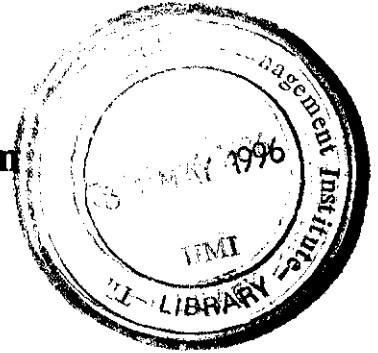


**Short Report Series**  
**on**  
**Locally Managed Irrigation**

*Report No. 13*



**TRANSFERRING IRRIGATION  
MANAGEMENT RESPONSIBILITY IN ASIA:  
RESULTS OF A WORKSHOP**

FAO/IIMI Expert Consultation on  
Irrigation Management Transfer in Asia

Bangkok and Chiang Mai  
25-29 September 1995

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## Purpose of the Series

The *Short Report Series on Locally Managed Irrigation* is designed to disseminate concise information on the role of local management in irrigation and irrigation management transfer or turnover experiences and policies. The *Series* is distributed worldwide to a broad range of people—policymakers, planners, researchers, donors and officials in both public and nongovernmental organizations—who are concerned with the irrigated agriculture sector. IIMI's goal is not to promote policies such as irrigation management transfer, but to enhance the knowledge base available to decision makers and advisors as they face questions of policy adoption and strategies for implementation.

Locally managed irrigation can be of many types, such as traditional farmer-constructed diversion or tank schemes, indigenous and often new lift irrigation, government-constructed but farmer-managed irrigation systems and systems where management is or has been transferred from an outside agency to a local user organization.

By "irrigation management transfer" we mean some degree of transfer of responsibility and authority for irrigation management from the government to farmer groups or other nongovernmental entities. This generally involves contraction of the role of the state and expansion of the role of the private sector and water users in irrigation management. In other words, there is a shifting upstream of the point where management responsibility and control of the water supply are transferred from the irrigation authority to local management. This may involve changes in policies, procedures, practices and the performance of irrigated agriculture. It may or may not involve "privatization" of ownership of the assets of the irrigation system. The *Short Report Series* addresses questions such as the following:

*What are the necessary conditions which support viable locally managed irrigation?*

*What socio-technical conditions, institutional arrangements and change processes lead to sustainable locally managed irrigation?*

*What is the range of different models that are being applied worldwide for turnover or transfer of responsibility for local management for recently developed irrigation?*

*What are the effects of management transfer on the productivity, profitability, financial viability, equity, efficiency and sustainability of irrigated agriculture?*

*What are the perspectives of farmers, managers, policymakers, urban consumers and other stakeholders in irrigated agriculture about irrigation management transfer?*

*What adjustments in government may be needed as a result of turnover to provide support to locally managed irrigation systems and to improve productivity in the public sector?*

The *Short Report Series* is produced by the **Program on Local Management** of the **International Irrigation Management Institute (IIMI)**. Support for the Series is provided by Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH through the Privatization and Self-Management of Irrigation Project (No. 91.7860.9-01.288). Individuals wishing to contribute to the Series or otherwise correspond about the Series, are invited to direct communications to the editors of the Series:

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## Preface

As a follow-up to the large International Conference on Irrigation Management Transfer held in Wuhan, China in September 1994, the Food and Agricultural Organization of the United Nations (FAO) and the International Irrigation Management Institute (IIMI) sponsored a smaller regional workshop for Asia on the same topic in September 1995. This was the FAO/IIMI Expert Consultation on Irrigation Management Transfer in Asia, held in Bangkok and Chiang Mai, Thailand, September 25–29, 1995.

Perhaps owing to the smaller size of the group of participants, or the lapse of time for further experience and reflection, the September 1995 meeting in Thailand identified a number of new issues, ideas, and suggestions for research and development support which went significantly beyond those raised in the previous conference.

Among these issues is that there are two different views about what turnover is or should be. One view, held by some participants from South Asia, is that management transfer (or “participatory management,” as some preferred to call it) is really only the *augmentation* of existing agency management with more farmer participation. The alternative approach, currently being implemented in Indonesia, China, Mexico and Turkey, is that management transfer constitutes the *replacement* of existing agency management with management by farmer or other local organizations, at some level. The group considered the conditions that make the alternative approaches appropriate in different settings.

The participants divided irrigation management into several different functions and considered the need for support services for turning over irrigation management to local groups. Participants also discussed whether management transfer could be done at larger scales than has previously been done in most countries in Asia, such as for entire irrigation systems of medium and large scales. The group discussed alternative organizational models for achieving accountability between water users, leaders of water users associations, and management staff. And in an exercise in visualizing the future, the group outlined arrangements they expect to be in place for managing irrigation systems in their countries five and fifteen years hence. Finally, the group identified priority support needs for training, meetings, information exchange and research. This Short Report summarizes outcomes of the discussions.

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# IRRIGATION MANAGEMENT TRANSFER IN ASIA

Results of the FAO/IIMI Expert Consultation  
held in Bangkok and Chiang Mai, Thailand  
25–29 September 1995

## 1. INTRODUCTION

Transferring the responsibility for managing irrigation systems from governments to farmers' associations or other private sector organizations is being widely advocated as a solution to problems of poor irrigation management and inadequate performance. It is argued that managing organizations in the private sector have stronger incentives for achieving performance standards and can operate more efficiently than government agencies. Transfer programs are currently being developed or are underway in most Asian countries; however experiences and progress vary widely.

This report summarizes the results of a joint FAO/IIMI workshop held in Bangkok and Chiang Mai, Thailand in September 1995 on irrigation management transfer (IMT) in Asia. The workshop was a follow-on to the major international conference on irrigation management transfer organized by the International Irrigation Management Institute (IIMI) in Wuhan, China in September 1994 (Johnson et al. 1995), and was designed to provide opportunity for more intensive regional interaction on IMT issues. Objectives were:

- \* to give participants a clear and detailed understanding of the various forms of IMT and the process of introducing IMT;
- \* to enhance understanding among participants about IMT efforts currently underway in Asia,
- \* to provide workshop sponsors with an understanding of the research and support needs of countries practicing IMT in Asia.

The workshop was attended by about 30 persons, including 18 country representatives and observers, 6 invited resource persons, 5 FAO and IIMI representatives, and several host country observers.<sup>1</sup> It was informal and participatory. Discussions took place in small groups of six to nine people, results of which were discussed by the entire group. This is a summary of the results of these discussions and workshop papers. The authors have tried to be faithful

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<sup>1</sup> A list of participants is provided in Annex 1.

to the spirit and intent of the various inputs, but interpretations and conclusions are their responsibility.

The workshop was organized around 5 aspects of IMT:

1. Reasons for undertaking irrigation management transfer;
2. Alternative organizational structures;
3. Management functions to be transferred and retained;
4. Conditions under which IMT can succeed; and
5. Support needs after IMT.

Section 2 points out the need for increased food production in Asia and reasons national governments are undertaking management transfer programs. Sections 3 and 4 define concepts and identify alternative management transfer models. Section 5 discusses management functions which have typically been transferred to private sector entities by government agencies and those which have been retained. Section 6 addresses conditions for successful implementation of IMT, and Section 7 concludes with a discussion of the external support needs for IMT programs in Asia, as identified by workshop participants.

## **2. DEMANDS FOR RISING PRODUCTIVITY IN IRRIGATED AGRICULTURE**

About 240 million hectares, or 17 percent of the world's cropland, is irrigated. This land produces one-third of the world's food. Almost three-quarters of this irrigated area is in developing countries and around 60 percent, or 136 million hectares, are found in Asia. Since the 1950s, the total irrigated area in the world has expanded rapidly. Between 1961 and 1990, the area under irrigation increased by almost 100 million hectares, 70 percent of which was in Asia. The rate of growth, however, has declined sharply. During the 1960s and 1970s, the annual growth rate of irrigated area exceeded 2 percent. Today, the growth rate has slowed to a modest 0.8 percent (FAO 1992; Production Yearbook 1992. Rome, Italy).

Increased irrigated area and the technological innovations of the green revolution have enabled Asia to achieve food sufficiency. The pressing question which remains is whether continued innovation can meet future food demands of an ever-growing population. Water security is a prerequisite for food security and water is becoming a critically scarce commodity.

The medium variant estimates of world population growth, as drawn from the UN's World Population Prospects (1992 Revision), indicate that from 1995 to 2020 the population will increase by 2.3 billion to 8.1 billion. Of this increase, 93 percent will take place in developing countries, and about 60 percent will take place in Asia. This means that Asia's present population of 3.0 billion people will grow to 4.4 billion by 2020. As a result of the increase in population and changing food demands, world food production will need to double by 2020 (Nygaard 1994). The FAO estimates that the share of world food production contributed by irrigated agriculture will have to increase from the present 34 percent to 45 percent by that year (FAO 1993).

There is reason for concern about the world's capacity to meet future food demands. Cereals are the main staple food in Asia and food security depends heavily on their production. Since 1990, cereal production growth rates have been declining. At present the annual growth rate of total cereal production is only 0.9 percent (FAO 1995).



The first constraint is land. In Asia, very little land capable of sustainable production remains unused. Further, productive land is continually being lost or degraded. Fertile farmland on the urban periphery is relentlessly buried under the sprawl of urban and industrial development. Agricultural land is degraded by erosion, waterlogging and salinization. About 43 percent of land in Asia is affected by some degree of degradation (ibid.). Because of high existing settlement densities, the option of expanding irrigated area is rapidly closing.

The second key constraint is water, particularly the scarcity of clean water. Per capita availability (PCA) of renewable freshwater will decline by 50 percent in the next 25 years (Abdullah 1994). Nine Asian countries will have "low" ratings by that date, including the most populous countries in the region, China and India.

A third constraint for increasing world food production is the decreasing impact of yield-raising technologies. The yield of many high-yielding crop varieties is holding

constant or declining. The frontier science of biotechnology holds some promise for reversing this trend, but the time lags involved in wide dissemination of any new technology following even a near-term technical breakthrough suggests that other approaches to production increases must be pursued as well.

The times when water and land were available in abundance are over, and irrigated agriculture will have to increase production with less water and less land. Relaxing these land and water constraints to increasing food production depends heavily on improving irrigation performance, currently unacceptably low in most Asian countries.

Reasons for the disappointing performance of irrigation are many. They include poorly planned, designed, and constructed irrigation systems, failure to complete construction of tertiary works, inadequate funding for system O&M, and unprofitable agriculture due to poor rural infrastructure and government suppression of commodity prices. Some of the most serious and intractable causes of poor irrigation performance, however, relate to ineffective system management. Many other problems follow from this failure, since it is management's job to identify and address problems such as those mentioned above. Admittedly, many of the problems confronting irrigation system performance are beyond the ability of irrigation system managers to remedy. But many others are not. In the past, efforts to improve managerial performance have focused on improving irrigation technology and on upgrading the skills of the irrigation bureaucracy. Results of these efforts have generally been disappointing.

Today, attention is shifting dramatically toward more radical reforms of irrigation management. These reforms alter the fundamental relationship between the government and the farmers growing irrigated crops and involve a net transfer of responsibility and authority from government to farmers. The hope and promise are that these reforms will improve

## 2.1 Reasons for Concern over Future Asian Food Security

1. Population increase of 1.4 billion by 2020
2. Land scarcity
  - \* urban encroachment
  - \* insignificant expansion of irrigated area (0.8% per annum)
  - \* high land-development costs
3. Water scarcity
  - \* per capita water availability halved by 2020
  - \* competition between urban and rural sectors
4. Poor performance of irrigation systems
5. Scarcity of new yield-raising technologies

management of irrigation systems in such a way that water use efficiencies will rise and water shortages which constrain production for many farmers will be eased, allowing production growth rates to accelerate. At the same time, these reforms promise to reduce the cost of irrigation service.

### 3. IRRIGATION MANAGEMENT TRANSFER: A GLOBAL PHENOMENON

The phenomenon called irrigation management transfer (IMT) here has been variously referred to as "turnover" (Indonesia and the Philippines), "management transfer" (Mexico and Turkey), "privatization" (Bangladesh), "disengagement" (Senegal), "post responsibility system" (China), "participatory management" (India and Sri Lanka), "commercialization" (Nigeria) and "self-management" (Niger). During the workshop the following definition for IMT was proposed to describe all of these policies:

*The expansion of the role of farmers and the private sector and the reduction of the role of government in irrigation management.*

Management transfer can take many forms. It can mean the contraction of the scope of government managerial responsibility to encompass only the largest facilities in the system, leaving management of tertiary or distributary facilities to farmer groups or other private sector entities. Or transfer can encompass the entire irrigation system, including intake, distribution, and drainage works. IMT can even comprise transfer of responsibility for groups of separate systems to managing entities under farmer control.

Following the broad definition above, irrigation management transfer is occurring in many countries in Asia, Africa, the Americas and the Pacific. Early efforts to transfer management from government to farmer organizations occurred in the USA, France and Taiwan in the 1950s, 1960s and 1970s. IMT became a national strategy in developing countries only in the 1980s and 1990s, with Chile, Peru, Mexico, Brazil, Dominican Republic, Haiti, Senegal, Mauritania, Niger, Zimbabwe, Tanzania, Sudan, Somalia, Madagascar, Turkey, Pakistan, India, Sri Lanka, Bangladesh, Lao, Vietnam, China, Indonesia and the Philippines and other countries adopting transfer programs.

In China, the government intends to continue reforms to the point of transferring full control, financial responsibility, and functional ownership of irrigation districts to farmer organizations, subject to regulatory constraints. In China, it is now illegal for central or provincial governments to subsidize operations and maintenance of irrigation systems (PRC 1988). The Government of Indonesia is transferring full control, financial responsibility, and eventually ownership of small-scale irrigation systems (less than 500 ha in service area) to farmer organizations, subject to governmental regulation of the resource base.

During the workshop, resource persons from the World Bank and Turkey reported on transfer experiences in Mexico and Turkey, for comparison with the South and Southeast Asian countries represented at the workshop. Several participants, especially those from South Asian countries, expressed discomfort with the term, "management transfer," preferring instead the term "participatory management." It became apparent that participants from these countries had a different conception of this reform than that prevailing in Mexico, Turkey, China and Indonesia, seeing it more as farmers *augmenting* rather than *replacing* the role of governments in irrigation management. In Mexico and Turkey governments have strong clear

policies that call for farmer organizations to replace government agencies in irrigation management.

Such changes may eventually also take place in countries such as India, Sri Lanka and Pakistan, but official policies in these countries currently support more limited farmer participation or joint farmer/agency management of irrigation systems rather than replacement of agencies with users organizations. Such policies generally leave control of water supply and basic allocation in the hands of government agency personnel and exclude farmers from participation in overall system governance.

These discussions suggested that two terms may be needed to distinguish the two concepts. A more precise definition of **irrigation management transfer**, then, could be:

*The replacement of government agencies with farmer organizations or other private sector entities in managing irrigation systems, either at subsystem or systemwide levels.*

### 3.1 Reforms in China's Irrigation Districts

Since 1949, China has expanded its irrigated area by 21 million hectares through the construction of 5,363 medium and large-scale irrigation districts and countless small-scale village irrigation works. The rapid expansion of irrigated area created an immense challenge—how to finance the recurring costs of operating and maintaining China's numerous irrigation systems? In response, a series of reforms in irrigation management was introduced throughout China in the mid-1980s. These included the following five elements:

1. Transfer of responsibility for financing irrigation from communes or provincial governments to financially autonomous irrigation districts,
2. Volumetric and area water fees coupled with traditional compulsory maintenance labor,
3. Introduction of sideline enterprises within irrigation districts,
4. Introduction of the worker incentive systems based on performance monitoring, and
5. Introduction of water markets with the new National Water Law of 1988.

While it is reported that this "first wave" of reforms in the 1980s helped spur the dramatic advance in agricultural productivity, government officials are concerned about widespread deterioration of irrigation systems, declining irrigation efficiencies, financial problems and weak accountability between the irrigation district management and farmers. Authorities in the water sector perceive that more far-reaching institutional reforms are needed to reverse these worrisome trends.

During the early 1990s what Ministry of Water Resources officials are referring to as a "second wave" reform has emerged in Shandong and Hunan provinces. This is the development of farmer stock shareholding arrangements. Farmers secure governance authority over irrigation districts by acquiring ownership of system infrastructure through a distribution of shares. The Ministry intends to experiment with wider application of this model in an effort to make irrigation districts become financially sustainable and stem the tide of deterioration.

### 3.2 Irrigation Management Transfer in Indonesia

Since 1989, the Government of Indonesia has been implementing a policy of turning over all small-scale irrigation projects of less than 500 ha, which are in the inventory of public systems, to water user associations (WUA). This constitutes 70 percent of all public irrigation systems in Indonesia, but only about 21 percent of the design area. The main objectives of this ambitious program are to reallocate scarce government funds to medium and large-scale systems and to improve the sustainability of both small and larger schemes. Before transfer, irrigation facilities are repaired as needed, involving farmers in decision making and labor.

The first phase of the transfer program is completed. All government schemes less than 150 ha, totaling 150,000 ha, have been improved and turned over. The second phase, to turn over all schemes larger than 150 ha and smaller than 500 ha, is now being implemented and should be completed by the year 2005.

Evaluations carried out in several post-turnover schemes indicate that WUAs need to improve their management and technical skills. Nevertheless, O&M of the schemes were judged to be generally satisfactory. Other results reported are increased cropping intensities, greater crop diversification, improved water management and fewer water disputes.

A more precise definition of **participatory irrigation management** could be:

*The involvement of farmer organizations as full partners with government agencies in managing irrigation systems.*

Research to date and discussion in the workshop generally supported the notion that certain prerequisites are needed before countries can expect to achieve success with transfer programs. Five conditions appear to be present in successful cases of transfer and are not present in less-successful cases. These are:

- \* A recognized and sustainable water right,
- \* Appropriate infrastructure relative to local management capacities,
- \* Clear designation of responsibility and authority for all essential management functions,
- \* Supportive accountability and incentive mechanisms, and
- \* Adequate resources (financial and human) for sustainable irrigation management (Vermillion 1995).

The items in this list that appear to be most commonly deficient in many Asian countries are:

- \* Lack of clear water rights,

- \* Lack of clearly designated lines of authority between farmers and agencies, and
- \* Lack of supportive accountability and incentive systems for management.

#### 4. REASONS FOR UNDERTAKING IRRIGATION MANAGEMENT TRANSFER

Workshop participants identified reasons for undertaking IMT in their countries. These reasons were discussed in small groups and then consolidated and listed on flip charts. The most commonly mentioned reason was **to reduce the cost to the government of operating and maintaining irrigation systems**. It was suggested that this could reduce the government's subsidy burden and free up funds for additional irrigation investment. A related purpose mentioned was to see IMT as an alternative to increased cost recovery from farmers for system O&M. This point is a corollary to the one mentioned above, but viewed from a farmers' perspective.

The second most common reason indicated was **to improve system performance and productivity**. This includes the objectives of improving farm incomes and making irrigation service providers more accountable to water users.

The third major motive for undertaking IMT was **conditionality imposed by external funding agencies**. A related reason, given by one group, was the *bandwagon syndrome*, which suggests that countries adopt IMT programs, in part, because it is fashionable and popular.

A list of five reasons identified by workshop participants, in approximate order of aggregate importance, is shown in Box 4.1.

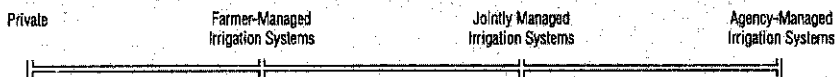
##### 4.1 Reasons for Undertaking IMT

1. Reduce government expenditure on irrigation system operation and maintenance
2. Improve system performance and productivity
3. Respond to pressure of external funding agencies
4. Respond to broader national democratization and privatization policies and programs
5. Enhance the sustainability and reduce detrimental environmental impacts of irrigation systems

#### 5. ALTERNATIVE MANAGEMENT STRUCTURES

The concept used most commonly to describe types of irrigation management organizations is one developed by Robert Chambers more than 20 years ago, as shown in Box 5.1. It posits 4 types of organizations ranging from private systems, such as individually owned tube wells, to irrigation systems managed entirely by a government agency (Agency-Managed Irrigation Systems, or AMIS). In between are systems managed entirely by farmers (Farmer-Managed Irrigation Systems, or FMIS) and those managed jointly by irrigators' associations and government agencies (Jointly Managed Irrigation Systems, or JMIS).

## 5.1 Chamber's Model—Types of Irrigation Management Organizations



This framework has proven useful and durable. However, as dissatisfaction with the effectiveness of the most common of these management modes grows (AMIS and JMIS), a number of alternative organizational models are emerging. An illustrative listing of alternative organizational models is given in Box 5.2.

To analyze this variety of alternative management models, workshop participants applied a model proposed by Svendsen in a workshop presentation. This model consists of four basic components of management.

The first of these is **governance**. Governance is the set of functions which provide ultimate control over the organization. Ultimate control is reflected in such actions as setting basic policy, approving investment plans, and appointing and evaluating top leadership. Possibilities are for the government to possess this ultimate control, as in a standard line irrigation department; for users to exercise such control, as in a FMIS or an irrigation district; or for there to be shared control.

The second dimension comprises the **financial objective** of the organization. Possible values of this dimension are *profit-making*, as in the case of a private contractor or a public utility; *self-reliance*, as with a WUA or parastatal company; or

## 5.2 Alternative Irrigation Management Models

1. *Department* - A government line agency
2. *Administration or Authority* - A quasi-independent government agency
3. *Management company* - A quasi-independent organization intended to be financially self-reliant
4. *Irrigation district* - A chartered association of farmers having governance responsibility for irrigation within its boundaries
5. *Drainage district* - Similar to an irrigation district but for drainage
6. *Mutual company* - A nonprofit company formed to develop a source of water and provide it economically to its members for irrigation purposes
7. *Public water utility* - A private company with a monopoly over water supply within a given jurisdiction regulated by a commission made up of government representatives, users, and other interested parties
8. *Water users association* - A group of farmers with certain responsibilities relating to the supply of irrigation service to its members
9. *Cooperative* - An association of farmers responsible for making various agricultural inputs, possibly including irrigation service, available to its members
10. *Contractor* - A company engaged by those responsible for irrigation service provision to provide repair, maintenance, operations, fee collection or other services on a contract basis

### 5.3 Irrigation Management Transfer in Turkey

Since 1953, irrigation law in Turkey has permitted transfer of completed irrigation systems to a variety of municipal, village, and farmer-based organizations. In response to severe financial pressures on the national irrigation agency (DSI), irrigated area transferred has grown explosively during the past 3 years. By November 1995, about 55 percent of the 1.63 million hectares of irrigated area under DSI authority had been transferred to local organizations. IMT in Turkey is following a different path than that pursued in Southeast Asia. In Turkey, schemes as large as 38,000 hectares are transferred to an existing local organization or special purpose irrigation cooperative after less than 6 months of preparatory work. The extensive local organization effort which characterizes the "Philippine model" of farmer involvement is largely absent here. System operation and maintenance are carried out by paid staff of the managing organization, supported by user fees. Promising initial results are claimed, but data are scarce and research on impacts is needed.

to expend available resources, as with a centrally funded government irrigation agency.

The third dimension is the **execution mode** for performing management functions. This relates to the type of people who carry out the work of the organization—those who clean canals, open gates, prepare bills, collect fees, and so on. Possibilities include members of the organization, as with a small WUA; *employees of the organization*, as with a government irrigation department or an irrigation district; or *contractors*, who are engaged by the organization from time to time for specialized functions.

The fourth dimension is **accountability**. This characteristic can be divided into several different relationships. One relates to the way in which governance bodies, such as boards of directors, are accountable to the owners of the organization. Owners might be farmer members in a farmer-based organization, stockholders in a corporation, or representatives of the finance ministry in a government financed organization. Another accountability relationship is between the governance body and the operational managers of the organization. A third is between operational personnel and farmers. This is the important day-to-day relationship between farmers and those who deliver their irrigation services. Possible mechanisms for this last interaction include financial transactions, bonuses and penalties, social ties, political links, and none (i.e., no substantive accountability).

Different IMT programs may involve different levels and combinations of reform in **governance, financial objectives, execution modes and accountability arrangements**. Tasked with designing future management arrangements for a hypothetical irrigation scheme, workshop participants came up with the concept of a **joint managing board** comprising both government representatives and farmers. This was seen as an interesting and easy-to-implement innovation in the governance arrangements for government-run irrigation systems in Asia. Models from Turkey and Mexico, which featured prominently in discussions at the workshop, feature governance entities entirely accountable to farmer associations.

Models developed by participants also highlighted the importance of **financial self-reliance**. Financial self-reliance creates a linkage of accountability between farmers and the service provider, encourages the public irrigation agency to transfer additional management responsibility, and generates pressures for more efficient system operation. Positive incentives associated with financial self-reliance stand in sharp contrast to the negative ones associated with the motive of expending all available funds, which is common

to many government irrigation agencies in the region. China and the Philippines are examples of countries employing financial self-reliance to encourage management transfer and improve irrigation management performance.

**Execution modes** for management depend on a variety of local conditions and do not appear to be strongly related to the status of management transfer. In Mexico and Turkey, farmer-governed irrigation districts use hired and contracted labor to carry out system O&M. On the other hand, in China some years back, government irrigation organizations utilized large amounts of farmer labor for system construction, maintenance, and repair. It should thus not be assumed that farmer-governed irrigation systems necessarily utilize farmer labor in performing their O&M functions. Choices in this area will depend on economic conditions and social preferences.

A variety of **accountability mechanisms** are available for managing the relationships between farmers, a governing board and management staff. With respect to the farmer/service provider relationship, payments for service can be a potentially powerful, if still rare, mechanism for accountability. Political accountability, such as through elected representatives, is often unstable and misused, especially in countries with long traditions of paternalistic government involvement with rural populations. Alternatives, in these cases, need to be explored.

Transfer of management responsibilities to farmer-governed organizations will involve substantial changes in government irrigation agencies. These include a reduction in their role in irrigation O&M and possible expanded responsibilities in other areas. A number of new responsibilities which could be taken on by government irrigation agencies, as suggested by small groups in the workshop, are shown in Box 5.4.

Staff levels in public irrigation agencies may decline after transfer. Options for accommodating redundant employees include voluntary retirement (perhaps with financial incentives), redeployment within government service, and voluntary hire by farmer-governed irrigation organizations. For remaining employees, reorientation and retraining will often be necessary. In addition, the disciplinary composition of agency staff will shift from one made up predominantly of civil engineers to a mix of engineers, management specialists, legal specialists, agriculturalists, trainers, and others.

#### **5.4 Possible New or Expanded Functions for Public Irrigation Agencies after IMT**

1. Water resource regulation
2. Watershed protection and management
3. Monitoring and evaluation of irrigation performance
4. River-basin planning
5. Technical and institutional support for farmer organizations and farmer-governed irrigation agencies

## **6. MANAGEMENT FUNCTIONS TRANSFERRED AND RETAINED**

The primary functions related to irrigation management may be summarized as follows:

- \* Legalizing water use for irrigation,



- \* Commissioning organizations to own irrigation property, to regulate water for irrigation, to provide resources for irrigation and to produce the irrigation service,
- \* Regulating, auditing and monitoring irrigation management entities,
- \* Owning irrigation assets,
- \* Mobilizing resources for irrigation services,
- \* Performing irrigation services (Vermillion 1991).

The first two functions are inherently governmental. The other functions can be handled either by government or by the private sector. The "private sector" can be either community groups, resource user groups, individuals, or companies. In light of our original definition of IMT and this list of functions, management transfer would then generally mean turning over full or partial responsibility and authority for regulating and auditing irrigation management, owning irrigation assets, mobilizing resources for the service, and performing the service.

### **6.1 Irrigation Management Transfer in Vietnam**

Vietnam is following a policy of decentralizing control of irrigation management to the provincial level. Here, *Irrigation and Drainage Management Companies* are being established on a financially autonomous basis to operate and maintain existing irrigation systems. Fees charged for these services average 4 to 8 percent of gross production and are among the highest in the world for public gravity irrigation. Linking with these companies at the village level are *Water Management Teams* of the village agricultural cooperatives, which themselves are based on the production communes of earlier years. Governance arrangements and accountability linkages remain incomplete and, although some basic elements of a vital management system are in place, refinement is needed to realize the potential.

Each government of the Asian countries represented at the workshop is involved in all of the above six functions. The functions most commonly turned over to farmer groups, especially in small irrigation systems or subsections of larger systems, are mobilizing resources (through fees, maintenance labor and materials) and performing irrigation services (such as operations, maintenance and rule enforcement).

Many Asian countries have long histories of farmer-managed irrigation. Since the 1970s, water user associations have been promoted to improve management of government developed irrigation systems. Prominent pilot experiments in the Philippines, Indonesia and Sri Lanka became national and international models for irrigation development by the 1980s. This model promoted water users associations as both a governance and a management entity. On the side of governance, water users associations were organized to develop constitutions and bylaws, elect representatives and establish rules and enforcement arrangements. On the side of management, they were organized to plan and implement operations and maintenance and to mobilize resources.

The notion that water users associations should combine governance and management functions in the same organization has endured for several decades now. If a water users association must handle both governance and management at once, the requirements for

management and financial control and skilled labor inputs become too intensive for most water users associations, except for small-scale irrigation. But reasons are emerging in Asia to consider turning over larger-scale systems to farmer organizations. Separating the two roles of governance and management after transfer may become necessary in order to ensure professional and technical quality control and accountability to the users, especially for larger or more complex irrigation systems.

Box 6.2 lists potential governance and management functions related to irrigation systems. The two dimensions are different and where medium or large-scale irrigation is under the authority of farmer organizations, such as in Spain, the USA, or Japan, the governing body is separate from the managing organization, although the latter is accountable to the former. For example, the general assembly of farmers may elect a board of directors. This is the governing body which formulates a constitution and bylaws, selects leaders and applies sanctions. The board of directors, however, does not manage the irrigation system. They hire and provide oversight to professional and technical staff or contract with a firm to implement management. This separation has existed for several decades in medium and large-scale irrigation systems in Japan and Taiwan and is emerging in China. It may soon be on the agenda for pilot experimentation in other countries in South and Southeast Asia.

## **6.2 Governance and Management Functions**

### **GOVERNANCE**

1. Establishing the charter of authority
2. Developing bylaws and rules
3. Developing water rights
4. Selecting leadership
5. Setting and regulating basic policy
6. Commissioning services

### **MANAGEMENT**

1. Developing O&M work plans
2. Budgeting and resource management
3. Setting management procedures
4. Implementing O&M
5. Management of information, control and accountability
6. Monitoring and evaluation (could be a third party)

## **7. CONDITIONS FOR SUCCESSFUL IRRIGATION MANAGEMENT TRANSFER EFFORTS**

Once a government has adopted management transfer as a key to improve irrigation performance, planning for the transfer process must outline the conditions necessary for successful implementation. Transfer of management responsibility implies substantial changes in management roles and procedures; lines of authority and responsibility; financing; water rights; infrastructure and ownership.

Workshop participants discussed the conditions for successful IMT and identified six essential conditions, as given in Box 7.1. The participants agreed on the necessity of strong, top-level political support for implementation of IMT programs so as to overcome bureaucratic resistance. In the post-transfer phase, most irrigation bureaucracies have to find alternative employment opportunities for the substantial number of staff that have become redundant. Simply laying off government staff was seen as extremely difficult. Redundancy packages should be made available and redeployment and retirement opportunities for staff should be identified prior to implementing transfer.

Participants agreed on the need for a clear government vision and well-defined policies and implementation strategies. New roles, rights and responsibilities must be clear to the new governing and managing entities. The government's transfer policy should designate responsibility and authority for all management functions for the respective organizations at operational levels. Responsibility for future rehabilitation, operation and maintenance, water charge collection and payments, and dispute settlements should be clearly defined. One participant stressed the need for transparency in all stages of the implementation process.

Management entities taking over new responsibilities after transfer must have a solid legal basis for their roles. If farmer organizations lack the legal recognition they will have difficulty generating support from members, raising revenues, purchasing equipment, applying sanctions and entering into contractual relationships with the government and third parties.

Since management responsibilities must be taken on willingly by the new management, a prime condition for successful transfer is that it should lead to substantial economic benefits for the majority of farmers. Benefits of self-management should outweigh additional costs. The sustainability of locally managed irrigation depends on this. It is widely reported that farmers willingly pay substantial amounts for irrigation service when the service provided is adequate and reliable.

A major concern of workshop participants was the financial viability of farmer organizations. Financial problems were seen as significant likely causes of failure of transfers. Farmer organizations have often had to search for additional income opportunities, as in China. Accounting skills, financial control and auditing are often inadequate in farmer-based organizations. A major concern expressed was the impact of increased cost recovery resulting from IMT on resource-poor farmers who may not benefit from IMT as much as others. It was felt that the differential situation of various classes of farmers must be taken into account.

In jointly managed schemes, a crucial condition for successful transfer is that sufficient and timely deliveries of water be made available to farmer-managed units within the scheme. Target deliveries and schedules should be based on contractual agreements negotiated between supplying and recipient organizations. The agreement must provide penalties for failure to comply with delivery schedules as well as for failure to make fee payments. Well-defined water rights should be an element of every IMT program. In many cases, irrigation infrastructure in systems to be transferred is not functional or suitable for the

## **7.1 Conditions for Successful IMT Efforts**

1. Strong high-level political support
2. Clear policy direction
3. Legal basis for new managing entities
4. Economic benefit to farmers
5. Well-defined water rights at system and farmer levels
6. Functional irrigation facilities

operational patterns envisioned by farmers. Physical modifications and repairs are thus often necessary elements of an IMT program.

## **8. REGIONAL SUPPORT NEEDS FOR IRRIGATION MANAGEMENT TRANSFER**

Workshop participants were asked to list topics for which IMT efforts in Asia require external assistance and support. Support needs were listed under three categories: training and courses, workshops, and others.

### **Training and Courses**

Participants agreed that a primary objective for training related to IMT should be to achieve attitudinal change among policymakers, engineers, implementers, and organizers, orienting them to a future in which farmers will play a preeminent role in managing irrigation systems. Farmers and farmer leaders, in turn, must develop new managerial and technical skills to carry out their new roles.

Results of small group discussions showed a substantial consensus. Recommendations for assistance and support needed from external agencies are as follows:

**Policy analysis and planning.** There is a need for skill development in methods of policy analysis and planning by officials at both the strategic and management levels. This need is shared by officials from planning, irrigation, agriculture and financial ministries. Of particular importance are strategic planning skills. As mentioned by one participant, "planning is there, but it is not strategic." By "strategic" we mean preparing for basic, long-term change with the involvement of relevant stakeholders in the process.

**Business management.** Participants said that there was a need for operational staff of irrigation and agriculture departments and farmer leaders to have training in business management skills. This is essential for farmer leaders in their new roles and would enable irrigation agency staff, and other providers of support services for irrigated agriculture to provide assistance to farmers in the areas of small enterprise development, basic accounting, and marketing.

**Creation of farmer organizations.** In some countries no expertise is available on how to establish and develop farmer organizations which are able to take over irrigation management. In other countries these skills are well developed. Training should be built around the transfer of these skills.

**Water legislation.** Participants indicated a pressing need for regional and national training courses in water rights and water legislation. Short courses of 10 days could be held for senior strategic-level officials from planning, water resources and agriculture ministries and longer courses organized for operational staff expected to be involved in developing and implementing water legislation in the future.

**O&M of transferred systems.** There is an important need for training in operations and maintenance at national and provincial levels for managing staff of transferred

systems. Farmers require skills in contracting with third parties for O&M services. The ability of farmers to plan and supervise irrigation O&M needs to be enhanced.

**Monitoring and evaluation.** Skills in monitoring and evaluation and performance assessment are needed by the staff of irrigation, planning and agriculture ministries, to enable them to describe and assess the performance of systems after transfer. Such skills are also important for farmer-based operating organizations as a vital management tool. Performance assessments must involve organizations as full participants, making these skills important to them as well.

## Workshops

**Design/management changes related to IMT.** Participants noted the need for a workshop to share experiences and insights about the implications of irrigation management transfer for design and management of irrigation systems. Participants suggested first holding a series of national-level workshops to pool insights and recommendations from professionals within countries. Then, representatives from national workshops would meet in an Asian regional workshop to exchange views between countries in the region.

**Performance assessment for IMT.** Participants stated a need for a regional workshop on performance assessment of irrigation management transfer. Workshops should also be held at national and provincial levels.

**New roles for irrigation agencies.** Participants indicated a need for a regional workshop to exchange views and experiences regarding the major changes in the structure and functioning of irrigation agencies resulting from IMT. This workshop would involve top-level officials from water resources, agriculture and planning ministries.

**Monitoring and evaluation of irrigation performance.** A workshop is needed to discuss appropriate systems for monitoring and assessment of

### 8.1 Regional Support Needs

1. **Training**
  - policy analysis
  - strategic planning
  - business management
  - creating farmer organizations
  - water legislation
  - O&M for systems after IMT
  - monitoring and evaluation
2. **Workshops**
  - design and management of turned over systems
  - performance assessment
  - new roles for irrigation agencies
  - monitoring and evaluation
  - financial management
3. **Information exchange**
  - study tours
  - newsletter
  - e-mail network
4. **Action research**
  - IMT impact assessment
  - organizational models
  - alternative technologies
  - enterprise development

transferred systems. Guidelines and manuals for M&E should be prepared.

**Financial aspects of irrigation reform.** Participants identified a need for national workshops to discuss the financial implications of implementing IMT. Increased operational costs for farmers, responsibility for costs of system rehabilitation prior to transfer, and responsibility for financing rehabilitation after transfer would be the main foci of discussions.

## **Information Exchange**

**Study tours.** Participants said study tours within countries for agency staff and farmers to visit successfully managed systems after transfer would be helpful. Regional or international study tours for more senior officials from countries poised on the brink of reform could also be very useful.

**Newsletter.** Participants expressed the need for a regional or international newsletter which would deal more broadly with "irrigation management reform" than does IIMI's FMIS Newsletter. The newsletter should be produced twice per year and should encourage participation and inputs by irrigation-sector practitioners. It would deal with organizing farmer groups, transfer of responsibilities, agency reform and water rights and laws.

**Communications.** Most participants in the region already have, or will soon have, access to e-mail at their offices. They suggested that an e-mail network of professionals involved in irrigation reform be established by making available a list of members and e-mail addresses. This would provide a new and inexpensive mode for exchanging information within the region.

## **Action Research**

**IMT impact assessment.** Participants wanted to see IMT programs assessed with more rigor, in order to judge their results and impacts.

**Management models.** Participants felt that experimental field-testing of alternative management models should be done to test farmer responses and performance impacts.

**Alternative technologies.** Participants suggested that alternative irrigation operation and maintenance technology more appropriate for farmer management should be developed and tested in the field.

**Enterprise development.** Participants suggested using action research to determine effective ways for farmer organizations to develop small enterprises to supplement revenues from water charges.

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