

CHAPTER 17 DEVELOPMENT PLAN OF THE PRIORITY IRRIGATION SCHEMES

17.1 Introduction

The development plan in the Feasibility Study (F/S) has adopted the PCM method for participatory planning as mentioned in Chapter 16. The PCM workshops were held with personnel concerned in the priority irrigation schemes. The workshop's participants have determined farmer/community as the target group and adopted three approaches to be tackled during the Feasibility Study as: i) strengthening of farmers' organisation (including the increment of non-farm income as by improving employment opportunity), ii) obtaining sufficient irrigation water, and iii) improving agriculture activity (including marketing and agriculture credit). The Study Team has prepared PDMs for respective priority irrigation schemes based on the results of the workshops. This chapter is to set the development plan based on PDM and to prepare Plan of Operation.

17.2 Basic Development Concepts

17.2.1 Overall Goal and its Adaptability with the Development Components of the Master Plan

The Master Plan Study has proposed the following two (2) goals.

- a) Achieving sustainable development of rural agriculture.
- b) Improving agricultural production in the rural community.

PCM workshops were organised based on the above goals. The PDMs for respective priority irrigation schemes prepared on the results of the workshops are adaptive and possible to implement within the frameworks of the Master Plan as described in the table below.

PDM (Narrative Summary) - F/S	Master Plan
Overall Goal	Overall Goal
Achieving sustainable development of rural agriculture.	Sustainable development of rural agriculture.
Improving agricultural production in the rural community.	Improvement of agricultural production & Farm household income.
Project Purpose	Basic Development Purpose
Improving socio-economic status*1	Increase farm household income
Activities	Development Components
1) Strengthening Farmer' Organisation	
Conducting awareness and training programmes.	Awareness programme
Reorganisation to be multifunctional FOs.	Strengthening programme for FOs.
Income generation through FOs.	Income generation plan.
2) Supplying proper irrigation water according to schedule.	
Rehabilitating and improving irrigation facilities.	Rehabilitation and improvement plans for irrigation facilities.

(continued)

Improving water management. Strengthening O&M of the facilities.	Water management plan Including into above plans of the rehabilitation and the strengthening FOs.
3) Improving agriculture activity.	
Strengthening agriculture extension activity.	Improvement of agricultural support services.
Promoting OFC cultivation.	Agriculture production plan. (Crop diversification).
Improving marketing of inputs material and outputs.	Marketing improvement plan.
Improving credit services.	Rural credit improvement & Strengthening.
Promoting reforestation in the catchment area.	Corresponding to promote fruits cultivation of the above income generation plan.
Reducing elephant damage.	(Proposed as environmental conservation, not included in the development components)

*1: Summary of the entire priority irrigation schemes.

17.2.2 Basic Approaches on the Programme Preparation

The following basic approaches were adopted to formulate the concrete development programmes and to prepare the plan of operations, based on the PDM.

(1) Application of Basic Development Approaches adopted in Master Plan Study

In the preceding Master Study, the following basic approaches for the preparation of the development programme has been established (refer Section 8.3.2). These have also been adopted in this F/S.

- a) Programme implementation through farmers' initiative.
- b) Comprehensive development.
- c) Programme implementation according to the present development stage of the irrigation scheme.
- d) Equal distribution of the fruits of development.
- e) Close communication and maintaining transparency.

On the item of "programme implementation in accordance with the present development stage of the scheme", the development stage of the priority irrigation schemes is to be executed in the first stage (refer Section 8.6). Therefore the approach is to be a comprehensive development, which is the rehabilitation and improvement of irrigation facilities including the software components.

(2) Reflecting Farmers' Opinions obtained at Public Meeting

Many opinions raised in the public meetings on the preliminary PDM are considered to be valuable, which are farmers' own ideas. These opinions are reflected into the basic approach on the programme preparation, which are presented in the following table.

Basic Approach on the Programme Preparation

Farmers' Opinion in the Public Meeting	Basic Approaches
1) Participants consider the gap on idea of O&M between FO leaders and ordinary farmers. They are also pointed out the importance of awareness for officers in order to change into the project implementation method of reflecting farmers' opinion from the one-sided project works.	The programme is to emphasis on awareness of both personnel concerning the executing agencies and farmers. Awareness programme for individual farmer is to be carried out through FOs.
2) Rehabilitation works carried out in the past project were without reflecting farmers' intention and are not in operation at present. There are many farmers who are not satisfied the implemented works.	Lack of communication between official institutions and farmers basically caused by the problems of 2) and 3). Following approaches are employed as the countermeasures in the programme preparation. Contents of rehabilitation and improvement works are to be <u>reflected as much farmers' intention as possible</u> . The plan in this study is prepared based on FOs' estimation of the rehabilitation. Transparency to the rehabilitation works and communication system between executing side and farmers are to be established.
3) Farmers criticised officers and contractors that rehabilitation works in the past were not transparent and discussion before construction was not enough.	
4) Samurdi and other organisations are carrying out a group loan at present, but are not fairly implemented.	This is the issues not only for rural credit but also for the services provided by the Project. Farmers' organisation is to be fostered as autonomous organisation representing the community and programme is to approach for system to provide fairly various services through FO.
5) There is a problem on O&M of facilities and water management caused by unclear relation of landlord and tenant. (Nachchaduwa scheme)	This problem occurred in Nachchaduwa scheme at present and might occur in the other schemes too. Therefore, all FOs have to survey the relation of landlord and tenant.

The main needs of farmers in the public meetings were the rehabilitation and improvement of irrigation facilities, and farmers' intention on the works is on "reflecting farmers' ideas" and "maintaining transparency of the works and effective communication." Therefore, the F/S is prepared based on the following concrete basic approaches.

1) Reflecting Farmers' Ideas to the Development Components (Programmes)

All FOs (28 FOs) were made to prepare the rehabilitation plans during the field survey as mentioned in Section 16.5. The plans prepared were mostly technically and economically acceptable; therefore it was decided that the rehabilitation and improvement programmes in the F/S are prepared based on these plans.

2) Maintaining Transparency and Close Communication

In order to maintain transparency and close communication between officers and farmers, three resident workshops, which are systematically practised by ADB project at present, are to be introduced in this Project. Moreover for further strengthening the system, training for officers, "Capacity building on communication" for both parties and "Skill of technology transfer to farmers" are to be applied.

(3) Implementing Project as Comprehensive Development

The component of activities prepared on the basis of the PCM workshops shows a comprehensive development consisting of not only rehabilitation of the irrigation facilities but also strengthening of FOs, provision of income generating and social services, improvement of agricultural extension, marketing and rural credits, etc. And, in order to achieve successful implementation of these components, it is important to strengthen the support services of the government agencies concerned. Therefore, the development of the priority irrigation scheme should include strengthening programme of the government support services. Moreover, the priority schemes consisting of 5 areas should be developed as one unit, because individual development of priority scheme will bring about over investment on grading-up of the government agencies concerned.

17.3 Development Plan of the Priority Irrigation Schemes

17.3.1 Nachchaduwa Major Scheme

(1) General

Nachchaduwa major irrigation scheme is located adjacent to Anuradhapura and it has easy access to Dambulla, which is a centre for marketing agricultural products. Total number of farm households is 3,230 and the irrigated paddy area is 2,540ha. The Farmers' Organisation Federation, consisting of 14 FOs of Nachchaduwa and 1 FO of Thruwila, is organised in to a scheme. (The project targeted FOs are the former 14) The present situation of the scheme is in Table 15.1.1.

The PDM of the Nachchaduwa scheme is shown on page 17-12. The development plan is formulated as "increase farmers' income in the rural community" for the project purpose and the target group in farmers/community's people. The details are given in the table of the Plan of Operation of page 17-13 and 17-14, and the project layout map of page 17-15.

(2) Strengthening Farmers' Organisation

Farmers' organisations are the main executing organ of the Project. The proposed components are to be implemented by the FOs or through the FOs, who are also the core organ of sustainable rural agriculture development for self-reliance. The approaches considered for strengthening FOs are: i) awareness and training programmes, ii) establishment of multifunctional FOs, iii) income generation programme and iv) construction of farmer centre. The concrete plans for these programmes are as follows.

1) Awareness Programme and Educational/Training Programmes

Awareness programme

Awareness programme is applied for the both “farmers” and “official institutions concerned” as mentioned before. Its contents and implementation procedure are as detailed in Section 9.2. The multifunctional FO is to be established through this programme with the self-motivation of the entire community.

Education/ training programme

Following education and training programmes for fostering leaders of the multifunctional FO are to be conducted.

Education/Training Programmes for FO Leader – Nachchaduwa Major Scheme

Training Subject	Contents	Training Method
1) Draft preparation of the Articles of Organisation amendment	Draft preparation of the Articles of Organisation, and knowledge of the systems and the procedures required on the process.	Lecture in Srawasthipura Agrarian Service Centre (ASC/DAS) and practical training by Farmer Animator.
2) Practical training of the basic operation and management of the organisation	Planning, participatory management, practical operation & management of FO, practical financial management, financial resource management, role & systems of official concerned, etc.	
3) Training on the income generation activity	Practical; training of the operation/management of the rural credit(Group-loan, Revolving-loan) and co-operative purchasing/selling.	Lecture by ASC/DAS, IMD, private bank (PMU arranges with banks) & practical training by Farmer Animator.
4) Information network formation/Awareness training	Establishing information networks with external organisations for collecting and sharing information in and around the community.	Holding joint workshops with external organisations and 14 FOs for sharing information.

These programmes are conducted separately from the awareness programme within the regular works of Nachchaduwa Resident Project Manager’s Office (RPM) and Srawasthipura ASC. Education and training facilities of Srawasthipura ASC are to be improved and strengthened (refer Section 17.4).

2) Establishment of Multifunctional Farmers’ Organisations

The present FOs are to be reorganised to multifunctional. The reorganisation is determined in the general meeting of the entire community, which conducted the awareness programme mentioned previously. The organisation is to provide various services to farmer/community and to be fostered to be an autonomous organ representing the community. Major change in the reorganisation is to set up subcommittees under the executive committee for acting on irrigation, agriculture, business of FO, and income generation/social services.

Setting up the Subcommittee – Nachchaduwa Major Scheme

Subcommittees	Purposes and Activities
1) Irrigation	i) Water management, ii) O&M of facilities, iii) Safety operation of irrigation facility, iv) Estimation & collection of Irrigation Service Fee (ISF), and v) Survey on lease/tenant of farmland
2) Agriculture	i) Collaboration with official extension works, ii) Holding technical extension seminar, iii) Income generation activity (Home garden and livestock development), iv) Operation of group works as pest control, and v) Control elephant damage (strengthening control by FO)
3) Businesses of FO	i) Establishment and operation of co-operation purchasing/selling, Pola/collection point, ii) Operation and management of the rural credit service (group loan, revolving loan), iii) Business of FO as farm machinery rental service, inland fishery, agro-processing, etc.
4) Income Generation/Social Services	i) Income generation activities such as vocational training, small-scale enterprise/business, self-employment, ornamental fish culture and collection of employment information, ii) Promotion of mutual aid credit system, iii) Financial support for income generation, and iv) Promotion of anti alcohol addict campaign, social welfare, health & sanitary improvement.

Operation and management of irrigation facilities by seasonal tenant became a problem in Nachchaduwa scheme as the responsibility of landlord and tenant on O&M works is not clear. Therefore, the irrigation subcommittee of FO is to survey the situation of seasonal tenant and the responsibility of O&M is to be clarified. It is proposed that this activity is to be authorised to FOs by the Kanna meeting.

Audit section is proposed to set for maintaining transparency of FO activity and to employ volunteer for close communication with FO members. The audit section is to check periodically and report to the general meeting. The volunteers are to work on communication among the executive committee, the subcommittees and the members.

3) Income Generation/Social Services through Farmers' Organisations

“Agriculture” and “Income Generation/Social Services” subcommittees are to carry out income generation for farmers and community. The activities are; i) promotion of home garden development, ii) livestock promotion, iii) inland fishery promotion, iv) promotion of vocational training, v) employment services, vi) small-scale enterprise/business promotion, vii) financial support for income generation, and viii) social services such as anti-alcohol addict. The income generation/social services are to be carried out by the self-motivation of FOs and are to target poverty groups in the community. Necessary information is to be provided through Srawasthipura ASC and Farmer Animators. The training facilities of the National Youth Service Council (NYSC) are to be utilised for vocational training, so no extra facility is constructed by the Project.

4) Construction of Farmer Centre

Farmer centres are to be constructed for smooth implementation of FOs' activities and for maintaining communication in the community and with the official agencies concerned. Ranketa FO owns a hall at present but it has deteriorated and there are no facilities in the other thirteen FOs. Therefore, fourteen centres are to be constructed for all FOs. The size of the facility is according to the DOA's on-going plan as mentioned in Section 17.4.2.

(3) Distribution of Proper Irrigation Water

1) Rehabilitation and Improvement Plan of Irrigation Facilities

The rehabilitation and improvement works in Nachchaduwa major scheme are as follows:

Rehabilitation and Improvement Plan – Nachchaduwa Major Scheme

Category	Item	Quantity	Description of works
Tank	Bund	L.S.	Embankment, Gravelling, Rip-rap, Filter toe drain
	Sluice	L.S.	Repair of concrete works, protection of downstream, Measuring device
	Spillway	L.S.	Repair of concrete works
	Others	L.S.	O&M Road
Main canal	Earthworks	15 km	Embankment, De-silting
	Lining	7 km	Masonry Lining
	Structures	180 Nos.	Turnout, Regulator, Bathing steps, Bridge, Culvert etc.
	O&M Road	26 km	Earth filling, Gravelling
D-canals	Earthworks	16 km	Embankment, De-silting
	Lining	21 km	Masonry Lining
	Structures	230 Nos.	Turnout, Drop, Culvert
	O&M Road	18 km	Earth filling, Gravelling
F-canals	Earthworks	17 km	Embankment, De-silting
	Lining	38 km	Masonry Lining
	Structures	122 Nos.	Farm turnout, Culvert, Drop
	O&M Road	45 km	Earth filling, Gravelling
Others	Small Tank	11 Nos.	Minor repair
	Feeder Canal	L.S.	Repair of feeder canal from Kala Wewa

The major works on the main canals include the rehabilitation of the off-takes, and construction of new bridges. The masonry lining will be provided in most of the D-canals and 20% of the F-canals in length. As for the O&M of roads, earthworks with gravelling are proposed for easier vehicle transportation in rainy season.

The works for tanks and main canals are to be conducted by constructors and the works for D-canals and F-canals are to be carried out by contractors or farmers. The training courses for rehabilitation and improvement works are programmed in order to reflect farmers' intention to the works as much as possible, and to carry out the works by the farmers. The training courses for the government staff and the farmers are outlined below.

**Training Programme for Rehabilitation and Improvement Works
– Nachchaduwa Major Scheme**

Activities	Session	Period	Lecturer	Subject of training
Training for the government staff	First	1day Pre-construction	RATPA	Participatory planning Communication with farmers
	Second	1day, in the construction	ID	Skill of technology transfer to farmers
	Third	1day Post-construction	ID	Hand-over of O&M responsibility to farmers, follow-up programme
Training for farmers	First	2 days Pre-construction	RATPA	Participatory planning, field investigation, design and cost estimate
	Second	2 days Pre-construction	ID	Contract for rehabilitation works Farmers' contribution
	Third	1day In the construction	ID	Quality control for earthworks and concrete, preparation of document for rehabilitation, field inspection
	Fourth	1day Post-construction	ID	Follow-up programme

RATA: Research and Advisory Team for Participatory Approach

Education/training for officers is one course for TA and WS of Anuradhapura ID. One course in every two FOs (total 7 courses in Nachchaduwa) is to be conducted and farmers, the office bearers of FOs and the subcommittee members are to be participants.

2) Training for Water Management

The water management training for the government staff and farmers are proposed as follows:

Training Programme for Water Management – Nachchaduwa Major Scheme

Activities	Session	Period	Lecturer	Subject of training
Training for the government staff	First	1day, pre-construction	RATPA	Awareness programme, communication with farmers
	Second	1.5days Post-construction	ID	Estimation of water requirement, preparation of water distribution programme, skill for gate operation of tank and off-takes, flow measurement and flow monitoring, skill of technology transfer to farmers
	Third	1day	ID	Follow-up programme
Training for farmers	First	1day Pre-construction	RATPA	Awareness programme, communication with government staff, communication among farmers, communication with other FOs
	Second	1.5days Post-construction	ID	Preparation of water distribution programme, skill for gate operation of tank and off-takes
	Third	1day	ID	Follow-up programme

RATA: Research and Advisory Team for Participatory Approach

Education/training for officers is one course for TA and WS of Anuradhapura ID. One course in every two FOs (total 7 courses in Nachchaduwa) is to be conducted and farmers, the office bearers of FOs and the subcommittee members are to be participants.

3) Training for O&M of Irrigation Facilities

The training on O&M of irrigation facilities for the government staff and farmers is proposed as follows:

Training Programme for O&M – Nachchaduwa Major Scheme

Activities	Session	Period	Lecturer	Subject of training
Training for the government staff	First	1day, pre-construction	RATPA	Awareness programme Communication with farmers
	Second	1.5days, in the construction	ID	Preparation of maintenance programme Monitoring of maintenance activities Skill of technology transfer to farmers
	Third	1day	ID	Follow-up programme
Training for farmers	First	1day, pre-construction	RATPA	Awareness programme
	Second	1.5days, in the construction	ID	Preparation of maintenance programme, organising a patrol, organising a Sramadana, collection of O&M charge
	Third	1day	ID	Follow-up programme

RATA: Research and Advisory Team for Participatory Approach

Education/training for officers is one course for TA and WS of Anuradhapura ID. One course in every two FOs (total 7 courses in Nachchaduwa) is to be conducted and farmers, the office bearers of FOs and the subcommittee members are to be participants.

(4) Improvement of Agriculture Activities

1) Promotion of Crop Diversification

Water resource potential of Nachchaduwa scheme is not so high and its potential for increasing cultivation area after the project implementation is as less than 50% (refer Section 9.4.3), therefore OFC promotion cropping pattern is proposed. The proposed cultivation area and production of respective crop are as follows, and the proposed cropping system is shown in Figure 15.3.1.

**Cropping Area and Production With & Without Project
– Nachchaduwa Major Scheme**

	Without Project			With Project			Increase (ton)
	Area (ha)	Yield (ton/ha)	Production (ton)	Area (ha)	Yield (ton/ha)	Production (ton)	
Paddy - Maha	2,540	4.43	11,252	2,286	5.0	11,430	178
- Yala	1,473	3.81	5,611	2,032	5.0	10,160	4,549
OFC							
Maha - Pulses	-	-	-	89	1.5	134	134
- Chili	-	-	-	76	1.5	114	114
- Red onion	-	-	-	51	15.0	765	765
- Vegetables	-	-	-	38	10.0	380	380
Yala - Sesame	-	-	-	102	0.9	92	92
- Pulses	-	-	-	127	1.5	191	191
- Chili	202	0.67	135	127	1.5	191	56
- Red onion	-	-	-	102	10.0	1,020	1,020
- Vegetables	-	-	-	51	10.0	510	510

2) Strengthening Agricultural Extension Services

Major technical improvement required for crop diversification and increasing yield in Nachchaduwa is as follows.

Yield Increase of Paddy	Crop Diversification & OFC Yield Increase
a) Improvement of planting technique (seed rate, seed quality)	a) Improvement of plant density
b) Improvement of fertilising technique (amount, timing)	b) Improvement of OFC irrigation (interval, amount))
c) Improvement of pest management (amount of chemical, timing)	c) Improvement of Fertilising technique (amount, timing)
	d) Improvement of soil (organic matter application)
	e) Appropriate harvesting time (quality improvement)

Inter-provincial Extension Unit (IPEU) of the central government is to conduct the following extension activities in order to achieve crop diversification and increase in yield.

Agriculture Extension Activity – Nachchaduwa Major Scheme

Programme	Objectives	Method & Required Materials
1) Field Trial / Demonstration Programme - Adaptive trials - Small-scale demonstration - Cropping pattern demonstration - Large-scale demonstration - Productivity increase programme - IPM programme	- To develop technology for improving productivity - To demonstrate recommended practices of paddy and OFC for crop diversification and increasing productivity. - Appropriate chemical application	● Conducted by IPEU ● FOs close contact with IPEU ● Use farmers' field for demonstration ● Farmer training programme including quality seed campaign, and field tour ● Seed production programme includes provision of register seed and technical guidance. Production expense is born by farmers.
2) Farmer Training Programme - Induction farmer training - Induction farmer guidance - Farmer training - Workshop, quality seed campaign, study tour	- To disseminate crop diversification and cultivation technique directly to farmers.	● Required material cost for extension activities are born by the Project. Details are shown in 1/12 to 7/12 of Table R.3.2 of Appendix-R.
3) Seed Production Programme - Paddy seed production - OFC seed production	- To foster seed production farmers.	

Moreover, improvement of marketing agricultural products is needed for OFC promotion. Improvement of fertilising/pest management techniques is related closely to marketing of input materials and the rural credit, and the countermeasures are described in 3) and 4).

3) Improvement of Marketing of Agricultural Outputs and Inputs Materials

Improvement of inputs materials

Co-operative purchasing of inputs materials is proposed by FOs. This system is to carry out by linking to a group loan to be mentioned in the improvement of rural credit of the item 4). Awareness and education to Srawasthipura ASC are to be attempted for introducing the system.

Improvement of outputs

Following improvement on marketing programme is proposed. These activities are to be carried out by FOs (FO business subcommittee).

**Improvement Programme of Marketing Agricultural Products
– Nachchaduwa Major Scheme**

Programme	Objectives	Method & Required Materials
1) Setting Pola	To activate marketing of farm products by open Polas. To sell small quantity products from home gardens.	<ul style="list-style-type: none"> ● Polas are to be managed by FOs ● Proposed that Pola is to set without any construction for reducing maintenance cost and no Pola fee is to charge. ● Guidance for setting Pola is to be carried out to FOs by ASC/DAS and suitable location and day are to be decided by contact with merchants. ● Proposed location of Polas is shown in the Project Layout Map based on the discussion with FO leaders.
2) Setting Collecting Point of Farm Products	To set contact points of producers with merchants on outputs marketing.	<ul style="list-style-type: none"> ● No required materials for setting the system. ● Selections of merchants and locations are determined by farmers and Proceeded by FOs. ● ASC/DAS is provide guidance to both merchants and FOs on collecting points and co-operative selling.
3) Establishing Co-operative Selling System	To sell products regularly and develop new markets.	
4) Establishing Market Information Collection	To collect information on market prices.	<ul style="list-style-type: none"> ● Regular purchasing of KARTI publication. PMU will provide information on purchasing.
5) Improving Quality	To improve quality of products.	<ul style="list-style-type: none"> ● No required materials. ● Quality standard of products is not established and it is judged by merchants. FOs have to collect information on quality and disseminate to farmers. ● ASC/DAS is to provide guidance on information collection.

4) Improvement of Rural Credit

Introduction of the following loans is proposed. The activity on the rural credit is to carry out mainly by FOs and PMU and Srawasthipura ASC will support them.

Improvement of Rural Credit – Nachchaduwa Major Scheme

Programme	Objectives	Method & Required Materials
1) Introduction of Group Loan (cultivation loan)	For purchasing inputs materials. Linkage with co-operative purchasing system.	<ul style="list-style-type: none"> ● No required materials. ● Mainly loan by private banks. It is considered to be possible to introduce for group loan by private banks, because this loan is practised at present. PMU is to request to banks on introduction. ● The system management/operation of farmer sides is carried out by FOs(subcommittee) ● ASC/DAS is to educate FOs on the introduction and training FO leaders on the operation works.
2) Introduction of Revolving Loan (medium term loan)	For purchasing farm machinery and financing small-scale enterprise.	<ul style="list-style-type: none"> ● No required materials. ● Operation & management by FOs (subcommittees). Principally the fund is to be prepared by FOs. If its capital is not enough, FOs obtain a loan from the bank, and PMU supports FOs for obtaining loan. ● ASC/DAS is to provide training for lending works.
3) Introduction of Mutual Aid Credit system	For emergency need on living as sickness, accident or financing of self-employment.	<ul style="list-style-type: none"> ● No required materials. ● Loan from the Women's Bank. ● Mainly operating for women groups. ● FOs (Income Generation/ Social Services Subcommittee) is deal with education but not on operation. ● ASC/DAS's education to FOs.

Project Design Matrix - Nachchaduwa Major Irrigation Scheme

Name of Project : Nachchaduwa Development Project for Irrigated Agriculture and the Community

Project Area : Nachchaduwa Major Irrigation Scheme

Duration : 7 years

Date : 31 May 2000

Executing Agency : Ministry of Irrigation and Power (MIP)

Target Group : Farmers / all villagers in the Nachchaduwa Scheme

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal			
1.1 Achieving sustainable development of regional agriculture	1.1 Development activities are planned and implemented independently by FOs and farmers themselves.	1.1 Monitoring reports of the project office (PMU)	Agricultural policy of the Government not hinder implementation of the project.
1.2 Improving agricultural productivity of the rural community	1.2 Agriculture is economically feasible.	1.2 Monitoring reports of PMU	
Project Purpose			
2.1 Increasing income among farmers	2.1 Total gross income of farmers increase progressively by the end of the project.	2.1 Monitoring reports of PMU	Agricultural products do not have to face unreasonable competition from imported products.
Outputs			
3.1 FOs having multi functions relating to irrigation, agriculture, small enterprises, income generations, social services are established and activated.	3.1.1 FOs provide various services including income generation, etc. from the 3rd year after commencement of the project. 3.1.2 Committee and sub-committee meetings are held monthly by the 3rd year after commencement of the project.	3.1.1 Minutes of FOs' general meeting and monitoring reports of PMU 3.1.2 Minutes of FOs' committee and sub-committee meetings	There is no extreme natural disaster (drought, heavy rain, etc.). Government enforces existing rules and regulations to protect environment. Other sectors have no drastic and sudden change in the economic activities. Social conditions in the community have no drastic change. The project has no adverse effect from the other development projects, even if they overlapped.
3.2 Irrigation water is properly supplied in accordance with a schedule.	3.2 Farmers are able to receive water in accordance with a schedule by the end of the project.	3.2 Monitoring reports of PMU	
3.2.1 Irrigation facilities are rehabilitated and improved.	3.2.1 Facilities necessary for proper water supply are repaired and improved by the 5th year after commencement of the project.	3.2.1 Records of RPM's office	
3.2.2 Proper water management is done by FOs.	3.2.2 Discharge is observed by FOs and DOI after completion of construction works.	3.2.2 Records of DOI	
3.2.3 Irrigation facilities are maintained.	3.2.3 All facilities below gates of D-canal are maintained by FOs after completion of construction works.	3.2.3 Monitoring reports of PMU	
3.3 Agricultural activities are improved.	3.3 Agricultural productivity of farmers is improved from the 3rd year after completion of construction works.	3.3 Animators' field survey reports and records of ASC (AI)	
3.3.1 Crop cultivation is diversified.	3.3.1 Extent of OFC occupies about 20% of paddy area in Yala by the end of the project.	3.3.1 Animators' field survey reports	
3.3.2 Yields of paddy and OFC are increased.	3.3.2 Yields of crops reach the level of "projected yields" by the 3rd year after completion of construction works.	3.3.2 Animators' field survey reports	
3.3.3 Marketing of farm inputs and outputs is improved.	3.3.3 (1) Group purchasing of farm inputs is implemented actively by the 4th year after commencement of the project. (2) Collecting point for OFC is established in the area by the 4th year after commencement of the project.	3.3.3 (1) FOs' account books and financial reports in FOs' general meeting 3.3.3 (2) Animators' field survey reports	
3.3.4 Access to credit services is improved.	3.3.4 Group loan, revolving loan and multi-aid credit systems are established by the 4th year after commencement of the project.	3.3.4 Reports of Banks, monitoring reports of PMU	
3.3.5 Damage by elephant is decreased.	3.3.5 Surveillance system of wild elephant is established in FOs by 3rd year after commencement of the project.	3.3.5 Animators' field survey reports	
Activities	Inputs		
4.1 Strengthening FOs	Foreign Donor	Sri Lankan Side	Trained Officers stay with the project. Local government and front line officers positively support the project. No action will be taken by government to destabilize local market.
4.1.1 Implement awareness and training programmes.	Mobilization	(1) Sri Lankan Government	Pre-conditions The Sri Lankan Government raises all project funds including foreign currency portion, local currency portion and recurrent cost of PMU. MIP and agencies concerned establishes organization to implement project. To operate the project, necessary officers and physical facilities are provided by MIP and agencies concerned.
4.1.2 Reorganize FOs to have multi function.	Awareness and training costs	Manpower	
4.1.3 Implement income generation and social services through FOs.	Rehabilitation & improvement cost	- Local engineers/experts	
4.1.4 Construct Farmer Centres.	Equipment	- Administrative officers	
	- Vehicles	- Supporting staff	
	- O&M equipment	Facilities of PMU	
4.2 Supplying irrigation water in accordance with schedule.	Facilities	Recurrent cost for project implementation	
4.2.1 Rehabilitate and improve irrigation facilities.	- Facilities for	(2) Farmers	
4.2.2 Improve water management.	- agri. extension	10% of rehabilitation and improvement cost of D- and F-canals	
4.2.3 Strengthen O&M of irrigation facilities.	- Farmer centers	(3) NGO for implementing awareness and training programmes	
4.3 Improving agricultural activities.	Monitoring cost	Total Project Cost	
4.3.1 Promote crop diversification.	Cost for engineering services		
4.3.2 Strengthen agricultural extension services.	Physical contingency		
4.3.3 Improve marketing of farm inputs and outputs.	Price contingency		
4.3.4 Improve access to credit services.			
4.3.5 Establish surveillance system of wild elephant in FOs.			

Plan of Operation - Nachchaduwa Major Irrigation Scheme (1/2)

Activities	Expected Results	Schedule (Year)								Agencies in Charge	Inputs	Remarks
		1st	2nd	3rd	4th	5th	6th	7th	8th			
1. Mobilization of PMU												
2. Awareness programme: Officers of agencies concerned												
4.1 Strengthening farmers' organisation.												
4.1.1 Implement awareness and training programmes.	- Level-up farmers' and community people's knowledge for FOs. - Development component is implemented independently by FOs/farmers.									- PMU (KARITI) - ASC/DAS, IMD	- Trainers, moderators - DO/ASC, Farmer Animator - Organizational expert (IMD)	- Providing training programme for participatory planning - A Community Coordinating Committee (CCC) is established in each community. - Re-organization is decided by the community's general meeting. - Providing necessary guidance and information for re-organization
1) Awareness programme												
2) Training to FOs' leaders for operation and management of FOs												
4.1.2 Reorganize FOs to have multi function.	- FOs are strengthened by rising in social standing through providing various services to the community.									- ASC/DAS, IMD - ASC/DAS, IMD	DO/ASC, Farmer Animator Organizational expert (IMD)	
1) Establishing organization of multi-function												
2) Guidance for preparing articles & by-laws for organization of multi-function												
4.1.3 Implement income generation and social services through FOs.	- Increasing farmers' income											
1) Home garden development										- IPEU	- Extension officers	- Income generating activities are implemented independently by FO.
2) Livestock development										- PDAPH	- Extension officers	
3) Inland fisheries development										- NAQDA	- Extension officers	- FOs establish a "Sub-committee for Income Generation and Social Services" for dealing income generating activities.
4) Vocational training										- NAITA, NYSC	- Instructor	
5) Employment information services										- NYSC	- Instructor	
6) Small enterprises and business										- SEDD/MYASRD	- Instructor	
7) Providing social services										- ASC/DAS	- DO/ASC, Farmer Animator	
8) Credit services for income generation										- ASC/DAS	- DO/ASC, Farmer Animator	
4.1.4 Construct Farmer Centres.	- Keep efficient management of FOs and close communication between FOs and agencies concerned or within communities.									- ASC/DAS, IMD	- Farmer centre x 14 nos.	- Multi-purpose center with office room for FO & Animator, meeting places and temporary store space of farm inputs for cooperative purchasing
4.2 Supplying irrigation water in accordance with schedule.												
4.2.1 Rehabilitate and improve irrigation facilities.												
1) Investigation, detailed design & tendering (including training for farmers and staff)	- Farmers participation to formulate the plan can be promoted.									- ID, IMD	- Staff in ID & IMD, farmers	- Canal structures to be rehabilitated (regulators, turnouts, measuring devices, etc.)
2) Implementation of rehabilitation / improvement	- Proper water management and O&M can be achieved.									- ID	- Staff in ID (Contractors), farmers	- Rehabilitation of F-canals are carried out by farmers.
3) Turnover process of facilities (including training for farmers and staff)	- Irrigation facilities can be handed over in proper condition.									- ID, IMD	- Staff in ID & IMD, contractors and farmers	
4.2.2 Improve water management.												
1) Training for the government staff	- Capacity of the staff for water management is improved.									- ID, IMD	ID and external staff Vehicles and equipment Training facilities Training equipment	- ID is responsible for water management of main irrigation facilities.
- Awareness for water management												
- Irrigation planning and scheduling												
- Water distribution and monitoring												
2) Training for farmers	- Proper water management is done by the farmers (FOs).									- ID, IMD	IMD, ID and external staff Vehicles and equipment Training facilities Training equipment	- Farmers are responsible for water management below D-canals.
- Awareness for water management												
- Irrigation planning and scheduling												
- Water distribution and monitoring												
4.2.3 Strengthen O&M of irrigation facilities.												
1) Training for the government staff	- Capacity of the staff for O&M is improved.									- ID, IMD	ID and external staff Vehicles and equipment Training facilities Training equipment	- ID is responsible for O&M of main irrigation facilities.
- Awareness programme for O&M												
- Irrigation planning and scheduling												
- Water distribution and monitoring												

Plan of Operation - Nachchaduwa Major Irrigation Scheme (2/2)

Activities	Expected Results	Schedule (Year)								Agencies in Charge	Inputs	Remarks
		1st	2nd	3rd	4th	5th	6th	7th	8th			
2) Training for farmers - Awareness programme for O&M - Irrigation planning and scheduling - Water distribution and monitoring	- Farmers can manage the irrigation facilities by themselves.									- ID, IMD	IMD, ID and external staff Vehicles and equipment Training facilities Training equipment	- Farmers are responsible for O&M of facilities below D-canals.
4.3 Improving agricultural activities.												
4.3.1 Promote crop diversification.	- Extent OFC occupies about 20% of paddy area in Yala.									- IPEU	IPEU, Farmer Animator, etc.	- Promoting activities are done independently by FOs, and IPEU provide necessary information and guidance to them.
4.3.2 Strengthen agricultural extension services.												
1) Field programs - Adaptive trials - Small-scale demonstration - Cropping pattern demonstration - Large-scale demonstration - Productivity increase programme - IPM	- Level-up farmers' knowledge for crop diversification and proper farming practices of crop									IPEU	IPEU, DOA, Farmer Animator, etc.	Demonstration, trial, IPM etc. Necessary cost is funded by the Project.
2) Farmer training programmes - Induction farmer training - Induction farmer guidance - Field day - Workshop/mass guidance - Seed campaign - Study tour	- Improve farmers' technique for crop cultivation											
3) Seed production programme										PDOA (NWP)	- Provision of registered seeds, technical guidance of AI	
4.3.3 Improve marketing of farm inputs and outputs.												
1) Improve marketing of farm inputs - Establishing group purchasing system of farm inputs	- The farmers can purchase adequate quantity of farm inputs before the season.									- IMD, ASC	- DO/ASC, IPEU, Institutional Officer/IMD, Animator	- Group purchasing system is linked with agricultural extension and group loan.
2) Improve marketing of farm outputs - Establishing pola - Establishing collecting point of farm products - Establishing cooperative shipping - Establishing marketing information service - Improving quality of products	- Improve access to market for selling products.									- ASC/DAS - ASC/DAS - ASC/DAS - PMU - ASC/DAS	- No facilities - No facilities - No facilities - Bulletin of KARTI - No facilities	Improving activities are done independently by FOs, and ASC/DAS provide necessary information and guidance to them.
4.3.4 Improve access to credit services.	- Improve access to credits for purchasing farm inputs, agri. equipment and capital of income generating activities.									- PMU, banks & DAS - PMU, DAS - ASC/DAS	- Loaned by private banks - FOs' owned capital or arranged by PMU.	
4.3.4 Establish surveillance system of wild elephant in FOs.	- Damage by elephant is decreased.									- ASC/DAS		- Group loans are provided through FOs, and invested to purchase farm inputs. - Loan for procurement of machinery & farm facility, and for capital of small enterprises - Loans for living and income generation and managed by women's group.
(Follow-up programme)										- IMD, DAS		



17.3.2 Palukadawela Major Scheme

(1) General

Palukadawela major scheme is located near Galgamuwa and midpoint of Anuradhapura and Kurunegala. Number of farm households in the scheme is 1,100 and the irrigated paddy area is 960 ha. There are seven farmers' organisations (FOs) and the present situation of the scheme is shown in Table 15.1.1.

The PDM of the Palukadawela scheme is shown on page 17-24. The development plan is formulated as "proper economic level is created" for the Project purpose and the target group is farmers / community's people. The detail contents are given in the table of the Plan of Operation of pages 17-25 and 17-26 and the Project layout map on page 17-27.

(2) Strengthening Farmers' Organisation

Farmers' organisations are the main executing organ of the Project. The proposed components are to be implemented by FOs or through FOs who are also the core organ for sustainable rural agriculture development for self-reliance. The concrete plans for the strengthening FOs programmes are as follows.

1) Awareness Programme and Educational/Training Programmes

Awareness programme

Awareness programme is applied for the both "Farmers" and "Official institutions concerned" as mentioned before. Its contents and implementation procedure are as detailed in Section 9.2. The multifunctional FO is to be established through this programme with the self-motivation of the entire community.

The farmers in three FOs (Yaya-4DC, Yaya-5DC & Yaya-6DC) in the downstream of Palukadawela are highly dependent, especially elders. Therefore, the target of awareness programme is proposed mainly for youth and women.

Education/ training programme

Following education and training programmes for fostering leaders of the multifunctional FO are to be conducted.

Education/Training Programmes for FO Leader – Palukadawela Major Scheme

Training Subject	Contents	Training Method
1) Draft preparation of the Articles of Organisation amendment	Draft preparation of the Articles of Organisation and knowledge of the systems and the procedures required on the process.	Lecture in Galgamuwa Agrarian Service Centre (ASC/DAS) and practical training by Farmer Animators.

(continued)

2) Practical training the basic operation and management of the organisation	Planning, participatory management, practical operation & management of FO, practical financial management, financial resource management, role & systems of Officials concerned, etc.	
3) Training on the income generation activity	Practical; training of the operation/management of Rural Credit (Group-loan, Revolving-loan) and co-operative purchasing/selling.	Lecture by ASC/DAS, IMD, private bank (PMU arranges with banks) & practical training by Farmer Animator.
4) Information network formation/Awareness training	Establishing information networks with external organisations for collecting and sharing information in and around the community.	Holding joint workshops with external organisations and 7 FOs for sharing information.

These programmes are conducted separately from the Awareness programme within the regular works of Mi Oya Resident Project Manager Office (RPM) and Galgamuwa ASC. Education and training facilities of Galgamuwa ASC are to be improved and strengthened (refer Section 17.4).

2) Establishment of Multifunctional Farmers' Organisation

The present FOs are to be reorganised to be multifunctional. The reorganisation is determined in the general meeting of the entire community, which conducted the awareness programme mentioned previously. The organisation is to provide various services to farmer/community and to be fostered as an autonomous organ representing the community. Major change in the reorganisation is to set subcommittees under the executive committee and to act on irrigation, agriculture, business of FO, and income generation/social services.

Setting up the Subcommittee – Palukadawela Major Scheme

Subcommittees	Purposes and Activities
Irrigation	i) Water management, ii) O&M of facilities, iii) Safety operation of irrigation facility, iv) Estimation & collection of Irrigation Service Fee (ISF), and v) Survey on lease/tenant of farmland
Agriculture	i) Collaboration with official extension works, ii) Holding technical extension seminar, iii) Income generation activity (Home garden and livestock development), iv) Operation of group works as pest control, and v) Control elephant damage (strengthening control by FO)
Businesses of FO	i) Establishment and operation of co-operation purchasing/selling, Pola/collection point, ii) Operation and management of the rural credit service (group loan, revolving loan), iii) Business of FO as farm machinery rental service, inland fishery, agro-processing, etc.
Income generation/Social Services	i) Income generation activities such as vocational training, small-scale enterprise/business, self-employment, ornamental fish culture and collection of employment information, ii) Promotion of mutual aid credit system, iii) Financial support for income generation, and iv) Promotion of anti alcohol addict campaign, social welfare, health & sanitary improvement.

An audit section is proposed to be set for maintaining transparency of FO activities and to employ volunteers for close communication with FO members. The audit section is to check periodically and report to the general meeting. The volunteers are to work on communication among the executive committee, the subcommittee, and the members.

Puranagama village of Palukadawela scheme is split due to religious affiliations. Youth club was organised by young generation in January 2000 for reuniting the village. Therefore, the establishment of multifunctional FO is proposed to be mainly carried out by the youth club.

3) Income Generation/Social Services through Farmers' Organisations

“Agriculture” and “Income Generation/Social Services” subcommittees are to carrying out an income generation activities for farmers and community. The activity is as shown in previous section 2). The income generation/social services are to be carried out by the self-motivation of FOs and are targeting poverty groups of the community. Necessary information is to be provided through Galgamuwa ASC and Farmer Animators. The training facilities of the National Youth Service Council (NYSC) are to be utilised for vocational training, so that no extra facility is constructed by the Project.

4) Construction of Farmer Centre

There is no any facility for FOs' in Palukadawela scheme. Farmer centres are to be constructed for smooth implementation of FOs' activities and for maintaining communication in the community and with the official agencies concerned. The construction is to be five buildings and the details are described in Section 17.4.2.

(3) Distribution of Proper Irrigation Water

1) Rehabilitation and Improvement Plan of Irrigation Facilities

The rehabilitation and improvement works in Palukadawela major scheme are as follows:

Rehabilitation and Improvement Plan – Palukadawela Major Scheme

Category	Item	Quantity	Description of works
Tank	Bund	L.S.	Earth filling, Gravelling, Rip-rap, Filter
	Sluice	L.S.	Minor repair, Downstream protection, Measuring device
	Spillway	L.S.	Minor repair
	Others	L.S.	Bathing steps
Main canal	Earthworks	16.3 km	Earth filling, De-silting
	Lining	16 Nos.	Masonry Lining around structures
	Structures	78 Nos.	Turnout, Regulator, Bathing step, Bridge, Culvert
	O&M Road	16.3 km	Earth filling, Gravelling
D-canals	Earthworks	11.2 km	Earth filling, de-silting
	Lining	5 Nos.	Masonry Lining around structures
	Structures	96 Nos.	Turnout, Regulator, Culvert
	O&M Road	11.2 km	Earth filling, Gravelling
F-canals	Earthworks	0.6 km	Earth filling, De-silting
	Lining	0.8 km	Masonry Lining
	Structures	71 Nos.	Farm turnout, Culvert, Drop etc.
	O&M Road	20.7 km	Earth filling, Gravelling
Others	Anicuts	18 Nos.	Improvement of Anicuts in Traditional village
	Feeder canal	L.S.	Improvement of feeder canal from Attaragala Wewa

The major works on the main canals include the rehabilitation of the off-takes, and construction of new birth steps, bridges and culverts. The masonry lining will be provided in a part of the D-canals, as for the O&M of road, earthworks with gravelling and anicut rehabilitation in Prana village are also proposed.

The works for tank and main canal are to be conducted by constructors and the works for D-canals and F-canals are to be carried out by contractors or farmers. The education/training courses for rehabilitation and improvement works are programmed in order to reflect the farmers' intention properly to the works and conduct the works smoothly by farmers. The training courses for the government staff and the farmers are to be conducted as below.

**Training Programme for Rehabilitation and Improvement Works
– Palukadawela Major Scheme**

Activities	Session	Period	Lecturer	Subject of training
Training for the government staff	First	1day, pre-construction	RATPA	Participatory planning, communication with farmers
	Second	1day, in the construction	ID	Skill of technology transfer to farmers
	Third	1day, post-construction	ID	Hand-over of O&M responsibility to farmers, follow-up programme
Training for farmers	First	2 days, pre-construction	RATPA	Participatory planning, field investigation, design and cost estimate
	Second	2 days, pre-construction	ID	Contract for rehabilitation works Farmers' contribution
	Third	1day, in the construction	ID	Quality control for earthworks and concrete, preparation of document for rehabilitation, field inspection
	Fourth	1day, post-construction	ID	Follow-up programme

Education/training for officers is one course for TA and WS of Galgamuwa ID. One course in every two FOs (total 4 courses in Palukadawela: 3 courses for settlement villages and one course for traditional village) is to be conducted for farmers, the office bearers of FOs and the subcommittee members.

2) Training for Water Management

The training on water management for the government staff and farmers is proposed as shown in the following table. Education/training for officers is one course for TA and WS of Galgamuwa ID. One course in every two FOs (total 4courses in Palukadawela: 3 courses for settlement villages and one course for traditional village) is conducted for farmers, the office bearers of FOs and the subcommittee members.

Training Programme for Water Management – Palukadawela Major Scheme

Activities	Session	Period	Lecturer	Subject of training
Training for the government staff	First	1day, pre-construction	RATPA	Awareness programme Communication with farmers
	Second	1.5days, post-construction	ID	Estimation of water requirement, preparation of water distribution programme, skill for gate operation of tank and off-takes, flow measurement and flow monitoring, skill of technology transfer to farmers
	Third	1day	ID	Follow-up programme
Training for farmers	First	1day, pre-construction	RATPA	Awareness programme, communication with government staff, communication among farmers, communication with other FOs
	Second	1.5days, post-construction	ID	Preparation of water distribution programme, skill for gate operation of tank and off-takes
	Third	1day	ID	Follow-up programme

RATA: Research and Advisory Team for Participatory Approach

3) Training for O&M of Irrigation Facilities

The training for O&M of irrigation facilities for the government staff and farmers are proposed as follows:

Training Programme for O&M– Palukadawela Major Scheme

Activities	Session	Period	Lecturer	Subject of training
Training for the government staff	First	1day, pre-construction	RATPA	Awareness programme Communication with farmers
	Second	1.5days during the construction	ID	Preparation of maintenance programme, monitoring of maintenance activities, skill of technology transfer to farmers
	Third	1day	ID	Follow-up programme
Training for farmers	First	1day, pre-construction	RATPA	Awareness programme
	Second	1.5days during the construction	ID	Preparation of maintenance programme, organising a patrol, organising a Sramadana, collection of O&M charge
	Third	1day	ID	Follow-up programme

Education/training for officers is one course for TA and WS of Galgamuwa ID. One course in every two FOs (total 4 courses in Palukadawela: 3 courses for settlement villages and one course for traditional village) is conducted and farmers, the office bearers of FOs and the subcommittee members are to be participants.

(4) Improvement of Agriculture Activities

1) Promotion of crop cultivation in unused farmland

Water resource potential of Palukadawela scheme is not so high and its potential for increasing cultivation area after the project implementation (refer Section 9.4.3), therefore OFC promotion cropping pattern for effective use of water resource is proposed. The proposed cultivation area and

production of respective crop in the Palukadawela major scheme are as follows, and the proposed cropping system is shown in Figure 15.3.1.

**Cropping Area and Production With & Without Project
– Palukadawela Major Scheme**

	Without Project			With Project			Increase (ton)
	Area (ha)	Yield (ton/ha)	Production (ton)	Area (ha)	Yield (ton/ha)	Production (ton)	
Paddy - Maha	956	3.55	3,394	860	5.0	4,300	906
- Yala	433	2.66	1,152	346	5.0	1,730	578
OFC							
Maha - Pulses	-	-	-	33	1.5	50	50
- Chili	-	-	-	29	1.5	44	44
- Red onion	-	-	-	19	15.0	285	285
- Vegetables	-	-	-	14	10.0	140	140
Yala - Sesame	94	0.25	24	17	0.9	15	-9
- Pulses	47	0.57	27	22	1.5	33	6
- Chili	47	0.38	18	22	1.5	33	15
- B'onion	-	-	-	17	10.0	170	170
- Red onion	4	1.00	4.0	-	15.0	-	-4
- Vegetables	-	-	-	9	15.0	90	90

2) Strengthening Agricultural Extension Services

The technical improvement required for promoting effective land use and increasing crop productivity in Palukadawela is as follows.

Effective Land Use	Increase Crop Productivity
a) Disseminating proper cropping system. b) Promoting effective land use. c) Effective labour use. d) Providing Market information & rural credit. e) Procuring inputs materials before cropping. f) Introducing co-operative selling system.	a) Selecting appropriate crops. b) Improving cultivation technique c) Improving harvesting technique. d) Improving soil (Use organic material) e) Disseminating proper harvesting time (Quality improvement)

The Provincial Department of Agriculture (PDOA) is to conduct following extension activities in order to carry out the improvements mentioned above. Countermeasures on agricultural production inputs, marketing and rural credit are to be mentioned in Sections 3) and 4).

Agriculture Extension Activity – Palukadawela Major Scheme

Programme	Objectives	Method & Required Materials
1) Field Trial / Demonstration Programme - Adaptive trials - Small-scale demonstration - Cropping pattern demonstration - Large-scale demonstration - Productivity increase programme - IPM programme	- To develop technology for improving productivity - To demonstrate recommended practices & irrigation technique of paddy and OFC for effective land use & increase productivity. - Appropriate chemical application	<ul style="list-style-type: none"> ● Conducted by PDOA ● FOs closely contact with PDOA ● Use farmers' field for demonstration ● Farmer training programme including quality seed campaign, and field tour ● Seed production programme includes provision of register seed and technical guidance. Production expense is born by farmers. ● Required material cost for extension activities are born by the Project. Detail is in 1/12 to 7/12 of Table R.2.3 of Appendix-R.

(continued)

2) Farmer Training Programme - Induction farmer training - Induction farmer guidance - Farmer training - Workshop - Quality seed campaign - Study tour	- To disseminate cultivation technique directly to farmers.	
3) Seed Production Programme - Paddy seed production - OFC seed production	- To foster seed production farmers.	

3) Improvement of Marketing of Agricultural Outputs and Inputs Materials

Improvement of inputs materials

Co-operative purchasing of input materials is proposed by FOs. This system is to carry out by linking to a group loan to be mentioned in the improvement of rural credit of the item 4). Awareness and education to Galgamuwa ASC is to attempt for introducing the system.

Improvement of outputs

Following improvement of marketing programme is proposed. These activities are to be carried out by FOs (FO business subcommittee).

Improvement Programme of Marketing Agricultural Products – Palukadawela Major Scheme

Programme	Objectives	Method & Required Materials
1) Setting Pola	To activate marketing of farm products by open Polas. To sell small quantity products from home gardens.	<ul style="list-style-type: none"> ● Polas are managed by FOs ● Proposed Pola is to set without any construction for reducing maintenance cost and no fee for Pola is to required. ● Guidance to FOs on setting Pola is to be carried out by ASC/DAS and suitable location and day are to be decided by contact with merchants. ● Proposed location of Polas is shown in the Project layout map based on the discussion with FO leaders.
2) Setting Collecting Point of Farm Products	To set contact points of producers with merchants on outputs marketing.	<ul style="list-style-type: none"> ● No materials are required for setting the system. ● Selections of merchants and locations are determined by farmers and Proceeded by FOs. ● ASC/DAS is to provide guidance to both merchants and FOs on collecting points and co-operative selling.
3) Establishing Co-operative Shipping System	To sell products regularly and develop new markets.	
4) Establishing of Market Information Collection	To collect information on market prices.	<ul style="list-style-type: none"> ● Regular purchasing of KARTI publication. PMU will provide information on purchasing.
5) Improving Quality	To improve quality of products.	<ul style="list-style-type: none"> ● No materials are required. ● Quality standard of products is not established and it is judged by merchants. FOs have to collect information on quality and disseminate to farmers. ● ASC/DAS is to provide guidance on information collection.

4) Improvement of Rural Credit

Introduction of the following loans is proposed. The activity on the rural credit is to carry out mainly by FOs and PMU and Galgamuwa ASC will support them.

Improvement of Rural Credit – Palukadawela Major Scheme

Programme	Objectives	Method & Required Materials
1) Introduction of Group Loan (cultivation loan)	For purchasing inputs materials. Linkage with co-operative purchasing system.	<ul style="list-style-type: none"> ● No required materials. ● Mainly loan by private banks. It is considered to be possible to introduce for group loan by private banks, because this loan is practised at present. PMU is to request to banks on introduction. ● The system management/operation of farmer sides is carried out by FOs(subcommittee) ● Galgamuwa ASC/DAS is to educate FOs on the introduction and training FO leaders on the operation works.
2) Introduction of Revolving Loan (medium term loan)	For purchasing farm machinery and financing small-scale enterprise.	<ul style="list-style-type: none"> ● No required materials. ● Operation & management by FOs (subcommittees). Principally the fund is to be prepared by FOs. If its capital is not enough, FOs obtain a loan from bank, and PMU supports to FO for obtaining loan. ● Galgamuwa ASC/DAS is to provide training for lending works.
3) Introduction of Mutual Aid Credit system	For emergency need on living as sickness, accident or financing of self-employment.	<ul style="list-style-type: none"> ● No required materials. ● Loan from the Women's Bank. ● Mainly operating for women groups. FOs (Income generation/ Social Services Subcommittee) is deal with education but not on operation. ● Galgamuwa ASC/DAS's education to FOs.

Project Design Matrix - Palukadawela Major Irrigation Scheme

Name of Project : Palukadawela Development Project for Irrigated Agriculture and the Community

Project Area : Palukadawela Major Irrigation Scheme

Duration : 6 years

Date : 31 May 2000

Executing Agency : Ministry of Irrigation and Power (MIP)

Target Group : Farmers / all villagers in the Palukadawela Scheme

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal			
1.1 Achieving sustainable development of regional agriculture	1.1 Development activities are planned and implemented independently by FOs and farmers themselves.	1.1 Monitoring reports of the project office (PMU)	Agricultural policy of the Government not hinder implementation of the project.
1.2 Improving agricultural productivity of the rural community	1.2 Agriculture is economically feasible.	1.2 Monitoring reports of PMU	
Project Purpose			
2.1 Creating suitable economic level	2.1 Total gross income of farmers increase progressively by the end of the project.	2.1 Monitoring reports of PMU	Agricultural products do not have to face unreasonable competition from imported products.
Outputs			
3.1 FOs having multi functions relating to irrigation, agriculture, small enterprises, income generations, social services are established and activated.	3.1.1 FOs provide various services including income generation, etc. from the 3rd year after commencement of the project. 3.1.2 Committee and sub-committee meetings are held monthly by the 3rd year after commencement of the project.	3.1.1 Minutes of FOs' general meeting and monitoring reports of PMU 3.1.2 Minutes of FOs' committee and sub-committee meetings	There is no extreme natural disaster (drought, heavy rain, etc.). Government enforces existing rules and regulations to protect environment.
3.2 Irrigation water is properly supplied in accordance with a schedule.	3.2 Farmers are able to receive water in accordance with a schedule by the end of the project.	3.2 Monitoring reports of PMU	Other sectors have no drastic and sudden change in the economic activities.
3.2.1 Irrigation facilities are rehabilitated and improved.	3.2.1 Facilities necessary for proper water supply are repaired and improved by the 4th year after commencement of the project.	3.2.1 Records of RPM's office	Social conditions in the community have no drastic change.
3.2.2 Proper water management is done by FOs.	3.2.2 Discharge is observed by FOs and DOI after completion of construction works.	3.2.2 Records of DOI	The project has no adverse effect from the other development projects, even if they overlapped.
3.2.3 Irrigation facilities are maintained.	3.2.3 All facilities below gates of D-canal are maintained by FOs after completion of construction works.	3.2.3 Monitoring reports of PMU	
3.3 Agricultural activities are improved.	3.3 Agricultural productivity of farmers is improved from the 3rd year after completion of construction works.	3.3 Animators' field survey reports and records of ASC (AI)	
3.3.1 Farm lands are used effectively.	3.3.1 Utilization of fallow land is expanded progressively from the 3rd year after commencement of the project.	3.3.1 Animators' field survey reports	
3.3.2 Productivity of crop cultivation is improved.	3.3.2 Yields of crops reach the level of "projected yields" by the 3rd year after completion of construction works.	3.3.2 Animators' field survey reports	
3.3.3 Marketing of farm inputs and outputs is improved.	3.3.3 (1) Group purchasing of farm inputs is implemented actively by the 4th year after commencement of the project. 3.3.3 (2) Collecting point for OFC is established in the area by the 4th year after commencement of the project.	3.3.3 (1) FOs' account books and financial reports in FOs' general meeting 3.3.3 (2) Animators' field survey reports	
3.3.4 Access to credit services is improved.	3.3.4 Group loan, revolving loan and multi-aid credit systems are established by the 4th year after commencement of the project.	3.3.4 Reports of Banks, monitoring reports of PMU	
3.3.5 Damage by elephant is decreased.	3.3.5 Surveillance system of wild elephant is established in FOs by 3rd year after commencement of the project.	3.3.5 Animators' field survey reports	
Activities	Inputs		
4.1 Strengthening FOs.	Foreign Donor	Sri Lankan Side	Trained Officers stay with the project. Local government and front line officers positively support the project. No action will be taken by government to destabilize local market.
4.1.1 Implement awareness and training programmes.	Mobilization	(1) Sri Lankan Government	
4.1.2 Reorganize FOs to have multi function.	Awareness and training costs	Manpower - Local engineers/experts	
4.1.3 Implement income generation and social services through FOs.	Rehabilitation & improvement cost	- Administrative officers	
4.1.4 Construct Farmer Centres.	Equipment - Vehicles	- Supporting staff	
4.2 Supplying irrigation water in accordance with schedule.	- O&M equipment	Facilities of PMU	
4.2.1 Rehabilitate and improve irrigation facilities.	- Agri. extension	Recurrent cost for project implementation	
4.2.2 Improve water management.	Facilities	(2) Farmers	
4.2.3 Strengthen O&M of irrigation facilities.	- Facilities for agri. extension (including provincial seed farm of Galugamwa)	10% of rehabilitation and improvement cost of D- and F-canals	
4.3 Improving agricultural activities.	- Farmer centers	(3) NGO for implementing awareness and training programmes	
4.3.1 Promote crop cultivation in unused lands.	Monitoring cost		
4.3.2 Strengthen agricultural extension services.	Cost for engineering services		
4.3.3 Improve marketing of farm inputs and outputs.	Physical contingency		
4.3.4 Improve access to credit services.	Price contingency		
4.3.5 Establish surveillance system of wild elephant in FOs.		Total Project Cost	Pre-conditions The Sri Lankan Government raises all project funds including foreign currency portion, local currency portion and recurrent cost of PMU. MIP and agencies concerned establishes organization to implement project. To operate the project, necessary officers and physical facilities are provided by MIP and agencies concerned.

Plan of Operation - Palukadawela Major Irrigation Scheme (1/2)

Activities	Expected Results	Schedule (Year)								Agencies in Charge	Inputs	Remarks
		1st	2nd	3rd	4th	5th	6th	7th	8th			
1. Mobilization of PMU												
2. Awareness programme: Officers of agencies concerned												
4.1 Strengthening farmers' organisation.												
4.1.1 Implement awareness and training programme	Level-up farmers' and community people's knowledge for FOs.									- PMU (KARTI)	- Trainers, moderators	- Providing training programme for participatory planning
1) Awareness programme	- Development component is implemented independently by FOs/farmers.									- ASC/DAS, IMD	- DO/ASC, Farmer Animator	- A Community Coordinating Committee (CCC) is established in each community.
2) Training to FOs' leaders for operation and management of FOs											- Organizational expert (IMD)	- Re-organization is decided by the community's general meeting.
4.1.2 Reorganize FOs to have multi function.	FOs are strengthened by rising in social standing through providing various services to the community.									- ASC/DAS, IMD	DO/ASC, Farmer Animator	Providing necessary guidance and information for re-organization
1) Establishing organization of multi-function										- ASC/DAS, IMD	Organizational expert (IMD)	
2) Guidance for preparing articles & by-laws for organization of multi-function												
4.1.3 Implement income generation and social services through FOs.	- Increasing farmers' income									- PDOA (NWP)	- Extension officers	- Income generating activities are implemented independently by FO.
1) Home garden development										- PDAPH	- Extension officers	- FOs establish a "Sub-committee for Income Generation and Social Services" for dealing income generating activities.
2) Livestock development										- NAQDA	- Extension officers	
3) Inland fisheries development										- NAITA, NYSC	- Instructor	
4) Vocational training										- NYSC	- Instructor	
5) Employment information services										- SEDD/MYASRI	- Instructor	
6) Small enterprises and business										- ASC/DAS	- DO/ASC, Farmer Animator	
7) Providing social services										- ASC/DAS	- DO/ASC, Farmer Animator	
8) Credit services for income generation										- ASC/DAS, IMD	- Farmer centre x 7 nos.	- Multi-purpose center with office room for FO & Animator, meeting places and temporary store space of farm inputs for cooperative purchasing
4.1.4 Construct Farmer Centres.	- Keep efficient management of FOs and close communication between FOs and agencies concerned or within communities.											
4.2 Supplying irrigation water in accordance with schedule.												
4.2.1 Rehabilitate and improve irrigation facilities.												
1) Investigation, detailed design & tendering (including training for farmers and staff)	- Farmers participation to formulate the plan can be promoted.									- ID, IMD	- Staff in ID & IMD, farmers	- Canal structures to be rehabilitated (regulators, turnouts, measuring devices, etc)
2) Implementation of rehabilitation / improvement	- Proper water management and O&M can be achieved.									- ID	- Staff in ID (Contractors), farmers	- Rehabilitation of F-canals are carried out by farmers.
3) Turnover process of facilities (including training for farmers and staff)	- Irrigation facilities can be handed over in proper condition.									- ID, IMD	- Staff in ID & IMD, contractors and farmers	
4.2.2 Improve water management.												
1) Training for the government staff	- Capacity of the staff for water management is improved.									- ID, IMD	ID and external staff	- ID is responsible for water management of main irrigation facilities.
- Awareness for water management											Vehicles and equipment	
- Irrigation planning and scheduling											Training facilities	
- Water distribution and monitoring											Training equipment	
2) Training for farmers	- Proper water management is done by the farmers (FOs).									- ID, IMD	IMD, ID and external staff	- Farmers are responsible for water management below D-canals.
- Awareness for water management											Vehicles and equipment	
- Irrigation planning and scheduling											Training facilities	
- Water distribution and monitoring											Training equipment	
4.2.3 Strengthen O&M of irrigation facilities.												
1) Training for the government staff	- Capacity of the staff for O&M is improved.									- ID, IMD	ID and external staff	- ID is responsible for O&M of main irrigation facilities.
- Awareness programme for O&M											Vehicles and equipment	
- Irrigation planning and scheduling											Training facilities	
- Water distribution and monitoring											Training equipment	

Plan of Operation - Palukadawela Major Irrigation Scheme (2/2)

Activities	Expected Results	Schedule (Year)								Agencies in Charge	Inputs	Remarks
		1st	2nd	3rd	4th	5th	6th	7th	8th			
2) Training for farmers - Awareness programme for O&M - Irrigation planning and scheduling - Water distribution and monitoring	- Farmers can manage the irrigation facilities by themselves.									- ID, IMD	IMD, ID and external staff Vehicles and equipment Training facilities Training equipment	- Farmers are responsible for O&M of facilities below D-canals.
4.3 Improving agricultural activities.												
4.3.1 Promote crop cultivation in unused lands.	- Farm lands are used effectively by farmers.									- PDOA (NWP)	PDOA (NWP), Farmer Animator, etc.	- Promoting activities are done independently by FOs, and PDOA (NWP) provide information and guidance to them.
4.3.2 Strengthen agricultural extension services.												
1) Field programs - Adaptive trials - Small-scale demonstration - Cropping pattern demonstration - Large-scale demonstration - Productivity increase programme - IPM	- Level-up farmers' knowledge for crop diversification and proper farming practices of crop									} PDOA (NWP)	} PDOA (NWP), DOA, Farmer Animator, etc.	} Demonstration, trial, IPM etc. Necessary cost is funded by the Project.
2) Farmer training programmes - Induction farmer training - Induction farmer guidance - Field day - Workshop/mass guidance - Seed campaign - Study tour	- Improve farmers' technique for crop cultivation											
3) Seed production programme	- Bringing-up of seed growers									- PDOA (NWP)	- Provision of registered seeds, technical guidance of AI	- Training, study tour etc. Necessary cost is funded by the Project.
4.3.3 Improve marketing of farm inputs and outputs.												
1) Improve marketing of farm inputs - Establishing group purchasing system of farm inputs	- The farmers can purchase adequate quantity of farm inputs before the season.									- IMD, ASC	- DO/ASC, PDOA (NWP), Institutional Officer/IMD, Animator	- Group purchasing system is linked with agricultural extension and group loan.
2) Improve marketing of farm outputs - Establishing pola - Establishing collecting point of farm products - Establishing cooperative shipping - Establishing marketing information service - Improving quality of products	- Improve access to market for selling products.									- ASC/DAS - ASC/DAS - ASC/DAS - PMU - ASC/DAS	- No facilities - No facilities - No facilities - Bulletin of KARTI - No facilities	} Improving activities are done independently by FOs, and ASC/DAS provide information and guidance to them.
4.3.4 Improve access to credit services. - Introducing group loan system (cultivation loan) - Introducing revolving loan system (medium term credit) - Promoting multi aid credit	- Improve access to credits for purchasing farm inputs, agri. equipment and capital of income generating activities.									- PMU, banks & DAS - PMU, DAS - ASC/DAS	- Loaned by private banks - FOs' owned capital or arranged by PMU.	
4.3.5 Establish surveillance system of wild elephant in FOs.	- Damage by elephant is decreased.									- ASC/DAS		- Group loans are provided through FOs, and invested to purchase farm inputs. - Loan for procurement of machinery & farm facility, and for capital of small enterprises - Loans for living and income generation and managed by women's group.
(Follow-up programme)										- IMD, DAS		

