
IMPROVING THE MANAGEMENT OF IRRIGATED AGRICULTURE:

THE MANAGEMENT TRAINING AND PLANNING PROGRAM
FOR COMMAND WATER MANAGEMENT, PAKISTAN



WATER MANAGEMENT SYNTHESIS PROJECT
WMS PROFESSIONAL PAPER 3

**Improving the Management of Irrigated Agriculture:
The Management Training and Planning Program
for Command Water Management, Pakistan**

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PREFACE

The Management Training and Planning (MTP) program was developed and conducted in support of Pakistan's Command Water Management (CWM) Project. It was a joint effort of Colorado State University (CSU) and the University of Maryland, working through USAID's Water Management Synthesis II (WMS II) and Performance Management (PMP) projects.

The MTP Program was a team effort: important contributions were made by many individuals in the United States and Pakistan. The MTP Program owes most of its success to the energy, efforts and leadership of Mr. Navaid Nasri, Federal Coordinator for CWM; the CWM subproject managers --- Mr. Bashir Ahmad/Baluchistan, Mr. Jalil Khan and Mr. Akhter Ali Ismaili/Northwest Frontier, Mr. Salim Arshad/Punjab, and Mr. Ayallatoh Tunio/Sind; Mr. John Foster, USAID/Islamabad project officer; Mr. Usman Qamar, International Development Association representative (World Bank); and the key personnel of the CWM-related organizations and their staffs in each province. All of the participants in the Management Training and Planning Program in each province were critical contributors, from farmers to field personnel to the Secretaries of the CWM-related organizations.

In the U.S., valuable support and guidance was provided by the leadership of Water Management Synthesis II and the Performance Management projects in USAID's Science and Technology Bureau. The MTP teams fielded under these projects

worked long, hard, and effectively alongside the provincial participants to achieve the results discussed here. Among the team members were two individuals who hold posts in the Government of Pakistan: Ms. Feroza Ahsan and Mr. Asif Brohi. Their participation, in particular, added depth to the teams and contributed greatly to the overall success of the program. The members of the MTP teams who worked in Pakistan were: Ms. Feroza Ahsan, management consultant (International Development Management Center, IDMC) and senior researcher at the Administrative Staff College, Government of Punjab, Lahore; Mr. Asif Brohi, IDMC management consultant and deputy director of the National Development Centre, National Bank of Pakistan; Dr. Mohammed Haider, economist, CSU; Mr. Dennis Hamilton, IDMC management consultant; Dr. Gene Quenoneon, economist, CSU; Dr. Richard Tinsley, agronomist, CSU; Dr. Robert Mohammed, agricultural engineer, CSU; Dr. Brad Parlin, sociologist, Utah State University; Mr. Joe Alwis, water management consultant, CSU; Ms. Judith Oki, IDMC management consultant; and Dr. Paul Wattenburger, agricultural engineer, CSU. Additional professional support was provided by David B. Levine, H. Lee Jennings, and Merlyn Kettering of Development Program Management Center (DPMC).

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Co-Team Leaders
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EXECUTIVE SUMMARY

In this paper, the authors present, discuss, and analyze an experience in designing and implementing a management improvement effort called the Management Training and Planning Program, for an irrigation development project in Pakistan in 1986 and 1987. This program was carried out for the Command Water Management (CWM) Project in each of Pakistan's four provinces: Baluchistan, Northwest Frontier, Sind, and Punjab. It involved a team of water management and management specialists using a specific approach to guiding the management of development efforts — the team planning methodology — to help the Pakistan provincial organizations involved in the project (mainly the Irrigation and Agriculture departments) improve CWM's implementation.

The MTP Program built on the results of the diagnostic analysis studies conducted earlier for each of the pilot subproject areas. The diagnostic analysis studies had provided data on the presence and magnitude of the constraints to productivity in the system and had provided an ideal taking-off point for a management improvement program.

The purpose of the MTP Program was to assist the organizations involved in the CWM Project to address the problem-solving, planning, implementation, coordination, and monitoring requirements of the effort. To carry out the MTP Program, a consulting team of management and water management specialists from USAID's Water Management Synthesis II Project worked closely with a provincial CWM subproject manager for over one month. During this month, the team conducted a series of structured meetings and workshops. These meetings, and two structured planning workshops, brought together representatives of the involved organizations in a collaborative, problem definition and planning process that involved, at different points, all organizational levels — from the provincial Secretaries to the departmental field workers, as well as farmer representatives. The immediate results of that process were that the organizations involved in implementing Command Water Management:

1. Developed greater understanding of and support for the CWM Project, as well as clarifying the roles and responsibilities of each organization (department).

2. Reached a common understanding of the problems and opportunities in the irrigated subproject area based on the results of the diagnostic analysis study, as well as combining knowledge of field conditions from individuals in each department.
3. Identified and agreed on new approaches to addressing the above, frequently involving new patterns of collaboration among departments to carry out innovations.
4. Developed and agreed upon an interdepartmental plan for improving the pilot command area, which included articulating long-term improvement goals, one-year objectives, and activity plans for meeting objectives with defined responsibilities and monitoring points.
5. Identified and initiated on-going organizational mechanisms for continuing the planning process, and planned for the periodic monitoring and review of progress.

The structured process of the MTP Program brought the involvement of provincial departments from the policy level (Secretaries of Irrigation, Agriculture, Finance, and Planning and Development), the executive level (directors, directors general, and chief engineers), the operational management level (deputy directors, superintending and executive engineers), and the field level (agricultural officers, subdivisional officers) into the process of problem solving and planning for the command area. In this effort, farmers were involved, but due to the weak linkages between farmer organizations and provincial departments, this involvement was in some cases only a starting effort and was relatively minimal. Where strong farmer organizations did exist and linkages were strong, their participation was more central to the planning.

It is clear that there is a great need for continuing efforts to help the provinces build on this initial planning step. For this kind of management improvement strategy to work effectively, it is critical that follow-up work assists the provinces in developing their approaches to on-going monitoring of progress, re-identifying and addressing problems, and replanning key activities. While much was learned by all parties during this program, such efforts, if undertaken in similar circumstances, should be on an on-going, longer-term basis to ensure the greatest impact.

I. INTRODUCTION

Improving the productivity of irrigated agriculture in developing countries is a continuing challenge to irrigation water management professionals worldwide. While much has been learned about structural, physical, technical, and agronomic improvements that could contribute to dramatic increases in yields, improving management is still a major, outstanding challenge. (See, for example, Chambers, 1980, and Clyma, Lattimore and Reddy, 1982.) Without better strategies for improving management, other improvements are unlikely to have their potential impact.

The purpose of this paper is to contribute to the growing knowledge about irrigation management by describing recent experiences in developing and conducting a program that focused on improving the management of an irrigated command area.¹ Specifically, this paper discusses the month-long Management Training and Planning (MTP) Program developed for Pakistan's Command Water Management (CWM) Project² as part of the support provided to that project through USAID's Water Management Synthesis II Project (WMS II).³ The MTP Program was conducted by technical assistance teams led jointly by Colorado State University and the International Development Management Center of the University of Maryland for a CWM subproject command area in each of Pakistan's four provinces.

The MTP Program was designed to support the start of the CWM Project by building a solid foundation for managing project implementation. It built on earlier assistance to the project by WMS II, and was to be followed by further technical assistance provided by a long-term, resident assistance team provided by a USAID contractor. The MTP focused on helping CWM to immediately achieve specific water management improvements at the same time as it provided a basis for addressing the overall management-related needs of the project. The MTP Program thoroughly integrated a focus on technical and management aspects of project effectiveness.

The remainder of this paper is organized as follows. Section II discusses the outcomes of the four MTP programs conducted in 1986 and 1987. Section III gives background information

¹ A command area is the total area provided irrigation water by a single main or branch canal and its distributary canals.

² The CWM Project is jointly funded by the Government of Pakistan, the World Bank, and the U. S. Agency for International Development. Its primary purpose is to develop and apply on a pilot basis an integrated command area approach to improving the productivity of irrigated agriculture, which includes greater departmental coordination, increased farmer involvement, improved management of the irrigation system, and specific physical improvements.

³ A list of reports and plans developed during the WMS II assistance to the CWM Project is presented in Appendix A. A list of the abbreviations used in this report is presented in Appendix B.

about the Pakistan CWM Project and the WMS II Project, and reviews the overall WMS II training effort in support of the CWM Project. Section IV traces how the MTP Program was developed and implemented, and outlines the activities and intended outcomes of each of its phases. Section V presents some of the next steps required to build on the foundation established by the MTP programs. In Section VI, we look more generally at some of the challenges of improving irrigated agriculture, at how the MTP Program was able to address these in Pakistan, and at how this approach might be applied to other irrigation development efforts.

II. OUTCOMES OF THE PROGRAM

The immediate results of the MTP programs demonstrated that this approach was effective in meeting some of the challenges of irrigation management encountered in Pakistan. Our experiences in working with the CWM subprojects in each province differed due to differences in organizational settings, the specific irrigation management problems faced, the status of project implementation, the individuals involved, and the composition of our own teams. Nevertheless, there were some general outcomes of the MTP program common to all provinces:

1. **Understanding of and involvement in the project were strengthened** for the representatives of the diverse organizations who participated in the MTP program. At the policy level this meant increased support for the project in achieving its overall objectives. At the operational level individuals felt ownership for a plan that they themselves created and were responsible for implementing.
2. **Problem-solving and planning were consistently linked directly to the in-depth knowledge of the needs of the subproject area** provided by the diagnostic analysis and the CWM staff.
3. **The command area management plan completed during the MTP established a stronger base for project implementation and monitoring.** The plan directly linked project activities to the achievement of measurable objectives for system improvements.⁴
4. **Innovations in water management and management were identified and planned** during the MTP. These arose from small group discussions in which outside resources (host country, as well as MTP team members) provided input and ideas in the context of the problem-solving discussions.
5. **Involvement of farmers in the project was somewhat strengthened** by the MTP. However, except in Baluchistan, farmer participation was not as great as desired and was an important area identified for further work.

⁴ While the plan expanded the contemplated project activities beyond the physical rehabilitation of the system, for differing reasons many of these activities had not been accomplished by the time follow-up visits were made nine months later.

6. **Linkages among organizations and individuals were strengthened** through the MTP process. For example, the representatives of key organizations⁵ on the subproject coordinating committee (SCC) were the designated "planning team" for the MTP. The planning experience resulted in a more active and greatly strengthened SCC.
7. **The concept of multi-level, multi-organizational problem solving and planning was demonstrated to be viable and was accepted as relevant** to improving systems and system management.

Some outcomes were specific to the subproject area in each province. The MTP process at times resulted in the resolution of certain long-standing problems and in agreements to move ahead with recommended, specific innovations in irrigation policies and programs. Examples of these outcomes from the four provinces include:

1. Agreement to modify the jurisdiction of the Extension Service so that it would be compatible with those of On-Farm Water Management and Irrigation, thereby allowing for improved coordination of services. (Northwest Frontier Province and Punjab)
2. Initiation of joint programs to serve farmers by Extension and On-Farm Water Management (Northwest Frontier Province and Punjab) and by Extension and Command Water Management (Sind and Baluchistan).
3. Agreement to use procedures that would result in the coordination of designs for the main canal system with those for watercourses by the Irrigation Department and On-Farm Water Management or CWM (Agriculture Department). (All four provinces)
4. Policy decision to use the SCARP (Salinity Control and Reclamation Project) tubewells to provide farmers with additional water during times of peak crop requirements. (Sind)
5. Agreement at the policy level to support the investigation of groundwater development as part of the CWM Project. (Punjab)
6. Policy decision to permit the revision of branch canal designs, where appropriate, to increase the bed level of the canals in order to better command the irrigated area. (Sind)
7. Development of a management system for guiding, coordinating, and controlling complicated implementation and construction schedules. (Northwest Frontier Province)
8. Initial agreement to revise procedures for the *warabandi* (rotation schedule) to account for watercourse losses. (Punjab and Sind)
9. Commitment by the Pakistan Water and Power Development Authority to work with CWM to resolve the problem of interrupted power supply to the pumps for the lift canal. (Northwest Frontier Province)

10. Plans for how the newly arrived resident technical assistance team would support and be involved in implementing the management plan. (Baluchistan)
11. Agreement on a plan for managing the distribution of canal water, which included monitoring flows at key points in the system to improve the equitable distribution and adequacy of the water supply. (Northwest Frontier Province and Baluchistan)
12. Agreement by Irrigation, Extension, and On-Farm Water Management to work together to involve farmers in watercourse and other system improvements. (Northwest Frontier Province and Baluchistan)

III. BACKGROUND

A. The Pakistan Command Water Management Project

The Pakistan Command Water Management Project, launched in 1984, is a jointly funded project of the Government of Pakistan, the International Development Association (IDA) of the World Bank, and the U.S. Agency for International Development. The purpose of the Command Water Management Project is to develop and apply coordinated approaches to addressing problems in irrigated agriculture. It is a pilot project and is funded for five years, from 1984 to 1989.

Specifically, the CWM Project was designed to support the Irrigation and Agriculture department organizations involved in irrigated agriculture in their efforts to improve the planning, coordination, integration, and monitoring of their activities at the irrigation command level. CWM focuses on improving irrigation management from the level of the farmer to that of the policy maker in pilot subproject areas in Punjab, Sind, Baluchistan, and Northwest Frontier provinces. The CWM Project's strategy for increasing productivity in the subproject areas includes:

1. Increasing the equity, reliability, and adequacy of water distributed to farmers.
2. Increasing the farmers' use of appropriate agricultural inputs, credit, and improved farming practices.
3. Developing improved systems and water management techniques that can be replicated in other areas.
4. Increasing the involvement of farmers and farmer organizations in operating, maintaining, and managing the irrigation system.
5. Institutionalizing coordination among key agencies (particularly the departments of Irrigation and Agriculture) and farmer organizations for planning and implementing integrated programs for irrigated agriculture.

⁵The key organizations were the Irrigation Department, the On-Farm Water Management and Extension directorates of the Agriculture Department, the two engineering consulting firms working on the project, and the office of the CWM subproject manager.

Central to the overall strategy of the CWM Project is increased coordination among involved organizations to assist farmers in increasing productivity. These organizations include the provincial Irrigation departments, the Agricultural Extension and On-Farm Water Management directorates within the provincial Agriculture departments, agricultural credit institutions, seed and fertilizer suppliers, and water user associations. Guidance committees at the policy-making and operational levels and a subproject management office (SMO) were established in each province to oversee the efforts of all groups and to support coordination (Figure 1). The CWM Project provides funding to staff the small, interdisciplinary SMO, which coordinates improvements to the main canal system by the Irrigation Department, and to the on-farm systems by the On-Farm Water Management Directorate. CWM also provides funding for technical assistance and training.

Figure 1 presents a general picture of the relationships among provincial agencies implementing the CWM Project.⁶ The organizational placement of the CWM subproject management office is different in each of the four provinces. In Punjab, it is a semi-independent office within the Agriculture Department. In Sind, the subproject management office is semi-independent and sits within the Agriculture Department, but also has responsibility for on-farm water management in the subproject area. In Baluchistan and Northwest Frontier provinces, the subproject manager is a line manager within the Irrigation Department who carries his normal irrigation responsibilities along with the responsibilities of the CWM subproject manager.

In each province a provincial policy committee (PPC) was created with the Secretary of Agriculture, of Finance, and of Irrigation as members. The committee is chaired by the Additional Chief Secretary, Planning and Development. The purpose of the PPC is to make sure that these heads of departments are informed and involved in the CWM Project, both in general oversight and in making sure that the project-related activities of their respective departments are coordinated and linked. The subproject manager reports directly to this committee on project matters, most often through his particular departmental Secretary.

The subproject management office (SMO) typically consists of the subproject manager and four to five individuals who were seconded from the three main implementing agencies (Irrigation, On-Farm Water Management and Extension) to form his staff. The SMO develops project plans, coordinates the activities of the implementing agencies, assists in initiating water management improvements, and monitors and evaluates system management and the results of the work done.

Project documents provide for the SMO to be organized into two divisions — monitoring and evaluation, and water manage-

⁶ All of the organizations listed in Figure 1 are involved in implementing CWM, although only five of them (Irrigation, On-Farm Water Management, the subproject management office, and the two consulting firms) receive funding for activities under the project.

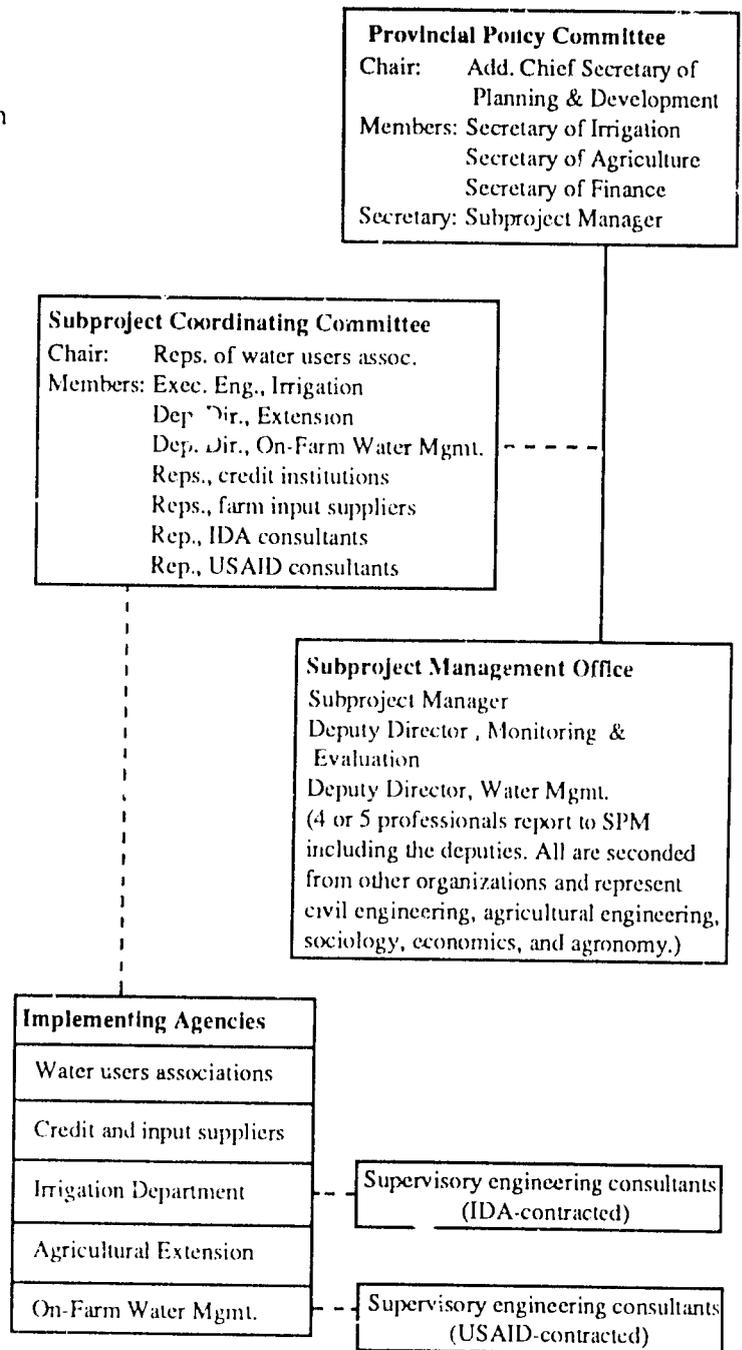


Figure 1. Provincial organizational relationships and structures for CWM Project implementation.

ment. The Monitoring and Evaluation Division will regularly collect and analyze data on the conditions in the subproject area. The Water Management Division will identify and then initiate the use of new water management methods.⁷ Coordination of implementation is to be achieved through a subproject coordinating committee (SCC) chaired by the subproject manager. Included on the SCC are representatives of all agencies or organizations supporting irrigated agriculture in the subproject area. The SCC is to contribute to project planning, coordinate

⁷ When the MTP programs were held, the responsibilities of these two divisions were not yet clearly defined or reflected in actual operation.

the activities of the departments, identify and address problems, and monitor and evaluate progress.

B. The Water Management Synthesis II Effort

The strategy of the Command Water Management Project required that individuals involved in project implementation immediately receive training in the basic concepts and methodology to be used. This early training was to focus on the use of interdisciplinary approaches to diagnosing and addressing problems. In 1984, the centrally funded, USAID Water Management Synthesis II (WMS II) Project⁸ was requested to plan and conduct this training by the Government of Pakistan and USAID/Islamabad. Colorado State University (CSU), one of the universities involved in WMS II, took the lead in responding to this request. CSU developed and began implementing a general plan for training in the summer of 1985.

At the heart of CSU's approach to the CWM training program was its Development Model⁹ (Figure 2), which described a process for improving irrigation management (Clyma, Lowdermilk and Lattimore, 1981). This model is a cycle containing three phases:

1. Diagnosis of an irrigated area using an interdisciplinary field study approach called "diagnostic analysis" (Lowdermilk *et al.*, 1983; Polmore and Eynon, 1983).
2. Development and assessment of alternative solutions to identified problems.
3. Development and implementation of plans for irrigation system improvement and management.

This sequence repeats as implementation is followed by further data collection and analysis to develop an updated picture of the system in order to identify new or continuing problems and to further develop new solutions and implementation plans.

The central assumption of this development model is that irrigation systems can be improved significantly only if the current operation of the system — its problems and opportunities — is well understood. Within the development model, diagnostic analysis is used to generate a better understanding of system operation. Because of the importance of the diagnostic analysis process for identifying needed improvements to understand and resolve problems in Pakistan, diagnostic analysis was incorporated into the CWM training program as its primary analytic tool.

⁸ The WMS II Project was initiated by USAID in 1982 to support the improvement of irrigated agriculture in developing countries worldwide, with a focus on Asia and the Near East. WMS II was designed to systematically synthesize, apply, and advance what was being learned around the world about improving irrigated agriculture.

⁹ The development model created at CSU is one of a number of paradigms used by professionals in this field to describe the development process. Since CSU led this assistance effort, the CSU model was used as the underlying conceptual framework for our work.

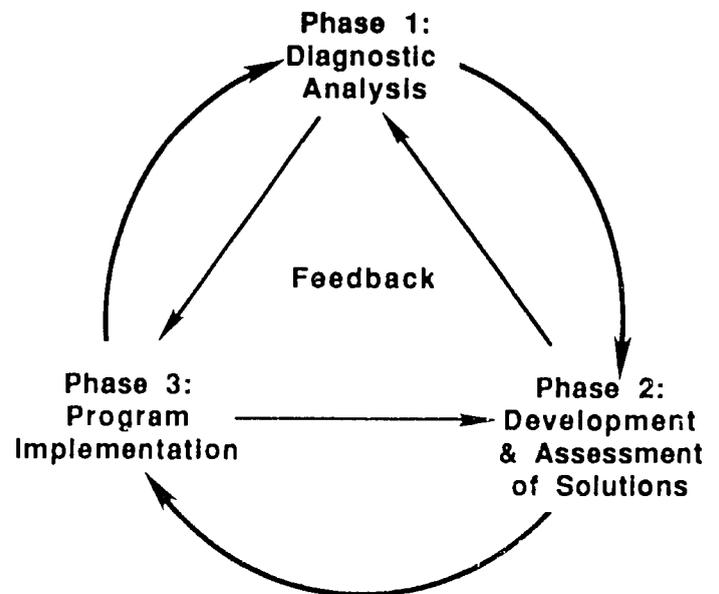


Figure 2. The Development Model.

As planned by CSU, the CWM training program involved a sequence of training activities taking place over two years. The general objectives of the program, as articulated in early 1985, were that the program would assist the involved individuals and organizations in the following ways:

1. In learning how to apply diagnostic analysis in order to achieve a comprehensive understanding of an irrigated command area.
2. In successfully conducting a diagnostic analysis of a subproject area in each province.
3. In addressing the problems identified during the diagnostic analysis, including developing a provincial management plan that would identify the goals, objectives, activities, and roles and responsibilities of the organizations involved.
4. In developing management processes and procedures for effective monitoring and evaluation.
5. In developing further the skills and understanding necessary for improving the management of irrigation systems.

During 1985, prior to developing and conducting the first MTP Program, the following initial activities addressing the first two objectives listed above had been completed, and provided a foundation for the MTP Program:

Diagnostic Analysis Workshop (participants from all provinces)	July - August, 1985 (5 weeks)
Introduction to Management Planning (participants from all provinces)	August 1985 (1 week)

Key Officials' Meetings (each province separately)	September 1985 (3 days in each province)
On-Site diagnostic analysis training (each province separately)	November-December, 1985 (6 weeks each in Northwest Fron- tier, Punjab and Sind provinces); February- March, 1986 (Baluch- istan, 6 weeks)

By March of 1986, a diagnostic analysis had been completed by the subproject management office and line departments in each of four provinces. Some of the irrigation problems and opportunities identified were new; others were already known by the individuals working in the subproject area, though the diagnostic analysis usually provided specific new data about their magnitude and contributing factors. As an example, some of the more important points raised by the diagnostic analysis in the Punjab subproject follow:^{10, 11}

1. *Inequity of water supply.* Outlets at the head of the system received significantly more water than those at the tail. Withdrawals at the head outlets ranged from 40 percent to 90 percent above the sanctioned supply, while near the tail withdrawals were measured at 62 percent to 65 percent below sanctioned supply.
2. *Unreliability of water supply.* Farmers reported that the water supply was unreliable and said that they were unwilling to invest in high-yielding varieties and fertilizer, which require more predictable water supplies. Their reports were supported by measured fluctuations in the flow of water ranging from 5.9 to 18.3 cusecs near the tail of the distributary.
3. *Inadequacy of water.* Water supplies were inadequate for growing higher valued crops. Near the tails of the distributaries, minors and watercourses, land was kept fallow due to insufficient water supply. Initial studies, however, demonstrated the presence of good quality groundwater which could be more fully exploited to provide adequate water to all farmers.
4. *Watercourse losses.* Water losses in watercourses¹² averaged 40 percent, thereby contributing to inequitable, inadequate, and unreliable water supplies to individual farms.

¹⁰ In large measure, the problems found in Punjab were similar to those identified in the other three provinces. However, the specific contributing factors were usually quite different.

¹¹ The documents providing the results of the diagnostic analysis studies and the management plans developed during the MTP programs are listed in Appendix A.

¹² Watercourses deliver water from the canal outlet (which is managed by the Irrigation Department) to individual farms. Farmers operate and maintain the watercourses and smaller field channels below the canal outlet.

5. *Submerged outlets.* The identification of a number of submerged outlets demonstrated the need for better coordination between the designs of the canals and the watercourses.
6. *Use of inputs.* Only 3 percent of the farmers reported using agricultural credit. Fertilizer use was half the recommended amount.
7. *Farmer involvement.* The great majority of farmers indicated that although they did not currently belong to a farmers' organization, they were interested in forming organizations through which they could help to improve the availability, accessibility, and usage of water supply, the quality of services, and the access to agricultural inputs.

IV. THE MANAGEMENT TRAINING AND PLANNING PROGRAM

A. Summary of Needs to be Addressed by the MTP Program

Toward the end of 1985, the International Development Management Center (IDMC) at the University of Maryland began working with CSU to develop plans for addressing the management aspects of the CWM Project. The initial step in this joint effort involved conducting a needs assessment to better understand and develop agreement among key policy, executive, and operational managers about the important management needs and how they should be addressed. To make the assessment, key people in the project at all levels and in each government department were interviewed. The needs identified were categorized in three areas as follows:

1. Relationship of the CWM Project to the Larger Development Environment

The assessment identified the following needs in strengthening the linkage of the project to the larger environment:

- To increase support for and ownership of the project within the upper echelons of the provincial governments while creating a stronger link between the CWM Project and the overall development programs of the provinces.
- To develop better support and strategies for involving farmers and farmers' organizations in improving and managing the irrigation systems.
- To raise the general awareness of the range of organizations and individuals involved regarding the kinds of improvements needed.

2. Effective Project Management

The assessment identified the following needs for improving the management of the project:

- To support the development of strong, effective leadership within the project in each province.
- To more effectively articulate the approach to irrigation development envisioned by the CWM Project and the approach and strategies to be used to move toward achieving that vision.
- To develop management systems and agreements that would support effective implementation.
- To develop a stronger link between the allocation of resources and the plans for addressing the most critical project needs.

3. Introduction of Appropriate, Sustainable Technologies

The assessment identified the following needs for strengthening the introduction of appropriate, sustainable technologies:

- To develop organizational mechanisms that result in the continual use of information on field conditions (such as diagnostic analysis results) to guide the development of project strategies and plans.
- To identify and employ realistic strategies that are targeted to addressing current important problems, rather than only following the blueprint guidance of early project designs.
- To modify as appropriate and strengthen organizational structures and mechanisms to guide and coordinate improvement efforts.
- To increase the flexibility with which targets are established, results are evaluated, and plans are made.

These general management needs of the Pakistan Command Water Management Project are not unique to that project. The problems and challenges of the CWM Project have much in common with development projects in general, and certainly with other irrigation projects.¹³ The purpose of the needs assessment was to identify not only the general areas of need, but also the specific circumstances and context to which we would tailor the MTP program.

As the needs assessment was being completed, we put together a plan for a management improvement program in each province that would begin to address the needs identified in the assessment, as well as the specific water management issues identified in the diagnostic analysis studies. Instead of separating management training from water management planning as

originally envisioned, we decided to work together to develop a “management training and planning” program that would integrate management and water management concerns. The MTP Program would be guided by the team planning methodology (TPM), an approach to management improvement that has been used by IDMC and others in a number of development situations (Levine, 1988).

For this program, however, the TPM would be tailored so that the program could build upon the earlier work and learnings from the diagnostic analysis studies conducted in each subproject. The diagnostic analysis provided a solid base of information that CWM-related organizations could use to identify and address problems and opportunities for improvement. Field personnel from the involved organizations had conducted the study, and, therefore, felt ownership for the results. In-depth interviews with farmers had provided substantial information and a way to bring farmers’ views of the problems and needs of the area into the analysis.

Prior to the diagnostic analysis, professionals in each of the provincial organizations planned their activities with little information about actual field conditions, and each organization used somewhat different, untested assumptions about these conditions. The completed diagnostic analysis provided, for the first time, accurate information about water distribution, agronomic conditions, availability of markets and inputs, and farmer needs and concerns. This information could now be used to create a common understanding of the problems from which improvements could be identified and planned.

However, joint planning would most likely not occur without a mechanism to effectively involve the multiple organizations, and levels within organizations, in a coordinated process to address the findings of the diagnostic analysis. Also, though individuals in the lower levels of the various organizations understood the problems and felt ownership for the diagnostic analysis, there was a need to bring the same understanding into the operational, executive, and policy-making levels of these organizations. For this reason, the MTP Program was designed to use the team planning methodology to bring the diverse organizations and individuals involved in the CWM Project together in a collaborative problem-solving and planning process that would help move the project ahead, while strengthening important management skills.

B. Design and Implementation of the MTP Program

The Management Training and Planning Program was designed as a three-to-four week intervention. In it, some of the issues identified in the diagnostic analysis and the needs assessment would be dealt with directly, while for other issues only the groundwork would be laid for future consideration. It was anticipated that future programs would be needed to strengthen and support the results of this first program and to carry the work further.

¹³ A recent needs assessment completed by the senior author for a small-scale irrigation effort in India uncovered a very similar set of overall project needs. However, the approaches to resolving these needs will undoubtedly differ since the specific factors contributing to the problems differ.

The overall purpose of the MTP Program was to give the provincial CWM organizations an opportunity to work together in reviewing the CWM Project, analyzing what they knew about the needs of the pilot command area, identifying current issues that needed to be addressed, and planning how to address them. By the end of the MTP, provincial officials would have developed a management plan that addressed the problems identified by the diagnostic analysis; strengthened the processes for problem-solving, planning, coordination, monitoring, and evaluation; and improved their own management skills as they relate to undertaking the improvements.

To create a program that would actually integrate the consideration of water management and management issues, we began by conceiving of the program as a shared effort between CSU and the International Development Management Center (University of Maryland). We modeled this relationship in our co-directorship roles, and we sought to integrate our two perspectives when we recruited and selected the members of our teams and prepared them to conduct the MTP Program. Each MTP team was to consist of four to five specialists, with at least two water management and two management specialists on each team.¹⁴

Because of this integrated approach, the roles of each specialist were not limited to his or her technical field. Team members were expected to ensure that our work continually incorporated the understandings of all disciplines. To achieve this level of integration and teamwork, a four-to-five day, team planning meeting was held with the intervention team before each program.

The purpose of the team planning meeting was to give team members the opportunity to:

1. Reach a common understanding of the context, purpose, and structure of the CWM Project and the results of the diagnostic analysis study of the provincial project area.
2. Establish and agree on the purpose, intended outcomes, and approach of the MTP Program.
3. Understand individual and collective roles and responsibilities as team members, and how their specific expertise would fit the interdisciplinary team approach.
4. Plan how to specifically tailor and implement the general MTP Program design to the actual situation in the province within which they were to work.

Although grounded in a well-tested management improvement methodology — the team planning methodology — the MTP Program represented a new extension and application of that methodology. Since the Command Water Management Project actually consists of four independent, provincial sub-projects, the MTP Program would be implemented four times, once in each province. To control the evolution of the intervention model, we sequenced the programs so that we had an opportunity to build on each previous experience. In the first program in Punjab, the co-authors worked as co-team leaders to bring our combined experience and conceptual approaches to bear on that first implementation. For the second and third programs, we each separately led teams that tailored and delivered the program in Northwest Frontier and Sind provinces. In early 1987 we used what we had learned in the earlier programs to guide and support the team that conducted the fourth MTP intervention in Baluchistan province. The two co-authors then led a follow-up program in Northwest Frontier Province.

The MTP assured that the individuals and organizations involved in improving irrigated agriculture in each province achieved the following through a series of participative workshops and meetings.

1. Agreement on the overall context of the Command Water Management Project; that is, how was the project linked to overall provincial development goals, what were the CWM Project purpose and objectives, what were the intended organizational roles and responsibilities within CWM, and what was the current status of implementation.
2. Using the diagnostic analysis as a starting place, identification and agreement upon the current priority of problems and issues (technical, organizational and political) in the pilot area and the project. This involved an in-depth review of the problems, the magnitude of each problem area, and the factors contributing to it.
3. Articulation of a set of goals, objectives, and activities based on a problem-solving process that would link specific activities, roles, responsibilities, and monitoring requirements to the resolution of the agreed-upon problems. This would result in a draft management plan.
4. Adoption of the management plan based on review, input and support from the executive- and policy-level personnel in the involved provincial organizations, as well as the involvement of the federal project coordinator and representatives of the donor agencies.

As part of our use of the team planning methodology, we employed an "action-training" approach (Solomon, Heegaard and Korhner, 1977; Kettering, 1985), rather than a traditional training approach to the workshops held. This meant that the program and its workshops involved participants in addressing the actual problem-solving and planning tasks of the project, while learning skills and concepts that would allow them to continue this work. The MTP team worked with a series of

¹⁴The water management specialists selected for the teams were all experienced in diagnostic analysis and came from a number of different disciplines: agronomy, agricultural engineering, economics, and sociology. Of the two water management specialists on each team, one was a physical scientist and the other a social scientist. Of the two management specialists on each team, one was from the U.S. and the other was from Pakistan. The U.S. specialist brought experience with the management improvement approach we were using, and the Pakistani specialist brought knowledge of the management structure of and issues in public institutions in Pakistan, as well as other cultural skills and knowledge.

small and large groups which, in different combinations based on the work at hand, participated in background briefings, problem definition and problem-solving sessions, and decision-making and planning at both operational and policy levels.

To best carry out this kind of approach, we took time to ensure that there was support for the program and that the organizations and individuals would be able to participate in ways congruent with their roles in the project. For example, we made sure to consult the members of the Provincial Policy Committee before and after the formal planning workshops. Their participation was essential to gaining a mandate for the work we were doing, as well as for building their own involvement and clarifying their role in the CWM Project. Also, executive-level individuals were informed, their input was solicited, and they were invited to participate at selected points in the workshops. This mid-program participation allowed them to provide input and direction to the management plan as it was being formed.

The operational managers were the key participants of the problem definition and planning workshops as members of a "planning team" responsible for drafting the management plan. In most cases, these managers were their organizations' representatives on the subproject coordinating committee. Representatives of farmers' organizations and field workers from the different agencies also were involved, although mainly when the workshops focused on problem definition.

To give a better idea of what actually occurred in the MTP program, Table 1 describes the sequence of program activities and Figure 3 relates the activities to the personnel involved. Each MTP Program contained three phases: entry, management training and planning, and consolidation. A set of essential steps were taken prior to each MTP¹⁵ which included:

1. The completion of the diagnostic analysis of the project area by the involved organizations.
2. Quick assessment visits to each province by MTP team members prior to the actual start of the program.
3. A structured team planning meeting during which the MTP team tailored the general program to the specific province subproject and prepared to conduct it.

1. Phase I: Entry

The entry phase varied from 1-1/2 weeks in the Punjab (where, because there had been only limited preparation prior to the program, there were additional tasks to accomplish) to 4 days in Sind, Northwest Frontier, and Baluchistan provinces. During the entry phase, the team met with the key people involved in CWM in the province, especially the subproject manager and his staff, to obtain their input, involvement, and support for the program by:

- Identifying who needed to be involved in the various activities of the MTP.
- Reviewing the results of the diagnostic analysis.
- Identifying the concerns and issues that needed to be addressed.
- Reviewing and getting concurrence in the overall MTP approach and strategy.

Typically, we met with the provincial Secretary of Irrigation and the Secretary of Agriculture, with the chief engineers and directors general who worked for them, with the operational counterparts of the CWM subproject manager in each line agency, and with other key people at the operational and policy levels. The purpose of this phase was to set the stage for the action-training workshops of Phase II, in which selected representatives of key organizations would participate in problem-solving and planning to address the identified issues.

2. Phase II: Management Training and Planning

This phase lasted from 1-1/2 to 2 weeks in each province and culminated with the completion of a draft management plan. Two workshops took place during this phase. The first workshop was large (30 to 35 participants) and involved selected individuals from the field and operational management levels of all the organizations involved in the CWM effort in that province. This 2-3 day workshop focused on developing a common understanding of the CWM Project, reviewing and expanding the results of the diagnostic analysis using the knowledge and experience of the participants, and reaching a common understanding of the problems in the subproject and the factors contributing to them.

A second workshop (2 days in Punjab and 5 days in Northwest Frontier, Sind, and Baluchistan provinces) brought together a smaller operational planning team representing the key organizations responsible for implementing CWM.¹⁶ The purpose of this workshop was to build on the agenda developed in the first workshop by further defining and clarifying the most significant problems. These problems were then addressed, and a draft inter-organizational management plan was developed. This plan:

- reflected agreements on a general set of goals for the subproject area over the remaining three years of the CWM Project.
- identified some specific objectives for the next 6 to 12 months, action plans to achieve these objectives, and the roles and responsibilities of the involved organizations.

¹⁵ One exception to this pattern was the program in Punjab where most of the tasks that were to be done prior to the MTP were completed after the team planning meeting and during the first phase of the MTP.

¹⁶ Six offices in different organizations were considered by the subproject managers to be the key implementors. Four of these were provincial offices: the CWM Subproject Management Office and the On-Farm Water Management, Extension, and Irrigation line offices responsible for the subproject area. In addition, the two consulting firms working with the Irrigation and On-Farm Water Management offices were included on the planning team. In Baluchistan only, farmers' representatives were also members of this team.

Table 1. Stages of the CWM management intervention supported by WMS II.

Stage	Focus	Participants
Diagnostic Analysis		
Diagnostic Analysis (DA) Workshop (5 wks)	DA concepts, skills, & practice	CWM/SMO staff from each province, WMS II team
Diagnostic analysis of subproject (6 wks)	Identify priority problems, their contributing factors, and their magnitude.	CWM/SMO staff, field personnel from all involved agencies, farmers, input suppliers, WMS II team
Management Training and Planning		
Pre-program visit for the MTP Program (1 wk)	Initial planning for MTP, information gathering and briefing of provincial organizations	CWM/SMO staff, multi-levels of key provincial organizations, 2-3 members of MTP team
MTP Team Planning Meeting (4 days)	Prepare MTP team and plan MTP program.	MTP team and representatives of USAID, Govt. of Pakistan
Phase I: Entry (1 wk)	Present and refine MTP, identify key concerns, obtain input of policy officials, final planning for workshops.	CWM/SMO staff, multi-levels of key provincial organizations, MTP team
Phase II: Management Training and Planning (1-1/2 weeks)	Workshop I: Problem Definition. Review project context, goals, and structure; starting with the DA, gain understanding and consensus on priority of problems.	Field and operational personnel, CWM/SMO staff, other representatives of all involved organizations, farmers, MTP team
	Workshop II: Problem Solving and Planning. Complete draft management plan.	Operational planning personnel, CWM/SMO staff, farmer representatives, executive personnel, MTP team
Phase III: Consolidation (1 wk)	Return to key policy officials with briefing on draft plan; obtain policy-level input and decisions; "next steps planning" by SMO.	Policy and executive levels of key organizations, CWM/SMO staff, MTP team

The completed draft management plan set the stage for a series of reviews for further input and approval by executive and policy level personnel during the final phase of the program.

The two workshops held during Phase II of the MTP Program used an action-training approach to address tasks, while simultaneously teaching important management skills and concepts. The workshop sessions included short presentations on water management concepts relevant to the CWM Project and on management concepts and skills related to problem-solving, planning, monitoring, and evaluation. Presentations on these areas were usually made immediately before concepts and skills were to be applied. Once the concepts and skills were applied, the experience gained was reviewed for what was learned.

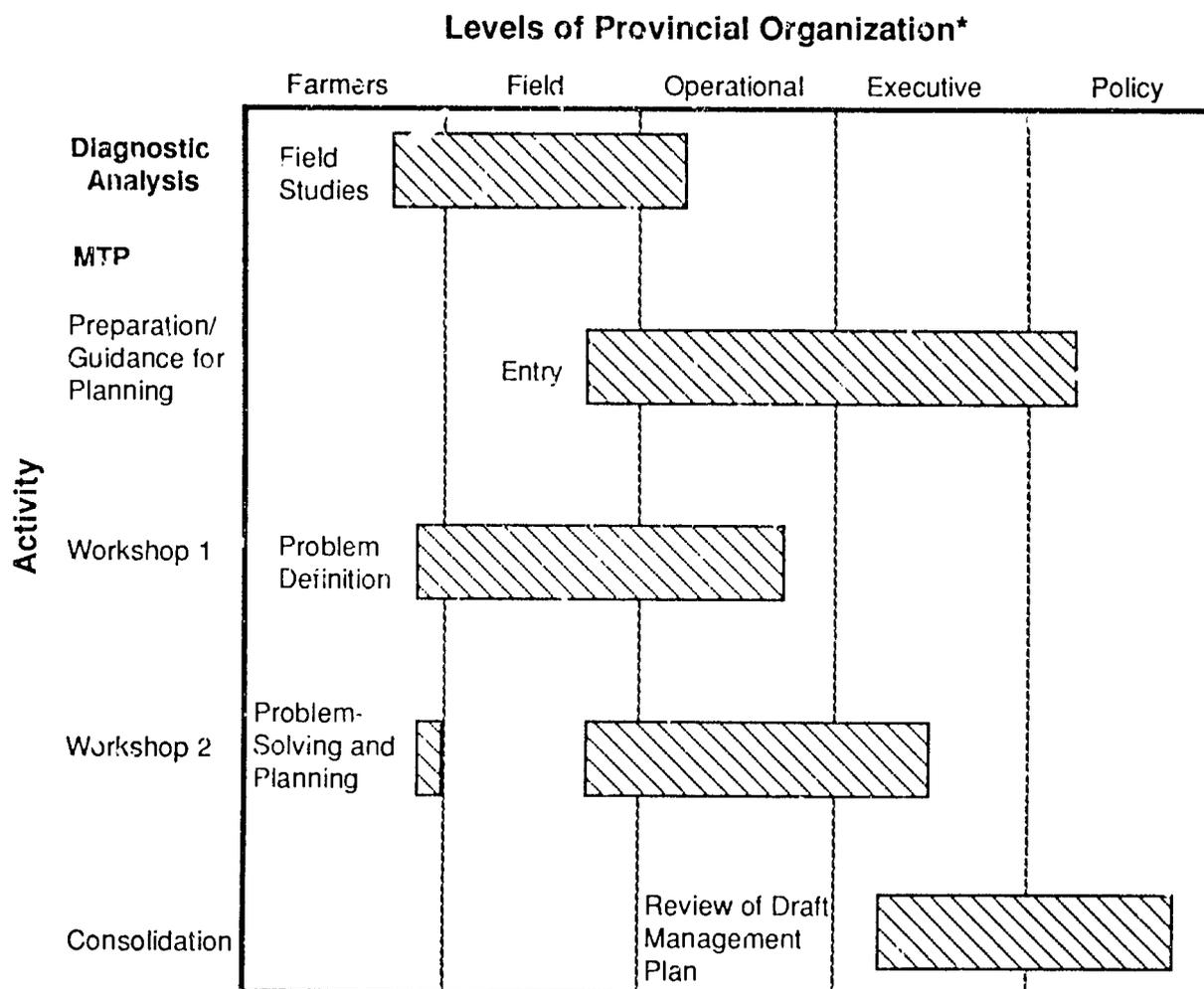
One example of the use of action-training in the second workshop was the introduction of a method for developing project plans. A specific planning format was introduced,

discussed, and agreed to by the "planning team." Small subgroups of that team were then asked to use that tool to develop their plan for specific areas of the project.¹⁷ They received guidance from the training team in their work, and when their plan was completed, they presented it and received critique and suggestions from their peers. This training approach was used throughout the workshops to teach skills in problem definition and problem-solving, planning, and monitoring.

3. Phase III: Consolidation

During this final phase, the team worked with the subproject manager and his staff to conduct briefings for the policy- and executive-level officials. The intent was to obtain input and

¹⁷ Small working groups that included representatives of each major organization were formed to address each important technical area identified in the first workshop. For example, in one province, the technical areas identified were system management, productivity improvement, and farmer participation.



*Anywhere from five to fifteen organizations were involved in the activities.

Figure 3. Involvement of farmers and the levels of provincial irrigation-related organizations in the DA/MTP planning process.

support for the draft management plan, as well as any specific decisions required by it. We also worked with the subproject manager and his staff to identify specific steps they needed to take to ensure the completion and effective implementation of the plan. This phase took four to five days.

V. STEPS TO TAKE IN THE FUTURE

The Management Training and Planning Program was only one step in a longer program of assistance to the Command Water Management Project. What was accomplished during the program — e.g., increasing the understanding of and support for the project, addressing key problems, and planning for project implementation — cannot be viewed as having been accomplished once and for all time. Management is a continuing process of identifying and addressing problems, and

the management and technical requirements of a complex effort like Command Water Management are great.

As a follow-up to the MTP Program, it will be critical to continue to assist the provincial subprojects as they address on-going needs for further problem-solving, planning, and coordination, and as they develop more effective approaches to monitoring and evaluating their activities and modifying their plans. At this time, the following appear to be the most important areas to address as continuing assistance is provided to the CWM Project:

1. Strengthening implementation, especially the strategies used for on-going monitoring and evaluation of project activities and performance and for replanning activities.
2. Continuing to identify and address areas that need coordinated action by multiple agencies.
3. Developing strategies for effectively involving the Extension Service and other public and private

organizations that provide agricultural inputs and services to farmers.

4. Assessing current strategies for obtaining farmer involvement, and identifying and instituting additional means for involving farmers in the project.
5. Continuing to improve the management of the system by setting objectives for water deliveries (Irrigation Department) and target efficiencies (On-Farm Water Management), as well as objectives for increased knowledge and skills transfer to farmers (Extension) to increase productivity.
6. Initiating action research in the field to test and implement improved technologies for assisting farmers to further improve productivity and incomes.
7. Involving the resident technical assistance team in supporting the above improvements.

VI. APPLICABILITY OF THE APPROACH

The Pakistan Command Water Management Project reflects many of the constraints to improving productivity that are found elsewhere. Worldwide, the challenge of improving irrigated agriculture has revolved around a recurring set of implementation difficulties similar to those in Pakistan. As reviewed above, the MTP addressed these successfully by:

1. Linking improvement efforts to an understanding of the actual field conditions and problems.
2. Identifying improvements that were appropriate given the resources available and the priority assigned to the improvements by those involved.
3. Achieving greater collaboration among the diverse organizations that must contribute to an improvement effort.
4. Obtaining the support and guidance of policy and upper management levels for implementing improvements; particularly those that involved politically sensitive issues such as water policy enforcement and coordination among different agencies.
5. Providing expert technical assistance in a way that built on and supported the expertise of local resources.
6. Increasing the involvement of farmers in planning, designing, and implementing improvement efforts that had traditionally been handled only by government agencies.
7. Improving the management of irrigated agriculture by focusing on improving the productivity and incomes of farmers.

Just as the MTP depended on earlier steps taken in the project, such as the diagnostic analysis, follow-up to the MTP is

essential. Further work is needed to continue to address all three phases of the Development Model: monitoring and analysis of relevant data about the system, development and assessment of solutions to problems, and planning and implementation of improvement programs.

The approach demonstrated by the MTP Program is applicable to any situation calling for the systematic improvement of irrigated agriculture. While diagnostic analysis has been used with success in a number of countries and irrigation projects, this has been, to the authors' knowledge, the first systematic attempt to use a structured management intervention program to build on the results of a diagnostic analysis.

Diagnostic analysis, or some form of field study, is essential for developing an understanding among professionals in irrigated agriculture of the problems that most constrain improved management of irrigated agriculture. We believe the MTP, as an action-training, implementation planning program, provides an important model for addressing the question of how an improvement program can be initiated and sustained.

Applying the approach used in the MTP to other irrigation management settings will mean developing specific variations of this management improvement program to address the requirements of each situation. The MTP is not a recipe for how planning should be done, but an example of how an approach to implementation planning was successfully applied to a particular set of circumstances.

This approach is currently being used to design a new effort to support the implementation of a small-scale irrigation development project in India and the development of an irrigation advisory service in Egypt. These efforts and others should help to significantly expand our ability to improve management processes in support of improved irrigated agriculture.

VII. REFERENCES

- Chambers, R. 1980. *In search of a water revolution: questions for managing canal irrigation in the 1980s*. Institute of Development Studies, University of Sussex, Brighton.
- Clyma, W.; Lattimore, D.; Reddy, J.M. 1982. *Irrigation water management problems around the world*. Paper presented at the Ninth Technical Conference on Irrigation Drainage and Flood Control, U.S. Commission on Irrigation, Drainage and Flood Control, Jackson, MS. October 20-23.
- Clyma, W.; Lowdermilk, M.K.; Lattimore, D. 1981. On-farm water management for rural development. *Agricultural Engineering*. 62(2):14-15.

Kettering, M.H. 1985. *Action training for development management: learning to do and doing to learn for stronger development programs*. Development Program Management Center, USDA, Washington, D.C.

Levine, D. 1988. *The team planning methodology: shaping and strengthening development management*. Development Program Management Center, USDA, Washington, D.C.

Lowdermilk, M.K.; Clyma, W.; Dunn, L.E.; Haider, M.I.; Laitos, W.R.; Nelson, L.J.; Sunada, D.K.; Podmore, C.A.; Podmore, T.H. 1983. *Diagnostic analysis of irrigation systems: concepts and methodology, Volume 1*. Water Management Synthesis Project, Colorado State University, Fort Collins.

Podmore, C.A.; Eynon, D.G. (eds.). 1983. *Diagnostic analysis of irrigation systems: evaluation techniques, Volume 2*. Water Management Synthesis Project, Colorado State University, Fort Collins.

Solomon, M.J.; Heegaard, F.; Korhner, K. 1977. *An action-training strategy for project management*. Development Program Management Center, USDA, Washington, DC.

VIII. APPENDICES

APPENDIX A: LIST OF REPORTS RESULTING FROM THE DIAGNOSTIC ANALYSES AND MTP PROGRAMS CONDUCTED IN PAKISTAN

- Baluch, A.R.G. *et al.* 1987. *Diagnostic analysis of the Lasbela Subproject, Hub, Baluchistan.* Water Management Synthesis II Project, Colorado State University, Fort Collins.
- Haider, M.I. *et al.* 1987. *Pre-rehabilitation diagnostic study of Sehra irrigation system, Sind, Pakistan.* WMS Report 53. Water Management Synthesis II Project, Colorado State University, Fort Collins.
- Jones, A.; W. Clyma. 1986. An approach to management improvement of irrigated agriculture: the management and training planning program for Command Water Management, Pakistan. *Water Management Review*, 1(2):13-16. Water Management Synthesis II Project, Colorado State University, Fort Collins.
- Jones, A.; W. Clyma. 1988. *Improving the management of irrigated agriculture: The management training and planning program for Command Water Management, Pakistan.* WMS Professional Paper 3. Water Management Synthesis II Project, Colorado State University, Fort Collins.
- Jones, A.; W. Clyma. 1987. *Initial plan for the management training and planning program for Command Water Management in Pakistan.* Water Management Synthesis II Project, Colorado State University, Fort Collins.
- Tinsley, R.L.; P. Wattenburger. 1987. *Diagnostic analysis study of the Warsak Lift Canal subproject area, Northwest Frontier Province, Pakistan.* Water Management Synthesis II Project, Colorado State University, Fort Collins.
- Water Management Synthesis II Project. 1986. *Management plan for Command Water Management, Warsak Lift Canal subproject area, Northwest Frontier Province, Pakistan.* Water Management Synthesis II Project, Colorado State University, Fort Collins.
- Water Management Synthesis II Project. 1987. *Draft management plan for Command Water Management, Lasbela subproject, Hubchowki, Pakistan.* Water Management Synthesis II Project, Colorado State University, Fort Collins.
- Water Management Synthesis II Project. 1987. *Framework for the management plan: Niazbeg subproject area.* WMS Report 54. Water Management Synthesis II Project, Colorado State University, Fort Collins.
- Water Management Synthesis II Project. 1987. *Framework for the management plan: Sehra subproject area.* WMS Report 55. Water Management Synthesis II Project, Colorado State University, Fort Collins.
- Water Management Synthesis II Project. 1987. *Revised management plan for the Warsak Lift Canal, Command Water Management Project, Northwest Frontier Province, Pakistan.* WMS Report 65. Water Management Synthesis II Project, Colorado State University, Fort Collins.
- Wattenburger, P. 1987. *Command Water Management — Punjab: Pre-rehabilitation diagnostic analysis of the Niazbeg subproject.* WMS Report 52. Water Management Synthesis II Project, Colorado State University, Fort Collins.
- Wattenburger, P. 1988. *Water Management Synthesis II Project Training Programs for Command Water Management in Pakistan.* Water Management Synthesis II Project, Colorado State University, Fort Collins.

APPENDIX B: ABBREVIATIONS

CSU	Colorado State University. One of the participating U.S. universities in USAID's Water Management Synthesis II Project and the lead institution for the WMS II activities in Pakistan, including the MTP Program.
CWM	Command Water Management Project. A project funded jointly by the Government of Pakistan, the World Bank (IDA) and USAID to establish pilot areas in each of the four Pakistan provinces to develop and implement improvements in the management of irrigated agriculture.
DA	Diagnostic analysis. A diagnostic analysis is an interdisciplinary study of an irrigation system to understand its operation and to identify what is working well and what is constraining improved productivity.
DPMC	Development Program Management Center, U.S. Department of Agriculture. DPMC is an organization dedicated to improving public sector management in agriculture, rural development, and related areas. As a cooperating institution with USAID's Performance Management Project, DPMC provided support to the implementation of the MTP Program.
IDA	International Development Association of the World Bank. Provides concessionary loans to least developed countries. IDA supports the Pakistan CWM Project.
IDMC	International Development Management Center, University of Maryland. IDMC is an organization dedicated to the research, development, and application of management improvement approaches for development management. IDMC provided management development leadership to the MTP. It is a cooperating institution within USAID's Performance Management Project.
MTP	Management Training and Planning Program. The approximately four-week management improvement program developed and implemented to support the Pakistan Command Water Management Project.
NWFP	Northwest Frontier Province, Pakistan.
PMP	Performance Management Project. A centrally funded project of USAID's Science and Technology Bureau whose purpose is the research, development and application of management improvement strategies and techniques for development efforts.
PPC	Provincial policy committee. Chaired by the Additional Chief Secretary of Planning and Development, the committee's members are the Secretary of Agriculture, the Secretary of Finance, and the Secretary of Irrigation. The committee's purpose is to keep its members informed and involved in the CWM Project.
SMO	Subproject management office. Each provincial SMO develops project plans, coordinates the activities of the implementing agencies, and monitors and evaluates the results of the work.
SPM	Subproject manager.
TPM	Team planning methodology. The TPM provides a way of structuring interventions to assistance efforts so that those involved in projects assess the current status of the project, identify key implementation issues, and develop plans for the next phases of implementation. One application of the TPM is in the preparation of technical assistance teams for their assignments.
USAID	United States Agency for International Development. Donor agency that funds the Pakistan CWM Project through a combination of grant and loan, and which also funds the WMS II and PMP activities in support of CWM.
USAID/ Islamabad	The USAID mission located in Islamabad, Pakistan. USAID/ Islamabad provided funds for the MTP intervention.
WMS II	Water Management Synthesis II Project. A centrally funded project of USAID's Science and Technology Bureau whose purpose is the development, synthesis, and dissemination of approaches for improving irrigated agriculture worldwide. CSU's and IDMC's work on the Pakistan CWM Project was done as a part of the WMS II Project.