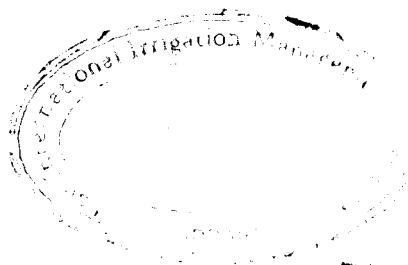


STRATEGIES FOR FARMER PARTICIPATION IN IRRIGATION MANAGEMENT
IN SRI LANKA:
PAST EXPERIENCES AND FUTURE REQUIREMENTS

by

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Prepared for presentation at the Seminar on Irrigated Water Management --
Strategies of Farmer Participation, 20 June 1988, ICTAD Auditorium, Colombo.



7 June 1988

Mr C.C.T. Fernando
Seminar Organizer
Engineering Consultants Ltd.
P O Box 602
60, Dharmapala Mawatha
Colombo 3

Dear Mr Fernando:

Seminar on Irrigated Water Management: Strategies of Farmer Participation

Thank you for your kind invitation to speak at the above seminar to be held at ICTAD Auditorium on Monday, 20th June. I have consulted with the Director General of IIMI, and in view of the important participants and support of the Ministry of Lands and Land Development, he has approved of my making a presentation.

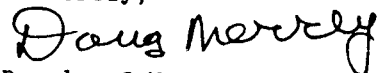
Enclosed please find a copy of a paper for distribution, as requested, entitled "Strategies for Farmer Participation in Irrigation Management in Sri Lanka: Past Experiences and Future Requirements." This paper will form the basis of my presentation, but in my oral presentation, after briefly recapitulating points in the written paper, I plan to go beyond these and discuss some possible next steps if there is to be serious progress in this area, in terms of policy, legal changes, and strategies.

I am enclosing a brief IIMI publication, Management Brief No. 5, from which my oral presentation will also draw. Unfortunately, IIMI has run out of copies of this publication, but if you think it would be valuable, you may make photocopies and distribute them to the participants (some will have seen this article).

I am looking forward to participating in this seminar, on a very important topic. Since I am taking time away from other obligations to participate, I would be very grateful if you would contact me if there happen to be any changes in the program.

With best wishes,

Sincerely,



Douglas J Merrey
Social Scientist

cc: R Lenton, Director General, IIMI

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INTRODUCTION

This paper is actually an extract from a forthcoming publication of IIMI, entitled Irrigation Management Research in Sri Lanka: A Review of Selected Literature (Merrey, Rao, and Martin 1988). It reviews recent research and other literature on irrigation organization and management in Sri Lanka, under four major headings: policy and law, management at the agency level, management at the farmers' level, and other social issues. In each case it endeavors to identify the major work that has been done, the key findings or lessons learned, and the most important research questions and gaps in knowledge. It provides a concise background discussion of some of the major experiences in farmer participation and related issues, and the bibliography provides references that can be consulted for further details.

I have prepared this extract for distribution to participants in the "Seminar on Irrigated Water Management -- Strategies of Farmer Participation." Unfortunately, since the organizers wanted something that could be copied and distributed to participants, there was not enough time to write a separate paper. However, my oral presentation will take off from this background paper, and suggest some ideas as to what is required for future development of viable, responsible, and sustainable farmers' organizations for irrigation management, which I believe could be an important component of a strategy for development of a prosperous and productive farming community in Sri Lanka.

POLICY AND LAW

Policy and legal issues are not a major focus of this review. This is not to say they are not important -- they are indeed extremely important. Basic research on broad agricultural as well as specifically irrigation-oriented policy options could make a very important contribution to future development of irrigated agriculture. However, the discussion here is limited to issues that directly affect progress on strengthening irrigation management institutions, both government and farmers'.

Abeywickrema (1986) provides an up-to-date overview of the evolution and rationale for government policy in regard to participatory management. After explaining the relatively strong governmental role in the development of major irrigation schemes, he notes that in some respects government agencies have "faired poorly" in achieving their objectives. Hence government interest in participatory management of irrigation schemes if this can be shown to be more effective. The result is a "let 100 flowers bloom" approach, that is, encouragement of a variety of institutional

experiments, but no commitment to any particular approach.

Alwis (1986) traces the history of legislation in regard to irrigation development and management since colonial times, and points out that legislation by itself cannot bring about farmer participation, supporting an argument presented several years earlier by Uphoff (1982). Nevertheless, laws can provide a broad framework to legitimize and strengthen such organizations; Alwis (1986) therefore recommends amending the current Irrigation Ordinance based on the lessons learned in recent years from efforts to organize farmers. More recently, Merrey and Bulankulame (1987) have suggested that Sri Lanka adopt as a long term goal the turnover of all small and medium sized systems, and the lower distribution portions of large systems, to farmers' organizations. Implementation of such a policy would require enabling legislation to provide the necessary framework.

Sri Lankan policy in regard to the allocation of responsibility for irrigation system management between government and farmers has evolved considerably in the last decade. It would be useful to establish clearly the long and medium term objectives, and then carry out policy research on what the legal options are, what changes might be required in existing law and in the existing mandates of particular government agencies, and what would be the most effective strategy for achieving the objectives. Alternative models for irrigation management, such as irrigation agencies as public utilities, and turning system ownership and management over to farmers' organizations or farmer-owned companies could also be examined. Financing policies are critical at this level as well.

MANAGEMENT AT THE AGENCY LEVEL

Since all major irrigation schemes are owned, built, operated and maintained by government agencies in Sri Lanka, one would expect that research to identify the impediments and opportunities to improve their performance would begin with questions about the agencies' operations themselves. However, as is true in other countries, the study of the management agencies and their managerial performance is still rare. It is much easier to study either purely technical questions, or to study "farmers", with the implicit assumption that most problems are found at the level of the farmers. As a result, the behavior and performance of irrigation management agencies has remained a neglected subject, a veritable "black box" about which anyone may speculate but few understand.

Various studies have shown the potential for improvement in the performance of irrigated agriculture through management innovations above the farm level (see for example Bottrall 1981, Wade and Chambers 1980). In most cases, such potential is demonstrated through a concerted effort by officials during a crisis period, or by researchers able to invest sufficient resources. However, it is difficult for agencies to sustain such extraordinary efforts over a longer period without implementing changes in the agencies themselves and the resources at their command. The question, then, is how can agencies develop a better capacity for sustained high performance management?

In Sri Lanka, a number of articles have been written suggesting reasons for poor system performance that relate to agencies, or suggesting general approaches to improving agencies' management capacities. For example, in a report evaluating the original Appraisal Report for the Tank Irrigation Modernization Project (TIMP), Ranatunge et al (1981) suggest that the "risk-averse strategy" of the Irrigation Department is a key factor leading to late and unreliable water issues. They suggest the need for a strong comprehensive management strategy, involving cooperation between agriculture and irrigation and retraining of officials including engineers.

Harriss (1977) discusses the control and manipulation of the (irrigation) bureaucracy by local elites who thereby obtain a preponderance of the benefits. Chambers (1977) suggests that on large systems jointly managed by farmers and an agency, there is a need for an impartial and independent bureaucracy to execute allocation of water among "communities" and for some provision for acting as a court of appeal, including the authority to police and prosecute infringements of the rules. "The key lies in the reform of organization and operation -- in short, in improved management of men" (Chambers 1977:361). Karunanayake (1982) also emphasizes the need for a water-specific system of justice -- water courts. He also calls for a greater emphasis on system management, including regular policing at above-community levels, and a re-orientation of both training and incentives to emphasize O&M.

The major systematic study of a Sri Lankan irrigation agency actually published to date is the work of Moore (1980a, 1980b, 1982). His work is based on research on the Irrigation Department nearly 10 years ago. His analysis is from the theoretical perspective of "organizational theory." Broadly, Moore's papers attempt to identify the sociological factors underlying the low productivity of irrigation systems with special reference to the irrigation bureaucracy itself. The reason for this focus is not that all the causes are within the agency, but that the main effort to improve irrigation management must come from a reformed bureaucracy. Only the bureaucracy, he argues, has the capacity to intervene and change the other factors external to itself.

He identifies five major factors which discourage work performance (most are not unique to irrigation agencies). These are: patterns of recruitment that impede interaction between public servants and cultivators, patterns of recruitment and rewards that inhibit internal communication in the agency, use of inappropriate indicators of management capability, lack of incentives for good management, and devaluation of management (O&M) as opposed to design and construction. In view of these, he suggests a number of strategies for improving performance (see especially Moore 1980b).

Moore (1982) notes that much of the pressure on established agencies like the Irrigation Department is the result of changing conditions and expectations. In this circumstance, organizations always try to perpetuate themselves either by attempting to defend their original functions and ways of doing things ("natural conservatism"), or by reorganizing and reorienting themselves. The Irrigation Department had in fact been responding by making

changes, but slowly, since it seemed to Moore at that time to have a limited capability to change significantly.

Murray-Rust (1983) provides a detailed study of the management of the Gal Oya system at the main system level, from a combined engineering and institutional (socio-technical) perspective. Building on Moore to some degree, his work provides further details on the factors affecting the Irrigation Department's ability to respond to changing demands in the short and long term. For example, he finds that decisions made before the irrigation season, policies and pressure from outside the scheme, and the structure of the bureaucracy itself seem to have more effect on operations than changing water conditions within the scheme during the season. If changes in main system operations are contemplated, the consequences of such changes and the managerial and technical limitations of the Department must be taken into consideration. This study remains a pioneering study of the operation of a major irrigation scheme.

More recent work primarily related to the Water Management Project in Gal Oya suggests that in fact the Irrigation Department has changed more than Moore (and possibly Murray-Rust) might have expected. Uphoff (1985a; 1985b; 1987) notes that a key objective of the farmers' organization program was in fact "bureaucratic reorientation", a change in the attitude, orientation, and performance of the Department. He lists the improvement in officials' attitudes and performance as one of the three major accomplishments of the work in Gal Oya (Uphoff 1987). Merrey and Murray-Rust (1987), based on interviews with key Department officials that had been involved in the Gal Oya rehabilitation project, plus the evaluations done by ARTI and independent consultants, confirm this perspective. They suggest that the Irrigation Department is presently in a transitional stage and that the present informal policies regarding a greater management- and farmer-orientation should be made explicit and clear, and should include specific incentives and training programs to make them more effective.

Before the beginning of each cultivation season, the law requires that a cultivation (kanna) meeting be held. All cultivators are invited to attend this meeting, which is chaired by the Government Agent or his designee, and attended by representatives of all the irrigation and agriculture-related departments. Murray-Rust and Moore (1983) analyze the cultivation meetings they had independently observed at Gal Oya and Naddurra. ~~They show the~~ cultivation meeting format is inappropriate and ineffective on large irrigation schemes, especially as a decision-making mechanism. They suggest a number of alternatives, including replacing such mass meetings with committees of elected representatives (i.e. Project Committees) and concentrating attention on delivering water to heads of distributaries where farmers' organizations could take over, rather than facing the complexities of trying to deliver promised amounts of water reliably to field channels. One "positive function" mentioned is embarrassment of officials as a check on poor job performance, but this would not seem a very effective mechanism for performance monitoring.

At present, research on agency-level management issues is shifting to a new approach. Whereas the work of Moore, for example, derives from

sociological theory on organizations, tends to emphasize structural issues, and tends to be "external" to the agency in its perspective, recent research has attempted to examine the internal management processes based on methods and insights derived from modern management approaches. This work is done with the close collaboration of agency officials -- indeed it cannot be done without this support. The role of the researcher in such work is closer to a management consultant than to a traditional researcher. In principle, this work can lead to identifying key impediments to an agency's ability to achieve its objectives, and to suggested means to improve the performance of agencies and their employees. Two examples of such recent work, not yet published, are Raby (1988) on the Irrigation Management Division (IMD), and Raby and Merrey (1988) on MEA's management system in System H.

An evaluation of the effectiveness of the INMAS program within IMD is presently underway; and the studies on financing O&M discussed in Merrey, Rao, and Martin (1988) are also relevant to defining issues and developing testable solutions in agency-level management. Evaluations, and "conceptual" studies from various theoretical perspectives (such as organizational theory, public choice theory) are valuable in defining larger policy and strategic issues, and suggesting broad solutions. "Internal" management studies are useful to identify and test ways to improve the effectiveness of organizations to achieve their objectives.

The major research questions emerging from this review are:

1. How can the effectiveness and performance of irrigation management agencies be improved? The objective would be to examine the present management systems, for example performance monitoring and control of personnel; recruitment, training, and incentives policies; communications (management information systems) both within the agency and between agency officials and clients; decision-making processes; and organizational goals, mission, and values (culture). The methods would include participant observation, interviewing, examination of files, etc. in the first stage, followed by a stage of collaborating with agency officials to develop, test, and evaluate alternative management procedures and methodologies, including those which have been used by other public and private organizations to change themselves.

More detailed questions would emerge from the specific context to be studied. For example, the IMD has the responsibility for both coordination of agencies providing inputs for irrigated agriculture at the project level, and development of farmers' organizations. This is to be achieved by a "Project Manager", sometimes but not always assisted by an institutional development officer and/or institutional organizers. Are the expectations regarding the project manager reasonable? Does the IMD system of performance monitoring, incentives and rewards, Colombo-field communications, etc. tend to encourage or discourage the performance expected? What kind of a management information system would be most appropriate for IMD? Similar detailed questions could be developed for other organizations.

2. A second area needing far more investigation is training. IIMI (1987) carried out a survey of present training capacities and likely future

needs, and made certain recommendations for more effective use of existing training facilities. But many questions remain unanswered. What is the impact of present training programs on actual behavior and performance of individuals, and agencies? What are the skills most needed by existing personnel? What should be the balance between training in specific techniques and technologies, e.g. water measurement, and training intended to support institutional strengthening and management improvement?

MANAGEMENT AT THE FARMERS' LEVEL

This section deals with both farmers' organizations, and the interface between farmers and irrigation agencies. Sri Lanka is well-known for a number of interesting experiments with promoting farmers' organizations, and there is a lot of literature on the subject, though not all of it is useful. Several authors have noted that the absence of effective local level organizations and leadership is a major factor explaining disappointing irrigation system performance, and impeding improvements (for example Karunanayake 1980 and 1982, Moore 1980a, Alwis et al 1983a and 1983b, Chambers 1977, Gunsekere 1981). Some authors trace this lack of effective local organizations to the increasing intrusiveness of government in recent times which has undermined the traditional system and engendered a dependency on outside forces, and to the changing policies and legal arrangements since Independence (e.g. Gunsekere 1981, Karunanayake 1980). Others suggest that the official control of settlement schemes has discouraged the development of local organizations (Chambers 1978, Lundquist 1986).

In his review of water management problems on large schemes, Moore (1980a) expresses strong reservations about the likely usefulness of promoting farmers' organizations as a means to improving irrigation system performance. He suggests that they will be unable to deal with local conflicts; have a dismal record on sustainability; are premised on a false image of the social composition of settlement schemes; and would detract from the more crucial need, reform of the bureaucracy. Put another way, the concern expressed is the trade-offs between elected leaders who face limitations in what they can accomplish versus an impartial external authority able to impose discipline. Nevertheless, particularly since the late 1970s, there have been a number of experiments with farmers' organizations that have generated considerable interest and been quite influential with Sri Lankan policy makers.

An interesting pioneering effort that does not appear to have led to any permanent impact is the one at Thannimurripu, Vavuniya District, documented by Ellman and Ratnaweera (1973). An administrative board consisting of officials and elected farmer leaders was established to deal with system problems when the line agencies found it difficult themselves to solve them. Based on a rather short study 2.5 years after it was started, the study concludes the effort to date was a "qualified success."

There are several more recent and contemporaneous experiments that have had impacts beyond the system on which they were done. These are the

Mahaweli Turnout Groups, the committees formed at Minipe, the Kimbulwana case, and the farmers' organization program as part of the rehabilitation project in Gal Oya. There have been other efforts, some discussed in papers in IIMI (1986), but these are the major influential cases.

Mahaweli Turnout Groups

The turnout group program was initiated in parts of System H in 1979. A concentrated effort was made to develop farmers' groups below the turnout to carry out irrigation tasks and to facilitate agricultural extension and training. These efforts are described by officials who had been involved in the program (see Karunatilake 1986, Jayawardene 1986). According to these authors the program is being implemented in the new Mahaweli systems (B, C, etc) as well. It is important to note that the original concept was limited to the turnout only; Karunatilake (1986) in fact expresses reservations about federating them at the distributary level. However, in System H today there are D channel representatives, though their functions are not clearly defined.

A number of authors have raised questions about the effectiveness of the turnout groups in System H (see Karunanayake 1980; Lundquist 1986; Bulankulame 1986). Lundquist claims that despite the high hopes of the officials, after several years experience with turnout group leaders, a survey of farmers showed "an overwhelmingly negative attitude toward them." Lundquist notes that even though the leaders are supposed to be elected by and from farmers, in fact they tend to be from more elite groups, and in many instances are nominated by the officials, and are often extensions of the bureaucracy, doing things officials should do (Karunatilake [1986] also mentions this problem). Bulankulame (1986:16) found that farmers are uncertain about the role of the farmer representative, and often bypass him; further, members often do not see themselves as a group, in part because of residential dispersion.

The Kimbulwana Case

Kimbulwana is a medium sized scheme in Kurunegala District which was rehabilitated in the late 1970s/early 1980s. The Irrigation Department's Technical Assistant (TA) in charge of the project spent some years developing a highly-disciplined approach to system management with the participation of the farmers. A video film has been made documenting the experience; an evaluation was written several years ago (Weeramunda 1985), and more recently with IIMI support the TA has documented his approach from his own perspective (Gunadasa 1988). Gunadasa's approach cannot be characterized as "participatory" in the usual sense; rather, he imposed a structure for consultation and decision-making and was able to impose the kind of discipline in water management that surveys often show farmers would prefer.

It has come to be seen as a success story since as a result of these efforts, irrigation efficiency apparently improved, productivity improved, farmers have been able to get an extra crop occasionally, and the system is said to be well-maintained. Weeramunda (1985) lists five major characteristics: it is disciplinarian in structure and character, it

combines discipline with elements of participation, it is an efficient water management system, farmers and officials both view it as a success, it is based on "bureaucratic leadership" in which a particularly dedicated official won the farmers' compliance, and its long term viability (sustainability) is doubtful.

The last point is important; Weeramunda's (1985) evaluation suggests that the farmers' attitude is one of compliance and complaisance, younger and more critical people have been excluded, and there is a failure to develop local leadership independent of the TA. Gunadasa of course does not agree with this evaluation; it is difficult to evaluate the sustainability of the effort until Gunadasa leaves. A study to examine what lessons there might be at Kimbulwana that are transferable is needed: it is clear that farmers often prefer an impartial external authority to impose discipline, but could this be done effectively and fairly on a wide scale by the present government institutions?

The Minipe Experience

The case of the effort to organize farmers for water management at Minipe Scheme illustrates the problem of sustainability after the source of inspiration departs. The water management project at Minipe, initiated by the then Deputy Director of Irrigation for Kandy, N.G.R. de Silva, attempted to set up a committee system to enable farmer participation in system management. This has been described by de Silva (1981, 1985) and evaluated by Peiris (1987) after de Silva had left. Peiris finds that while there had been some positive impact of the project, this was less than had been hoped. He attributes the lack of sustainability of the organizations to several factors, including problems of getting cooperation among line departments, problems in implementing decisions of the Project Committee, and problems arising from both the agrarian social structure and the poor condition of the physical system. Peiris expresses skepticism about the extent to which farmers can "participate" in matters that are part of the administrative domain.

The Minipe ~~experience is of particular interest for several reasons. It~~ was the pioneering effort to use "catalysts" in initiating the transformation process among farmers -- in this case young people fielded by the National Heritage Programme in a pilot area during the first year. Informal group representatives were elected from among the farmers to assist in water management, and coordinating committees were established. In a later stage of the project, a committee system with formal farmer representation was established throughout the system, but without the benefit of the catalysts. Farmers' representatives were elected by secret ballot under the Agrarian Services Act, and there were six Sub-Project Committees and one Project Committee on which both field officers and farmers sat.

The Gal Oya Project

During the period 1978-85, the Irrigation Department implemented the rehabilitation of the Left Bank of Gal Oya, with funding and other assistance

from USAID. An integral component of the project was an effort to organize farmers' groups which was implemented by ARTI with some assistance from Cornell University. This component of the project in particular has attracted wide national and international interest, and has had considerable impact on government policy and on donor policy as well. The team which did the final evaluation of the whole project termed this aspect of the program a success, but complained about the volume of reports on the project (ISTI 1985).

The most useful discussions of this effort in our view are contained in the following: Wijayaratne (1985); Uphoff (1985a, 1985b, 1986, 1987); Perera (1986); and Merrey and Murray-Rust (1987). The papers by Wijayaratne and Uphoff discuss the program from the point of view of the two key people who set up and guided it; Uphoff (1986) puts the effort into a broad comparative perspective; Perera's (1986) paper provides a useful overview but from a more critical perspective; while Merrey and Murray-Rust (1987) look at the impact of the program on the Irrigation Department from the perspective of the key Department participants in the project¹.

An important feature of the program was the use of "catalysts" called Institutional Organizers (IOs) to work with farmers in organizing groups. The IOs were all graduates in social or agricultural sciences who were trained in various aspects of water management, group dynamics, and organizational methods. They resided in the communities and developed close personal relationships and an intimate knowledge of the communities. This enabled them to work effectively with farmers to assist them in forming field channel (FC) groups, and later larger organizations based on field channel representatives. The FC groups were expected to carry out FC maintenance, organize water sharing programs where needed, and work closely with the Irrigation Department engineers in the design and reconstruction of the FCs. One or more FC representatives was to be chosen by the farmers to be a spokesperson for them at distributary committees and Area Councils.

According to the official evaluation, by late 1985, 350 FC organizations had been formed over an area of 10,250 ha; above these were 27 D channel organizations, 6 Area Councils, and a Project Committee (ISTI: 1985). The evaluators felt the 420 farmers' representatives on the whole were responsive to farmers' needs and 60-80 percent of the farmers in the organized area were participating directly or indirectly in the FC organizations. According to a survey carried out by ARTI, both farmers and Irrigation Department engineers expressed a high degree of satisfaction with the organizations, and particularly with their representatives (see ARTI and Cornell 1986; Perera 1986).

Unfortunately the prevailing conditions in Sri Lanka have prevented any recent evaluations of the Gal Oya farmers' organizations. But based on interviews with two key Irrigation Department officials in mid-1987, Merrey and Murray-Rust (1987) found that the organizations had apparently endured

¹See Merrey, Rao, and Martin (1988) and references therein for a review of other aspects of the Gal Oya rehabilitation project.

even after the end of the project; and the improvement in both discipline among farmers and at the agency level and communication between farmers and agency, enabling more effective operation of the system, remained the key benefits in the eyes of these officials.

Comparison of Different Experiments: Lessons and Research Questions

It is interesting to compare and contrast the experience at Gal Oya with the experience reported in other systems in Sri Lanka. Like the Mahaweli Turnout Groups program, this was an officially sponsored effort on a particularly large irrigation scheme. However, the Mahaweli program was implemented by a bureaucracy that is relatively dense and has multiple (integrated) responsibilities at the field level. It had a more limited objective -- organizing at the turnout only -- and limited expectations -- the groups were primarily conceived as a mechanism for the agency to train farmers (one way communication). The Unit Managers, part of the bureaucracy, organized the groups. There was little emphasis on the process of organization and learning lessons from the experience as the process unfolded.

At Gal Oya, there was relatively little coordination among line departments, and the Irrigation Department had a narrow range of responsibilities. Its staff was comparatively less dense per unit area or per farmer. The program was initially implemented by a research organization that could work in a flexible and decentralized manner. The objective was more ambitious than in Mahaweli System H -- farmers were to be actively involved in the rehabilitation effort, including decision-making and contributing resources, and as the program evolved, in system management at various levels, not just the FCs. The IOs were on two year contracts with ARTI; they were not part of the bureaucracy. There was a great emphasis on "getting the process right" -- the title and theme of Uphoff's (1986) recent book -- and learning from the process.

The effort at Minipe used catalysts, apparently successfully, in the beginning, but this did not continue. The farmers did respond to the opportunity to participate in improving and managing the system. However, the program was not sustained because the effort required to overcome the impediments in both the agrarian social and economic structure and the bureaucracy itself were not sustained. The Kimbulwana experiment was "catalyzed" by one dedicated person. The notable contribution here is the acceptance by farmers of a high degree of discipline imposed from outside, plus a considerable degree of collective responsibility for system maintenance. The question of sustainability is a serious but unanswerable one at this stage.

These experiments suggest a number of key lessons, but raise further issues requiring applied research. The lessons include:

1. Farmers will respond to opportunities to take greater responsibility for system O&M in cooperation with government officials.
2. The use of specially trained catalysts, deployed in communities with a mandate to spend a couple of years working with farmers is an effective

method for organizing responsible and useful farmers' organizations.

3. The presence of such legitimate and effective farmer organizations leads to improved cooperation among farmers, and improved cooperation and communication between farmers and agency officials. This in turn makes the agencies' jobs easier, and increases the incentives of officials to be responsive. These improvements in turn can lead to improved system performance on a sustained basis.
4. The development of farmers' groups and changes in irrigation management agencies are mutually supportive; in the long run, both must occur, and changes in one have a strong impact on the other.

A number of research issues also arise from these experiences. These include the following:

1. What has been the level of sustainability of the farmers' organizations formed at Gal Oya, Kimbulwana, and Mahaweli System H, and what are the reasons?
2. What modifications could be made in the IO program to improve the efficiency of implementation over a larger scale? This would suggest some experimentation with different types of IOs (e.g. non-graduates, persons from the community) and different recruitment methods (e.g. contracts, use of existing staff, use of NGOs).
3. What modifications from the Gal Oya model would be required for success in systems where conditions are different from Gal Oya [e.g. different ethnic groups, already existing organizations requiring strengthening, different management agency such as Mahaweli Economic Agency (MEA)] or where the project objectives are different (e.g. not a rehabilitation project, shifting a system from rice to mixed cropping, improving efficiency on a water short system, improving maintenance).
4. Are there alternative methods of organizing farmers' groups that would be effective and perhaps less costly financially and in terms of management intensity in achieving program objectives? For example, can IMD Project Managers, or Unit Managers in Mahaweli systems, implement such a program effectively on their own? If so, under what conditions?
5. What is the most appropriate division of responsibilities and overall relationship between the existing agencies and farmers' groups in the short run (say five years)? What would be the most appropriate mixture of roles, and types of organizations to be developed in the long run? For example, can/should distributary groups take over both operational and maintenance responsibilities on their distributary? Would an organizational framework in which there is a contractual relationship between a farmers' group and an irrigation service agency be more appropriate in the long run? What role can farmers' representatives play in overall policy and decision making on large irrigation systems? What factors inhibit and what factors encourage such participation?

OTHER SOCIAL ISSUES

There are a number of other social issues that are not directly irrigation management issues, but that relate very closely, either in terms of their impact on efforts to improve irrigation system performance, or in terms of the potential broader impact of improved irrigation performance. These issues include (but are not limited to) the following:

1. concentration of other productive factors necessary for agricultural production, such as land, access to credit and inputs, and farm power;
2. land tenure issues and settlement policies (residence dispersion for example) and their relationship to irrigation management;
3. employment generation, especially as it relates to second generation settlers; and
4. the relationship between family size and structure, including particularly women's roles, and irrigated agriculture.

Concentration of land control has been reported on settlement schemes, (Abeysekera 1986) but not well-documented. Concentration of farm power has been documented (see Abeyratne and Farrington 1986). The farm power study carried out on three major schemes in 1979-80 documented the interactions between unequal access to water of head and tail farmers and unequal access to farm power. Since such interactions can lead to a situation of increasing inequality, which in turn could make efforts to use management and organizational interventions to equalize water deliveries problematical, further research is required. A high degree of social inequality will make development of effective farmers' organizations difficult.

There are a lot of issues related to trends in land tenure and the relationship between settlement policies and practices, and irrigation management. Studies of settlement schemes consistently find very high levels of leasing, mortgaging, tenancy, fragmentation, and outright but non-legal sales (see for example Bulankulame 1986, Ekanayake and Groenfeldt 1987, Abeysekera 1986, and other references in Stanbury 1988). These have very important impacts on the effectiveness of farmers' organizations; for example, should non-allottees be excluded? If they are, and if more than half the cultivators on a channel are non-allottees, how can such an organization be effective? A recent literature review (Stanbury 1988) has highlighted land tenure and other settlement-related issues requiring further study in terms of their impact on irrigation management.

The problems of the second and subsequent generations of settlers in terms of their limited access to land and employment, and the impact of this limited access on the resource base in Gal Oya, is the subject of a study by Abeyratne (1982). She documents the adaptive strategies of such families, given their limited opportunities, and notes that under- and un-employment, poverty, and lack of access to resources, the very conditions settlers came to the dry zone to escape, are repeated in the next generation. This is the major study on this subject; it confirms the common perception. It relates more broadly to the question of the role and potential impact of irrigation

management in trying to reduce poverty, especially among those with limited access to irrigation resources. Research on these problems goes beyond irrigation management, but the issues are crucial to the long term viability of irrigation schemes.

Finally, another under-studied topic is the relationship between family structure and irrigated agriculture, and in particular, the impact on, and role of, women. The study by D de Silva (1982) provides an overview of women's adaptation in a Mahaweli scheme, while Kilkelly's (1986) survey in Polonnaruwa provides interesting data but little analysis. Although studies of women in development have very rightly and rather belatedly become more common, no one has yet identified specific research problems related to irrigation management in Sri Lanka.

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RESPONSIBILITY IN IRRIGATION SYSTEM MANAGEMENT: SOME POLICY SUGGESTIONS FOR SRI LANKA

Douglas J. Merrey and Senarath Bulankulame*

Farmer participation in irrigation system management in Sri Lanka has been accepted as a concept by most professionals and policy makers concerned with improving irrigation system performance. But questions remain about the organizational form farmer participation should take, the degree of responsibility farmers should be asked to shoulder, the relationships to be developed between the farmers and the government, the specific tasks to be assigned to farmers, and the incentives required for both farmers and government agencies to change their respective roles in irrigation management.

There is agreement that a clear policy commitment is required to develop and implement effective participatory methods, and that a specific legal framework will be required to facilitate this process. However, one source of confusion is the tendency to discuss "farmer participation" without reference to the diversity of types and sizes of irrigation systems in Sri Lanka.

This *IIIM Management Brief* suggests a classification scheme for irrigation systems in Sri Lanka, a set of broad policy objectives for each type of system, and possible strategies to achieve the policy objectives.

TYPES OF SYSTEMS IN SRI LANKA

The Government of Sri Lanka normally distinguishes between major and minor systems.

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The latter have commands of less than 80 hectares. Oversight of minor systems — both village tanks? and small canals — rests with the Department of Agricultural Services (DAS) within the Ministry of Agricultural Development and Research. Major systems are managed by the Irrigation Department (ID) and the Mahaweli Economic Agency (MEA).

This classification does not provide a very useful basis for policy-making nor serve very well as a management tool because major systems include too wide a variety of types for such variety a single set of policy objectives and management structures is not appropriate. Table 1 provides an alternative classification which distinguishes among four system types, and suggests specific policy objectives and strategies for each. These are:

□ *Village Tanks (and small canals):* Includes tanks and canals presently under DAS oversight. In these systems farmers already have primary *de facto* management responsibility with some assistance from a Cultivation Officer.

□ *Small Medium Systems:* Relatively small systems recently managed by the ID. Very little research has been done on these systems so date, aside from the personal experience of the ID officers and farmers involved, is not clear how they actually work. We believe farmers play an active *de jure* role in management and that there is likely to be considerable potential for improving productivity. Systematic appraisal of a few such systems is needed to clarify their problems and the opportunities for improvement.

□ *Large Medium Systems:* Recently managed

by the ID with certain responsibilities to the Irrigation Management (IMD). Systems range from about 4,000 hectares, but this should not be a criterion. We prefer to distinguish between the small medium systems on the one hand, and the large medium systems on the other, based on technical factors or political/administrative constraints (such as the need for control and financial control across hydrological, administrative, or electoral boundaries) rather than on the basis of the number of farmers from managing the system even with outside technical advice.

□ *Major/Multipurpose Systems:* Presently managed by the ID with IMD participation. These are very large systems, often spanning multiple districts or provinces, and often hydro-electric components as in Galle and/or inter-basin transfers of water and/or inter-basin transfers of water. These systems are managed with some assistance from the national economy means that the government must retain most of the responsibility for management.

APPROPRIATE POLICIES FOR DIFFERENT TYPES OF SYSTEMS

Village Tank Systems and Small Medium Systems: These two systems are seen as "types" only because they are now under administrative agencies, but we recognize that they are under one agency. The government would provide financial and technical assistance as needed and requested by the farmers. We get the same policy objectives for both: complete turnover of ownership and management responsibility to legally constituted

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AIR MAIL

THE	POLICIES	STRATEGIES
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<p>VILLAGE TEAMS</p>	<p>Objective: - Complete transfer of management and ownership to farmers. Government provides technical and financial (credit) assistance.</p>	<p>The VITE, IIDD² to develop methodologies for farmers. Learn from experience of other countries; experimental learning approach.</p>
<p>SMALL FARMING SYSTEMS</p>	<p>Objective: - Complete transfer to full management, and eventually ownership, by farmer organizations. Government provides technical and financial (credit) assistance.</p>	<p>Include rapid appraisal to ascertain how these systems should be defined, and what the problems and opportunities are. Use casestudy, in collaboration with ID and IIDD to develop and test methodologies for farmers.</p>
<p>LARGE MEDIUM SYSTEMS</p>	<p>Objective: - Joint farmer/government responsibility for system management, including operation, maintenance and modernization, with full costs borne by farmers. Full farmer responsibility at "D" and "C" levels with eventual ownership.</p>	<p>Use ESAP, MUDP to strengthen IIDD and ID capabilities and to develop improved methodologies, including using casestudy. Create secondary policy support, farmer support, and legal framework.</p>
<p>LARGE/ MEDIUM SYSTEMS</p>	<p>Objective: - Government retains primary responsibility for later-stage transfers and subproject operation, in consultation with farmer representatives. Joint farmer/government responsibility for managing identifiable sub-systems, in well large medium systems.</p>	<p>Use Wallace Roberts Project, other resources including IIDD/ID on non-bankable systems to develop and test appropriate methodologies. Create secondary policy support, farmer support, and legal framework.</p>
<p>Large Medium Systems</p>	<p>"Ownership" means a legally registered farmer organization would hold title to the systems and to rights to the water in the system, as is common in the Philippines and other countries. There are four reasons for proposing this: 1) The administrative and financial burden of managing thousands of small systems is very heavy; 2) due to their heterogeneity and dispersion, it is unlikely that government could do high quality management, even with a highly equipped budget and manpower; 3) Sri Lanka farmers have been observed to manage such systems better than expected; and 4) handling responsibility for these small systems over to farmers' groups would enable government to concentrate more effectively on the larger systems and make better use of limited resources.</p>	<p>The most appropriate long term objective is joint farmer and government management, with farmers having responsibility (including ownership) for branch creation and distribution and field channels throughout the system. We envisage a legal farmers' organization. We envisage a legal council of representatives from farmers' organizations and government, having management responsibility of the system, including financial responsibility. Legally constituted farmers' organizations formed on "D" and branch canals would take responsibility for operation and maintenance at this level, would send representatives to the system council, and would pay fees to the system. In return, they would take delivery of the measured amount of water and distribute it among their members.</p>

Joint management of major systems is a legal reality in Sri Lanka and elsewhere.⁴ Numerous examples exist where farmers do operation and maintenance (O&M) on "D" channels when the government is unable to do so. Joint management is the principle underlying the last-mentioned Agricultural Settlements Development Management of Agricultural Settlements (INMAS) program implemented by IMD. Clear policy goals and a legal framework to enable its effective implementation are needed.

Major/Midsize/Small Systems: We assume that government will need to retain primary responsibility for management at the main reserved, inter-dean transfer levels. It would be useful, however, to have a mechanism for regular consultation with representatives of junior groups at this level, and on the non-Mahaweli system such as Gal Oya, it may be feasible to form a council similar to that suggested for large medium systems. The Project Committee in Gal Oya plays this role to some extent now but does not fully represent the interests of all the farmers.

Joint farmer-government responsibility for large components, such as: main canals and sub-systems under intermediate tanks, would be similar to that suggested for large medium systems. Farmer ownership and responsibility for branch canals and "D" and field channels would be the same as with large medium systems.

DIVISION OF RESPONSIBILITIES FOR SPECIFIC TASKS

Table 2 suggests the division of responsibilities for ownership and irrigation management tasks. Farmers (through legally constituted organizations) would own and manage village-level small medium systems. Government and farmer organizations would jointly own and manage the organization-level systems. Capital costs would be shared under two types. Capital costs would be shared between farmers and government for all systems. But farmers would pay O&M costs. Fertilizer and D' canals would be the farmers' responsibility, except that government would assist with the design and rehabilitation. Main canals and the sluices/bunds would be the responsibility of farmers on village tanks and small medium systems, with government assistance for design and rehabilitation. The larger systems would be either jointly managed or government would take primary responsibility for main canals and sluices.

STRATEGIES FOR ACHIEVING POLICY OBJECTIVES

Strategies for achieving the proposed policy objectives are summarized in Table 1. Three common elements are essential for all the strategies: 1) A clear policy statement and strong

Table 2.5 Suggested division of farmers' and government's responsibilities in irrigation system management by type of system.

TASKS	VILLAGE		SMALL MEDIUM	LARGE MEDIUM	MAJOR/ MULTIPURPOSE
	TANK	TANK			
System ownership					
Full management responsibility	F	F	FG		FG
New system construction	F	F	FG		FG
Existing const.	FG	FG	G*		G*
new construction					
rehab/modernization	FG	FG	FG	FG	FG
O & M	FG	FG	FG	FG	FG
Field Channel level -					
design & rehabilitation	FG	FG	FG	FG	FG
operation	F	F	F	F	F
maintenance					
Ditchway Channel level -					
design & rehabilitation	FG	FG	FG	FG	FG
operation	F	F	F	F	F
maintenance					
Main Canal level -					
design & rehabilitation	FG	FG	G		G
operation	F	F	FG		G
maintenance					
Silver Band -					
design & rehabilitation	FG	FG	FG	G	G
operation	F	F	FG	G	G
maintenance					

NOTE: F Farmers' ultimate responsibility;
G Government's ultimate responsibility;
FG Shared farmer/government responsibility;
* Assumes settlement scheme.

political and administrative support from government and strong support from farmers; 2) a legal framework supporting the policy objectives; and 3) an approach to develop appropriate strategies for implementing the policy, which would include learning from other countries' experiences where relevant.

We suggest using existing or presently anticipated new projects as vehicles for improving or developing methodologies and strategies to achieve the proposed policy objectives. For example, projects such as the Village Irrigation Rehabilitation Project II (VIRP II) and the International

for village tanks and canals, while the Irrigation Systems Management Project (ISMP), the Major Irrigation Rehabilitation Project (MIRP), the

Walwalwe Rehabilitation Project, and the MID and ID institutional development project with the Asian Development Bank could be used for the large medium and major systems. Some applied research is needed on small medium systems to identify appropriate strategies and criteria for distinguishing them from large medium systems.

NOTES

¹This is indicated clearly in, for example, the proceedings of the recent workshop on "Paratubercular Management of Sri Lanka's Irrigation Schemes" (IIMI 1986 and Perera 1986).

Plants are small reservoirs, with an enormous bund, used for collecting run-off water during the monsoon for irrigation and domestic water supply.

Experiences in countries such as the Philippines, Indonesia, Nepal, Senegal, Mexico, Thailand, South Korea, and Taiwan show that farmers are willing to take on ownership responsibilities and can manage such systems effectively and productively.

Notably the Philippines but also practiced in many Latin America, European, and North American systems.

Although the tables were prepared for a meeting in Colombo on 30 April 1987 between UNMI and certain government officials, they were not formally presented at that meeting.