Ministry of Lands, Irrigation, and Mahaweli Development

Asian Development Bank

MONITORING AND EVALUATION OF PARTICIPATORY IRRIGATION SYSTEM MANAGEMENT

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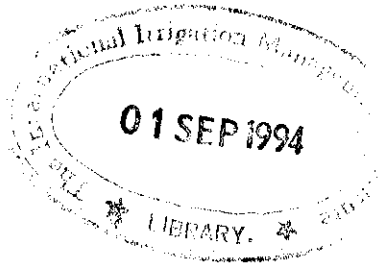

PROGRESS OF PARTICIPATORY MANAGEMENT:

RECONNAISSANCE RESULTS

International Irrigation Management Institute
Sri Lanka Field Operations

Agrarian Research and Training Institute

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ABBREVIATIONS

ADB	Asian Development Bank
ARTI	Agrarian Research and Training Institute
DCO	Distributary Channel Organization
EC	European Community
FCG	Field Channel Group
FR	Farmer Representative
FO	Farmer Organization
ID	Irrigation Department
IDO	Institutional Development Officer
IIMI	International Irrigation Management Institute
IMD	Irrigation Management Division
INMAS	Integrated Management of Major Irrigation Schemes
IO	Institutional Organizer
IRDP	Integrated Rural Development Project
ISMP	Irrigation Systems Management Project
JMC	Joint Management Committee
M&E	Monitoring and Evaluation
MASL	Mahaweli Authority of Sri Lanka
MANIS	Management of Irrigation Schemes (Program)
MARD	Mahaweli Agricultural and Rural Development (Project)
MEA	Mahaweli Economic Agency
MEF	Monitoring, Evaluation and Feedback (System)
MIRP	Major Irrigation Rehabilitation Project
MLIMD	Ministry of Lands, Irrigation, and Mahaweli Development
NIRP	National Irrigation Rehabilitation Project
NGO	Non-government Organization
NORAD	Norwegian Agency for International Development
O&M	Operations and Maintenance
OFC	Other Field Crop (non-paddy crop)
PMC	Project Management Committee
PMU	(Mahaweli) Planning and Monitoring Unit
SLFO	System Level Farmer Organization
SPC	Sub-project Committee
USAID	United States Agency for International Development

FORWARD

This report is a product of the Monitoring and Evaluation of the Participatory Irrigation System Management Policy being carried out jointly by IIMI and ARTI under the auspices of the Ministry of Forestry, Irrigation and Mahaweli Development. The work is funded by Technical Assistance no. 1705 SRI from the Asian Development Bank.

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EXECUTIVE SUMMARY

1. Monitoring and Evaluation of Participatory Irrigation System Management

Under the participatory irrigation system management policy, responsibilities for O&M of distributary and field channels on major irrigation schemes are to be turned over to farmer organizations; farmers are to participate in overall system management through joint management committees (JMCs). The INMAS, MANIS, and Mahaweli programs are implementing the policy; these three programs cover approximately 200 major and medium schemes.

The International Irrigation Management Institute, in collaboration with the Agrarian Research and Training Institute, is undertaking the Monitoring and Evaluation of Participatory Irrigation System Management. The objectives of the Monitoring and Evaluation are:

a) To determine the progress and evaluate the impacts of the three participatory management programs, recommending improvements and suggesting alternatives in cases where it seems participatory management is not effective in achieving its goals.

b) To develop indicators and other means by which the Government can monitor the progress and impacts of participatory management in the future.

This report is a product of an activity of the Monitoring and Evaluation.

2. The Reconnaissance Survey

The Reconnaissance Survey was carried out to provide some background data for detailed planning of further activities.

During December 1992 and January 1993, the IIMI/ARTI researchers visited 60 schemes (24 INMAS, 32 MANIS, and 4 Mahaweli) representing respectively 65 percent of INMAS, 20 percent of MANIS, and 67 percent of Mahaweli schemes. In each scheme, researchers interviewed scheme managers and farmers, including officers from FOs, regarding a) basic scheme characteristics, b) progress of FOs and JMCs, c) progress of turnover of O&M responsibilities to FOs, and d) type and effectiveness of systems for M&E of participatory management.

Logistical constraints limited the Reconnaissance to eight districts. Within each district, the team of researchers selected schemes based on prior knowledge of scheme features, recommendations of agency officers, and convenience of visiting. Schemes where participatory management has been introduced were favored, though some schemes were selected randomly.

Caution should be exerted when interpreting the results of the Reconnaissance for three reasons:

a) the methodology may have introduced biases, b) data collection was based almost exclusively on interviews, and c) variation within schemes was glossed over. Despite these limitations, the IIMI/ARTI team believes that the results of the Reconnaissance Survey shed light on the progress of participatory management in Sri Lanka.

3. Progress of Participatory Management in INMAS Schemes

The 24 sample INMAS schemes range in size from 600 acres to over 25,000 acres of command area; most have command areas of over 5,000 acres. Most of the sample schemes (75%) are major reservoir schemes; 21% of these schemes are connected to other major schemes and one is a pure anicut scheme.

Progress of Farmer Organizations and Joint Management Committees In 71% of the schemes visited, all field channel groups (FCGs) have been formed. All of the distributary channel organizations (DCOs) have been formed in 88% of the sample schemes; the average number of DCOs in these schemes is 18.9. Half of the sample schemes reported the existence of SLFOs. IMD claims to have created SLFOs in more schemes since the field work was finished.

Project Management Committees (PMCs) have been established in all 24 INMAS schemes surveyed. Five sample schemes (21%) also have Subproject Management Committees. A separate joint Water Management Committee has been set up in one scheme. In 88% of the sample schemes it was reported that the PMCs were the primary decision-making bodies for seasonal water allocations. In 91% of the sample schemes the PMC solves problems between the FOs and officials.

In 71% of the sample schemes, IOs were present at the time of the Reconnaissance. Of the remaining 7 schemes, two had IOs earlier and turnover has already taken place. Some IOs appointed under projects have been withdrawn as funds have dried up.

Progress of Turnover Operation of field channel head gates in 91 percent of the sample schemes were reported to be undertaken by the FOs. Only in 9 percent of the schemes are these gates operated by Irrigation Department. Water rotation schedules are prepared jointly by Irrigation Department officers and the FOs in 71 percent of the schemes.

The survey found that only in 17 percent of the sample schemes does the Irrigation Department now take direct responsibility for cleaning distributary channels; the work is carried out by the DCOs in the remaining schemes. In 46% percent of the schemes, the budgetary allocation for cleaning distributary channels is given to the DCOs. No such allocation is given to the DCOs in 38% of the sample schemes. The Irrigation Department offers contracts to DCOs for structure repairs in 79% of the schemes.

The Reconnaissance reported that turnover of distributary and field channel O&M responsibilities to the DCOs had taken place formally in 38% of the schemes surveyed and informally in 17% of the schemes. In one scheme turnover was expected soon. In 21% of the schemes, the concept of turnover was not known to farmers.

Impact of Participatory Management on Operations and Maintenance Irrigation Department officers in 79 percent of the schemes said there has been an improvement in water distribution because of the FOs. In 91 percent of the schemes, the FRs felt that water management had improved. Farmers were also generally positive.

Monitoring and Evaluation of Participatory Management in INMAS The current system used in INMAS schemes is the MEF system. In MEF, DCOs fill out a monthly questionnaire. The monthly information is made available at PMC meetings so that action can be taken to solve the problems. Often, IOs rather than DCO officers complete the monthly form and sometimes the reports are not used at PMC meetings. In addition, the Project Managers collect and report information on seasonal performance. There is little evidence to show that this information is used for management purposes.

4. Progress of Participatory Management in MANIS Schemes

The MANIS program officially includes 160 schemes varying in size from 100 to 17500 acres. For the Reconnaissance, 32 MANIS schemes from eight districts were visited. Slightly over half (56%) of the sample schemes are tank systems, all except one of the remainder are anicut schemes. The one exception has a tank that gets water from a major system.

Progress of Farmer Organizations and Joint Management Committees Most (63%) of the sample schemes, report the existence of functioning FOs. However, only 19% of the sample schemes report functioning FCGs. The average number of FOs in the sample schemes is 6.4. FOs in MANIS schemes appear to vary a great deal. Tract based FOs were reported in a number of the sample schemes; in two sample schemes, FOs are based on villages.

It was reported that 60% of the sample schemes have functioning Project Management Committees. In 82% of the sample schemes with PMCs, the PMCs make seasonal water allocations. In 70% of these schemes, the PMCs also resolve disputes between farmers and officers.

Few MANIS schemes have had the services of IOs; fifteen of the sample schemes (47%) have neither had external help nor are scheduled to receive it. Without FOs, initial organizing work has been carried out by officers from different agencies; differences in the interests and training of these officers have affected the ways in which the FOs were introduced. It is not surprising that most of the FOs need strengthening. The success achieved in some schemes can be attributed to the dedication of particular Project Managers.

Progress of Turnover In 47% of the sample schemes, field channel head gates are operated by Irrigation Department personnel; in 53% of the schemes, these structures are operated by FRs or Vel Vidanes. The responsibility for operating the distributary channel head gates lay with the Irrigation Department in 67% of the sample schemes; FOs and the Irrigation Department shared the responsibility in 13% of the schemes; in 9% of the schemes an FR or Vel Vidane was responsible. Water rotation schedules are reportedly prepared jointly by Irrigation Department officers and the FOs in 38% of the sample schemes; the Irrigation Department alone plans rotations in 41% of the schemes; in 16% of the schemes, rotations are planned by FRs or Vel Vidanes.

In only one sample scheme was it reported that the FOs clean the distributary channels; in most of the others (59%), this work was undertaken jointly by FOs (or Vel Vidanes) and the Irrigation Department; in 28% of the schemes, the Department handles distributary maintenance. Among the sample schemes, only in 18% is any portion of the budgetary allocation for cleaning distributary channels given to FOs. The Irrigation Department offers contracts to FOs for structure repairs in 75% of the schemes.

No official turnover was reported from any of the sample schemes. Indeed, in 31% of the schemes, farmers were reported to be unaware of the turnover concept. Only in 3 schemes had some elements of turnover been introduced to the farmers. The major reason for lack of progress in turnover is that the farmer organization effort itself is still in the early stages.

Impact of Participatory Management on Operations and Maintenance In 78% of the schemes, the officers said they thought there was an improvement in water distribution after the FOs became involved. In 95%, the consensus among FRs was that water management had improved after the FOs were developed. In 83% of the schemes, farmers felt that water distribution had improved.

Monitoring and Evaluation of Participatory Management in MANIS Only 3 of the sample schemes (9%) reported the existence of a system to monitor and evaluate the progress of participatory management. In one the Irrigation Department itself collects the data. In two, farmers and local agencies have instituted a system of meetings to review management issues.

5. Progress of Participatory Management in Mahaweli Schemes

Researchers visited four of the six Mahaweli schemes: System H, System B, System C, and the Walawe Special Area (Uda Walawe). The four sample schemes are very large, ranging from 15,000 to almost 30,000 hectares.

Progress of Farmer Organizations and Joint Management Committees Turnout Groups, equivalent to field channel groups (FCGs), were created in Systems H, C, and B from the beginning of settlement. FCGs were introduced later in Uda Walawe. Reportedly, all of the Turnout Groups have been formed in systems B and H, and 90 percent in Uda Walawe and

System C. In System H and Uda Walawe, DCOs have been created. System C chose to develop unit organizations. System B developed both DCOs and unit organizations. In Systems C and B, MEA is now reorganizing the FOs into DCOs. In Systems C and B there has been emphasis on business development that has resulted in the development of financially strong FOs.

Before October 1992, MEA made no attempt to create joint management committees in the Mahaweli systems. For this reason, almost all the joint management committees are very new. Because of the large size of Mahaweli schemes, each scheme has several levels of JMCs made up of MEA officers and FRs.

Until 1992, Institutional Organizers have been used in Mahaweli schemes only where a specific project called for them. MEA has recently recruited and trained Institutional Organizer Volunteers in all the schemes. These IOs are supervised by an Assistant Manager (Institutional Development). The new IOs have not yet had time to make an impression.

Progress of Turnover In all four sample schemes, almost all gates are operated by MEA Irrigators. Farmers working together with the MEA in the preparation of water rotation schedules has been reported in all four schemes. Turnout leaders have been told that they would eventually have control over tertiary channels but some FOs show greater interest than others.

In all schemes, maintenance of the distributary channels is done on a contract basis by FOs or, in System H, by private contractors (including other FOs). In many cases, these contracts are used to raise funds for the FO.

There has been no turnover of O&M responsibilities in any of the sample Mahaweli schemes. In large part, the lack of turnover is due to the relatively recent development of FOs and JMCs. Although training had begun, no turnover procedure had been formulated at the time of the Reconnaissance.

Impact of Participatory Management on Operations and Maintenance In all four schemes, MEA officers, farmer representatives and farmers all say that water management has improved after the formation of FOs.

Monitoring and Evaluation of Participatory Management in Mahaweli The MEA has not, until recently, had effective programs for participatory management. Therefore, little attention has been paid to monitoring and evaluating FOs. However, since 1992, the Planning and Monitoring Unit has developed indicators for measuring progress of FOs and is now publishing reports on this subject.

6. Conclusions

Overall Assessment Overall there has been great progress in creating FOs and JMCs. The better progress of INMAS is explained by the fact that the INMAS program began in 1984 and it has had special inputs, particularly full time Project Managers. Although the MANIS Program was inaugurated in 1986, serious work in the schemes began recently and extra inputs have only been available very recently. MEA began forming Turnout Groups early but began work on DCOs and unit organizations only in 1989 and only in October 1992 did MEA begin forming JMCs. This history explains the progress in Mahaweli schemes.

Turnover has not yet progressed very far except in INMAS schemes. Even in INMAS schemes, most FOs are at least partially dependent upon government funding for distributary channel maintenance. In 21% of INMAS schemes, 31% of MANIS schemes, and half of the Mahaweli schemes, the farmers professed ignorance of the turnover concept. There seems to be reluctance on the part of both officers and farmers.

A major concern is whether FOs can mobilize the resources needed to undertake O&M responsibilities. Most FOs are now involved in mobilizing and managing funds, but the most important sources of funds for many FOs are rehabilitation and maintenance contracts with the government. To date, there is no evidence that the FOs can mobilize the necessary resources on their own.

The Reconnaissance provides only opinions on the impact of participatory management. The opinions cited seem to show that participatory management has improved water distribution but this has not been confirmed by other data.

External Support for Participatory Management Catalyst agents and other resources are needed to create and strengthen FOs and JMCs. Many sample schemes have benefitted from resources from externally funded projects, mostly rehabilitation and modernization (R&M) projects. The MANIS program has been the least benefitted. R&M projects have potential usefulness beyond simply funding IOs; they can repair a badly dilapidated scheme and farmer participation in rehabilitation is potentially a way of strengthening FOs.

Monitoring and Evaluation of Participatory Management Of the three programs, only INMAS was reported to be collecting regular data on progress of the FOs, JMCs, and turnover. Since the Reconnaissance, the Mahaweli Planning and Monitoring Unit has introduced a system to keep track of the progress of participatory management in Mahaweli schemes. More needs to be done.

Major Unanswered Questions The Reconnaissance has provided suggestive data on the progress of participatory management. There remain several major outstanding questions, including questions about the impacts on O&M, about impacts on crop production and profitability, about impacts on government finances, about the ability of farmers to mobilize resources for O&M, about the impact of external resources on the success of participatory

management, and about the relationships between successful participatory management and various physical and social characteristics of schemes. These and other questions are being taken up in the further studies of the project.

Section 1

MONITORING AND EVALUATION OF PARTICIPATORY IRRIGATION SYSTEM MANAGEMENT

1.1 The Participatory Irrigation System Management Policy

The Government of Sri Lanka established the Participatory Irrigation System Management Policy through a Cabinet paper in December 1988. As specified in the Paper, responsibilities for operations and maintenance (O&M), including resource mobilization, of distributary and field channels on major irrigation schemes are to be turned over to farmer organizations (FOs) established for the purpose. In return for assuming participatory responsibilities, farmers were to be exempted from payment of an irrigation service fee. In addition, farmers are to participate in overall system management through joint management committees (JMCs) consisting of farmer representatives (FRs) and agency officers.

Three programs have been created for the implementation of this policy.

INMAS

The Integrated Management of Major Irrigation Schemes (INMAS) program was created in 1984 and is the result of several experiments that demonstrated the potential of organized farmer involvement in irrigation system management. The main goals of INMAS are to coordinate the services (including input supply) of various government agencies and to promote farmer participation in irrigation management through creation of FOs and JMCs. Schemes brought under INMAS (originally 48, since reduced to 37) include most of the major schemes (those over 800 hectares in size) in the country. This INMAS program is managed by the Irrigation Management Division (IMD), which was created for this purpose, while the Irrigation Department shares O&M responsibilities with the farmers.

Because the INMAS program has become the model for the other programs, the basic elements are spelled out here. The INMAS strategy has three key components:

- Project Manager The Project Manager is a full-time employee of the IMD. He is mainly responsible for coordinating the efforts of the line agencies and organizing farmers, but lacks power over the other agencies. The source of authority lies in his influence with farmers. Where resources permit, generally through donor funded projects, the Project Manager is provided with help in the form of an Institutional Development Officer (IDO) and Institutional Organizers who organize and work with farmers.

- Farmer Organizations The basic INMAS farmer organization (FO) is the Distributary Channel Organization (DCO) consisting of the farmers served by one distributary channel. Within the DCO there are informal field channel groups (FCGs) consisting of the farmers on each field channel. Each FCG selects a Farmer Representative (FR) to coordinate efforts and to act as spokesman. The DCO is governed by a committee of the FRs. The FRs select DCO officers, generally consisting of a President, a Secretary, and a Treasurer from among themselves.

- Joint Management Committees To provide effective coordination between line agencies and FOs and to provide for farmer input into system decisions, each INMAS scheme has a Project Management Committee (PMC) made up of FO representatives and scheme level officers from the Irrigation Department, Agriculture Department, and other relevant agencies. The PMC is usually chaired by the Project Manager. In larger schemes, joint Subproject Committees have been created to serve smaller areas within schemes.

MANIS

The Management of Irrigation Schemes (MANIS) program was created in 1986 by the Irrigation Department for the large number of medium schemes (those between 80 and 800 hectares in size) not included in INMAS. The objectives, organization and strategy of MANIS are the same as those of INMAS. Until recently, the Irrigation Department has not had resources to appoint additional personnel to serve as Project Managers, IDOs, or IOs. Therefore, Irrigation Department officers, mostly Technical Assistants, have taken on the functions of Project Managers, after training, besides their other duties. Recently, under the National Irrigation Rehabilitation Project (NIRP), Institutional Organizers have been recruited to work on a number of MANIS schemes. There are currently 160 MANIS schemes.

Mahaweli

Beginning in 1977, the Mahaweli Authority of Sri Lanka (MASL) has been responsible for the construction, development, settlement and operation of several very large irrigation schemes. Operation of the schemes was entrusted to the Mahaweli Economic Agency (MEA), one of the MASL's component agencies. Since 1980, the MEA has been experimenting with ways to encourage farmers to take a greater part in O&M. The best known and most widespread of these experiments was the formation of "Turnout Groups," each consisting of the farmers served by a single field channel and headed by a "Turnout Leader." These experiments have not met with much success. In 1992, the MEA adopted a modified version of the INMAS organization and strategy and is currently in the process of carrying out the program. MEA has named an Assistant Manager for Institutional Development for each scheme to take charge of farmer organization efforts. In addition, some IDOs and IOs have been recruited, although none of the IOs had been recruited at the time of the fieldwork reported here. There are six Mahaweli schemes under MEA's management.

To support the participatory management policy, the Agrarian Services Act was amended in 1991 to allow the Commissioner of Agrarian Services to legally recognize FOs. A planned amendment to the Irrigation Ordinance to give the FOs specific legal powers has not yet been passed.

As shown in Table 1, the three programs cover approximately 200 major and medium-sized irrigation schemes.

Table 1 Schemes in the Three Programs

Program	No of Schemes	Total Command Area	Average Command Area
INMAS	37	197,000 ha	5,324 ha
MANIS	160	59,000 ha	369 ha
Mahaweli	6	121,000 ha	20,167 ha
Total	203	377,000 ha	

1.2 Monitoring and Evaluation of Participatory Management

Under the authority of the Ministry of Lands, Irrigation and Mahaweli Development (MLIMD), the International Irrigation Management Institute (IIMI), in collaboration with the Agrarian Research and Training Institute (ARTI), is undertaking the Monitoring and Evaluation of Participatory Irrigation System Management. The study is being funded by the Asian Development Bank (ADB) through Technical Assistance 1705 SRI.

The objectives of the Monitoring and Evaluation (M&E) are:

1. To determine the progress and evaluate the impacts of the three participatory management programs, recommending improvements and suggesting alternatives in cases where it seems participatory management is not effective in achieving its goals.

2. To develop indicators and other means by which the Government can monitor the progress and impacts of participatory management in the future.

To achieve these objectives, the IIMI/ARTI team, with cooperation from the three agencies involved, is pursuing various activities. The present report is a product of the Reconnaissance Survey, one of the Monitoring and Evaluation activities. For complete information on the Monitoring and Evaluation, see the *Inception Report (Revised)* (IIMI 1993).

Section 2

THE RECONNAISSANCE SURVEY

2.1 Purpose and Scope

The Reconnaissance Survey was undertaken as a component of the M&E study to provide preliminary information on the range of variation to be found in the 200 schemes under the three programs. This information has been used in the detailed design of more intensive data collection efforts, including selection of samples.

The basic plan was to make quick visits to a significant sample of schemes from the three programs. At least 50 schemes (25 percent of the total) were to be included. In each scheme, researchers interviewed scheme managers and farmers, including officers from FOs. Interviewees were questioned regarding:

- basic scheme characteristics,
- progress of FOs and JMCs,
- progress of turnover of O&M responsibilities to FOs,
- type and effectiveness of systems for M&E of participatory management.

A guide for data collection was developed and is included as Annex A.

2.2 Methodology

The field visits were made mostly in December 1992 and January 1993 by teams of researchers from the two Institutes. A detailed schedule of these visits is given in Annex B.

Logistical constraints limited the Reconnaissance to eight districts: Anuradhapura, Badulla, Hambantota, Kandy, Kurunegala, Moneragala, Polonnaruwa, and Puttalam. These districts cover most of the schemes in the three programs.

Within each district, the selection of schemes to visit was left to the team of researchers covering the district. Each scheme was chosen based on

-the researchers' prior knowledge of scheme features, including FO progress or lack thereof,

- recommendations of schemes by agency officers in Colombo or in the district,

- convenience of visiting.

Schemes where participatory management has been introduced were favored, though other schemes were selected randomly from a list provided by the Irrigation Department. When time was not a constraint, the research team visited as many schemes as possible in the selected districts. This method brought to view some schemes that had previously been neglected such as Mahagalgamuwa and Erige Oya.

At each site, the research team interviewed scheme managers including, among others:

- Irrigation Engineers, Technical Assistants and Institutional Organizers (IOs) from the Irrigation Department in INMAS and MANIS schemes,

- Project Managers, Institutional Development Officers (IDOs), and Institutional Organizers (IOs) from the IMD in INMAS schemes,

- Resident Project Managers, Block Managers, Unit Managers, Irrigation Engineers, and Engineering Assistants from the MEA in Mahaweli schemes.

The team also interviewed farmers and Farmer Representatives including officers of the FOs. In addition, it was possible to observe a few farmer organization and Project Management Committee meetings during the visits. Group interviews of farmers and Farmer Representatives were also conducted. Every attempt was made to meet as many farmers as possible from the different parts of the scheme to gain an overall picture of the entire scheme.

In all, 60 schemes (24 INMAS, 32 MANIS, and 4 Mahaweli) were visited, representing respectively 65 percent of INMAS, 20 percent of MANIS, and 67 percent of Mahaweli schemes.

2.3 Limitations

Caution should be exerted when interpreting the results of the Reconnaissance for three reasons:

1. Although sample sizes are sufficiently large to be significant the methodology introduces biases:

   - The Reconnaissance was limited to eight non-randomly selected districts including only one Wet Zone district (Kandy) although MANIS schemes are found in many parts of the Wet Zone. Schemes in Tamil speaking areas have been excluded for security reasons.

- Selection of schemes within districts was not strictly random, hence unrecognized biases may have been introduced.

2. Data collection at each site was based almost exclusively on interviews, only infrequently supplemented by documents and observation.

3. Because this was a rapid assessment of schemes, variation within schemes was necessarily glossed over. This lack is particularly significant for the larger schemes.

Despite these limitations, the IIMI/ARTI team believes that the results of the Reconnaissance Survey shed considerable light on the progress of participatory management in Sri Lanka.

Section 3

PROGRESS OF PARTICIPATORY MANAGEMENT IN INMAS SCHEMES

3.1 Basic Characteristics of the Sample INMAS Schemes

3.1.1 Location and Size

The team visited 24 irrigation schemes representing 65% of the schemes under the INMAS program. As shown in Table 2, these schemes are located in the Dry Zone in the districts of Anuradhapura, Hambantota, Polonnaruwa, Puttalam and Moneragala and in the Intermediate Zone in the districts of Kurunegala and Kandy. The schemes visited range in size from 600 acres to over 25,000 acres of command area. Most have command areas of over 5,000 acres.

Two discrepancies in classification should be pointed out:

- Tissawewa, Basawakkulam and Halpanuela together are managed as a single scheme under one Project Manager and one Project Management Committee (PMC) although they are physically separate and are listed separately in IMD lists. Earlier, these were individual MANIS schemes.

- The old and new areas of Kirindi Oya are now being managed by one Project Management Committee and one Project Manager. Earlier, they were treated as separate INMAS schemes and had separate PMCs and Project Managers.

In this analysis, these schemes are treated as separate schemes.

Most of the sample schemes (75 percent) can be described as major reservoir schemes. Twenty-one percent of these schemes are connected to other major schemes by anicuts or canals. Minipe is the only anicut scheme.

3.1.2 Water Availability and Crops

Water availability is a critical factor affecting the livelihoods of farmers in these generally dry areas. Forty-one percent of the sample schemes have serious water problems during the Maha season; 79 percent have serious water problems during Yala including 2 schemes that have little or no water during Yala. Only four schemes have secure water supplies throughout the year:

- Nachchaduwa gets water from Mahaweli System H via a special canal to supplement Yala supplies.

- Rajangana gets drainage water from Mahaweli System H.
- Ridiyagama gets water from the Walawe river that, like the Mahaweli River, has its head waters in the Wet Zone highlands.
- Kirindi Oya old area gets water during both Maha and Yala due to priority distribution.

Table 2 Location and Size of Sample INMAS Schemes

Name of the scheme	Districts	Size (acres)
Huruluwewa	Anuradhapura	9,510
Nachchaduwa	"	6,785
Nuwara Wewa	"	2,500
Basawakkulam	"	973
Tissawewa	"	1,028
Halpanuela	"	592
Usgala Siyambalagamuwa	"	3,000
Rajangana	"	12,940
Muruthawela	Hambantota	5,496
Ridiyagama	"	9,514
Kirindi Oya new	"	9,077
Kirindi Oya old	"	9,336
Giritale	Polonnaruwa	7,498
Minneriya	"	1,924
Parakrama Samudra	"	25,112
Kaudulla	"	11,302
Inginimitiya	Puttalam	6,298
Tabbowa	"	2,035
Muthukandiya	Moneragala	1,976
Hakwatuna Oya	Kurunegala	4,688
Ridi Bendi Ela	"	5,928
Mee Oya	"	6,004
Minipe	Kandy	15,306
Nagadeepa	"	4,216

Paddy is the most popular crop, with 83 percent of the schemes concentrating on paddy during the Maha season. Both paddy and other field crops are planted in the remainder of the schemes during Maha.

During Yala more non-paddy crops are grown as there is insufficient water for paddy cultivation. Both paddy and other crops are grown in sixty-three percent of the sample systems

when there is Yala cultivation; only paddy is grown in 33 percent of the schemes; and only crops other than paddy are planted in one scheme during Yala.

The practice of bethma, a system for sharing land during water short seasons was reported in 35 percent of the schemes. Twenty-five percent of the schemes reported that they do not practice bethma. But the question was not asked in 40 percent of the sample. Of those which practice bethma, half do so only during Yala. When water is very scarce the other half also resort to bethma even during Maha. In general, the most common type of bethma is cultivation on an alternate tract basis, one group operating during Yala and another during Maha. Sharing of headend land by the tailenders is much less common.
Bethma is successfully practiced both in settlement schemes and in schemes where settlement and private lands coexist.

3.1.3 Land Tenure

Only settlement land under the Land Development Ordinance is included in the officially irrigated areas of 46 percent of the sample schemes. Thirty-seven percent of the sample schemes have a combination of settlement and private land. Four schemes (17 percent) have only private land.

The size of landholdings largely depends on whether the land is private or crown land. Landholdings in 70 percent of schemes fall into the range of 2-5 acres per farmer family. Most of these holdings are allotments under the Land Development Ordinance. Despite legal provisions that limit legally recognized land fragmentation in such land, farmers are found cultivating plots of less than 1.5 acres even in crown land. For private lands, size of landholding ranges from 1/4 acre in schemes like Basawakkulam and Mee Oya to 25 acres in Tissawewa, Nachchaduwa and Tabbowa.

3.2 Progress of Farmer Organizations and Joint Management Committees

The INMAS program has been gradually expanding since its inception in 1984. In 38% percent of sample schemes the farmer organization process began in 1984/85 and in another 24% percent, FO formation began in 1986/87. In almost two-thirds of the schemes, the FO organization process has been going on for six years of more.

3.2.1 Field Channel Groups

Effective field channel groups (FCGs) are considered to be the basis of effective farmer organizations. In 71 percent of the schemes visited, all FCGs have been formed. In 8 percent of the schemes, FCG formation is in progress. Failure to form FCGs in some schemes is

attributed by scheme managers to lack of Institutional Organizers (IOs); IOs have generally been provided only for schemes undergoing donor funded rehabilitation. In schemes without IOs, it is difficult for the Project Manager to form FCGs all by himself since intensive work with a large number of farmers is required. Consequently, in 17 percent of the schemes it was reported that the Project Manager has nominated the Farmer Representatives without forming FCGs. All these are schemes where the entire extent is privately land; none have had the help of IOs. None of these schemes have had external support.

3.2.2 Distributary Channel Organizations

All the distributary channel organizations (DCOs) have been formed in 88 percent of the schemes visited. The average number of DCOs in these schemes is 18.9. Exceptions are Halpanuela, Basawakkulam and Muruthawela. In the latter, it was reported that efforts are being made with little success.

DCO constitutions in 65 percent of the schemes have been prepared by the IMD. DCO officers in 22 percent of the schemes report that their constitutions were prepared by them. In 4 percent of the schemes, it was reported that model constitutions were provided by the IMD and revised by the DCOs. In nine percent of the schemes, the DCOs have no constitutions.

Handling funds is a necessary part of DCO activities. Not only will funds management be necessary to handle O&M of distributary and field channels, but DCOs have, with encouragement from the agencies, taken up various other activities requiring the handling of cash. Currently, it is reported that the DCOs in 92 percent of the schemes have funds in their bank accounts.

As part of the turnover of O&M responsibilities to DCOs, the annual allocation for distributary channel cleaning is now given to some DCOs by the Irrigation Department through contracts. The DCOs can either spend the allocation on getting the channels cleaned or they can do the work themselves on a shramadana basis and save the money. The Irrigation Department also offers contracts to repair irrigation structures and other concrete works to DCOs. The DCOs in 96 percent of the visited schemes reported that they undertake maintenance or repair contracts to raise funds. DCOs in 94 percent of the 16 schemes for which the information is available reported that the major source of DCO funds is the cleaning allocation or contracts.

Apart from channel cleaning and contracting, the main sources of funds are membership fees and profits made from agricultural trade and other business ventures. In 19 percent of the 16 schemes for which the information is available, membership fees were reported to be an important source of DCO funds. Monthly membership fees vary from Rs 2 to Rs 100 per member.

DCOs in 52 percent of the sample schemes were involved in fertilizer and agro-chemical distribution. They purchase material from wholesalers and resell it, thereby earning a profit. At Rajangana, Huruluwewa and Nuwara Wewa, FOs have large stalls for storage. In two schemes, DCOs buy and sell rice. Their credibility is high and they are able to get credit from banks for this purpose.

DCO leaders appear to want to expand the activities of the DCOs to accommodate the needs of the farming community. One very important issue they would like to sort out is that of settlement farmers who mortgage their lands to others.

3.2.3 System Level Farmer Organizations

Although not originally considered a necessary part of the INMAS model, the INMAS program has adopted a policy of creating system level farmer organizations (SLFOs). These are federations of the DCOs within the scheme. Half of the sample schemes reported the existence of SLFOs. It has been reported that the IMD has created SLFOs in many more schemes since the Reconnaissance field work was finished.

3.2.4 Joint Management Committees

Project Management Committees (PMCs) have been established in all 24 INMAS schemes surveyed. Five sample schemes (21%) also have Sub-project Management Committees to support the PMCs. In addition, a separate joint Water Management Committee has been set up in Huruluwewa.

In 88% of the sample schemes it was reported that the PMCs were the primary decision-making bodies for seasonal water allocations. For the remainder, it was reported that kanna meetings were the primary ratifying bodies for seasonal allocations. In 71% of the sample schemes, it was reported that the PMCs prepare seasonal crop plans as well as water allocations. In 20 percent of the schemes it was reported that decisions made at the PMCs were sometimes changed subsequently, either by Kanna meetings or by the Irrigation Department. In one scheme, there were no formal plans, only ad-hoc programs. In Huruluwewa, the separate Water Management Committee made the decisions.

In 91 percent of the sample schemes the PMC mediated conflicts between the FOs and Agency officials and in 71 percent of the schemes the PMCs are also involved in land matters.

Agency officials in 83 percent of schemes are happy with the role played by the PMCs. In a few cases, the Irrigation Department officers were happy but not the IMD officers and vice versa. Farmer Representatives in 79 percent of the schemes said they were satisfied with the activities of the PMCs. Other farmers were slightly less enthusiastic; farmers in 63 percent of

the schemes were satisfied with the PMCs while farmers in 16 percent (4) were unhappy with them. Farmers' attitudes in the remaining schemes (20%) were not recorded.

3.2.5 Communication among Farmers

To make participatory management work, effective communication links among farmers, FRs, DCOs, and JMCs is needed. Decisions taken at the PMCs and at the DCOs should incorporate the opinions of farmers. Decisions taken by these committees should be transmitted to farmers.

The DCO committees, consisting of the FRs from the FCGs within the DCOs, reportedly meet once a month in most of the schemes. Full DCO meetings with all farmers are either held annually or once a season depending on the DCO constitution. Generally, PMC meetings are held once a month.

In the study it was observed that although information flows from the PMCs to the FRs, there is no regular mechanism to communicate PMC decisions to farmers. If there is an urgent and important message to pass to farmers, officers put up notices in prominent places in the village or in the settlement rather than communicate through FRs. In schemes where the IOs are working, farmers often seek scheme level information from them rather than from their FRs. When essential information is needed, such as when there is uncertainty on water issue dates, farmers come to the officers for information.

3.2.6 Support for Farmer Organization Development

Most concerned officers feel that the presence of Institutional Organizers (IOs) is required to create strong FOs. For financial reasons, IOs have been appointed only where external funds have been made available as part of a donor funded project, generally a rehabilitation project.

In 29 percent of the sample INMAS schemes (7 schemes), IOs were not present at the time of the Reconnaissance. These schemes are not under rehabilitation programs at present; so no extra funds are available for the recruitment of IOs. In such places, the Project Manager had to take action to form and/or support FOs. Two of them had help earlier and turnover has already taken place.

In 71 percent of the schemes, there were on-going or planned externally funded projects and IOs were present. Their activities have included:

- Reorganizing of FCGs and selection of effective leadership for DCOs. Reports from schemes that have come under the ISMP in the Polonnaruwa district report that they have made changes to their leadership. The old leaders, the Vel Vidanes, failed to represent farmer opinion and have been changed.

- IOs have helped farmers reorganize on a hydrological basis. Prior to intervention by IOs there were organizations at various levels, With the help of the IOs these have been turned into DCOs. For example, in Giritale there were five Subproject Committees earlier. These have been turned into eleven DCOs.

- Encouraging effective work within the DCOs and within the JMCs.

Some IOs appointed under the different projects have been withdrawn as funds have dried up. In the Australian project in Muthukandiya it was observed that the IOs continued to work on a voluntary basis after their salaries were withdrawn.

3.3 Progress of Turnover

Turnover of O&M responsibilities for distributary and field channels to farmer organizations has two aspects. First, it implies that farmers, through their organizations take on the actual O&M responsibilities and that the Irrigation Department field staff relinquish those functions. This may be called defacto turnover. The second aspect is that the turnover of functions is officially recognized and recorded through a legal agreement or through other means.

3.3.1 Operations Undertaken by Farmer Organizations

Undertaking of operational responsibilities by FOs can be identified at three levels: field channel level, distributary channel level and main canal/scheme level. At scheme level, these operational responsibilities consist solely of involvement in decision-making through the JMCs. Responsibilities undertaken at field and distributary channel levels vary among the schemes.

Operation of field channel head gates in 91 percent of the sample schemes were reported to be undertaken by the FOs through the FRs or through appointed Jalapalakas. Only in 9 percent of the schemes are these gates operated by Irrigation Department Jalapalakas.

Water rotations are often needed to distribute water to water scarce areas and to reduce wastage of water by limiting the duration of water issue. Water rotation schedules are reportedly prepared jointly by Irrigation Department officers and the FOs in 71 percent of the schemes. The Irrigation Department alone plans rotations in 20 percent of the schemes. In one scheme, rotations are prepared by the FRs alone and forwarded to the Irrigation Department.

3.3.2 Maintenance Undertaken by Farmer Organizations

Seasonal maintenance work has two components: i) desilting and channel cleaning and ii) repairing structures. Cleaning of field channels has always been the responsibility of farmers.

Under the previous system, farmers were assigned sections of field channels to clean by a functionary appointed by the Department of Agrarian Services. With participatory management, the method of getting the work done is left to the FOs. Both assignment of sections to individual farmers and group work (shramadana) are used.

Prior to participatory management, the cleaning of distributary channels was generally done by the Irrigation Department using their own labor force. During the survey it was found that only in 17 percent of the sample schemes does the Irrigation Department now take direct responsibility for cleaning distributary channels with their own laborers. The work is carried out by the DCOs in the remaining schemes. Except in one scheme, wherever DCOs are responsible for distributary channel cleaning, the work is done by the DCOs themselves. In the one exception, the DCOs are reported to be unable to enlist the cooperation of all the farmers so they hire laborers using funds received from the Irrigation Department. However, there is almost certainly variation within schemes not reported here.

However, the Irrigation Department continues to receive a budgetary allocation for distributary channel cleaning. In 46% percent of the sample schemes, the budgetary allocation for cleaning distributary channels is given to the DCOs by the Irrigation Department. No such allocation is given to the DCOs in 38% of the sample schemes. Information on this point was not gathered for the remaining schemes (4 schemes). The Irrigation Department also offers contracts to DCOs for structure repairs in 79 percent of the schemes.

Farmers require technical assistance in distributary channel maintenance. For seasonal maintenance it is important to maintain channel profile. Also, where structure repair work is concerned, the quality of the work, including concrete work, has to be maintained. The Irrigation Department's assistance in this matter is considered satisfactory by farmers in 39 percent of the sample schemes.

3.3.3 Official Recognition of Turnover

Official turnover under INMAS is shown by the signing of an agreement between the IMD and the DCO. For the most part, under this agreement, the DCO simply agrees to take responsibility for seeing that O&M of field and distributary channels are carried out. A more advanced version has been developed for the Irrigation Systems Management Project (ISMP) under an agreement with the United States Agency for International Development which requires the DCO to take full financial responsibility for O&M.

At the time of the Reconnaissance, it was reported that turnover of distributary and field channel O&M responsibilities to the DCOs had taken place officially in only 38 percent of the schemes surveyed. In 17 percent of the schemes turnover had taken place informally. In one scheme turnover was expected soon. In 21% of the schemes, the concept of turnover was not known to farmers. No information on this question was gathered from the remaining six schemes.

Turnover of all distributary channels was reported from Kaudulla in the Polonnaruwa district. Kaudulla had been part of the ISMP. In the other schemes where turnover was reported, turnover was reported for some but not all DCOs. The IMD reports considerable progress in achieving turnover since the time of the Reconnaissance.

There is no clear connection between official or informal turnover and withdrawal of government funds for O&M of distributary channels. Most of the schemes where DCOs do not receive any funds are schemes in which turnover has not officially taken place. In Giritale and Minneriya, both part of the ISMP, turnover has taken place and funds have been withdrawn from some DCOs in accordance with an arrangement with USAID. Farmers have been complaining wherever the seasonal maintenance allocations have been withdrawn from some but not all DCOs.

In some schemes where the Irrigation Department still operates the distributary channels, farmers stated that they felt operations should be turned over as well. One argument is that without turnover, farmers cannot implement water rotations on the distributary channels as gates are operated by agency officers. A few DCO leaders said that DCOs could undertake operational responsibilities for the entire scheme.

However, they felt it would be difficult to take responsibility for maintenance as it was costly and required technical knowledge. Some farmers and FRs argued that the FOs can take full responsibility for maintenance of distributary channels if these channels are rehabilitated.

3.4 Impact of Participatory Management on Operations and Maintenance

Although the Reconnaissance made no serious effort to evaluate the impact of participatory management, some indicative data was collected. In order to evaluate the success of FOs in improving water management, the opinions of three groups were solicited:

- Irrigation Department officers in 79 percent of the schemes said they thought there was an improvement in water distribution after the FOs became involved. There was a definite negative response in two schemes - Nachchaduwa and Tissawewa. In 13 percent of the schemes, the main problems remained water scarcity and poor conditions of irrigation channels rather than the efficiency of the new management system.

- The response from the FRs was more positive. In 91 percent of the schemes, the consensus was that water management had improved after the FOs were developed. In one of the remaining two schemes water scarcity was the problem and conflicts between farmers impede progress in the other.

- Farmer response to the same question was positive in all schemes where answers were received (75 percent). One exception is Muruthawela where the FO system is still in its nascent stage.

Although not checked with observations nor with specific questions, indications from the interviews are that participatory management may not have improved the quality of maintenance. Because FOs must clean the distributary channels to receive the O&M allocation from the Irrigation Department, it appears that some DCOs concentrate and fail to give equal attention to the field channels. The FOs given distributary channel maintenance allocations report that the amount received decreases annually. Like the Irrigation Department, therefore, they may be reducing their effort. In one scheme the Irrigation Department officers instructed farmers to apply weedicide instead of engaging in manual clearing of channels as this was cheaper.

3.5 Monitoring and Evaluation of Participatory Management in INMAS

There have been three types of M&E systems introduced within INMAS projects.

- The first one was the system introduced in 1986 with the major objective of obtaining management information for the IMD officials about the proposed seasonal cultivation program and its performance. The Project Manager provided information by filling 4 questionnaires prepared by the IMD.

- A special M&E system was introduced in 1988 within the Irrigation System Management Project (ISMP) and the primary source information was a questionnaire filled by the field level Agricultural Extension Officers. The Project Manager and Irrigation Engineer filled two questionnaires to provide additional information.

- A simplified M&E system was introduced in 1991 within the ISMP and MIRP and then spread to 19 INMAS systems in 1992. This one asked FOs to fill out a simple questionnaire each month concerning how things had gone. In addition, the Project Managers were responsible for completing separate end of season reports. Following the name introduced by the ISMP, this is called the Monitoring, Evaluation and Feedback (MEF) System.

One part of the MEF system is intended to provide information monthly about the status and performance of key major activities and problems such as water shortage, input supplies, maintenance difficulties and FO development issues. Data is collected by asking DCOs to complete MEF Form 6 each month. This information is made available to the line agencies at PMC meetings and necessary actions are taken to solve the problems. The IMD also prepares a monthly report for IMD headquarters.

Reportedly, in many cases, IOs rather than DCO officers complete the monthly form and in some cases the reports are not used at PMC meetings. One problem is that the farmers

generally do not see the information as useful to themselves; most of the FRs do not fully understand the reason for collecting the information.

The second part of the MEF system is intended to allow evaluation of seasonal performance. MEF Forms 1 and 3 forms are to be completed by the Project Managers to collect information on major activities of the proposed cultivation program at the distributary and scheme levels. At the end of the cultivation season, MEF forms 2, 4 and 5 are completed to evaluate the activities carried out during the cultivation season. MEF Form 7 is basically designed to evaluate the program from the point of view of farmers. There is little evidence to indicate that this information is being used for management purposes.

Section 4

PROGRESS OF PARTICIPATORY MANAGEMENT IN MANIS SCHEMES

4.1 Basic Characteristics of the Sample MANIS Schemes

4.1.1 Location and Size

When originally conceived in 1985, the Management of Irrigation Systems (MANIS) program was intended to cover all government schemes managed by the Irrigation Department not already included in the INMAS program. This would have covered about 250 schemes, mostly "medium" schemes. Due to lack of resources, war, and political changes, the actual number incorporated in the program has been somewhat less. Today 160 schemes are officially included the MANIS program. These MANIS schemes vary in size from 100 acres to 17500 acres.

For the Reconnaissance, 32 MANIS schemes from eight districts were visited by researchers (Table 3).

4.1.2 Water Availability and Crops

Slightly over half (56%) of the sample schemes are tank systems, all except one of the remainder are anicut schemes. The one exception has a tank that gets water from a major system.

One quarter (25%) of the sample schemes reported water availability problems during Maha seasons. All of these schemes are in the Dry or Intermediate Zones. On the other hand, fully 91% of the schemes reported water problems during Yala. Yala cultivation was reported to be restricted or abandoned in these schemes. Only three schemes do not have water problems during Yala; one lies in the Wet Zone, one draws water from a river originating in the Wet Zone, and one lies in the Intermediate Zone.

Bethma practices are commonly used to cope with water shortages. Of the sample schemes surveyed, 14 (44%) reported bethma practices during Yala but only 3 schemes (9%) reported bethma practices during Maha. Most (53%) of the reported bethma consisted of alternations among tracts within the schemes. The remainder included pangu bethma, alternation between two main channels, and some others.

Crops in the sample MANIS schemes are dominated by paddy. The overwhelming majority (84%) reported only paddy during Maha; one scheme (3%) reported only other crops during Maha; and four schemes (13%) reported both paddy and other crops. During Yala, only 41% reported only paddy while 53% reported both paddy and other crops; one scheme reported only

other crops and for one scheme this information is lacking. However, in view of the water availability problems mentioned above, much of the land is allowed during Yala.

Table 3 Location and Size of Sample MANIS Schemes

Name	District	Size (acres)
Manankattiya	Anuradhapura	1500
Urubokke	Hambantota	2580
Old Walawe RB	"	8067
Mahagalwewa/Meegahajandura	"	100
Mahabamma-amuna	"	750
Handapangala	Moneragala	1000
Dehiattawela	"	700
Muthukandiya	"	450
Badulu Oya	"	530
Buttala	"	1000
Sudupangala	"	600
Kubukkan Oya	"	1683
Pahariya	Puttalam	360
Mahaandarawewa	"	400
Siyambalankottuwa	"	1000
Mahakumbukkadawela	"	327
Kottukachchiya	"	857
Ma Ela	Kandy	1272
Gampola Raja Ela	"	430
Murapola	"	1640
Radagalpotha	"	200
Kimbulwana Oya	Kurunegala	1650
Wennoruwa	"	476
Hulugal Wewa	"	208
Madiyawa	"	967
Mahananeriya	"	360
Mahagalgamuwa	"	404
Erige Oya	"	200
Kande Ela	Badulla	1587
Ambewela	"	1000
Taldena	"	300
Komarika Ela	"	1100

4.1.3 Land Tenure

Only 16% of the sample MANIS schemes consist of land settled under the Land Development Ordinance and another 22% consists of mixtures of colony land and private land. Fully 62% of the schemes consist solely of private land.

Reported size of landholdings varies widely - from 1/4 acre to 35 acres. However, most landholdings are reported to be between 1 and 5 acres.

4.2 Progress of Farmer Organizations and Joint Management Committees

The MANIS program did not begin until 1986 and, as noted, few special resources could be devoted to it. Thus in the great majority of the MANIS schemes, the farmer organization process did not begin in earnest until recently; work on farmer organizations began after 1987 in 81% of the sample schemes. Work began in 53% only in 1990 or later.

4.2.1 Farmer Organizations

In 72% of the sample schemes, informants reported that programs to create and strengthen FOs are in progress. Most (63%) of the sample schemes, report the existence of functioning FOs.

Since the MANIS program was modeled on the INMAS program, the organization of FOs is expected to be similar. That is, it is expected that the basic FO will be a distributary channel organization (DCO) governed by a group of Farmer Representatives (FRs) each of whom is selected by an informal field channel group (FCG). In fact, however, FOs in the MANIS schemes appear to vary a great deal; not many resemble the INMAS model.

All schemes with FOs have DCOs or equivalents. The average number of FOs in the 20 MANIS schemes reporting FOs is 6.4. Prior to MANIS, irrigation management tasks were carried out by "Vel Vidanes" appointed by the Department of Agrarian Services or by the local government. Each worked within an administrative area called a "tract." In many MANIS schemes, FOs were "formed" simply by renaming the old Vel Vidane tracts. Tract based FOs were reported in a significant number of the sample schemes. Other bases for FOs also exist; in Mediyawa and Wennoruwa, FOs are based on villages.

Selection of Farmer Representatives is very important; success of the FO program may hinge on selecting FRs who take seriously their responsibilities of representing the farmers who select them. Under the INMAS model, FRs are to be selected by FCGs. However, only 19% of the sample schemes report functioning FCGs. Thus, in 50% (10 of 20) of the schemes from which this information was collected, it was reported that FRs were nominated by farmers without forming groups. In many cases, these FRs were the previous Vel Vidanes.

Only 11 schemes (34% of all schemes but 55% of schemes reporting FOs) reported that the FOs had constitutions; the great majority of these were constitutions prepared by the Irrigation Department. Ten schemes (50% of those with FOs) reported that the FOs were registered. Of these only five schemes reported that the FOs were registered with the Department of Agrarian Services to get legal recognition; the others were registered only with the Irrigation Department.

Of the 20 schemes reporting FOs, 15 report that the FOs have their own funds; of these 14 keep their funds in their own bank accounts. Almost half (47%) of the sample schemes reported that the Irrigation Department offers construction contracts to DCOs, but only 13% of the schemes reported that O&M funds are given to FOs. Among the 12 schemes for which the information is available, seven (58%) report that membership fees form the major source of funds. The remainder report that contracts and the O&M allocation provide most of the funds. Virtually no FO undertakes business activities such as fertilizer sales to raise funds.

4.2.2 Joint Management Committees

Because MANIS schemes are smaller than INMAS schemes, it is expected that there is a need only for a single Project Management Committee (PMC) or equivalent in each scheme. This committee should be made up of representatives of the FOs and scheme level officers from the concerned agencies, particularly the Irrigation Department. It was reported that 60% of the 28 sample schemes for which this information was collected have functioning PMCs.

In 82% of the sample schemes with PMCs (17 schemes) the PMCs undertake seasonal water allocations as part of seasonal planning. In 70% of these schemes, the PMCs also resolve disputes between farmers and officers over water distribution.

Agency officials in 88 percent of schemes with PMCs are happy with the role played by the PMCs. Farmer Representatives in 78 percent of the schemes for which this information was collected (14 schemes) said they were satisfied with the activities of the PMCs. Other farmers were slightly less enthusiastic; farmers in 50 percent of the schemes were satisfied with the PMCs, while farmers in 43% were not happy; the attitude of farmers in the remaining schemes were not recorded.

4.2.3 Support for Farmer Organization Development

For the most part, the only external support that has been supplied to MANIS schemes has been training for Technical Assistants as Project Managers. Fifteen of the sample schemes (47%) have neither had external help nor are scheduled to receive it.

In these cases, initial organizing work has been carried out by a variety of officers from different agencies, including:

- Technical Assistants from the Irrigation Department,

- Divisional Officers from the Department of Agrarian Services,

- Grama Seva Niladharis (village level government officers).

The Irrigation Department was involved in virtually all cases, but one or both of the others were directly involved in 16% of the sample schemes and peripherally involved in many others. The differences in the interests of the agencies and training of the officers affected the ways in which the FOs were introduced.

In most places the initiative for the formation of FOs came from officers by calling a meeting. In one scheme, the establishment of FOs was done at the initiative of farmers. In two schemes, FOs were formed by separate efforts by both a Technical Assistant from the Irrigation Department and by a Divisional Officer from the Department of Agrarian Services. This created confusion among the farmers as the methodology adopted by the two officers differed. In addition, farmers had difficulty obtaining cooperation from the two officers as each was biased toward his FOs.

Those schemes which have had external support to date have received the support from three sources: from the World Bank funded National Irrigation Rehabilitation Project (28%), from Integrated Rural Development Projects (IRDPs) funded from various bilateral sources (13%), and from a European Community funded rehabilitation project in the Northwestern Province (9%). Two schemes expect support from the Asian Development Bank funded Northwestern Province Water Resources Development Project.

In these cases, farmer organization is considered an important part of the project and resources, usually consisting of Institutional Organizers or similar catalyst agents, have been or will be provided. Nine of the sample schemes (28%) have been selected for rehabilitation under the National Irrigation Rehabilitation Project. For the most part, NIRP funded IOs were fielded only late in 1992 and thus had little impact at the time of the Reconnaissance.

It is not surprising therefore that the data suggests that most of the FOs need strengthening. The success achieved in some schemes - ie Kimbulwana Oya, Komarika Ela, Kottukachchiya and Gampola Raja Ela - can be attributed to the dedication of particular Project Managers. In some cases, notably Wennoruwa, the scheme was efficiently supported by the Department of Agrarian Services.

4.3 Progress of Turnover

Turnover of O&M responsibilities for distributary and field channels to farmer organizations has two aspects. First, it implies that farmers, through their organizations take on the actual O&M

responsibilities and that the Irrigation Department field staff relinquish those functions. This may be called defacto turnover. The second aspect is that the turnover of functions is officially recognized and recorded through a legal agreement or through other means.

In most MANIS projects, Vel Vidanes remain powerful and influential as far as water management is concerned. As pointed out earlier, many of the FRs have been nominated from among the Vel Vidanes.

4.3.1 Operations Undertaken by Farmer Organizations

Undertaking of operational responsibilities by FOs can be identified at three levels: field channel level, distributary channel level and main canal/scheme level. At scheme level, these operational responsibilities consist solely of involvement in decision-making through the JMCs. Responsibilities undertaken at field and distributary channel levels vary among the schemes.

It was reported that in 47% of the sample schemes, the field channel head gates are operated by Irrigation Department personnel. In 38% of the schemes, these structures are operated by FRs while in 15% they are reported operated by Vel Vidanes.

The responsibility for operating the distributary channel head gates lay with the Irrigation Department in 67% of the sample schemes. FOs and the Irrigation Department shared the responsibility in 13% of the schemes. Only in 9% of the schemes was an FR or Vel Vidane responsible. This information was not collected for one scheme (3%).

In one sample MANIS scheme, even the main channel and tank sluice are operated by a Vel Vidane. In all of the others, these are operated by the Irrigation Department.

Water rotation schedules are reportedly prepared jointly by Irrigation Department officers and the FOs in 38% of the sample schemes. The Irrigation Department alone plans rotations in 41% of the schemes. In 16% of the schemes rotations are planned by FRs or Vel Vidanes. For two schemes (5%), this information was not collected. In some schemes, Irrigation Department employees keep the key to the main sluice but implement water delivery plans decided at meetings with farmers.

4.3.2 Maintenance Undertaken by Farmer Organizations

Under the participatory management policy, distributary channel maintenance should be undertaken by the FOs. However, in only one of the sample schemes was it reported that the FOs clean and desilt the distributary channels. In most of the others (59%), it was reported that this work was undertaken jointly by FOs (or Vel Vidanes) and the Irrigation Department. In 28% of the schemes, the Department handles distributary maintenance alone. In one scheme,

some of the maintenance is done by the Rural Development Society of the area because the President of the Rural Development Society is also the FR nominated by the Irrigation Department.

The Irrigation Department continues to receive a budgetary allocation for distributary channel cleaning. Information on this was collected in only 22 of the 32 sample schemes. Among those schemes, only in 4 (18%) is any portion of the budgetary allocation for cleaning distributary channels given to FOs.

It was also reported that in one scheme that farmers were given O&M responsibility, but did not attend to it because no funds were provided by the Irrigation Department. As a result water deliveries are delayed. In another scheme, the Irrigation Department ordered the FOs to use weedicide to clean channels. This method was adopted to cut costs, but farmers were concerned about water pollution.

Among the 24 schemes for which the information was collected, the Irrigation Department offers contracts to FOs for structure repairs in 75% of the schemes. Farmers also said that when FOs request their share of the rehabilitation allocation there is a tendency to underestimate contracts. It would seem from this complaint that FOs are not being given adequate encouragement for undertaking contracts in their areas and this has influenced the attitude of farmers with negative consequences.

Farmers require technical assistance in distributary channel maintenance. For seasonal maintenance it is important to maintain channel profile. Also, where structure repair work is concerned, the quality of the work, including concrete work, has to be maintained. The Irrigation Department's assistance in this matter is considered satisfactory by farmers in only 33 percent of the sample schemes from which this information was collected (21 schemes).

4.3.3 Official Recognition of Turnover

Official turnover under MANIS should be shown by the signing of an agreement between the Irrigation Department and the FO. No such agreements were reported from any of the sample schemes. Indeed, in 31% of the schemes, farmers were reported to be unaware of the concept. Only in 3 schemes had some elements of turnover been introduced to the farmers.

Although reasons for the lack of progress in handing over responsibilities to the FOs are not clear, in most schemes it would seem that the FOs are not yet capable of self-management. However, in a few schemes, farmers are willing to take over management responsibilities if all structures are fully functioning. There are also cases where farmers agreed to maintain distributary channels with the expectation they would get funds for rehabilitation, but funds did not come.

It was noted that farmers in one scheme said the Irrigation Department might not like to turn over responsibilities to FOs; farmers said the Irrigation Department officials are not very keen to support FO activities. However, officers from the scheme said that they are in the process of encouraging FOs to get involved in management functions. Officers said they are hoping to turn over O&M activities to FOs after rehabilitation. They also said that for this purpose Irrigation Department staff have already received some training regarding turnover.

Under the MANIS program, Siyambalankotuwa is an exceptional case. Although management responsibilities have not been officially handed over to FOs, farmers are involved in all aspects of management. This system is under consideration for rehabilitation under the Northwestern Province Water Resource Development Project. FOs have actively participated in the design stage of rehabilitation with Irrigation Department officials. FRs cooperate with the Irrigation Department staff in preparing water distribution schedules at all levels. It was also noted that distributary channels and field channels are maintained entirely by FOs; the Irrigation Department is responsible only for main canal maintenance. The Irrigation Department and FOs are now working together to develop a procedure for the official turnover of O&M responsibilities to FOs. They have already developed a mechanism for training FRs and farmers for turnover.

Clearly the major reason for lack of progress in turnover is that the farmer organization effort itself is still in the early stages.

4.4 Impact of Participatory Management on Operations and Maintenance

Although the Reconnaissance made no serious effort to evaluate the impact of participatory management, some indicative data were collected. In order to evaluate the success of FOs in improving water management, the opinions of three groups were solicited:

- The opinions of Irrigation Department officers were gathered in 23 of the 32 sample schemes. In 78% of these schemes the officers said they thought there was an improvement in water distribution after the FOs became involved. There was a definite negative response in 13% of the schemes. In 9% of the schemes, officers felt that the FO program was too new to tell.

- The responses from FRs were gathered in 19 schemes. In 18 of these (95%), the consensus was that water management had improved after the FOs were developed.

- Farmer responses were gathered in only 12 schemes. In 10 of these schemes (83%) farmers felt that water distribution had improved; in only two schemes was the answer negative.

One of the reasons cited for lack of improvement was the nomination of FRs by officers rather than selection by FCGs. When FRs are nominated there is a tendency for such FRs to be partial some farmers or, if selected with help from the officers, toward the officers. Farmers are

generally suspicious of nominated FRs, especially when hurried choices are made by officials in order to i) meet Agency targets or ii) impress funding Agencies. When it comes to getting cooperation for O&M and other collective activities, nominated FRs may find it difficult to get the full participation of farmers. At decision-making time particularly, FRs may have no say if they are nominated; they cannot represent the interests of the majority of farmers.

Implementation of the participatory management policy in MANIS schemes is still at an early stage and there is much variation. There are strong and active FOs in systems such as Manankattiya, Urubokke and Mediyawa. The FOs in the Urubokke scheme there has been input from NORAD (for an IRDP) as well as from the Irrigation Department and the Department of Agriculture. The healthy coordination among these agencies is one reason for the active participation of FOs in this scheme. The positive atmosphere in Mediyawa and Manankattiya is due to strong local leadership. On the other hand, in some schemes FOs have been formed in name only. In some schemes, O&M activities are undertaken by farmers with support from Irrigation Department officers but without formal organizations. In these schemes, the Irrigation Department officers need not take a keen interest in institution building because O&M activities are already being undertaken by farmers collectively.

4.5 Monitoring and Evaluation of Participatory Management in MANIS

Only 3 of the sample schemes (9%) reported the existence of a system to monitor and evaluate the progress of participatory management.

Of the three schemes, one reports that the Irrigation Department itself collects all of the data. In Gampola Raja Ela and Murapola, however, farmers and local agencies had instituted a system of meetings to review management issues. Once a month a meeting of the Tract Committee is held with the Project Manager followed by a Progress Review Committee meeting at the District Irrigation Office at which, based on information from the Tract Committee, the Project Manager reports the progress of the FOs. It was also noted that in both schemes FRs were actively involved in collecting data for agency monitoring activities and the agency also seemed keen to provide feedback whenever necessary.

Although the Irrigation Department has not established formal or systematic strategies for M&E, in some schemes they have informal arrangements with farmers and field staff to collect data. For example, at Manankattiya, the Vel Vidanes transmit information between farmers and agency staff.

Section 5

PROGRESS OF PARTICIPATORY MANAGEMENT IN MAHAWELI SCHEMES

5.1 Basic Characteristics of the Sample Mahaweli Schemes

During the Reconnaissance Survey researchers visited four of the six Mahaweli schemes: System H, System B, System C, and the Walawe Special Area (Uda Walawe scheme). All of these schemes are settlement schemes in which lands are allotted to settlers under the Land Development Ordinance.

The Mahaweli Economic Agency (MEA) manages these schemes. Each scheme is headed by a Resident Project Manager appointed by the MEA. The Resident Project Manager is assisted by deputies from agriculture, lands, community development, institutional development, irrigation and marketing. Each Mahaweli scheme is divided into Blocks and Units. Each administrative block is headed by a Block Manager who is assisted by officers in the disciplines mentioned earlier. At the lowest administrative level is the Unit Manager who is assisted by Technical Officers for irrigation and Field Assistants for agriculture. An important point is that, unlike the INMAS and MANIS schemes, the Mahaweli schemes are managed by an agency concerned not only with irrigation management but with many other functions as well.

As shown in Table 4, the four sample schemes are very large. The size of these schemes means that there is a great deal of variation among and within the schemes. For that reason, each is described separately here.

Table 4 Location and Size of Sample Mahaweli Schemes

Name	District	Size (ha)
Mahaweli H	Anuradhapura	29,434
Mahaweli B	Polonnaruwa	25,300
Mahaweli C	Badulla, Ampara	23,700
Uda Walawe	Hambantota	15,000

5.1.1 System H

System H lies mostly within Anuradhapura District and is the oldest and largest of the Mahaweli systems. The irrigable area is 29,434 hectares. The settled area incorporated a large number of long settled (purana) villages as well as some previously developed colony lands. Some of the settlements in these earlier colony lands are more than 25 years old; Kandalama and

Kagama-Katiyawa are parts of this scheme. Most of the settlers brought in under the Mahaweli program were settled in the latter part of the 1970's.

System H has been divided into ten administrative blocks: Galnewa, Meegalewa, Kagama Kattiyawa, Eppawala, Tambuttegama, Nochchiyagama, Talawa, Madatugama, Old Area (H6 & H8), and Galkiriyagama.

System H has 153.8 km of main canals, 90.7 km of branch channels, 674.3 km of distributary channels and 1,595.2 km of field channels. For water, System H depends upon water diverted from the Mahaweli River at Polgolla and brought to the system through Bowatenne Reservoir. In general, System H is reported to have enough water during Maha but is short of water during Yala. The lower portions have more water problems than the upper portions. It has become customary to use bethma during Yala below Kalawewa to help solve the water shortage problems.

Paddy is the most important crop grown. Paddy yields average about 5 metric tons per hectares. During Maha 91/92 35,595 hectares were cultivated and upland crops (OFCs) took up 665 hectares. During Yala 91/92 paddy dropped to 10,047 ha and OFCs became more significant with 11,750 hectares.

As pointed out above, System H includes both farmers settled under the Land Development Ordinance and farmers occupying villages that preceded the settlement programs. The settlers generally have 1 to 2 hectares of irrigated land but private landholdings vary greatly in size. The number of farmer families settled by the Mahaweli program as of April 1993 was 24,026 together with 7,614 non-farmer families, giving a total of 31,640.

5.1.2 System C

System C is located in portions of Badulla, Polonnaruwa and Ampara Districts. The command area is 23,700 hectares. System C is divided into 10 blocks:
Batalayaya, Lihiniyagama, Nuwalagala, Mahawanawala, Heberawa, Sandunpura, Dolakande, Medagama, Siripura, and Veheragala.

The main canals are of 33 km long and distributary channels are 472.47 km long. There are 1,224.5 km of field channels and 747.72 km of drain channels in the scheme. The scheme has plenty of water; there is no record of bethma practices. The main source is water diverted from the Mahaweli River at the Minipe Diversion and distributed through the Ulhitiya and the Rathkinda Reservoirs. Forty minor tanks also benefit from the scheme.

Paddy is the chief crop grown, with average yields of 4.3 metric tons per hectare. During Maha 1991/92, 16,200 hectares of paddy were cultivated. During Yala 1992, the paddy are was more or less the same but some 600 hectares of other crops were also reported.

The System C area was largely uninhabited prior to the Mahaweli program. Mahaweli settlement began in the late 1970's and early 1980's. To April 1993, 20,576 farmer families, 1,300 non-farmer families, 2,481 second generation families and 57 cashew families were settled.

5.1.3 System B

Mahaweli System B is located in parts of Polonnaruwa, Batticaloa and Ampara Districts. The irrigable area of the Left Bank comprises 25,300 hectares; the Right Bank is not operational. Some old irrigation schemes such as Pimburettewa and 74 minor tanks have been incorporated into the scheme.

System B is divided into 8 administrative blocks: Vijaybapura, Damminna, Ellewewa, Dimbulagala, Sevenapitiya, Senapura, Aselapura, and Singhapura. For administrative convenience, System G (Bakamuna) has been added to System B as the Bakamuna block. System G, however, is hydrologically distinct and located some distance from System B. This discussion does not apply to System G.

The channel system includes 58 km of main canals, 388.37 km of distributary channels, 1,039.60 km of field channels and 1,005.41 km of drainage channels. Water availability is good during both seasons although some problems have been reported; water comes from the Minipe Diversion on the Mahaweli River through the Ulhitiya and the Maduru Oya Reservoirs. There is no record of bethma practices.

Paddy is the most important crop grown. Yields have leveled off at 4.1 metric tons per hectare. During Maha 1991/2 paddy was cultivated on 10,700 hectares and OFCs on 80 hectares. Yala cultivation was 9,700 hectares of paddy and 500 hectares of OFCs.

Most of the farm families are settlers either from the Mahaweli program who come in the mid 1980's. The number of families settled in the system until April 93 was 15,177 farmer families and 744 non-farmer families. Thus landholdings average around 1 hectare per farmer.

5.1.4 Uda Walawe

The Walawe Special Area consists of the Uda Walawe scheme located in Hambantota District. Although not hydrologically connected to the Mahaweli River basin, it has been managed by the Mahaweli Economic Agency since 1982. The total command area is about 15,000 hectares. Most of the system was constructed in the late 1960's and early 1970's. Extension of the area is now being planned. Uda Walawe is administered through 7 administrative blocks: Embilipitiya, Chandrikawewa, Muravashihena, Binkama, Angunukolapelessa, Kiri Ibbanwewa, and Suriyawewa.

Water for the system comes primarily from the Uda Walawe Reservoir on the Walawe River. A number of other tanks, principally Chandrikawewa, have been incorporated into the system. The canal network includes 62 km of main canals (41 km in the Right Bank and 21 km in the Left Bank), 75 km of branch channels, 198 km of distributary channels and 615 km of field channels.

Water availability is good because the Walawe River catchment is located in the Wet Zone highlands although most of the command area lies in the Dry Zone. For the most part, farmers have no water scarcity problems although a drought occurred during Yala 1992. While this can be said to be true for the scheme as a whole there are differences within the scheme; some portions of the Right Bank tail area rarely get irrigation water. Also, 2,500 acres of land in Muravasihena and Angunakolapelessa Blocks are not being cultivated due to salinity brought about by the invasion of sea water. During Maha over 80% of the command area is cultivated but during Yala only 25-50 percent is generally cultivated. There is no record of bethma practices.

Paddy is the single most important crop during both seasons, although banana has been growing in importance. Sugarcane is grown in portions of the scheme for the Sevanagala sugar factory. Other crops, including chilis, red onions, and vegetables are grown during Yala. The MEA has been encouraging non-paddy crops and many farmers are experimenting with them.

Although some private lands have been incorporated into the scheme, most of the farmers are settlers. Thus the average landholding is close to the allotment size of 1 hectare. To April 1993, 17,576 farmer families, 12,589 non farmer families and 97 second generation families have been settled.

5.2 Progress of Farmer Organizations and Joint Management Committees

5.2.1 Turnout (Field Channel) Groups

In System H, the field channel network of the scheme is designed with small turnouts consisting of 10-20 hectare holdings each, so that farmers are easily grouped within small hydrological boundaries. Turnout Groups, equivalent to field channel groups (FCGs), were introduced to settlers at the beginnings of these schemes. For each Turnout Group, a "Turnout Leader" was selected, generally through a meeting organized by the MEA officers. The Turnout Leaders were given training in water distribution and other functions but no other direct support was offered to the Turnout Groups and no higher level groups were created.

Similar systems were established in Systems C and B. In Uda Walawe, because the scheme was designed at an earlier time, the field channels did not fit. Therefore, it was proposed to introduce this system following rehabilitation, but with the changes that have occurred since the introduction of the participatory management policy, field channel groups (FCGs) like those in

INMAS systems have been introduced there. Turnout Groups, now sometimes called field channel groups (FCGs), remain the smallest farmer organization. Reportedly, 100 percent of the Turnout Groups have been formed in systems B and H, but only 90 percent have been formed in Uda Walawe and System C.

During the 1980s, it was observed by researchers that the functioning of Turnout Groups in System H was somewhat confused and chaotic and that the Turnout Group members were not happy with the selection of Turnout Leaders. During this period rotational water distribution at field channel level and regular maintenance of field channels were not considered satisfactory.

There were isolated attempts to strengthen the Turnout Groups. In the late 1980's, the Nation Builders' Association worked with farmers in part of System B and Uda Walawe to create distributary channel organizations. These efforts were largely failures, in part because of lack of support from the MEA.

5.2.2 Distributary Channel and Unit Organizations

Following adoption of the participatory management policy at the end of 1988, the MEA began to develop distributary level FOs. In System H, DCOs, comprising Turnout Leaders and the Unit Manager, were created. DCOs were also adopted in Uda Walawe. System C chose to develop organizations based on units rather than on distributary channels. System B developed both DCOs and unit organizations.

Unit organizations, unlike DCOs, are not based on hydrological boundaries. There has been dispute over the effectiveness of unit organizations. In System B, some officers claimed that unit organizations are effective for drawing up the cultivation calendar, preparing of the agricultural plan, procuring inputs and obtaining the services of unit level officers. However, under the INMAS model, the DCO is the key organization. In Systems C and B therefore, MEA is now working to reorganize the farmers. In System C it is reported that many unit organizations are not functional due to the reorganization. Farmers say they are reluctant to continue with the activities of unit organizations.

Various problems are reported with these organizations. For example, the Reconnaissance found that many FCGs and some DCOs in System H did not report any activities. In System C, it was observed that the officers of several FOs had clear political affiliations and were apparently trying to use the FOs to fulfil political ambitions. In the case of the FOs which are making money in Systems B & C there are reported cases of misappropriation of funds. In Uda Walawe, farmer leaders are reportedly chosen through the FCGs, but the FRs have to maintain a balance in their relationship with the agency which still plays a very significant role.

According to MEA, there are 2065 field channel groups and 224 DCOs in System H and System B has 1520 turnout groups, 171 DCOs and 75 unit level FOs. Reportedly, at the time of

Reconnaissance, 1370 FCGs were formed in Uda Walawe, out of 1441 FCGs planned, and 162 of the targeted 169 DCOs were formed.

In all of these systems, the development of DCOs and unit organizations was constrained by two factors: centralization of power and authority within the Mahaweli Economic Agency and inadequate experience in irrigation management in farmers and officials. For example, the members of the Tuwargala FO in System C complained that the Unit Manager was too influential in the FO and that the FRs play a supportive role only.

However, many DCOs and unit organizations have been successful in achieving limited objectives set by farmers and officials. In some cases, particularly in System H, these organizations were able to improve water distribution at turnout level and distributary level.

Most of the DCOs have constitutions prepared by MEA; in a few cases, the farmers have modified the constitutions. Virtually all DCOs are registered with MEA and many are also registered under the Agrarian Services Act through the MEA. For example, in System H, 132 out of the 224 DCOs are registered under the Section 56A of the Agrarian Service Act.

Under the present FO structure modeled on INMAS, irrigation management is considered the primary function of FOs and all FOs are involved in O&M. In Uda Walawe and System H it is reported that some FOs are also involved in irrigation construction contracts.

Some FOs have gone into non-irrigation activities too. In System H, some FOs are reported to be involved in storing, purchasing and marketing of agricultural products. A few DCOs in Uda Walawe have taken up these activities as well.

In System C and System B, however, a great deal of effort has focussed on the development of unit organizations as business entities, particularly for the cultivation of high value crops. For example, FOs in System B are reportedly involved in the following activities: a) providing agricultural inputs such as fertilizers, agrochemicals, seeds, etc to farmers, b) providing small loans for self-employment projects, c) purchasing, storing and marketing produce, d) operating collective farms, e) operating rice mills, f) issuing cultivation loans, g) other activities related to farming such as providing tractors, etc, and h) various social and religious activities.

In System H, many DCOs have their own funds; 107 out of 224 DCOs reportedly have bank accounts. Sources of funds include membership fees, purchases of shares in the FO and profits earned through maintenance contracts given by MEA. DCOs in Uda Walawe have similar sources and amounts of funds.

In Systems C and B, however, the emphasis on business development has resulted in the development of some financially strong FOs. In System C, Hungamalagama in the Siripura block has been selected as one of the best FOs in the Mahaweli and has received an award of Rs 500,000. This FO owns a tractor and maintains a fund of Rs 507,000. In this scheme too,

FO funds are raised through maintenance contracts, hiring of agricultural equipment, membership fees and selling of membership shares.

Raising funds by selling shares is widely practiced in many FOs in System C. Shares are usually Rs 500 or 1000 each. The Sandunpura FO has sold shares worth Rs 36,000 to its members; the value of a share is Rs 1,000. This FO provides fertilizer on credit to members. Eligibility of members for obtaining credit is based on the value of shares owned. In addition to credit facilities provided for purchasing fertilizer, small cash loans of Rs 3,000 are also available to each member at 3 percent interest.

The financial position of FOs in System B is also strong. Not only do almost all FOs have funds but also 18 tractors are owned by the FOs. The funds of the FOs come from various sources including membership fees, selling of shares, profits from maintenance contracts, hiring of agricultural equipment, operation of rice mills and marketing outlets.

5.2.3 Joint Management Committees

Prior to adoption of the INMAS structure in October 1992, MEA made no attempt to create joint management committees in any of the Mahaweli systems. For this reason, virtually all of the joint management committees were very new at the time of the Reconnaissance.

Because of the large size of Mahaweli schemes, each of the schemes has several levels of JMCs, including unit committees, block committees, subproject committees, and project committees. The top level committee is called a Project Coordinating Committee rather than a Project Management Committee as in INMAS schemes. In every case, these committees are made up of MEA officers at the appropriate level and FRs. Unit committees are chaired by farmers while all higher level committees are chaired by MEA officers.

At the time of the Reconnaissance, it could not be said that the JMCs played any real part in seasonal decision making or in problem solving. Since then, however, there have been some reported successes. For example, the System H Project Coordinating Committee was able to develop a new bethma system for Yala 1993. In Uda Walawe, the Embilipitiya Block committee and its lower level unit committees have been able to help resolve water distribution problems. Still, at this time, the JMC structures in the sample systems are too new to have made much impact.

It may seem surprising that the Mahaweli schemes have had JMCs for such a short time, particularly since JMCs were adopted by the INMAS program in 1984. It seems, however, that the reason has mostly to do with MEA's management organization and philosophy. MEA's first job was caring for settlers. To serve that end, MEA created a system in which all services were routed through general functionaries - the unit, block, and project managers. It was felt that JMCs would threaten the ability of these officers to carry out their duties by weakening their

authority. Now, of course, almost all of the settlement has been completed so that other considerations have become more important.

5.2.4 Support for Farmer Organization Development

In Mahaweli Systems H, C, and B, the funding for scheme construction and settlement came largely from external sources. In addition, there have been a large number of special bilaterally and multilaterally funded programs to provide various kinds of assistance. Overall, a great deal of resources have been made available to all of the Mahaweli schemes, unlike the INMAS and MANIS schemes. In Systems H and C, however, these resources have not, for the most part, been specifically dedicated to farmer organization development. In System B, one project, the USAID funded Mahaweli Agricultural Research and Development Project, has focussed on farmer organizations since 1988. Earlier, the Nation Builders' Association also devoted special efforts to creating FOs in a portion of System B.

Uda Walawe is a different case because it was built and settled in the 1960's and 1970's under a separate project, mostly funded by the Asian Development Bank. Since 1986, an Asian Development Bank funded rehabilitation project has been in progress in four blocks of the Right Bank area but this has not provided resources for the support of farmer organizations. In addition, IIMI has been working with farmer organizations in Uda Walawe since 1991 under an action research project.

Mahaweli schemes, on the whole, have had access to much more funds and resources than non-Mahaweli schemes have had. The relative lack of progress with FOs and JMCs in Mahaweli schemes is not due to lack of resources but rather to a conscious decision not to focus much attention on FOs and JMCs. Prior to adoption of the participatory management policy, support for Turnout Groups was to be provided basically by the Unit Managers alone. After adoption of the policy, MEA had to consider how to create DCOs or equivalent organizations. This was made a function of the Unit Managers but without reducing their other tasks. Hence they could not devote much time or effort to working with the FOs. FO development has accordingly been quite uneven.

Until 1992, Institutional Organizers have been used in Mahaweli schemes only where a specific project called for them; notably the Nation Builders' Association experiments in portions of System B and Uda Walawe, the USAID funded MARD Project in System B, and IIMI's action research in one small portion of Uda Walawe. The Nation Builders' Association effort had only moderate success. As pointed out earlier, in System B where special attention has been given to developing FOs as business entities there has been some notable successes. In the Moraketiya area of Uda Walawe, the IIMI work has resulted in some effective FOs.

In recognition of the need for IOs, MEA has recently recruited and trained Institutional Organizer Volunteers in all of the schemes. These IOs are supervised by an Assistant Manager

(Institutional Development) in each scheme who is assisted by Institutional Development Officers. All of these officers have been transferred from other jobs. The new IOs have not yet had time to make much of an impression.

5.3 Progress of Turnover

5.3.1 Operations Undertaken by Farmer Organizations

Even though the FOs are operational at all levels in the Mahaweli, responsibility for the operations remains largely with the MEA. In all four schemes, virtually all gates are operated by MEA Irrigators. It is reported that a few FRs in System H have been entrusted with gate keys. Farmer involvement, together with the MEA, has been reported in all four schemes in the preparation of water rotation schedules.

Turnout leaders have been told that they would eventually have control over tertiary channels. In some FOs interest is greater than in others. In System C, the FRs take some interest in water distribution. In some FOs, the FRs feel they can manage without the Irrigator who is usually an outsider. They prefer to hire someone they trust. In other FOs, farmers prefer outsiders as they do not trust their own members.

5.3.2 Maintenance Undertaken by Farmer Organizations

In all schemes, field channels are maintained by the FOs. Maintenance activities performed by the FOs include channel cleaning, desilting and minor repairs. Farmer interest varies from organization to organization; often field channel clearing is done only when there are impediments to cultivation.

Maintenance of the distributary channels is done on a contract basis by FOs or, in System H, sometimes by private contractors (including other FOs). Use of private contractors is more common for concrete works. The MEA assists with equipment, tractors and technical help where necessary. In many cases, these contracts are used to raise funds for the FO by performing the work through shramadana.

Contracts for maintenance have certainly boosted FO development in Mahaweli schemes. But there is a tendency for farmers to wait for contracts and not do work on their own channels which they might have done in the past. This is because they were now aware that there is an allocation for maintenance although this is not being given directly to the FOs.

5.3.3 Official Recognition of Turnover

There has been no turnover of O&M responsibilities in any of the sample Mahaweli schemes; no formal agreement has been signed nor has turnover been done informally. In large part, the lack of turnover is due to the relatively recent development of FOs and JMCs (other than Turnout Groups). It appears that few FOs are currently capable of managing O&M on their own. Also, there has been little attempt to inform farmers of the necessity for turnover.

A program of training officials, FRs and farmers in preparation of turnover has begun, but no procedure for turnover has been formulated. It is not clear to farmers that the MEA officers are committed to turnover. However, many farmers have come to realize that there is a turnover program. In Uda Walawe, some farmers have expressed opposition because they see turnover as simply an attempt by the government to shove O&M costs on to the farmers. Awareness and interest currently varies a great deal but is growing in all of the schemes.

5.4 Impact of Participatory Management on Operations and Maintenance

In all four schemes, MEA officers, farmer representatives and farmers all say that water management has improved after the formation of FOs. However, because of the large size of the schemes, there is likely a great deal of variation not reported here.

5.5 Monitoring and Evaluation of Participatory Management in Mahaweli

As explained above, although nominally committed to participatory management since adoption of the policy, the MEA has not, until recently, had effective programs. Therefore, although Mahaweli has various monitoring and evaluation mechanisms, including the Planning and Monitoring Unit, little attention has been paid to FOs. Except where reports are produced by special projects, such as MARD, there has been very poor information about the progress and impact of FOs.

One of the interesting points is that some of the best information came from the FO competition held in each of the last three years as part of Mahaweli Week. For this competition, the achievements of some of the strongest FOs were observed and publicized. However, because only the best FOs are looked at, this publicity provided a false picture of the progress of FOs in the Mahaweli schemes.

However, since the adoption of the INMAS model in 1992, the Planning and Monitoring Unit has developed some simple indicators for measuring progress of FOs and is now publishing reports on this subject.

Section 6

CONCLUSIONS

6.1 Overall Assessment

Table 5 summarizes the main findings of this report. The discussion below looks at some of the causes and consequences of these findings.

6.1.1 Farmer Organizations and Joint Management Committees

The formation of farmer organizations and joint management committees is necessary to achieve the expected results of participatory management. As shown, there are considerable differences among the three programs with regard to progress in creating farmer organizations. FCGs and DCOs (or unit organizations) exist in all of the INMAS schemes and Mahaweli schemes while FOs are some sort exist in about 63% of the MANIS sample schemes. JMCs exist in all of the INMAS schemes; JMCs exist in only 60% of the sample MANIS schemes; and, at the time of the Reconnaissance, JMCs were just being instituted for the first time in Mahaweli schemes.

The reasons for these differences are quite straightforward:

- The good progress of INMAS in forming farmer organizations and joint management in committees is explained by the fact that the INMAS program was begun in 1984 and it has had some special inputs, particularly Project Managers dedicated to making the program work, since its beginning.

- Although the MANIS Program was inaugurated in 1986, serious work in the schemes began somewhat later. Reconnaissance findings indicate that work in 69% of the sample MANIS schemes to form farmer organizations and joint management committees began in 1989 or after whereas work in 76% of the INMAS schemes began before 1989. Also, in most cases, the sole input was training for Technical Assistants as Project Managers; they were not relieved of their other duties nor given full time help dedicated to forming farmer organizations.

- The Mahaweli Economic Agency originally had a policy of forming only Turnout Groups (FCGs) although there were some experiments with other types of farmer organizations. Following adoption of the participatory management policy at the end of 1988, MEA began developing FOs, either DCOs or unit organizations, but still did not adopt JMCs. The good progress with FCGs in Mahaweli schemes is explained by the long history; the relatively good progress with DCOs or unit organizations is explained by the resources available to MEA. However, only with the adoption of the INMAS model in October 1992 did MEA begin

forming JMCs, hence the slower progress of JMCs in Mahaweli schemes is explained by the recentness of the decision to form JMCs.

Table 5: Summary of Main Findings

Farmer Organizations/Joint Management Committees

	FCGs	DCOs	JMCs
INMAS	All formed in 71% of schemes	All formed in 88% of schemes	PMCs formed in all schemes SPCs formed in 21% of schemes
MANIS	FCGs reported in 19% of schemes	FOs reported in 63% of schemes	PMCs formed in 60% of schemes
Mahaweli	FCGs (Turnout Groups) formed in all schemes	DCOs or Unit Organizations formed in all schemes	JMC structures recently formed in all schemes

Turnover

	Operations	Maintenance	Recognition
INMAS	FC gates operated by FOs in 91% of schemes	DCs cleaned by FOs in 83% of schemes. Govt funds given to FOs in 46% of schemes	Turnover has officially, occurred in 38% of schemes
MANIS	FC gates operated by FRs/VVs in 53% of schemes	DCs cleaned jointly by ID and FOs in 59% of schemes; in one scheme (3%) it is carried out by FO alone. Govt funds given to FOs in 18% of schemes	No official turnover has occurred
Mahaweli	All gates operated by agency	Many DCs cleaned by FOs under contract in all schemes	No official turnover has occurred

However, the Reconnaissance information provides an incomplete picture of the characteristics of the FOs and JMCs in the various programs, in part because there is no information on

intrascheme variation. It appears that FOs and JMCs within MANIS schemes are more variable than within the other two programs. For example, there are both tract and hydrological bases for FOs in MANIS schemes; and leaders vary among traditional Vel Vidanes, FRs selected by farmers, and FRs nominated by officers. In both of these traits the other programs are more uniform. This would, of course, be expected because of the larger number of schemes, many of which differ in important physical and social ways, and because of the shorter history of working with FOs in MANIS schemes. The differences among Mahaweli schemes, on the other hand, such as the development of DCOs in System H and Uda Walawe while unit organizations were developed in Systems C and B, are more the result of deliberate decisions by scheme managers.

There is considerable variation in the activities undertaken by FOs. FOs in INMAS schemes appear to have the widest set of activities although FOs in some Mahaweli schemes have well established non-irrigation activities. Although legal recognition for FOs is now available through the Amendment to the Agrarian Services Act, some farmers still complain that they lack legal powers for managing irrigation, including the legal right to punish those who take water without permission, etc. These powers can come only through amendment of the Irrigation Ordinance.

6.1.2 Turnover

The evidence from the Reconnaissance indicates that turnover has not yet progressed very far except in INMAS schemes. Even in INMAS schemes much of the operational and maintenance responsibility has been handed over and turnover has been much discussed, yet most FOs are at least partially dependent upon government funding for distributary channel maintenance. Mahaweli schemes have not turned over any aspect of operations and only part of maintenance. Little turnover has occurred in MANIS schemes except where farmers have traditionally been operating and maintaining parts of the systems before participatory management.

As pointed out above, in a relatively large number of schemes, the farmers professed ignorance of the concept; this was the case in 21% of INMAS schemes, 31% of MANIS schemes, and half of the Mahaweli schemes. The profession of ignorance may in fact be a strategic answer intended to avoid discussion. On the other hand, it may be real and indicate that this aspect of the participatory management policy has not yet been discussed with farmers.

From various conversations with farmers and scheme managers, reluctance in some quarters to turning O&M responsibilities over farmers can be discerned. On the farmers' side it seems to arise more from the perception that turnover is the government's way of making the farmers pay more. Others have said that their systems should be rehabilitated before they take full responsibility; that is, the government should turn over only well functioning systems. Opposed scheme managers, on the other hand, feel that farmers as yet lack the organizational and technical capabilities to handle O&M responsibilities. Some farmers too are concerned about lack of technical knowledge.

In addition, except in INMAS schemes, there has been relatively little thought and planning given to turnover. Only the INMAS program has developed a procedure for turnover but it is not being consciously implemented in most of the schemes. Training of agency staff and farmers for turnover has been given in only 50% of the Mahaweli sample schemes and in 29% of the INMAS schemes; virtually none has been given in MANIS schemes.

6.1.3 Mobilization of Resources for Operations and Maintenance

A major concern is whether FOs can mobilize the resources needed to undertake O&M responsibilities. Most FOs are now involved in mobilizing and managing funds, but the most important source of funds for many of the FOs are rehabilitation and maintenance contracts. That is, their funds are coming to a large degree from government funds. To date, therefore, there is no evidence that the FOs can mobilize the necessary resources.

There has been emphasis given to developing the business and financial capabilities of FOs in some of the schemes, in part to ensure the financial viability of participatory management. In 52 percent of the INMAS schemes and 75 percent of the Mahaweli schemes, non-irrigation business has become important. This mostly relates to trade in agricultural products such as paddy, chilies, etc, agrochemicals and other items. In Systems B and C of the Mahaweli, it is this non-irrigation business that has provided the impetus for farmer organizations. In the two systems water supply is generally ensured so business is more important than water management.

6.1.4 Impacts of Participatory Management

The Reconnaissance evidence shows that there has been major progress in forming FOs and JMCs, but the Reconnaissance gives little evidence of impacts of participatory management. The opinions reported in sections 3.4, 4.4, and 5.4 would seem to indicate that participatory management has improved water distribution. No data was collected on other aspects of impact, although since government maintenance funds are still being distributed to FOs even after unofficial turnover, it can be inferred that government costs have declined very little or not at all.

Even the opinion data quoted above is not to be trusted; those opinions could easily have been slanted to please the IIMI/ARTI teams. More importantly, because of the data collection methods, there is no evidence of differences of opinions within the schemes. Also, of course, because the Reconnaissance was a rapid assessment, there is little hard data on impacts to confirm or disconfirm the opinions.

6.2 External Support for Participatory Management

As pointed out earlier, there is a need for the use of catalyst agents and other resources to help create and strengthen FOs and JMCs to prepare them for turnover. In MANIS schemes, the Irrigation Department has not provided funding from its own allocations for such support; in INMAS, the IMD funded Project Managers and Institutional Development Officers from its own resources; until recently, the MEA has largely depended upon its Unit Managers and other personnel for support for FOs but is now funding Assistant Managers (Institutional Development), Institutional Development Officers, and IOs from its own funds.

In addition, however, some schemes have benefitted from resources from externally funded projects. A summary of the support for the sample schemes from external projects is given in Table 6. As can be seen from the titles, most of these have been rehabilitation and modernization (R&M) projects.

R&M projects have potential usefulness beyond simply funding IOs. First, such a project will repair a badly dilapidated scheme and thus prepare it for turnover to FOs. Second, farmer participation in the rehabilitation is potentially a useful way of strengthening FOs by improving their technical, managerial and financial capabilities. For this reason, some persons insist that participatory management must be coupled with R&M. The Irrigation Department is currently relying upon NIRP to help the MANIS Program and in fact classifies MANIS schemes on the basis of whether they are functioning as expected, whether they are included as part of the NIRP or other project, and whether there is still a need for support from an R&M project. MEA is counting in part on support from the planned R&M of portions of Systems H, C, and G through the Mahaweli Consolidation Project. In addition to the projects shown in Table 6, NGOs such as Nation Builders Association have been involved in creating farmer organizations in some of the schemes.

It should be noted, however, that R&M projects do not guarantee the success of FO development since that success is likely to depend a great deal on the process by which FO strengthening proceeds.

6.3 Monitoring & Evaluation of Participatory Management

Of the three programs, only INMAS was reported by the Reconnaissance to be collecting regular data on progress of the FOs, JMCs, and turnover. This is not unexpected since INMAS is basic responsibility of the Irrigation Management Division whereas promoting participatory management is only one responsibility of the Irrigation Department and MEA. Since the Reconnaissance, however, the Mahaweli Planning and Monitoring Unit has introduced a system to keep track of the progress of participatory management in Mahaweli schemes.

Table 6 Donor Funded Projects in the Sample Schemes

Donor Funded Project	INMAS	MANIS	Mahaweli
1. Irrigation Systems Management Project (USAID)	5		
2. Major Irrigation Rehabilitation Project (World Bank)	7		
3. National Irrigation Rehabilitation Project (World Bank)	1	9	
4. Muthukandiya Improvement (Australian AID)	2		
5. Kirindi Oya Irrigation and Settlement Project (ADB)			
6. Minipe Rehabilitation (Japan AID)	1		
7. Integrated Rural Development Projects (various donors)		4	
8. Northwestern Province Water Resources Development Project (ADB)	1	1	
9. Northwestern Province Rehabilitation Project (EC)		3	
10. Mahaweli Agriculture Research and Development Project (USAID)			1
11. Walawe Irrigation Improvement Project and Irrigation Management and Crop Diversification Project (both ADB)			1
12. Mahaweli Consolidation Project (World Bank and EC)			2
13. None	7	15	
Totals	24	32	4

In addition, there have been attempts under both the INMAS and MANIS programs to get Farmer Representatives to collect flow information in order to monitor water deliveries. In general, this has not been a successful program. Monitoring of flow data appears to be more efficiently carried out in the Mahaweli schemes; particularly in System H. There is a flow monitoring unit and the FRs collect data and get feedback. Line agencies also get feedback.

To date, there has not been a great deal of interest in either monitoring the farmer organizations or involving farmers systematically in monitoring irrigation scheme performance except under specific projects. Monitoring the progress and impacts of participatory management are important, however, for evaluation of the policy. Involving farmers and farmer organization in scheme performance monitoring offers the possibility of strengthening participatory management. Such involvement would also provide information on impacts that would be very useful.

One of the main goals of the technical assistance on Monitoring and Evaluation of the Participatory Irrigation System Management Policy is to help devise indicators and means of monitoring participatory management.

6.4 Major Unanswered Questions

The Reconnaissance has provided some suggestive data on the progress of participatory management. This data has been very useful in designing the detailed studies to follow. However, because of the limitations of the methodology, these findings must be confirmed by better quality data.

In addition, there remain several major outstanding questions, including:

1. Impacts on O&M How well will the farmer organizations be able to manage operations and maintenance? Will their management improve or worsen water distribution?

2. Impacts on Crop Production and Farm Income Will participatory management make irrigated agriculture more productive by raising yields or cropping intensity or by letting farmers grow more profitable crops? In turn, will improved crop production mean improved income from irrigated agriculture?

3. Impacts on Government Finances Will turnover mean that the government irrigation agencies will be able to reduce personnel or expenditures on O&M? If so, how much?

4. Ability of Farmers to Mobilize Resources for O&M Can the farmers pay the costs of O&M, particularly in the light of current prices for paddy and other crops? This question is tied to the question of impacts on O&M and on government finances because, if the farmers cannot mobilize the needed resources, the schemes will deteriorate, leading to a need for rehabilitation earlier than expected.

5. Impact of External Resources on the Success of Participatory Management Are rehabilitation projects and IOs necessary to achieve participatory management? How can the resources provided by externally funded projects be best used to support participatory management?

6. Participatory Management and Physical and Social Characteristics of Schemes How do the physical and social characteristics affect the progress and impacts of participatory management programs? How should the programs be adapted to different conditions?

These and other questions are being taken up in the further studies of the project.

Annex A

Reconnaissance Survey Data Collection Guidelines

The Reconnaissance Survey will focus on four main areas:

1. FO development program
2. Turnover program
3. Information needs and M&E systems
4. System information

A. FO Development

1. Date of commencement
2. Who organized the FO?
   a) External agent
   b) Farmers themselves
   c) Agency itself
3. The basis for the organization
   a) Hydrological units
   b) Hamlet levels
   c) Administrative units
4. Registration : Yes/No If yes, when? with whom?
   If not registered, why not?
5. Level of expansion
   a) Subproject management committee
   b) Project Management Committee
   c) Federation (system level)
   d) Any other committees formed for special tasks (ie. marketing, credit)
6. FO performance
   a) Water distribution - equity, timeliness etc
   b) Conflict resolution
   c) Maintenance
      1) Contracts undertaken (number, nature, amount, etc)?
      2) Whether DCO has awarded sub-contracts?
      3) Shramadanas (number, progress in terms of money, etc)?
   d) DCO funds?
   e) Nón-irrigation activities (type of activity, benefits, etc)?

B. Turnover Program

1. Whether turnover has taken place? - Joint or self managed?
2. Who turned over, ID, IMD, MEA?
3. Whether turnover is legal or official?
4. Whether FO has willingly taken over?
5. Financial and technical capability of FO at the time of taking over?
6. Whether the FO had any conditions for the take over?
7. The farmers' perception on turnover?
8. Involvement of agency in operations before and after turnover?
9. Maintenance before and after turnover
   a) Canal clearing (frequency)
   b) Desilting (frequency)
10. How did the agency prepare for turnover? Preparedness of agency officials for turnover?
11. Problems after turnover?

C. Information Needs and M&E Systems

1. What M&E systems exist?
2. Who is responsible - agency officials? others? which agency(s)?
3. If there is a participatory M&E system, what information is given at FCG, DCO, PMC levels?

D. System Information

1. Reservoir capacity
2. Command area
3. Cropping pattern, extent of cultivation
4. No. of DCOs
5. No. of distributary channels turned over
6. DCO funds
7. Maintenance program
8. Physical conditions
   a) Rehabilitation
   b) Canal capability of carrying water to the tail ends
   c) Condition of the structures
   d) Agency personnel views
   e) Farmer views

Annex B

Field Visits to INMAS, MANIS and Mahaweli Schemes

Dates Visited	District	Scheme	Program	Team
7-12-92	Polonnaruwa	* Parakrama Samudra * Minneriya * Giritale * Kaudulla	INMAS	ARTI
10-2-92	Kurunegala	* Mee Oya	INMAS	ARTI
12-2-92	Kurunegala	* Usgala Siyambalagamuwa	INMAS	IIMI
9-11-92 10-11-92	Anuradhapura	* Huruluwewa * Nachchaduwa	INMAS	IIMI
7-12-92 to 11-12-92	Anuradhapura	* Nuwara Wewa * Rajangana * Basawakkulam * Halpanuela * Tissawewa	INMAS	IIMI
23-12-92 24-12-92	Puttalam	* Tabbowa * Inginimitiya	INMAS	IIMI
19-12-93	Moneragala	* Muthukandiya	INMAS	IIMI
11-2-93 12-2-93 13-2-93	Hambantota	* Kirindi Oya * Ridiyagama * Muruthawela	INMAS	IIMI
18-2-93 22-2-93	Kandy	* Minipe * Nagadeepa	INMAS	ARTI
12-12-92	Polonnaruwa	* Erige Ela	MANIS	ARTI
17-12-92 to 19-12-92	Kurunegala	* Wennoruwa * Mediyawa * Mahananneriya	MANIS	ARTI
4-1-93 to 7-1-93	Kurunegala	* Mahagalgamuwa * Hulugalwewa * Kimbulwana Oya	MANIS	ARTI

Dates Visited	District	Scheme	Program	Team
29-1-93 to 2-2-93	Kandy	* Gampola Raja Ela * Murapola * Ma Ela * Radagalpotha	MANIS	ARTI
11-3-93 to 15-3-93	Badulla	* Komarika Ela * Taldena * Ambewela * Kande Ela	MANIS	ARTI
19-1-93 to 24-1-93	Moneragala	* Handapangala * Sudupanagala * Buttala * Udaganawa * Dehiattawela * Badulla Oya * Kumbukkan Oya	MANIS	IIMI
8-12-92	Anuradhapura	* Manankattiya	MANIS	IIMI
20-2-93 to 23-2-93	Puttalam	* Siyambalankotuwa * Kottukachchiya * Maha Kumbukkadawala * Pahariya	MANIS	IIMI
19-1-93 to 24-1-93	Hambantota	* Meegahajundua * Mahabamma Amuna * Old Walawe Right Bank	MANIS	IIMI
26-2-93 to 28-2-93	Polonnaruwa	* System B	Mahaweli	ARTI
10-3-93	Badulla	* System C	Mahaweli	ARTI
2-12-92 and 7-12-92	Anuradhapura	* System H	Mahaweli	IIMI
14-12-92	Hambantota	* Uda Walawe	Mahaweli	IIMI