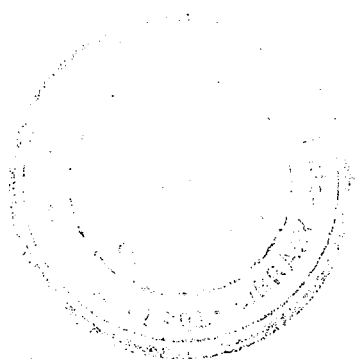


Status of Irrigation Management Transfer in India

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# IRRIGATION MANAGEMENT TRANSFER POLICIES AND LAW



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International Irrigation Management Institute  
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# IRRIGATION MANAGEMENT TRANSFER POLICIES AND LAW

## 1. INTRODUCTION

### 1.1 Irrigation Management Transfer as a Solution to Irrigation Problems

Over the past 50 years there has been a great expansion of irrigated area in the world, much of it managed by government agencies. During this period a variety of problems for irrigation systems have come to light. Rising populations have greatly increased the demands for the products of irrigated agriculture and have put pressure on irrigation systems and managers to make more efficient use of irrigation water. Demands for water for other uses have also begun taking water away from agriculture thus also forcing greater efficiency. At the same time a wide variety of circumstances are putting pressure on government finances in most countries, forcing the governments to look for ways to reduce their expenditures. Also, costs of repair and rehabilitation of irrigation systems have been rising faster than other costs, adding to the financial concerns with irrigation.

Irrigation management transfer has come to be seen as a means of solving some of these problems. Irrigation management transfer refers specifically to the transfer of operations and maintenance and other responsibilities for the management of irrigation systems from government agencies to private entities, generally to water user associations (WUAs). The basic underlying ideas are:

- Farmers depend upon the irrigation water for their livelihood and thus are motivated to make the most effective use of scarce water, unlike government employees whose livelihoods depend upon government salaries.
- In most cases, farmers have not been asked to pay the full costs of irrigation; financial pressures on government force an increase in the share of the costs borne by the farmers to make the irrigation systems sustainable.

In India, although the National Water Policy (MOWR 1987) offers only the mild statement that "Efforts should be made to involve farmers progressively in various aspects of management of irrigation systems, particularly in water distribution and collection of water rates," over the past 10 years, the Government of India has clearly taken positions supporting both an increase in irrigation fees to users and the transfer of irrigation management responsibilities to organized users. However, irrigation in India is a state subject and

irrigation management policies are determined by the states. The states have varied widely in their interest in irrigation management transfer as a means of solving problems in irrigated agriculture.

This paper looks in detail at the irrigation management transfer policies and activities in six Indian states - Bihar, Gujarat, Haryana, Maharashtra, Kerala, and Tamil Nadu - in an attempt to characterize and explain the variation in irrigation management transfer policies within India. In addition, this paper looks at the legal basis for these policies in these and other states within India.

## **1.2 Irrigation Management Transfer Policies and Programs**

### ***Irrigation Management Policy***

Irrigation management policy includes those rules and principles that define:

- the system for allocation of irrigation water to legitimate users,
- the persons or organizations responsible for distributing water (operations) and for maintaining the irrigation system (maintenance),
- processes for mobilization of resources, including payment of irrigation fees, for operations and maintenance of the system.

Government policy exists in several forms, including statements in law, written policy statements, government agency regulations and guidelines, and widespread beliefs among government agency personnel that things should be done in a particular fashion.

As used in this paper, government policy consists of the way the government wishes to carry out its functions. Policy need not be codified into a formal written statement, but policy must be generally accepted by personnel of one or more government agencies. In any one state, there may be multiple policies, each held by one or more agencies.

### ***Irrigation Management Transfer Policies and Programs***

Irrigation management transfer consists of the transfer of irrigation management responsibilities, including operations and maintenance (O&M) responsibilities and

responsibilities for mobilizing the resources needed to carry out O&M tasks, from a government agency to a private person or organization.

An irrigation management transfer policy is a government policy that includes those rules and principles that specify:

- changes in allocation of irrigation water to users,
- changes in assignment of O&M responsibilities, including a definition of the private persons or organizations that take on former governmental responsibilities,
- changes in resource mobilization principles and procedures,
- how these changes are to be carried out, including persons or agencies responsible for providing assistance and support, and resources to be used to support the changes.

Irrigation management transfer programs include those activities designed to implement the policies.

### 1.3 Categories of Irrigation Systems

As will be shown, there are major differences among the policies for certain types of irrigation systems. Two key characteristics of irrigation systems have been found useful for the analysis of policies. These are:

- Size of the system, ie large or small,
- Whether or not a lifting apparatus is used, ie gravity or lift systems; lift systems include both surface lift and well systems.

System size has been deliberately left vague because the point of differentiation between large and small systems differs from state to state and even within states. The important point is that all of the states assign management responsibilities of large and small systems, no matter how defined, to different departments or agencies or to separate wings of an agency.

System size is important because the management of large systems requires technical training, equipment, and management skills generally considered beyond those available to farmers, whereas small systems can be managed by the farmers themselves.

Whether the system is a gravity or a lift system is important because the management characteristics of pump operation add a special requirement to system management, particularly for farmers.

These two characteristics define four classes of irrigation system for policy analysis: large gravity systems, large lift systems, small gravity systems and small lift systems. Two of these classes large gravity and large lift systems - can be treated as a single class because, as pointed out above, large systems are, by virtue of size alone, treated as requiring specialist management skills, whether they are lift or gravity systems. For purposes of analysis in this study, we differentiate among three classes only:

- large systems, including both gravity and lift systems,
- well and small lift systems,
- small gravity systems.

An additional characteristic - whether the primary source of water is surface water or groundwater - is a basic determinant of water allocation principles. Every state claims the ultimate responsibility to allocate surface water. On the other hand, in every state, every landholder may use the water beneath his land without restriction. However, one state, Haryana is now considering imposing restrictions on groundwater use to help control growing problems of overextraction and other problems of uncontrolled groundwater exploitation. However, because all groundwater is lifted, differentiating between gravity and lift systems is generally equivalent to differentiating on the basis of source of water.

#### 1.4 Sources of Information

This paper is based on a rapid assessment of irrigation management transfer policies and activities in six states. A variety of written sources were also consulted.

The six states were selected to serve two purposes:

- The six states cover the major agro-climatic regions in India where irrigation is of major importance. That is, Haryana represents northwestern India; Bihar represents eastern India; Gujarat and Maharashtra represent western India; Kerala and Tamil Nadu represent southern India.
- The six states also include those states where irrigation management transfer is reportedly most advanced, namely Gujarat, Maharashtra, Kerala, and Tamil Nadu.

The focus of the paper will be on the six states studied.

## 1.5 Organization of this Paper

The remainder of this paper is organized as follows:

- Section 2 describes background, irrigation management transfer policies and their implementation, reasons for adoption of transfer, and the expected consequences of transfer in large systems.
- Section 3 describes background, irrigation management transfer policies and their implementation, reasons for adoption of transfer, and the expected consequences of transfer in well and small lift systems.
- Section 4 describes background, irrigation management transfer policies and their implementation, reasons for adoption of transfer, and the expected consequences of transfer in small gravity systems.
- Section 5 discusses the present status of law to support irrigation management transfer policies.
- Section 6 summarizes and draws some conclusions from the paper.

## 2. IRRIGATION MANAGEMENT TRANSFER POLICIES FOR LARGE SYSTEMS

### 2.1 Pre-Transfer Irrigation Management Policies

All six sample states have or are considering irrigation management transfer policies for large systems. Those transfer policies, however, can be understood only in the context of the existing irrigation management policies in the states. As pointed out earlier, irrigation management policy defines how and to whom irrigation water is allocated, who is responsible for operations and maintenance of systems, and procedures for resource mobilization.

#### *Water Allocation*

All of the sample states reserve the power of allocation of surface water to the state governments. However, the systems for allocation differ significantly among the states. There are five systems used in large schemes:



- **Shejpali** Gujarat and Maharashtra both use shejpali as the basic system of water allocation. Under shejpali, each farmer is required to apply for irrigation water for a particular crop on a particular area each season. The state agency can then sanction some or all of the applications. Once sanctioned, the agency is obligated to deliver sufficient water to each farmer to bring his crop to harvest.
- **Assured Irrigation Area** In Bihar, water is allocated to the "assured irrigation area" within each surface irrigation system. If there is extra water, it can be allocated by state officers to the "probable irrigation area" with the system. The amount of water to be provided is defined as sufficient to bring the crop to maturity.
- **Land Classification** Tamil Nadu and Kerala allocate water to land classes. All land is classified with regards to rights to irrigation water. Some land within irrigation commands is classed as "double cropped" land which is allocated water for two crops, generally rice crops, each year. Other land is classed as "single cropped" and is allocated water for only one crop. In some systems, Parambikulam-Aliyar in Tamil Nadu for instance, has land classes with a right to water for only one season every two years. In both states, certain key aspects of operating schedules are decided at meetings chaired by District Collectors. In Kerala, these are meetings of the Project Advisory Committee for each large scheme. In Tamil Nadu, these are public meetings for each large scheme.
- **Block System** In Maharashtra, although shejpali is the dominant water allocation system, the "block system" was devised to encourage investment in sugar. Under the block system the state enters into a 6-12 year agreement with a group of farmers to provide a fixed quantity of water for a particular crop pattern for the block of land held by a specified group of farmers. This alternative is not legally recognized in Gujarat despite its common heritage with Maharashtra.
- **Warabandi** Haryana allocates water through the warabandi system. Under this system, available flow is allocated equally to each unit of land within the recognized command. Equality of allocation is provided by the system of delivery in which each farmer gets an equal flow of water for an amount of time proportional to his landholding. In practice, however, the state delivers the appropriate quantity of water to a group of farmers and then, if desired, helps them enforce the division among themselves.

These systems differ in two important characteristics:

- the theoretical power they give the state to control allocations,
- the amount of effort required by the agency and farmers to make the system work.

In terms of the theoretical control held by the state, these five systems can be ranked in descending order as follows:

- shejpali
- assured irrigation area
- land classification
- block system
- warabandi

Shejpali theoretically gives the state the greatest power to control allocations to farmers since each farmer must get a new sanction each season. Moreover, neither amounts of water nor a schedule are specified so that the agency has a great deal of freedom in actual delivery of water. On the other hand, in theory, warabandi gives the state agency little or no power over allocations since flows are to be divided equally and the schedule of delivery is specified.

The other systems fall in between these two extremes. On one hand, they give rights to irrigation water for long periods, hence they give less power to the state than does shejpali. On the other hand, except for the block system, they do not specify the quantities to be delivered nor the schedule of delivery, hence they give the state agency great flexibility in actual delivery. The block system specifies only the quantity not the schedule.

The greater the state power over allocation, the less the farmers' assurance of irrigation water. Under shejpali, for example, no individual farmer has a guarantee that his application for water will be sanctioned in any particular season. Moreover, in all of the systems other than warabandi, the farmer has no real claim against the agency for poor distribution because decisions about both quantities delivered and schedule of delivery are left entirely to the irrigation agency. Also, actual delivery is not made to individual farmers but rather to the outlet serving a group of farmers. It is left to the farmers to distribute water among themselves. None of the allocation systems except warabandi define how farmers should distribute water among themselves, thus providing farmers with no legal basis for making claims against other farmers for misappropriating water.

In Tamil Nadu, because of the lack of surety for farmers, the power of state irrigation agency to control water allocation has been constrained by two legal considerations. First, every large system has a written set of operating rules that specify many aspects of the scheduling and amounts of water to be delivered to each part of the system. Operating rules, although issued as Government Orders, have also been upheld as legally valid in court cases. Second, the courts in Tamil Nadu recognize a "riparian right" for some users. In fact, this is a prior use right; court decisions have upheld the right of prior users to priority of irrigation water. These "riparian rights" give some users priority for scarce irrigation water over other users

whose land is in the same land class. The difficulty with this means of balancing farmer and state power over water allocations is that it is cumbersome and inflexible since there is no clear procedure for getting farmer input into the definition or modification of operating rules.

The greater the degree of state power, the greater the effort required by the state agency to make the system work properly. Thus shejpali requires irrigation officials to solicit and process an application from each individual farmer every season and to chase down those that take water without applying. Also, under shejpali, operations plans should be worked out anew each season depending upon the crops and areas identified from applications. Shejpali also requires considerable effort from farmers since each has to apply individually. None of the other systems requires this amount of paperwork nor this amount of system planning. Warabandi requires the least amount of work because quantities of water and schedule are fixed without regard to crops. The other systems require little or no paperwork connected with allocation but do require operations planning to satisfy crop needs. Demands on farmers are also much less with the systems other than shejpali.

### *System Management Responsibilities*

There is little variation among the six states in the basic assignment of system management responsibilities in large systems. In all states, the state takes responsibility for operations and maintenance (O&M) for the system from the headworks down to the outlet. In every state an outlet serves more than one farmer. In principle, farmers are collectively held responsible for O&M below the outlet. There are several terms in use for outlet, including "sluice" in Tamil Nadu, "spout" in Kerala, and others. Also, the areas served by a single outlet vary widely among and within states; some outlets serve areas as large as 100 hectares and some serve areas less than 10 hectares. However, the principle of a point above the level of the individual farm where O&M responsibilities are transferred to farmers is common to all states.

Unlike the other states, Haryana takes responsibility for maintenance below the outlet in selected systems following on-farm development in which the state lines watercourses below the outlet. Also, Haryana has a policy of defining an official and enforceable rotation schedule below the outlet, if requested by the farmers.

### *Resource Mobilization*

There are some major variations among the states in systems for resource mobilization in large systems.

One feature is common to all states; all states assume that farmers will provide labor and other resources for operations and maintenance below the outlet. Haryana is a partial exception in that the state takes responsibility for maintenance of lined watercourses in some places.

For resource mobilization of O&M above the outlet, all states collect fees for irrigation services but do so in ways explicitly connected to the allocation systems:

- Under shejpali in Gujarat and Maharashtra, farmers are required to pay irrigation fees at the time of application for water. Fees are based on the area to be planted with specified crops. Enforcement is done by inspecting the fields to detect those who have taken irrigation water without applying for sanction and paying the required fees. Collection of fees and enforcement of the rules is necessarily the responsibility of the irrigation agency.
- Under the "assured irrigation area" system in Bihar, farmers within the assured irrigation area are billed each season whether or not they have taken water. Farmers outside the assured irrigation area are billed following their applications for water. In Bihar, for historical reasons, collection of fees is the responsibility of the irrigation agency, although there is no reason why it could not be done by another agency.
- Under the "block system" in Maharashtra, the farmers in the block are required to pay for the volume of water delivered as measured by the irrigation agency. Assessment is necessarily the responsibility of the irrigation agency; collection is also their responsibility in Maharashtra if only because the Irrigation Department must also collect for allocation under shejpali.
- Under warabandi in Haryana, farmers are billed according to their allocation. Collection is the responsibility of the irrigation agency although it need not be.
- Allocation by land classification ties irrigation fee collection directly to the land tax system in Kerala and Tamil Nadu. Assessment is by land classification, although surcharges and betterment fees are sometimes added, and collection is carried out by the land revenue agency.

In fact, however, none of these systems collect sufficient funds to pay the costs of services by the irrigation agencies, to say nothing of paying the costs of construction of the systems themselves. Both fee levels and collection rates are very low.

Experience in various countries has shown that getting farmers to pay the actual costs of irrigation service requires linking the charges and collection system to performance of the irrigation system. However, in none of the states is assessment and collection of irrigation fees linked to performance or to incentives for farmers and irrigation officers to make the most efficient use of water. The reasons include:

- Collected fees are deposited in the treasury in each state as part of the state's general revenue. Resource needs of irrigation agencies are provided through annual appropriations from the general revenues. These appropriations are based primarily on requests backed with data showing how much is needed for agency activities. These appropriations are always more than the amounts of irrigation fee collected. There is thus no incentive for the irrigation agency officers to try to collect more funds or to improve their performance to collect greater amounts of fees.
- Assessment and collection systems are linked to allocation systems. As shown earlier, the allocation systems, with the exception of warabandi and the partial exception of the block system, provide no good way for farmers and officers to come to agreement over how much water will be delivered nor when they will get it. This means that neither officers nor farmers can unequivocally show that the irrigation agency has lived up to its obligations. Farmers thus have an excuse not to pay whenever they are not satisfied.
- Fee levels are set by the state legislatures. There has been resistance in the past to raising fee levels because politicians have often wished to please farmers.

Thus, despite the large differences among the allocation systems, none of the states has had significantly better success in ensuring adequate funding for their irrigation agencies.

## 2.2 Irrigation Management Transfer Policies

All six states have or are considering irrigation management transfer policies and programs for large systems. These proposed transfer policies can be summarized succinctly as follows:

- Bihar is considering a policy to create WUAs at distributary channel level, transfer full O&M responsibilities to these WUAs, and have the WUAs collect irrigation fees in return for keeping a portion of the fees collected.

- Gujarat is considering a policy to create water user associations at the minor level, transferring O&M responsibilities for the minor and smaller channels to the WUA, and charging for water on the basis of the water actually taken.
- Haryana is considering a policy to create WUAs at outlet level and transfer full O&M responsibilities below the outlet, including maintenance now done by the state, to the WUAs, and having the WUAs collect irrigation fees in return for keeping a portion of the fees collected.
- Kerala has a policy for systems under the Command Area Development (CAD) Program to create a three-tier system management organization including outlet level WUAs, canal level joint management committees, and a project level joint management committee. O&M responsibilities are to be fully or partially transferred to these bodies.
- Maharashtra has a policy that proposes creating water user associations (WUAs) at minor level, transferring O&M responsibilities for the minor and smaller channels to the WUA, allocating water to the WUAs through 5 year agreements, and charging for the water on the basis of the volume of water actually taken.
- Tamil Nadu has adopted a policy calling for the creation of a three-tier system management organization, including WUAs at the outlet and 500 hectare command levels and a joint management committee at project level. O&M responsibilities are to be fully or partially transferred to these bodies.

As pointed out earlier, transfer policies define changes in allocation of irrigation water to users, changes in assignment of O&M responsibilities, changes in resource mobilization principles and procedures, and how these changes are to be carried out. If the last point is ignored, these cases fall into four basic patterns:

- **Mid-Level WUAs and Volumetric Charges** Transfer of O&M responsibilities to WUAs formed at a minor level, allocation by agreement, and charging of irrigation fees volumetrically (Gujarat and Maharashtra).
- **Mid-Level WUAs Only** Transfer of O&M responsibilities to WUAs at distributary level but no change in allocation principles or principles for charging irrigation fees (Bihar).
- **Three-Tier System Management Organization** Transfer of O&M responsibilities to a three-tier structure of WUAs and joint management committees but no change in allocation principles or principles for charging irrigation fees (Tamil Nadu and Kerala).

- **Outlet Level WUAs** Transfer of O&M responsibilities to outlet level WUAs but no change in allocation principles or principles for charging irrigation fees (Haryana).

Only one of the four types proposes to change the basic allocation principles for water allocation. These transfer policies are primarily policies to shift O&M responsibilities.

All of the four types propose the creation of water user associations. These are organizations of farmers managed by themselves. They must be distinguished from joint management committees (JMCs). JMCs are committees made up of farmer representatives - often selected by WUAs - and government agency officers. Only one of the four types includes JMCs, although some officials in Bihar have indicated interest in using them in conjunction with the Mid-Level WUA policy.

Some will question whether the Outlet WUA policy proposed by Haryana is a transfer policy at all since the pre-transfer policy in Haryana (and in all of the other states) is that in large systems, farmers are collectively responsible for O&M below the outlet. The features that qualify it as a transfer policy include only that some maintenance now done by the state will be transferred to the WUAs and that there will be formal registered organizations of farmers rather than informal groups below the outlet.

## 2.3 Implementation Policies

### *Models for Transfer*

The policies adopted or being considered have mostly been based on experiments and work carried out in the states:

- Bihar's proposed policy is modelled directly on the experiment begun in 1988 at Paliganj Distributary in the Sone System by the WALMI.
- Gujarat's policy is based on a variety of experiences beginning with work begun in 1978 by the Irrigation Agency with the Mohini Society in Ukai-Kakrapar System. Other lessons have been learned from research begun in 1986 at Anklaav Sub-distributary in Mahi-Kadana System by the WALMI, from a variety of NGO experiences in Gujarat, and from sources outside the state.
- Haryana has no model for its proposed policy.

- Kerala adopted its policy in 1986 without referring to any immediate precursors in the state. Kerala's policy was based exclusively on models from outside the country.
- Maharashtra's policy is modelled directly on work begun in 1987 by the Centre for Applied Systems Analysis in Development in cooperation with the Irrigation Department at Right Bank Main Canal Minor 7 in the Mula Project.
- Tamil Nadu's policy is modelled largely on work carried out between 1988 and 1995 by the state's Agricultural Engineering Department under the CAD program in five major schemes. The Agricultural Engineering Department's work was based on an experiment carried out by its own staff at Thindal in Lower Bhavani Project. The present policy also includes elements pioneered by experimental work carried out by the Irrigation Management and Training Institute at Salipperi in the Cauvery Delta.

### *Implementation Policies*

The implementation policies proposed by the states are also largely modelled on the experiences listed above. These implementation policies can be summarized as follows:

- Bihar has not yet decided how it will implement its policy. The state is planning to complete transfer of O&M responsibilities at Paliganj and then monitor and evaluate the results after three years. In the meantime, the state is also encouraging the WALMI to keep on experimenting.
- Gujarat is planning to invite NGOs to carry out most of the work of creating WUAs in cooperation with Water Resource Department personnel. In addition, Gujarat is considering providing incentives to the farmers, including repairs to their channels and rebates of irrigation fees in return for prompt payment. The state has taken up 14 pilot projects to learn how best to accomplish transfer in different parts of the state.
- Haryana has not yet devised a policy for implementing its transfer policy. Haryana is planning to carry out about 10 pilot experiments to gather information for this purpose. In the meantime, the state has decided that it will provide watercourse lining only to farmers who form and register a WUA below the outlet.
- Kerala's transfer policy is implemented as part of its CAD program and applies only to the 14 CAD schemes. The CAD organization in each scheme includes a Cooperative specialist who is responsible for organizing the farmers. However, most of the



organization work is done as part of a process for getting watercourse lining done. That is, formation of an outlet level WUA is required to get watercourse lining. Once the WUA is formed, its president automatically sits on the local canal committee and the president of the canal committee sits on the Project Advisory Committee. As part of the CAD program, subsidized inputs and other agricultural assistance are channeled through the WUAs.

- Maharashtra is hoping that farmers will begin to organize themselves to demand transfer. To that end, they have undertaken a public relations campaign to inform farmers that transfer is available. In addition, they are encouraging both NGOs and Irrigation Department officers to help farmers create WUAs that will then negotiate for transfer with the Irrigation Department. The state is offering incentives for farmers to take over, including repair of the channel, reduced rebates for prompt payment of irrigation fees, volumetric fees that are lower than crop-area fees, and maintenance grants. Also, the Irrigation Department is now monitoring the progress of transfer throughout the state.
- Tamil Nadu is organizing lower level staff of the Water Resources Organization into "Farmer Organization Teams" that will help the farmers to organize themselves. Once the channel level organizations are created, a representative will be asked to sit on the Apex Body joint management committee. The organization work will be part of rehabilitation work in the systems; thus the organized farmers will help plan and carry out repairs to the system. Incentives are under consideration; one that has been identified is a matching fund to help the WUA set up a bank account whose interest will be used for future maintenance work by the WUA.

Officials in all of the states are aware that farmers are not likely to spontaneously organize themselves into WUAs and request transfer of irrigation management responsibilities. Either or both of two things are needed: strong incentives for farmers or persons to work with farmers to convince them and help them to organize themselves for their own benefit. All of the states except Haryana and Bihar have identified incentives to be offered to the farmers. Only Kerala and Tamil Nadu plan to depend upon state government personnel to work with the farmers. Gujarat and Maharashtra are depending upon NGOs and the farmers themselves while Bihar and Haryana have not worked out who will be responsible for organizing farmers.

Both incentives and personnel cost money. Reluctance to commit state personnel derives directly from reluctance to hire additional people. It is not clear where the funds for the incentives will come from. If irrigation fees are raised and if collection rates increase as a result of transfer, the incentives can probably be paid, at least for a few years, from increased

irrigation fee revenues. However, interviews with policy-makers in the states indicated that most are depending either upon donor funds or upon Government of India funds.

## 2.4 Reasons for Adoption of Transfer Policies

Not surprisingly, the reasons for adoption of transfer policies vary from state to state. The reasons can be divided into two types: those that attempt to solve state problems, and exogenous reasons.

### *State Problems*

The state problems addressed with irrigation transfer in large systems vary from state to state:

- Bihar has a financial crisis. As a result, the Water Resource Department cannot find funds for its activities. Vehicles, fuel, and many other things are just not available. As a result, Bihar's large irrigation systems are in very bad conditions and are deteriorating. Along with raising irrigation fees, state irrigation officials see transfer as perhaps the only way that the systems can be sustained. Farmers who have been exposed to transfer ideas and plans seem to agree because they have lost faith in the state government's ability to maintain the systems.
- Gujarat has multiple reasons for adopting transfer. State officials concerned with finance see transfer as a way to reduce costs to the state and to raise the rate of recovery of irrigation fees. To keep costs down, Gujarat made a formal decision in 1984 that water from the Sardar Sarovar Project would be delivered to villages rather than to individual farmers. Water Resources Department officers see a benefit in ending the labor intensive shejpali system. Many also believe that transfers will raise the efficiency of water use, something that is particularly important in the water short systems of North Gujarat and Saurashtra. NGO personnel see transfer as a way to improve agricultural productivity and raise farmer incomes.
- Irrigation officers in Haryana see transfer as helping to solve two problems. First, the state government will be able to cease maintenance below the outlet which is being done contrary to its own policies. Second, transfer of irrigation fee collection to WUAs is expected to raise the collection rate. However, many irrigation specialists in Haryana are skeptical about the transfer policy. On the one hand, they point out that the policy offers no real incentives to farmers. On the other hand, they are afraid that it will interfere with the present water allocation and distribution practices which they see as good.

- In Kerala, when the CAD program began, it was expected that the WUAs and JMCs would help improve water distribution. At one level this is considered important because Kerala has been strongly criticized for failure to irrigate major portions of constructed commands. On another level, however, officials and some farmers point out that with Kerala's high rainfall, irrigation is not as important as in some other states. Today, many irrigation officials see no benefit to the WUAs and joint management committees, although it is reported that at least some canal committees and project committees have helped improve water distribution. Improved distribution below the outlets is reported but may be due as much to watercourse lining as to the existence of the WUAs.
- In Maharashtra, irrigation officials assert that the primary concern is to improve water use efficiency, a primary concern in Maharashtra where most large systems actually serve only a fraction of the planned command. Irrigation officials explicitly deny that cost reduction is a goal. Improved productivity is also mentioned as a benefit as is reduced work because of elimination of shejpali.
- In Tamil Nadu, maintenance of irrigation systems in a situation of tight funds is considered the primary problem. The primary benefit expected from transfer is improved maintenance. Improved water distribution within the WUA managed area and consequent improved productivity are also expected benefits.

These expected benefits thus fall into the following categories:

- improved water distribution and productivity,
- improved efficiency of water use,
- improved maintenance and sustainability,
- reduced workload for irrigation officers,
- reduced costs to the state,
- improved collection of irrigation fees.

The problems that transfer is expected to solve are problems related primarily to the pre-transfer water allocation systems and other government actions within the state. For example, both Gujarat and Maharashtra want to eliminate the shejpali system as it creates heavy workloads and is widely violated, which creates more work. In Maharashtra too, the need to improve the efficiency of water use is a partial consequence of the way irrigation systems have been designed. Similarly, Bihar hopes transfer will help to reduce the effects of its financial crisis and Tamil Nadu wants to use transfer to overcome financial limitations. The relation of transfer to Kerala's problems is ambiguous and the problems mentioned by Haryana are not of the importance of the problems mentioned in the other states.

## *Exogenous Reasons*

Despite the statements of the expected benefits from irrigation management transfer, it is clear that in some cases the trigger that led directly to adoption of a transfer policy in a state came from outside. Basically there are two such triggers.

First, Government of India policy has had considerable influence. This influence has been exerted through the Command Area Development Programme. Farmer involvement in system management was identified as part of the program when it was started in 1974. However, no significant efforts were made in this area until the mid-1980s. Since 1985, the CAD Programme has issued a series of guidelines, exhortations, and offers to the states to take up aspects of transfer. Central CAD guidance was a key influence in Kerala's formulating a transfer policy for CAD schemes in 1986. In addition, the management subsidy offered by the CAD Programme has generated a considerable amount of activity. In Tamil Nadu, the Agricultural Engineering Department reported that their efforts in forming a reported 3300 outlet WUAs and 118 distributary canal WUAs were largely financed with these and other CAD Programme funds. In Maharashtra, the guidelines defining the transfer program quote extensively from CAD Programme documents.

However, although the CAD Programme has been influential, it did not, except in Kerala, trigger adoption of a transfer policy for large irrigation systems. Even in Kerala, transfer has been confined to 14 schemes under CAD. The other 14 large schemes have no transfer activities.

Of far greater importance have been donors.

- The adoption of a transfer policy by irrigation authorities in Haryana and Tamil Nadu was a direct result of demands by the World Bank as part of the negotiations for Water Resources Consolidation Projects in those two states. In Haryana, it appears that transfer is under consideration even though most irrigation officials believe that it is not helpful, will not work, and might even be harmful.
- The USAID Water Resources Management and Training Project pushed the WALMIs in the participating states into experimenting with aspects of transfer; in Gujarat and Tamil Nadu, and most spectacularly in Bihar, this effort indirectly helped establish the transfer policies for large systems.
- The recent World Bank program to get the states to define action plans for transfer has also pushed several into taking some concrete steps. This effort has resulted in general adoption of the term "Participatory Irrigation Management" for transfer in large systems.

The fact that donors and the Government of India had influence seems primarily to be due to the fact that both donors and the Government of India can offer funds to back up their suggestions. The case of Kerala suggests that the state finds no problems to solve with transfer hence it is not adopting it as a statewide policy (indeed the draft Kerala Irrigation Act now under consideration does not mention it) but did adopt transfer when offered funds under the CAD Programme. Similarly, in Tamil Nadu, despite several years of work by the Agricultural Engineering Department (motivated in part by the CAD Programme), the irrigation authorities did not even consider transfer as a policy until it was forced upon them by the World Bank. The Haryana case is similar. However, Haryana is more reluctant than Tamil Nadu because they have neither perceived major problems to be solve by transfer nor local examples of how it might be done and what it might accomplish.

On the other hand, Maharashtra, Gujarat, and Bihar show clearly that a state will adopt transfer if the perceived benefits are major even if not offered money to do so.

### *Cultural, Historical and Environmental Influences*

The proposed forms of transfer are related to cultural and historical factors. It is no accident that the four types of transfer policy correspond directly to four of the water allocation policies in the states. Some examples of the relations are:

- Both Gujarat and Maharashtra use shejpali as their dominant allocation system and both are adopting the Mid-level WUA/Volumetric Charge transfer policy; volumetric charging solves the problem of the shejpali workload which derives in large part from the system established in the Bombay Irrigation Act of 1878.
- Maharashtra's willingness to adopt transfer seems in part to be a result of its experience with the block system.
- Haryana wants to maintain warabandi as its allocation system and is reluctant to organize farmers at levels above the outlet for fear that it will interfere.
- Both Kerala and Tamil Nadu have long experience with farmer involvement in public management and politics and thus find the Three-Tier WUA transfer policy congenial.

There are relations with environmental conditions as well. Some examples are:

- Haryana's warabandi policy is considered particularly well adapted to large systems in the western Indo-Gangetic plains where irrigation water is scarce and irrigation is dependent upon the diversion of rivers with highly variable flows.

- Kerala has high rainfall for much of the year, hence irrigation is said to be of lesser importance than in some other states. This factor is part of the explanation both for Kerala's willingness to experiment with transfer and its relative indifference to transfer outside of the CAD program.

Of the two, cultural and historical factors seem to be of much greater importance in determining irrigation management policy in large systems than are environmental factors.

## 2.5 Probable Impacts and Problems of Transfer

### *Implementation Progress to Date*

Except in Kerala, experience with transfer is very recent. It is not possible to provide much information on actual impacts and problems of transfer programs. Progress with implementation of transfer in the six states are as follows:

- Implementation has not yet begun in Bihar. There is no case yet of complete transfer as envisioned by the policy.
- Implementation has not yet begun officially in Gujarat, but there are experimental cases, particularly Mohini and other cases in Ukai-Kakrapar System, Ankav in Mahi-Kadana System, and others.
- Implementation has begun in Haryana to the extent that ongoing work on watercourse lining has been modified to promote the formation of WUAs. Thus in October 1995, Haryana reported the existence of about 264 outlet level WUAs in scattered locations.
- Implementation in Kerala has been going on in the original 10 CAD systems since 1986. Four more systems were included in CAD in 1993. As of July 1995, Kerala CADA reported the existence of 3506 outlet level WUAs out of a projected 4484. Also 99 canal committees are reported in 11 systems; 9 project committees exist. Not all of the WUAs are functioning. For example, in Neyyar project, although 317 WUAs were formed, only 62 reregistered with CADA in 1995 in order to get subsidized inputs. Failure of the WUA also means that the joint management committees are severely weakened because they lack the farmer representatives. Many canal JMCs reportedly do not meet.

- Implementation in Maharashtra has been proceeding slowly. In March 1995, the Irrigation Department reported transfer of O&M functions to 75 WUAs and another 205 WUAs in the process of formation in major systems (MOWR 1995). These cover less than 1% of the large systems in the state.
- Implementation of the current policy in Tamil Nadu has not yet begun. However, in June 1994, the Agricultural Engineering Department reported the formation of 3300 outlet level WUAs and 118 distributary canal level WUAs. However, many of these were not functioning (eg see IIMI 1995a). Also, in Tamil Nadu, there are large number of existing WUAs in some large systems. For example, there are over 130 WUAs of various types in the Tambraparani System (Pundarikanthan et al, 1992).

### *Benefits for Farmers*

Success of irrigation management transfer depends in part on its acceptance by farmers. Farmers are not likely to accept irrigation management transfer unless it is somehow beneficial to them. Foreseeable benefits to the state policies include the following:

- In Bihar, systems are deteriorating. Partly for this reason and partly for financial reasons, the Water Resource Department is not capable of controlling water flows well enough to get water equitably to each of the outlets. If the Paliganj experience can serve as a guide, transfer of O&M to distributary level WUAs will serve first to improve water distribution to outlets and second to improve maintenance (Srivastava and Brewer 1994). Farmers are aware of the capacity of the Department and many farmers see transfer as the only way to keep the irrigation systems functioning.
- In Gujarat, because the policy has not yet been fully formulated, it is not possible to fully predict the benefits. One obvious benefit to farmers is ending the need to apply to the government for water each season, thus reducing the hassle of getting irrigation water. In addition, in so far as the proposed MOUs guarantee fixed quantities of water, transfer will give farmers greater assurance of irrigation water than under shejpali. In addition, the incentives to be offered by the state may be attractive to the farmers, particularly if they reduce the cost of irrigation.
- In Haryana, farmers did not report any clear benefits from the outlet level WUAs. One clear benefit is that some will get their watercourses improved and lined, but others already have had that done.
- In Kerala, some farmers reported that the outlet level organizations have helped because they serve as channels for subsidized inputs. Few report irrigation related benefits.

- In Maharashtra, farmers report that the primary benefits of transfer include getting guaranteed amounts of water each season, reducing the hassle of applying for water, ending restrictions on crops, particularly sugarcane, and ending restrictions on conjunctive use of canal and well water. The monetary incentives and subsidies offered by the government are also attractive but less so than getting greater power over the allocation and use of irrigation water.
- In Tamil Nadu, a few farmers involved in the Agricultural Engineering Department's program report improved water distribution below the outlet because of rotational systems implemented by the outlet WUA. A very few others report assistance with water distribution along distributary channels. Discussions with farmers involved in spontaneously created WUAs show that their primary function is to acquire water for the WUA.

This list shows that the most important benefit to farmers is to get greater assurance of irrigation water. This is particularly important where pre-transfer irrigation management policy gives great powers to the state, as under shejpali in Gujarat and Maharashtra. The Haryana pre-transfer policy, however, gives farmers relatively high assurance of irrigation water; also, the proposed transfer policy adds nothing to farmers' power to control water distribution, hence the farmers see few benefits.

The experience in Kerala would seem to contradict this interpretation since, through joint management committees, the transfer policy seems to give farmers considerably greater powers over water distribution than they had previously. However, experience elsewhere in the world shows that JMCs work well for farmers only when the officials that sit on them are cooperative (IIMI 1995b). Discussions with Kerala Irrigation Department officials suggests that most officials do not see any need for the JMCs and thus do not act in a supportive manner. If so, this finding would resolve the apparent contradiction.

### *Expectations of Progress and Impacts*

The discussion of benefits to farmers suggests the following predictions:

- In Bihar, prediction is not yet possible since the decisions on the full extent of powers to be transferred to the WUAs are still under discussion and since the attitude of the irrigation officials in the field are not known. If the transfer program is accepted it will result in better water distribution and increased crop production. It is not possible to predict the impact on maintenance.



- In Gujarat, it would appear that the benefits to farmers will make the transfer program attractive. The major possible weakness is that the state has not committed itself to supplying specific quantities of water to WUAs or to giving the WUAs some way to influence main system management. Past experience in Gujarat suggests that transfer is likely to help improve water distribution, crop production, and fee collection rate. The impact on maintenance and water use efficiency is impossible to predict.
- In Haryana, there is no basis to predict acceptability, but clearly acceptance by farmers is doubtful. Even if the outlet level WUAs are accepted, the impact is likely to be minimal since changes in management are minimal.
- In Kerala, experience has already shown that transfer is acceptable to farmers when implemented through the CAD program. Impact has been variable, but scattered successes in improving water distribution suggest that, given the proper support, transfer could help improve water distribution more generally. There has been little impact on maintenance because maintenance has not been addressed by transfer. Also, because of high rainfall, the impact on crop production is small unless water can be reserved for a third crop during the dry season.
- In Maharashtra, the transfer program is clearly acceptable to farmers and is likely to spread slowly. At least for the first WUAs, the impacts are likely to include improved water distribution, improved crop production, increased value of crop production, and improved collections of irrigation fees. The impact on water use efficiency is unknown since the allocations to the first WUAs have been greater than they got in the past. These increased allocations suggest that in the future, as the number of WUAs increases, there will be conflicts among WUAs for water allocations.
- In Tamil Nadu, experience in many countries indicates that it will be easy to form the WUAs to take part in system rehabilitation. However, it is not clear that farmers will find sufficient benefits to sustain the WUAs following rehabilitation. The support of the irrigation officials for the WUAs and proposed project level JMC is unknown. In the past, irrigation officials have shown themselves hostile to working with the WUAs created by the Agricultural Engineering Department.

The findings suggest that success is not guaranteed in any of the states. On the other hand, except possibly in Haryana, these observations do not suggest that the transfer policies will fail. A great deal depends upon the enthusiasm and flexibility with which the policies are implemented by the state irrigation agencies.

### **3. IRRIGATION MANAGEMENT TRANSFER POLICIES FOR WELLS AND SMALL LIFT SYSTEMS**

#### **3.1 Government Well and Small Lift Systems**

Irrigation management transfer deals with the transfer of irrigation management responsibilities from government agencies to private persons or organizations. While well irrigation systems or lift irrigation systems are found in all of the states, not all have government managed well or lift systems. Government managed tubewells are found in three of the six states - Bihar, Gujarat, and Haryana. Government managed small lift systems are found in two states only - Bihar and Kerala. These five categories of systems in four states are discussed here.

Well and lift systems not discussed here include the following:

- Privately or cooperatively owned and managed irrigation wells found in large numbers in all of the states except Kerala.
- Government operated wells in Haryana and Tamil Nadu used to provide additional or emergency water for surface systems.
- Large scale government operated lift systems in Haryana, Maharashtra, and elsewhere.
- Privately or cooperatively owned and managed lift systems in Bihar, Gujarat, Kerala, and Maharashtra.

Lessons from some of these, particularly the cooperatively owned and managed well and lift systems in Bihar and lift systems in Gujarat and Maharashtra, have been important to development of transfer programs although they are not cases of transfer in themselves.

An interesting development, also not discussed here, is that Kerala is now experimenting with a program to construct tubewells for irrigation and then turning them directly over to user groups.

#### **3.2 Pre-Transfer Irrigation Management Policies**

As mentioned earlier, irrigation management policies define water allocation to users, O&M responsibilities, and resource mobilization principles and procedures.

In all of the states, landholders may use the groundwater beneath their land without restriction. One state - Haryana - is considering imposing restrictions on groundwater use

because of growing problems of overextraction and overuse of poor quality groundwater. The state need not take any action to allocate water to a government well or to a well transferred to private persons. Water allocation to government managed small lift systems is also automatic since all of the states claim the right to allocate surface water.

Water allocation to individual farmers from the pump in both well and small lift systems tends to be done in the same way. In most places, pipelines or channels are laid out to reach specific locations. Users within the specified command are permitted to request water, often on a first come first served basis, sometimes on a schedule.

In government managed systems in all four states, pump operation and maintenance is state responsibility, operation and maintenance of pipeline or channels built as part of the system is also officially government responsibility but is often carried out by farmers. Operation and maintenance of channels below the outlets constructed by the government is always farmer responsibility.

In each state, the responsible agency at least partially separate from the agency responsible for large systems. In Bihar, the Minor Irrigation Department and the Bihar Water Development Corporation are responsible for O&M of the more than 5000 state tubewells and more than 200 state small lift systems. In Gujarat, the 3500 state tubewells are managed by the Gujarat Water Resources Development Corporation. In Haryana, the 1000 or so state tubewells are managed by the Minor Irrigation Tubewell Corporation. In Kerala, the 2000 small lift systems are managed by the Minor Irrigation wing of the Irrigation Department.

The primary differences among systems are the differences in ways that users are charged for the cost of pump operation. In all four states discussed, state systems overwhelmingly use electric pumps. In Bihar, users are generally charged on the basis of area irrigated; two levels of fees are used, one for a single irrigation during the season, one for more than one irrigation. In Gujarat and Kerala, users are charged by the hour of pump operation. In Haryana, users are charged either by time or by the units of electricity used. Users are billed following the season.

Because almost all of the pumps are electrically powered, electricity policies affect the operations of these systems. Bihar and Gujarat offer subsidized flat rate pricing of electricity for irrigation. Bihar, however, is so short of generating capacity that many pumps can be operated only 2 hours per day; in Bihar, unlike most other states, the great majority of private pumps are diesel powered. Haryana offers partially subsidized electricity rates for irrigation but charges by usage. Kerala has no subsidy on electricity for irrigation and charges by usage.

### 3.3 Irrigation Management Transfer Policies

Transfer policies vary among the states can be summarized as follows:

- In 1992, Bihar decided to transfer the state tubewells and small lift systems to users. First preference was given to gram panchayats and then to user groups. It was found that few panchayats were willing to take on the management of the systems and those few that were willing were not capable of doing so; almost half of those transferred were not working in 1995. The decision has been made to transfer the state tubewells and lift systems to user groups. Plans are now being formulated that cover providing repairs to the systems, dealing with shortages of electricity, and organizing and training user groups. Actual work is expected to start when finance is found to pay for the program.
- Gujarat began leasing out state tubewells in 1987. Although initially there was a preference for leasing to local government entities, it was found that few such entities were willing to take on the responsibility. Thus leases were offered to user groups. Rents are nominal but the lessees are obligated to make the water available to all farmers within the command area at the government rates; lessees are also obligated to pay all O&M costs and to try to collect arrears from users. Some 200 tubewells have been taken on lease. Many have been returned to the state. It has been found that many of the user groups are fronts for individuals. Now, Gujarat is formulating a program to sell the state tubewells to user groups.
- In the early 1990s Haryana began a program to transfer state tubewells to panchayats. It was found that no panchayats were willing to take on this responsibility. Then it was decided to sell state tubewells to individuals for a fixed price. It was found that only the best tubewells drew any response. However, those that did draw a response led to conflicts and court cases over the right to purchase the tubewells. Only a few such tubewells could be sold and this program has been discontinued. The state government is now considering how to proceed further. Auctioning of state tubewells to individuals and transfer to user groups are under consideration.
- In the late 1980s, Kerala adopted a policy of transfer of state lift systems to panchayats. Most panchayats refused and those that accepted were generally incapable of operating the lift systems. The state then began offering them to user groups. About 400 out of the 2000 in the state have been transferred to panchayats and user groups.

In all four states, there was an initial preference for transfer of the systems to panchayats and local government bodies. This transfer did not seem to work well in any of the states. In the

second stage, all of the states except Haryana felt they should transfer the systems directly to user groups. Success of this policy has been mixed so far.

### **3.4 Reasons for Adoption of Transfer Policies**

In all four states, charges to users were subsidized by the state. For example, Haryana figures that tubewell operating costs average Rs 10 per unit of electricity but the charge to users is only Rs 3 per unit, recently raised from Rs 1.75. Thus, the primary reason for adoption of the transfer policy in all states has been the wish to reduce state costs. A few persons also say that they expect transfer to result in improved productivity because farmers will be able to operate the systems more efficiently.

As with large systems, the World Bank has had influence. For example, Bihar adopted its transfer policy as part of a World Bank funded project to improve the state tubewells. However, Bihar is continuing the policy even though the World Bank funds have since been withdrawn. Haryana also has been influenced in this by the World Bank.

One reason for attempting to transfer first to panchayats has been the World Bank's advocacy of this policy based on the reported success of transfers of state tubewells to panchayats in West Bengal. Transfer to local government bodies was considered logical in all of the states since all states give local government bodies some powers to control resource use. Thus both Gujarat and Kerala chose to transfer first to local government bodies without reference to the West Bengal case. However, in these four states, unlike West Bengal, local government institutions are very weak. For example, in Bihar there have been no elections to panchayats for 16 years. Also, unlike West Bengal, these states did not make major efforts to organize user groups answerable to the local government to actually manage the systems.

### **3.5 Probable Impacts and Problems of Transfer**

From the government point of view, the success of transfer of government wells and small lift systems depends exclusively upon the acceptance of these systems by the farmers.

In most cases, the design of the state tubewells and lift systems is technically superior to those installed by private owners. Also, the states offer transfer on attractive financial terms; unless they are sold, the states charge very little or nothing to the user groups and even when sold the systems are offered at prices well below the value of comparable systems if purchased privately.

However, there are many reported problems:

- Because of management problems, many of the state tubewells and lift systems have given poor service. This has accelerated a trend to the installation of private tubewell and lift systems within the commands of the state systems. The existence of these private systems means that the potential market for services from the state system is reduced, sometimes severely reduced, thus reducing the attractiveness of the state systems.
- There are some major technical problems. Many of the state tubewells and lift systems are over 15 years old and need constant repair and upkeep. In many cases, the pump installations are larger than farmers are willing to take responsibility for. Some lift schemes in Kerala have pump installations of 300 horsepower. In Bihar, as mentioned earlier, electricity problems severely restrict hours of operation. This problem affects the other states also but to a much smaller degree. In many cases, discharges have reduced over the years for technical reasons. In Haryana, falling water tables have also led to reduction of discharge.
- All of the states face the problem of getting rid of pump operators following transfer. Bihar and Gujarat tried to resolve this problem by requiring the panchayats or user groups to continue to employ the operator as a condition of transfer. However, in many cases, continuation of the operator is unacceptable to farmers because many operators have been irresponsible.

Overall then, there are some major difficulties in getting farmers to accept transfer of the state well and lift systems even at low prices. Without resolution of the operator problem and some of the technical problems, it may not be possible to actually complete the transfer of most of the state wells and lift systems.

#### **4. IRRIGATION MANAGEMENT TRANSFER POLICIES FOR SMALL GRAVITY SYSTEMS**

##### **4.1 Pre-Transfer Irrigation Management Policies**

All of the states regard allocation of surface water for irrigation as a state responsibility. The states have an interest in all surface irrigation systems irrespective of size; hence all states have a concern for small gravity systems. However, irrigation management policies for small gravity systems differ from those for large systems because of greater farmer involvement.

The situation in the six sample states can be summarized as follows:

- Bihar has many small gravity systems, mostly serving areas of less than 2000 hectares. Although all are considered the concern of the Minor Irrigation Department, most were originally built by farmers and are operated and maintained by farmers. Rights to water are not of concern to the state except for those systems that take water from the "notified" rivers, generally larger rivers. No attempt is made to collect irrigation fees from farmers under these systems. The Minor Irrigation Department occasionally provides assistance to these systems in the form of repairs or rehabilitation.
- Gujarat has a number of small gravity systems. Some schemes were built and are managed by farmers; allocation of water to these schemes has been tacitly ratified by the government. The Gujarat Water Resources Department has built and is directly involved in the management of many others of these schemes. In government minor schemes, the government is responsible for O&M of the system down to the outlet while farmers are responsible for O&M below the outlet. The shejpali system applies to all systems managed by the Water Resources Department.
- Haryana has few or no small gravity systems; the government is not involved.
- Kerala has many small gravity systems. Most were built and are managed by farmers. Some have been built by the government and largely turned over to farmers. Use of water by these schemes has been directly or tacitly ratified by the government. The Minor Irrigation wing of the Irrigation Department provides occasional assistance to the small schemes. Irrigation fees are collected through land taxes as in large systems.
- Maharashtra has a large number of small gravity systems. Many of these have been constructed by farmers; some, such as the "phad" systems in Nasik District, remain entirely managed by farmers. Others, such as the malgujari tanks in Nagpur District have been taken over by the Irrigation Department. Use of water by these schemes has been recognized by the government. Other small schemes have been constructed by the Irrigation Department and are thus under government management. In government managed minor systems, the government is responsible for O&M down to the outlet and farmers are responsible below the outlet. However, in many of the government managed minor systems, key decisions are made by tank level joint management committees. Shejpali rules apply to all of the government managed systems.
- Tamil Nadu has a very large number of small systems, consisting mostly of the 39,000 "tank" systems. These tank systems range up to 5000 hectares in size. Virtually all of these small systems have been constructed by farmers. Many of the farmer built tanks

have been incorporated into large canal systems. According to the government, the state government is responsible for management of all tank systems whose commands are 40 hectares or more. Management of tank systems whose commands are smaller than 40 hectares is the responsibility of panchayat unions. In practice, except for the system tanks, neither the Minor Irrigation wing of the Water Resources Organization nor the panchayat unions play any part in management of these tanks other than providing occasional maintenance assistance for the headworks. Instead, villages or other spontaneously created organizations of farmers operate and maintain these systems. In the case of the system tanks, the canal systems supply water to the tanks hence the state agency has some responsibility for operations. Irrigation fees are collected through land taxes as in large systems.

It is clear that there is great variation in the existence of and policies toward small gravity systems among the six states.

#### 4.2 Irrigation Management Transfer Policies

The descriptions of the state situations show that there is already considerable farmer involvement in the management of small gravity systems. However, the situation varies widely among the states. The scope for irrigation management transfer policies necessarily depends upon the existing amount of farmer responsibility. Thus there is also wide variation among the states in transfer policies for these systems.

- In Bihar, Haryana, and Kerala there is no concern for irrigation management transfer in small gravity systems. In Bihar, the state provides little help. In Haryana there are no systems. In Kerala, the only possible issue is whether farmers should be asked to pay irrigation fees through the land tax system. This is not a current issue in the state.
- In Gujarat, transfer of irrigation management responsibilities in government managed small systems is being considered. At the policy level so far this issue is being treated exactly as if these systems were the same as large systems. As described in Section 2, the policy is to form mid-level WUAs in areas of 500-1000 hectares, turn over O&M responsibilities to the WUAs, and then charge the WUAs for the volume of water delivered. Policy implementation is to be done by NGOs and supported by subsidies and incentives.
- In Maharashtra, the policy is to transfer the operations and maintenance responsibilities for the whole small system to a single WUA. However, the policy also says that basic



management decisions for the system are to be made by a joint management committee. Both of these conditions can be satisfied by asking the appropriate irrigation officer to sit on the Executive Committee of the WUA. The WUAs are to be charged a volumetric fees based on water used. Implementation is supported by the same means and incentives as are used for large systems.

- In Tamil Nadu, there are two types of issues. First, because of deterioration of the tank systems, the state is interested in rehabilitating the systems and promoting better maintenance. Under the European Union funded Tank Rehabilitation Project, the state has agreed to form formal WUAs, involve the WUAs in planning and carrying out tank rehabilitation, and provide training and assistance in management following rehabilitation. Second, many farmer organizations that manage tank systems want to establish rights to exploit all of the tank resources, including fishing rights, rights to trees on the bunds, etc, and to control exploitation of the areas upstream of the tanks. No policy has been formulated to deal with this issue.

The policy issues in Tamil Nadu thus are quite unlike to the issues in Gujarat and Maharashtra.

#### **4.3 Reasons for Adoption of Transfer Policies**

The expected benefits from adoption of transfer of small gravity systems in all three states are exactly the same as the expected benefits from the transfer of large systems in those states. Thus in Gujarat, expected benefits include improved collection of fees, reduced costs to the state, improved water use efficiency and crop production, and reduced workload for irrigation officers from elimination of shejpali. In Maharashtra, expected benefits are the same as those expected in Gujarat. In Tamil Nadu, the primary expected benefit of forming WUAs is improved tank maintenance.

Donors have also been influential. In Maharashtra, adoption of transfer for small gravity systems has been strongly influenced by demands of the USAID funded Maharashtra Minor Irrigation Project. In Tamil Nadu, the EU funded Tank Rehabilitation Project was the immediate trigger for adoption of the policy of organizing WUAs. The Tamil Nadu policy has been modelled on experiments carried out by Anna University, particularly at Kedar Tank.

Overall, however, much less attention has been paid to the issue of transfer of small systems than has been paid to transfer in large systems.

#### 4.4 Probable Impacts and Problems of Transfer

Progress of implementation in the three states can be summarized as follows:

- In Gujarat, implementation has not begun but pilot activities have been carried out by NGOs, particularly the work carried out by the Aga Khan Rural Support Program at Pingot and other tanks in Bharuch District.
- In Maharashtra, irrigation management responsibilities have been transferred to WUAs in 5 systems. WUAs in another 16 tanks are being organized.
- In Tamil Nadu, reports indicate that the state irrigation officers are not putting much effort into creating and working with the WUAs in tank systems under the Tank Modernization Project. Thus while a number have been created on paper, few exist in reality. Also, there has been little progress in establishing a clear policy on the rights of user groups over tanks. One NGO, PRADAN is pursuing this issue with the state government on behalf of farmers.

Benefits of transfer for farmers in Gujarat and Maharashtra include the incentives and freedom from crop and conjunctive use restrictions. These are the same as in large systems. However, as pointed out, the primary benefit in large systems in these states is that farmers expect guaranteed amounts of water delivered to them. In small systems, because farmers are not competing with others in the same system, this benefit is absent. This may make transfer in small systems less attractive. In these states then, transfer will probably spread but neither the spread nor the expected impacts are sure.

In Tamil Nadu, the benefits of forming WUAs for rehabilitation include better rehabilitation and getting some other direct help. However, it is reported that the benefit most desired by many farmers is getting state help to control the use of wells within tank commands. There have been numerous reports that installation of wells in tanks commands has led to weakening or collapse of the systems of obligations that maintained the tank. Those without wells generally would like to force those with wells to cooperate in tank maintenance. Since reports are that the irrigation officials have not shown much interest in the WUAs, it does not seem likely that the state will provide much help to farmers in controlling wells and well owners. In Tamil Nadu, then, without changes in implementation practices, the work with WUAs in tanks may not have any lasting impact.

### 5. LEGAL SUPPORT FOR IRRIGATION MANAGEMENT TRANSFER

#### 5.1 Need for Legal Support

The preceding sections referred to various experiments in irrigation management transfer. The great majority of these were carried out without any legal support; that is, there is no law

permitting the work and in many cases there are laws that actually would seem to prohibit aspects of the changes made. For example, in various experiments in Gujarat, the state has tried charging WUAs for water based on volume. However, the law mandates shejpali. There is thus a need to ensure that law actually supports transfer.

There are three basic needs:

- All of the transfer policies mentioned above recognize WUAs and user groups and some recognize joint management committees. These bodies need legal recognition.
- The transfer policies envisage transferring specific management functions from the government to the WUAs and JMCs. The WUAs and JMCs need legal authority and power for these functions, including taking actions needed to control abuses such as denying water to farmers for cause.
- Some of the transfer policies envisage major changes in water allocation systems, such as ending shejpali. These changes too need legal sanction.

None of the states in India have made legal provision for all three of these items, but partial provisions exist in several states.

## 5.2 Legal Recognition of WUAs

The first of these needs can be largely satisfied by registration of the WUAs under the central Societies Registration Act of 1860, various state Societies Registration acts, or Cooperative Societies Registration Acts (Jacob 1995). Of the six sample states, Bihar and Haryana register WUAs under the central Societies Registration Act of 1860, Gujarat and Maharashtra register WUAs under state Cooperative Registration Acts, and Kerala and Tamil Nadu register WUAs under state Societies Registration Acts. Joint management committees may not require formal registration but their functions need legal recognition.

## 5.3 Legal Definition of the Powers and Functions of WUAs

At the moment, the only valid state laws that define functions for WUAs are the Madhya Pradesh Irrigation Act 1931 and the Kerala Command Areas Development Act 1986. In 1989, Gujarat attempted to pass an ordinance to support transfer. These three laws are discussed below.

Some states have issued documents other than laws that specify powers and functions of WUAs. The most comprehensive has been issued by Maharashtra (GOM 1994); this is a statement of policy but it lacks the power of law. In Tamil Nadu, the state government has issued a Government Order in November 1994 defining the transfer policy. This too lacks the full power of law but it might get backing from the courts. Neither of these policy definitions are discussed here.

### ***Madhya Pradesh Irrigation Act 1931***

The Madhya Pradesh Irrigation Act, 1931, defines the functions and powers of Irrigation Panchayats which can be established by the District Collector for a village or chak or a group of villages in the command area of the canal. The Irrigation Panchayats:

- assist the Irrigation Department in the construction of water courses, in recording and checking irrigation, and in settling disputes;
- collect irrigation revenue and remit it to the treasurer;
- arrange for the maintenance and repair of water courses.

Fines can be levied by an Irrigation Panchayat for default on maintenance duties, water rates, damage to structures and illegal use of water.

### ***Kerala Command Area Development Act 1986***

Under this act, the CADA may entrust the following functions to Beneficiary Farmers' Associations (outlet WUAs):

- the construction, maintenance, repair and upkeep of the irrigation system under the pipe outlet at the expenses of the land holders;
- to carry out obligations on behalf of the land holders, if the land holders fail to do so, and recover expenses there of from them in such a manner as may be prescribed by rules;
- to regulate the supply of water for irrigation to each land holding by turns or rotation according to the time schedule and in the manner approved by the CADA;
- to regulate and control water supply for irrigation by volumetric measurement in the manner specified by the CADA;
- to prevent unauthorized and unlawful use of water;

- to supervise the irrigation system with a view to prevent waste of water and damage to the system;
- to perform such other functions as may be specified by the Government from time to time.

The CADA may create a canal committee including both officers and farmer representatives of the outlet WUAs for each branch canal which is responsible for equitable distribution of water on the canal, uniform agricultural practices in the branch canal command, and coordinating the functions of the Beneficiary Farmers' Associations.

The government may create a project committee including officers and farmer representatives of the canal committees which is responsible to coordinate the functions of the canal committees, to ensure equitable supply of water to different areas, and to undertake such other functions as may be prescribed by rules.

The Kerala CAD Act also provides a legal basis for transfer of lift systems or small gravity systems to farmers as "Community Irrigation Projects." Under this provision the Registered Association of Farmers of the community irrigation project is responsible for:

- the operation maintenance, repair and upkeep of the project under their control at the expense of the land holders;
- to carry out obligations on behalf of the land-holders, if the land-holders fail to do so, and to recover the costs from them;
- to regulate supply of water for irrigation to each land holding by turn or by rotation according to time schedule approved by the association;
- to prevent unauthorized and unlawful use of water;
- to perform such other functions as the Government may specify from time to time.

The difficulty with the Kerala Law is that it applies to systems under the authority of the CADA only. Its provisions have not been incorporated in the draft comprehensive irrigation law currently under discussion in Kerala.

### ***Gujarat Irrigation and Drainage Ordinance 1989***

The Government of Gujarat prepared the Gujarat Irrigation and Drainage Ordinance, 1989, to, among other things, define the roles and functions of WUAs. An ordinance has a validity of six months unless it is approved by the assembly for long term implementation, this ordinance was not approved in time and lapsed. However, irrigation officials say they plan to resubmit it or something similar.

This ordinance specified that a group or association of users or federation of associations can apply to the canal officer for recognition as a WUA. However, it is assumed that the basic group is based on an outlet command (chak) or portion of an outlet command (subchak).

The ordinance then went on to specify that the WUA is responsible for operations and maintenance within its area and that disputes would be referred to the government officers. The details are taken up below.

This 1989 ordinance does not include all of the transfer ideas now proposed by Gujarat; in particular it does not refer to minor-level WUAs.

### *Comparison of these Laws*

The three laws are quite different. The Madhya Pradesh law creates a quasi-government entity whose sole purposes are to collect irrigation fees and maintain channels. The Kerala law creates a three tier structure of WUAs and joint management committees primarily focussed on water distribution and secondarily on agricultural planning. Gujarat's law provides little specification of powers and functions but, as will be discussed below, it obviates the shejpali system.

Of the three laws, Kerala's clearly has the most comprehensive specification of powers and functions. Also, all provisions under the law are subject to the whim of the CADA. Most importantly, canal and project committees can be formed only at the initiative of the government; farmers have no choice if the government does not want to apply the law. Madhya Pradesh's law also leaves all initiative to the government.

Of the three, only the Madhya Pradesh law provides powers to the WUAs (fining) to enforce its own rules. This is a serious lack in the other laws since without that power individual farmers can simply defy the group. The Gujarat ordinance attempts to resolve this lack by referring disputes to government officers. Unfortunately, government officers can and sometimes do form alliances with particular farmers so that the farmers can ignore rules with impunity.

## **5.4 Changes in Water Allocation and Resource Mobilization Systems**

The third need is to legally redefine state water allocation and distribution systems and resource mobilization systems to fit the transfer policy. Despite the comprehensive discussion of powers and functions of WUAs, Kerala's law makes no fundamental changes in water allocation systems. Indeed, as pointed out earlier, only the transfer policies for Gujarat and

Maharashtra attempt to make fundamental changes in water allocation and distribution; in particular, both states wish to do away with shejpali. Both states have made progress in redefining water allocation and distribution systems.

### ***Gujarat Irrigation and Drainage Ordinance 1989***

The lapsed Gujarat Irrigation and Drainage Ordinance, 1989, provided that upon application from a recognized WUA, the government would grant a (perpetual) supply of water to the WUA subject to several conditions, including:

- Such supply of water shall be subject to the availability of water.
- The water charges payable by the WUA shall be determined at the end of each year of supply of water and shall be paid within the ninety days of being intimated to the WUA; if not paid, the supply of water may be stopped.
- The WUA is responsible for supplying water to each sub-chak or chak according to the schedule for rotational water distribution prepared by the canal officer. Disputes are to be resolved by canal officers.
- The WUA maintains the field channels.
- The land shall be prepared every year for receiving water.

This ordinance not only replaces shejpali with the supply to the WUA but also obligates the WUA to institute rotational water supplies below the outlet.

### ***Maharashtra Irrigation Act 1974***

In order to accommodate the "block system", the Maharashtra Irrigation Act 1974 includes provisions for volumetric supply of water. The provisions specify that where supply of water for several years is given by agreement the users can consent to receive water on a volumetric basis. To do so, they must form a Water Committee of five persons, one of whom is an irrigation officer, to receive the water and pay irrigation fees based on the volume received. In addition, the Water Committee has to oversee distribution among the users and to ensure that it is used only for sanctioned crops and areas.

### ***Madhya Pradesh Irrigation Act 1931***

The Madhya Pradesh Irrigation Act 1931 not only specifies the powers and functions of Irrigation Panchayats, it also provides for changes in water allocation systems. Specifically it says that the government may enter into short or long term agreements with the permanent landowners for the supply of water of irrigation. Irrigation fees are fixed by the government

for the agreement. The government may cancel such an agreement if the farmers fail to maintain their watercourses in proper repair.

### 5.5 Lacks in the Laws

This discussion shows that none of the states has yet provided full legal support for their transfer policies. This is appropriate in those states where the policy is not yet fully defined and where experiments are still going on. Of the six sample states, this applies explicitly to Bihar, Haryana, and Gujarat. While Tamil Nadu has issued a Government Order defining its policy, it is clear that time is still needed to ensure that the policy will work as expected.

On the other hand, both Maharashtra and Kerala have fully defined their policies. Kerala has the most comprehensive law but, as shown, it too is flawed since it fails to allow for farmer initiative, it fails to provide means for WUAs and JMCs to enforce their decisions, and it does not apply to all schemes. Although the Maharashtra Irrigation Act provides the best legal support for the changes in water allocation systems needed for the transfer policy, it does not provide support for the roles and functions of WUAs.

## 6. CONCLUSION

### 6.1 Summary

This paper has analyzed irrigation management policies, irrigation management transfer policies, and various activities in six selected states. It was shown that the transfer policies refer to three types of irrigation systems: large systems, small systems that depend upon pumps (wells and small lift systems), and small gravity systems.

For large systems, it is possible to define five pre-transfer allocation and distribution policies:

- shejpali (Gujarat, Maharashtra)
- assured irrigation area (Bihar)
- land classification (Kerala, Tamil Nadu)
- block system (Maharashtra)
- warabandi (Haryana)

These differ significantly in the power they give the state government. Also, these are distributed neatly into geographic and culture areas within India.



## 6.2 Irrigation Management Transfer and the Transfer of Power

Since all of the states are planning to increase the share of O&M costs borne by the farmer, the farmers have to get something for it. What farmers seem to want most of all is more power to control the sources of irrigation water. The proposed transfer policies differ radically on the amount of control transferred to farmers:

- The irrigation transfer policies proposed by Gujarat and Maharashtra explicitly include giving farmers more control over water sources by giving them guaranteed amounts of water rather than requiring seasonal sanctions.
- The policy proposed in Bihar provides an increase in farmer control over the sources of water by turning operations of distributary channels serving large areas over to WUAs.
- The transfer policies in Kerala and Tamil Nadu potentially provide increased control to farmers through the proposed joint management committees. However, realization of this control depends upon the powers actually given to the joint management committees.
- The policy proposed by Haryana includes no increase in farmer control over the sources of water.

Although there are certainly many factors that will determine the degree of success of these transfer policies, this question of empowerment of farmers is likely to be basic. If so, the following predictions can be risked:

- Transfer in Gujarat, Maharashtra, and Bihar is likely to succeed. Because Bihar has the least resources to use to pursue transfer, it is, perhaps, the most questionable of the three.
- Transfer could be successful in Kerala and Tamil Nadu, depending on actions of government officials. The experience in Kerala so far is not encouraging, nor is experience with the Agricultural Engineering Department program in Tamil Nadu.
- Transfer in Haryana is not likely to succeed. Some irrigation specialists note that the warabandi allocation system provides greater assurance of water to farmers than do any of the other pre-transfer policies, thus farmers may not have much to gain. Some specialists feel that transfer is neither necessary nor wise in Haryana.

More experience is needed.

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