

PROGRAM ON IMPROVING PUBLIC IRRIGATION ORGANIZATIONS AND SECTOR LEVEL MANAGEMENT OF IRRIGATED AGRICULTURE

by

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1. INTRODUCTION

A major conclusion emerging from the International Conference on Irrigation Management Transfer in Wuhan, China, in September 1994 is that treating "public organizations," "local management," and "sector management" as three separate programs is artificial and misleading. Many of the Conference papers reflect broad, sometimes even radical, transformations in sector policy, public institutions, and local organizations for irrigation management. Indeed, some papers (e.g., from China and Vietnam) were not at all about "turnover" but achieving financial self-sufficiency by government water resource management agencies. Transfer of irrigation management roles to users is very important in many countries, but is part of larger structural changes. In this sense, the study of cases of local management, if confined to the local aspects of the phenomenon, would be behind, and not at the crest of, the wave of changes occurring in water resource institutions.

Restructuring public irrigation organizations is already planned or underway in many countries (for example Mexico, Colombia, Ecuador, Sudan, Nigeria, Niger, Vietnam, China, Pakistan, Sri Lanka, Bangladesh, and several states in India). However, unlike the case for transfer of irrigation management to users, there are very few studies on what kinds of public organizations perform best, the most appropriate roles for public organizations, and how to reform public irrigation organizations to improve performance and sustainability. There are few case studies on public organizations, and even fewer comparative analyses. Some of the restructuring programs being initiated are based on untested assumptions, with little or no provision for learning from the experience.

If IIMI hopes to be a leader and innovator in irrigation management, it is essential to have a strong program on sector management and public organizations, closely linked to -- if not fully integrated with -- its programs on local management, performance, water management, and environment.

Unfortunately, the present program which combines "sector" and "public organizations" is totally dependent on unrestricted core funds, resulting in its being so under-funded as to be unsustainable¹. There was no approved budget until June 20, 1994, and that budget was so minimal that it was impossible to engage any staff beyond the Program Leader and his secretary. The work done in 1994 must be viewed in this context.

2. RESEARCH ACTIVITIES

2.1 Designing Institutions for Accountability

A fundamental question achieving and sustaining higher productivity of irrigated agriculture in the future is to identify institutional arrangements that assure a high degree of accountability in the management of large-scale gravity irrigation systems currently owned and managed by government agencies. Many of the current programs for turnover of lower levels of large irrigation systems make the crucial assumption that public agencies will retain primary responsibility for overall system management, and fail to design into the programs mutual accountability between users and managers, or incentives for officials to foster independent responsible users organizations. "Joint management" as currently practiced is often business as usual with cosmetic changes.

A study on this question began with a review of both the theoretical literature on *accountability* and public organizations in general, and the literature synthesizing the "design principles" underlying successful farmer-managed irrigation. Many previous researchers have drawn an analogy between farmer-managed irrigation and water users associations at the tertiary levels of large-scale irrigation systems, but as noted by Robert Hunt (1989) this analogy is false. It is essential to examine the institutional arrangements for management of the *entire system*, and not separate parts.

The work then focused on the interactions of two essential characteristics of effective collective choice arrangements. These are: 1) the relationship between the irrigation management agency and the government; and 2) the relationship of the management agency to the irrigation infrastructure.

¹. Ironically, IIMI presently has residential programs in five (formerly seven) of the countries listed in the previous paragraph, and nonresidential programs in several others; but its ability to support government efforts at planning and implementing restructuring programs in these countries is minimal.

Relationship of irrigation agency to government: The analysis distinguishes two dimensions along a continuum between "autonomy" and "dependence": organizational, and financial. "Financial autonomy" -- an organization that is largely self-financing -- had been shown previously by IIMI and others to be more conducive to high performance than financial dependence on the State. Distinct from financial autonomy, "organizational autonomy" refers to an organization whose charter of authority is internal, i.e., by the consent and agreement of its members or shareholders; while "organizational dependence" refers to an organization which is created and controlled by the State.²

Relationship of management organization and irrigation infrastructure: This principle has two dimensions: 1) a single agency whose primary business is management of one irrigation system; and 2) a single agency managing a multiplicity of systems.

The working hypothesis is that those irrigation systems managed by an agency that is *both* organizationally and financially autonomous, and whose primary responsibility is management of that particular system (and not a multiplicity of systems) will exhibit a higher level of performance and resilience in the face of changing demands than others. A number of other hypotheses can also be derived from this basic hypothesis.

Figure 1 is a matrix that relates autonomy-dependence and management of single versus multiple systems, and classifies a set of irrigation cases reported in the literature according to the matrix. The systems in the "autonomous-single system" cell are generally regarded as exhibiting a higher level of performance than those falling into the other cells, strongly supporting the working hypothesis.

This study was reported in a paper presented at the Conference on Irrigation Management Turnover in Wuhan, China, in September 1994 (Merrey 1994a). Further work is required to introduce measures of performance, refine the classification scheme, and to extend the analysis to other cases. Nevertheless, the paper concludes that the implications for policy makers are clear:

Those countries whose irrigation management agencies are dependent on government financially, organizationally or both should consider how to make such agencies more autonomous. Those countries in which a single provincial or national irrigation management agency manages a

². It is possible for an organization to be autonomous on one dimension but not the other; for example the National Irrigation Administration of the Philippines is financially autonomous but organizationally dependent.

large number of systems should explore ways to encourage the emergence of autonomous user-based organizations on each system, or perhaps on specific watersheds. Such reforms will be successful only if governments are willing to provide a supportive and enabling institutional and policy framework, positive incentives for local users to take full responsibility and authority for their systems, and sufficient training and technical support.

2.2 Study of Decision-Making Processes in Mahi-Kadana System, Gujarat, India

IIMI has been working with the Water and Land Management Institute (WALMI) and the Irrigation Department of Gujarat State, India, for several years, studying the performance of the largest system in the state, and assisting in pilot testing of a new computer-based management information system (Murray-Rust et al. 1994). The Mahi-Kadana System is also one of the four systems involved in the four-country study on Performance Improvement being carried out in collaboration with ILRI and IHE under the Performance Program.

In June 1994, in collaboration with the Irrigation Department, WALMI, and IIMI's Performance Program, the Public Organization Program initiated a study on the decision-making processes of the Department staff managing Mahi Kadana System. The main objective of the study is to identify ways to improve the decision-making processes further, enhancing the Department's ability to use the new MIS. The basic hypothesis is that improvements in decision-making at higher levels of the Department would enhance the performance impacts at the lower levels of the introduction of MIS.

One Research Officer is spending about half time collecting documents, interviewing engineers, observing meetings, and operating as a kind of management consultant (the other half of his time is devoted to collecting performance data under the Performance Program). Events in that region of India combined with other urgent demands on the Program Leader's time have led to reduced supervision of this work. As a result, preliminary results of the work are delayed until late 1994, and the completion of a formal report is delayed until the end of the first quarter of 1995.

The Program Leader is corresponding with an advisor to the Government of Gujarat on irrigation institutional issues (former Director of the Aga Khan Rural Support Program in Gujarat). The Government has established a high-level Working Group to oversee pilot projects for turning over increased responsibility for irrigation system management to farmers and reforming the Irrigation Department. There are indications that IIMI will be invited to attend future meetings as an observer.

2.3. Comparative Study of Organizational Performance in Two Irrigation Schemes of Sri Lanka

There is a strong presumption that the internal structure of organizations and their operating rules have a significant impact on organizational performance. This presumption is generally established in sociology, and underlies most restructuring programs. Nevertheless, there are few studies establishing the relationship between organizational structure and performance; and recent management literature has suggested organizational structure is an emergent, not determinant, feature of organizational performance.

This study, initiated in September 1994, will compare two contrasting types of organizations using existing data from two irrigation systems in Sri Lanka. It makes use of data collected by IIMI as part of the Asian Development Bank-funded action research programs in Kirindi Oya and Uda Walawe. Walawe is managed by the Mahaweli Economic Agency (MEA). MEA uses a "matrix" management structure to provide agricultural, economic, social as well as irrigation services to settler farmers. In Kirindi Oya several independent line departments provide these services. The basic question is whether provision of multiple services through a unitary agency managed through a matrix structure is more, or less, effective than provision of such services through multiple single-purpose agencies.

The study is focused primarily on the conceptual and methodological issues involved in trying to answer this question. There is no broadly acceptable ready-made methodology for comparative analysis of organizational performance. Because of the complexity of the systems, no single-factor or linear theory will suffice. But the advantage of using these cases for the study is that we can hold many factors constant: social and cultural characteristics, physical setting, and technology are basically similar (except one system is newer and short of water compared to the other). The contrast in organizational arrangements is the major contrast between the two systems.

This study is being done by Jeff Brewer, R Sakthivadivel and Doug Merrey. Because of the late start and unanticipated pressures of other work, initial results are not yet available; a progress report and plan for completion of the study will be developed before the end of December 1994.

3. PROPOSAL PREPARATION

A concept paper for a Program on Improving Public Organizations was prepared early in 1994, but after internal discussions, it was concluded that in the current climate it would be difficult to find a donor willing to support such a broad program. Therefore, the present strategy is to take advantage of opportunities to obtain support for specific activities, both international (comparative) and country-specific.

3.1 Improving Irrigation Agencies' Rate of Adoption of Management Innovations

IIMI prepared and submitted a proposal to IDRC's New Delhi office for the first of two phases of this study, which is expected to be initiated in early 1995. The objectives will be to identify the factors that affect the adoption by public irrigation management agencies of management and organizational innovations intended to improve performance, and how innovativeness can be improved.

IIMI will first carry out a survey of irrigation organizations in Asia on their experience in implementing innovations, to identify possible cases for further study. Based on the results, a selected group of managers, policy makers, researchers and representatives of NGOs will be invited to a workshop to discuss the problem, a conceptual framework for analysis, and the cases to be studied in depth. About five to eight case studies will then be carried out by national management research institutes, following an agreed methodology. The studies will include attention to: 1) the nature of the innovation itself; 2) the nature of the adopting organization; and 3) the adoption-decision process.

The results of the case studies will be reported and analyzed at an international workshop; the proceedings will be published and the cases used to prepare a synthesis paper. The results will provide a basis for specific recommendations on enhancing innovativeness and a framework and plan for a follow-up "action" phase.

This modest project will be the major "core" activity under the Program on Improving Public Organizations in 1995.

3.2 Egypt

3.2.1 *Improving the Long-Term Productivity of Water in Egypt*

In 1993 IIMI and the Water Research Center (WRC), Ministry of Water Resources and Public Works, Egypt, had developed a proposal for collaborative research. The Government had submitted this to USAID for funding, as had been informally agreed to by USAID officials. However, for various reasons having nothing to do with the proposal, IIMI or WRC, this project was not funded. In early 1994, in response to an expression of interest by the European Union, this proposal was revised and updated, and submitted by the Government and IIMI to the Cairo office of the European Union. The current status is that it is being considered seriously in the context of a large multi-donor package of investments for improving irrigation and drainage in Egypt.

The proposed five-year program would address four broad issues:

- * Performance Assessment and Improvement
- * Institutional Analysis and Organizational Strengthening
- * Water Quality and Reuse for Agriculture: The Management Dimension
- * Research-based Policies and Policy-Oriented Research.

Although the Program relates to several of IIMI's programs, the major thrust is on sector management and public organizations. IIMI anticipates the Program may be approved and initiated by late 1995, although there is still considerable uncertainty.

3.2.2 *Strengthening Irrigation Management in Egypt*

In September 1994, USAID in Cairo invited IIMI to submit a "Program Description" for a Cooperative Agreement to carry out studies on two closely related issues: cost recovery, and an analysis of the institutional constraints to adoption and effective use of new technologies and management practices. These studies are intended to be inputs into the design of the next major USAID project in Egyptian irrigation; therefore the work must be completed in a very tight time frame (December 1994 to July 1995). IIMI understands there will be opportunities for continuing work under the new project.

IIMI has proposed to do this study in a participatory manner, similar to IMPSA and the design of the SCOR Project in Sri Lanka, emphasizing efforts to assist the Egyptian government to accept and internalize the results, rather than simply producing reports. IIMI's proposal therefore combines seven specific

studies and nine workshops, with a Working Group of senior Ministry officials to guide the process. USAID has responded positively to the proposal, and IIMI anticipates a Cooperative Agreement to be signed and work initiated by early December 1994.

3.3 Pakistan

3.3.1 Institutional Framework for Improved Sustainability and Productivity of Irrigated Agriculture in Pakistan

IIMI and IFPRI have developed a joint proposal for research which would build on existing collaborative activities in Pakistan. This three-year project will identify the roles of key water management institutions emerging in some localities Pakistan, with emphasis on water allocation through user organizations, markets, and administrative mechanisms (i.e., *warabandi*); develop and validate a methodology for measuring performance of institutions; and examine the social, agro-economic and policy conditions under which each type of institution is most effective in irrigation and drainage management. Working with national partners, the study will move from comparative analysis of existing arrangements in a variety of settings in Pakistan, to participating in pilot projects to test alternative institutional arrangements being proposed under a major World Bank-supported National Drainage Program. Special attention will focus on the impact of public organizations on local management arrangements. The World Bank has expressed strong interest in supporting this proposal.

3.4 Sri Lanka

The Government of Sri Lanka has been sponsoring a variety of studies on restructuring the Mahaweli Authority and Irrigation Department. Some proposals had emerged from IMPSA which form the basis of present discussions. The Head of Sri Lanka Field Operations is a member of the Central Coordinating Committee on Irrigation Management which deals with this issue. As one contribution to this process IIMI had developed a draft concept paper for action research to test an effective *process* for restructuring management of large gravity irrigation systems. It is not clear what the government's future policy will be, and what, if any, IIMI's role might be. This should be clarified after the November 1994 Presidential elections.

3.5 Bangladesh

As part of a project to develop a Flood Action Plan (FAP) in Bangladesh, a consultant prepared a report (FAP No. 26) on the institutional framework for implementing the plans. Restructuring of the public agencies dealing with water is needed for effective implementation of future projects, and a satisfactory

agreement on the future institutional framework is a pre-requisite for future donor support for the FAP. Because of problems with the report, IIMI has been informally invited to comment on how the report could be strengthened or restructured. By the end of 1994, IIMI is likely to suggest an approach for resolving this issue, which may result in a formal set of activities in 1995.

4. OTHER

4.1 Papers Completed and Published

Three papers, two from the 1993 Internal Program Review and one from a 1992 DSE-IIMI Workshop, were substantially revised and accepted for publication in 1994. The two IPR papers were originally products of the Performance Program but have important implications for improving public irrigation agencies.

Merrey et al. (1994a) presents a methodology for rapidly assessing the *capacity* of the managers and users of an irrigation system to improve its performance and for identifying what kinds of interventions are likely to succeed. The paper concludes that problems in system design, operations, data collection and management framework are nearly always a function of institutional weaknesses and suggests policy makers should therefore give the highest priority to institutional reform and strengthening. Merrey et al. (1994b) also shows, based on comparative analysis of how performance is assessed on three systems, that policy makers should focus on creating institutional conditions conducive to improved performance, including introduction of an effective performance assessment program and strategic management processes.

Murray-Rust and Merrey (1994) discusses the necessity for institutional adaptation and reform if irrigated agriculture is going to meet the challenges of the 21st century. While it is not possible to propose a single model for irrigation institutions applicable to all countries, it is clear that just as institutions are being restructured in other sectors, irrigation institutions cannot continue to resist similar changes without threatening the environment and food security of countries.

4.2 Nile Valley Regional Program Phase II, Egypt

IIMI's support to the *Nile Valley Regional Program, Phase II*, a joint project implemented by ICARDA and the Agricultural Research Center, Egypt, is through this Program. NVRP II is a project intended to assist Egyptian agricultural researchers to pay greater attention to natural resource management issues. ICARDA requested IIMI to assist in integrating irrigation management issues into

the program; one of the research institutes of the Water Research Center is also participating in the project. The Program Leader attended a planning workshop in February and a Regional Workshop on Socio-Economic Research in May (at which a paper was presented; Merrey 1994b); and has provided detailed comments on the first round of synthesis papers done by the Egyptian counterparts. This participation has helped build IIMI's relationships in Egypt, as well as contributing a broader systems perspective to the project.

4.3 Workshop on Agricultural Sustainability, Growth and Poverty Alleviation

The Program Leader participated in this DSE-IFPRI Workshop in Kuala Lumpur in October 1994.

5. CONCLUSION

The Bangalore edition of *The Hindu* dated September 14, 1994, carries a story with the headline, "Irrigation officials threaten stir." The article describes the inability of irrigation officials to deliver water to several large sections of the Tungabhadra Left Bank Canal, allegedly because of unauthorized cultivation in the head reaches of the canal, and tail end farmers' rage and threats directed against the irrigation officers. The article is a dramatic case of daily occurrences on thousands of irrigation systems around the world.

The underlying causes are complex. The solutions proposed by the irrigation staff -- creating an expert committee "to go in to the anomalies in the present system of water management," "the Government to find a permanent solution to curb the cultivation of unauthorized paddy and violation of cropping pattern in the upper reaches," and "creation of a separate police force" to deal with irrigation violations are not adequate to address the problem. The underlying causes as the article itself notes are complex and "innumerable." Simple solutions like introducing improved performance assessment or turning over canals to farmers' organizations are by themselves unlikely to have any impact. No solutions are possible without major changes in the institutional framework for irrigation management. The question is, will IIMI be in a position to make a positive contribution to these complex problems? Will IIMI be ahead of, or behind the wave of institutional transformation?

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Agency Manages:	Relationship of Agency to Staff Government:	
	Dependent	Autonomous
Single irrigation system	Egypt Punjab, Sindh- Pakistan ORMVAs, Morocco ^a Haryana, India 1	Mendoza, Argentina Irrig. Districts, USA Taiwan systems <i>Unidades</i> in Mexico Communals-Philippines FMIS by definition 2
Multiple irrigation systems	3 Sri Lanka; Nepal Most states in India NWFP, Baluchistan - Pakistan <i>Distritos</i> in Mexico ^b	4 National systems under NIA-Philippines ^c

Source: Adapted from Merrey (1994a).

- a. ORMVAS are a partial case: they are partially autonomous financially, but their charter of authority is derived from government.
- b. These are in transition through a turnover program and are therefore moving into cell 2 (autonomous, single-system).
- c. NIA is a partial or mixed case; it is partially, but not fully, autonomous in financial terms; and its charter of authority is based on dependence on government; therefore the distinction between the cases in cells 3 and this case in cell 4 is not as great as is often claimed.

Figure 1. Matrix of Irrigation System Governance Arrangements