IIMI's EXPERIENCE IN PAKISTAN IN STRENGTHENING NATIONAL CAPACITY

INTRODUCTION

IIMI has a strong presence in Pakistan since 1986 and has a good concentration of interdisciplinary international staff compared to other country programs of IIMI. It has made much progress since its establishment and reached a stage where it is tacitly accepted that IIMI has gained an unexpected insight into all aspects of irrigation system operations and could no longer be considered an "outsider".

This paper describes the experience of IIMI-Pakistan with particular reference to the objective of strengthening national capacity in Pakistan

(i) of national irrigation management agencies in implementing innovative irrigation management practices resulting from IIMI's research in Pakistan in order to improve some aspect of performance of irrigation systems;and

(ii) of national research agencies engaged in irrigation or irrigation management related research.

First, the paper describes the context and conditions in which the program of IIMI-Pakistan has developed. Second, there is a brief description of the institutional linkages it has established and of the activities of IIMI-Pakistan with emphasis on current and recent activities. Third, there is an elaboration, not so much in terms of the outputs in term of the results of the activities, per se,(which are reported in IPR meetings) but the outcomes and effects of activities in strengthening national capacities of irrigation management agencies and irrigation research institutions Fourth, there is an analysis of the outcomes and the conclusions based on the experience to date.

CONTEXT

General: Pakistan's population , estimated at 110 million at the beginning of the present decade, is likely to reach 150 million by the year 2000, if present rates of growth continue. About 70 percent of this population lives in rural areas, primarily dependent on agriculture, the mainstay of the country's economy.

Irrigation: Pakistan has an arid sub-tropical climate with an average annual precipitation of less than 300 mm. The country's natural endowment of glacier-based water resources in the northern mountainous region overlooks a vast flat valley with an average slope of about 0.2 m per km, which extends for more than a thousand kilometers to the southern coastline. This situation of perennial sources of water and large tracts of flat land is typically geared to an irrigation-dependent agricultural sector.

With a gross irrigated area exceeding 16 million hectares, Pakistan ranks fifth in the world and third among developing countries in irrigated area.It has the largest contiguous irrigation system in the world, comprising over 60,000 kilometers of irrigation canals and more than 1.6 million kilometers of water courses and field channels. The irrigation infrastructure also includes 12500 large public tubewells,more than 275000 small private tubewells and some 16000

kilometers of surface drains.

Comprehensive studies of the Indus Basin potential have suggested that the Basin has one of the world's most favourable environments for large scale intensive and highly productive irrigated agriculture. Recent studies by the International Food Policy Research Institute indicate that Pakistan and Thailand are the only two countries in Asia with potential to export food on a substantial basis in the 21st century. In stark contrast are the predicted shortfalls in future national food and fiber production needs -- 10 percent by 2000, and 25 percent by 2013 -even if the recently adopted water sector investment plan's targets are met.

Irrigation Agencies : The irrigation departments in Pakistan have responsibility for water delivery to the heads of water courses,maintenance of all channels to the water courses,and collection of water fees.

In carrying out these responsibilities, the irrigation departments are operating in a situation of : relatively rigid physical systems,organizational structures and administrative rules that basically were formulated over 100 years ago, modestly updated after independence; significant changes in amount, sources and quality of water supply; major changes in agricultural technology with implications for irrigation utility; and accelerating needs for increased production. The combinations of relative rigidities of the physical system and relatively rapid changes in needs suggests the existence of relatively large discrepancies between managerial actions and needs.

In the case of the Pakistan irrigation departments, there is little incentive to consider the agricultural performance of the system in the evaluation of the performance of the department, or of the system under their control. The separation of the agriculture and irrigation departments contributes to this. The department is not driven by macro-level concerns of population,food production trends etc. It is influenced more often and more directly by the level of complaints from land owners, politicians and others with influence.

Irrigation Management Research: In Pakistan, there is a strong tradition of agricultural research, on-farm water management research and waterlogging and salinity research. Research on irrigation management -- policy, institutional and management aspects of irrigation agencies, performance of irrigation agencies and of irrigation systems -- is almost insignificant.

IIMI-PAKISTAN PROGRAM

Institutional Linkages and Modalities

Consultative Committee : IIMI's Consultative Committee in Pakistan is chaired by the Chairman of the Pakistan Agricultural Research Council and has members representing the interests of irrigation and agriculture in both the respective ministries and departments. Irrigation is a provincial matter, so the CC has members representing the provincial departments of irrigation and agriculture, and at the federal level, representatives of the Ministry of Water and Power Pakistan Agricultural Research Council, and Water and Power Development Authority, as well as a few private members. It is in the meetings of the Consultative Committee that the research agenda and priorities are discussed and

the guidelines for IIMI's program of activities are generally set.

Memoranda of Understanding (MOU) : IIMI - Pakistan has executed formal MOUs for collaborative research activities with a number of institutions :

- Center of Excellence in Water Resources Engineering (CEWRE)
- University of Agriculture, Faisalabad;
- Drainage and Reclamation Institute of Pakistan (DRIP),
- Lower Indus Water Management and Reclamation Research Project (LIM);
- International Waterlogging and Salinity Research Institute (IWASRI);
- Soil Survey of Pakistan (SSOP)
- Irrigation Research Institute of the Punjab Department of Irrigation (IRI);

Collaboration with Departments and NGO

In spite of all the Memoranda of Agreement, the major activity of IIMI-P is its own field research carried out by IIMI's own field staff, in collaboration with Provincial Departments of Irrigation and Agriculture. In one case, the collaboration was with an NGO, Aga Khan Rural Support Program.

Finances for Activities: Finances for the research activities have come from a variety of sources and arrangements: IIMI-P's core funds, Technical Assistance grants from ADB; Co-operative Agreement with USAID with financial assistance from USAID financial assistance from the Government of Netherlands, Aga Khan foundation, IFAD and IIMI-P's core funds.

ACTIVITIES

Field Research

From its inception in 1986, IIMI-P's program and activities depended heavily on field research and field data collection programs carried out by IIMI's own field staff. There are now four field stations in Punjab and one in North-West Frontier Province with a total field staff of around 40 persons, comprising field research professionals (University Graduates),field assistants (usually graduates of technical training programs) and laborers. In general, this mode of operation has been highly successful as evidenced by research reports based on primary data collection under current operation conditions of irrigation systems in Pakistan , presented at the IPR meetings. The field research is conducted with the collaboration of the Provincial Departments of Irrigation and Agriculture. The staff members of both the departments have collaborated in a number of field activities. For example, agricultural extension staff, after training by IIMI staff, have contributed to data collection in research on "Irrigation constraints on Wheat production". The line agencies have been kept informed about IIMI's research objectives and findings.

The currently continuing field research projects, which constitute nearly

80 percent of IIMI-P's activities, are the following.

- Irrigation Management to minimize waterlogging and salinity problems;
- Irrigation Management for crop-based irrigation operations in NWFP;
- Management decision support for canal operations and maintenance.

The field research projects, which involve learning by doing, provide the main strategy for IIMI staff to understand and gain insights into the realities of Pakistan irrigation, by contrast to the projected image of that irrigation. It would greatly enhance their credibility when management interventions based on field research are recommended for adoption in the 'action research' phase and the subsequent phases of wider adoption.

Dialogue and Consultation

An example of an important activity of IIMI-P was a Retreat organized on 20 and 21 October, 1991 and held at Murree for Dialogue and Consultation with senior officers of the establishment in Pakistan. Ten senior irrigation engineers of the irrigation department and one from WAPDA (General Manager, Planning, Water) attended both days of the Retreat. On the second day, the Secretary of Irrigation, Chairman of the Pakistan Agricultural Research Council (also Chairman of IIMI's Consultative Committee), Member Water (WAPDA), and Chief Water Resources in Federal Ministry of Planning and Development, were also present. IIMI's senior staff members attended. Dr. G. Levine, who was specially invited as a consultant to assist in the activity, led the discussions.

The Retreat had three objectives : First, communication of IIMI research to engineers of the Pakistan Irrigation Department (PID). This was done quite successfully. Evidence and data presented by IIMI staff were not questioned or challenged as being non-representative. In fact, there was a tacit acceptance that IIMI had gained an unexpected insight into all aspects of system operations. Second, to attain meaningful collaboration between PID and IIMI. Progress was made with respect to this by institution of a working group. Third, to obtain commitment from the irrigation engineers on the implementation of one or more management interventions.

A working group was established, which -- one year later -- has led to collaboration of PID and IIMI in the implementation of three of the four management interventions that were discussed at the retreat. IIMI mounted training sessions on water measurements in secondary canals that would make it possible for PID to collect flow data as the first step in the process of 'enhancing accountability' for water distribution; collaboration with PID's Directorate of Land Reclamation led to monitoring of leaching flows; and two irrigation engineers were seconded to work for IIMI staff on a Division Support Package.

RESULTS OF STRENGTHENING NATIONAL CAPACITY

Strengthening National Capacity to Manage Irrigation Systems

The results of the field research conducted over the last six years have brought a much better appreciation of the reality of the irrigation systems among

the collaborating agencies rather than the images of the system they are used to. But the agencies have not yet been able to internalize the approaches to adoption of the improvements and innovations suggested or institutionalize them. An acid test of IIMI's effectiveness is whether the research findings have led to any changes in the management of the irrigation systems. Thus far, that is the case in one instance only, where at the suggestion of IIMI, targeted maintenance took place in a distributory canal. Another suggestion - to make a minor change in an inlet structure to reduce the flow variability in the off- taking distributory canal resulting from variations in discharge in the main canal - was not carried out.

The experience of the dialogue and consultation at the Retreat suggests that it has the potential to influence the thinking of the senior officers regarding management improvements though it may not lead to immediate results in terms of implementation. It will surely lead to improved collaboration in future.

Strengthening National Capacity of Research Institutions

The picture is not very encouraging in this regard also. IIMI-P has worked with especially the Center of Excellence on Water Resources Engineering (CEWRE),Lahore, for at least three years, with little outcome to show for it, other than one IIMI fellow who did his Ph.D. research with IIMI-P and received his degree from CEWRE. Frequent contacts with CEWRE over the years have only recently led to an expressed commitment from the Center's Director to identify one or two M.Sc. students who could do data collection for their degree work in one of IIMI's field research programs, provided CEWRE and IIMI-P could agree on the student's research proposal. Active involvement of senior staff in IIMI's field research has failed to materialize, in large part because of their preoccupation with teaching and the absence of Ph.D. research students at the Center.

One of the University of Faisalabad's irrigation students has collected data for his M.Sc. thesis during the Kharif season of 1990-91, but the weakness of the University program makes it unlikely that this arrangement can be fruitfully repeated in the future.

Irrigation Research Institute (IRI) of the PID and Soil Survey of Pakistan (SSOP) have collected data under contract with IIMI-P; IRI on tubewell performance, and SSOP on soils, groundwater quality and crops in research areas. In both instances, the involvement of the institutes in data analysis was small. IIMI-P has not succeeded in interesting these agencies in carrying out their own research and survey work at their expense in areas where IIMI-P has an interest and where collaboration in data collection and analysis would have been most fruitful for both parties. Concrete examples of collaboration with the other national institutes with which IIMI-P has agreements cannot be cited.

IWASRI is in name the author of the document required by Government of Pakistan (GOP). The document was drafted by IIMI-P and it formalizes IIMI's execution of the Technical Assistance research project in North-West Frontier Province. The Government of Pakistan, Ministry of Power, has recently decided to strengthen IWASRI's research capability by extending its number of senior staff positions. This was done in part to equip IWASRI to qualify for continued UNDP support, to play an adequate role as counterpart to a Netherlands Research Assistance Project, and to strengthen the institute to act as the Pakistan focal

point for the Egypt-Pakistan comparative studies undertaken with support from IPTRID. Of course, to have competent research staff at IWASRI helps to make it a suitable collaborator for implementation of some of IIMI-P's projects.

How to enhance the skills and capacity of scientists and institutions to conduct research is one of the key elements of the current activities under the Cooperative Agreement with USAID in the ISM-R project. In this project IIMI-P has three ways of assisting to strengthen research capacity; helping with the analysis of data, assisting in writing the report, and in drafting research proposals jointly with the national institute for research to be done after the end of the ISM-R period.

ANALYSIS AND CONCLUSIONS

ANALYSIS

Strengthening National Capacity for Irrigation Management

There are many constraints in the implementation of the management interventions for improving irrigation management by the agencies. First, the perception of the need for improvement is influenced by the irrigation department's degree of concern for the agricultural output from the system, the factual understanding of current irrigation performance and the willingness to face that reality. Currently, such perception of the need is not governed by macro-level concerns of population, food production needs etc. There is little incentive for the irrigation department to consider the agricultural performance of the system in the evaluation of the performance of the department, or of the system under its control. Second, most management interventions will require some changes in institutional arrangements; occasionally changes in organizational structure will be required, and sometimes there will be need for changes in system hardware. While changes in institutional arrangements, including provision of greater individual and technical accountability are required, the irrigation departments suffer from lack of accountability. Hence, difficulties can be anticipated in the implementation of managerial changes. Third, most of the interventions identified for improving management may have relatively little financial expenditure costs. However, some of them may have significant transaction costs, both internal to the department and external in relations with influential landowners. There are implications for substantial losses in informal 'rents'. These transaction costs are endemic to many public activities, and they cannot be ignored in any realistic program for intervention. Fourth, irrigation department staff believe they know the system better than 'outsiders'. Thus, any intervention suggested by an outsider is subject to a severe test of credibility. It takes an extended and intensive presence in the field, such as that of IIMI, to make the designation of outsider difficult. But it takes quite some time to build up credibility and acceptance of results of research.

Strengthening National Capacity of Research Institutions

The research capacity for irrigation management-related research in the national context is very weak among the research institutions. This is understandable as there is no effective demand for such research from the irrigation management agencies. It is therefore difficult to identify a critical mass or viable concentrations of research personnel and research talent in at least a

few institutions to work with on a sustained basis. The available talent is much too dispersed among various institutions. It is pointless, perhaps, to talk about building or strengthening research capacity without first producing a pool of qualified people from whom to recruit potential researchers. IIMI-P may have to commit itself to supporting the training of a corps of Master's candidates; some among them may qualify for doctorate work and beyond and continue to work in the research institutions, provided a good atmosphere is created in the institutions and adequate incentives are given to them to stay on. If research is really a priority for a country, then that commitment should be shown through adequate remuneration of its nationals engaged in research work.

CONCLUSION

It would be rather presumptuous to claim that IIMI in Pakistan has strengthened national capacity significantly, both with respect to management and for doing research. An important lesson is that strengthening is a long-term effort and there is still a long way to go. The pace of progress depends on the context and the state of affairs obtained during the period under review. There are, of course, difficulties in drawing conclusions from IIMI-P's experiences without having a set of parameters that describe the management and research capabilities at the time that IIMI-P started its work, to serve as benchmark for any improvements resulting from IIMI-P's strengthening efforts. Besides, improvements may also occur as a result of some other factors and this problem is perhaps common to all of IIMI's claims of impacts.