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SHARED GOVERNMENT-FARMER  
MANAGEMENT OF IRRIGATION RESOURCES:  
THE POTENTIAL FOR FARMER PARTICIPATION

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Irrigation systems built by governments and used by farmers form a link between the state and the individual rendering them joint managers of a common resource: irrigation water. Because the objectives of the government are not always the same as those of individual farmers, their joint management of irrigation water is inherently problematic. This paper explores management approaches to the government farmer interface which have successfully utilized the management capacity of farmers while also meeting the needs of government.

I. INTRODUCTION

A division of management responsibility between a government agency and farmers can be found in nearly any irrigation system where the government plays a management role. In the warabandi systems of Pakistan and NW India, for example, the Irrigation Department is typically in charge of operation and maintenance of

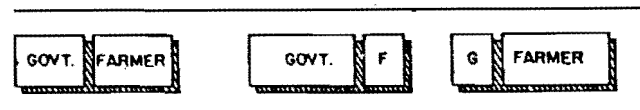
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the canal network down to the level of the mogha which feeds a single watercourse. Below this point the farmers have certain management functions such as distributing water and cleaning the watercourse. Certain irrigation systems are managed almost entirely by the government so that there are really no decisions left to the farmer. Government sugar estates in Zimbabwe are managed as centrally controlled companies with government agents making all management decisions. Similarly, then Sudan Gezira Board handles most irrigation decisions for the tenants who cultivate the land.

At the other extreme are irrigation systems, generally, though not always ones, which have been constructed by farmers themselves without government assistance and which continue to be managed entirely by the farmers. In such cases, there is no "meeting" or interface between government and farmers, although the situation can change. In the Philippines, for example, a large number of irrigation systems which were built by farmers and managed for many years without government involvement, were gradually brought under the jurisdiction of the National Irrigation Administration (NIA) as the farmers were given government assistance in making physical improvements. Recently many of these systems have reverted to farmer control through a government program aimed at enhancing farmer management capacity. The example of the Philippines will be discussed later in this paper as a case where there has been a steady waxing and then waning of government involvement in local irrigation management and where there has been a lively interest on the part of both government officials and farmers in finding the optimal mix in their respective management roles.

Irrigation systems where farmers play no management role at all, such as the sugar estates of Zimbabwe, and irrigation systems where government plays no management role at all, such as community irrigation schemes built and operated by farmers, lie outside the scope of the present discussion. Our concern here is with irrigation

schemes where management responsibility is shared, however unequally, between government agencies or officials on one hand and farmers or users on the other. The relative management responsibilities of the two groups, and the interface between them, can be conceptualized as fitting one of the following situations: (1) management responsibility is shared equally between government and farmers, (2) management is largely controlled by government with farmers playing a minimal role, or (3) management is mostly in the hands of farmers, with modest government assistance. These three situations are diagrammed below.



## II. IMPORTANCE OF THE GOVERNMENT/FARMER INTERFACE

As national governments and international agencies seek low-cost management solutions to problems of poor irrigation performance, there is a growing interest in the management capacity of farmers. Evidence from irrigation schemes around the world suggests that farmers can carry out certain management functions more effectively than government agencies, and at lower cost. The key question in a particular irrigation scheme is not whether farmers should play a management role, but rather which management functions are best given to farmers and what functions should government handle (cf. Upoff et al, 1985:1). Finding the optimal mix of

government/farmer management responsibility is an essential part of achieving optimal system performance.

Irrigation schemes with broken control structures, silted channels, and unauthorized outlets are all too familiar reminders of the importance of government/farmer cooperation. A broken gate or a missing shutter is not, however, a problem in itself; it is a symptom of a deeper, non-physical, management problem. Repairing the gate addresses the symptom, not the problem. The problem, briefly stated, lies in the lack of correspondence between the interests of the farmers who broke the gate and the irrigation department which installed it. Both farmers and department officials claim management jurisdiction over the water flowing through the broken gate.

A useful analogy can be drawn with the problem of two nations claiming the same territory. Until a mutually agreed border is established, there can be at best an uneasy peace, which may be broken by fighting at any moment. Each side must invest time and resources to safeguard its interests. The management interface between the irrigation agency and farmers can be viewed as disputed territory. Until a negotiated settlement is reached by which their mutual management responsibilities are agreed upon, both sides -- government and farmers -- will incur substantial costs.

Unlike the disciplined action usually characteristic of military forces, however, farmers do not fight as a unified group against a unified irrigation department; within each group there may be considerable divergence of interests which must be addressed in any management solution. Upstream farmers steal water from downstream farmers who would otherwise benefit from it. Irrigation officials may require extra-official incentives before they concede to authorize water releases (cf. Wade, 1982). Such complex management problems call for sophisticated solutions which must be geared to the specifics of each case.

In several irrigation projects where management problems have been addressed successfully a common element of strategy can be discerned. The division of management responsibility between government and farmers serves as a focus for addressing particular management issues on both sides of that divide -- both within the irrigation agency and within the ranks of farmers. The result of new management approaches in these projects has been a significantly greater management role for farmers, and a greater understanding of management constraints on both sides of the government/farmer interface. Two examples of this type of approach are outlined below.

### III. EXAMPLES OF FARMER PARTICIPATION IN IRRIGATION MANAGEMENT

Irrigation projects which have integrated farmers into significant aspects of the management process are discussed here to suggest answers to the following questions: (1) In what phases of irrigation development (e.g. design, construction, operations, and/or maintenance) is a management role for farmers feasible and/or desirable? (2) How can farmers be induced to play a management role? (3) How can an irrigation agency be induced to encourage farmer participation in management? (4) What kinds of costs and benefits, to both farmers and irrigation agencies, can be anticipated? In the Gal Oya irrigation project in Sri Lanka, management is shared by the national Irrigation Department and local farmers. In the Philippines, NIA is experimenting with new management strategies and has turned over small systems entirely to farmers; on larger systems, NIA shares management responsibility with farmer associations.

#### Farmer Participation in Gal Oya, Sri Lanka

The Gal Oya irrigation scheme, a large reservoir system serving about 60,000 ha was constructed during the 1950s and early 1960s; by the late 1970s it was in need of rehabilitation. Much of the physical infrastructure needed reconstruction and irrigation water was frequently not

managed efficiently in the main and distribution canals and below the turnouts. Large areas in the tail of the system were effectively rainfed, receiving virtually no water from the irrigation system. Inequities also existed among distributary channels (Widanapathirana and Brewer 1985:13).

When the rehabilitation project began in 1979, there was a clear need not only for new water control and conveyance structures, but for an entirely new approach to irrigation management. The decision was taken to adopt an approach similar to the experiment with water user associations in the Philippines (see below), as an integral part of the physical rehabilitation process. A cadre of "institutional organizers" (IOs) was recruited and trained by the Agrarian Research and Training Institute (ARTI), with the assistance of Cornell University consultants. The role of the IO was intended to be that of a catalyst for farmer organization rather than to make the IOs promoted interaction between farmers and irrigation officials through various types of meetings which drew on a long-standing Sri Lankan tradition of seasonal cultivation meetings bringing together farmers, irrigation, agriculture, and administrative officials to discuss the next season's agricultural practices. During the project, several new types of meetings were arranged including the following (Wijayaratna, 1985:128):

Design meetings between farmers and Irrigation Department officials to discuss F-channel design; these were later modified to "walk-the-channel" meetings which were held on an opportunistic basis.

Monthly meetings between farmer representatives (of the turn-out group) and field officers from the Irrigation Department, Agriculture Department, and Agrarian Services Department.

Periodic meetings between farmer representatives and district level officers, and

- Informal meetings between farmers and field level officers.

At the same time that farmers, with the help of IOs, were involved in planning and designing the tertiary channels, they continued to be responsible for operating and monitoring these channels. Their functions included periodic cleaning, the introduction of rotations as needed, and conflict resolution. Based on the data available in 1983, there was general satisfaction among both farmers and irrigation officials with water management practices (Widanapathirana and Brewer, 1985). There was marked improvement in cooperative activity both in terms of water rotations within the F-channel, where during the 1985 Yala season 65 per cent of sample farmers practiced rotations (Tilakaratne, 1986), and in terms of cooperative labour (shramadana) involving farmers at the secondary canal level.

The available data on the farmer participation in Gal Oya suggest that the program has been successful in terms of (1) motivating the farmers to carry out major O&M functions at the F-channel level, and some functions along secondary canals and above, (2) managing conflicts and individual problems locally, rather than reverting to high level officials or politicians as was the general practice prior to the program, and (3) motivating irrigation field staff to work with farmers to solve problems as they arise. Perhaps the most impressive change in the eyes of government officials has been a reduction in farmer complaints about irrigation. Whereas irrigation complaints were made at a rate of 100 a day in 1980, said the former Government Agent, today they are nil (Uphoff, 1985). The reasons probably lie both in greater farmer satisfaction and in a better-understood organizational system by which those complaints which do arise can be channelled directly to the appropriate farmer representatives and/or irrigation officials, rather than to district administrators.

The division of management responsibility between farmers and irrigation staff at Gal Oya is illustrated in Figure

1 (adapted from Wijayarathna, 1985:129). The diagram represents the management situation in 1984; by the time the project was completed in December 1985 the management ratios had shifted somewhat to give greater responsibility to farmers at the level of the secondary canals and, to some degree, at the project level (ISTI, 1985).

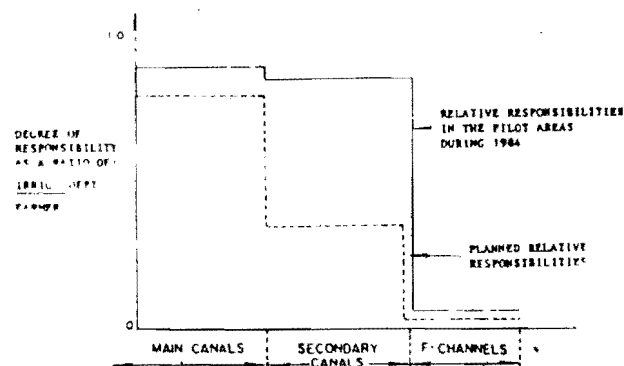


Fig. 1 Desired and actual division of management responsibility between farmers and the Irrigation Department at Gal Oya

In considering the success of Gal Oya farmers in managing certain levels of the irrigation system, attention must be given to the role of the IOs. Though charged with playing a role of facilitator rather than leader, the IOs are looked upon by some farmers as key actors in their "farmer" groups. Whether and to what extent farmers will continue to manage their portion of the system, and whether the farmer representatives will continue to interact closely with irrigation department staff after the IOs have departed, remains an open question (ISTI, 1985:28). Similarly, the extent to which irrigation department officials will continue to work closely with farmers after the departure of the IOs and the outside consultants will also bear close monitoring.

## The Philippine Experience in Farmer Management

In the Philippines, the NIA has for nearly a decade promoted greater farmer management of the irrigation systems under government jurisdiction. The initial stimulus for this policy originated largely from economic constraints on the NIA budget when, in 1974, the government decreed that O&M costs should be financed by irrigation fee collections from farmers in national systems, and construction or rehabilitation costs should be recovered from farmers in communal systems (Bagadion, 1985:8).

Relations between the government, as represented by the NIA, and farmers had been quite amicable in the Philippines, but at a high cost to the government and with little benefit to farmers. Prior to 1974, farmers in communally managed irrigation schemes could appeal to the government for assistance in repairs or rehabilitation, and requests were frequently granted on a "pork barrel" basis, particularly at election times (Bagadion 1985). This type of appropriation policy was not conducive to sustained financing of recurrent costs, however, and in spite of national subsidies many of the communal systems were in a poor state of repair. The post-1974 policy required farmers in communal systems to pay back construction costs, though at no interest and over a period of up to 50 years. While the farmers still enjoyed a subsidy, they also had annual obligations to repay a part of the loan. Farmer association seemed to be necessary to mobilize repayment. The NIA, which did not have in-house capacity for organizing farmer groups, contracted with the Farm Systems Development Corporation (FSDC) to organize groups of water users. The approach taken by NIA and FSDC was not very successful, but it led to other experiments which were Korten (1982:13) discusses the difficulties with the FSDC approach.

The contracting arrangement (between NIA and FSDC) was based on the assumption that the organizing and construction works were separate tasks, appropriately carried out by different agencies. It was assumed that minimal coordination was needed at the field level, and

that most of the organizing task could be done during or after construction. Subsequent experience showed that these assumptions were wrong. A major problem was that the issues that concerned the farmers were the technical ones such as the location of the diversion and the canals, the timing of construction, and choice of hired labourers for the construction work. With the organizational tasks separated from the planning, design and construction tasks, the organizers could not deal with the issues of concern to the farmers -- they approached the farmers 'empty handed'. Organizing work was needed well before construction with close integration of the organizing and engineering work.

In 1976, NIA began to experiment with a different approach by organizing farmers in communal irrigation systems. The new approach differed from the FSDC approach in two major respects: (1) farmers were organized before any construction activity was started and (2) the agents who helped organize the farmers were specially trained community organizers. While the approach has been improved upon over the past 10 years, its essential elements have remained the same. By 1985, 15% of the 600,000 ha under communal irrigation systems had been brought under the program of NIA-Induced farmer associations. In addition, the program was extended in 1980 to include national systems (those operated and maintained by NIA) where farmer organizations are being formed to manage the tertiary levels of the systems. By 1985 the program covered 28 of the smaller national systems with a total area of 25,000 ha.

The key features of the NIA approach center around selecting irrigation systems, whether communal or national, that do not have insurmountable technical difficulties, and then working with the farmers to develop an organization that can manage the system or (in the case of national systems) a part of the system. The community organizers have training in community development as well as a basic understanding of agriculture and engineering, and they represent the first step in the

NIA's efforts to transfer management responsibility to farmers. Every irrigation scheme in the program undergoes physical improvements of some kind, as decided not by the NIA but by the farmers themselves as they will have to bear the eventual costs. The first task of the newly formed farmer association, and indeed its initial *raison d'etre*, is to decide what physical improvements are needed. With the advice of NIA engineers, farmers select the location of channels and outlets and the location and type of diversion weir. Farmers may also elect to help in the construction of these designs, and their labour is applied against the total cost negotiated with NIA.

In operating and maintaining communal systems, farmers are largely autonomous although they may seek technical assistance from NIA. In the national systems where farmer associations have been formed, farmers may opt for complete take-over of a system, if it is relatively small, or they may manage only one part of the larger systems. Farmer associations in the large systems manage the command area of lateral canals varying from 250 to 700 ha (Bagadion 1985). Under this arrangement the associations collect irrigation fees on behalf of NIA, in addition to carrying out normal O&M functions.

#### IV. LESSONS FOR JOINT MANAGEMENT

The cases from Sri Lanka and the Philippines have been cited as successful models of irrigation systems jointly managed by farmers and a government agency. But not all management approaches that integrate groups of farmers into the management process will be viable or cost effective. The suitability of farmer participation, and the optimal mix of farmer - agency management seems to be dependent on some or all of the following factors: (1) the social environment, (2) a manageable main system, (3) a commitment on the part of the irrigation agency, (4) the use of community organizers, and (5) the integration of farmer groups with rehabilitation activities and other tasks. Each of these factors is discussed below.

## 1. The Social Environment

Effective management by groups of farmers requires a degree of social organization and cooperation which does not obtain in every situation. In new settlements where patterns of leadership have not yet emerged, or in settlements that are highly factionalized and in communities where there is extreme socio-economic differentiation, it may be unrealistic to expect farmers to effectively manage irrigation systems. The two cases discussed above involved well established social systems and irrigation systems. Gal Oya was a settlement scheme in the 1950s. Some of the NIA schemes were constructed by farmers over the past 50 years while others were built more recently by the government, but all were generally in areas of pre-existing settlement.

## 2. A Manageable Main System

Though the main system may be in need of rehabilitation (and indeed, for purposes of mobilizing farmer interest, should be), there must be adequate water control to meet basic irrigation needs, or at least the potential for water to be available on a predictable basis. However, either too much water (assuming adequate drainage) or too little precludes the incentive for farmer participation and points to problems in the management of the main system that need to be resolved before downstream issues are addressed (see Wade, 1979 for an example of this).

## 3. Commitment by the Irrigation Agency

Before management responsibility can be shared significantly with farmers, there must be a clear commitment on the part of the agency which has overall management responsibility. The willingness of NIA to experiment with new management approaches and in many of the smaller irrigation systems, to turn over entire systems to farmer associations, indicates a firm commitment stemming, in part, from financial constraints.

eliminate the subsidies that NIA had once been empowered to pass on to farmers. The NIA needed to find a management solution that would (1) increase productivity, so farmers could repay their loans on capital improvements and pay for O&M, and (2) instill a sense of ownership in the farmers so they feel obligated to make their payments as well as take on extra O&M tasks. In one sense, the NIA is asking farmers to perform services previously provided for them, and to pay more for the services that NIA continue to provide in the national systems. The farmers, for their part, receive physical improvements with heavily subsidized credit, and on the national systems they receive greater management control over the water. As one farmer put it, "we can do a better job than the NIA". While this may or may not be true, in terms of physical performance, in terms of the farmers' social welfare it would be difficult to argue otherwise.

In the case of Gal Oya, the Irrigation Department has less incentive to share management with farmers. During the implementation of the rehabilitation project which ended in December 1985, the organization of farmer groups was stipulated in USAID's contract with the Government of Sri Lanka. There is also strong independent support for the concept at high levels of the government and within the Irrigation Department. There is not, however, a financial imperative within the department, nor are there other incentives within the department to promote farmer management. The institutional organizers, who were never a part of the department, have lost their positions with the close of the rehabilitation project and it is now uncertain whether their positions will become incorporated into the main body of the department.

#### 4. The Use of Community Organizers

In the examples discussed above, a separate cadre of community organizers was involved in helping farmers to organize. The community organizers were recruited not for their technical skills (though some did have technical qualifications as well) but for their knowledge of, or predisposition to, the role of social worker. Both the Philippine COs and the Gal Oya IOs developed a distinct social zeal in their approach to their task of organizing farmers. While this may have interfered somewhat with their prescribed role of catalyst rather than activist, a sense of community within the cadre of organizers is to be expected when the work is taken to heart. This level of social awareness verging on activism stands in marked contrast to situations where technical workers are given the task of creating irrigator associations as one part of their duties. In the vast Mahawell Project in Sri Lanka, the lowest level administrators (unit managers) are expected to help create turnout groups similar to those of Gal Oya. The unit managers have a broad range of administrative responsibilities in addition to irrigation, however, and generally have no training in sociology; the groups created so far exist more on paper than in reality. A similar approach to irrigator associations is found in many other countries as well. In Thailand the zoneman, a technical field staff of the Royal Irrigation Department, is expected to induce farmers to form associations for O&M functions. In Pakistan, agricultural officers are given this responsibility under the On-Farm Water Management Program.

Giving the task of developing viable farmer associations to a technical field officer untrained in either extension or social science is probably a mistake. Not only do most technical officers have little experience in farmer organization, they also have little career incentive. Engineers and agronomists are not given promotions on the basis of their competence in motivating farmers to form associations.

Organizing farmers is only one part of the role played by community organizers in Gal Oya and the Philippines. A second and equally important role was that of mediator between the farmers and the irrigation agency. Where they are employees of the agency, community organizers have a good understanding of and, one would presume, identity with, the agency. At the same time by working with farmers, the COs understand and presumably sympathize with their problems. In effect, the CO can play both sides of the fence, to the mutual advantage of the irrigation agency, which needs to know what farmers are thinking, and the farmers, who need to understand the policy and the constraints of the irrigation agency. Technical field officers generally have neither the time, training, nor inclination to play a mediating role; they are usually too clearly on the government side of the agency/farmer interface.

#### 5. Rehabilitation Activities and Farmer Organization

It is no coincidence that in the successful cases cited above, farmers were organized for specific activities involving physical improvements, and not only for O&M. The objective of organizing farmers is, of course, not simply to form an association, but to carry out some management functions. The association is a means to that end. Rehabilitation provides an opportunity for organizing farmers around a clearly understood set of activities, e.g., design, location, and construction of new facilities. As a group, farmers can interact with irrigation officials in an effective manner; the association of farmers so formed will be stronger because of its clear function, and will earn the respect of irrigation officers because of its sense of purpose. After the physical rehabilitation work is completed, the association will continue to draw its sense of identity from, in part, the relations with irrigation officers which were formed during the common rehabilitation efforts. The association will concern itself with O&M activities which are far less demanding, perhaps, than rehabilitation activities,



but its effectiveness in managing a conflict over water rights, for example, will depend on the organizational strength, the association derives from its more visible physical accomplishments.

#### V. BENEFITS OF FARMER PARTICIPATION IN IRRIGATION MANAGEMENT

There are basically two arguments for greater involvement of farmers in managing irrigation. One is the economic one that farmers can do the job, at least at the tertiary and perhaps secondary levels of the system, more effectively and less expensively than can an irrigation agency. The second argument is a social one: the experience of working as a group and interacting with government officials provides farmers with skills useful in other aspects of their lives.

##### The Economic Argument

The claim that economic benefits can be derived by involving farmer organizations in irrigation management is based more on impressions, experience, and logic than on empirical research. Examples of benefits cited in the literature (e.g., Uphoff et al 1985:2) are often open to several interpretations. For example, the 30 per cent increase in the flow of water downstream from the Minipe pilot project area in Sri Lanka (de Silva, 1985:142) may be due to better management by farmers, better management of the main system, greater water supply into the head of the system, less demand due to a rainy year, or perhaps other factors. In the Nong Wai irrigation scheme in Thailand, cropping intensity increased from 50% to 90% during a two year development project which included land consolidation, agricultural extension, and the formation of water user groups (Kathpalia, 1984:18). When so many improvements are being made concurrently, the pure effects of the water user groups cannot be easily separated from the other factors.

While the pure effects of farmer management are difficult to isolate, the management performance of farmers can be evaluated empirically. For example, farmers in Gal Oya now generally practice rotations, repair and clean field channels, and have among the highest collection rate (80%) in Sri Lanka for the newly imposed O&M fees (Uphoff, 1985). It would be hard to dispute the claim that the irrigator associations have helped promote this behavior. Similarly in the Philippines, the NIA has been quite successful in recovering O&M fees from farmers on national schemes where the associations take responsibility for recovering the fees from their members. Without the existence of the associations, this level of recovery would probably not be possible. Other benefits attributable to farmer associations in NIA-managed schemes include reduced damage to structures (Bagadion, 1985).

Except for specific O&M functions and records of fee payment, however, the benefits of farmer participation are not easily separated from the broader management environment. Farmer involvement in designing, locating, and constructing field channels and outlets has resulted in significantly lower costs in some Philippine schemes (Bagadion and Kortan, 1985:69-72). Yet the benefits of the farmers' involvement would not have been possible without the cooperation of the NIA engineers who often actively sought farmer input. Because of the complex relationship between farmer participation and the operation of the main system and the structure of the irrigation agency, it is probably more useful to speak of the implications of farmer participation than the effects of farmer participation. For example, unless organizational changes are made within the agency to accommodate and interact with farmer groups, the groups are unlikely to have long-term viability.

Questions regarding the economic benefits of irrigator associations thus need to be rephrased to ask what are the economic benefits of management approaches which integrate farmers into the management process. In Gal

Oya, the participatory management approach appears promising, though quantification is difficult. As the writers of the Final Evaluation Report (ISTI, 1986:B-10) noted, "...it is impossible to isolate the contribution of the [farmer] organizations from the effects of the concurrent physical rehabilitation of the system and the improved receptivity and cooperation of the Irrigation Department officers in the project area. It can only be said that the combined result has been positive". In the Philippines, NIA has adopted a participatory management approach because of financial constraints, and the results have been successful.

### The Social Argument

The social benefits of participatory management lie in the realm of "social development" where the benefits are measured in terms of social relationships among people (farmers with farmers) and between groups of people (farmers with agency officials). Through their participation in the management process, farmers gain skills, experience, and confidence in themselves both as individuals and as a group. Their relationship with irrigation officials in particular, and government officials in general, will be changed qualitatively as their understanding of those officials increases, and as farmers begin to view those officials as co-workers and colleagues. Instead of the agency paternalism that is nurtured by top-down management policies, farmers learn to become self-reliant, relating with agency officials on a basis of mutual respect (cf. Goodell, 1984).

The importance of farmers becoming actively involved in determining their own future rather than being passive recipients of development benefits is one of concepts of "people-centered development" (see D. Korten 1984). Instead of focussing on the economic products of development, this perspective considers the process of development and long-term sustainability. Farmers who are self-reliant in their management of irrigation resources are better able to adjust to new economic

and political circumstances. If, for example, petrol is locally unavailable and irrigation officials cannot make their normal rounds, or if there is a strike of government workers, or if there is a decidedly incompetent field officer assigned to manage the irrigation system, farmer participation in the management process can provide a buffer against effects which could otherwise prove economically damaging. Management self-reliance can serve both as insurance against uncertainty and provide a sense of self-respect which is a benefit in its own right.

The organizational skills which farmers learn by participating in an irrigation association are also social benefits to the extent that these skills can be applied to concerns beyond irrigation management. For example, the management capacity of farmers to deal with other common property resources can be enhanced through the experience gained in irrigation. Farmers who have learned to manage irrigation along a secondary canal are better equipped for coping with the problems of managing the village pasture, forest, domestic water supply, and roads.

### VI. CONCLUSION

Joint management of irrigation resources involves both government and farmers in a common task. The benefits to government include lower costs and greater productivity; the benefits to farmers include productivity and security. Both sides have much to gain, yet examples of true participatory irrigation management are surprisingly hard to find. There are strong incentives -- larger budgets and staff -- for government agencies to expand their sphere of management and reduce the involvement of farmers. There are also strong incentives for farmers to welcome top-down management approaches. Lined channels may be constructed at no cost to the farmer, and he need not concern himself with day to day management problems. For international agencies too, there is a temptation to overlook farmer participation

(Merrey, 1984). When funds must be dispersed according to a hurried timeframe, top-down management is far more convenient than waiting to consult with farmers and seeking their collaboration in design and construction.

The examples of Gal Oya and the Philippine experience have demonstrated two processes by which farmers can play a larger role in irrigation management, and the kinds of the benefits that may result. Some of factors underlying the success of these cases have been discussed, particularly the role of community organizers and the commitment required on the part of the irrigation agency. Our understanding of the conditions under which farmer management participation is possible and desirable is still quite feeble. We need to know more about how community social factors, irrigation design and layout, and alternative strategies for involving farmers in the design and construction phases of irrigation development contribute to effective farmer management. We also need to know more about the organizational arrangements within irrigation agencies and the preconditions for effective interfacing with farmer groups. Finally, we need to know more about the benefits, both economic and social, which can realistically be anticipated from farmer participation in the management process.

The purpose of farmer participation in irrigation management is not merely to create a peaceful environment in the agricultural sector but to promote a more prosperous economy and a more progressive society. As farmers become involved in the management of their irrigation resources, they have more control over their own lives, both economically and socially. Shared management of irrigation systems by farmers and government has the potential for improving both agricultural production and social well-being.

## REFERENCES

Bagadion, Benjamin U. 1985:

"Water User Organizational Needs and Alternatives". Paper presented to the Regional Symposium on Water Resources Policy in Agro-Socio-Economic Development, 4-8 August 1985, Dhaka, Bangladesh.

Bagadion, Benjamin U. and Frances F. Korten 1985:

"Developing Irrigators' Organizations: A learning Process Approach" in, Michael M. Cernea (ed), Putting people First: Sociological Variables in Rural Development, Oxford: Oxford University Press.

de Silva, N. G. R. 1985:

"Involvement of Farmers in Water Management - Alternative Approach at Minipe, Sri Lanka." in Participatory Experiences in Irrigation Water Management, Rome: FAO.

Goodell, Grace 1984:

"Political Development and Social Welfare: A Conservative Perspective." in D. Korten and R. Klaus (eds), People Centered Development, West Hartford, Connecticut (USA): Kumarian Press.

Kathpalia, G.N. 1984:

"Water Users' Groups in Nong Wai Irrigation Project - Thailand." ODI Irrigation Management Network, Network Paper 10c.

Korten, David C. 1984:

"People - Centered Development : Toward a Framework." in D. Korten and K. Klaus, (eds) People Centered Development. West Hartford, Connecticut (USA): Kumarian Press.