that success here is not defined as a win-lose outcome, where one stakeholder group imposes its interests at the expense of another. Rather, success is interpreted as the reorganization of social relations and management

institutions in irrigated agriculture in such a way, that the interests of the stakeholders and the need for rational goal achievement are balanced, and all participants gain from the pursuit of their livelihoods.

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