PROJECT ASSISTANCE CLOSE-OUT REPORT

OF

IRRIGATION SYSTEMS MANAGEMENT PROJECT

SRI LANKA

PROJECT NO. 383-0080

BEST AVAILABLE

by

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT

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IRRIGATION SYSTEMS MANAGEMENT PROJECT

CLOSEOUT REPORT

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BASIC PROJECT INFORMATION

Project Agreement Signed and Funds Obligated	:	25 August, 1986
Original LOP Funding	:	Loan; $11,700,000 Grant; $6,900,000 B/G; $9,700,000
Final LOP Funding	:	Loan; $11,251,290 Grant; $6,679,352 B/G; $9,516,732
Original PACD	:	30 June, 1992
Final PACD	:	31 December, 1992
Implementing Institution	:	The Irrigation Management Division, Ministry of Lands, Irrigation and Mahaweli Development
Collaborating Institutions	:	The Irrigation Department Ministry of Agriculture Ministry of Public Administration International Irrigation Mgt. Inst.
Contractor (Prime)	:	M/s. Sheladia Associates, Inc. June, 1987 - June, 1992
Contractor (sub)	:	Colorado State University Utah State University Louis Berger International
Evaluations	:	USAID Internal Assessment, December, 1988 Mid-term Evaluation (ISPAN), March, 1990
Audits	:	Host Country Contribution Audit Construction Audit

LIST OF ACRONYMS

DC	Distributory Canal
DCFO	Distributory Canal Farmer Organization
DOA	Department of Agriculture
FAR	Fixed Amount Reimbursement
FC	Field Canal
FCG	Field Canal Group
FM	Financial Management
FO	Farmer Organization
GSL	Government of Sri Lanka
HCC	Host Country Contribution
ID	Irrigation Department
IIMI	International Irrigation Management Institute
IMD	Irrigation Management Division
IMPSA	Irrigation Management Policy Support Activity
INMAS	Integrated Management of Major Agricultural Settlements
IO	Institutional Organizer
ISMP	Irrigation Systems Management Project
ISPAN	Irrigation Support Project for Asia and the Near East
LOP	Life of Project
MEF	Monitoring, Evaluation and Feedback
MFIMD	Ministry of Forestry, Irrigation and Mahaweli Development
MLIMD	Ministry of Lands, Irrigation and Mahaweli Development
O&M	Operation and Maintenance
OFC	Other Field Crops
PACD	Project Assistance Completion Date
PBD	Performance Based Disbursement
RAC	Research Advisory Committee
SAI	Sheladia Associates Incorporated
SLFO	System Level Farmer Organization
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

The Project Agreement for the Irrigation Systems Management Project (ISMP) was signed on August 25, 1986. The original Project Assistance Completion Date (PACD) was June 30, 1992. The original total project cost was $28.3 million, of which $9.7 million was the Host Country Contribution (HCC) in cash and in kind. USAID's contribution was $18.6 million ($6.9 in grant funds and $11.7 in loan funds).

ISMP was conceived to implement the second phase of a water management program begun in 1979 under the USAID financed Water Management Project. ISMP's goal was to increase agricultural productivity, expand rural employment opportunities, and raise net farm-family income on existing irrigated land in Sri Lanka. The purpose of ISMP is twofold: (a) to develop GSL (Government of Sri Lanka) institutional capacities at national, district (range), and system levels to operate and maintain major irrigation systems on a "sustained renewal" basis, i.e., without recourse to periodic major rehabilitation; and (b) to test and demonstrate the effectiveness (cost vs. benefits) of different combinations of management and structural improvements carried out in selected irrigation systems.

ISMP was designed to accomplish these purposes in seven irrigation schemes using six separate but highly interrelated elements: (a) farmer organization development; (b) operations and maintenance improvement; (c) financial management improvement; (d) monitoring, evaluation, and feedback; (e) training capacity enhancement; and (f) research. Project inputs consisted of (1) Technical Assistance; (2) Training; (3) Commodities; (4) Research; (5) Recurrent Costs; (6) System Upgrading / Rehabilitation; (7) Facilities Construction; and (8) Evaluation.

The Ministry of Lands, Irrigation and Mahaweli Development (MLIMD) was responsible for overall project implementation, with the day-to-day implementation resting within the Irrigation Management Division (IMD) and the Irrigation Department (ID). Technical Assistance for project implementation was provided by Sheladia Associates, Inc. (SAI), an 8a consulting firm. SAI technical assistance staff have been in Sri Lanka since August 1987. The International Irrigation Management Institute (IIMI) in Sri Lanka manages the ISMP research component through a Cooperative Agreement (CA) with USAID.

After about two years of project implementation, the IMD and USAID decided to use training funds to conduct a series of Project Review Workshops to improve communications, understanding and participation of all parties involved in project implementation. These workshops were designed and facilitated by the Training Resources Group (TRG) under the Irrigation Support Project for Asia and the Near East (ISPAN). The workshops were recognized as having been very effective, and one of the key elements to project success. The first review workshop was conducted in April 6-10, 1989 and the second in March 21-24, 1990. The second review workshop was combined with a Midterm Evaluation. The primary recomendation of the midterm evaluation was to extend the project by two years. This recomendation was made because the system rehabilitation construction program was behind schedule due to civil unrest and an overambitious plan.

After much deliberation, a revised project approach was accepted instead of a two year project extension. This revised approach introduced a performance based disbursement element into the project to leverage the needed reforms in major institutional and policy changes. $7.0 million in Loan funds was disbursed in three tranches under this Performance Based Disbursement (PBD). Subsequently, the PACD of the project was extended from June 30, 1992 to September 30, 1992 in order to accomodate workshops to institutionalize lessons learned from research studies done under the project. Finally, the PACD was extended again to December 31, 1992 in order to provide time to resolve minor shortcomings in fulfilling all of the requirements under the third and final tranche PBD. Among the major accomplishments under the Project were (a) transforming the I.D from functioning purely as a construction agency to one which works with/through Farmer Organizations (FOs); (b) enhancing the legal status and powers of registered FOs; (c) turning over the tertiary irrigation systems to DCFOs for joint operations and maintenance. Annex 13 gives details of project accomplishments by project elements.

It has been recognized that the project assisted Farmer Organizations (FOs) need to get into more income generating activities to remain financially viable and sustainable beyond the USAID PACD. Many FOs have started such activities as fertilizer sales, marketting paddy, and assuming mortgages with great success. It is anticipated that the System Level Farmer Organizations (SLFOs) could expand and improve their activities with some outside assistance and enter into income generating activities such as rice processing, storage and marketting, and wholesaling of inputs etc. It is expected that USAID's new Agro Enterprises Project may assist the more commercially oriented organizations to develop such activities.

PROJECT DESCRIPTION

Goal: To increase agricultural productivity, expand rural employment opportunities, and raise net farm family income on existing irrigated land.

Purpose: To develop institutional capacities at national, district and system levels to operate and maintain major irrigation systems on a "sustained renewal" basis, and to test and demonstrate the effectiveness of different combinations of management and structural improvements carried out in selected irrigation systems.

Project Components: The project has six key components; (a) farmer organization development; (b) operations and maintenance improvement; (c) financial management improvement; (d) monitoring evaluation and feedback; (e) training capacity enhancement; and (f) research. The project targeted seven existing major irrigation systems in three districts, serving a net area of about 70,000 hectares. The systems are Gal Oya (right bank) in Ampara District, Parakrama Samudra, Giritale, Minneriya and Kaudulla in Polonnaruwa District, and Ridi Bindi Ela in Kurunegala District.

PROJECT BACKGROUND

The Gal Oya Experience: USAID, Sri Lanka first assisted the irrigation sector in the **Gal Oya Water Management Project**, implemented from 1979 to 1985. This project focused on rehabilitation of the left bank of the Gal Oya Irrigation System, but was unique in Sri Lanka in introduction of a multi-disciplinary approach with the following elements:

- farmer organizations (FO) for participatory management
- management skills within the Irrigation Department
- pragmatic rehabilitation for more cost-effective designs
- systems operations for more efficient water delivery

These elements were recognized in Sri Lanka and internationally as new and more effective approaches to cost effective, sustainable increases in irrigation system productivity. Farmer organizations (water user groups) were formed by specially trained **Institutional Organizers (IO)** who spent several years in the field as catalysts, organizing,training and motivating the farmer groups to work closely with Irrigation Department for improved communication and joint management of the system for the collective good of all users

The Irrigation Management Division (IMD) was created as a parallel agency to Irrigation Department to introduce a more interdisciplinary and management oriented approach to irrigation. IMD's mandate was to implement the new **Integrated Management of Major Irrigation Schemes (INMAS)** concept in Sri Lanka, using **IO's** to organize farmers, and **Project Managers** to coordinate inputs and marketing between the line agencies and Irrigation Department. **Pragmatic Rehabilitation** was a new rehabilitation design concept introduced at Gal Oya to move away from the standard practice of rebuilding to original designs and specifications towards an approach of looking for more technically and economically sound ways of providing the control necessary to deliver required water throughout the irrigation system. **Improved systems operations** included introduction of Water measurement at key locations in the system, and development of a computer model for determining deliveries and monitoring performance.

All elements of the project were considered successful. Perhaps the most impressive indicator was that after the project, water use per unit of area irrigated or per unit of production was reduced to almost half the pre-project figure. The acreage authorized for cultivation in the Gal Oya L.B system increased from the pre-project figure of about 20,000 acres to a post-project figure of about 40,000 acres. This was achieved with far less than the normal cost for rehabilitation of infrastructure, but large inputs for institutional development and training. It was recognized at the end of the project that the processes for these new approaches were still in their infancy,and more assistance was needed for refinement and replication. The **Irrigation Systems Management Project (ISMP)** was identified and designed as a follow-on project for this purpose.

<u>ISMP Project Design:</u> The project design report was done by the Consortium for International Development under the centrally funded Water Management Synthesis Project (WMS Report 33), completed in December, 1984. The design team was lead by Gaylord Skogerboe of Utah State University (irrigation engineering) with Jeffrey Brewer (social scientist), Alan Early (water management specialist), Bruce Brown (financial analyst) and Richard McConnen (ag. economist). Many team members had experience in Sri Lanka and Gal Oya. The Project Paper and Authorization were signed in August, 1986.

<u>Diagnostic Analysis:</u> In order to provide baseline information for effective implementation, monitoring and evaluation of ISMP, USAID provided funds under the Gal Oya Water Management Project to the Consortium for International Development through the Water Management Synthesis Project to undertake a series of diagnostic analyses of the proposed target systems in the Polonnaruwa district. These interdisciplinary studies were carried out in 1985/86 and resulted in seven reports (WSM Reports 57-61, 69&77).

IMPLEMENTATION OVERVIEW

Technical Assistance: A $4.8m contract was signed with Sheladia Associates in June, 1987 to provide technical assistance for project implementation. The contract was a non-competitive 8a AID-direct contract. Past contracts for AID projects with the implementing agency had been competitive and host country, with the implementing agency taking an active role in selection and contract management. This change was not welcomed by the implementing agency, and resulted in initial lack of support and some delay in getting up to speed.

The TA team started with a Team Building Workshop in Maryland before mobilizing to Sri Lanka. The workshop included all expatriate members and home office support staff, and the newly assigned USAID project officer. The team was mobilized and arrived in Sri Lanka in August, 1987. The project design and contract called for a heavy load of expatriate technical assistance during the first two years, with greatly reduced levels and terminated inputs following in later years. The original expatriate staffing and proposed levels of effort are shown below:

Long Term Expatriate TA Staffing

From Initial Design/Contract

Position	Incumbent	Level of Effort
Chief of Party	Louis Haley	5 years
Irrigation Engineer	Charles Leonhardt	3 years
Farmer Organizer	John Wilkins-Wells	2 years
Ag Economist	Seth Schiek	1.5 years
Training Specialist	Herbert Roberts	1.25 years

This initial expatriate term was augmented with Sri Lankan professional and administrative personnel, and was modified throughout the contract period to meet changing needs as experience was gained. The primary changes involved using more Sri Lankan professional and less short-term expatriate professionals than originally anticipated to increase the level of effort for the farmer organizers and add an agronomist. The actual staffing for the contract period is shown in **Annex 1.**

Host Country Organization/Staffing: The sponsoring agency for ISMP was the **Irrigation Management Division (IMD)** of the **Ministry of Lands, Irrigation and Mahaweli Development (MLIMD).** IMD assigned a Deputy Director full time as project manager. The following IMD staff from the central office were assigned to work part time on ISMP: Deputy Director/O&M, DD/Farmer Organization & Training, DD/Monitoring & Evaluation. In the field, each project irrigation system had a Project Manager devoted full time to the system and project. Each Project Manager had a contingent of **Institutional Organizers (IO)** under his direction to implement the farmer organization component. The IO's were not permanent IMD staff, but recruited, trained and contracted on an annual basis.

Irrigation Department (ID) also played a primary role in implementation, and worked hand in hand, on a daily basis, with IMD and the TA team at both the central and field level. The three Deputy Directors of Irrigation assigned to the Districts with project sites,and their system level Irrigation Engineers, had the ISM project as their first priority of duty. The Irrigation Engineers assigned to each of the six project systems had a full contingent of Technical Assistants and Work Supervisors to implement work in the field. Designs and estimates were done by ID engineers both in the field and central office. Procurement of project commodities was done by the ID central office with assistance from USAID and the Consultant.

Department of Agriculture (DOA) played a key role in implementation in the following areas:

- Training Institutional Organizers
- Agricultural Extension and Marketing
- Initial Enumerators for ME&F
- Supply of Agricultural Inputs

These inputs were coordinated at the National level by the Director of IMD, and at the system level by the Project Managers.

The Sri Lanka Field Operations Office of the **International Irrigation Management Institute (IIMI)** undertook the research component under a project cooperative agreement. This activity was guided and monitored by a committee chaired by the Director, IMD, with members from IMD, ID, USAID and the TA team.

USAID Assessment: After a year of active implementation, ISMP had not progressed as expected. It appeared there were problems within the technical assistance team, and collaboration with and within the sponsoring agency. The USAID mission decided to undertake an assessment of the project with mission resources. The assessment team was lead by the USAID Deputy Director, with the ISM project officer, and project officers from the Office of Agriculture and Office of Projects as members.

The assessment included conclusions and recommendations to orient the TA team and project focus, and resulted in a countersigned Project Implementation Letter clarifying and shifting project focus, and a formal letter to the consultant to improve their internal and external teamwork. It was recognized shortly after that the Assessment and follow-on actions were a turning point in the project, and things began to operate quite smoothly.

Implementation Workshops: The complexity of the project, and the required collaboration of many departments and ministries, made the start-up phase a difficult task. In order to overcome these difficulties, IMD and USAID decided to use training funds to conduct a series of Project Review Workshops to improve communications, understanding and participation of the extended project team. The first two workshops (April, 1989/90) were designed and facilitated by Training Resources Group under the **Irrigation Support Project for Asia and Near East (ISPAN).** Each workshop resulted in a report including agreed upon actions and responsible parties for the following year of implementation. In [illegible] this activity was merged with the **Annual Work Plan Workshop**, designed and [illegible] by [illegible] with participants from all implementing organizations. [illegible] workshops have been recognized as having been very effective, and one of the [illegible] to implementation [illegible].

The technical assistance [illegible] importance of workshops in the proposal, and started the [illegible] and work plan workshops. The success of the orientation workshops was limited due to poor attendance and commitment from the host government. The Life of Project Work Plan Workshop [illegible] designed and conducted by the project consultant, was very successful in defining task [illegible] bilities and establishing a format for future annual work plans.

Mid-term Evaluation: A formal Midterm Evaluation was conducted by ISPAN in March/April, 1990. The term was lead by Bechir Rassas (ag. economist), with Steve Joyce (training), Mike McGovern (engineer), and Siri Hettige (Sociologist). The evaluation team benefitted by attending the second annual Project Review Workshop to get first hand knowledge of the individuals, organizations, progress and problems of the project. Subsequently, the team spent a week in the field with the consultants, officials and farmers. The draft report was widely circulated and reviewed, and discussed formally with the evaluation team. The final report included 52 recommendations. The project committee (USAID, GSL, and Sheladia Associates) conducted formal meetings to decide required action and responsibility for the recommendations, all of which were not accepted.

BEST AVAILABLE

All the accepted recommendations were implemented and closed by the end of the project. Selected major recommendations are abbreviated and listed below:

- Extend the project two years
- Draft an agreement defining rights and responsibilities of Farmer Organizations upon turnover of irrigation systems
- Conduct a training needs assessment, design of training programs, and in-country training officers
- Review the MI&E program and modify as needed
- Focus IIMI research to achieve the second project purpose

Performance Based Disbursement: The primary recommendation of the midterm evaluation was to extend the project by two years. This recommendation was made because the rehabilitation construction program was behind schedule due to civil unrest and an overambitious plan. Early action was taken within USAID to carefully consider this recommendation before implementation. Two important factors were recognized which had a direct impact on the decision to extend. First, it was recognized that Irrigation Department had developed the capability to design and execute the programatic rehabilitation contracts without further oversight from the consultants beyond the PACD. Second, it was recognized that some major institutional and policy changes had to be in place to assure achieving the project goals and sustainability, and that the project design had no mechanism or leverage to put these changes into effect.

Having understood these factors, the Program Officer came up with the creative idea to introduce a performance based disbursement element into the project to leverage the needed reforms, using savings from procurement, and projected remaining funds from construction at the PACD. The USAID project committee recognized that this new approach could achieve more than could be hoped for with or without the project extension recommended in the evaluation. The Ministry (MLIMD) was presented a proposal for the new approach. They recognized the merits and approved it.

An agreement was drawn up to be countersigned which set up the criteria for disbursement of $7.0 million in three tranches upon meeting specified targets. The targets were based on the following:

- Drafting and approval of a Memorandum of Understanding defining the rights and responsibilities of farmer organizations after turnover of systems
- Signing of forty Memorandums of Understanding by farmer organizations, which include FO's assuming O&M responsibility
- Formation of three system-level farmer organizations
- Formation and staffing of "water management cells" for all Project irrigation systems
- Computerized operation and water measurement/monitoring in two project systems

Details of the plan are given in [illegible] 7. The Memorandums of Understanding created much better communication and agreement between the agents; the FO's, IMD and ID. The memorandums also transferred the operation and maintenance responsibility within the FO boundaries from ID to the FO's, representing about 60% of the total system operating cost. The water management cells consisted of newly created positions and job descriptions to assure human resources to implement improved water management. The improved systems operations included construction and calibration of required water measurement devices, and development, calibration of required water measurement devices, and development, calibration and use of computer models for more efficient water delivery to the farmer organizations. The improvements in irrigation efficiency assure increased productivity at the farm level, which should more than offset the newly assumed farmer contribution to O&M.

<u>PACD Extension:</u> A critical element to project sustainability and replication of lessons learned was to hold national workshops to institutionalize lessons learned from the research papers. The final research activity encompassed knowledge from prior studies as well as projects outside of ISMP. This study was finalized shortly before the original PACD, and it was recognized that not enough time was remaining to design and conduct the required workshops to assimilate and institutionalize these all-important final lessons. Accordingly, the PACD was extended from June 30 to September 30, 1992 to accommodate these workshops. Subsequently, the PACD was extended again to December 31, 1992. This extension became necessary, when it was realized that all requirements prior to the third and final tranche of the Performance-Based Disbursement (PBD) were fulfilled, except for shortcomings in the calibration of several water measurement structures in the Kaudulla scheme in Polonnaruwa. The extension provided time to resolve these shortcomings and thereby fulfill all of the requirements under the third and final tranche performance disbursement.

Planned Post-Project Activities: Several project related activities will continue beyond the USAID PACD. First and foremost, the sponsoring agencies (ID and IMD) will continue the rehabilitation construction program to complete all targeted systems. A three year work plan has been made based on past activities and experience. As part of the performance based disbursement, GSL has covenanted to make funds available in each annual budget to complete this work. IMD is also continuing work with farmer organizations in strengthening and training. Key areas of concern are financial management, maintenance planning and construction, and contracting.

It has been recognized that the project farmer organizations need income generating activities to remain financially viable and sustainable. Many organizations have started such activities as fertilizer sales, marketing paddy, and assuming mortgages with great success. However, it is felt that they could expand and improve these commercial activities with some outside assistance. USAID's new Agro Enterprises Project will be contacting some of the more commercially oriented organizations to explore possibilities for assistance to further develop such activities.

A new component is being designed for the USAID Natural Resources and Environment Policy Project (NAREPP) focusing on participatory management of natural resources, which will include some follow-up activities and studies on ISMP. Specifically, funds will be provided for the International Irrigation Management Institute to do detailed impact and lessons learned studies for the farmer organizations and improved systems operations. Both of these elements were still in the growing stage at the PACD.

PROJECT ELEMENTS

Integrated Approach: Building on the successes and lessons of the Gal Oya Water Management Project, ISMP followed an integrated approach to improved management to assure maximum benefits and sustainability of rehabilitation expenditures. Great progress had been made in these efforts by the start of the project by the formation of the Irrigation Management Division, and by shifting national policy from construction of new systems to improved management of existing ones. However, the work to be done in changing institutional directions and attitudes, and forming farmers into strong, sustainable organizations, remained, and still remains, a monumental task. At the national (institutional) and project irrigation system level, ISMP achieved major progress toward this goal. The key elements in this process are discussed below.

Farmer Organizations: The project objective was to form and strengthen farmer organizations in the seven project irrigation systems for "participation in operating and maintaining the systems under the authority of MLIMD". The strategy for forming and strengthening these organizations was to use trained field **Institutional Organizers (IO's).** Their role was to act as catalysts in forming the organizations and facilitating communications, rather than taking an active lead in the organizations. The membership of the farmer organizations was based on "**hydrologic boundaries**", or irrigated areas served by discrete canal units. The lowest units as field canals, serving about ten farm allotments of one to two hectares each. The respective **Field Canal Groups (FCG)** form the lowest level, but are the most important foundation of the farmer organizations. The **distributary canals** deliver water to ten or so field canals, which make the boundary for the **Distributary Canal Farmer Organization (DCFO).** The DCFO's are formal and registered organizations, with members and representatives from the respective FCG's. Distributary canals are fed by main and branch canals, and federated into the **System Level Farmer Organization (SLFO)** which represents the collective interest of all members for the entire irrigation system. By the end of the project, 2,161 FCG's had been formed, each with an elected representative at the DCFO level. Of the targeted 201 DCFO's, 180 were formed and trained in operation and maintenance and financial management. The shortfall was due to civil unrest in the Eastern Ampara District, precluding work in that area. Of these 180 DCFO's 138 have registered with the Agararian Service Commissioner, empowering them to execute construction contracts, open savings and loan accounts, market inputs and outputs, assume land mortgages, etc. By the original June 30, 1992 PACD, these farmer organizations had undertaken over $1 million in rehabilitation construction contracts, marketed over $600,000 in farm inputs, and generated over $250,000 in operating capital. These commercial activities were beyond the scope and expectations of the original project design, and were achieved largely by initiative and demand from the farmer organizations and assistance from the IMD and consultants. In fact, in the early phases of implementation there was much debate and two camps among the experts regarding whether FO activities should be restricted to irrigation operation and maintenance, or broadened into more commercial interests. Ultimately, it was the initiative of the organizations that decided.

Several years before ISMP started, IMD had initiated a policy and practice of collecting annual water user fees based on the area served to help recover O&M costs. The collection was quite successful the first year, but failed in subsequent years due to: a) no sanctions or ability to collect from "free riders", and b) collected fees going into a central fund with no decision or visibility of use by the farmers. Since cost recovery was essential to the sustainability of ISMP, the project was faced with this problem (fee collection) from the start.

Recognizing the futility of continuing on the strategy of collection of fees by the GOSL from the farmers, the project decided to try an alternative approach of waiving the fees to DCFO organizations which took responsibility for O&M of canals and structures below their headgate. It was also decided to give the DCFO's "first refusal" to execute rehabilitation contracts within their boundaries. It was reasoned that if the FO members had decision over how their money was spent, and it was used on their canals to their direct benefit, then the fees could be generated and used within the organization itself, and GOSL would be relieved of the burden of O&M representing more than half the total for the system. It was further realized that the new organizations would need working capital, which could be generated from the rehabilitation construction contracts. Also, this hands-on involvement by the farmers would give them invaluable experience for future maintenance, as well as a sense of ownership and responsibility. Both these landmark decisions demonstrated the extreme flexibility and good intent on the part of GOSL, as well as the experimental nature the designers had the foresight to include in the project. When these decisions were made and put into implementation, very few involved in the project envisioned the degree of success that would be attained, either in the quality and quantity of construction by the DCFO's, or the financial assets they would generate for sustained maintenance.

By the end of the project there were widely varying opinions among individuals and organizations regarding the level of development and sustainability of the farmer organizations. The TA consultants felt that the organizations were not fully matured and formed, which was quite correct. The mid-term evaluation sociologist was quite optimistic, saying they were "irreversible". However, the sociologist on the final research study of the project stated that "less than ten percent of the organizations were sustainable". Perhaps this indicates that the variability of the individual researchers in soft sciences can be greater than the variables in the subject of study. USAID's view is that the TA consultants tended (to their credit) to look at the development of the organizations as proprietary, and a contractual task to be completed, while their real task was to advise and assist IMD in increasing their capacity to fill a continuing role in developing such organizations. A more important question regarding sustainability of the organizations may be that of the level of institutional development of IMD rather than of the individual farmer organizations. USAID is of the opinion that many of the existing farmer organizations under the project are sustainable and irreversible, and that IMD has the capability and directive to monitor and assist others as needed. USAID and IMD also recognize that the process of farmer organization development is continuous, and changing in time with changing needs. It is also recognized that part of the process is diminishing support as a prerequisite for increased responsibility by the farmer organizations-- avoiding the "dependency syndrome".

It is generally accepted that the FO component was the most important central element of the project, that it was highly successful, and that it was the most successful element of the project. It is recognized that the ISMP farmer organizations have advanced much further than any in the nation, and that they, as well as the processes and lessons in their formation, serve as the model for replication. They are also recognized internationally as being among the success stories in this sector in similar countries in Asia.

Operation and Maintenance: These linked but quite separate activities were treated together in the project design, but will be separated here.

Maintenance, as conceived in the project design, included required rehabilitation and upgrading, routine seasonal maintenance, and future maintenance plans to assure sustainability. Further, the future maintenance plans were to be based on the concept of **"sustained renewal"** so the systems could be operated without periodic major rehabilitation. It is difficult to draw a fine distinction between rehabilitation and maintenance. The general idea is to include routine annual or seasonal activities under maintenance, and longer term, more costly repairs or rebuilding as rehabilitation. The theme of ISMP was to use **"pragmatic rehabilitation"** and **"essential structural improvement"** (two levels of investment lower than traditional full rehabilitation) in conjunction with improved management and institutional inputs to "test and demonstrate the effectiveness (costs vs. benefits) of different combinations of management and structural improvements carried out in selected irrigation systems" and to find "the amount of expenditure needed per acre for physical upgrading of systems and installation of water control and measurement devices".

The following table gives targeted and achieved completion of canal rehabilitation and related structures as at PACD:

Canal Type	LOP Target	LOP Achieved	Percent
Main	90 km.	90 km.	100
Branch	151	90	60
Distributary	561	260	46
Field	1,172	360	31

Rehabilitation construction was done by **fixed amount reimbursement (FAR).** Some unique problems and project solutions to using FAR for irrigation system rehabilitation are discussed in **Annex 2.** Each sub-project was made up of discrete canal lengths, and included the canal and appurtenant structures.

Each sub-project was executed by numerous small private contractors, and in the case of distributory and field canals, contracts with DCFO's. The system rehabilitation construction element did not achieve the planned targets for overall reasons.Civil unrest in all sites during the first two years (and throughout the project at Gal Oya) put the construction far behind schedule. The project design was over ambitious, not accounting for the short construction season when canals are de-watered between two annual crops, and the difficulties of mobilizing numerous contractors and labor in the brief period (about two months per year). Finally, involving the DCFO's in contracting required large efforts of training and sensitization not required in the past with private contractors. It is believed by USAID and IMD that the construction shortfalls will not ultimately harm the success or sustainability of the project because the Irrigation Department is capable and committed to completing all required works as agreed under the performance based disbursement element of the project.

Annual maintenance plans were completed for canals and structures served 60,000 hectares (88%) of the project area. More importantly, the Irrigation Department was trained and left fully capable of completing and replicating these plans in other systems. These maintenance plans (for the main systems as well as the areas turned over to DCFO's) are recognized as one of the most successful and innovative elements of the project. They were developed by walking along each canal, and were tailored to their specific needs (no two are alike). For the field and distributary canals, the plans were developed in a joint effort of engineers and farmers, and are turned over to the respective DCFO's for their future implementation. The plans not only include the physical works to be undertaken, but the required budget for planning and financial management. This rational approach resulted in accurate per hectare costs (unique to each canal and reach), which was one of the project objectives, and also effectively demonstrated that it is the rational process of developing maintenance costs for each area rather than average numbers and economic research that is important. However,at present, budget allocations for maintenance are determined by Treasury at the national level, and, if budgets are not allocated in the future in accordance with the annual maintenance plans, complete implementation will be precluded. Sufficient annual budget must be appropriated to implement the rational maintenance plan to achieve sustained renewal.

Systems operations focused on improved water management to increase efficiency and equity of water distribution for increased productivity. The strategy was to introduce water measurement and control where needed, and a computer model to improve water delivery. This element was slow in starting, partially due to disagreement regarding the level or density of water measurement required, and the type of computer model needed.

During the first year of implementation, USAID questioned the feasibility and potential returns from implementing the systems operations element as conceived, recognizing the complexity of the systems involved, and the large human resources commitment required to develop, calibrate and implement such computer models. The IMD and ID as well as the technical assistance consultants felt strongly that this element should continue as originally planned. Disagreement continued on the details of how to proceed and who should take the lead. A proposal by Colorado State University was rejected by USAID and IMD as being too complex and not tailored for the specific problems encountered in Sri Lanka. In 1989 USAID and IMD entered into discussions with Utah State University International Irrigation Center (IIC) through Sheladia Associates to develop a plan for the systems operations. USAID insisted that IIC come to Sri Lanka to study the operations problems as perceived by the Irrigation Department personnel on their systems, and then tailor a user friendly and replicable model based on practically available data and the required output. In addition, IIC was to design and conduct an in-country training program for technicians to learn water measurement and calibration of structures in their respective irrigation systems. This would be required as part of the input data for calibration and operation of the model. It was also recognized that personnel had to be dedicated full time to water management in order aid make it a success, and Irrigation Department agreed to set up "water management cells" from existing staff to undertake these functions. Virtually all technicians and engineers in the past were predominantly involved with maintenance and rehabilitation construction, leaving little or no time for water management.

As it turned out, USAID's assessment of the complexity and level of effort to implement the water measurement and computerized operations was correct. Seeing the difficulties of getting it started after developing the computer model and training seven engineers and sixty technicians in microcomputers and water measurement, USAID included completing the improved operations as one benchmark for performance based disbursement. These objectives were achieved with great difficulty by the original PACD, but sustainability and replicability remain open questions to be determined through post-project monitoring and research. The computer operations and water measurement are discussed in more detail in **Annex 3.**

<u>Financial Management:</u> Efforts were focused almost entirely on developing the capability at the DCFO level to address all required aspects of accounting required to plan budgets, collect and maintain capital for system improvements, and make payments in a transparent system that can be understood by members. This was appropriate in light of the project strategy to turn operation and maintenance responsibility over to DCFO's. Initially, computer spreadsheets were prepared for all organizations, including all members, and were updated periodically for fee collection and use.

This transparent system was excellent for all members to see where money was coming from and being used, but was found not to be entirely practical due to lack of access to computers and operators at the DCFO level. A training package was developed to introduce simple ledger accounting to the DCFO's, and all have been trained to date. The monitoring, evaluation, and feedback element of the project tracks financial management capability of the DCFO's, which continues to be a priority item for enhancement. A key job of the system level project managers and their institutional organizer staff is checking on the DCFO book keeping and accounts, since bad management of funds is the biggest single threat to credibility and sustainability of the organizations. It has been recognized that periodic formal audit of the DCFO accounts would greatly enhance chances for sustainability, and measures are planned for introduction.

Monitoring, Evaluation and Feedback: The objective of this element was to design, implement and institutionalize "a systematic data gathering, assessment and reporting program to support irrigation system managers". At the outset of ISMP, IMD had a full time Deputy Director in charge of ME&F for all the major irrigation schemes in their purview. The technical assistance expert from Sheladia associates worked with this Deputy Director to develop and test an appropriate model under ISMP for replication. True to the interdisciplinary and participatory nature of IMD and ISMP, committees and workshops were organized to plan an ME&F strategy and indicators to suit the needs of all users at all levels. There was a natural tendency for the list of indicators and issues to grow far beyond the capacity to collect and analyze meaningful data in this exercise, and no mechanism to delete suggested indicators for which meaningful data and implementable results could not be obtained. The result was a questionnaire of over four hundred questions, far beyond the capacity of the cadre of enumerators or respondents to effectively administer. For many or most of the questions, there were no reliable sources of data. Other questions did not lead to clear analyses and results, or lacked clear cause-effect links. Extension agents in the Department of Agriculture were trained as enumerators, and the package was tested for two seasons. The ME&F program came under heavy criticism in the 1988 USAID project assessment, and the mid term evaluation recommended a complete renovation of the existing system.

As a result of the mid term evaluation, a new consultant was recruited to develop a more practical ME&F package. Working with a new dynamic Deputy Director for ME&F in IMD, the two started with a new approach. Their basis approach was "minimalist", with the option to add on, as opposed to the former attempt to monitor and analyze everything, and eliminate later. Also, the new approach was designed to spot potential trouble for detailed analysis and action rather than understanding the details of everything.

The strategy was to conduct and facilitate a series of workshops with field personnel responsible for gathering and using the information, and helping them work through exactly how they would obtain and use information. The new system was implemented for a year and replicated in systems outside ISMP. IMD asked the same TA consultant to come back and conduct some workshops with the users to refine the system. This was considered a very successful exercise throughout, and the system has been successfully used and replicated for two years. The system being used also has the characteristic of being simple to change with changing needs.

Training: The objective of this element was "to produce trained personnel to carry out all activities in the other six project elements, while at the same time enhancing local training capacity". A general life of project training plan was made during the first year of the project, and refined and updated as required in the annual work plans. Overseas training was funded by USAID, and in-country training was funded by GSL. As a result of the mid term evaluation, as well as project management insight, fairly large components of in-country training were added in the second half of the project, using technical assistance for training needs assessment, development of training modules, training of trainers, and direct training. These activities targeted enhancing farmer organization capacity for operation, maintenance and financial measurement and management, and computerized systems operations. Virtually all the targeted training under the annual work plans was completed as scheduled. Evaluation of the effectiveness of the participant training programs took place just after the PACD of the Project. Returned participants were interviewed regarding their courses. All participants were required to submit their Trip Reports, Report upon return from training, and Report on post training. Participant evaluation of the courses was to be used for feedback and improvement. Tables V-1 through V-3, copied from the Consultant's Final Report, are given in **Annex 4** and show the details of all the training conducted under the ISMP.

Research: The two objectives of the research element were: (a) to increase Sri Lanka's institutional capacity to conduct research; and (b) to find causes and solutions to problems which must be solved if the overall objectives of the ISMP are to be accomplished. The research component was conducted under a $580,000 cooperative agreement with the International Irrigation Management Institute (IIMI). A project **Research Advisory Committee (RAC)** was formed, chaired by the Director, IMD, with members from IIMI, USAID, the consultants, ID, and Department of Agriculture. The function of the committee was to determine topics of research, review and approve proposals and contracts, and work with IIMI to monitor research and institutionalize results.

IIMI's program description specified general areas for research, but detailed study areas were worked out by IIMI and the RAC. IIMI was to solicit proposals from national organizations and research institutes to undertake the specific studies, with IIMI providing guidance to enhance their capabilities. Eleven national universities and public institutes were solicited for proposals during the first year of implementation. Proposals were either inadequate, or not forthcoming. In response to this set back, the RAC decided to open the studies to local private sector firms, with good results. Seven major studies and a literature review were programmed by the RAC and successfully completed by the selected firms and IIMI. These studies are listed below:

Calibration of Water Delivery Systems in Irrigation Schemes in Polonnaruwa, Lanka Hydraulics Ltd., June 1990

Institution Building in Five Irrigation Schemes in Polonnaruwa, TEAMS (Pvt.) Ltd., Sept. 1990

Water Management Projects in Nagadeepa, Mahawewa and Pimburettewa Systems, Associated Development Research Consultants, DEC 1990

Operations and Maintenance Costs, TEAMS (Pvt.) Ltd., Maya 1991

Maximizing Profitability of Irrigated Agriculture in the Polonnaruwa Systems, Agriculture Industry Consultancy and Services (Pvt.) Ltd., July, 1991

Turnover of O&M on Distributaries to Farmer Organizations in Polonnaruwa, TEAMS (Pvt.) Ltd., Mar. 1992

Rehabilitation of Irrigation Systems in Sri Lanka: A Literature Review, Dr. W.A.T. Abeysekera, Dec. 1991

Cost Effective Irrigation Modernization Strategies for the 1990's, Engineering Consultants Ltd., and Associated Development Research Consultants, June, 1992

This last study was to draw upon lessons from the former studies as well as other systems and experiences to provide comprehensive recommendations for future irrigation investment in existing systems. Workshops were conducted during and after each study to guide, assimilate and institutionalize the findings. The final study was followed by national workshop of policy makers and project implementors from relevant ministries, and resulted in a 15 page document of guidelines (Annexe 12), including 60 recommendations covering all disciplines of the subject. Some key lessons will be included in a following section.

It is hard to evaluate the effectiveness of the research component of the project in terms of meeting the overall purpose as originally stated. It was clear that part (b) of the project purpose; "to test and demonstrate the effectiveness (costs vs. benefits) of different combinations of management and structural improvements carried out in selected irrigation systems" was the responsibility of the research component. It is also clear that these objectives were not fully met, at least in the quantified fashion originally envisioned. What is clear is the extreme difficulty, impracticality or impossibility of measuring the direct impact of project elements at the purpose level in order to quantify benefits or fine tune implementation. If there was failure to meet the objectives to the letter, it was not due to the qualifications and efforts of the researchers, but an unreasonable task set before them. Perhaps the most positive benefit of the research was the numerous workshops and networking which was part of this activity. These activities were very beneficial and timely in feeding information and ideas into the USAID Irrigation Management Policy Support Activity (IMPSA). In fact, ISMP research and implementation served as the primary proving ground for IMPSA. These workshops were also instrumental in pushing forward national thinking and consensus in participatory management policy.

Crop Diversification: This successful element was added to the project after one year of implementation in recognition of the importance of improving farm income. The component was added with little cost, using a local agronomist/extension specialist on the technical assistance team to work with Department of Agriculture and Extension. Low cost, low risk interventions were sought to augment the rice based irrigation systems for improving income and/or nutrition. Perhaps the most successful intervention was growing ming beans between rice crops. This technique required no tillage or irrigation, as seeds were sown on the paddy fields just after harvest, using residual soil moisture. Farmers were quick to realize the benefits of this added crop with minimal risk and labor. The project also had considerable success with higher value commercial crops such as chilies, onions and cucumbers. The Mid-Term Evaluation found the crop diversification element to be out of the scope of the project, detracting from the purpose, and recommended discontinuation. IMD, USAID and the TA team disagreed, and left this low cost and important element in the project. The interventions have been well received and replicated by farmers throughout the seven irrigation systems.

Procurement: The Project Paper included a detailed list of commodities totaling over $4.25 million. One of the first and most positive implementation actions was making a life of project work plan with all responsible implementors, including a greatly revised commodity list more suited to the actual requirements. Much heavy equipment was deleted, with more appropriate light equipment substituted. Also, spares were bought to rebuild some existing equipment rather than purchasing some new items. This exercise resulted in a cost savings of $3 million (approx.) which could be used for other purposes, including the under funded rehabilitation. Procurement actions proceeded relatively smoothly, with Irrigation Department as the lead agency, working in close conjunction with Sheladia Associates and USAID to assure meeting AID regulations and requirements.

Sheladia associates procured some key items in the United States when it was recognized to be more expedient. This was particularly useful for precision instruments like current meters for measuring stream flow, and hand levels. A complete list of project commodities is given in **Annex 5.** Items procured by the consultant for their use not on this list (office and household equipment and furniture) was inventoried and turned over to IMD at the end of the project.

Project Impacts/Accomplishments

Some of the impacts of the Project are somewhat difficult to measure. The most far-reaching impact has been on developing a basis and furthering the policy of participatory management of irrigation systems. The impacts of increased acreage cultivated and increased diversification are easily measured. Increased yields on existing acreage due to improved water management is more difficult and in this case was not measured. Benefits from essential structural improvement and pragmatic system rehabilitation, improved operation/maintenance efficiencies, spread effects, and improved farmer terms of trade are extremely difficult to estimate and were not quantified.

Specific policy reforms that were introduced and/or implemented by the project include: (a) Irrigation Department policy of working with/through farmer organizations instead of simply as a construction agency; (b) turn-over of distributory canals to farmer organizations; and (c) enhancing the legal status and powers of registered farmer organizations.

Project impacts in terms of some key indicators are noted below. Note that the GSL project continues despite the PACD of the AID assistance and impacts are increasingly realized at the latter stages of the project.

	Project Achievements		
	as of PACD	as of end of 1993	Total expected
(a) Irrigated area under joint management.	11,000 ha	53,350 ha	68,000 ha
(b) No. of Distributory Canal Farmer Organizations (DCFOs) that have taken over the tertiary systems (distributory and field canals) for joint operations and maintenance.	40 DCFOs	194 DCFOs	208 DCFOs
(c) Area turned over for joint management.	11,000 ha	53,350 ha	68,000 ha
(d) No. of FOs	40 DCFOs	194 DCFOs	208 DCFOs
(e) Membership	8,824 farmers	42,000 farmers	52,000 farmers

Employment / Economic Growth

All DCFOs are engaged in the generation of development funds and have initiated collection of subscription fees from the members. The DCFOs use these resources for income generating activities like agribusiness activities, undertaking canal rehabilitation contracts with the Irrigation Department, releasing of mortgaged paddy lands of poorer member farmers, etc.,

172 DCFOs had raised Rs. 2.5 million (approx.$60,000) in Development Funds as at March 31, 1992. Every DCFO now has a bank account and many are now engaged in the sales and distribution of fertilizers and pesticides. During the period Jan. '91 to March '92, the total sales amounted to Rs. 17.0 million (approx.$400,000).

Also, $ 1.0 million worth of construction works have been awarded to farmer organizations to execute rehabilitation contracts.

Many poor farmers have mortgaged their paddy fields in order to raise loans, subsequently defaulted on the repayment, and were thereby losing the use of their fields. 19 DCFOs have used their Development Funds to release the mortgages of 350 acres of paddy fields amounting to Rs. 1.0 million.

Agricultural production and profitability has increased as a result of improved irrigation distribution, extension and market access. Many farmers are engaged in growing diversified foodcrops such as onions, chillies, cowpea, groundnut, mushroom, soybean, gherkins, vegetables, etc. About 3,000 acres are under cultivation giving the farmers net profits ranging from Rs. 1,500/- per acre to Rs. 9,000/- per acre.

In Gal Oya R.B. scheme, 4,000 acres of existing paddy lands could not be cultivated in Maha and 9,000 acres could not be cultivated in Yala. Due to increased canal/structure capacity these could now be cultivated. Similarly, 1,000 acres of existing paddy fields could not be cultivated in Yala in the Parakrama Samudra Scheme. Due to increased canal/structure capacity these could now be cultivated. This increase represents a net farmer profit of about $ 2.0 million per year due to the project assistance.

Sustainable employment generation as a result of the project would be estimated at 3,162 person years. This is based on an additional 2,268 person years of employment due to increased paddy cultivation on 2,756 ha; 205 person years from increased production of 4,268 * MT of paddy on existing land; 301 person years from 1215 ha of increased diversified crop production; and 388 person years from economic activities of farmer organizations.

Based on above estimates, annual incremental investment due to the project would be $2.26 million and value of increased annual productivity would be $4.0 million.

* (Based on one percent increase in yield on 4 MT/ha yield per season over 53,350 ha).

Improved System Maintenance/Preventive Maintenance

A preventive maintenance program is in place to ensure sustainable maintenance of the systems rehabilitated since 1987. Annual maintenance cost estimates, annual maintenance plans and water issue trees have been prepared in order to effectively implement this program. The maintenance requirements were determined after a "walk through maintenance survey" was carried out jointly by irrigation agency officials and F.O. representatives. The annual maintenance plan enables the members of the DCOs and ID personnel to develop resource mobilization strategies. The DCOs ensure maximum participation of farmers by forming sub-committees to plan and implement O&M activities. An MEF (Monitoring, Evaluation & Feedback) program is also in place to regularly assess the maintenance efficiency. These actions will ensure proper maintenance and function of canals and will eliminate or po tpone the need for future rehabilitation.

Spread Effects

A sustainable MEF program has been established in all the schemes under the ISM Project and has been in operation since February, 1991. The system has already been replicated in other schemes under the "INMAS" (Integrated Management of Major Agricultural Settlements) program. Three reports are produced under this program in order to evaluate performance periodically. These are: (1) Annual/Seasonal Planning Reports to establish targets and schedules of various programs; (2) Management Information Systems (MIS) Report for monthly monitoring and feed-back; and (3) Seasonal Post-harvest Survey.

As a result of attitudinal changes brought about under the ISM Project, communication and coordination between farmer organizations and irrigation system personnel have significantly improved. This has made it quite easy to create and sustain farmer organizations in other major irrigation systems.

Recognition given to crop diversification under the ISM Project has been responsible for initiating a major change in the farmer's attitude towards rice mono-cropping. Farmers have realized, through Project demonstration and production activities, that net income and employment opportunities that are generated in Other Field Crops (OFC) production is greater than from rice in spite of the high cost of production. As a result, there is now a trend to move towards OFCs production in other major irrigation systems.

Sustainability

Although AID assistance for the Project ended on December 31, 1992, GSL support for the many activities under the Project still continues. The impacts are increasingly realized at the latter stages of the Project. Draft Annual Work Plans were prepared, discussed and finalized before implementation during each of the post project years of 1993 and 1994.

Project influence will make ID and IMD programs cost-effective in the future. GSL commitment to irrigation development is clear and will ensure future funding, though at reduced levels.

Farmer organizations have the capability and authority to continue their activities. These will occasionally fail for various reasons, but can be expected to reorganize/reform to meet needs of members.

As a result of sustained support for F.O. development 2433 Field Canal Groups (FCGs) have been formed as of end of year 1993 as against 2,168 at PACD. 194 DCFOs have taken over the tertiary systems for joint operations and maintenance as of end of year 1993 as against 40 at PACD. The irrigated area under joint management has increased from 11,000 ha at PACD to 53,350 ha at end of year 1993. Field canal representatives have been trained in Operation and Maintenance practices and planning the Kanna (Cultivation) Calendar and input supplies. Also, Farmer Organizations have obtained legal recognition under the Agrarian Services (Amendment) Act No. 4 of 1991 and all DCFOs have registered themselves with the Commissioner/Agrarian Services Department. Registration under this Act allowed each of them to become legal entities. With the amendment to the Irrigation Ordinance recently the DCFOs enjoy much better legal powers than before. Development funds arising out of membership fees collected from farmers and DCFO business profits from the sale of agro-inputs, construction contracts, etc., are maintained in DCFO accounts at the State Banks and the Co-operative Rural Banks. Office bearers of the DCFOs have been trained and continue to be trained in a simple financial management system. Their accounting records are regularly audited.

The total length of canals rehabilitated has increased from 800 km at PACD to 1462 km by end of year 1993. It is planned to complete all canal rehabilitation construction works by end of year 1995. A preventive main[illegible]e program is in place to ensure sustained renewal of the rehabilitated irrigation systems.

A sustainable MEF program has been established in all the schemes under the Project and is still in operation since February, 1991. Reports produced under this program continue to help in the evaluation of performance periodically.

Environmental Impacts

Rehabilitation of the existing irrigation systems and development of farmer organizations has resulted in better water distribution and water management. Existing lands that could not be cultivated earlier are now being cultivated as a result of increased canal/structure capacity. Improved water management has given rise to increased yields on existing paddy lands. The incidence of illicit tapping of irrigation water has greatly reduced as a result of farmer organizations being conferred with legal status and powers. Farmers have realized, through Project demonstration, that their income could be increased through increased diversification on the existing lands. This has considerably reduced the need to encroach and clear state lands and has also reduced the need to engage in slash and burn chena cultivation.

LESSONS LEARNED

Literally hundreds of conclusions, recommendations and lessons are documented in the numerous reports, studies and evaluations done under ISMP. This was to expected since the project was experimental in nature. Most of these recommendations have been accepted and institutionalized by various implementing and policy forming agencies. Many of these are generally accepted truisms, or too specific to be of general or outside interest. The following lessons with brief discussions were selected as being the most significant new lessons evolving out of ISMP, which have broad applicability outside the project.

1. Measuring impact on productivity from rehabilitation and management improvements of existing irrigation systems can be difficult and unfeasible.

In order to achieve this objective, one must have "before" and "after" data (baseline and end-of-project). In most cases, the baseline is not static, but what production would have been without project interventions. Since the project impact is a measure of differences rather than absolutes, the accuracy of the baseline and end of project data must be significantly finer than the difference one is trying to measure. Linking cause and effect presents an even more difficult problem. ISMP used many structural and management interventions to improve system performance. In addition to these variables, there were many other, and more significant, extraneous factors (rainfall, pests and disease, price of fertilizer, civil unrest, etc.) which affected performance and productivity. Since this was one of the purposes of ISMP, many resources were used (ME&F, research) with futility to find very elusive numbers. If this is to be a serious objective, the project design must include a detailed and implementable monitoring plan beginning with baseline data, and including the specific data, sources, persons responsible, and analytical procedures.

This exercise should also include the objectives and reasons for the monitoring and evaluation. Had this been done for ISMP, we suspect it would soon have been seen during the design phase to be an exercise in futility.

2. Detailed site and system-specific studies to identify constraints to productivity are required before design and implementation of interventions for improvement.

This is linked closely with the above recommendations, since the site-specific constraints and their reductions in production are the key to monitoring improvement and benefits. ISMP planned and executed this activity with the seven volume Diagnostic Analysis (see last para of page 2). However, the objectives were not met, because these studies did not identify and quantify the specific constraints, with a rational set of solutions. The Gal Oya Water Management Project had dramatic improvements in productivity and area irrigated after introducing improvements in productivity and area irrigated after introducing improved water measurement and computerized scheduling. It was assumed that ISMP could benefit from the same interventions. However, the designers and diagnostic analysis did not reveal that the ISMP schemes scheduled for rehabilitation were either already working with very high efficiency, or there was no additional area which could be served by saving water. Interventions need to be linked to verified constraints with some idea of the benefits which interventions in ISMP helped insure sustainable future operations with participatory management rather than large increases in production.

3. For introducing participatory management to irrigation schemes, institutional developers need to focus talent and energy on pulling engineers and farmers together for two-way communications and solving common problems.

Social scientists have done an outstanding job recognizing and documenting the problems traditional engineers and technicians have working in harmony with farmers and irrigators. The social engineers have not done nearly so well bridging the gaps between these polarized groups to communicate and work out problems harmoniously. These is a tendency for the farmer organization specialists and Institutional Organizers to champion the farmers, highlight past problems, and serve as wedge between the already polarized groups. Orientation and training of these "catalysts" need to focus on pulling the groups together rather than siding with one. ISMP began with severe and wide-spread problems, from the ID/IMD field officers through the technical assistance team. After two years strong and successful measures were taken to rectify this condition.

4. Institutional Organizers (catalysts) for forming farmer organizations for participatory management of irrigation systems should be recruited from the project area, and have cultural and economic backgrounds similar to the targeted farmers.

Institutional Organizers originally recruited for ISMP were new university graduates. The IO jobs were temporary, not highly paid, and required living in the remote and rural sites. After training, many of the university IO's did not go to the project areas, and the attrition rate of the others was unacceptably high. The alternative approach of recruiting at the local level, lowering the educational requirement to "A" level graduates (high school), and modifying the training was highly successful. It should also be noted that about half the IO's recruited locally were female. They performed exceptionally well; perhaps because they found it easier to function as catalysts rather than active leader. This also encouraged women to participate and take offices in the farmer organizations.

5. Farmer Representatives should be elected by secret ballot.

Politicization is recognized as a major threat to farmer organizations in Sri Lanka. Secret ballots are an effective safeguard to help prevent this.

6. Farmer organizations for participatory management of irrigation systems should be formed based on hydrological rather than community boundaries.

Since the basis for the organizations is operation and maintenance of their respective systems, membership should be made up of farmers served by discrete canals or groups of canals. A control structure (sluice gate with water measurement) needs to be the divide between farmer organizations, or an organization and the irrigation agency. This may introduce administrative difficulties and be a "complication" for the political administration of an area, but is important for group cohesion and focus.

7. An interdisciplinary, participatory management project for irrigation system improvement needs well planned periodic workshops to assure integrated team planning, consensus, and implementation.

Such workshops in ISMP were critical for planning and consensus building and served to spread lessons learned and impacts to other projects and areas.

8. In order to achieve cost-effective, pragmatic rehabilitation of an irrigation system, an incentive structure must be in place.

The only effective check for cost-effective rehabilitation under ISMP was lower than normal funding levels. The incentive at all levels (farmer organizations, Irrigation Department) tended to be to over design and over spend. Since farmer organizations were given construction contracts, their incentive often became profit oriented rather than cost-effective water management. This could be rectified by requiring the FO's to contribute a substantial portion of the rehabilitation cost for their area. Not only would this result in more pragmatic decision making on their part, but would provide substantial reductions in cost, motivation to improve maintenance, and a perfect indicator for organizations which are ready and willing to begin participatory management.

The natural tendency for the Irrigation Department is to use original designs and specifications as the basis for rehabilitation. This simplifies planning and design work, but results in costlier contracts. Pragmatic, cost-effective rehabilitation must be based on good field work, sound and creative hydraulic engineering, and innovative, new designs. None of these are rewarded in the present system.

At USAID, more attention and value needs to be given to improved performance and reduced costs through quality and creative engineering than to meeting implementation expenditure projections.

9. Trained and motivated technicians are a prerequisite to improved technology for irrigation water management.

For a flooded rice based system, motivated technicians and farmer groups can attain high irrigation efficiency and equity with minimal scientific water management. The converse is not true. Irrigating rice is like filling a tea cup. Pour till it's full, but don't spill. In order to reap improvements from scientific measurement and scheduling, the irrigators and technicians must have strong incentive and motivation to make improvements, because the scientific techniques require greatly increased human and physical resources. Technological improvements should be demand-driven from the potential users and beneficiaries, with a clear understanding of required resources and potential benefits.

ANNEX 1
TECHNICAL ASSISTANCE

Long Term Professional (Expatriate)

Name	Position	Date of Arrival	Date of Departure	Person Months
Louis E. Haley	Chief of Party	3-8-87	2-7-89	23.00
W.J. Leatham	Chief of Party	5-8-89	16-9-90	13.40
Seth Schick	Economist	25-10-87	24-7-89	21.00
H. Roberts	Training Adviser	25-8-87	6-11-88	15.55
C.F. Leonhardt	O&M Engineer	6-8-87	7-1-91	40.75
	Chief of Party	8-1-91	30-6-92	18.77
Tito Cerdan	O&M Engineer	18-2-91	30-6-92	16.39
TOTAL				148.86

Short Term Professional (Expatriate)

Name	Position	Date Of Arrival	Date Of Departure	Person Months
H. Bautista	Farmer Organization	16-9-91	30-6-92	9.50
A. Lutz	SAI Management	5-4-87 10-11-87 7-6-89 30-8-90 10-4-91 6-10-91 14-6-92	13-4-87 22-11-8 21-6-89 13-9-90 18-4-91 18-10-91 28-6-92	0.30 0.44 0.50 0.50 0.30 0.42 0.54
K. Smith	MEF Specialist MEF Specialist	9-1-91 13-1-92	2-4-91 12-2-92	2.81 1.00
G. Merkley	Computer Specialist	15-3-90	11-5-92	1.90
S. Skogerboe	Water Management	3-11-89 3-1-90	27-11-89 17-3-91	0.83 1.49
M. Redditt	SAI Project Director	7-8-87	8-10-87	2.07
S. Pfleuger	SAI Admin.	2-8-87	4-9-87	0.94

R. Nothstein	SAI Project Dir.	25-7-89	11-8-89	0.58
D. Bradbury	SAI Procurement Specialist	11-11-87	3-12-87	0.77
	SAI Prj. Director	21-8-88	2-9-88	0.42
	SAI Prj. Director	18-2-89	18-4-89	2.00
E. Hodgkins	Workshop Coordinator	16-9-87	21-10-87	1.18
J. Twarowski	SAI Prj. Director	29-4-92	19-6-92	1.70
TOTAL				**30.19**

Long Term Professional (Local)

Name	Position	Date Of Arrival	Date of Departure	Person Months
S. Ganewatte	Farmer Organization	25-8-87	10-10-90	37.56
N. K. Adikarange	Inst. Dev. Specialist	18-2-90	30-6-92	28.39
S. Balasingam	Irrigation Engineer	1-2-90	31-1-92	24.00
S. Samarakoon	Agronomist	1-9-88	30-6-92	46.00
D. Weerakoon	Engineering Asst.	16-7-90	30-6-92	23.52
W. Amarakoon	Engineering Asst.	10-9-90	30-6-92	21.70
K. Vallipuram	Engineering Asst.	16-4-90	30-9-90	6.50
K. Vallipuram	Engineering Asst.	01-1-91	30-6-92	18.00
S.Seneviratne	Engineeing Asst.	3-6-91	30-6-92	12.93
R. Kandiah	Program Assistant	15-3-90	30-9-90	6.53
R. Kandiah	Program Assistant	8-4-91	24-4-92	12.57
P. Periyasamy	Agriculturist	1-7-88	31-8-90	25.00
T. M. R. S. Jayampathi	Draftsman	23-1-89	15-3-91	25.77
S. Neelawela	Draftsman	12-3-91	13-3-92	12.06
D. S. A. Kulasekera	Irrigation Engineer	1-10-89	24-12-89	14.77
TOTAL				**316.30**

Short Term Professional (Local)

Name	Position	Date Of Arrival	Date Of Departure	Person Months
A. Nanayakkara	Comp.Operator	1-12-87	8-1-88	1.26
A. Athureliya	Comp.Operator	1-1-90	31-10-89	10.00
S. Munasinghe	Program Asst.	16-3-90	16-6-90	3.00
Malkanthi	Draftsman	16-3-92	30-6-92	3.52
TOTAL				17.78

Long Term Administration (Local)

Name	Position	Date Of Arrival	Date Of Departure	Person Months
F. Mansoor	Office Manager	11-6-87	15-5-89	23.15
A.V. Hettiarachi	Office Manager	1-9-89	30-6-92	34.00
Usha Lourensz	Secretary	4-11-87	30-6-92	55.90
D.V. Dhanapala	Secretary	28-9-87	30-6-92	57.10
N. Jayawardena	Secretary	2-6-88	30-4-89	10.97
A. H. Kumar	Driver	9-12-87	30-6-92	54.71
A.G. Daniel	Driver	8-10-87	30-10-88	12.77
A.G. Daniel	Driver	1-6-90	30-6-92	25.00
M.L. Chandradasa	Driver	25-10-88	30-6-92	44.23
W.D. Andrew	Driver	1-1-88	30-6-92	54.00
K.D.H. Padmasiri	Driver	1-1-88	30-6-92	54.00
A. Amarasinghe	Driver	9-9-87	30-3-90	30.73
G.D. Wilson	Messenge/Clerk	1-8-87	4-3-89	21.00
T. De Silva	Messenge/Clerk	1-1-90	31-3-92	27.00
TOTAL				504.56

Short Term Administration (Local)

Name	Position	Date Of Arrival	Date Of Departure	Person Months
A. Akbar	Secretary	1-8-87	2-11-87	3.07
Ahamed	Driver	9-8-87	30-9-87	1.74
Imran Uvais	Office Asst.	1-1-88	31-8-88	8.00
K. De S. Wijeyaratne	Secretary Secretary	7-8-90 16-3-92	21-9-90 10-4-92	1.51 0.85
TOTAL				**15.17**

Sub-Contract (Expatriate)

J. Wilkins-Wells	Farmer Organization	14-10-87	11-4-89	18.00
J. Mc Callum	Training	1-10-90	9-4-91	6.30
TOTAL				**24.30**

Sub-Conctract Professional (Local)

Raja Perera	R D C Manager	INTERMITTENT		2.00
M. A. Perera	Financial Consultant	9-10-87	9-7-89	21.00
D. S. A. Kulasekera	Irrigation Engineer	1-10-87	1-10-89	24.00
H. Premaratne	Training Specialist	1-10-90	9-4-91	6.30
TOTAL				**53.30**

Home Office Management

Audrey Lutz	Vice President/Manager	INTERMITTENT	4.90
TOTAL			**4.90**

K. Smith	MEF Specialist	15-12-90	17-12-90	0.14
K. Smith	MEF Specialist	5-4-91	4-5-91	0.09
E. Hodgkins	Facilitator	INTERMITTENT		0.46
M. L. Cizar	Procurement	INTERMITTENT		0.01
J. Twarowski	Project Director	INTERMITTENT		6.42
K. Raddit	Project Director	INTERMITTENT		1.93
D. Bradbury	Project Director Procurement	INTERMITTENT		3.25
B. Nothstein	Project Director	INTERMITTENT		0.27
B. Frazier	Project Director	INTERMITTENT		2.56
TOTAL				15.15

J. Collier	Secretary	INTERMITTENT	1.15
S. Pflueger	Admin. Assistant	INTERMITTENT	1.54
D. Shelley	Exec. Secretary	INTERMITTENT	13.36
J. Snipe	Accountant	INTERMITTENT	1.57
S. Seyed	Accountant	INTERMITTENT	4.04
B. Schickram	Secretary	INTERMITTENT	5.02
D. Pyle	Secretary	INTERMITTENT	1.12
TOTAL			27.80

AID:ANR:DJ:aa
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ANNEX 2

Fixed Amount Reimbursement for Irrigation System Rehabilitation

Fixed amount reimbursement (FAR) was designed by USAID to simplify and facilitate construction oversight and approval for payment, and is highly suitable when many or several buildings, units, or "sub-projects" are to be built according to a standard set of approval plans, specifications and cost estimates. Under the basic FAR system, plans, specifications and cost estimates are approved by USAID and the sponsoring agency. Construction is executed by host country contract, or other agreed upon mechanism. Upon completion of a sub-project, or group of sub-projects, USAID, or their designated agent, inspects the completed works.

If the sub-project(s) are completed, and meet all specifications, they are approved for payment, and the sponsoring agency is reimbursed the approved cost estimate, regardless of actual expenditure.

FAR was chosen as the reimbursement mechanism for ISMP rehabilitation construction. Records are not clear why this choice was selected. It is clear that rehabilitation of irrigation works does not fit the classic FAR mold, that little, if any streamlining and reduced oversight burden resulted, and that many problems were encountered. Sub-projects under ISMP consisted of discrete lengths of canals, including appurtenant structures. Work included desilting and shaping canals and embankments, constructing retaining walls and rubble packing (rip rap), repair and reconstruction of water control structures, and repair to some maintenance roads. Each sub-project consisted of many elements, and many small contracts. One sub-project might be completed under ten or so small contracts, and consist of a hundred or so elements. No two subcontracts or sub projects are alike in elements or cost. Unit costs for estimating purposes are standard for a year or season, but few elements within a subcontract had the same cost. Therefore, the estimated cost for each sub-project required laborious estimating, checking and approval, not being able to utilize the inherent FAR advantage of standardization. Further, FAR requires completion of a sub-project for reimbursement. With numerous contractors working on each sub-project during the short "closed season" between irrigated crops, invariably, some elements under some contract would not be finished, rendering the complete sub-project ineligible for reimbursement.

In order to overcome the problem of incomplete sub-projects, USAID modified the FAR system under ISMP to accommodate partial payments under a sub-project, based on completed elements of work. The countersigned PIL describing the modified FAR was based on approval and completion of discrete elements or units within sub-projects, which stand alone in performing their intended purpose without reliance on other elements or sub-projects. The modified FAR system provided for reimbursement in two possible tranches for any sub-project.

The first tranche could be claimed upon completion of elements totaling half or more of the estimated cost of the entire sub-project. The amount of the first tranche could be between 50% and 75% of the total approved estimate, and was based on the actual completed units. The remaining balance, or 25%, whichever was greater, was retained for the second and final tranche to be made upon completion of all units within the sub-project. Care was taken in selecting units which stood alone to perform their required function when preparing the schedules for estimates and reimbursement. A sluice gate to serve a distributary canal from a functioning main canal would be an example. Once the sluice gate and all fixtures were completed, it could deliver the required water as intended, and could be counted for reimbursement under the respective sub-project. However, if the structure was 90% complete, but missing the gate, or any other part of the approved plans, it could not count for anything on the reimbursement claim.

The new system served it's function of fair and timely reimbursement of completed work within the USAID rules and regulations, but did not alleviate the onerous burden of review and approval of thousands of cost estimates and completed work. To maintain the required control, USAID requested the consultant, Sheladia Associates, to hire four full time technicians to review and approve plans and estimates, monitor construction and inspect and approve upon completion. USAID worked closely with these technicians throughout the project with field visits and checks to assure control was adequate. The system worked quite well, but required human resources far beyond what was anticipated in project design. The USAID mission was not successful in finding alternative streamlined reimbursement mechanisms with the required control.

The Regional Inspector General for Audit/Singapore conducted an audit of USAID/Sri Lanka's management of AID funded construction. The ISM Project, among other projects, came under this audit. Although the construction component of the ISMP was funded under FAR, the FAR method of financing for this project did not involve advance payments. The reimbursements in respect of Facilities Construction (buildings) were made only after 100% completion while reimbursements in respect of canal upgrading/rehabilitation were made in two stages. The first payment was on partial completion (more than 50%) of a sub-project and the second on 100% completion. The GSL need not return funds if a sub-project is not 100% complete under canal rehabilitation works. This is because our reimbursements are tied to specific stand-alone elements within the greater sub-project. The RLA has reviewed the background documents in the ISM Project FAR arrangements and has advised us to this effect. Connected correspondences are in ISMP files. On ensuring that AID financed construction is used as intended our position is that the buildings constructed under Facilities Construction are occupied and are in use. All rehabilitated irrigation systems are also serving their purpose. This was evidenced by the Audit Team during their inspection on the ISM Project. The only negative finding was that AID funded construction had not been adequately marked to identify U.S participation in the Project. Action was subsequently taken to publicize U.S participation by erecting permanent sign boards at all AID funded facilities construction sites and at the headworks of all rehabilitated irrigation systems construction sites.

ANNEX 3

Computer Operations for Rice-Based Irrigation Systems

The project design and technical assistance contract called for developing computer models to improve systems operations (water management) which would work on daily or weekly periods. This element of the project was very difficult to put in place, and met with limited success. Some separate but related observations and reasons are discussed below. Some observations are universal, and others are site and country specific, and therefore must be taken with caution. "The only things in the irrigation sector which can be transferred with impunity are Newton's laws", Dan Jenkins.

Irrigation of flooded rice can be done quite efficiently without depending on modern scientific techniques. It's like filling a cup with coffee; pour till it's full, but don't spill. This can be done quite well without ever knowing how much was poured or drunk, but everyone is quite satisfied that the amount was sufficient, and none was wasted. An alternative scientific approach might be to calculate the volume of the coffee cups using some equations describing their curves, measure the required coffee into a graduated cylinder, and then pour into the cups. No doubt, this would result in more uniform and equitable distribution of coffee, and accurate records of consumption. A third alternative might be to forget the equations, and measure the volume of the cups with the graduated cylinder, and then record the number of cups poured multiplied by the volume to estimate the coffee consumed. This cased cannot be made for irrigation of upland (non-flooded) crops, because in the latter case water is stored in an invisible soil moisture reservoir. The irrigation cannot "see" when it is full to assure adequate water was applied, or if too much was applied and wasted by percolating below the root zone. Therefore, the required volume must be calculated using characteristics of the soil and depth of the roots, and then carefully measured. Also, unlike the flooded rice crop, the irrigator cannot see when it is time to irrigate again, unless his crop suffers some permanent damage from wilting.

To continue this argument, Sri Lanka was a successful "Hydraulic Civilization " a thousand years before Isaac Newton laid the foundation for hydraulic engineering, and Pierre Perrault founded scientific hydrology by showing the flow in the Seine could be sustained by precipitation over the basin. Virtually any "seasoned" system in Sri Lanka in which water is not critically limiting is irrigating well over the design capacity. This is not due to scientific fine tuning, but to a natural evolution of farmers "encroaching" onto canal and drain reservations and highlands, by picking up drainage water and seepage for re-use, and by expanding the system to the physical limits. Irrigation Department meets these additional demands by adjusting gates to meet demands. In water rich systems, the result is less than desirable efficiency due to lack of incentive.

However, many of the old systems with limited water have achieved very high efficiency with no water measurement (except the bulk releases from the reservoir), or scientific calculation of requirements. Minneriya, as case in point, irrigates a dry season crop of rice with less than one meter of water released from the reservoir. That is excellent by any standards in the world.

Scientific irrigation of upland crops (by calculating crop water requirements and irrigation frequencies, and measuring the required water) is not very difficult, and should result in payoffs in yield and reduced costs. Scientific irrigation of flooded rice is more difficult, because the variables that are involved in the process are more difficult to measure, and more significant. Specifically, percolation rate on a flooded rice system is highly variable in both time and space, and is by far the biggest variable in determining the water requirement. Since this is not a variable for determining upland crop requirements, it makes rice much more difficult. In addition, canal and reservoir seepage losses in non-rice systems are accurately considered as total losses. However, in rice systems, a significant portion or perhaps all these losses are recovered in the irrigated fields; a parameter which is impossible or impractical to quantify. In short, flooded rice systems do not fit the clean and classic Western irrigation models for upland crops.

If the reader can tolerate an additional culinary analogy, it might be appropriate to consider a team of Western cooks on a mission to provide advice to Sri Lankans on how to improve their curries. The team would immediately be struck by the fact that the Lankan cooks did not have the facilities of measuring spoons and cups, thermometers, timers, etc. In fact, they don't even have recipes! No wonder they can't make a decent curry!

The message here is not that traditional irrigation for rice is better than more modern, scientific approaches, but that the scientific approach requires <u>much</u> larger inputs of software, hardware and human resources. All this has to be brought to a high level of precision to reach the break-even point, and there is a considerable lag time on the investment in hardware, training, etc. Before moving to this more modern approach it must be clear to all what additional inputs are required, and specifically what is hoped to be gained. All players must have clear ideas of the end purpose of modernization, and have a strong commitment to that purpose or vision. Demand driven as opposed to donor driven is a key message here.

It is appropriate to say a few words about irrigation system models in general and the ISMP model in particular. First, any model should be looked at, selected or designed as a tool for the use of improved operations of the irrigation system. It should be clear that the tool will result in some positive results that are more than the costs (improved production, saved water, saved labor, more equitable distribution, or something!)

Models come in all shapes and forms, from highly sophisticated mathematical and hydraulic simulations, to simple spreadsheet approaches. They can be canned models developed for general applications, or designed specifically to target the identified operations problems of a system or group of systems. One thing they all have in common is that collection of input data and calibration to accurately reflect field conditions is invariably much more difficult than developing or installing the software. The ISMP models were chosen to assist Irrigation Department implement more efficient operations (opening and closing gates) of the targeted systems. The models were tailor made to solve the problems as identified by Irrigation Department. There were two possible approaches: (a), make a scientific model that inputs all physical parameters of the systems (climate, crops, soils, hydraulics, etc.) and calculates the water to be delivered at each location in the system, or (b), a softer approach in which water requirements at the respective DCFO head gates are determined by observation and dialogue between farmers and technicians, using the model to assist in efficient gate operations within the systems to deliver the requirements. The latter approach was chosen for ISMP. Further, these models were seen more as a tool which surfaces and asks questions rather than answers them. The most immediate benefit is the required dialogue between the farmer representatives and Irrigation Department to establish requirements. As the data fed into the model is analyzed, anomalies and inconsistencies surface into view. The model may not answer the why and how of these anomalies, but prompts field investigations to see what is happening and how improvements may be made. If this is not the approach taken by the operators, ie. a tool which reveals questions for field investigations and improvements, the efforts will likely not result in benefits.

One last but more important word about the computerized systems operations; The computerized systems operations is never any better than the commitment and dedication of those in charge of using it. It can be safely stated that a highly motivated and trained staff of technicians working closely with farmers can do an outstanding job of efficient water management (on a rice based system) without scientific calculations or computers. The scientific approach can help these motivated and trained cadres reach even higher standards. But without the motivated human resources, the computerization of a system will result in little or no improvements. There is a danger of it becoming a video game in an air conditioned room.

TASK 5.0 - TRAINING CAPACITY ENHANCEMENT

Table V-1
Sheet 1 of 2

The tabulation below summarized the training completed from 1987 to 1991 and the training programed for 1992.

TRAINING PROGRAMS COMPLETED AS OF 1991 AND PROGRAMED FOR 1992.

IN COUNTRY TRAINING		COMPLETED DURING (Persons) 1987	1988	1989	1990	1991	TOTAL 1987/91	1992 Program (Persons)
A. FUNDED FROM IMO FUNDS								
Task 1	FARMER ORGANIZATION							
	Project Managers	5		5	8	3	21	
	Operations Management							
	Awareness-Leadership Building							200
	Agro Processing and Packing							792
	Trade and Marketing							396
	Skills Development							1300
Task 2	OPERATION AND MAINTENANCE							
	IEs - Water Management SLITI	--	--		0	15	15	
	TAs - Hydraulic Operations	--	--		60		60	
	TAs - SLITI	--	90	90	90	15	285	
	TAs - Quality Control	--			50		50	
	TAs - Maintenance	--			50	15	65	
	TAS - Water Management SLITI	--			5		5	
	IEs - Water Management Model				8		8	
	IEs - Design and Programing	--			8		8	
	Computer Operators (W.M.Model)	--			5		5	
	WSs - Quality Control	--			60		60	
	WSs - SLITI	--	93	90	50	30	263	
	Farmer Leader O&M - GITI	--			0	30	30	
	Drivers/Operators-Maint. SLITI	--			0	30	30	
	WSs - Maintenance	--			0	30	30	
Task 3	FINANCIAL MANAGEMENT							
	FM/MEF Assistants	--		5		6	11	20
	DCO Office bearers		70	90	180	305	645	895
	IOs							120
Task 4	MON. EVAL. & FEED BACK							
	IOPs - Enumerators	--			100	100	200	120
	FM/MEF Assistants	--		5	7	9	21	8
	Computer Operators	--	6		1		7	
	Computer Supervisors	--	6		1		7	6
	Monitoring Officers							8
	DCO Reps.							680
	FCG Reps.							1350
	Sub Total	5	265	285	683	588	1826	5895

T5TRNCAP

TASK 5.0 - TRAINING CAPACITY ENHANCEMENT

Table V-1
Sheet 2 of 2

The tabulation below summarized the training completed from 1987 to 1991 and the training programed for 1992

TRAINING PROGRAMS COMPLETED AS OF 1991 AND PROGRAMED FOR 1992.

IN COUNTRY TRAINING	CONPLETED DURING (Persons) 1987	1988	1989	1990	1991	TOTAL 1987/91	1992 Program (Persons)
Task 6 CROP DIVERSIFICATION							
Awareness Training to officers	--			150	150	300	
Field Officers - SNO, AI, GSN	--			400	201	601	
Awareness Training to Farmers	--			300	480	780	
Sub. Matter Training to Farmers	--			300	480	780	
Field days/Tours	--			1000	800	1800	
Field Ext. Volunteers	--			0	212	212	
B. FUNDED FROM USAID GRANT (05 RECURRENT EXP)							
Task 1 - FARMER ORGANIZATION							
IDO - Pre-service Training	10		10	10	2	32	
IDO - In-service Training		10	10	6	9	35	
IO Pre-service Training	65	94	132	11	40	342	20
IO In-service Training		66	60	110	40	270	47
Field Officers			600	182		782	--
DCO Office Bearers			180		420	600	465
F.O. Representatives			450	300	3976	4726	1450
Farmers On Job		2300	5120	300	935	9155	900
Farmer Exchange Program			325	20000	374	20699	377
Sub Total	75	2564	6887	23069	8119	41114	3259
Total In-Country	80	3229	7172	23752	8707	42890	9154
Overseas Training Funded by USAID Grant							
Acadamic US			4		3	7	
Acadamic TCF			1		1	2	
Sub Total			5		4	9	
Technical US		8	3	15		26	
Technical TCF		14	18	18		50	
Total Overseas		22	26	33	4	85	
Total Training Program	80	3,251	7,198	23,785	8,711	42,975	9,154

T5TRNCAP

TABLE V - 2

OVERSEAS TRAINING - FUNDED BY USAID GRANT

Name of Participant	Designation/ Agency	Course	Institution	Duration	Period From	Period To	Cost $	Post training Assignment/ Remarks
US-LT								
383-0081-1-60056 SV Ratnasara	IE/ID HO	M.S. in Eng. (Water Management)	U.S.U. Utah	18 Months	Jan. 89	Sep. 90	46177	N/A
383-0081-1-60057 D.Abesuriya	AD/DOA	M.S. In Agriculture	University of Arizona	18 Months	1-9-89	28-2-91	40050	
383-0081-1-69262 KAUS Imbulana	IE/Polonnaruwa	M.S. Irrig. Engineering		18 Months	10-1-87	30-9-90	45987	SLITI
383-0081-1-60083 MGM Razeek	R&T Officer ARRTI	M.S. In Sociology		18 Months	6-1-90	6-6-92	41550	N/A
US-ST								
383-0081-1-60060 SS Ranatunga S Senaratna S Piyadasa Mrs. Samarasekera Mrs. Imbulana	DD IMD IE Hinguraigoda DDI Polonnaruwa CIE Polonnaruwa IE DDI/Polon.	Course in O&M, Management of Irrigation Delivery systems	USU Logan Utah	6 Wks	2-10-82	12-11-89	43525	No Change
383-0081-1-60059 RWF Ratnayake W Ratnayake MR Jayasinghe	DD IMD Adl. DD(Ext)DOA DD-ID	Course on ME&F and Management of Agric. Systems. Visit to Islamabad, Lahore & Karachchi	CSU-Colorado	3 Wks	26-9-88	14-10-88	24250	N/A
383-81-1-69071 AMUB Alahakoon K Nittiyanandan DS Ratnayake	DD IE ISMP	1. On farm Irrigation Design & Evaluation 2.On farm wtr.scheduling 3.Main System ,, ,,	IIC-Utah Logan	11 Wks	7-5-89	29-7-89	35520	No Change
383-81-1-60086 AMS Munasinghe DD ARiyaratna W Nimal Rohana SLM Aliyar GP Perera RH Piyaratna WM Tilakaratna	CIE Kurunegala DA Hinguraigoda DA Polonnaruwa	Applied microcomputer use in Irrigation & Drainage	IIC-Utah	8 Wks	7-1-90	3-3-90	78095	No Change
383-81-1-60094 W Kuruppu FM Sugunapala	FM Kaudulla FM Minneriaya	Training for trainers for Ag. & Rural Develop.	George Mason University	5 Wks	6-8-90	14-9-90	21700	No Change

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TABLE V - 2

Sheet 2 of 5

OVERSEAS TRAINING - FUNDED BY USAID GRANT

Name of Participant	Designation/ Agency	Course	Institution	Duration	Period From	Period To	Cost $	Post training Assignment/ Remarks
US-ST								
383-0081-1-60100		RE&F and Management of	CIIM - CSU	3 Wks	3-9-90	28-9-90	8875	No Change
W Ellawela	DD IMD	Ag. Systems	Colarado					
383-0081-1-60104								
GT Jayawardena	PD ISMP	O&M and Management of	IIC Utah	6 Wks	30-9-90	10-11-90	42720	----
S Senthinathan	DDI Ampara	Irrg. Delivery systems						
D Wijenayake	IE Polonnaruwa							
WAP Wijesooriya	IE Nikaweratiya							
383-0081-1-60106		1. Eighth International		1 Week	21-10-90	26-10-90	5510	No Change
WHE Premaratna	Adl Dir IMD	Soil corelation meeting						
		Texas. 2. Annual Meeting						
		of American Society of						
		Agronomy, Texas						
ICT								
383-0081-1-68041		Seminar, Workshop and		3 Wks	9-4-88	29-4-88	11421	No Change
WMN Boteju	PD ISMP	observation tourin						
W Kuruppu	PM Kaudulla	Manila, Bangkok and						
HA Karunasena	IE Kaudulla	Kathmandu						
383-0081-1-68059								
DG Premachandra	Adl. S.ML&MD	Meetings, field visits		3 Wks	27-8-88	28-9-88	17070	No Change
GT Jayawardena	PD ISMP	in Phillipenes and						
LT Wijesuriya	Adl PD ISMP	Thailand						
B Bulumulla	GA Kurunegala							
383-0081-1-69084								
WA Gnanasena	Farmer	Study tour Thailand	AIT Bangkok	3 Wks	1-10-89	21-10-89	18974	No Change
PM Herathbanda								
HW Ukkubanda								
EW Sutatapala								
J Kudiyanse								
AA Mawatte								
DKT Ratnayake								
WM Gunaseskera								
PP Gunaratna								
383-0081-1-60101								
WLW Premadasa	PM Giritale	Study Tour of farmer	AIT Bangkok	3 Wks	22-8-90	15-9-90	19668	No Change
MK Wimalasena	‹›	Organizations in						
MPM Sunil Perera	‹›	Thailand						
HP Sirisena	‹›							
MAS Premachandra	‹› Farmers							
ERG Suriyawardena	‹›							
US Kiribanda	‹›							
AM Priyaratna	‹›							
HM Mathubanda	‹›							

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TABLE V - 2

Sheet 3 of 5

OVERSEAS TRAINING - FUNDED BY USAID GRANT

Name of Participant	Designation/ Agency	Course	Institution	Duration	Period From	Period To	Cost $	Post training Assignment/ Remarks
TCT								

383-0081-1-68061	DD IMD	Study Tour in Korea,		3 Wks	9-10-88	30-10-88	15923	No Change
SA Gunasekera	Asst. LC	Philippenes & Bangkok						N/A
SN Jayatilake	PM Dewahuwa							No change
DC Perera								
383-0081-1-60107								
Mrs.TLMC Senaratna	ALC	Study tour in Thailand	AIT Bangkok	3 Wks	1-10-90	20-10-90	23024	
Mrs.MCK Tennakoon	CO							
PIA Silva	)							
HP Ariyaratna	)							
KDI Jotiwansa	) TA							
HP Ariyapala	)							
WD Fonseska	)							
UR Liyanage	)							
WIT Croos	)							
383-0081-1-69063								
RJ Gunawardena	TA Minneriya	Project Managers Course	NIA Consult	3 Wks	7-11-88	26-11-88	15040	No Change
WMD Akunugama	do Kaudulla		Inc.					No Change
S Liyanagamage	PM Hakwatunaoya		Manila					No Change
KMM Sheriff	do Galoya RB		Philippines					Adl GA Battica
383-0081-1-69073		Rehab. & Management of	AIT Bangkok	7 Wks	8-5-89	30-6-89	5632	No Change
S Senaratna	IE Hingurakgoda	Irrig. Projects						
383-0081-1-69081								
SS Ranatunga	DD IMD	Study tour of		3.5 Wks	27-8-89	21-9-89	21320	No Change
UG Jayasinghe	GA Polonnaruwa	Indonesia, Korea						
S Balasingam	DDI Kurunegala							
GT Jayawardena	PD ISMP							
383-0081-1-69079		1.Planning & Management	UNDP Manila	3.5 Wks	28-8-89	22-9-89	7630	No Change
W Ellawela	DD IMD	of training programs						
IR Perera	R&T Officer	2.Pre course study tour						
	ARATI							
383-0081-1-69082		Integrated farming	AIT Bangkok	6 Wks	18-9-89	27-10-89	8422	N/A
MKB Dissanayake	Asst. Com. DAS	Systems Management						
BMAK Bandaranayake	AG Instructress	Program						
	DAS							
383-0081-169068		Human Settlement Devel.	AIT Bangkok	11.5 Wks	8-5-89	20-4-90	15222	N/A
M Sirisena	PM Polonnaruwa	1. Certificate						
		2. Diploma						
383-0088/21		Management Rural Devep.	AIT	4 Wks	20-8-90	14-9-90	7370	GA Aspara
G Mudannayake	GA Aspara	AIT Bangkok	AIT	4 Wks	20-8-90	14-9-90	7370	PM Polonnaruwa
UG Abegunawardena	PM Polonnaruwa	,,						
383-088/24								
V Jayasena	PM	Training	UNDP, Manila	3 Wks	5-11-90	23-11-90	7568	No Change
HMH Dissanayake	DD Polonnaruwa	Training	UNDP, Manila	3 Wks	5-11-90	23-11-90	7568	No Change

Sheet 4 of 5

TABLE V - 2

OVERSEAS TRAINING - FUNDED BY USAID GRANT

Name of Participant	Designation/ Agency	Course	Institution	Duration	Period From	Period To	Cost $	Post training Assignment/ Remarks
US-ST								
383-080-1-62167		Trn. on Orgnizations	USDA	1 Month	26-5-92	26-6-92	12,260	N/A
S Dananasooriya	Asst Dir	And Mgt. Development						
US-ST								
383-080-1-62160								
W Ellawela	Dy. Dir. IMD	Trn in Organization and	USDA	1 Month	26-5-92	26-6-92	38,245	N/A
WD Tilakaratna	PM IMD	Management Development						
WLW Premadasa	PM IMD							
US-ST								
383-080-1-62157								
HPS Somasiri	DDI	Trn on on farm Irrig.	IIC/USU	5 Weeks	13-5-92	13-6-92	43,665	N/A
Mrs.VS Nallaperuma	IE	Design, Evaluation and	USA					
WG Siripala	IE	scheduling						
GP Gunawardena	IE							
US-ST								
383-080-1-61149		Trn.course on Management	USU/USA	2.5 Month	29-9-91	9-11-91	9,975	No Change
PAKR Theodore	IE	of Irrg.Dellivery System						
TCT								
383-080-1-61148								
DM Ariyaratna	Dir. IMD	Study tour in South		3 Weeks	26-8-91	13-9-91	14,411	No Change
LU Weerakoon	State Sec.Irrig	Korea and Indonesia						
TCT								
383-080-1-61142								
WGDA Wimalaratna	ADA	Training in Planning	DTCP Manila	3 Weeks	2-9-91	20-9-91	4,281	N/A
		and Management	Philippine					
TCT								
383-080-1-61132								
S Jayasinghe	DD Finance	Trn. on Programing	AIM Manila	3 Weeks	4-11-91	29-11-91	4,786	N/A
		for Development	Philippine					
TCT								
383-080-1-61150								
UG Abeygunawardena	PM	Study Tour to Observe	AIT	2 Weeks	30-9-91	13-10-91	21,040	No Change
SM Dharmatunga	Farmer	Agricultural and	Bangkok					
AMM sakitu	do	Irrigation Schemes						
KK Kiribanda	do							
RM Sunil Gamini	do							
RP Tilakaratna	do							
DT Wijeratna	do							
SP Winie Sarath	do							
KA Rendias	do							

TRNDVS

TABLE V - 2

Sheet 5 of 5

OVERSEAS TRAINING - FUNDED BY USAID GRANT

Name of Participant	Designation/ Agency	Course	Institution	Duration	Period From	Period To	Cost $	Post training Assignment/ Remarks
TCT								
383-088-1-62150								
IA Jabar	PM	Study Tour Farmer	AIT	2 Weeks	11-5-92	26-5-92	37,625	N/A
KBSK Semasinghe	AO	Management Irrigation	Bangkok					
PMW Bandaranayake	IDO	Systems in						
LSP Silva	IDO	Thailand						
UPK Perera	IDO							
P Wanigasinghe	IDO							
RP Ekanayake	IDO							
LP Jayampathy	PM							
J Jayasena	PM							
FK Sugunapala	PM							
W Kuruppu	PM							
GRAW Hemmatagama	ADA							
HMA Dissanayake	IDO							
RM Punchibanda	IDO							
TCT								
383-088-1-62165								
AMUB Alahakoon	IE	Study tour of	AIT Bangkok	3 Weeks	7-6-92	28-6-92	43,065	No Change
BG Jemis Silva	Farmer	Farmer Representatives						
ACS Ibrahim	do							
MMG Samarakoon	do							
WM Karunaratna	do							
AM Wijeratna	do							
H Podiappuhamy	do							
FGW Jayatilake	do							
PG Nagoda	do							
IG Babanis	do							
O Karunaratna	do							
GG Jayasena	do							
DM Wijekoon	do							
SM Yoosuf	do							
AAM Merza	do							
DP Abesena	do							
BM Mutubanda	do							

TRNOVS

Table V-3

TRAINING PROGRAMS CONDUCTED DURING THE YEAR 1990 - 30 JUNE 1992.

Dec 15 to Jan 6, 90	IO Training	PM's Office Hingurakgoda
8-31 Jan.	TAA Trn. on hydraulic operations of Irrigation delivery systems	SLITTI
15-22 Feb 1990	IO Training	Anuradhapura
5-9 March 1990	TA Training Hydraulics on Irrigation Systems	SLITTI
24-26 May 1990	In-service Trn. course for WSS water management	SLITTI
May 1990	2 day trn. course for selected DCO members and IOs	Polonnaruwa
19 May to 6 Jun 90	IO Training	Kundasale
14-15 Sep 1990	TA Trn. course	SLITTI
19-24 Nov 1990	Trn. for FMA/MEF Asst.	Colombo
3-7 Dec. 1990	In-service Trn. for TAA	SLITTI
Jan 1991	In-service Trn. for TAA/WSS	SLITTI
4-7 Mar 1991	FCG Reps. training	Polonnaruwa
Mar. 91 3 days	In-service Trn. for TAA/WSS/IOs	SLITTI
Mar 91 5 days	Trn. in Const. and quality control for WSS	SLITTI
27 Jan to 6 Feb. 92	IOs Training	ARTI
May 22 to Jun 30 92	VOCA Training Women Organization	Minneriya Scheme

TRN2.5

ANNEX 5

COMMODITY PROCUREMENT

Item	LOP Target	Procured by PACD
Front End Loader	1	1
Back hoe with Shovel	1	1
Concrete Vibrator with Engine	4	4
Concrete Mixer 5/7 Cuft.	6	6
Farm Tractor/Trailer	15	15
Farm Tractor/Water Bowser	5	5
Air Compressor with 3 Hammers	1	1
Pumps, half cusec bellow type	4	4
Crawler Tractor 90/100 HP	1	1
Generator Set with Engine 1.0 KWA	6	0
Boom for Cat 225 Back Hoe	1	1
Hand Operated tamping roller	2	2
Hand Held Compactors	40	40
Motor Grader	1	1
Pajero type Jeeps	16	16
4-WD Double Cab Pickups	13	13
Motor Car	2	2
Spares for Equipment	Lot	Lot
Spares for Equipment	Lot	Lot
Current Meters	18	9
Theodolite	1	1
Levels with Accessories	15	15
Hand Levels	40	40
Photocopier	4	4
Typewriter Electronic English	6	6
Typewriter Manual English	2	0
Typewriter Manual Sinhala	2	0
Micro Computer	8	7
Air Conditioners	14	7
Color Television Sets	4	0
Video Cassette Recorders	4	0
Audio Visual Training Aids	Lot	Lot
Slide Projector	2	0
Motorcycles	127	118
Bicycles	300	160
Drafting Equipment	10	0
Office Equipment - Furniture etc.,	Lot	0
Library Requisites	Lot	0
Mosquito Nets	100	100
Leather Bags	100	100
Hand Held Walkie Talkie Radio Sets	19	0
Workshop Equipment	Lot	0
Miscellaneous Small Equipment	Lot	0

ANNEX 5A

ඉඩම්, වාරිමාර්ග සහ මහවැලි සංවර්ධන අමාත්‍යාංශය
காணி, நீர்ப்பாசனம், மகாவலி அபிவிருத்தி அமைச்சு
Ministry of Lands, Irrigation and Mahaweli Development

Irrigation Management Division
Irrigation Department Building,
Bauddhaloka Mawatha,
Colombo 7.

තැ. පෙ. / த. பெ. / P.O. Box 1138

දුරකථන / தொலைபேசி / Telephone 5874 5806 5899

මගේ අංකය / எனது இல. / My No. 10/62/3 (Vol. III)

ඔබේ අංකය / உமது இல. / Your No.

MAR 1 9 1990

දිනය / திகதி / Date 13th March

OFFICE	ACT	INFO
D-RIDD		✓
HSG		
PRM		
EXO		
CTR		
PRI		✓
AGR		
ENG	X	W/A
PSD		
C & R		
DUE DUE	N/-AP	
ACT. TAKEN	NAN	
FILE STA	6.1 & 6.2	
NAN	✓	
INITIALS	(4/5/90)	

OFFICIAL FILE COPY

Mr. Dan Jenkins,
Project Officer,
USAID,
Colombo.

Dear Mr. Jenkins,

IRRIGATION SYSTEMS MANAGEMENT PROJECT
COMMODITY INVENTORY RECORD

Commodity inventory record, in respect of the following procurements, duly certified by me is sent herewith in duplicate.

1) Jeeps
2) Motor Car
3) Spares
4) Motor Cycles
5) Vibratory plate compactors
6) Vibratory tampers
7) Puch bicycles

sincerely,

Jayawardena

G.T. JAYAWARDENA,
Project Director/ISMP.

REFERENCE NO. 90/544
DATE RECEIVED 03.19.90
ACTION NAN

IRRIGATION SYSTEMS MANAGEMENT PROJECT - 383-0080

COMMODITY INVENTORY - 1990

Item Description	Make & Model	Serial No.	Regd. No.	Qty.	Location	Date of Received	Govt.Inventory No.	Unit Price	Source/Origin
Pajero Jeep	LD 43	400360	32/4822	01	Sheladia Associates Inc.	17.03.88	4N/67		Japan
- do -	CLO 48 VFY	400453	32/4828	01	- do -	18.03.88	4N/68		- do -
- do -	- do -	400456	32/4826	01	- do -	22.03.88	4N/69		- do -
- do -	- do -	400459	32/4827	01	- do -	23.03.88	4N/70		- do -
- do -	LD 43	400357	32/4820	01	- do -	16.03.88	4N/66		- do -
- do -	CLO 48VFY	400565	32/6795	01	I.E. Kaudulla	28.06.89	4-0/12		- do -
- do -	- do -	400544	32/6794	01	I.E. Polonnaruwa	22.06.89	4-0/13		- do -
- do -	- do -	400501	32/6796	01	I.E. Hingurakgoda	22.06.89	4-0/14		- do -
- do -	- do -	400543	32/7316	01	D.D.Ampara	31.01.90	4-0/59		- do -
- do -	- do -	400510	32/7317	01	- do -	08.02.90	4-0/65		- do -
- do -	- do -	400517	32/7318	01	I.M.D.	08.02.90	4-0/66		- do -
- do -	- do -	400584	32/7319	01	M.E./H.O.	31.01.90	4-0/60		- do -
- do -	- do -	400525	32/7321	01	I.M.D.	08.02.90	4-0/64		- do -
- do -	- do -	400537	32/7323	01	- do -	08.02.90	4-0/63		- do -
- do -	- do -	400531	32/7325	01	Director Agriculture	31.01.90	4-0/62		- do -
- do -	- do -	400571	32/7324	01	D.D.Polonnaruwa	31.01.90	4-0/61		- do -
Nissan Pulsar Car	1.4 SLX	001769	16/4257	01	I.M.D.	24.09.89	4-0/18		- do -
Honda Motor Cycle	CG 125	1360776	102/4036	01	Institutional Development, Officer Parakrama Samudraya	17.08.88	4N/134		- do -
- do -	- do -	1360787	102/4068	01	D.D.Polonnaruwa	17.08.88	4N/136		- do -
- do -	- do -	1364068	102/4069	01	- do -	17.08.88	4N/137		- do -
- do -	- do -	1364156	102/4070	01	- do -	17.08.88	4N/138		- do -
- do -	- do -	1360792	102/4072	01	Institutional Development, Officer, Kaudulla Pro.	17.08.88	4N/140		- do -
- do -	- do -	1360777	102/4073	01	D.D.Polonnaruwa	17.08.88	4N/141		- do -

Contd. /...2

IRRIGATION SYSTEMS MANAGEMENT PROJECT - 383-0080

COMMODITY INVENTORY - 1990

Item Description	Make & Model	Serial No.	Regd. No.	Qty.	Location	Date of Received	Govt.Inventory No.	Unit Price	Source/Origin
Honda Motor Cycle	CG 125	1360770	102/4080	01	P.D.Polonnaruwa	17.08.88	4N/142		Japan
- do -	- do -	1364158	102/4081	01	- do -	17.08.88	4N/143		- do -
- do -	- do -	1360793	102/4082	01	- do -	17.08.88	4N/144		- do -
- do -	- do -	1360720	102/4083	01	Institutional Development, Officer, Giritale.	17.08.88	4N/145		- do -
					I.E.Kaudulla	17.08.88	4N/146		- do -
- do -	- do -	1360794	102/4085	01	D.D.Polonnaruwa	- do -	4N/147		- do -
- do -	- do -	1360764	102/4086	01	I.E.Kaudulla	- do -	4N/148		- do -
- do -	- do -	1360786	102/4087	01	D.D.Polonnaruwa	- do -	4N/149		- do -
- do -	- do -	1364154	102/4088	01	- do -	- do -	4N/150		- do -
- do -	- do -	1360781	102/4090	01	Ins.Officer, Minneriya	- do -	4N/152		- do -
- do -	- do -	1360796	102/4063	01	M.E.Ratmalana	- do -	4N/135		- do -
- do -	- do -	1360780	102/4089	01	- do -	- do -	4N/151		- do -
Honda Motor Cycle	CG 125 3K	1521596	109/417	01	D.D.Polonnaruwa	13.11.89	4-0/32		- do -
- do -	do -	1521347	109/238	01	- do -	- do -	4-0/26		- do -
- do -	- do -	1521533	109/414	01	- do -	- do -	4-0/33		- do -
- do -	- do -	1521364	109/166	01	- do -	- do -	4-0/35		- do -
- do -	- do -	1521349	109/419	01	- do -	- do -	4-0/38		- do -
- do -	- do -	1521535	109/391	01	- do -	- do -	4-0/42		- do -
- do -	- do -	1521538	109/181	01	D.D.Ampara	- do -	4-0/45		- do -
- do -	- do -	1521551	109/394	01	- do -	- do -	4-0/41		- do -
- do -	- do -	1521582	109/161	01	- do -	- do -	4-0/34		- do -
- do -	- do -	1521343	109/416	01	- do -	- do -	4-0/36		- do -
- do -	- do -	1521213	109/163	01	- do -	- do -	4-0/31		- do -
- do -	- do -	1521348	109/416	01	- do -	- do -	4-0/27		- do -
- do -	- do -	1521587	109/180	01	M.E.Ratmalana Stores.	- do -	4-0/28		- do -
- do -	- do -	1521540	109/174	01	- do -	- do -	4-0/29		- do -
- do -	- do -	1521228	109/410	01	- do -	- do -	4-0/37		- do -
- do -	- do -	1521209	109/392	01	- do -	- do -	4-0/39		- do -
- do -	- do -	1521345	109/395	01	- do -	- do -	4-0/40		- do -
- do -	- do -	1521669	109/415	01	- do -	- do -	4-0/43		- do -
- do -	- do -	1521670	109/292	01	- do -	- do -	4-0/44		- do -
- do -	- do -	1521207	109/182	01	- do -	- do -	4-0/46		- do -

Contd../..3

IRRIGATION SYSTEMS MANAGEMENT PROJECT - 383-0080

COMMODITY INVENTORY - 1990

Item Description	Make & Model	Serial No.	Regd. No.	Qty.	Location	Date of Received	Govt.Inventory No.	Unit Price	Source/Origin
Push Bicycle	AVON			13	Parakrama Samudraya, Pro. Manager	01.03.88	4-0/55		India
- do -	- do -				Pro. Manager Kaudulla	- do -	4-0/55		- do -
- do -	- do -			14	Pro. Manager Minneriya	- do -	4-0/56		- do -
- do -	- do -			02	Pro. Manager Hakwatunnoya	- do -	4-0/56		- do -
- do -	- do -			02	Pro. Manager Kick Bonti Elo	- do -	4-0/56		- do -
- do -	- do -			03	Pro. Manager Galoya	- do -	4-0/56		- do -
Vibrating Tampers	Wacker-BS 60V	501335641		01	D.D. Ampara	12.09.89	41 128		USA
- do -	- do -	501335789		01	D.D. Ampara	- do -	41 129		- do -
- do -	- do -	501335756		01	- do -	- do -	41 130		- do -
- do -	- do -	501335735		01	- do -	- do -	41 131		- do -
- do -	- do -	501335629		01	- do -	- do -	41 132		- do -
- do -	- do -	501335778		01	- do -	- do -	41 133		- do -
- do -	- do -	501335732		01	- do -	- do -	41 134		- do -
- do -	- do -	501335673		01	- do -	- do -	41 135		- do -
- do -	- do -	501335779		01	- do -	- do -	41 136		- do -
- do -	- do -	501335753		01	I.E.Hingurakgoda	- do -	41 137		- do -
- do -	- do -	501335687		01	- do -	- do -	41 138		- do -
- do -	- do -	501335617		01	- do -	- do -	41 139		- do -
- do -	- do -	501335687		01	I.E.Kaudulla	- do -	41 140		- do -
- do -	- do -	501335630		01	- do -	- do -	41 141		- do -
- do -	- do -	501335768		01	- do -	- do -	41 142		- do -
- do -	- do -	501335754		01	- do -	- do -	41 143		- do -
- do -	- do -	501335688		01	I.E.Polonnaruwa	- do -	41 144		- do -
- do -	- do -	501335815		01	- do -	- do -	41 145		- do -
- do -	- do -	501335608		01	- do -	- do -	41 146		- do -
- do -	- do -	501335637		01	- do -	- do -	41 147		- do -

Contd../..4

IRRIGATION SYSTEMS MANAGEMENT PROJECT - 383-0080

COMMODITY INVENTORY - 1990

Item Description	Make & Model	Serial No.	Regd. No.	Qty.	Location	Date of Received	Govt. Inventory No.	Unit Price	Source/Origin
Vibrating plate Compactor	Wacker-VPH 1750	627101025		01	D.D.Ampara	12.04.89	41 148		USA
- do -	- do -	627101039		01	- do -	- do -	41 149		- do -
- do -	- do -	627101033		01	- do -	- do -	41 150		- do -
- do -	- do -	627101030		01	- do -	- do -	41 151		- do -
- do -	- do -	627101019		01	- do -	- do -	41 152		- do -
- do -	- do -	627101020		01	- do -	- do -	41 153		- do -
- do -	- do -	627101031		01	- do	- do -	41 154		- do -
- do -	- do -	627101011		01	- do -	- do -	41 155		- do -
- do -	- do -	627101016		01	I.E.Kandalla	- do -	41 156		- do -
- do -	- do -	627101038		01	- do -	- do -	41 157		- do -
- do -	- do -	627101017		01	- do -	- do -	41 158		- do -
- do -	- do -	627101029		01	- do -	- do -	41 159		- do -
- do -	- do -	627101037		01	- do -	- do -	41 160		- do -
- do -	- do -	627101034		01	I.E.Hingnadigala	- do -	41 161		- do -
- do	- do -	627101028		01	- do -	- do -	41 162		- do -
- do -	- do -	627101036		01	- do -	- do -	41 163		- do -
- do -	- do -	627101032		01	I.E.Polonnaruwa	- do -	41 164		- do -
- do -	- do -	627101035		01	- do -	- do -	41 165		- do -
- do -	- do -	627101014		01	- do -	- do -	41 166		- do -
- do -	- do -	627101026		01	- do -	- do -	41 167		- do -
Spare parts (Crawler Tractor)	J.I. Case	-		00	4D Head Office	12.02.88	168		U.S.

I certify that the above commodities are in the locations specified and are being used for the project.

Jayawardena 18/3/90

.....

Authorized Signer

G.T. JAYAWARDENA,

Project Director/ ISMP.

ANNEX 6

CLOSE OUT CHECK LIST

Chapter 14 of USAID Handbook 3 covers close out of projects. USAID, Sri Lanka Mission Order 430.03 summarized these requirements and the following check list is based on the Mission Order and Handbook 3. Each item of the list is given below with the status.

1. Financial Close Out: The ISM Project ended on December 31, 1992 and the Terminal Disbursement Date (TDD) falls on September 30, 1993. This is the terminal date by which all claims for payment must be processed and made by USAID. **Annexe 11** presents the financial status of ISMP as of September 9, 1993. Accordingly, $111,067.62 in Grant funds and $336,325.61 in Loan funds amounting to a total of $447,393.23 in Project funds will be available for de-obligation after the Terminal Disbursement Date (TDD) of September 30, 1993.

There were five AID contracts under ISMP; Sheladia Associates Inc. (SAI) for Technical Assistance (TA), IIMI for research, ISPAN for management workshops and mid-term evaluation, and WMSII for the Diagnostic Analysis. It is confirmed that there are no outstanding payments due to IIMI and WMSII. $310.19, which is the balance under the IIMI contract will therefore be de-committed from this contract. The TA Contract with SAI ended on June 30, 1992, leaving an undisbursed balance of $52,677.49 under the Contract. In order to execute the formal close-out of the SAI Contract USAID/Colombo communicated with SAI, beginning as early as April 7, 1993, asking them to submit their final voucher together with the release form including the confirmed overhead rate. SAI responded by fax dated June 6, 1993 assuring that all the necessary paperwork will be forwarded by the end of June 1993. Regrettably, USAID has still not received the necessary documents as at September 9, 1993, inspite of several follow-up letters and faxes. This undisbursed balance of $52,677.49 may have to remain as an outstanding payment for sometime after the Terminal Disbursement Date until this final payment is settled. The resulting undisbursed balance, if any, could then be de-committed. ISPAN, by their fax dated August 27, 1993, has confirmed that their activities under the ISMP are complete and accounts closed. They confirm that the balances remaining under their buy-in activities are $5,173 and $12,542. The ISPAN confirmed balances of $5,173 and $12,542, which appear under the "Training" and "Evaluation" line items in the last column of **Annexe 11** page 1, could therefore be de-committed from their Contracts. In conclusion, all the amounts appearing in the last column of **Annexe 11** Pages 1 and 2 could be de-obligated after the TDD of September 30, 1993 except the undisbursed balance of $52,677.49 remaining in the TA contract. After a considerable delay the final voucher and the release form from SAI finally arrived. After settling the final payment under the SAI Contract the new undisbursed balance of $43,682.63 was de-obligated from their Contract. **Page 3 of Annexe 11 shows the final financial status of the ISMP as of June 30, 1994.**

The Borrower/Grantee (MLIMD) has ascertained that funds are available in their budget to complete all commitments under the Loan and Grant Agreement. A three year budget was submitted to USAID for completing rehabilitation, and Treasury has covenanted to fund this budget each year.

2. **Host Country Contribution (HCC):** The Project Loan and Grant Agreement specified the details of host country inputs, including physical, human resources and financial. Physical inputs included office space and housing for personnel at the project site, land and buildings for facilities construction and irrigation systems operation centers, and expendable/nonexpendable items for project counterpart personnel. There were no delays or constraints in supplying these inputs. Human resources included key counterparts at both the central and systems levels. There were some problems with staffing and commitment to the project for the first six months at the central and site levels, but integrated orientation and planning workshops overcame these problems. For the remainder of the project, there was full commitment and staffing, including adjustments as needed. It is possible this pulled resources from other areas of the country since all agencies were working with a fixed base.

The ISM Project, among other Projects, was subjected to a HCC audit by the Office of the Regional Inspector General for Audit/Singapore. According to information available in the ISMP files, the Office of Projects (PRJ) wanted each of the USAID Offices to collect the HCC information from the GSL. The Jenkins/Premachandra letter of December 15, 1987 had also intimated to the GSL the HCC reporting requirement. Expenditure statements were received by USAID at the end of the year 1987 and 1988. Thereafter, the Deputy Director (Finance) attached to the IMD has furnished periodic (Quarterly) statements of HCC by the GSL from December 1989 to the PACD of December 31, 1992. These have appeared in the Quarterly Project Progress Reports as well. The HCC was reported in the PIRs beginning March 1991. The HCC information furnished by the GSL has been verified by the Office of Controller (CTR).

The original HCC requirement as per the ProAg was $ 9.7 million. This represents 34% of the original total project cost of $28.3 million (ie. $6.9 million in AID grant funds, $11.7 million in AID loan funds and $9.7 million in HCC). The revised project financial plan, as appearing in Project Amendment Number Two dated April 30, 1993, provides $6,790,139 in AID grant funds, $11,587,616 in AID loan funds, and $9,600,000 in HCC amounting to a total of $27,977,755 in project funds. This revised HCC requirement of $9.6 million also represents 34% of the revised total project cost of $27,977,755. The HCC verified by the Office of Controller (CTR) was $9,516,732 (please see **Annexe 10**) as at PACD. However, the final revised status of the project finances, as appearing in PIL No.98 of June 10, 1994, provides $6,679,352 in AID grant funds and $11,251,290 in AID loan funds. The CTR verified HCC of $9,516,732 brings the total project cost to $27,447,374 and represents 34.7% of the final total Project cost of $27,447,374.

3. **Final Evaluation:** Two years before the PACD it was decided not to conduct a formal final evaluation of the ISMP. This decision was made based on several factors. The mid term evaluation provided a very good report of the status of the project, with major recommendations which were accepted and implemented. Since the nature of the project was experimental, the research component completed eight studies which were essentially evaluations of various elements of the project. The final research study drew upon all the former studies and project experiences and in itself served as a final evaluation with recommendations and lessons for continuation and replication. The TA consultant was directed to focus their final report on lessons and recommendations from their unique vantage point and experience. This resulted in a very candid and detailed report for future implementation. Finally, this close out report has been written to focus on project evaluation from the USAID perspective. USAID Sri Lanka is confident that the decision to waiver a formal final evaluation was sound.

4. **Equipment Utilization:** One of the most positive actions of the project was a very careful review of the project design commodities list by the end users as part of the life-of-project work plan. As a result of this exercise, the list was greatly reduced and modified. Some small and more appropriate equipment was substituted for large construction equipment, and spares were ordered to repair some heavy equipment purchased under a former USAID project. These actions resulted in matching the type and quantity of equipment to the required task, with very good utilization throughout the project. It must be understood however, that the nature of irrigation rehabilitation and maintenance restricts most work to the two months between irrigation seasons, so much of the construction equipment is not heavily utilized outside that period. One exception to good utilization was the 40 hand-levels purchased for engineering technicians to set out and check field construction.

They preferred to continue using precision levels, when in fact, they are slower, more costly, and have far greater precision than needed for most of the check work (once a local temporary benchmark is established). It is possible the failure was lack of training is the use and benefits in the cost effective hand levels. Details of procurement and equipment are given in the Project Element section and **Attachment 5** of this report.

5. **Post Project Monitoring:** Three post project monitoring or implementation activities are planned or ongoing. First and foremost is the institutionalized Monitoring Evaluation and Feedback component of the project. This element collects and analyses monthly and seasonal information at the irrigation system level to monitor and improve performance and management. This system has been expanded to major irrigation schemes outside the ISMP areas. During the last year of the project, the consultant who developed the system was asked to return and work with Irrigation Management Division to assist in improving the system for post project monitoring and focusing on sustainability. This system has two successful years of operation, and reports will continue to be sent to USAID.

An outside monitoring and evaluation activity is planned to be implemented through the Shared Control of Resources (SCOR) component of the Natural Resources and Environmental Policy (NAREP) Project. The International Irrigation Management Institute will periodically evaluate farmer organizations established under ISMP for level of development and sustainability, and the improved water management activities for effectiveness, sustainability and replicability. IIMI is the ideal organization for these activities due to their close involvement implementing the research component of ISMP, as well as their national and international interest and mandate in the field of irrigation management.

The final planned post project activity is to assist and advise selected advanced DCFO's and SLFO's enter into commercial income generating activities under the **Commercial Small Farm Development (CSFD)** project. This existing project will work with selected organizations in the ISMP to establish or improve commercial operations such as processing, storage and marketing of rice, purchasing and selling of inputs such as fertilizer, pesticides and equipment, and credit. This will require adding funds into CSFD.

6. Lessons Learned: Since this close out report focuses on evaluation and lessons, a chapter of this report and two annexes are dedicated specifically to lessons.

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ANNEXE 7

SECTOR ASSISTANCE IMPLEMENTATION PLAN

TRANCHE	TARGET DATE	REQUIREMENTS	DOCUMENTATION	CERTIFICATION	APPROVAL
No.1 ($3M)	01 Sept. 1991	(a) FO Standard agreement (b) Evaluation criteria for FO turnover (c) GSL agrees to: i. turnover rehabilited system to FO's meeting criteria. ii. adequate funding for completing rehabilitation iii. sufficient budget allocations for future O&M.	Draft Agreement Draft evaluation criteria	TA Contractor TA Contractor	USAID (Director) USAID (Director)
No.2 ($2M)	01 Dec. 1991	a) 30 signed Standard agreements for FO turnover b) Establishment of water management cells for seven systems.	Signed agreements	TA Contractor	USAID (Director)
No.3 ($2M)	01 June 1992	a) 40 Signed agreements for FO turnover (total) b) Two water management cells functioning with computer models and calibrated water measurement. c) Three system level FO's and circular establishing roles and responsibilities.	Signed agreements Statement from Irrigation Department	TA Contractor TA Contractor USAID	USAID (Director) USAID (Director)

Annex 8
~~Attachment~~
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ISAP (383-0080)

PROJECT FINANCIAL PLAN
AMENDMENT NUMBER ONE
(Source and Application of Funds - $000s)

Project Inputs	Cumulative Obligations 1986			Obligations Under this Amendment 1			Total AID		
	Grant	Loan	B/G	Grant	Loan	B/G	Grant	Loan	B/G
Technical Assistance	3625	-	-	965	-	-	4590	-	-
Training	995	-	-	-	-	145	995	-	145
Commodities	260	4085	-	-	-	520	260	4085	520
Facilities Construction	-	185	-	-	-	145	-	185	145
Upgrading/Rehabilitation	-	3776	-	-	3654	4400	-	7430	4400
Research	540	-	-	-	-	-	540	-	-
Recurrent Costs	380	-	330	-	-	4160	380	-	4490
Evaluation	-	-	-	135	-	-	135	-	-
Totals	5800	8046	330	1100	3654	9370	6900	11700	9700

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REVISED PROJECT FINANCIAL PLAN AS PER PIL 13

(Source and Application of Funds - $ 000s)

Project Inputs	Cumulative Obligations-1987			Changes Per this PIL 13			Total	AID	Total
	Grant	Loan	B/G	Grant	Loan	B/G	Grant	Loan	B/G
Technical Assistance	4590	-	-	+276	-	-	4866	-	-
Training	995	-	145	-	-	-	995	-	145
Commodities	260	4085	520	-156	-	-	104	4085	520
Facilities Construction	-	185	145	-	-	-	-	185	145
Upgrading/Rehabilitation	-	7430	4400	-	-	-	-	7430	4400
Research	540	-	-	-120	-	-	420	-	-
Recurrent Costs	380	-	4490	-	-	-	380	-	4490
Evaluation	135	-	-	-	-	-	135	-	-
TOTALS	6900	11700	9700	0	0	0	6900	11700	9700

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REVISED PROJECT FINANCIAL PLAN AS PER PIL 43

(Source and Application of Funds - $ 000s)

Project Inputs	Changes Per this PIL 43 Grant	Loan	B/G	Total AID Grant	Loan	Total B/G
Technical Assistance	-	-	-	4866	-	-
Training	-	-	-	995	-	145
Commodities	-	-	-	104	4086	520
Facilities Construction	-	-	-	-	185	145
Upgrading/Rehabilitation	-	-	-	-	7430	4400
Research	+160	-	-	580	-	-
Recurrent Costs	-160	-	-	220	-	4490
Evaluation	-	-	-	135	-	-
TOTALS	0	0	0	6900	11700	9700

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ISMP (383-0080)

ATTACHMENT 8 Page 4 of 8

REVISED PROJECT FINANCIAL PLAN AS PER PIL 62

(Source and Application of Funds - $000s)

Project Inputs	Original Grant	Changes Per this PIL 62 Grant	Loan	B/G	Total AID Grant	Loan	Total B/G
Technical Assistance	4,866	+150	-	-	5016	-	-
Training	995	-	-	-	995	-	145
Commodities	104	-	-	-	104	4085	520
Facilities Construction	-	-	-	-	-	185	145
Upgrading/Rehabilitation	-	-	-	-	-	7430	4400
Research	580	-	-	-	580	-	-
Recurrent Costs	220	-150	-	-	70	-	4490
Evaluation	135	-	-	-	135	-	-
TOTAL	6,900	0	0	0	6900	11700	9700

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REVISED PROJECT FINANCIAL PLAN
AS PER PIL 69

The revised project budget is summarized below:

Budget Line Item:	Prior to this amendment Total AID Grant:	Prior to this amendment Total AID Loan:	Changes Per This Project Amendment Grant:	Changes Per This Project Amendment Loan:	B/G:	Revised Total AID Grant:	Revised Total AID Loan:	B/G Total
Performance Disbursements (new line item)	-	-	-	+7,000,000	-	-	7,000,000	-
Technical Assistance	5,016,000	-	-	-	-	5,016,000	-	-
Training	995,000	-	-	-	-	995,000	-	145,000
Commodities	104,000	4,085,000	-	-2,853,834	-	104,000	1,231,166	520,000
Facilities Construction		185,000	-	-36,406	-	-	148,594	145,000
Upgrading/Rehabilitation		7,430,000	-	-4,109,760	-	-	3,320,240	4,400,000
Research	580,000	-	-			580,000	-	-
Recurrent Costs	70,000	-	-	-	-	70,000	-	4,490,000
Evaluation	135,000	-	-	-	-	135,000	-	-
TOTAL	6,900,000	11,700,000	0	0	0	6,900,000	11,700,000	9,700,000

The total GSL and AID contributions to the project remain unchanged at $9,700,000 and $18,600,000 respectively. AID's contribution is reconfigured to add a new "program assistance" line item of $7.0 million, which is made by reducing the "Commodities" line item by $2,853,834, the "Upgrading/Rehabilitation" line item by $4,109,760 and "Facilities Construction" line item by $36,406.

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August 14, 1991.

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Revised Project Financial Plan as per PIL 79
The Revised project budget is summarized below:

Budget Line Item:	Prior to this amendment. Total AID Grant:	Loan:	Changes per this PIL 79 Grant:	Ln	B/G	Revised Total AID Grant:	Loan:	B/G Total
Performance Disbursements (new line item)	-	7,000,000	-	-	-	-	7,000,000	-
Technical Assistance	5,016,000	-	-60,000	-	-	4,956,000	-	-
Training	995,000	-	+60,000	-	-	1,055,000	-	145,000
Commodities	104,000	1,231,166	-	-	-	104,000	1,231,166	520,000
Facilities Construction	-	148,594	-	-	-	-	148,594	145,000
Upgrading/ Rehabilitation	-	3,320,240	-	-	-	-	3,320,240	4,400,000
Research	580,000	-	-	-	-	580,000	-	-
Recurrent Costs	70,000	-	-	-	-	70,000	-	4,490,000
Evaluation	135,000	-	-	-	-	135,000	-	-
TOTAL	6,900,000	11,700,000	0	0	0	6,900,000	11,700,000	9,700,000

ISMP (383-0080)

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Revised Project Financial Plan as per PIL No. 93

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Budget Line Item	Prior to this amendment Total AID Grant	Prior to this amendment Total AID Loan	Changes per this PIL91 Grant	Changes per this PIL91 L	Changes per this PIL91 B/G	Revised Budget Total AID Grant	Revised Budget Total AID Loan	B/G Total
Performance Disbursements	-	7,000,000	-	-	-		7,000,000	-
Technical Assistance	4,956,000	-	-	-	-	4,956,000	-	-
Training	1,055,000	-	-14,000	-	-	1,041,000	-	145,000
Commodities	104,000	1,231,166	-	-	-	104,000	1,231,166	520,000
Facilities Construction	-	148,594	-	-	-	-	148,594	145,000
Upgrading/ Rehabilitation	-	3,320,240	-	-	-	-	3,320,240	4,400,000
Research	580,000	-		-	-	580,000	-	-
Recurrent Costs	70,000	-	+14,000	-	-	84,000	-	4,490,000
Evaluation	135,000	-	-	-	-	135,000	-	-
TOTAL	6,900,000	11,700,000	0	0	0	6,900,000	11,700,000	9,700,000

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Financial Plan for the Irrigation Systems Management Project

AMENDMENT NUMBER TWO

PROJECT INPUTS	CUMULATIVE OBLIGATIONS			DEOBLIGATIONS THIS AMENDMENT			REVISED TOTAL			FUTURE YEARS ANTICIPATED		TOTAL		
	AID		GSL	AID		GSL	AID		GSL	AID	GSL	AID		GSL
	Grant	Loan		Grant	Loan		Grant	Loan				Grant	Loan	
Performance Disbursements	-	7,000,000	-	-	-	-	-	7,000,000	-	-	-	-	7,000,000	-
Technical Assistance	4,956,000	-	-	50,506	-	-	4,905,494	-	-	-	-	4,905,494	-	-
Training	1,041,000	-	145,000	21,063	-	-	1,019,937	-	145,000	-	-	1,019,937	-	145,000
Commodities	104,000	1,231,166	520,000	25,293	33,717	-	78,707	1,197,449	520,000	-	-	78,707	1,197,449	520,000
Facilities Construction	-	148,594	145,000	-	65,410	-	-	83,184	145,000	-	-	-	83,184	145,000
Upgrading/Rehabilitation	-	3,320,240	4,400,000	-	13,257	-	-	3,306,983	4,400,000	-	-	-	3,306,983	4,400,000
Research	580,000	-	-	50	-	-	579,950	-	-	-	-	579,950	-	-
Recurrent Costs	84,000	-	4,490,000	-	-	100,000	84,000	-	4,390,000	-		84,000	-	4,390,000
Evaluation	135,000	-	-	12,949	-	-	122,051	-	-	-	-	122,051	-	-
TOTAL	6,900,000	11,700,000	9,700,000	109,861	112,384	100,000	6,790,139	11,587,616	9,600,000	-	-	6,790,139	11,587,616	9,600,000

This amended Financial Plan supercedes the original Financial Plan of the Project Agreement and the amended Financial Plan attached to PIL No. 93.

Either party unilaterally, with written notice to the other, may adjust line items in this budget to a maximum of 15% per line item, provided, however, that the total obligated amount as shown in the budget is not exceeded.

Annex 9

Irrigation Systems Management Project (383-0080)
List of PILs issued under the ISM Project

PIL NO:	DATE:	SUBJECT:	REMARKS:
01		Setting out the procedures for utilizing the proceeds of the Loan and Grant Agreement	
02	Oct.15, '86	Advises the Govt. of Sri Lanka that the Conditions Precedent to first disbursement has been satisfied.	
03	Mar.17, '87	Approval of Annual Work Plan	
04	Jun.16, '87	Purchase of spare parts for Case Crawler Tractors.	Earmarked US $65,300 in Loan funds for "Commodities".
05	Aug. 6, '87	Rehabilitation of the Irrigation Systems.	Earmarked Rs.93,169,000/- or $3,191,000 in Loan funds for "Upgrad./Rehab."
06	Aug.14, '87	-do-	Committed Rs.13,507,900/- or $462,600 in Loan funds for "Upgrad./Rehabilitation"
07	Sep. 21, '87	Facilities Construction	Earmarked and Committed Rs.927,300/- or $32.000 in Loan funds for "Facilities Construction".
08	Sep. 16, '87	Rehabilitation of the Irrigation Systems.	Committed Rs.1,945,900/- or $65,600 in Loan funds for "Upgrading/Rehabilitation".
09	Oct. 8, '87	Purchase of 5 Jeeps.	Earmarked Jap. Yen 8,844,000 or $57,700 in Grant funds for "Commodities".

PIL NO:	DATE:	SUBJECT:	REMARKS:
10	Dec.11, '87	Facilities Construction.	Earmarked and Committed Rs.1,062,450/- or $35,415 in Loan funds for "Fac. Constn."
11	Oct.22, '87	Purchase of 92 Bicycles for Institutional Organizers.	Earmarked and Committed Rs.147,660/- or $4,873.27 in Loan funds for "Commodities".
12	Dec.24, '87	Amendment to PIL 9 for the purchase of 5 Jeeps.	Committed Jap. Yen 8,040,000 or $66,388.30 in Grant funds for "Commodities".
13	Mar.21, '88	Approval of revised financial plan for the project.	Total amount of Grant funds, total amount of Loan funds and total amount of project funds remain unchanged.
14	Mar.31, '88	Purchase of 100 Mosquito Nets & 100 Circuit Bags for Institutional Organizers.	Earmarked and Committed Rs.74,000/- or $2,500 in Grant funds for "Commodities".
15	May 24, '88	Approval of Annual Workplan for 1988	
16	May 24, '88	Approval of Institutional Organizers scope of work and salaries.	Earmarked and Committed Rs.3,718,833/- or $121,170 in Grant funds for "Recurrent Costs".
17	Jun. 1, '88	Purchase of 19 Motor Cycles for TAs & Institutional Development Officers.	Earmarked and Committed Rs.622,250/- or $20,111.51 in Loan funds for "Commodities".

PIL NO:	DATE:	SUBJECT:	REMARKS:
18	Jun. 7, '88	Amendment to PIL No.14 for purchase of 100 Mosquito Nets and 100 Circuit Bags.	Increased amount earmarked and committed by Rs.12,500/- or $403.62 in Grant funds for "Commodities".
19	Jun.27, '88	Procurement of 6 Computers and Accessories.	Earmarked and Committed Rs.1,146,147/- or $36,913 in Loan funds for "Commodities".
20	July 11, '88	Approval of Institutional Organizers Training Curriculum and Costs.	Earmarked and Committed Rs.1,951,200/- or $63,600 in Grant funds for "Training".
21	July 27, '88	AID Internal Audit.	Requirement of report on operational status of commodities/equipment.
22	Aug.15, '88	Procurement of 15 Levelling Instruments, 15 Staves and 1 Theodolite.	Earmarked and Committed Rs.395,550/- or $12,333.96 in Loan funds for "Commodities".
23	Aug.29, '88	Procurement of 3 Land Vehicles.	Earmarked and Committed Jap. Yen (JY) 4,221,000/- or $37,293.97 in Loan funds for "Commodities".
24	Aug.29, '88	Amendment to PIL No.16 for Institutional Organizers (IO) salaries.	Acceptance of IOs salary abstract as supporting document for reimbursement claims.

PIL NO:	DATE:	SUBJECT:	REMARKS:
25	Oct.3, '88	Amendment to PIL No.22 for the procurement of 01 No. Theodolite	De-commits Rs.54,000/- for item 3 in PIL 22 and commits Rs,65,035/- or $1,982.77 in Loan funds for "Commodities".
26	Jan.18, '89	Amendment to PIL No.5 for Reimbst. of Rehabilitation and Construction Works.	Increases the Earmark by Rs.30,039,255/- or $910,005.00 in Loan funds for "Upgrad./Rehab."
27	Mar.15, '89	New Directions for the ISMP and Technical Assistance from December, 1988 Assessment.	
28	Mar. 6, '89	Approval of Annual Workplan and Budget for 1989.	
29	Mar.29, '89	Procurement of 1 Motor Car.	Earmarked and Committed JY 922,000/- or $7,730 in Loan funds for "Commodities".
30	Mar.29, '89	Procurement of 20 Vibrating Tampers and 20 Plate Compactors.	Earmarked and Committed $66,127.50 in Loan funds for "Commodities".
31	May 9, '89	Rehabilitation and Construction Works.	Commits Rs.24,492,618/- or $720,372.00 in Loan funds for "Upgrad./Rehab."
32	May 19, '89	Procurement of 8 Land Vehicles.	Earmarked and Committed JY 11,216,000/- or $90,200 in Loan funds for "Commodities".

PIL NO:	DATE:	SUBJECT:	REMARKS:
33	May 30, '89	Procurement of 7 Air Conditioners.	Earmarked and Committed Rs.96,125/- or $2,817 in Loan funds for "Commodities".
34	July 19, '89	Procurement of 4 Photocopiers, 6 Typewriters, one set Audio Visual Training Materials and one set Programmable Slide System	Earmarked and Committed Rs.523,051.20 or $15,125 in Loan funds for "Commodities".
35	Sep.11, '89	Procurement of 6 Tractor Trailers and 3 Trailer Bowsers.	Earmarked and Committed Rs.398,250/- or $10,500 in Loan funds for "Commodities".
36	Oct.12, '89	Procurement of 20 Motor Cycles.	Earmarked and Committed Rs.990,000/- or $25,000 in Loan funds for "Commodities".
37	Jan. 4, '90	Approval of Annual Workplan and Budget for 1990.	
38	Feb. 2, '90	Payment for Rehabilitation Construction.	(1)Committed Rs.40,385,491/- or $1,010,396 in Loan funds for "Upgrad./Rehab.", and (2)Earmarked and Committed Rs.5,595,700/- or $140,000 in Loan funds for "Upgrad./Rehab."
39	Feb.12, '90	Procurement of 12 Units Farm Tractors.	Earmarked and Committed $81,827.00 in Loan funds for "Commodities".

PIL NO:	DATE:	SUBJECT:	REMARKS:
40	Feb.14, '90	Procurement of 4 Concrete Vibrators and 4 Sludge Pumps.	Earmarked and Committed Rs.1,626,094.04 or $41,000 in Loan funds for "Commodities".
41	Mar.30, '90	Payment for Rehabilitation Construction.	Earmarked and Committed Rs.3,778,000/- or $94,521 in Loan funds for "Upgrad./Rehab."
42	Apr.16, '90	Procurement of Equipment and Machinery for Canal Rehabilitation Works.	Earmarked $168,500 in Loan funds for "Commodities".
43	Apr.24, '90	IIMI Cooperative Agreement (CA) and Budget Amendment.	Extends the CA by two years (until June 30, 1992.) and transfers $160,000 from AID Grant funds for Recurrent Costs to Grant funds for Research. The total amount of assistance under the project and total amount of Grant funds remain as same.
44	June 8, '90	Procurement of 19 Motor Cycles.	Earmarked and Committed Rs.1,007,000/- or $25,194 in Loan funds for "Commodities".
45	June 8, '90	Procurement of 1 Motor Grader and 1 Front End Loader.	Earmarked and Committed $142,675 in Loan funds for "Commodities".

PIL NO:	DATE:	SUBJECT:	REMARKS:
46	July 18, '90	Amendment to PIL No.35 for the Procurement of 8 Tractor Trailers.	Increased the amount earmarked and committed in PIL 35 by Rs.85,350/- or $1,610 in Loan funds for "Commodities".
47	Aug. 7, '90	Procurement of 4 Trailer Bowsers.	Earmarked and Committed Rs.246,264/- or $6,163 in Loan funds for "Commodities".
48	Oct.15, '90	Procurement of 8 Double Cabs & 1 Motor Car.	Earmarked and Committed JY 9,861,240 or $79,500 in Loan funds for "Commodities".
49	Nov. 1, '90	Amendment to PIL No.40 for the Procurement of 4 Concrete Vibrators and 4 Sludge Pumps.	Increased the amount earmarked and committed by Rs.247,246.24 or $6,200 in Loan funds for "Commodities".
50	Nov. 6, '90	Procurement of Spare Parts for Excavators and Crawler Tractor.	Earmarked and Committed $84,030.51 in Loan funds for "Commodities".
51	Nov.30, '90	Payment for Rehabilitation Constn.	Earmarked and Committed Rs.1,287,600/- or $32,000 in Loan funds for "Upgrad./Rehab.".
52	Jan. 7, '91	Temporary use of Rehabilitation Assistance Project (RAP) Vehicles & Equipment in ISMP.	Temporary allocation to ISMP.

PIL NO:	DATE:	SUBJECT:	REMARKS:
53	Jan.18, '91	Procurement of 100 Push Bicycles.	Earmarked and Committed Rs.306,000/- or $7,650 in Loan funds for "Commodities".
54	Feb.14, '91	Procurement of Audio Visual Equipment and Accessories.	Earmarked and Committed Rs.317,236/- or $7,900 in Loan funds for "Commodities".
55	Jan.30, '91	Approval of Annual Workplan & Budget 1991.	
56	Feb.15, '91	Amendment to PIL No.52.	Temporary use of RAP vehicles.
57	Feb.21, '91	Procurement of a Computer and Accessories.	Earmarked and Committed Rs.607,948.28 or $15,198 in Loan funds for "Commodities".
58	Apr. 1, '91	Procurement of Equipment & Machinery for Canal Rehabilitation Works.	Committed $113,000 and Ind. Rs.429,380/- (or $23,000) in Loan funds for "Commodities".
59	May 8, '91	Procurement of 5 Double Cabs.	Earmarked $45,000 in Loan funds for "Commodities".
60	Apr. 3, '91	Payment for Air Freight and Insurance in connection with the Procurement of 9 Current Meters.	Earmarked and Committed $1,587.79 in Grant funds for "Commodities".

PIL NO:	DATE:	SUBJECT:	REMARKS:
61	None	None	Not issued
62	May 20, '91	Approval of Revised Financial Plan for the ISM Project.	Total amount of Grant funds, total amount of Loan funds and total amount of project funds remain unchanged.
63	June 10, '91	Payment for Rehabilitation Constcn.	Committed Rs.4,141,470/- or $101,000 in Loan funds for "Upgrad./Rehab."
64	June 25, '91	Revised Project Approach.	Re-programmed $7.0 million in Loan funds for performance based disbursements.
65	June 14, '91	Procurement of 5 Double Cabs.	Committed JY 5,775,000/- or $45,000 in Loan funds for "Commodities".
66	June 28, '91	Payment for Rehabilitation Constn.	Committed Rs 7,400,376/- or $180,000 in Loan funds for "Upgrad./Rehab."
67	Sep.11, '91	Payment for Rehabilitation Constn.	Earmarked and Committed Rs.12,791,305/- or $305,630 in Loan funds for "Upgrad./Rehab."
68	Sep.13, '91	Payment for Rehab. Construction.	Earmarked and Committed Rs.9,749,800/- or $233,000 in Loan funds for "Upgrad./Rehab."

PIL NO:	DATE:	SUBJECT:	REMARKS:
69	Aug.21, '91	Status of Loan Funds for Re-programming the ISM Project.	Establishes the availability of $7.0 million in Loan funds for Performance Based Disbursements to be made in 3 Tranches.
70	Sep.26, '91	Performance-based Disbursement (PBD) per Implementation Letter No. 64.	Earmarked and Committed $3.0 million in Loan funds for Tranche 1 under PBD.
71	Nov.4, '91	Procurement of 2 Vibrating Rollers and 6 Concrete Mixers.	Earmarked and Committed $32,180 in Loan funds for "Commodities".
72	Nov.6, '91	Procurement of 8 Farm Tractors.	Earmarked and Committed $80,200 in Loan funds for "Commodities".
73	Nov.5, '91	Procurement of 7 Tractor Trailers and 1 Trailer Bowser.	Earmarked and Committed Rs.587,820/- or $14,000 in Loan funds for "Commodities".
74	Nov.25, '91	Commodity Audit.	Earmarked $9,000 in Grant funds from the "Evaluation" line item of the Project Financial Plan.
75	Jan.23, '92	Approval of Annual Workplan and Budget for 1992.	

PIL NO:	DATE:	SUBJECT:	REMARKS:
76	Jan.23, '92	Amendment to PIl No.5 for reimburst. of Rehab. & Constn. works.	PIL 5 for rehabilitation in Polonnaruwa schemes to include schemes in Kurunegala and Apara as well. Commits Rs.2,282,737/- or $53,611 in Loan funds for "Upgrad./Rehab."
77	Feb.10, '92	Procurement of 60 Motor Cycles.	Earmarked and Committed $54,000 in Loan funds for "Commodities".
78	None	None	Not issued.
79	May 27, '92	Approval of Revised Financial Plan for the ISM Project.	Total amount of Grant funds, total amount of Loan funds and total amount of Project funds remain same.
80	June 25, '92	Extension of Project Assistance Completion Date (PACD).	Extension of PACD from June 30, 1992 to September 30, 1992.
81	July 1, '92	Performance-based Disbursement per Implementation Letter No.64.	Earmarked and Committed $2.0 million in Loan funds for second Tranche of the PBD and Earmarked $2.0 million in Loan funds for third Tranche of the PBD.

PIL NO:	DATE:	SUBJECT:	REMARKS:
82	July 10, '92	Amendment to PIL No.16 for reimbursement of Institutional Organizers' (IO) salaries.	Includes IOs program in Attaragallewa scheme in Polonnaruwa District with no increase in the amount earmarked and committed.
83	Aug.20, '92	Amendment to PIL No.5 for reimbursement of rehabilitation. and construction works.	Includes Attaragallewa scheme in Polonnaruwa District with no increase in the amount earmarked. Commits Rs.3,040,203/- or $69,316 in Loan funds for "Upgrad./Rehab."
84	Aug.28, '92	Performance-based disbursement per PIL 64.	Disbursed $2.0 million in Loan funds for the second Tranche of the PBD.
85	Aug. 7, '92	Payment for Rehabilitation Construction.	Committed Rs.5,699,154/- or $132,938 in Loan funds for "Upgrad./Rehab."
86	Aug.14, '92	Payment for Rehabilitation Construction.	Committed Rs.1,505,396/- or $34,323 in Loan funds for "Upgrad./Rehab."
87	Aug.17, '92	Payment for Rehabilitation Construction.	Committed Rs.368,801/- or $8,410 in Loan funds for "Upgrad./Rehab."
88	Aug.24, '92	Facilities Construction in Ampara.	Earmarked and Committed Rs.683,802/- or $16,000 in Loan funds for "Facilities Constn."

PIL NO:	DATE:	SUBJECT:	REMARKS:
89	Sep.30, '92	Monitoring the Special Rupee Account in connection with Performance-Based Disbursement (PBD).	Tracking procedures for Special Rupee Account.
90	Oct.20, '92	Extension of Project Assistance Completion Date (PACD).	Extension of PACD from Sep. 30, 1992 to December 31, 1992.
91	Dec. 4, '92	Payment for Rehabilitation Construction.	Earmarked and Committed Rs.15,473,723/- or $386,[illegible] in Loan funds for "Upgrad./Rehab."
92	Nov.23, '92	Facilities Construction in Polonnaruwa.	Earmarked and Committed Rs.823,765/- or $18,590 in Loan funds for "Facilities Construction".
93	Nov.27, '92	Approval of Revised Financial Plan for the ISNP.	Transferred $14,000 from Grant funds for "Training" to Grant funds for "Recurrent Costs". The total funding for the project remains unchanged. Earmarked and Committed $14,000 in Grant funds for "Rec. Costs"
94	Dec.23, '92	Performance-based Disbursement per Implementation Letter No.64.	Committed $2.0 million in Loan funds for the third Tranche of the PBD.

PIL NO:	DATE:	SUBJECT:	REMARKS:
95	Dec.24, '92	Amendment to PILs Nos.5,26,31,38, 41,51,63,66,67,68,76,83,85,86,87 and 91 for reimbursement of rehabilitation and construction works.	The total amount earmarked and committed remain unchanged.
96	Jan. 19, '93	Performance-based Disbursement for Implementation Letter No.64.	Disbursed $2.0 million in Loan funds for the third Tranche of the PBD.
97	June 9, '93	Project Close-Out Actions.	Sets forth the Close-Out Actions.
98	June 10, '94	Final Status of the Project Finances.	De-obligates U.S. $43,682.63 from the Technical Assistance line item.

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IRRIGATION SYSTEMS MANAGEMENT PROJECT # 383-080

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~~ATTACHMENT 1~~

HOST COUNTRY CONTRIBUTION
CONSOLIDATED FUND EXPENDITURE

OBJECT CODE		COST CENTRE	1987 RS.	1988 RS.	1989 RS.	1990 RS.	1991 RS.	1992 RS.	1993 RS.	TOTAL RS.
106 09(01)	Furn/Off. Equi	IMD-CMB					285,700	10,155		295,855
106 09(01)	Furn/Off. Equi	KCH-POL	0	0	0	0	43,900	0		43,900
106 09(02)	Vehicles	DI-CMB				67,265	106,691			173,956
106 09(03)	Equipment	DI-CMB				541,224	929,220	862,337		2,332,781
COMMODITIES			0	0	0	608,489	1,365,511	872,492	0	2,846,492
Less USAID Reimbursements			0	0	0	619,176	0			619,176
COMMODITIES			0	0	0	(10,687)	1,365,511	872,492	0	2,227,316
106 09(07)		DI-CMB				348,252	0	184,766		533,018
106 09(07)A(ii)	Buildings	DDI-POL	2,381,124	2,011,422	441,435	5,644	0	0		4,839,625
106 09(07)A(i)	Tank Rehab.	DDI-AMP	0	25,003	4,566,650	8,040,190	8,783,468	14,614,018		36,029,329
106 09(07)A(i)	Tank Rehab.	DDI-KUG	0	0	0	0	7,201,821	8,080,584		15,282,405
106 09(07)A(i)	Tank Rehab.	DDI-POL	15,827,755	22,118,766	24,286,039	38,291,635	42,266,037	42,256,171		185,046,403
106 09(07)A(i)	Tank Rehab.	IMD-CMB					7,200	0		7,200
CONST/UPGRADING/REHABILITATION			18,208,879	24,155,191	29,294,124	46,685,721	58,258,526	65,135,539	0	241,737,979
Less USAID Reimbursements			0	15,114,700	14,934,416	1,493,250	33,250,426	4,239,032	67,322,923	136,354,747
CONST/UPGRADING/REHABILITATION			18,208,879	9,040,491	14,359,708	45,192,471	25,008,100	60,896,507	(67,322,923)	105,383,232
106 09(07)B(iii)	Reserch	DDI-KUG	0	266,435	426,423	0	0	0		692,858
106 09(07)B(iii)	Reserch	DOA-POL				84,999	0	0		84,999
106 09(07)B(ii)	Training	DDI-KUG	0	0	0	1,863,299	0	0		1,863,299
106 09(07)B(ii)	Training	DDI-POL	0	0	0	134,081	0	0		134,081
106 09(07)B(ii)	Training	DI-CMB				101,198	88,779			189,977
106 09(07)B(ii)	Training	KCH-AMP	0	0	0	0	0	0	0	0
106 09(07)B(ii)	Training	KCH-KUG	0	0	0	33,746	0	0		33,746
106 09(07)B(ii)	Training	KCH-POL	12,600	104,906	850,439	564,337	0	0		1,532,282
										0
TRAINING			12,600	371,341	1,276,862	2,781,660	88,779	0	0	4,531,243
Less USAID Reimbursements			0	0	0	597,328				597,328
TRAINING			12,600	371,341	1,276,862	2,184,332	88,779	0	0	3,933,915

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~~ATTACHMENT 1~~

IRRIGATION SYSTEMS MANAGEMENT PROJECT # 383-080

HOST COUNTRY CONTRIBUTION
CONSOLIDATED FUND EXPENDITURE

OBJECT CODE		COST CENTRE	1987 RS.	1988 RS.	1989 RS.	1990 RS.	1991 RS.	1992 RS.	1993 RS.	TOTAL RS.
106 09(07)C	Opp. Cost	DDI-KUG	0	0	0	43,271	0	0		43,271
106 09(07)C	Opp. Cost	DDI-POL	16,592	1,384,106	1,685,959	1,682,771	0	0		4,769,428
106 09(07)C	Opp. Cost	DOA-KUG	0	0	0	0	0	0	0	0
106 09(07)C	Opp. Cost	DOA-POL				436,637	0	0		436,637
106 09(07)C	Opp. Cost	KCH-KUG	0	140,265	75,092	248,118	0	0		463,475
106 09(07)C	Opp. Cost	KCH-POL	219,750	1,323,068	1,831,840	2,172,869	0	0		5,547,527
106 09(09)	Opp. Cost	DDI-AMP	0	0	0	0	558,298	1,663,279		2,221,577
106 09(09)	Opp. Cost	DDI-POL	0	0	0	0	3,481,534	3,017,134		6,498,668
106 09(09)	Opp. Cost	DI-CMB		2,669,631	11,928,649		861,443	562,156		16,021,879
106 09(09)	Opp. Cost	DOA-POL					558,094	161,584		719,678
106 09(09)	Opp. Cost	IMD-CMB	573,134	45,318	704,241	5,463,871	0	0		6,786,564
106 09(09)	Opp. Cost	KCH-KUG	0	0	0	0	102,694	122,708		225,402
106 09(09)	Opp. Cost	KCH-POL	0	0	0	0	819,943	561,062		1,381,005
106 09(09)TAX	Opp. Cost	IMD-CMB	0	3,470,503	4,232,748	931,073	5,536,983	3,812,736		17,984,043
	Salaries	In-kind	4,500,003	10,225,883	13,367,077	14,495,658	16,670,007	19,170,508		78,429,135
	Housing	In-kind		3,265,560	3,265,560	3,265,560	3,265,560	3,265,560		16,327,800
RECURRENT COST			5,309,479	22,524,334	37,091,166	28,739,828	31,854,556	32,336,727	0	157,856,089
Less USAID Reimbursements			0	0	0	994,765	697,774	701,093	1,204,594	3,598,226
RECURRENT COST			5,309,479	22,524,334	37,091,166	27,745,063	31,156,782	31,635,634	(1,204,594)	154,257,863
TOTAL COST			23,530,958	47,050,866	67,662,152	78,815,698	91,567,372	98,344,758	0	406,971,803
Less USAID Total Reimbursements			0	15,114,700	14,934,416	3,704,519	33,948,200	4,940,125	68,527,517	141,169,477
NET H.C.C.			23,530,958	31,936,166	52,727,736	75,111,179	57,619,172	93,404,633	(68,527,517)	265,802,326

SUMMARY:	LOP $	ACTUAL $	1987 Rs.	1988 Rs.	1989 Rs.	1990 Rs.	1991 Rs.	1992 Rs.	1993 Rs.	Total Rs.
COMMODITIES	$520,000	$79,746	0	0	0	(10,687)	1,365,511	872,492	0	2,227,316
CONST/UPGRADING/ REHABILITATION	$4,545,000	$3,773,120	18,208,879	9,040,491	14,359,708	45,192,471	25,008,100	60,896,507	(67,322,929)	105,383,232
TRAINING	$145,000	$140,849	12,600	371,341	1,276,862	2,184,332	88,779	0	0	3,933,915
RECURRENT COST	$4,390,000	$5,523,017	5,309,479	22,524,334	37,091,166	27,745,063	31,156,782	31,635,634	(1,204,594)	154,257,863
TOTAL	$9,600,000	$9,516,732	23,530,958	31,936,166	52,727,736	75,111,179	57,619,172	93,404,633	(68,527,517)	265,802,326

ISM Project Financial Status as of September 9, 1993
($)

Line Item	L/G	Obligation/ Earmark/ Commitment	Expenditure	Balance	Possible De-obligation after Terminal Disbursement Date of September 30, 1993
Technical Assistance	G	4,905,494.06	4,852,816.57	52,677.49	52,677.49
Training	G	1,011,261.26	965,684.26	40,364.94 5,212.06	40,364.94 5,173.00
Commodities	G	78,706.72	78,706.72	nil	nil
Research	G	579,950.00	579,639.81	310.19	310.19
Recurrent Costs	G	84,000.00	84,000.00	nil	nil
Evaluation	G	122,051.00	109,476.50	12,574.50	12,542.00
GRANT TOTAL	G	6,781,463.04	6,670,323.86	111,139.18	111,067.62

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ISM Project Financial Status as of September 9, 1993
($)

Line Item	L/G	Obligation/ Earmark/ Commitment	Expenditure	Balance	Possible De-obligation after Terminal Disbursement Date of September 30, 1993
Commodities	L	1,197,449.10	1,197,449.10	nil	nil
Upgrading/ Rehabilitation	L	3,306,983.02	2,973,807.01	333,176.01	333,176.01
Facilities Construction	L	83,183.60	80,034.00	3,149.60	3,149.60
Performance Based Disbursement	L	7,000,000.00	7,000,000.00	nil	nil
LOAN TOTAL	L	11,587,615.72	11,251,290.11	336,325.61	336,325.61
PROJECT TOTAL	L & G	18,369,078.76	17,921,613.97	447,464.79	447,393.23

Financial Status of the ISM Project as of June 30, 1994

($)

Project Inputs	Grant/ Loan	Obligations to date	Recommended De-obligations	Revised Obligation	Earmarks to date	Commitments to date	Expenditures to date
Technical Assistance	Grant	4,905,494	43,683	4,861,811	4,861,811	4,861,811	4,861,811
Training	Grant	965,685	0	965,685	965,685	965,685	965,685
Commodities	Grant	78,707	0	78,707	78,707	78,707	78,707
Research	Grant	579,640	0	579,640	579,640	579,640	579,640
Recurrent Costs	Grant	84,000	0	84,000	84,000	84,000	84,000
Evaluation	Grant	109,509	0	109,509	109,509	109,509	109,509
Grant Totals		6,723,035	43,683	6,679,352	6,679,352	6,679,352	6,679,352
Commodities	Loan	1,197,449	0	1,197,449	1,197,449	1,197,449	1,197,449
Upgrading/ Rehabilitation	Loan	2,973,807	0	2,973,807	2,973,807	2,973,807	2,973,807
Facilities Construction	Loan	80,034	0	80,034	80,034	80,034	80,034
Performance Disbursement	Loan	7,000,000	0	7,000,000	7,000,000	7,000,000	7,000,000
Loan Totals		11,251,290	0	11,251,290	11,251,290	11,251,290	11,251,290
Project Totals		17,974,325	43,683	17,930,642	17,930,642	17,930,642	17,930,642

ANNEXE 12
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~~CHAPTER VI~~

GUIDELINES FOR ADOPTION IN FUTURE IRRIGATION MODERNIZATION PROJECTS

The objectives of irrigation modernization projects should be "to increase farmer income and general improvement in the farmers' standard of living through increased agricultural productivity and expanded rural employment opportunities".

Irrigation modernization should essentially be Cost-Effective and for them to be cost-effective they should be sustainable as well. Based on these two basic principles, the following Guide-Lines have been formulated grouped under the following Headings and Sub-headings.

1. Project Preparation

2. Project Implementation
   * Planning
   * Farmer Organizations
   * Designs for Physical System Improvements
   * Construction
   * Procurement
   * Operation and Maintenance
   * Training
   * Research

3. Project Evaluation

4. Institutional and Managesent Aspects
   * Integrated Management approach
   * Irrigation Management Authority
   * Project Management
   * Project Management Committee
   * Unauthorised / Illegal Cultivators
   * Legal Provisions - Restatement of the Law
   * Farmer Organizations
   * Project Management Committees
   * General

The Guide-Lines are preceded by a brief discussion and the Guide-lines themselves are given in bold lettering for clarity.

PROJECT PREPARATION

1. An irrigation modernization project should in general have the following components.
   (a) Modernization of the System (including the Road Network)
   (b) Establishment or strengthening of Farmer Organizations,
   (c) Improved System Management
   (d) Improved Maintenance,
   (e) Institutional strengthening and infrastructural facilities for improved agricultural productivity.
   (f) Training and Procurement to support above components and
   (g) Any other components which are site-specific.

2. Some of the proposals made in the projects studied were not accepted by the farmers. Also farmers and other beneficiaries who would feel the impact of the modernization should be made aware of the broad proposals.It is therefore recommended that

> "Farmers and other beneficiaries be involved during project preparation and their knowledge, experience and needs incorporated in the Project design".

In the absence of FOs, this could best be achieved by explaining the proposals at a meeting of the farmers. If however FOs are already in existence, the awareness could be provided through them. A feed-back from the beneficiaries may be had after a lapse of a short period of time and their experiences and knowledge made use of and their requirements incorporated in the Project design as far as possible.

3. In TIMP,MIRP and ISMP the systems included in the Projects were treated with the same set of development proposals which did not reflect their individual problems. The existing condition, the prevailing problems and the rehabilitation requirements of one system differ in many respects from those of another. It is therefore recommended that

> "The circumstances which has led each scheme to require rehabilitation be studied on an individual basis before formulation of development strategies. Development strategies should be unique to each scheme within a generally accepted framework.

4. In some rehabilitated irrigation systems (eg. Mahakanadarawa and Huruluwewa out of the seven systems studied) the anticipated benefits have not been realised mainly due to the insuffiency of water to meet the demand. It is therefore recommended that

> "A realistic assessment be made of the water resources available to each system proposed for modernization, to ensure a reasonable degree of cultivation success.

5. Due to inactive participation of the implementing agencies inappropiate methodologies, unrealistic goals and confusing terminologies have been adopted in the projects studied.It is therefore recommended that

The line-agencies responsible for Project implementation and management of the system, be actively involved from commencement of Project Preparation; including analysis of problems and in drawing up Project Proposals and Estimates.

6. **A certain degree of flexibility be provided in the Project Proposals to accomodate the changes that are generally and information becoming available during the implementation stage.**

7. In implementing modernization projects it will be necessary to obtain the services of personnel from agencies not directly involved in the project for activities such as training of farmers. Since the normal budgetary allocations of such agencies do not provide for expenses incurred in providing such services, it is recommended that

Provision be made in the Project estimate for funding the services of personnel (from various agencies) who will be required to support Project activities. Such funding requirements to be decided upon in consultation with the respective agencies.

8. During project preparation, which is generally limited to a short period of time, the project design team cannot be expected to cover all aspects of individual systems including a meaningfull dialogue, with the farmers and the personnel responsible for system operations.It is therefore recommended that

As a follow up after Project preparation, a study should be made by an inter-disciplinary Team of Specialists to identify the problem areas in each system and suggest possible improvements.

This should be more in the nature of a reconnaisance study than a full-scale diagnostic analysis and will need to be carried out with the co-operation and help of the personnel responsible for the post-rehabilitation management of the system, including FOs.

This study should also lay down criteria for evaluation of the Project impact.

PROJECT IMPLEMENTATION

Planning

1. Implementation of irrigation modernization projects with their multi-disciplinary approach will entail the execution of many different activities by a number of implementing agencies. Cost-effective implementation necessarily implies the timely execution of these activities, some of which are inter-related or are inter dependent. To facilitate implementation it is recommended that

A General Management and Work Plan be prepared at the inception of the Project with active participation of all the agencies who are expected to contribute to Project implementation.

This plan should

(a) Identify the main activities in each project component,
(b) Identify agencies responsible for executing each activity
(c) Schedule the Project activities on a realistic basis taking into consideration constraints such as restricted construction periods, dependency on other agencies etc.,
(d) Estimate annual budgeting requirements and
(e) Highlight activities dependent on inter-agency co-ordination.

The Work Plan, preferably in the form of a Network Analysis Diagram, could be reviewed and up-dated periodically or at least annually. The Network Analysis Diagram could also be used for evaluating the Project performance at any given time

2. **The General Management and Work Plan be followed up with Project logistics and a scheduling of the inputs, required for timely execution of the various activities.**

3. **Detailed annual Work Plans prepared with the active participation of the implementing agencies be reviewed and up-dated quarterly. Problems and constraints need to be identified, in order that the responsible agencies could take remedial action in time.**

4. The officials of the implementing agencies as well as the farmers should be aware of all the Project activities, the role they are expected to play and the anticipated impact. To ensure proper understanding and fuller co-operation it is recommended that

At the commencement of the Project, a training programme should be conducted to enhance the awareness of the agency officials involved in Project implementation. This should be followed by a similar programme for the beneficiaries.

Farmer Organizations

5. At the present stage in the evolution of farmer managed irrig settlement schemes it is necessary to engage the services of outside (catalytic) agents to set up in motion and speed up the formation of FOs at different levels as appropriate. However due to insecurity in job tenure, there has been a high rate of attrition amoung IOs after their training given at considerable cost. It is therefore recommended that

> **Catalysts (IOs) be engaged on the establishment and strengthening of FOs. A scheme should be drawn up to provide IOs, initially, security of employment for a given period and therefater continuity of employment.**

6. In addition to their responsibility for O&M of the distributary system it is anticipated that farmers will be involved in both design and construction phases of the distributary system. To ensure their active involvement at the design stage, they should be in a position to take collective responsibility for their proposals and decisions. It is therefore recommended that

> **Farmer Organizations should be established before commencement of the design of the distribution system.**

7. With the strengthening of FOs under the ISMP, and their taking over responsibilties for O&M of the distributary system, it became clear that monitoring and evaluation of data required in management information systems (MIS) will be greatly facilitated if the DCOs are demarcated on the basis of canal command areas. It is therefore recommended that

> **DCO boundaries be demarcated on the basis of canal command areas. Where a canal command area has to be divided among two or more DCOs, the boundaries should coincide with a measuring device or a hydraulic structure which can be calibrated for the purpose.**

Designs For Physical System Improvements

8. Improvements to the physical system accounts for a major portion of project costs. Since construction costs are determined by quantities and prevailing rates, the cost-effectiveness could only be achieved during the design stage. High quality engineering effort should therefore be made at this stage in the Project. It therefore recommended that

> **Designs for improvements to the physical system should be under the direction of a senior Irrigation Engineer wel experienced in the design of such systems.**

9. In the past, canals designed on the basis of continuous flow have been operated on a rotational basis resulting in rapid deterioration of the system. It is therefore recommended that

The design criteria for effecting improvements to the canal system be established only after a decision on the mode of operation of the system in regard to canal discharges.

10. The entire system as a whole needs consideration from an operational point of view for decision on the locations of control and measuring devices. It is therefore recommended that

Before detailed design of the canals, an operation survey of the whole system be carried out to identify location and type, of control and measuring devices required.

11. **In planning canal flow measuring devices, maximum use should be made of the existing structures, such as drop-structures, aqueducts and lined sections to serve as measuring devices.**

12. Although the ideal would be to measure canal discharges down to P-Cs, the benefits from such a sophisticated system cannot justify the high cost of additional measuring devices and the increased operating costs. It is therefore recommended that

Where new measuring devices are planned, these should be limited to only key-points in the main system and at the heads of D-Canals.

In the detail planning of measuring devices for Giritale and Kandulla systems, an approximate density of one measuring device for 250 acres was considered adequate. This may vary from scheme to scheme, but gives an idea of the required density.

13. A common feature that evidently had been prevalent in the Projects studied is the inadequacy of data on the system, particularly in respect of the actual extents under irrigation and the incompleteness of available maps and "Issue Trees". These data provide vital information, not only for system modernization designs, but also for systems operation on completion. It is therefore recommended that

An assessment of the actual extents under irrigation should be carried out at the inception of the Project. This could best be achieved with the help of Final Colony Plans and Supplementary Tenement Lists or at the least Blocking Out Plans (BOPs) updated with the help of recent air photographs.

14. **The Issue Trees be up-dated to reflect the actual command areas and changes in the distribution system.**

15. The historical values of main canal peak discharges are lower than those obtained by the application of ID Design Criteria or those adopted by P&C Engineering Consultants in the design of the Gal Oya LB main system. Considerable economies could be effected by the use of historical duties in the design of main canals where increases in capacity are required to command additional extents. Use of historical duties obviates the need to assign values to design parameters such as evapo-transpiration, crop-factors, seepage and percolation and system losses which have been used in deriving the design criteria applicable to new systems. It is therefore recommended that

Where an increase in main canal capacity is required, the canal should be designed on the basis of historical duties.

16. The water surface elevations in existing canals are different from calculated elevations due to constrictions, erosion, sedimentation and other factors. It is therefore recommended that

Where appreciable changes in canal capacity is not envisaged, the structures be designed on the basis of actual maximum water surface elevations in preference to theoretically calculated elevations. The longitudinal section of the canal should include its water surface profile (maximum) as well.

17. **Designs for improvements to the Distributary System be prepared after consulting the farmers and should be explained to them in detail before implementation.**

18. **In irrigation systems with scarce water resources, sections of canals running through permeable soils be lined with brick in cement mortar with cement sand plaster. Canal section to be preferably trapezoidal.**

19. Changes in the lay-out to provide for one-cusec canals necessitate high investment costs. It is therefore recommended that

One-Cusec canals (ie. Distribution systems where the command of each F-C is limited to the area which could be irrigated by one cusec), though very effective in water management, are not generally recommended due to the high initial cost of construction.

20. Existing systems have been designed on the basis of continuous flow. A change in this mode of operation will necessarily entail increased canal capacities and higher costs. It is therefore recommended that

Rotational Issues of irrigation water is recommended to be practised only among and along Field Canals.

Construction-

21. In the award of Civil works contracts pertaining to the irrigation distribution system, FOs should be given the "first refusal". FOs should not be offered main system contracts directly but they should be allowed to bid for such contracts.

22. An independent Quality Control Unit (within the agency but outside the Project) be established for ensuring strict adherence to specifications.

Procurement

23. Procurement of machinery and equipment to be preceded by
(a) Project Logistics and scheduling of inputs and
(b) A careful assessment of their need and suitability.

Equipment for maintenance of the completed work and small quality control equipment to be hired to FOs should be included in the list of machinery and equipment.

Operation and Maintenance

24. In planning improvements to systems operation, the system should be studied as a whole, taking cognisance of spatial distribution, existing office and housing facilities of field staff, transport and communications.

25. In large systems (over 1,000 ha under a head sluice) computer assisted system operations be instituted with adequate two-way communication facilities between field and operation centres.

26. Develop and institute procedures and methodologies for implementing maintenance on a 'sustained renewal' basis.

By sustained renewal it is not intended that the system will not need modernization in a future date, but maintenance of irrigation water supplies at a satisfactory level. The system will in any case need upgrading to meet changing demands imposed on the system.

27. Facilities to be provided for O&M personnel to reside within their working areas or at least within easy reach of the area, in order to maintain a close relationship with FOs and to exercise better supervision over the works.

Training

28. A training needs assessment be carried out after preparation of the General Management and Work Plan and all training activities be scheduled.

29. Overseas study tours and short term overseas training be minimised.

30. In the training of Technical Assistants and in the 'in-service training' of Engineers, communication and community development be included in their curricula.

31. IOs be given a field training in addition to the formal classroom training. Emphasis should also be given in their training, to customs and cultural aspects pertaining to communities they will be expected to work with.

32. DCO officials be trained in financial management.

33. Responsibility for O&M of the distributary system will rest on the DCO. Personnel directly responsible for O&M need therefore to be trained to perform these functions. Such training could best be carried out in the field by the agency personnel who are entrusted with these responsibi ties.It is therefore recommended that

> Representatives from each DCO be given a field training in the Operation and Maintenance of the canal system within the DCO area.

Research

34. Some of the research activities supported by ISMP did not produce satisfactory results.If these activities were entrusted to the respective line agencies tangible results could have been achieved at a fraction of the cost incurred.It is therefore recommended that

> As far as possible, research activities, if any, be implemented in collaboration with the respective line agencies.

PROJECT EVALUATION

1. During implementation of rehabilitation projects which generally span over a number of years, changes in strategies and methodologies, re-scheduling of costs and other amendments to project design etc., may be required to achieve Project goals in a cost-effective manner, in the light of experience gained during implementation. It is therefore recommended that

A mid-term evaluation be carried out by a competent team of specialists not directly involved in the Project.

2. Workshops conducted during implementation of ISMP have proved useful not only in evaluating the progress and identifying constraints, but also in providing a better understanding of the role played and to be played by each agency, their duties and responsibilities, ensuring willing co-operation among the various agencies. It is therefore recommended that

Annual 'Workshops' conducted by experienced facilitators be held preferably in conjunction with discussions and approval of annual Work-Plans.

3. Simplified monitoring and continuous evaluation systems similar to those now in operation in ISMP be established, but modified on the basis of experience gained on ISMP. They should also conform to the special requirements of the Project.

4. The study revealed that in the case of WMP,GOLB apart from evaluation studies done by ISTI and ARTI, there were no documented records of Project activities, especially hard data such as actual cost of various components, quantities of work actually accomplished, equipment procured, their costs and details in respect of personnel trained and also research activities. It is therefore recommended that

Preparation of Completion Reports be made a Project requirement. These reports should include

(a) Detailed account of Project activities and input of personnel.

(b) Quantities and costs of main items in each component.

(c) Component-wise break-down of annual expenditures.

(d) Annual material costs and rates.

(e) An Assessment of performance of machinery and equipment deployed.

(f) Methodologies adopted, problems encountered and lessons for the future.

(g) As-built Drawings and an Inventory of Bench Marks.

(h) Operation and Maintenance Manuals.

The Completion Report should be prepared by the authority co-ordinating the Project activities with the help of the implementing agencies.

An Idealized Activity Flowchart of the common major activities involved in a modernization project, incorporating the main recommendations made in this paper and assuming a five year implementation period is annexed (Figure 6.1).

INSTITUTIONAL AND MANAGEMENT ASPECTS

Integrated Management Approach

The integrated management (INMAS) approach is the most appropriate at the present stage of evolution of irrigated settlement schemes. It is therefore recommended that:

1. **The integrated management (INMAS) approach should be pursued.**

2. **INMAS Projects should in the future be undertaken strictly under the control of a Central Co-ordinating Committee set up on the lines as outlined in the INMAS Programme, particularly to ensure commitment to the Projects from the M/ADR and its agencies.**

Irrigation Management Authority

3. The function of the integrated management of irrigated settlement schemes which continue to be the responsibility of the Government of Sri Lanka should logically be undertaken by a single authority: the present arrangements create invidious distinction in relation to facilities available resulting in otherwise avoidable stress and friction between two Central Government authorities engaged in the same sphere of operations. It is therefore recommended that:

   Both the INMAS Programme of IMD of the M/LLD and the MANIS Programme of the Department of Irrigation should be amalgamated and administered by one and the same Authority, whether located in the Ministry or the Department, (hereinafter referred to as "Irrigation Management Authority"): it is presumed for the purposes of this recommendation that either the one or the other of these two Programmes would have been implemented by the IMD or the ID, as the case may be, in respect of projects that continued even after the Thirteenth Amendment to be the responsibility of the Government of Sri Lanka.

Project Management

The role envisaged for Project Manager under the INMAS Programme should be further expanded if the overall objectives of higher agricultural productivity, higher rural incomes and expanded rural employment opportunities are to be achieved. Therefore it is recommended that

4. **The Project Management concept which is an integral part of the INMAS Programme should be continued.**

5. The post of Project Manager and the job specifications and salary scale relating thereto should be upgraded particularly for the major irrigated settlement schemes. The Project Manager should be invested with position, power and authority, as appropriate, not only to co-ordinate effectively the activities of the several line agencies operating at Project level but also to manage the settlement scheme in its totality. Under the immediate control of the Project Management Committee, (eventually the SLFO), and subject to the overall supervision of the Irrigation Management Authority.

6. Project Managers should be provided with specialized training, as necessary in individual cases, in the several disciplines related to the management of an enterprise with a predominant human resource input.

Project Management Committee

7. The Project Management Committee should for the time being work in close collaboration with the SLFO with which it should eventually be merged, the ultimate objective being that the settlement scheme should function as a self-governing entity on the model, but not in the form, of a private company.

Unauthorised / Illegal Cultivators "

8. Persons who are in illegal possesion of, and cultivate, irrigable lands in settlement schemes get the benefit of irrigation water without fulfilling any commensurate obligations. Therefore it is recommended that

Action should be taken to
(a) Regularise encroachments where merited;
(b) Introduce a scheme to restore ownership and possession to the original allottees; and
(c) Sell the land at the market value to those in possession, where the original allottees have left the settlement scheme.

Legal Provisions

Restatement of the Law

The provisions of the Irrigation Ordinance have been eroded by the enactment of laws to provide security of tenure for tenant

9. There should be a re-statement of the law relating to irrigation particularly in the light of the fact that even the subject of "rehabilitation and maintenance of minor irrigation works" has been devolved to Provincial Councils.

The present position is as follows. Since in 1969 an anomalous provision was made by the Irrigation (Amendment) Act No. 16 of 1968, conferring on the Commissioner of Agrarian Services (An officer under the Ministry of Agriculture), supervisory powers over Government Agents in the exercise of their powers under the Irrigation Ordinance which fell within the purview of the Minister in charge of Irrigation. In terms of this provision the Commissioner of Agrarian Services has been made "responsible for the general supervision and control of Government Agents in the exercise and discharge of the powers and duties conferred and imposed upon them by (the Irrigation) Ordinance: (Section 1A). He is also empowered under sub-section 2 of this section to give general or special directions to Government Agents. The Commissioner is requested in the exercise of his powers and the discharge of his duties to be "subject to the general directions and control of the Minister" (presumably the Minister in charge of Irrigation). It is therefore recommended that

10. Provision should be made in the proposed new law relating to irrigation for the Secretary to the Ministry in charge of the subject of irrigation to be made responsible for the supervision and control of Government Agents.

Farmer Organizations

Registration with the Commissioner of Agrarian Services who has no powers to exercise or responsibilities to fulfill in respect of major irrigated settlement schemes that would continue to be the responsibility of the Government of Sri Lanka even after the Thirteenth Amendment. It is therefore recommended that

11. Provision should be made in the proposed new Irrigation Act for farmer organizations in irrigated settlement schemes under the purview of the Central Government to be registered with the Irrigation Management Authority.

12. Provision should also be made therein for the powers to be exercised and the duties to be performed by farmer organizations, at one or more levels as appropriate.

13. FOs should be required to maintain proper systems of financial control installed and adherence thereto by the office bearers ensured by proper supervision which should be undertaken by the Irrigation Management Authority.

Project Management Committees

14. Legal provision should be made for the establishment of Project Management Committees for irrigated settlement schemes.

General

18. Indiscriminate irrigation development within the catchments of existing irrigation systems have had devastating effects on these systems, which have been built at great cost. The settlers under these systems have been deprived of their riparian rights. It is therefore recommended that

The construction of any new irrigation facilities or of any works to extend the command, under any existing irrigation facility should not be undertaken without obtaining the prior approval of an Authority specifically established by Government for this purpose.

Since, on the one hand, Provincial Councils have been given powers under the Thirteenth Amendment in respect of the rehabilitation and maintenance of minor irrigation works as well as the planning, designing, implementation, supervision, and maintenance of all irrigation works which come within their purview, while on the other, "water storage and management... and planning of water resources", falls within the "Concurrent List", it is recommended that the Authority to be established for this purpose should be set-up at the national level by the Government of Sri Lanka in consultation with the Provincial Councils which will have representatives along with those from the Central Government in such Authority.

PROJECT ACCOMPLISHMENTS

Project accomplishments under each of the project elements are as follows:

Farmer Organization Development

- Two Thousand Four Hundred and Thirty Three (2,433) Field Canal Groups were formed in Parakrama Samudra, Giritale, Minneriya, Attaragallewa, Kaudulla, Ridi Bendi Ela and Gal Oya LB and RB Schemes. Each Field Canal has their own representative, who represents the DCFO.

- Two Hundred and Eight (208) DCFOs were formed in the eight Schemes including Attaragallewa Scheme under Bakamuna Division. The DCFOs were accepted as formal organizations. Their Executive Committee or Board of Management is comprised of Field Canal Representatives and meets monthly.

- All Field Canal Representatives participate in an Assembly of DCFOs and there they elect the executives of the System Level Farmer Organization. The System Level Farmer Organization is the apex organization in the Scheme and elected Field Canal Representatives work as Directors of the Board. Eight System Level Farmer Organizations have been formed in Parakrama Samudra, Giritale, Minneriya, Kaudulla, Ridi Bendi Ela (RBE) and Gal Oya RB (Akkaraipattu and Damana) and LB Schemes.

- The Farmer Organizations obtained legal recognition under the Agrarian Services (Amendment) Act No.4 of 1991 and 146 DCFOs have registered with the Commissioner of Agrarian Services Department as of February 28, 1994. Registration under this Act allowed each of them to become legal entities.

- 194 DCFOs are actively engaged in the joint management process and are actively engaged in participatory management as evidenced by their take over of the operations and maintenance responsibilities of the Distributary Canal System.

- Recognizing the progress made by the DCFOs in previous construction contracts, the Agencies involved increased their contract value limit to DCFOs from Rs.25,000 to Rs.250,000 and finally increased it to Rs.750,000.

- Some 150 DCFOs have opened bank accounts in the State Bank and in the Cooperative Rural Bank in order to maintain their Development Funds. The DCFOs utilize this money in supplying agro-inputs to their members and for purchasing of agro-produce from the farmers. In addition to that they provide some funds for O&M of the system in accordance to the requirements of the Annual Maintenance Plan. This is especially true in DCFOs that signed the Standard Memorandum of Undertaking in Management Take Over with the Irrigation Department.

- By the PACD of December 31, 1992, forty DCFOs took over the operation and maintenance of the tertiary irrigation systems (distributory and field canals) from the Irrigation Department through a signed standard agreement.

Operations and Maintenance

- A total of 1,462 km of canals were rehabilitated as of end of year 1993 as against 800 km at PACD.

- Water Management Cells and Field Operation Unit Cells were established in all Seven Schemes within the ISMP area. Introduction of the Computer Assisted System Operation Model for a more effective and efficient water management occurred over LOP to help increase agricultural production.

- Annual Maintenance and Preventative Maintenance Programs were developed for the Main Systems of all the seven Schemes in order to facilitate sustained renewal of the Irrigation Systems.

Financial Management

- Assistance provided to DCFOs enabled them to levy membership fees from the members instead of O&M fees.

- IMD introduced a simple FM system to the DCFOs.

- DCFOs created Development Funds and utilized that money for supplying agro-inputs and buying materials for construction work.

- At PACD, a total of 125 DCFOs had a balance of Rs.2,465,315 in the local Banks as a result of their Development Funds.

- Training provided to FM Assistants, Institutional Organizers and FC Representatives in Financial Management improved skills in managing DCFO funds.

- 150 DCFOs have opened bank accounts.

- Training in the preparation of annual budgets enabled DCFOs to strengthen their skills in fund management.

- 22 DCFOs obtained credit facilities to buy fertilizers and agro-chemicals.
- DCFOs maintained Address Records and Specification Registers of their own.
- Seventeen (17) DCFOs engage in marketing of agricultural produce in concurrence with the Regional Rural Development Bank.
- Many DCFOs hired knowledgeable accountants to audit their Book of Accounts and funds in the bank on a regular basis.

Monitoring, Evaluation and Feedback

- A sustainable MEF program has been established in all the schemes of the ISMP and has been in operation since February 1991. The system has already been replicated in other Schemes under the INMAS program.
- Three reports are produced under the ISMP MEF System. They are:

  1. Annual/Seasonal Planning Reports to establish targets and schedules to various programs;
  2. Management Information System (MIS) report for monthly monitoring and feedback; and
  3. Seasonal Post-Harvest Survey Report to evaluate performance periodically.

- Although the monthly MIS report is prepared on a scheme-wide basis for Irrigation Engineers, Project Managers and District and Headquarters manager, a monitoring system for each DCFO is now utilized at the scheme level to evaluate performance of all DCFOs under each scheme.

Training (see Annex 4 for details of all the training under the ISMP)

- The Project developed the capabilities of a cadre of trainers for the organizations involved in irrigated agriculture.
- ISMP provided validated training modules and Manuals in Operations, Maintenance and Financial Management.

- Project training created attitudinal changes of officials and farmers. These changed reinforced Participatory Irrigation Systems Management.

- Training upgraded the capabilities of system management personnel and farmers.

- The Project provided training to Field Canal Representatives in Operation and Maintenance practices and planning Kanna (Cultivation) Calendar and inputs.

- The Project provided technical and practical training through a work/study program for ID staff. This was in water measurement practices and techniques and in the use of the Computer Assisted Water Management Models to assure the provide a better means for the equitable distribution of water to the farmers.

Crop Diversification

- Recognition and financial assistance extended to the Crop Diversification Program under the ISMP, facilitated the accomplishment of training, field demonstrations and field tours. This was responsible for initiating a major change in the farmer's attitude towards rice mono-cropping.

- Farmers have realized, through project demonstration and production activities, that net income and employment opportunities that are generated in other field crop production is greater than from rice in spite of the higher cost of production.

- There is a trend of acceptance in all of the schemes under ISMP to increase OFC production, due to the accomplishments on Other Field Crops (OFC) during the LOP.

- Farmers are engaged in growing Other Food Crops (OFCs) such as onions, chillies, cowpea, groundnut, mushroom, soybean, gherkins, vegetables, etc., in the four schemes in the Polonnaruwa Range and in the Ridi Bendi Ela Scheme in Kurunegala Range. About 3,000 acres are under cultivation giving farmers net profits ranging from Rs.1,500/- per acre to Rs.9,000/- per acre.

- The above achievements were a direct result of the Farmer Training activities conducted under the ISMP.

Research

- Eight Research Studies were concluded under the ISMP by various private consultants. This activity was co-ordinated by the International Irrigation Management Institute (IIMI) under a Cooperative Agreement between USAID and IIMI. These studies are as listed below:

ISMP Research Studies

	Research Study	Date
(1)	Study of Participatory Management Program in Nagadeepa, Mahawewa and Pimburettewa by Associate Development Research Consultants (ADRC).	October 1989.
(2)	Institution Building in Five Irrigation Schemes in Polonnaruwa by TEAMS (Pvt.) Ltd.	September 1990.
(3)	Study of Water Delivery Systems and Flow Measurements in Irrigation Schemes in Polonnaruwa by Lanka Hydraulics Inst. Ltd.	June 1990.
(4)	Study on Management and Cost of Operation and Maintenance of Irrigation Systems under ID in Sri Lanka by TEAMS (Pvt.) Ltd.	June 1991.
(5)	Rehabilitation of Irrigation Systems in Sri Lanka: A Literature Review by Dr. W.A.T. Abeysekera.	December 1991.
(6)	Maximizing Profitability of Irrigated Agriculture in the Polonnaruwa Systems by Agriculture Industry Consultancy & Services (Pvt.) Ltd.	July 1991.
(7)	Turnover of O & M of D-Canals to FOs in the Polonnaruwa Schemes by TEAMS (Pvt.) Ltd.	March 1992.
(8)	Cost Effective Strategies for Irrigation Modernization for the 1990s by Engineering Consultants Ltd. and ADRC.	June 1992.

IRRIGATION SYSTEMS MANAGEMENT PROJECT

PROJECT NO. (383-0080);

LIST OF REPORTS

NO:	SUBJECT	BY:
001	Final Project Report; Executive Summary, Report and Annexures (Vol.I)	Sheladia Associates, Inc. June 30, 1992
002	Final Project Repsort; Life-of-Project and Annual Work Plans (Vol.II)	Sheladia Associates, Inc. June 30, 1992.
003	Special Report on Assessment of ISMP's Farmer Organization Program	H.B. Bautista, June 30, 1992
004	Special Report on ISMP Preventative Maintenance Program	C.F. Leonhardt, June 30, 1992
005	Special Report on Up-Dating Irrigation Department Operation and Maintenance Manual	D. Weerakoon, June 30, 1992.
006	Final Project Report, Executive Summary	Sheladia Associates, Inc. June 30, 1992.
007	ISMP: 1991 Annual Work Plan DRAFT/FINAL	Sheladia Associates, Inc. November, 1990.
008	ISMP: 1992 Annual Work Plan	SAI: December, 1991
009	ISMP: 1993 Annual Work Plan	SAI: December, 1992.
110	Performance Improvement and Sustainability of Irrigation Systems under the ISMP.	IIMI - Colombo, 2-8 September, 1992
011	ISMP:MLIMD - Quarterly Progress Report	SAI: January-March 1989
012	ISMP:MLIMD - Quarterly Progress Report No.9	SAI: July-September, 1989
013	ISMP:MLIMD - Quarterly Progress Report No.10	SAI: October-December, 1989
014	ISMP:MLIMD - Quarterly Progress Report No.11	SAI: January-March, 1990

015	ISMP:MLIMD - Quarterly Progress Report No.12	SAI: April-June, 1990
016	ISMP:MLIMD - Quarterly Progress Report No.13	SAI: July-September, 1990
017	ISMP:MLIMD - Quarterly Progress Report No.14	SAI: October-December, 1990
018	ISMP:MLIMD - Quarterly Progress Report No.15	SAI: January-March, 1991
019	ISMP:MLIMD - Quarterly Progress Report No.16	SAI: April-June, 1991
020	ISMP:MLIMD - Quarterly Progress Report No.17	SAI: July-[illegible]
021	ISMP:MLIMD - Quarterly Progress Report No. [illegible]	[illegible] October-November, 1991
022	ISMP:MLIMD - Quarterly Progress Report No. [illegible]	[illegible] January-March, 1992
023	ISMP:MLIMD - Quarterly Progress Report No.20	SAI: April-June, 1992
024	MLIMD: Special Report on Gal Oya Left Bank System Preventative Maintenance Program	SAI: BY [illegible] 30 June [illegible]
025	ISMP:MLIMD - Crop Diversification	Mr. S. Somatakson - Agronomist 30 May 1989
026	ISMP:MLIMD - Methodology for ISMP Economic Cost Effectiveness Analysis	Mr. Seth H. Schick - Agricultural Economist, June 1989
027	ISMP:MLIMD - Financial Management Improvement Documentation Report	Mr. Seth H. Schick - Economist July 1989
028	ISMP:MLIMD - Guiding principles on Farmer Organizations in Major Irrigation Systems	Mr. Piyasena Ganewatte, Institutional Development Specialist
029	ISMP:MLIMD - Innovations in Farmer Organizations in Sri Lanka and the outlook for the future	Mr. Piyasena Ganewatte, Institutional Development Specialist
030	ISMP:MLIMD - Farmer Organization master plan Gal Oya left and right banks	Mr. P. Ganewatte, 26 June 1989

031	ISMP:MLMD - In-Service training course for Institutional Organizers, Course Report No.1	SAI: Mr. S.A. Premaratne & Mr. J. McCallum - November 1, 1990
032	ISMP:MLMD - In-Service training course for WM&FM Assistants, Course Report No.2.	SAI: Mr. S.A. Premaratne & Mr. J. McCallum November 24, 1990.
033	ISPAP: Proj. Review Workshop for ISMP, Colombo, Sri Lanka April 8-10, 1989	Kathy Alison & John J. Pettit September 1989
034	ISPAP: Second Annual Review Workshop for the ISMP. March 2-4, 1990	Kathy Alison, Steve Joyce and Basil Perera - April 1990.
035	**FINAL REPORT - VOLUME 1 - MAIN REPORT** - Study on Management & Cost of Operation & Maintenance of Irrigation Systems under the Irrigation Department, S/L.	TEAMS (Pvt) Ltd. June 1991.
036	**FINAL REPORT - VOLUME 2 - APPENDICES & MAPS** - Study on Management & Costs of Operations & Maintenance of Irrigation Systems	TEAMS (Pvt) ltd. June 1991.
037	**ISMP: FINAL REPORT** - The study of water delivery systems Phase 1: Flow Measurement	HMI - June 1990
038	**HMI: FINAL REPORT** - Institution-Building process of five major irrigation schemes in Sri Lanka.	TEAMS (Pvt) Ltd.
039	**FINAL REPORT** - Non-Government Organizations as social change agents: A case study from Sri Lanka.	Karunatissa Athukorale & Kusum Athukorale, ADRC - December 1990
040	**HMI: PART I - LITERATURE REVIEW:** ISMP substudy on Maximizing profitability of irrigated crop production inthe Polonnaruwa Systems.	Agriculture Industry Consultancy & Services (Pte) Ltd., July 1991.
041	**HMI: PART II - AN OVERVIEW OF SYSTEMS PERFORMANCE** - ISMP substudy on maximizing profitability of irrigated crop production in the Polonnaruwa Systems.	Agriculture Consultants AICS July 1991.

042	**IIMI: PART III - RESEARCH PROPOSAL** - ISMP subsidy on maximizing profitability of irrigated crop production in the Polonnaruwa Systems.	Agriculture Consultants (AICS) July 1991.
043	**IIMI: FINAL REPORT** - Turnover of O&M of Distributaries to Farmers' Organisations Polonnaruwa Dis[illegible].	TEAMS - March, 1992.
044	**IIMI: FINAL REPORT** - S[illegible] Cost effective Irrigation Modernization Strategies for [illegible] 1990s.	Engineering Consultants Ltd Associated Development Research Consultants Ltd., - June 1992.
045	**REVISED FINAL DRAFT** - Rehabilitation of irrigation systems in Sri Lanka. A Literature Review	Mr. W.A.T. Abeysekera - December, 1991.
046	**THE DRAFT FINAL REPORT** - The study of participatory water management project at Nagadeepa-Mahawewa and Pimburettawa	Karunatissa Athukorala and Kusum Athukorala - ADRC 1988-90
047	The study of water management in "Nagadeepa Mahawewa" and "Pimburettawa" projects	Associated Development Research Consultants, Colombo.
048	Monitoring Evaluation and Feedback - Seasonal Report for Maha 1989/90 - Ridi Bendi Ela Scheme Nikaweratiya Kurunegala Range.	SAI: Pitchapillai Periyasamy Associate Agriculturist - October 1990.
049	ISMP: USAID/SRI LANKA Assessment Team - Final Report	Gary Nelson, Dan Jenkins, Charles Strickland, Emily Hansen - December 14, 1988.
050	ISMP:MLIMD - **DOCUMENTATION REPORT** - Monitoring Evaluation & Feedback	SAI:Pitchapillai Periyasamy Associate Agriculturist October 1990.
051	**MANUAL FOR ANALYSIS OF SURVEY DATA** -	SAI: Dr. Kenneth F. Smith ME&F Consultant - March 1991.
052	**SYSTEM MANUAL** - Monitoring & Evaluating Irrigation Scheme Performance in Sri Lanka - A System for ISMP & INMAS	SAI: Dr. Kenneth F. Smith ME&F Consultant - March 1991

053	**REPORT OF FINDINGS & RECOMMENDATIONS -** Monitoring, Evaluation & Feedback (ME&F) of Sri Lanka's Irrigation Scheme	SAI: Dr. Kenneth F. Smith ME&F Consultant - March 1991
054	Managing the Development of Small Farmer water-user organizations in Sri Lanka; A follow-up Evaluation of the Monitoring, Evaluation & Feedback (ME&F) System	SAI: Dr. Kennth F. Smith ME&F Specialist - February 1992.
055	**DOCUMENTATION REPORT** Monitoring, Evaluation & Feedback	SAI:Seth H. Schick, Economist July 1989
056	**END OF TOUR REPORT;** Financial Management Improvement - Monitoring, Evaluation & Feedback and Methodology for Economic Cost Effectiveness Analysis Components	SAI: Seth H. Schick, Economist July 1989
057	ISMP:MLIMD - **FINAL REPORT;**	TEAMS: John McCallum Louis Berger Intl. & H.A. Premaratne; April 13, 1991
058	ISMP:MLIMD - **END OF TOUR REPORT:** Polonnaruwa Range	SAI: H.B. Bautista. 16 September 1991 - 30 June 1992
059	ISMP:MLIMD - **END OF TOUR REPORT:** Polonnaruwa Range	SAI: C.F. Leonhardt. 15 August 1987 - 17 February 1991
060	ISMP:MLIMD - **END OF TOUR REPORT:** Kurunegala Range	SAI: S.B. Seneviratne 30 June 1991 - 30 June 1992
061	ISMP:MLIMD - **END OF TOUR REPORT:** Ampara Range	SAI: R. Kandiah 15 March 1991 - 7 April 1992
062	ISMP:MLIMD - **END OF TOUR REPORT:** Ampara Range	SAI: K. Vallipuram 16 April 1990 - 30 June, 1992
063	ISMP:MLIMD - **END OF TOUR REPORT:** Financial Management	SAI: N.K. Adikaramge 18 February 1990 - 30 June 1992
064	ISMP:MLIMD - Polonnaruwa Range **END OF TOUR REPORT:** Financial Management,	SAI: N.K. Adikaramge 18 February 1990 - 30 June 1992

065	ISMP:MLIMD - **END OF TOUR REPORT:** Polonnaruwa Range	SAI: W. Amarakoon 16 September 1990 - 30 June 1992
066	ISMP:MLIMD - Polonnaruwa Range **END OF TOUR REPORT:** Financial Management	SAI: N.K. Adikaramge 18 February 1990 - 30 June 1992
067	ISMP:MLIMD - Polonnaruwa Range **END OF TOUR REPORT:**	SAI: S. Samarakoon 1 September 1988 - 30 June 1992
068	ISMP:MLIMD - Polonnaruwa Range **END OF TOUR REPORT:**	SAI: C.F. Leonhardt 15 August 1987 - 17 February 1991
069	ISMP:MLIMD - Polonnaruwa Range **END OF TOUR REPORT:**	SAI: T.A. Cerdan 18 February 1991 - 30 June 1992
070	ISMP:MLIMD - **END OF TOUR REPORT**	SAI: John Wilkins-Wells 30 March 1989.
071	ISMP:MLIMD - **END OF TOUR REPORT**	SAI: Herbert C. Roberts
072	ISMP:MLIMD - **END OF TOUR REPORT**	SAI: Pitchapillai Periyasamy October 1990
073	ISMP:MLIMD - **END OF TOUR REPORT**	SAI: D.S.A. Kulasekera December 1990
074	ISMP:MLIMD - **END OF TOUR REPORT**	SAI: Piyasena Ganewatte 10 November 1990
075	ISMP:MLIMD - **END OF TOUR REPORT**	SAI: Dr. Kenneth F. Smith April 1991
076	ISMP: A Follow-up Evaluation of the Monitoring, Evaluation & Feedback (ME&F) System. **END OF TOUR REPORT**	SAI: Dr. Kenneth F. Smith February 1992
077	ISMP:MLIMD - **END OF TOUR REPORT**	SAI: S. Balasingam January 1992.

E:\ISMPREP.AA
July 7, 1994.

ANNEX 15

A.I.D. EVALUATION SUMMARY - PART I

1. BEFORE FILLING OUT THIS FORM, READ THE ATTACHED INSTRUCTIONS
2. USE LETTER QUALITY TYPE, NOT DOT MATRIX TYPE

IDENTIFICATION DATA

A. Reporting A.I.D. Unit:
Mission or AID/W Office USAID/COLOMBO/ANR
(ES# _____)

B. Was Evaluation Scheduled In Current FY Annual Evaluation Plan?
Yes [ ] Slipped [ ] Ad Hoc [X]
Evaluation Plan Submission Date: FY ____ Q ____

C. Evaluation Timing
Interim [ ] Final [X]
Ex Post [ ] Other [ ]

D. Activity or Activities Evaluated (List the following information for project(s) or program(s) evaluated; if not applicable, list title and date of the evaluation report.)

Project No.	Project /Program Title	First PROAG or Equivalent (FY)	Most Recent PACD (Mo/Yr)	Planned LOP Cost (000)	Amount Obligated to Date (000)
383-0080	Irrigation Systems Management Note: This evaluation summary and attached Project Assistance Completion Report are submitted in lieu of a formal final evaluation.	1986	~~09~~ 12/92	18,600 11.7 6.9	~~10,600~~ 18,378

ACTIONS

E. Action Decisions Approved By Mission or AID/W Office Director

Action(s) Required	Name of Officer Responsible for Action	Date Action to be Completed
1. Design a program to monitor Project Farmer Organizations and improved irrigation system water management as a component of a new "Shared Control of Resources" Project	M. Siribaddana	Sept.1993

(Attach extra sheet if necessary)

APPROVALS

F. Date Of Mission Or AID/W Office Review Of Evaluation: (Month) (Day) (Year)

G. Approvals of Evaluation Summary And Action Decisions:

	Project/Program Officer	Representative of Borrower/Grantee	Evaluation Officer	Mission or AID/W Office Director
Name (Typed)				
Signature	Dan Jenkins			
Date				

ABSTRACT

H. Evaluation Abstract (Do not exceed the space provided)

The project goal was to increase agricultural productivity, expand rural employment opportunities, and raise net farm family income on existing irrigated land. The purpose was to develop institutional capacity to operate and maintain major irrigation systems on a "sustained renewal" basis, and to test and demonstrate the effectiveness of different combinations of management and structural improvements carried out in selected irrigation systems. The project included six elements; farmer organization development, operation and maintenance improvement, financial management improvement, monitoring evaluation and feedback, training, and research.

The project has been considered an overall success. The farmer organization component for participatory management of the irrigation systems was the core of the project, and by far the most successful element. The project was also very successful in transforming the Irrigation Department from a construction and engineering orientation to an organization to work and communicate with the new farmer organizations for improved management and maintenance. As the project matured, the O&M cost recovery strategy evolved into turning the secondary irrigation distribution systems over to the farmer organizations for O&M responsibility, which was highly successful. The rehabilitation construction element of the project was not completed due to (a) civil unrest, and (b) over ambitious design, not accounting for the fact that construction can only take place during the two months between irrigation systems. Other elements achieved their objectives. ME&F got a slow start because the initial system was too complex for practicality and field use and was re-designed as recommended in the mid-term evaluation.

SEASONS

COSTS

I. Evaluation Costs

1. Evaluation Team Name	Affiliation	Contract Number OR TDY Person Days	Contract Cost OR TDY Cost (U.S. $)	Source of Funds
NA; This evaluation summary and project completion report were executed in lieu of a formal final evaluation		N/A	N/A	N/A

2. Mission/Office Professional Staff Person-Days (Estimate) 5

3. Borrower/Grantee Professional Staff Person-Days (Estimate)

A.I.D. EVALUATION SUMMARY - PART II

SUMMARY

J. Summary of Evaluation Findings, Conclusions and Recommendations (Try not to exceed the three (3) pages provided)
Address the following items:

- Purpose of evaluation and methodology used
- Purpose of activity(ies) evaluated
- Findings and conclusions (relate to questions)
- Principal recommendations
- Lessons learned

Mission or Office:	Date This Summary Prepared:	Title And Date Of Full Evaluation Report:

Purpose and Methodology: A formal outside final evaluation was not conducted for the project. This decision was made because of the $0.5m research component of the project, resulting in eight independent studies, the last of which focused on evaluation and lessons learned for future implementation and replication. The TA consultant (Sheladia Associates) was directed to focus their final report on overall evaluation and lessons learned. Finally, USAID has done an internal detailed Project Close Out Report, transmitted with this Evaluation Summary, in lieu of a final evaluation.

Project Purpose: To develop institutional capacity to operate and maintain major irrigation systems on a "sustained renewal" basis, and to test and demonstrate the effectiveness of different combinations of management and structural improvements carried out in selected irrigation systems.

Findings and Conclusions: were the proposed outputs and end-of-project status achieved? At the national level, the proposed outputs of the project are listed below, with the end-of-Project status.

An expanded staff and institutionalized capacity to carry out management responsibilities in major irrigation systems: Yes

An expanded farmer organization program capable of being extended to all major systems: Yes

O&M improvement procedures capable of being extended to all major systems: Yes

Demonstrated costs and benefits associated with varying levels of management/rehabilitation improvements: No (see lessons learned)

An established national financial management program for irrigation system O & M, including the collection and disbursement of O & M fees paid by farmers: Yes

Trained personnel in the above irrigation management functions, and enhanced training capacities in local training organizations: Yes

A strengthened research capacity and the carrying out of proposed irrigation management research studies: Yes

At the field (district and project site) level, the proposed outputs of the project were:

Strengthened, comprehensive management capacity in seven irrigation systems: Yes

Farmer organizations established in seven systems on an average of one per 15-20 farmers, in each system at distributory channel levels, and farmers represented on system level Project Committees: Yes

O & M procedures institutionalized with computer-based operations and regular maintenance schedules: Yes

Essesntial Structure Improvement (ESI) completed for main, branch ,and tertiary channels in four systems: Yes

Pragmatic Rehabilitation (PR) completed for main, branch and tertiary channels in one system: Yes

O & M financial management systems producing monthly, seasonal and annual financial reports established in seven systems: Yes

Monitoring, evaluation and feedback programs producing project operations and performance reports established in seven systems! Yes

The combined activities in the project were expected to result in the following principal conditions by the end of the project. The end of project status is given.

A better understanding of the requirements, costs and benefits in upgrading existing major irrigation systems to the point where they can be operated and maintained on an affordable "sustained renewal" basis (without recourse to periodic major rehabilitation);Achieved

Better communications and coordination among farmer organizations and irrigation system personnel, and proven methods for creating and sustaining farmer organizations: Yes

Functioning financial management and MEF programs, computerized to the degree feasible, to handle annual O & M revenues and expenditures and report on the total performance of major irrigation system: Yes

Seven major irrigation systems brought to the sustained renewal level, upgraded physically with effective O & M procedures and management in place, and highly suitable for a program of improved farm water management and diversified agricultural production: No (see lessons learned)

Lessons and Recommendations:

1. Measuring impact on productivity from rehabilitation and management improvements of existing irrigation systems can be difficult and unfeasible.

In order to achieve this objective, one must have "before" and "after" data (baseline and end-of-project). In most cases, the baseline is not static, but what production would have been without project interventions. Since the project impact is a measure of differences rather than absolutes, the accuracy of the baseline and end of project data must be significantly finer than the difference one is trying to measure. Linking cause and effect presents an even more difficult problem. ISMP used many structural and management interventions to improve system performance. In addition to these variables, there were many more, and more significant, extraneous factors (rainfall, pests and disease, price of fertilizer, civil unrest, etc.) which affected performance and productivity. Since this was one of the purposes of ISMP, many resources were used (ME&F, research) with futility to find very elusive numbers. If this is to be a serious objective, the project design must include a detailed and implementable monitoring plan beginning with baseline data, and including the specific data, sources, persons responsible, and analytical procedures.

This exercise should also include the objectives and reasons for the monitoring and evaluation. Had this been done for ISMP, it would have been seen during the design phase to be an exercise in futility.

2. Detailed site and system-specific studies to identify constraints to productivity are required before design and implementation of interventions for improvement.

This is linked closely with the above recommendation, since the site-specific constraints and their reductions in production are the key to monitoring improvement and benefits. ISMP planned and executed this activity with the seven volume Diagnostic Analysis. However, the objectives were not met, because these studies did not identify and quantify the specific constraints, with a rational set of solutions. The Gal Oya Water Management Project had dramatic improvements in productivity and area irrigated after introducing improved water measurement and computerized scheduling. It was assumed that ISMP could benefit from the same interventions. However, the designers and diagnostic analysis did not reveal that the ISMP schemes scheduled for rehabilitation were either already working with very high efficiency, or there was no additional area which could be served by saving water. Interventions need to be linked to verified constraints with some idea of the benefits which can be achieved. The rehabilitation and institutional development interventions in ISMP helped insure sustainable future operations with participatory management rather than large increases in production.

3. For introducing participatory management to irrigation schemes, institutional developers need to focus talent and energy on pulling engineers and farmers together for two-way communications and solving common problems.

Social scientists have done an outstanding job recognizing and documenting the problems traditional engineers and technicians have working in harmony with farmers and irrigators. The social engineers have not done nearly so well bridging the gaps between these polarized groups to communicate and work out problems harmoniously. There is a tendency for the farmer organization specialists and Institutional Organizers to champion the farmers, highlight past problems, and serve as a wedge between the already polarized groups. Orientation and training of these "catalysts" need to focus on pulling the groups together rather than siding with one. ISMP began with severe and wide-spread problems, from the ID/IMD field officers through the technical assistance team. After two years strong and successful measures were taken to rectify this condition.

4. Institutional Organizers (catalysts) for forming farmer organizations for participatory management of irrigation systems should be recruited from the project area, and have cultural and economic backgrounds similar to the targeted farmers.

Institutional Organizers originally recruited for ISMP were new university graduates. The IO jobs were temporary, not highly paid, and required living in the remote and rural sites. After training, many of the university IO's did not go to the project areas, and the attrition rate of the others was unacceptably high. The alternative approach of recruiting at the local level, lowering the educational requirement to "A" level graduates (high school), and modifying the training was highly successful. It should also be noted that about half the IO's recruited locally were female. They performed exceptionally well; perhaps because they found it easier to function as catalysts rather than active leader. This also encouraged women to participate and take offices in the farmer organizations.

5. Farmer Representatives should be elected by secret ballot.

Politicization is recognized as a major threat to farmer organizations in Sri Lanka. Secret ballots are an effective safeguard to help prevent this.

6. Farmer organizations for participatory management of irrigation systems should be formed based on hydrological rather than community boundaries.

Since the basis for the organizations is operation and maintenance of their respective systems, membership should be made up of farmers served by discrete canals or groups of canals. A control structure (sluice gate with water measurement) needs to be the divide between farmer organizations, or an organization and the irrigation agency.

7. An interdisciplinary, participatory management project for irrigation system improvement needs well planned periodic workshops to assure integrated team planning, consensus, and implementation.

8. In order to achieve cost-effective, pragmatic rehabilitation of an irrigation system, an incentive structure must be in place.

The only effective check for cost-effective rehabilitation under ISMP was lower than normal funding levels. The incentive at all levels (farmer organizations, Irrigation Department, and USAID) was to over design and over spend.

Since farmer organizations were given construction contracts, their incentive often became profit oriented rather than cost-effective water management. This could be rectified by requiring the FO's to contribute a substantial portion of the rehabilitation cost for their area. Not only would this result in more pragmatic decision making on their part, but substantial reductions in cost, motivation to improve maintenance, and a perfect indicator of organizations which are ready and willing to begin participatory management.

The natural tendency for Irrigation Department is to use original designs and specifications as the basis for rehabilitation. This simplifies planning and design work, and results in costlier contracts. Pragmatic, cost-effective rehabilitation must be based on good field work, sound and creative hydraulic engineering, and innovative, new designs. None of these are rewarded in the present system.

At USAID, meeting expenditure targets and reducing the pipeline are much more visible and valued than improved performance and reduced costs through quality and creative engineering.

9. Trained and motivated technicians are a prerequisite to improved technology for irrigation water management.

For a flooded rice based system, motivated technicians and farmer groups can attain high irrigation efficiency and equity with minimal scientific water management. The converse is not true. Irrigating rice is like filling a tea cup. Pour till it's full, but don't spill. In order to reap improvements from scientific measurement and scheduling, the irrigators and technicians must have strong incentive and motivation to make improvements, because the scientific techniques require greatly increased human and physical resources. Technological improvements should be demand-driven from the potential users and beneficiaries, with a clear understanding of required resources and potential benefits.

ATTACHMENTS

K. Attachments (List attachments submitted with this Evaluation Summary; always attach copy of full evaluation report, even if one was submitted earlier; attach studies, surveys, etc., from "on-going" evaluation, if relevant to the evaluation report.)

Project Close Out Report

COMMENTS

L. Comments By Mission, AID/W Office and Borrower/Grantee On Full Report