

APPENDIX-2.6 PROJECT EVALUATION

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APPENDIX 2.6 PROJECT EVALUATION

2.6.1 Purpose of Evaluation

Project evaluation comprises financial evaluation and economic evaluation. The purpose of the former is to assess the profitability of a particular project from an individual economy standpoint, while the latter assesses the project in terms of its contribution to the national economy.

2.6.2 Method of Project Evaluation

On the basis of the benefit and cost comparison for the two cases of (i) future without project (hereinafter FW/O), and (ii) future with project (hereinafter FW), the profitability of the project is examined in terms of the 3 criteria of net present value, B/C ratio, and internal rate of return (IRR). Financial evaluation is centered on farm management analysis.

2.6.3 Financial Evaluation and Economic Evaluation

(1) Basic Evaluation Criteria

Farmgate prices of agricultural products and fertilizer (in economic terms) were estimated as shown in App.2.6.3-1 through App.2.6.3-6.

(2) Total Project Cost

Results for calculating conversion factors of direct construction cost and irrigation / drainage system rehabilitation cost for the respective schemes are shown in App. 2.6.3-7 through App. 2.6.3-10.

(3) Project Benefit

Net value of farm products was computed on the basis of the present case, the FW/O case and the FW case (see App. 2.6.3-11 through App. 2.6.3-13). Annual changes in cropped area and yield are shown in App. 2.6.3-14 through App. 2.6.3-16.

(4) Project Profitability Indicators

Flow of annual net incremental benefit based on project cost and project benefit is as shown in App. 2.6.3-17 through App. 2.6.3-19. On the basis of the 3 criteria, i.e. NPV, B/C ratio and EIRR, project profitability indicators under economic evaluation are as shown in App. 2.6.3-20 through App. 2.6.3-22.

App. 2.6.3-1 Farmgate Price for Rice/Paddy

Price Structure	Unit	Liyangastota Scheme		Muruthawela Reservoir Scheme		Badagiriya Scheme	
		1995 Price	2005 Price	1995 Price	2005 Price	1995 Price	2005 Price
International Market Price	US\$/mt	325	292	325	292	325	292
Quality Adjustment (80%)	"	260	234	260	234	260	234
Ocean Freight (Freight and Insurance)	"	13	13	13	13	13	13
CIF Price (Colombo Port)	"	273	247	273	247	273	247
Foreign Exchange Rate (US\$1=Rs.52)	Rs/mt	14,196	12,844	14,196	12,844	14,196	12,844
Port and Handling Charges	"	+312	+312	+312	+312	+312	+312
Distributor's Margin	"	+1,593	+1,441	+1,593	+1,441	+1,593	+1,441
Transport (Colombo Port - Wholesaler)	"	+188	+188	+188	+188	+188	+188
Transport (Wholesaler - Farm)	"	-121	-121	-144	-144	-154	-154
Price Ex-mill	"	16,168	14,664	16,175	14,671	16,135	14,631
Milling Adjustment (68%)	"	10,994	9,972	10,999	9,976	10,972	9,949
Milling Cost Less By-product Value	"	-425	-425	-425	-425	-425	-425
Economic Farmgate Price	"	10,569	9,547	10,574	9,551	10,547	9,524
Financial Farmgate Price	"	9,400	9,400	9,400	9,400	9,400	9,400

- Note: 1) The 2005 price for rice (Thai 5% Broke, FOB Bangkok) was estimated based on the World Bank's projected international market price (1995 constant price). For base data, reference was made to "Commodity Markets and the Developing Countries, November 1994".
- 2) Port and handling charges were calculated at Rs.367 multiplied by SCF of 0.85.
- 3) Distributor's margin was calculated at 13.2% of CIF price, multiplied by SCF of 0.85.
- 4) Assuming that transport distance for Colombo-wholesaler is 140km in the case of all 3 schemes, and wholesaler-farm transport distances are 90 km, 85km and 115km, respectively, for Liyangastota, Muruthawela Reservoir and Badagiriya, the transport cost was calculated at Rs.1.65/mt-km multiplied by the road transport conversion factor of 0.814.

App. 2.6.3-2 Farmgate Price for Chillies and Banana

Product	Price for Evaluation	Unit	Farmgate Price	
			1995 Price	2005 Price
Chillies	Economic Price	Rs/kg	85	85
	Financial Price	Rs/kg	100 ¹⁾	100 ¹⁾
Banana	Economic Price	Rs/kg	8.5	8.5
	Financial Price	Rs/kg	10	10

- Note: 1) The farmgate price for chillies is that for dried chillies.
- 2) The 1995 and 2005 economic farmgate prices for chillies and Banana for all schemes were calculated, multiplying these financial prices by SCF of 0.85.

App. 2.6.3-3 Farmgate Price for Urea (N46%)

Price Structure	Unit	Liyangastota Scheme		Muruthawela Reservoir Scheme		Badagiriya Scheme	
		1995 Price	2005 Price	1995 Price	2005 Price	1995 Price	2005 Price
International Market Price	US\$/mt	147	153	147	153	147	153
Ocean Freight (Freight and Insurance)	"	60	60	60	60	60	60
CIF Price (Colombo Port)	"	207	213	207	213	207	213
Foreign Exchange Rate (US\$1=Rs.52)	Rs/mt	10,764	11,076	10,764	11,076	10,764	11,076
Port and Handling Charges	"	+311	+311	+311	+311	+311	+311
Distributor's Margin	"	+2,492	+2,561	+2,492	+2,561	+2,492	+2,561
Transport (Colombo Port - Wholesaler)	"	+289	+289	+289	+289	+336	+336
Transport (Wholesaler - Farm)	"	+20	+20	+13	+13	+7	+7
Economic Farmgate Price	"	13,876	14,257	13,869	14,250	13,910	14,291
Financial Farmgate Price	"	10,200	10,200	10,200	10,200	10,200	10,200
Economic Farmgate Price in Nutrients	"	30,165	30,993	30,150	30,978	30,239	31,067

- Note: 1) The 2005 price for urea (FOB N.W. Europe) was estimated based on the World Bank's projected international market price (1995 constant price). For base data, reference was made to "Commodity Markets and the Developing Countries, November 1994".
- 2) Port and handling charges were calculated at Rs.366 multiplied by SCF of 0.85.
- 3) Distributor's margin was calculated at 27.2% of CIF price, multiplied by SCF of 0.85.
- 4) Assuming that the transport distance for Colombo-wholesaler are 215km, 215km and 250km, respectively, for Liyangastota, Muruthawela Reservoir and Badagiriya, and the wholesaler-farm transport distances are 15km, 10km and 5km, respectively, the transport cost was calculated at Rs.1.65 mt-km multiplied by the road transport conversion factor of 0.814.

App. 2.6.3-4 Farmgate Price for Triple Super Phosphate (P₂O₅ 46%)

Price Structure	Unit	Liyangastota Scheme		Muruthawela Reservoir Scheme		Badagiriya Scheme	
		1995 Price	2005 Price	1995 Price	2005 Price	1995 Price	2005 Price
International Market Price	US\$/mt	135	141	135	141	135	141
Ocean Freight (Freight and Insurance)	"	60	60	60	60	60	60
CIF Price (Colombo Port)	"	195	201	195	201	195	201
Foreign Exchange Rate (US\$1=Rs.52)	Rs/mt	10,140	10,452	10,140	10,452	10,140	10,452
Port and Handling Charges	"	+232	+232	+232	+232	+232	+232
Distributor's Margin	"	+2,284	+2,354	+2,284	+2,354	+2,284	+2,354
Transport (Colombo Port - Wholesaler)	"	+289	+289	+289	+289	+336	+336
Transport (Wholesaler - Farm)	"	+20	+20	+13	+13	+7	+7
Economic Farmgate Price	"	12,965	13,347	12,958	13,340	12,999	13,381
Financial Farmgate Price	"	10,480	10,480	10,480	10,480	10,480	10,480
Economic Farmgate Price in Nutrients	"	28,185	29,015	28,170	29,000	28,259	29,089

- Note: 1) The 2005 price for triple super phosphate (FOB US Gulf) was estimated based on the World Bank's projected international market price (1995 constant price). For base data, reference was made to "Commodity Markets and the Developing Countries, November 1994".
- 2) Port and handling charges were calculated at Rs.273 multiplied by SCF of 0.85.
- 3) Distributor's margin was calculated at 26.5% of CIF price, multiplied by SCF of 0.85.
- 4) Assuming that the transport distance for Colombo-wholesaler are 215km, 215km and 250km, respectively, for Liyangastota, Muruthawela Reservoir and Badagiriya, and the wholesaler-farm transport distances are 15km, 10km and 5km, respectively, the transport cost was calculated at Rs.1.65 mt-km multiplied by the road transport conversion factor of 0.814.

App. 2.6.3-5 Farmgate Price for Murate of Potash (K₂O 60%)

Price Structure	Unit	Liyangastota Scheme		Muruthawela Reservoir Scheme		Badagiriya Scheme	
		1995 Price	2005 Price	1995 Price	2005 Price	1995 Price	2005 Price
International Market Price	US\$/mt	108	112	108	112	108	112
Ocean Freight (Freight and Insurance)	"	60	60	60	60	60	60
CIF Price (Colombo Port)	"	168	172	168	172	168	172
Foreign Exchange Rate (US\$1=Rs.52)	Rs/mt	8,736	8,944	8,736	8,944	8,736	8,944
Port and Handling Charges	"	+232	+232	+232	+232	+232	+232
Distributor's Margin	"	+2,083	+2,129	+2,083	+2,129	+2,083	+2,129
Transport (Colombo Port - Wholesaler)	"	+289	+289	+289	+289	+336	+336
Transport (Wholesaler - Farm)	"	+20	+20	+13	+13	+7	+7
Economic Farmgate Price	"	11,360	11,614	11,353	11,607	11,394	11,648
Financial Farmgate Price	"	9,680	9,680	9,680	9,680	9,680	9,680
Economic Farmgate Price in Nutrients	"	18,933	19,357	18,922	19,345	18,990	19,413

- Note:
- 1) The 2005 price for murate of potash (FOB Vancouver) was estimated based on the World Bank's projected international market price (1995 constant price). For base data, reference was made to "Commodity Markets and the Developing Countries, November 1994".
 - 2) Port and handling charges were calculated at Rs.273 multiplied by SCF of 0.85.
 - 3) Distributor's margin was calculated at 28.0% of CIF price, multiplied by SCF of 0.85.
 - 4) Assuming that the transport distance for Colombo-wholesaler are 215km, 215km and 250km, respectively, for Liyangastota, Muruthawela Reservoir and Badagiriya, and the wholesaler-farm transport distances are 15km, 10km and 5km, respectively, the transport cost was calculated at Rs.1.65 mt-km multiplied by the road transport conversion factor of 0.814.

App. 2.6.3-6 Farmgate Prices of V-Mixture, TDM, Chilli No.1 and Banana (Special)

Fertilizer	Price for Evaluation	Unit	Liyangastota Scheme		Muruthawela Reservoir Scheme		Badagiriya Scheme	
			1995 Price	2005 Price	1995 Price	2005 Price	1995 Price	2005 Price
V-Mixture (N4%, P30%, K12%)	Economic Price	Rs/kg	11.94	12.27	11.93	12.26	11.97	12.30
	Financial Price	Rs/kg	10.76	10.76	10.76	10.76	10.76	10.76
TDM (N30%, K20%)	Economic Price	Rs/kg	12.84	13.17	12.83	13.16	12.87	13.20
	Financial Price	Rs/kg	9.94	9.94	9.94	9.94	9.94	9.94
Chilli No.1 (N13%, P11%, K6%)	Economic Price	Rs/kg	8.16	8.38	8.15	8.38	8.18	8.40
	Financial Price	Rs/kg	8.84	8.84	8.84	8.84	8.84	8.84
Banana (Special) (N12%, P8%, K34%)	Economic Price	Rs/kg	12.31	12.62	12.31	12.61	12.35	12.66
	Financial Price	Rs/kg	9.94	9.94	9.94	9.94	9.94	9.94

- Note: The 1995 and 2005 economic farmgate prices for V-Mixture, TDM, Chilli No.1 and Banana (Special) were calculated based on the nutrients of straight fertilizers for the respective schemes.

App. 2.6.3-7 Conversion Factor of Direct Construction Cost for All Schemes

Element	(1) Proportion (%)	(2) Conversion Factors	(1) × (2)
Traded Goods	26	1.00	0.26
Skilled Labour	11	0.85	0.09
Unskilled Labour	43	0.79	0.34
Non-traded Goods	16	0.85	0.14
Transfer Payment	4	0	0
Total	100	-	0.83

App. 2.6.3-8 Conversion Factor of Irrigation/Drainage System Rehabilitation Cost under Liyangastota Scheme

Item	(1) Proportion (%)	(2) Conversion Factors	(1) × (2)
Direct Construction Cost	70.3	0.83	0.58
Overhead & Profits	0.6	0.85	0.01
Land Acquisition	0.4	0.85	-
Engineering Services	5.6	0.85	0.05
Administration	3.5	0.85	0.03
Physical Contingency	10.5	0.85	0.09
Price Contingency	9.1	0	0
Total	100	-	0.76

App. 2.6.3-9 Conversion Factor of Irrigation/Drainage System Rehabilitation Cost under Muruthawela Reservoir Scheme

Item	(1) Proportion (%)	(2) Conversion Factors	(1) × (2)
Direct Construction Cost	70.3	0.83	0.58
Overhead & Profits	0.6	0.85	0.01
Land Acquisition	0.4	0.85	-
Engineering Services	5.6	0.85	0.05
Administration	3.5	0.85	0.03
Physical Contingency	10.5	0.85	0.09
Price Contingency	9.1	0	0
Total	100	-	0.76

App. 2.6.3-9 Conversion Factor of Irrigation/Drainage System Rehabilitation Cost under Badarigiya Scheme

Item	(1) Proportion (%)	(2) Conversion Factors	(1) × (2)
Direct Construction Cost	68.3	0.83	0.57
Overhead & Profits	3.2	0.85	0.03
Land Acquisition	0.3	0.85	-
Engineering Services	5.5	0.85	0.05
Administration	3.4	0.85	0.03
Physical Contingency	10.2	0.85	0.09
Price Contingency	9.1	0	0
Total	100	-	0.77

App. 2.6.3-11 Crop Budget under Liyangastota Scheme at Full Development

Item	Price for Evaluation ¹⁾	Unit	Unit Price/ Conversion Factor	Paddy					
				p ²⁾		FW/O ²⁾		FW ²⁾	
				Amount	Value	Amount	Value	Amount	Value
1. Value of Output									
(1) Yield				3,850		3,465		5,500	
(2) Production value	F	Rs/kg	9.40		36,190		32,571		51,700
	E	"	9.55		36,768		33,091		52,525
(3) By-product value									
(a) Bran	F	Rs/kg	3.25	193	627	173	562	275	894
	E	"	(0.85)		533		478		760
(b) Chaff	F	"	0.22	1,020	224	918	202	1,458	321
	E	"	(0.85)		190		172		273
Total	F	Rs/ha			37,041		33,335		52,915
	E	"			37,491		33,741		53,558
2. Input Costs									
(1) Seeds	F	Rs/kg	12.22	150	1,833	150	1,833	100	1,222
	E	"	(0.85)		1,558		1,558		1,039
(2) Fertilizer									
(a) Urea	F	Rs/kg	10.20	100	1,020	100	1,020	100	1,020
	E	"	14.26		1,426		1,426		1,426
(b) V-Mixture	F	"	10.76	145	1,560	145	1,560	200	2,152
	E	"	12.27		1,779		1,779		2,454
(c) TDM	F	"	9.94	100	994	100	994	150	1,491
	E	"	13.17		1,317		1,317		1,976
(3) Agro-chemical									
(a) Weedicides	F	Rs/l	253	9	2,277	9	2,277	9	2,277
	E	"	(0.85)		1,935		1,935		1,935
(b) Insecticides and Fungicides	F	"	748	2	1,496	2	1,496	2	1,496
	F	"	(0.85)		1,272		1,272		1,272
(4) Machinery, Draft Animals and Other	F	Rs/ha			6336		6336		6336
	E	"	(0.85)		5,386		5,386		5,386
(5) Labour									
(a) Family Labour		Rs/mid		80		80		100	
(b) Hired Labour	F	"	100	58	5,800	58	5,800	58	5,800
	E	"	(0.79)		4,582		4,582		4,582
Total	F	Rs/ha			21,316		21,316		21,794
	E	"			19,255		19,255		20,070
3. Net value									
	F	Rs/ha			21,525		17,819		36,921
	E	"			22,818		19,068		38,070
4. Net Farm Income									
	F	Rs/ha			14,874		11,255		29,906

Note: 1) F and E represent financial and economic prices, respectively.

2) P, FW/O and FW represent the present case, the future without project case, and the future with project case, respectively.

App. 2.6.3-12 Crop Budget under Muruthawela Reservoir Scheme at Full Development

Item	Price for Evaluation ¹	Unit	Conversion Factor		Paddy						Chillies						Banana			
			Paddy		Chillies		Banana		FW/Q ²		P ³		FW/Q ²		P ³		1st Year		2nd & 3rd Year	
			Amount	Value	Amount	Value	Amount	Value	Amount	Value	Amount	Value	Amount	Value	Amount	Value	Amount	Value	Amount	Value
1. Value of Output																				
(1) Yield	F	Rs/kg	3,300	31,020	2,970	27,918	5,500	51,700	500	50,000	450	45,000	1,000	100,000	5,000	50,000	20,000	200,000		
(2) Production value	E	"		31,515		28,364		52,225		42,500		38,250		85,000		42,500		170,000		
(3) By-product value																				
(a) Bran	F	Rs/kg	165	536	149	484	275	894												
(b) Chaff	E	"	875	456	737	411	1,458	760												
	F	"		164		147		273												
	E	"		31,749		28,922		52,915		42,500		45,000		100,000		50,000		200,000		
Total	E	Rs/ha		32,135		28,922		53,558		42,500		38,250		85,000		42,500		170,000		
2. Input Costs																				
(1) Seeds and Planting Materials	F	Rs/kg	150	1,833	150	1,833	100	1,222	2	1,600	2	1,600	2	1,600	1,000	6,000				
(2) Fertilizer	E	"		1,558		1,558		1,059		1,360		1,360		1,360		5,100				
(a) Urea	F	Rs/kg	76	755	76	755	100	1,020												
	E	"		1,083		1,083		1,425												
(b) V-Mixture	F	"	104	1,119	104	1,119	200	2,152												
	E	"		1,275		1,275		2,452												
(c) TDM	F	"	76	755	76	755	150	1,491												
	E	"		1,000		1,000		1,974												
(d) Chilli No.1	F	"																		
	E	"		8,84																
(e) Banana(Special)	F	"																		
	E	"		8,38																
(3) Agro-chemical																				
(a) Weedicides	F	Rs/l	2	506	2	506	7	1,771	4	1,012	4	1,012	4	1,012	4	1,012	2	506		
	E	"		430		430		1,505		860		860		860		860		430		
(b) Insecticides and Fungicides	F	"	1	748	1	748	2	1,496	6	4,488	6	4,488	6	4,488	2	1,496	4	2,992		
	E	"		636		636		1,272		3,815		3,815		3,815		1,272		2,543		
(4) Machinery, Draft Animals and Other	F	Rs/ha		6,670		6,670		6,670		1,800		1,800		1,800		1,800				
	E	"		5,670		5,670		5,670		1,530		1,530		1,530		1,530				
(5) Labour																				
(a) Family Labour	F	Rs/md	111	1,900	111	1,900	120	1,900	350	13,500	350	13,500	100	10,000	150	10,000	100	10,000		
(b) Hired Labour	E	"		1,501		1,501		1,501		10,665		10,665		7,900		7,900		7,900		
Total	F	Rs/ha		14,506		14,506		17,722		26,820		26,820		30,356		20,993		18,468		
	E	"		13,153		13,153		16,838		22,420		22,420		25,772		18,285		17,178		
3. Net value	F	Rs/ha		19,343		16,169		37,093		36,680		31,680		83,144		39,007		191,532		
	E	"		20,483		17,270		38,221		30,745		26,495		69,893		32,115		160,722		
4. Net Farm Income	F	Rs/ha		16,714		13,612		33,978		23,180		18,180		69,644		29,007		181,532		

Note: 1) F and E represent financial and economic prices, respectively.
 2) P, FW/Q and FW represent the present case, the future without project case, and the future with project case, respectively.
 3) The farmgate price for chillies is that for dried chillies.
 4) In addition to chemical fertilizers, manure is also used in the case of chilli and banana cultivation.
 Application amounts are 1t/ha and 2t/ha, respectively. However, as manure is not marketed but instead produced by the farmers themselves, this cost is not included in the input cost estimation.

App. 2.6.3-13 Crop Budget under Badagiriya Scheme at Full Development

Item	Price for Evaluation	Unit	Unit Price/ Conversion Factor		Paddy				Chillies				Banana				
			Paddy	Chillies	Banana	P ¹		PW/O ²		P ²		PW/O ²		1st Year		2nd & 3rd Year	
						Amount	Value	Amount	Value	Amount	Value	Amount	Value	Amount	Value	Amount	Value
1. Value of Output																	
(1) Yield	F	R/kg	9.40	100 ³	10	2,880	27,072	5,500	50	50,000	45,000	1,000	100,000	5,000	50,000	20,000	200,000
(2) Production value	E	"	9.52	(0.85)	(0.85)	30,080	27,418	52,360	42,500	42,500	38,250	85,000	42,500	42,500	42,500	170,000	170,000
(3) By-product value	F	R/kg	3.25			144	468	275	894								
(a) Bran	E	"	(0.85)			442	398	760									
(b) Chaff	F	"	0.22			187	168	1,458	321								
	E	"	(0.85)			159	273										
Total	F	R/ha	30,787			27,708	52,915	50,000	45,000	100,000			100,000	50,000	50,000	200,000	200,000
	E	"	31,065			27,959	53,393	42,500	38,250	85,000			85,000	42,500	42,500	170,000	170,000
2. Input Costs																	
(1) Seeds and Planting Materials	F	R/kg	12.22	800	6	1,833	1,833	100	1,222	2	1,600	2	1,600	1,000	6,000		
(2) Fertilizer	E	"	(0.85)	(0.85)	(0.85)	1,558	1,558		1,039		1,360		1,360		5,100		
(a) Urea	F	R/kg	10.20			1,020	1,020	100	1,020								
	E	"	(0.85)			1,429	1,429		1,429								
(b) V-Mixture	F	"	10.76			1,399	1,399	200	2,152								
	E	"	(0.85)			1,599	1,599	150	2,460								
(c) TDM	F	"	9.94			994	994	150	1,491								
	E	"	(0.85)			1,320	1,320		1,980								
(d) Chilli No.1	F	"	8.84														
	E	"	(0.85)														
(e) Banana (Special)	F	"	9.94														
	E	"	(0.85)														
(3) Agro-chemical	F	R/l	253	253	253	1,771	1,771	7	1,771	4	1,012	4	1,012	4	1,012	2	506
(a) Weedicides	E	"	(0.85)	(0.85)	(0.85)	1,505	1,505		1,505		860		860		860		430
(b) Insecticides and Fungicides	F	"	748	748	748	1,496	1,496	2	1,496	6	4,488	6	4,488	2	1,496	4	2,992
	E	"	(0.85)	(0.85)	(0.85)	1,272	1,272		1,272		3,815		3,815		1,272		2,543
(4) Machinery, Draft Animals and Other	F	R/ha	(0.85)	(0.85)	(0.85)	7,925	7,925		7,925		1,800		1,800		1,800		
	E	"	(0.79)	(0.79)	(0.79)	6,736	6,736		6,736		1,530		1,530		1,530		
(5) Labour	F	R/mid	100	100	100	2,900	2,900	130	2,900	135	13,500	135	13,500	150	10,000	150	10,000
(a) Family Labour	E	"	(0.79)	(0.79)	(0.79)	2,291	2,291		2,291		10,665		10,665		7,900		7,900
(b) Hired Labour	F	"	19,338			19,338	19,338		19,338		26,820		26,820		20,993		18,468
	E	"	17,710			17,710	17,710		17,710		22,430		22,430		18,285		17,178
3. Net value	F	R/ha	14,349			11,270	35,838		35,838		36,680		31,680		39,007		191,532
	E	"	15,646			12,540	36,972		36,972		30,735		26,485		32,115		160,722
4. Net Farm Income	F	R/ha	10,742			7,734	31,723		31,723		23,180		18,180		29,007		181,532
	E	"															

Note: 1) F and E represent financial and economic prices, respectively.
 2) P, PW/O and FW represent the present case, the future without project case, and the future with project case, respectively.
 3) The farmgate price for chillies is that for direct chillies.
 4) In addition to chemical fertilizers, manure is also used in the case of chilli and banana cultivation. Application amounts are 10/ha and 20/ha, respectively. However, as manure is not marketed but instead produced by the farmers themselves, this cost is not included in the input cost estimation.

App. 2.6.3-14 Annual Changes in Cropped Area and Yield under Liyangastota Scheme

Item	Year											
	1	2	3	4	5	6	7	8	9	10	11-25	
1. Cropped Area (ha)	9,542	9,542	9,542	9,542	9,542	9,542	9,542	9,542	9,542	9,542	9,542	9,065
(P)												
(FW/O)												9,065
(FW)	9,542	8,588	4,771	6,082	8,705	10,016	10,016	10,016	10,016	10,016	10,016	10,016
2. Average Yield (kg/ha)	3,850	3,850	3,850	3,850	3,850	3,850	3,850	3,850	3,850	3,850	3,850	3,465
(P)												
(FW/O)												3,465
(FW)	3,850	3,850	3,850	4,260	4,680	5,090	5,500	5,500	5,500	5,500	5,500	5,500

App. 2.6.3-15 Annual Changes in Cropped Area and Yield under Muruthawela Reservoir Scheme

Item	Year											
	1	2	3	4	5	6	7	8	9	10	11-25	
1. Cropped Area (ha)	7,920	7,920	7,920	7,920	7,920	7,920	7,920	7,920	7,920	7,920	7,920	7,524
(1) Paddy												7,524
(FW/O)												8,997
(FW)	7,920	7,128	3,960	5,219	7,738	8,997	8,997	8,997	8,997	8,997	8,997	8,997
(2) Chillies	315	315	315	315	315	315	315	315	315	315	315	299
(FW/O)												299
(FW)	315	284	158	204	295	340	340	340	340	340	340	340
(3) Banana	0	0	0	21	64	85	85	85	85	85	85	85
(FW)												
2. Average Yield (kg/ha)	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	2,970
(1) Paddy												2,970
(FW/O)												5,500
(FW)	3,300	3,300	3,300	3,850	4,400	4,950	5,500	5,500	5,500	5,500	5,500	5,500
(2) Chillies	500	500	500	500	500	500	500	500	500	500	500	450
(FW/O)												450
(FW)	500	500	500	625	750	875	1,000	1,000	1,000	1,000	1,000	1,000
(3) Banana	0	0	0	5,000	10,000	12,500	15,000	15,000	15,000	15,000	15,000	15,000
(FW)												15,000

App. 2.6.3-16 Annual Changes in Cropped Area and Yield under Badagiriya Scheme

Item	Year											
	1	2	3	4	5	6	7	8	9	10	11-25	
1. Cropped Area (ha)												
(1) Paddy (P)	903	903	903	903	903	903	903	903	903	903	903	
(FW/O)												858
(FW)	903	632	796	960	960	960	960	960	960	960	960	960
(2) Chillies (P)	40	40	40	40	40	40	40	40	40	40	40	
(FW/O)												38
(FW)	40	28	49	69	69	69	69	69	69	69	69	69
(3) Banana (FW)	0	0	35	69	69	69	69	69	69	69	69	69
2. Average Yield (kg/ha)												
(1) Paddy (P)	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200	2,880
(FW/O)												5,500
(FW)	3,200	3,200	3,775	4,350	4,925	5,500	5,500	5,500	5,500	5,500	5,500	5,500
(2) Chillies (P)	500	500	500	500	500	500	500	500	500	500	500	450
(FW/O)												1,000
(FW)	500	500	625	750	875	1,000	1,000	1,000	1,000	1,000	1,000	1,000
(3) Banana (FW)	0	0	5,000	10,000	12,500	15,000	15,000	15,000	15,000	15,000	15,000	15,000

App. 2.6.3-17 Flow of Economic Project Cost and Benefit for Liyangastota Scheme

(Unit: Rs.1,000)

Year	Cost						Benefit	Balance
	Rehabilitation	O&M Capacity	Strengthening & Support	Training	O&M	Total		
1	40,170	0	0	0	-1,280	38,890	0	-38,890
2	72,680	18,670	14,210	6,100	-710	110,950	-21,770	-132,720
3	157,210	74,660	56,830	1,520	-890	289,330	-108,860	-398,190
4	209,240	0	0	0	-890	208,350	-59,630	-267,980
5	122,320	0	0	0	3,250	125,570	44,160	-81,410
6	0	0	0	0	8,580	8,580	123,600	115,020
7	0	0	0	0	8,580	8,580	163,580	155,000
8	0	0	0	0	8,580	8,580	163,580	155,000
9	0	0	0	0	8,580	8,580	163,580	155,000
10	0	0	0	0	8,580	8,580	163,580	155,000
11	0	0	0	0	8,580	8,580	208,460	199,880
1	1	1	1	1	1	1	1	1
25	0	0	0	0	8,580	8,580	208,460	199,880

App. 2.6.3-18 Flow of Economic Project Cost and Benefit for Muruthawela Reservoir Scheme

(Unit: Rs.1,000)

Year	Cost						Benefit	Balance
	Rehabilitation	O&M Capacity	Strengthening & Support	Training	O&M	Total		
1	48,590	0	0	0	-1,390	47,200	0	-47,200
2	77,620	19,810	21,310	6,660	-770	124,630	-17,180	-141,810
3	227,640	79,230	85,260	1,670	-980	392,820	-85,940	-478,760
4	262,290	0	0	0	-980	261,310	-47,710	-309,020
5	82,190	0	0	0	6,150	88,340	60,330	-28,010
6	0	0	0	0	9,700	9,700	152,280	142,580
7	0	0	0	0	9,700	9,700	205,750	196,050
8	0	0	0	0	9,700	9,700	205,750	196,050
9	0	0	0	0	9,700	9,700	205,750	196,050
10	0	0	0	0	9,700	9,700	205,750	196,050
11	0	0	0	0	9,700	9,700	239,800	230,100
1	1	1	1	1	1	1	1	1
25	0	0	0	0	9,700	9,700	239,800	230,100

App. 2.6.3-19 Flow of Economic Project Cost and Benefit for Badagiriya Scheme

(Unit: Rs.1,000)

Year	Cost						Benefit	Balance
	Rehabilitation	O&M Capacity	Strengthening & Support	Training	O&M	Total		
1	12,730	0	0	0	-180	12,550	0	-12,550
2	45,550	8,060	2,370	830	-100	56,710	-4,610	-61,320
3	61,970	32,240	9,470	210	-130	103,760	3,980	-99,780
4	0	0	0	0	1,430	1,430	18,200	16,770
5	0	0	0	0	1,430	1,430	25,640	24,210
6	0	0	0	0	1,430	1,430	33,090	31,660
7	0	0	0	0	1,430	1,430	33,090	31,660
8	0	0	0	0	1,430	1,430	33,090	31,660
9	0	0	0	0	1,430	1,430	33,090	31,660
10	0	0	0	0	1,430	1,430	33,090	31,660
11	0	0	0	0	1,430	1,430	36,680	35,250
1	1	1	1	1	1	1	1	1
25	0	0	0	0	1,430	1,430	36,680	35,250

App. 2.6.3-20 Economic Profitability under Liyangastota Scheme

*** Net Present Value and Benefit-Cost Ratio ***

Year	Cost	D.F.	Present Worth	Benefits	D.F.	Present Worth
		10%			10%	
1	38,890	1.000	38,890	0	1.000	0
2	110,950	0.909	100,854	-21,770	0.909	-19,789
3	289,330	0.826	238,987	-108,860	0.826	-89,918
4	208,350	0.751	156,471	-59,630	0.751	-44,782
5	125,570	0.683	85,764	49,160	0.683	30,161
6	8,580	0.621	5,328	123,600	0.621	76,756
7	8,580	0.564	4,839	163,580	0.564	92,259
8	8,580	0.513	4,402	163,580	0.513	83,917
9	8,580	0.467	4,007	163,580	0.467	76,392
10	8,580	0.424	3,638	163,580	0.424	69,358
11	8,580	0.386	3,312	208,460	0.386	80,466
12	8,580	0.350	3,003	208,460	0.350	72,961
13	8,580	0.319	2,737	208,460	0.319	66,499
14	8,580	0.290	2,488	208,460	0.290	60,453
15	8,580	0.263	2,257	208,460	0.263	54,825
16	8,580	0.239	2,051	208,460	0.239	49,822
17	8,580	0.218	1,870	208,460	0.218	45,444
18	8,580	0.198	1,699	208,460	0.198	41,275
19	8,580	0.180	1,544	208,460	0.180	37,523
20	8,580	0.164	1,407	208,460	0.164	34,187
21	8,580	0.149	1,278	208,460	0.149	31,061
22	8,580	0.135	1,158	208,460	0.135	28,142
23	8,580	0.123	1,055	208,460	0.123	25,641
24	8,580	0.112	961	208,460	0.112	23,348
25	8,580	0.102	875	208,460	0.102	21,263
(Total)			670,875			947,264

Net Present Value at: 10% 276,389

Benefit-Cost Ratio at: 10% 1.41

*** Internal Rate of Return ***

Year	Incremental Benefits	D.F.	Present Worth	D.F.	Present Worth
		13%		14%	
1	-38,890	1.000	-38,890	1.000	-38,890
2	-132,720	0.885	-117,458	0.877	-116,396
3	-398,190	0.783	-311,783	0.769	-306,209
4	-267,980	0.693	-185,711	0.675	-180,887
5	-81,410	0.613	-49,905	0.592	-48,195
6	115,020	0.543	62,455	0.519	59,695
7	155,000	0.480	74,400	0.456	70,680
8	155,000	0.425	65,875	0.400	61,999
9	155,000	0.376	58,279	0.351	54,405
10	155,000	0.333	51,615	0.308	47,739
11	199,880	0.295	59,964	0.270	53,967
12	199,880	0.261	52,168	0.237	47,371
13	199,880	0.231	46,172	0.208	41,575
14	199,880	0.204	40,775	0.182	36,378
15	199,880	0.181	36,178	0.160	31,980
16	199,880	0.160	31,980	0.140	27,983
17	199,880	0.141	28,183	0.123	24,585
18	199,880	0.125	24,985	0.108	21,587
19	199,880	0.111	22,186	0.095	18,988
20	199,880	0.098	19,588	0.083	16,590
21	199,880	0.087	17,389	0.073	14,591
22	199,880	0.077	15,390	0.064	12,792
23	199,880	0.068	13,591	0.056	11,193
24	199,880	0.060	11,992	0.049	9,794
25	199,880	0.053	10,593	0.043	8,594
(Total)			39,011		-18,091

Internal Rate of Return : 13.68

App. 2.6.3-21 Economic Profitability under Muruthawela Reservoir Scheme

*** Net Present Value and Benefit-Cost Ratio ***

Year	Cost	D.F.		Present Worth	D.F.		Present Worth
		10%			10%		
1	47,200	1.000		47,200	0	1.000	0
2	124,630	0.909		113,289	-17,180	0.909	-15,617
3	392,820	0.826		324,469	-85,940	0.826	-70,986
4	261,310	0.751		196,244	-47,710	0.751	-35,830
5	88,340	0.683		60,336	60,330	0.683	41,205
6	9,700	0.621		6,024	152,280	0.621	94,566
7	9,700	0.564		5,471	205,750	0.564	116,043
8	9,700	0.513		4,976	205,750	0.513	105,550
9	9,700	0.467		4,530	205,750	0.467	96,085
10	9,700	0.424		4,113	205,750	0.424	87,238
11	9,700	0.386		3,744	239,800	0.386	92,563
12	9,700	0.350		3,395	239,800	0.350	83,930
13	9,700	0.319		3,094	239,800	0.319	76,496
14	9,700	0.290		2,813	239,800	0.290	69,542
15	9,700	0.263		2,551	239,800	0.263	63,067
16	9,700	0.239		2,318	239,800	0.239	57,312
17	9,700	0.218		2,115	239,800	0.218	52,276
18	9,700	0.198		1,921	239,800	0.198	47,480
19	9,700	0.180		1,746	239,800	0.180	43,164
20	9,700	0.164		1,591	239,800	0.164	39,327
21	9,700	0.149		1,445	239,800	0.149	35,730
22	9,700	0.135		1,310	239,800	0.135	32,373
23	9,700	0.123		1,193	239,800	0.123	29,495
24	9,700	0.112		1,086	239,800	0.112	26,858
25	9,700	0.102		989	239,800	0.102	24,460
(Total)				797,963			1,192,327

Net Present Value at: 10% 394,364

Benefit-Cost Ratio at: 10% 1.49

*** Internal Rate of Return ***

Year	Incremental Benefits	D.F.		Present Worth	D.F.		Present Worth
		14%			15%		
1	-47,200	1.000		-47,200	1.000		-47,200
2	-141,810	0.877		-124,368	0.870		-123,375
3	-478,760	0.769		-368,167	0.756		-361,943
4	-309,020	0.675		-208,589	0.658		-203,336
5	-28,010	0.592		-16,582	0.572		-16,022
6	142,580	0.519		73,999	0.497		70,862
7	196,050	0.456		89,398	0.432		84,693
8	196,050	0.400		78,419	0.376		73,714
9	196,050	0.351		68,813	0.327		64,108
10	196,050	0.308		60,383	0.284		55,678
11	230,100	0.270		62,126	0.247		56,834
12	230,100	0.237		54,533	0.215		49,471
13	230,100	0.208		47,860	0.187		43,028
14	230,100	0.182		41,878	0.163		37,506
15	230,100	0.160		36,816	0.141		32,444
16	230,100	0.140		32,214	0.123		28,302
17	230,100	0.123		28,302	0.107		24,620
18	230,100	0.108		24,850	0.093		21,399
19	230,100	0.095		21,859	0.081		18,638
20	230,100	0.083		19,098	0.070		16,107
21	230,100	0.073		16,797	0.061		14,036
22	230,100	0.064		14,726	0.053		12,195
23	230,100	0.056		12,885	0.046		10,584
24	230,100	0.049		11,274	0.040		9,204
25	230,100	0.043		9,894	0.035		8,053
(Total)				41,218			-20,400

Internal Rate of Return : 14.66

App. 2.6.3-22: Economic Profitability under Badagiriya Scheme

*** Net Present Value and Benefit-Cost Ratio ***

Year	Cost	D.F.	Present Worth	Benefits	D.F.	Present Worth
		10%			10%	
1	12,550	1.000	12,550	0	1.000	0
2	56,710	0.909	51,549	-4,610	0.909	-4,190
3	103,760	0.826	85,706	3,980	0.826	3,287
4	1,430	0.751	1,074	18,200	0.751	13,668
5	1,430	0.683	977	25,640	0.683	17,512
6	1,430	0.621	888	33,090	0.621	20,549
7	1,430	0.564	807	33,090	0.564	18,663
8	1,430	0.513	734	33,090	0.513	16,975
9	1,430	0.467	668	33,090	0.467	15,453
10	1,430	0.424	606	33,090	0.424	14,030
11	1,430	0.386	552	36,680	0.386	14,158
12	1,430	0.350	501	36,680	0.350	12,838
13	1,430	0.319	456	36,680	0.319	11,701
14	1,430	0.290	415	36,680	0.290	10,637
15	1,430	0.263	376	36,680	0.263	9,647
16	1,430	0.239	342	36,680	0.239	8,767
17	1,430	0.218	312	36,680	0.218	7,996
18	1,430	0.198	283	36,680	0.198	7,263
19	1,430	0.180	257	36,680	0.180	6,602
20	1,430	0.164	235	36,680	0.164	6,016
21	1,430	0.149	213	36,680	0.149	5,465
22	1,430	0.135	193	36,680	0.135	4,952
23	1,430	0.123	176	36,680	0.123	4,512
24	1,430	0.112	160	36,680	0.112	4,108
25	1,430	0.102	146	36,680	0.102	3,741
(Total)			160,176			234,350

Net Present Value at: 10% 74,174

Benefit-Cost Ratio at: 10% 1.46

*** Internal Rate of Return ***

Year	Incremental Benefits	D.F.	Present Worth	D.F.	Present Worth
		15%		16%	
1	-12,550	1.000	-12,550	1.000	-12,550
2	-61,320	0.870	-53,349	0.862	-52,858
3	-99,780	0.756	-75,434	0.743	-74,137
4	16,770	0.658	11,034	0.641	10,749
5	24,210	0.572	13,848	0.552	13,363
6	31,660	0.497	15,735	0.476	15,070
7	31,660	0.432	13,677	0.410	12,980
8	31,660	0.376	11,904	0.354	11,207
9	31,660	0.327	10,352	0.305	9,656
10	31,660	0.284	8,991	0.263	8,326
11	35,250	0.247	8,706	0.227	8,001
12	35,250	0.215	7,578	0.195	6,873
13	35,250	0.187	6,591	0.168	5,921
14	35,250	0.163	5,745	0.145	5,111
15	35,250	0.141	4,970	0.125	4,406
16	35,250	0.123	4,335	0.108	3,806
17	35,250	0.107	3,771	0.093	3,278
18	35,250	0.093	3,278	0.080	2,820
19	35,250	0.081	2,855	0.069	2,432
20	35,250	0.070	2,467	0.060	2,115
21	35,250	0.061	2,150	0.051	1,797
22	35,250	0.053	1,868	0.044	1,550
23	35,250	0.046	1,621	0.038	1,339
24	35,250	0.040	1,410	0.033	1,163
25	35,250	0.035	1,233	0.028	986
(Total)			2,786		-6,596

Internal Rate of Return : 15.29

APPENDIX-2.7 RECORD OF MEETINGS

LIST OF MEETINGS

1. Working Level Advisory Committee (WLAC)

Scheme	Date	Page
Liyangastota	1st February, 1996	A2.7-1
Muruthawela	2nd February, 1996	A2.7-6
Badagiriya	6th February, 1996	A2.7-12

2. Study Advisory Group (SAG) Date: 6th March 1996 A2.7-16

3. Workshop 9th April, 1996 A2.7-17 **on Sustainability of Participatory Management of Major Irrigation Systems after Rehabilitation**

MINUTES OF THE WALC MEETING (PHASE 11)

Name of the irrigation scheme: Liyangasthota

Date and time: 1st February at 10.00 a.m

Venue: Irrigation Engineer's office, Ambalanthota

Farmer representatives

1. H. W. Mendis Suhada farmer organization, SRB
2. A. Edirisooriya Vijaya farmer organization, SLB
3. B. Suwaris Theraputta farmer organization, SRB
4. K. Jayathissa Samagi farmer organization, Uda Baragama
5. A. P. wanasingha Pragathi farmer organization, Uda baragama
6. T. P. Liyanage Neela farmer organization
7. L. jayasekara Gajaba farmer organization, Koggalla
8. A. P. Davis Silva Pragathi farmer organization
9. P. L. Piyasena Ruhunu farmer organization
10. S. S. Vitharana Mahasen farmer organization
11. S. Jayasinghe Dimuthu farmer organization
12. A. G. Piyasena Pubudu farmer organization, Poliya Waththa
13. U. G. Sirisena Pubudu farmer organization, Poliya Waththa
14. M. A. G. Saiman Gotabaya farmer organization
15. T. G. Sunendra Senanayake farmer organization
16. P. Rajapaksa Isuru farmer organization, Baragama
17. J. B. Andarayas Parakum farmer organization
18. A. G. Samy Weera farmer organization
19. A. W. N. Muthu farmer organization
20. S. G. Keenmahatha Weera farmer organization
21. A. Iddamalgoda Parakum farmer organization
22. R. P. Samy Walawe farmer organization
23. W. A. Wimalasena Gajaba farmer organization
24. E. V. Andarayas Ekamuthu farmer organization, Modera Piliwala
25. K. B. Siripala Saruketha farmer organization, Bolana
26. W. A. Padmasiri Saruketha farmer organization, Bolana
27. R. G. Jinarathna Samagi farmer organization
28. J. Madagama Gamini farmer organization

Irrigation and other officials

1. G. V. Ratnasara Deputy Director, Hambanthota, ID
2. Irrigation Engineer, ID
3. ID

Study team

1. M. Fujioka Team Leader
2. N. Abeywickrama Consultant, institutional development
3. Jinadasa Consultant, agronomic aspects
4. A. Gamaathige Consultant, social aspects
5. K. Iwata Irrigation and Drainage Engineer
- 6.

1. Introduction

Mr. Rathnasara, DDI, Hambanthota welcomed the farmer representatives and said that the purpose of the meeting was to discuss irrigation matters and time schedule of field investigations during the second phase of the feasibility study. The detailed field study will be carried out in February and March.

Mr. Fujioka, Team leader thanked the participants for attending this meeting and requested them to state their important common irrigation and other problems briefly.

2. Problems and existing conditions of irrigation system

Farmer representatives in the right bank area presented their problems first.

Right bank

A farmer representative said that this system has not been rehabilitated and many sections of the main canal and distributary channels are damaged and silted and outlets are also broken. Some intermediate storage tanks like Mamadala and Olu Wila are silted up. Because of damages to channel embankments and silting water cannot be taken to tail end areas. The total command area under the RB main channel has increased considerably and therefore more water is now required for cultivation of the increased area. He further said that the original designs prepared intended to cultivate a smaller area than the actual cultivated area. One of the reasons for siltation of the channels is drainage water from the walawe river. He proposed to build a structure to prevent siltation or introduce some device to solve this problem. Although farmers have organized shramadanas (donation of labour) to de-silt the main canal such efforts are not enough.

FR2- said that the main channel is silted up due to drainage water. Rehabilitation of intermediate tanks namely, Mamadala, Bata Atha and Lunawa will help to increase water supplies to the downstream areas.

FR3. emphasized the importance of repairing the damaged sections of the main channel, i.e, eroded bunds and embankments of channels. The carrying capacity of the channel is low. For example when water level rises water overflows in some sections of the D1 channel. There are no cattle crossings available. Both DCs and FCs are narrow in many sections. Some FC bund roads need to be rehabilitated.

FR4. His major concern was on encroachment of the DC and FC Channel reservations by some farmers. As a result tractors cannot be used.

FR5. He gave a number of reasons for the decrease of quantity of water received by downstream farmers such as siltation of the main channel, damages to bunds from cattle, absence of some control structures to regulate water flows etc.

FR6. His point was to initiate action to take back the encroached areas of channel and road reservations before rehabilitation of DC and FC bund roads. FOs are quite willing to cooperate in this matter with relevant government agencies.

FR7. A FR representing the tail area of the system, Lunama said that intermediate small tanks are de-silted. It has become very difficult to drain water into the lagoon and thus drainage problem has become one of the major problems in this area. Further, he also suggested to get a surveyor to demarcate the encroached areas of tank catchment and DC, FC and drainage channels.

Team Leader asked FRs to identify the possibilities of increasing their incomes. Some possibilities for generating additional income are: 1) cultivation of OFCs like green gram by pumping water to highlands, 2) purchase of paddy by farmer organizations and sell at higher prices, 3) cultivation of banana as a commercial crop, 4) livestock development and 5) development of fish industry in small tanks.

Left bank

The cultivated area comes under Ridiyagama tank.

SLB- FR said that channel embankments are badly damaged in some sections. Also in some sections the SLB main channel is very wide and the construction of retaining walls is required. In some sections it is too narrow and should be widened.

NCB- FR said that some sections of the channel are very wide, about 20 feet, and suggested to construct retaining walls to increase the velocity of water.

SRB- Farmers in the tail end areas have experienced water shortages and as well as conditions of the Karagasnawa drainage channel are poor. Crops were damaged due to inundation. FR suggested to clean this drainage channel which drains water coming from the area of about 500 acres. The sub channel in LB4 is badly damaged. Some farmers get water through illegal outlets. Sand bars are formed and the lower area is inundated. About 16 villages are affected due to inundation.

SLB- FR said that the canal has not been rehabilitated during the last 30 or 40 years. Damages to channel banks and siltation are major problems and suggested to construct retaining walls.

Another FR said that about 500 acres are cultivated under the command area of Kadawara Wewa. However, the problem of draining water to Koggala Ara has resulted in crop damages in some areas. Field investigations to solve this problem were carried out by the IRDP.

NRB- FR suggested to rehabilitate the section of the channel in tract 3.

SCB and SLB- This is a colony developed in the 1940s. Two FRs from Uda Baragama and Pahala Baragama expressed their views on improvements of the drainage channel because about 84 families are already affected due to inundation. Some farmers have cultivated only 50% of their allotments.

Liyangasthota anicut and feeder canal

FR from RB2 said that banks of the feeder canal are damaged due to cattle crossings. Siltation of Ridiyagama Tank is also another problem. He suggested to have Cattle crossings across the feeder canal.

Another FR said that inflow of water into the tank has reduced and suggested to raise the tank bund. DD said this is not technically feasible.

LIYANGASTOTA SCHEME WLAC Meeting results are summarized as below.

Area in the Scheme	Issues Highlighted by the Representatives of FOs under LB Feeder Canal
Ridiyagama Tank	Siltation in the tank, thus the tank capacity is reducing year by year.
LB Feeder Canal	Reduction of seepage in the LB feeder canal is necessary. Provision of cattle crossing is necessary for protection of canal bunds.
NCB Canal	Originally designed 5 feet-wide canal has been widened to 20 feet at maximum due to collapse and erosion of side slopes and this is causing reduction of land reservation (width of bund width) along the canals.
SRB Canal	The total length of SRB canal is about 5 miles. However, irrigation water can be taken only from the canal portion of about 2.5 miles. This situation must be improved. Also drainage condition in the areas along the SRB canal must be improved. Sand bars are formed at the downstream portion, causing inundation.
RB-3 under SRB	Siltation in the canal is observed. Intrusion of waste-water into the canals should be avoided by provision of drainage canals.
LB-4 under SRB	Canals are badly damaged.
SLB Canal	Sections of the canal have been much widened and broken due to erosion of the slopes, wasting much amount of water. Repair of the canal bunds by construction of retaining wall is necessary.
Kadawara Wewa	Presently provided level-crossing structures are creating drainage problems in the area. Instead of the structures, cross drains be provided to improve present drainage condition. The canals in this area are silted. Protection works in the canal for cattle-crossing are necessary.
NRB Canal	Main problem in this area is drainage due to lack of proper drainage facilities.
Downstream area of NRB Canal	General drainage problems due to lack of drainage facilities.
SCB Canal	About 400 acres of the farmlands are badly affected due to insufficient drainage, causing inundation problem. Drainage improvement at downstream area is necessary.
Most downstream area of SRB Canal	Sea outfall structure is not functioning well, thus there always exist drainage problems. Also canal bunds in this area should be strengthened and raised.
Downstream area under SLB Canal	Shortage of irrigation water at tail end area and drainage problems especially in Maha season. Protection works in the canal for cattle-crossing are necessary. Reservation of farmlands along the canal is being encroached.
RB Main Canal	Condition of RB main canal is bad. Siltation in the canal is observed. Total command areas under RB main canal are increasing and more irrigation water is necessary. Mamadala Wewa under RB canal is silted. Rehabilitation of Mamadala Wewa, Mandagala Wewa and Lunama Wewa was suggested to increase irrigation water for the downstream areas under these wewas.
Lunama Area under RB Main Canal	Drainage is main problem in this area.
D-1 Area under RB Main Canal	Water shortage in RB main canal. Irrigation water includes much suspended loads. These conditions should be improved. D-1 canal sections need to be enlarged.
D-2 Area under RB Main Canal	Drainage problems in RB main canal. Also siltation in RB main canal. Construction of silt-excluder structures is necessary because at present farmers are forced to spend 2-3 days for desilting in the canal. Strengthening road net work along the canal is necessary.
D-3 Area under RB Main Canal	Almost all the structures in the area are in very bad condition. Design discharge in RB main canal seems to be not enough to irrigate the areas under RB main canal. Oluwila Wewa under D-3 is silted. Irrigation water from small tanks are irregularly taken by the encroachers. Registered reservation of the farmlands should be protected from encroachers. Utilizing small tanks for inland-fisheries was proposed. For increasing income, some farmers are considering introduction of OFC.

MINUTES OF THE WALC MEETING (PHASE 11)

Name of the irrigation scheme: Muruthawela
Date and time: 2nd February 1996 at 10.00 a.m
Venue : Agrarian Services Office, Weeraketiya

Farmer representatives

Muruthawela Tract 2

1. Y. K. Francina Tract 2
2. D. N. Amarakon D9
3. S. W. W. Ajith D6
4. G. Liyanage D5, tract 2
5. P. Liyanaarachchi
6. K. Dineris Sinhagiri farmer organization, Muruthawela

Muruthawela tract 3

1. S. Rathnayake Weera farmer organization
2. K. K. Akman Tract 2
3. A. S.
4. P. Gunapala D1, tract 3
5. J. Abeygunawardana Tract3
6. A. L. David D7, tract 3
7. G. A. A. Jayatissa D4, tract3
8. H.D. V. Andarayas D6, tract3
9. S. A. Gunapala tract 3
10. A. saranelis tract 3
11. W. I. Weerasinghe D8, tract 3
12. W. W. Kodithuwakku D8
13. D. A. Wickramasinghe D6

Kirama Oya

1. A. A. Wickramarathna Samagi farmer organization
2. I. Weerawarna Thangalu yaya farmer orgnaization
3. R. W. A. Gunapala Parakum farmer organization, Wile Amuna
4. P. Gajaweera
5. A. Abeywickrama Hambuwandi left bank
6. P. Jayasekara Okewela left bank
7. L. K. Richard Eksath farmer organization
8. W. A. Malani Siyabalangoda
9. K. A. Sirisena
10. Hari Jayawickrama

Urubokka Oya

1. D. N. Senarath Roteyaya, Godadora ela (high level canal)
2. S. Liyanarachchi Ranna anicut
3. D. M. G. Amarasena Thalakanathu Yaya, high level canal
4. G. A. Piyasena Pothuwila, Pothuwewa, high level canal
5. S. Weerathunga Halmilla, Udukirawila
6. B. Rathnayaka Wakamulla
7. D. D. Weerasinghe Harathis anicut
8. K. P. D. Andrayas Waladora ela, Udukirawila

9. N. Abeywickrama	waladorawewa, Udukirawala
10. D. A. G. Banadaranayaka	Athunnawala, high level canal
11. A. G. Premarathna	
12. A. K. Siripala	Ranasinghagama, high level canal
13. D. N. Vitharana	Hakuruwela anicut
14. D. M. Rathnayaka	Hunna kumbura anicut
15. D. M. Samaraweera	Ranasinghagama
16. L. Ekanayaka	Roteyaya
17. S. G. Manamperi	Andunalana anicut
18. W. A. Sirisena	Andulana
19. S. G. Kodithuwakku	Andulana
20. G. Disanayaka	Pattiyapola, Mahawewa
21. N. Kumarasingha	Netolpitiya

Irrigation and other officials

- 1.
2. Nandalal

Study team

1. Introduction

Existing conditions and irrigation problems

Tract 2

D1, D2 and D3- The D channel needs rehabilitation, particularly canal bund is damaged, some outlets are broken, conditions of access farm roads are poor. The trough is narrow and needs to be widened.

D4- capacity of the main canal is low and a rotation schedule of water distribution is practiced. Some FC outlets are damaged and paddy cultivation is allowed only for one season.

D5. farmers at the tail have experienced water shortage and some farmers have damaged gates by illegal opening of the outlets by removing planks.

D6. About 10 acres cannot be cultivated due to non availability of water. The reason may be the location of paddy fields at higher elevation than the channel.

D7. It was possible to cultivate the total area of about 175 acres during both yala and maha seasons until upto 1973 and after water was not adequate to cultivate about 25 acres. The quantity of water released to the channel cannot be shared among all farmers.

D9. Water shortage is the important problem and about 5 acres cannot be cultivated with paddy due to well drained soils. FC conditions are poor and water is leaking in the DC canal.

Tract 3

D1. FC outlets are broken by farmers wilfully. There is no canal

gate to control water and therefore tail enders are suffered. The illegal tapping of water using horse pipes and through illegal outlets is another significant problem. Nearly 75 acres cultivated in this area are outside the command area. Who should get water first, whether tract 1 or 2 or 3 is an issue and the unauthorized cultivators must be allowed to take after issuing water first to legal owners.

D2. The system was designed to cultivate only 3000 acres but the actual cultivated area is now about 5000 acres. Therefore, some tail end farmers are not provided with adequate water in correct time. FR said that it is possible to reuse the drainage water to cultivate some lands in FC areas.

D3 to D9. FR said that the illegal way of taking water has caused water shortage for about 50 legal cultivators in this area. He proposed to introduce a water distribution schedule and water should be given first to legal owners.

Tract 1

FR said that the total cultivated area is about 1100 acres and farmers use horse pipes or outlets to take water directly from the main canal. These are traditional lands and about 2500 families are benefitted. 9 FOs are formed and their FO representatives are not invited for the PMC meetings.

Urubokka Oya

Raluwa Nawarathna anicut- FR said that the channels is about 5 miles long. Reservations of the channels are encroached and some sections of the channel are damaged. Although regular maintenance activities of desilting and jungle clearing are done by farmers the channel is not in good shape.

Kinchigune- This is not a planned irrigation system and no drainage facilities are provided. During a rainy season excess water from 7 village tanks comes to the main channel resulting considerable damages to channel embankments.

Udukiriwala- The four door anicut gate is damaged and planks need to be removed. The spill is also damaged. The catchment area of Udukiriwala tank is cultivated with paddy and coconut. Water quality of the tank is poor because of sewage and solid waste disposal. FR said that Godadora Ela (high level canal) can be further excavated by about another 2 feet to take more water to the downstream area. About 40 acres don't get enough water now.

Wakamulla anicut- FR requested to replace wooden gates with iron gates to better control water.

Hunnakumbura- Farmers in RB and LB channels have different cultivation times and therefore water distribution has become difficult.

Hakuruwela- Channels are not cleaned properly. Some sections of the LB channel are damaged.

Andupalana- The anicut is damaged. Embankments of the RB channel are washed away. The main reason is the cattle crossing.

Ranna- This is the tail end anicut and drainage water from the upper anicut goes through this area. The sand bar is formed at Maha Modera and it is difficult to clean but only farmers' efforts during the yala season due to rough wind blowing.

Kirama Oya

There are 18 anicuts under this system.

Danketiya- This is the last anicut. Drainage facilities are poor. There are obstructions like tree trunks along the channel.

Maha- The anicut must be repaired by replacing planks.

Wilama- Out of about 185 acres only 80 acres are cultivated. The anicut is not located at the proper place.

Darande- About 70 acres are cultivated with OFCs.

Nalagama- Soli erosion is a major problem.

Pinode- The channel was rehabilitated by NORAD.

Kahawatta- Obstructions along the channel.

Kirama tank- Desiltation is necessary

MURUTHAWELA RESERVOIR SCHEME WLAC Meeting results are summarized as below.

Area in the Scheme	Issues Highlighted by the Representatives of FOs under Murthawela Scheme
D-1 under Tract-II	D-1 canal and its related facilities are generally bad. Needs rehabilitation. Irrigation water is insufficient. No cultivation in Maha season. Farm roads along FC canals are bad. Also needs rehabilitation.
D-2 under Tract-II	D-2 canal is being silted up. Road condition along the canal is bad. Outlet structures in the canal are bad. Rotation irrigation method is usually applied after land preparation period. Discussions among the farmers in D-3 to D-5 are made before conducting rotation irrigation. These opinions were stated by a female secretary to the FO.
D-1 and D-4 under Tract-II	Capacity of LB main canal is not enough. Outlet drop structures in the canal are bad. D.D.I Hambantota mentioned that water is now issued only to Tract-II. Under d-4 canal, paddy cultivation is allowed only for Maha season.
D-5 under Tract-II	Capacity of LB main canal is not enough. Farmers at tail end are suffering from water shortage.
D-6 under Tract-II	About 10 acres of farmland could not be cultivated. The reason for this may be attributed to higher elevations of the farmland than those of the canal.
D-7 under Tract-II	Irrigation water did not reach the tail end area and abandoned some areas. Tract-II receives irrigation water only during Yala season. Never obtained full amount of designed water amount in the past. Until 1973 about 175 acres of farmlands had been irrigated.
D-9 under Tract-II	Water shortage in the canal and other typical problems in the canal. About 60 acres of farmlands are not cultivated. Banana cultivation in 5 to 10 acres of farmlands. Farmers here want to fully cultivate rice at least once in a year.
D-1 under Tract-III	Unauthorized cultivation of paddy and OIC of about 75 acres. Unauthorized water taking using horse pipes.
D-2 under Tract-III	The system in Tract-III was designed for 3000 acres instead of 5000 acres at present. Accordingly, capacity of main canal be increased. Reuse of irrigation water was suggested.
Tract-I	There are 2500 farmer-families. In total 9 FOs exist, but not invited to the project management committee. Cultivation of 1200 acres of paddy. Illicit taking of irrigation water was pointed out.
Raluwa Nawarathne (Urubokka Oya)	Canal sections are bad. Encroachment of canals is observed. Prevention of canal from the encroachment is necessary.
Kinchigune (Urubokka Oya)	A request was made to the study team to check present irrigation system including existing Kinchigune anicut. Damages to canal bunds due to excess water.
Udukiriwila (Urubokka Oya)	Udukiriwila anicut is very old and not functioning well. Gates and spillway in the anicut need rehabilitation. Canals under the anicut are also bad.
Udukiriwila Tank (Urubokka Oya)	Water quality of the tank is bad due to intrusion of sewage and solid waste.
High Level Canal	It was pointed out that this canal system does not work effectively. Provision of canal system along the contours was proposed.
Wakamulla (Urubokka Oya)	A request to replace existing wooden gates in Wakamulla anicut with iron gates.
Hunnakmbura (Urubokka Oya)	Water distribution under Hunnakmbura anicut has become difficult due to timelag in water use in RB and LB canals.
Hakuruwela (Urubokka Oya)	Canals are not cleaned.
Andupalana (Urubokka Oya)	Andupalana anicut is badly damaged. Right side embankment of the canal are badly damaged due to cow-crossing.

Ranna (Urubokka Oya)	Sand bars are formed at Maha Modera, causing inundation in the area. Removing the sand bars is beyond farmers' efforts.
Danketiya (Kirama Oya)	Shortage of irrigation water during drought period. Drainage problem during flood. Drainage improvement at tail end.
Maha (do)	Repair of Maha anicut is necessary. Flank bunds along the canals are necessary. Drainage problem in the area.
Wilama (do)	Location of Wilama anicut seems to be bad. Out of 185 acres of farmland, only 80 acres are cultivated.
Darande (do)	About 70 acres are under O/C cultivation.
Nalagama (do)	In some areas there is no canal system. Access to the anicut is bad. Related canal structures are in bad condition. Damages due to flood and soil erosion are observed.
Pinode (do)	Some part of canals were rehabilitated by NORAD.
Kahawatta (do)	Many obstructions in the canal are observed.
Kirama Tank (do)	Needs desilting.

Badagiriya WLAC Meeting

Date : February 06, 1996
Present : JICA Team
Chief Resident Engineer
Resident Engineer
Technical Assistant
Agricultural Officer

Farmer representatives

1. L.P.Andrayas	No.1	Keliyawalana, A-9 Channel
2. Darlin Liyanage	No.2	D-1 F.O.
3. P.Wannigawa	No.2	D-1 F.O.
4.S.J.Munasinghe	No.3	D-3 F.O.
5.Willie Jayasuriya	No.3	D-3 F.O.
6.T.J.G.Milton	No.4	D-4 F.O.
7.J.R.D.Siripala	No.1	D-1 F.O.,K-1,2
8.Dhamudhiri Dissanayaka	No.2	D-2 F.O.
9.M.M.Umin		
10.P.H.Saimuddin	No.1	D-Ch. F.O.
11.D.V.Upatissa	No.1	D-Ch, K-1
12.W.G.Jayadeva		D-4 F.O.
13.B.Chavlis		
14.I.T.H.Jilmasena		8B F.O.

President of F.OO

Mr. Siripala, President F.O and President Regional council F.OO of Hambantota District, also Rep. Of FC-K1 to 5 farmers representing FC 1 to 5, 6 to 8, 9A, 9B 10, DC 1, FC25, to 31, DC3, FC 39, DC4, FC40 to 43 and reps of land owner of proposed area FC 44 to 49.

Representative of F.OO

Explained the requirements in FC, Feeder Canal, desilting, weak bunds, outlets, Feeder Canal No. 2 needs training to prevent collapse of canal sides, in Feeder Canal No.1 needs desilting and rehabilitation. In Main Canal, upto DC4 clearing was done in three stages, obstructions exist due to fast growing weeds and collapsing of banks.

Regarding question raised by JICA Team whether F.OO are prepared to maintain Feeder Canal No. 1? F.OO are not in a position to take over maintenance due to the magnitude of the work involved both in Feeder Canal and Main Canal, After rehabilitation of Feeder Canal. F.OO can maintain same, at the moment F.OO are not financially strong enough.

Representative of F.OO

In Main Canal upstream of regulator No.9, the causeway before FC 9 and canal spills overflow due to heavy silting due to silt brought in by inflow of rain from upland, protections to banks of Main Canal and prevention of silt inflow must be done.

ID

ID dose not have enough funds to maintain the canals.

Representative of F.OO

Upstream of DC 1, Main Canal needs double banking, ie, new bund on the LB.

D3 to D4, the canal needs slope protection,during rotational issues of water, distribution is very difficult towards the tail end of Main Canal.

Team Leader

whether farmers can utilize farm labour for canal clearing and desilting?

President of F.OO

After rehabilitation the F.OO can organize maintain F.CC by handing over sections of F.CC to farmer families

Representative of F.OO

FC1 is a long canal irrigating 100 ha, its left bank needs rehabilitation. In FC2 right bank bunds, and in FC3, bunds, structures are weak. Under FC2, originally only 7 allotments now increased to 13. Conveyance of water is not possible as bunds do not exist, of the 13 allotments about 40% of each field are unirrigable due to lands being higher and land consolidation has to be done. These 13 lots were given due to the fields given to these farmers earlier had salinity.

Re-farm roads, the farmers are prepared to give cultivated land for roads along F.CC where necessary.

President of F.OO

F.OO are already cooperating with ID to maintain Main Canal and D canals by carrying out repairs with materials from ID.

Team Leader

requested F.OO to inform farmers that in future ID will get less and less funds and farmers must maintain. During field inspection by JICA Team members during the next few weeks F.OO must explain the necessary repairs, and F.OO should draw up a plan with farmer participation.

Mr. Iwata

Inquired whether ID is doing a good job in operation of gates and regulator, water distribution?

F.OO

do not blame ID any short comings in water distribution as condition of the system is poor.

Team Leader

inquired regarding income from crops other than paddy, how to increase incomes, and other social upliftments?

Mr. Iwata

Hopes to contract F.OO regarding cropping patterns, use of fertilizers and chemicals, ideas on possible agro-industries? Any idea of what cropping patterns to adopt in proposed new area in FC44 to 49?

F.OO

About 30% paddy and 70% OFC, hope to finalize after consultations with respective farmers.

Mr. Jinendradasa

The pattern of OFC on existing fields?

F.OO

Only 5% of OFC are possible.

Agricultural Officer

After soil classification, OFC can be planned in the new area. Generally Maha 95/96 100% paddy, 80% Yala.

F.OO

Complained that 150 to 200 households do not have domestic water or water for cultivation on upland allotments, also suggested that shortage of water for fields in FC 22 can be overcome by reusing drainage water by an Anicut across the main drainage stream, and all drainage canals need improvements.

Team Leader

will look into this matter.

Mr. Tsumura

In DC3 area, partially abandoned fields are being irrigated by farmers with drainage water collected in a small village tank.

F.OO

Farm machinery available 50 to 60 nos. of 2W tractors, 4 to 5 nos. of 4W tractors. Drinking water only for part of the colony, that too for a limited number of hours per day through pipe lines from Lunugamwehera.

BADAGIRIYA SCHEME WLAC Meeting results are summarized as below.

Area in the Scheme	Issues Highlighted by the Representatives of FOs under Badagiriya Scheme
K-1 and FC-10 to FC 30	K-1 canal bunds and pipe outlets need rehabilitation. Desilting in Feeder canal No.1 and No.2 is necessary. Resectioning of feeder canal No.2 is necessary. Canal width of Main canal up to DC-4 is not wide enough. Also weeds in the main canal hinder the flow, causing water shortage at tail end.
Feeder Canal	Farmers know the importance of feeder canal, however, they will not take over the responsibility for maintenance of feeder canal in the future, it should be maintained by ID. At the same time there was a opinion from a representative of another FO that if the feeder canal is completely rehabilitated under the project, farmers may take responsibility for maintenance of feeder canal.
Between FC-8 and FC-9	Height of canal bunds is not enough, causing overflowing of water sometimes.
From FC-9 upto Badagiriya Tank	Construction of additional bunds along the main canal to protect lateral flow from Kirindi Oya was requested.
Main canal after D-1	Provision of additional bunds, double bunds and cross drainage structures was requested.
Near DC-4	Present capacity of main canal is not enough to carry water amount required under present irrigation system due to enlargement of areas to be irrigated. Water stagnation at the tail end area is one of the important problems to be solved.
FC-1	Road along FC-1 should be rehabilitated considering transportation of harvested rice and others. Provision of drops and cattle-crossing as well as rehabilitation of gates are necessary.
FC-2-A	Request for land leveling was made. (This is out of scope of the Project)
Between FC-1 and FC-5	Necessity of provision of side bunds along the canal was stressed.

REHABILITATION OF IRRIGATION AND DRAINAGE SCHEME IN SOUTHERN SRI LANKA

STUDY ADVISORY GROUP MEETING

Date : 6th March 1996
Venue: Ministry of Irrigation Power and Energy

AGENDA

1. Illicit cultivation - Muruthawela Tract I
2. Environmental matters - clearance from CEA
3. Operation and Maintenance after the rehabilitation.
4. Crop diversification.
5. Monitoring Water quality.
6. Any other matters.

List of Participants

1. Mr.Sarath Dassanayake - Asst. Director, M/Agriculture
2. Mr.H.Bandurathna - Addl.Director, National Planning Department
3. Mr.W.M.Bandusena - Deputy Director, M/ Irrigation Power and Energy
4. Mr.Runjith Rathnapala - W.R.Director, M/ Irrigation Power and Energy
5. Mr.S.A.P.Samarasinghe - Addl Director, IMD
6. Mr.S.P.P.Gamage - CIE, ID
7. Mrs.J.Amarakoon - D.D, ID
8. Mr.M.Sinnappoo - Snr.D.D, ID

Study Team

1. M.Fujioka - Team Leader
- 2.K.Iwata - Irrigation and Drainage Engineer

WORKSHOP
On

Sustainability of Participatory Management for
Major Irrigation Systems after Rehabilitation

Presentation of findings of JICA feasibility study on the
Rehabilitation of Irrigation and Drainage Systems in the River Basins
of Southern Sri Lanka.

Date : Tuesday 9th April, 1996.

Venue: IIMI Board Room

8.15 am - 8.45 am : Registration
8.45 am - 9.15 am : Inauguration :

- Address by Secretary, M /IP & E
- Address by Director General,
Department of Irrigation
- Address by Mr. M. Fujioka, JICA
Study Team Leader.

9.15 am - 10.15 am : Session I

Chairman : Mr. K. Thurairajarethnam
Addl. Secretary/ MIPE.

System Rehabilitation and O & M

Presentations :

Mr. M. Fujioka - Team Leader
D.W.R.M. Weerakoon - Snr. D.D (S.M & O.M)
Irrigation Dept.

Discussant : Mr. Godfrey Silva -
Coordinator, SLNP, IIMI.

10.15 am - 10.30 am : Coffee

10.30 am - 11.30 am : Session II

Agriculture Development and Protection of
Environment.

Presentation :
Mr. A.K.S.B. Jinendradasa,
Member, JICA Study Team

Mr. I. Seko
Member, JICA Study Team

Discussant
Mr. Terrence Abeysekera. -
Programme Officer, World Bank. Colombo.

11.30 am - 12.30 pm : Session III

Social Aspects

Presentation :
Mr. N. Gamathige - Member, JICA Study
Team

Discussant :
Mr. S.M.K.P. Nandarathna, Research
Associate.

12.30 pm - 1.30 pm : Lunch

1.30 pm - 2.30 pm : Session IV

Chairman : Mr. L.T. Wijesooriya,
Director General of
Irrigation.

**Participatory Management and Systems
Turnover.**

Presentation :
Mr. N. Abeywickrama. - Member, JICA
Study Team

Mr. K.S.R. De Silva - Project Director
(NIRP)

Discussant : Mr. I.K. Weerawardena
Consultant, NIRP

2.30 pm - 2.45 pm : Coffee

2.45 pm - 3.45 pm : Session V

Legal Aspects

Presentation : Mr. W.P. Wimalasena,
Commission of Labour

Discussant : Mr. I.K. Weerawardena
Consultant, NIRP

3.45 pm - 4.15 pm : Concluding session
Summing up.

GS/IIMIWORK/DIS2

List of Participants.

- | | |
|------------------------------|---|
| 1. Mr. J. Madagama | - Secretary, M/IPE |
| 2. Mr. K. Thuraijaseratnam | - Addl. Secretary (Irrigation) |
| 3. Mr. L.T. Wijesooriya | - Director General, ID |
| 4. Mr. Ananda Gunasekera | - Director /IMD |
| 5. Mr. R. Ratnayaka | - Director/WRD |
| 6. Mr. D.W.R.M. Weerakoon | - Snr. D.D (O,M & S.M) |
| 7. Mr. M. Sinnappoo | - Snr. D.D (P.D.& S.S) /ID |
| 8. Mr. K.S.R.de Silva | - Project Director NIRP/ID |
| 9. Mr. M.T. Athukorala | - D.D (O & M)/ID |
| 10. Mr. A.S. Manoharadas | - D.D (H & D) /ID |
| 11. Mrs. J. Amarakoon | - D.D (Planning) |
| 12. Mr. S.A.P. Samarasingha | - Addl. Director /IMD |
| 13. Mr. G.V. Ratnasara | - D.D/ID |
| 14. T.S.D. Peries | - D.D (P), M/IPE |
| 15. Mr. N.J. Baranasooriya | - C.I.E (O & M) /ID. |
| 16. Mr. S. Wijesekera | - CRE /ID |
| 17. Mr. S.P.P. Gamage | - C.I.E /ID |
| 18. Dr. S.L. Amarasiri | - Director General, Dept., of Agriculture
Peradeniya. |
| 19. Mr. S. Wirasingha | - Director, Extension Communication
Centre, Dept., of Agriculture, Peradeniya. |
| 20. Mr. Abeysekera | - Provincial Director of Agriculture
C/O Provincial Ministry of Agriculture,
Galle. |
| 21. Mr.N. G.R.de Silva | - Coordinator, SLNP /IIMI |
| 22. Dr. Terrence Abeysekera | - Programme Officer, World Bank, OFCC
Building, Colombo. |
| 23. Mr. I.K. Weerawardena | - Institutional Management Specialist,
Central Management Cell, NIRP. |
| 24. Mr. N.D.T. Amarasekera | - C.I.E /NIRP |
| 25. Mrs. P.I.L. Imbulana | - C.I.S /NIRP |
| 26. Mr. G. Uitter Bogaard | - Team Leader /NIRP |
| 27. Mr. M. Van Krimpen | - Consultant / NIRP |
| 28. Mr. S.S. Ranatunga | - Consultant /NIRP |
| 29. Mr. S.M.K.P. Nandarathna | - IRMU |
| 30. Mr. W.P. Wimalasena | - Commissioner of Labour |
| 31. Mr. W.A.D.D. Wijesooriya | - Deputy Director,
National Resource Management,
CEA. |

WORKSHOP
on
THE SUSTAINABILITY OF PARTICIPATORY MANAGEMENT
for
MAJOR IRRIGATION SYSTEMS AFTER REHABILITATION

**Presentation of Findings of the JICA Study on
The Rehabilitation of Irrigation and Drainage Systems
in the River Basins of Southern Sri Lanka**

**Colombo
April, 1996**

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Workshop Proceedings

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Session 1 - System Rehabilitation and O&M

Session 2 - Agricultural development and
Protection of the Environment

Session 3 - Social Aspects

Session 4 - Participatory Management and
System Turnover

Session 5 - Legal aspects

Annexes

1. Workshop Programme

2. List of Participants

3. Papers Presented

- a. Mr.M.Fujioka, "Sustainability on System Maintenance".
- b. Mr.A.K.S.B.Jinendradasa, "Agricultural Issues and Environmental Matters".
- c. Mr.N.Gamaathige, "Rural communities and Their Strengths and Weaknesses".
- d. Mr.K.S.R. de Silva, "Aftercare Programme of NIRP".
- e. Mr.N.Abeywickrema, "Sustainability, Participatory Management and System Turnover".
- f. Mr.R.P.Wimalasena, "The Scope of the Agrarian Services Act".
- g. Mr.I.K.Weerawardena, "Highlights on Irrigation (Amendments) Act No. 13 of 1994".

ACRONYMS

DAS	- Department of Agrarian Services
FO	- Farmer Organization
IAEP	- Integrated Agricultural Extension Project
ID	- Irrigation Department
IMD	- Irrigation Management Division
IO	- Institutional Organizer
JICA	- Japanese International Cooperation Agency
MALF	- Ministry of Agriculture, Lands and Forestry
M&E	- Monitoring and Evaluation
MIPE	- Ministry of Irrigation Power and Highways
NIRP	- National Irrigation Rehabilitation Project
OFCs	- Other Field Crops
O&M	- Operation and Maintenance
SIRP	- Southern Irrigation Rehabilitation Project

INTRODUCTION

This Workshop had as its objective the presentation of findings of the JICA Feasibility Study on the "Rehabilitation of Irrigation and Drainage Systems in the River Basins of Southern Sri Lanka". The Workshop focussed specifically upon issues of "sustainability" and "participatory management" as the basic approach to rehabilitation.

The Workshop Programme is at Annex 1.

List of participants is at Annex 2.

WORKSHOP PROCEEDINGS

1. INAUGURATION

The proceedings of the workshop commenced with Mr.K.Thuraijaretnam, Addl. Secretary, M/IP&E, taking the chair, deputizing for the Secretary, M/IP&E, who was out of the country. Associated with Mr.Thuraijaretnam were Mr. L.T.Wijesooriya, Director general Irrigation and Mr.M.Fujioka, Team Leader, JICA Study Team.

Mr. Thuraijaretnam making the opening address said that the focus of the workshop was on the sustainability of participatory management. In the context of participatory management he explained sustainability as the degree of flexibility a group should have to accommodate change and be able to adjust to an acceptable degree. In this regard a key role is assigned to farmers and Farmer's Organizations (FOs) as against the bureaucrats.

Recalling his own experiences, Mr.Thuraijaretnam noted that in order to make FOs function effectively the farmers must get significant benefits and the scheme itself should be in good working order. He also noted that for FO sustainability farmers must get maximum benefits and farmer representatives be socially acceptable.

Concluding his address Mr.Thuraijaretnam said that the findings to be presented would constitute valuable base material and the discussion that would follow should benefit the Study team and help formulate more meaningful Operation and Maintenance (O&M) plans.

Mr. L.T.Wijesooriya in his address thanked the organizers for the invitation and stated that the workshop is about an important subject, namely, sustainability of participatory management in relation to after care programmes for O&M. He said that it was a timely and opportune moment to deliberate on the project. It would be possible to establish a baseline as to what to look for after the project. It also provides the opportunity to consider the relevance and applicability of participatory management in the context of the south where both drainage and irrigation are involved.

He noted that the key issue addressed by the workshop, namely, participatory management is yet an unfinished journey in moving towards goals of irrigation management. Handing over of schemes is of significant concern to the department, which continues to learn lessons in this regard. Participatory management has

several areas of concern, such as, O&M and cost sharing; operation of schemes and water distribution; and, decision making at all levels of a scheme.

In conclusion Mr. Wijesooriya noted that in an era when major changes and transformations were taking place in all spheres of irrigation management, adapting project management is one of the issues being addressed in the process. The workshop would help assess and look out to the future.

Mr. M. Fujioka, Team Leader, JICA Study Team, addressing the Workshop said that the study was carried out during 1995 and 1996 jointly by Japanese and Sri Lankan experts. The Study Team conducted extensive field work. They met with a wide cross section of farmers. Consultations were held with farmers regarding the problems and issues of rehabilitation, maintenance and management of the respective irrigation schemes. He stated that they were happy to have had the opportunity to work with and looked forward to further collaboration with Sri Lankan professionals in formulating a good project.

Mr. Fujioka noted that donors and government are increasingly looking for sound O&M and management approaches and practices built into rehabilitation projects in order to make such projects viable and sustainable. In this regard farmers and farmer organizations have a key role to play in the rehabilitation and aftercare process. Therefore joint management approaches and system turnover are necessary ingredients of a sound rehabilitation project. This raises the issues that will be addressed by this Workshop, namely, sustainability and participatory management in irrigation systems.

Mr. Fujioka, in conclusion, thanked the Sri Lankan professionals who assisted in the work of the Study Team and looked forward to developing a sound major irrigation rehabilitation project for Southern Sri Lanka.

2. SESSION 1 : SYSTEM REHABILITATION AND O&M

Mr. M. Fujioka, Team Leader of the JICA study Team, making the presentation said that the studies in this component proceeded from a diagnostic assessment of existing maintenance conditions on the basis of physical investigations and farmer's observations. Two aspects were studied,

a. System Maintenance, the identification of maintenance conditions according to key factors on a scale of 1 to 5, from "no maintenance" to "excellent". The majority of the schemes investigated were poorly maintained.

b. Maintenance Capacities, the capacity of the Irrigation

department to maintain the schemes. It was found that main channels had one labourer for 2km and distributory channels had one labourer for 3/4km. Maintenance capacity was largely manual with little machine capacity.

On the basis of the analysis of the current maintenance conditions, capacities and performance four scenarios of possible action for improving system rehabilitation and operation and maintenance were presented.

Scenario 1

Increase government funding. It was noted that this would be difficult in the context of current budgetary constraints.

Scenario 2

Transfer ID jobs to the private sector. It was noted that the private sector capacity available locally was inadequate.

Scenario 3

Build new maintenance capacity.

Scenario 4

Hand over to FOs. It was noted that the current accomplishment of FOs was not remarkable.

While FOs execute irrigation works on distributory and field channels, they will find it difficult to take over in the short term due to the poor maintenance conditions of most of the schemes. Hence the third scenario of building new capacity appears to be the feasible strategic option in the short term.

Mr.N.T.Atukorale, Deputy Director, O&M of the Irrigation Department presenting on behalf of the Senior Deputy Director, said that there were many views on poor O&M. For some poor O&M was due to the inadequacy of funds, for others it resulted from the poor output of labourers. He said that both these points of view were right and perhaps there were more reasons. However what is important is that more can be done with the available resources.

- a. More interest of those concerned down the line from the top is necessary.
- b. Better and more programming of O&M is necessary. Maintenance programming should be not only on paper but also be practiced. Inputs by superior officers is inadequate.

This raises the question of motivation and incentives for better performance. Importance given to maintenance as against construction is insufficient. It is also necessary to enhance maintenance capacities and for this mechanization is necessary. Further work norms are required so that maintenance programmes could be worked down to last labourer.

Regarding the proposal for the establishment of departmental maintenance units, Mr. Atukorale noted that the current government policy was for privatization. He noted that originally maintenance labourers were casual and had been made permanent subsequently, and noted the tendency for less work to be done when made permanent. Therefore the feasibility of the privatization of maintenance units should be examined so that the government would pay for services.

It was also noted that the ID was overloaded with many development projects, resulting in the inadequacy of staff. This led to delays in construction tasks related relegating maintenance to a low priority status. He noted that maintenance should become a specialization.

Mr. Thurairajaratnam, leading the discussion from the Chair, said that opposing views had been presented and selective mechanization accepted as the way out. While funds may be inadequate better programming and motivation can go a long way in improving O&M performance. Regarding the option of handing over maintenance to FOs, the poor condition of the schemes would not make this feasible in the short term. Hence he suggested cooperative maintenance between the Government and the FOs could schemes going. The shortage of local capacity would make the privatization option difficult to work in the immediate context.

In the discussion that followed following points were made.

a. It is necessary to address as to how maintenance can be made more prestigious and high priority in the context of the current less prestigious and low priority perception of engineers.

b. Same amounts of funds for O&M have produced different results in different schemes, and the experience has been the quality of maintenance through better programming and higher priority. The ID should give rewards for better maintenance.

c. While machinery may be necessary to enhance maintenance capacity, this should not lead to replacing people who would be earning a living from maintenance work. There is no doubt that in large schemes machinery is necessary.

d. Privatization also involves funds to pay for maintenance services. Hence the establishment of machinery units under the department should be considered.

e. As far as handing over to FOs was concerned it was stated that Walawe and Murutalawe FOs would not be able to take over totally. Hence a joint programme is necessary in these schemes.

f. Introduction of enhanced machine capacity for maintenance should be selective and appropriate machinery should be used. The front-end loader with back hoe for D channel maintenance was cited as an example.

g. For FOs to take over they should be viable, and be financially sound. While there are many studies on handing over of O&M to FOs, the possibility for them to become viable on a large scale is yet inconclusive.

h. The importance of preventive maintenance was noted.

i. Maintenance is seen as a costly activity due to the tendency to assign overheads and any residual costs that cannot be charged to other activities being set off against maintenance.

j. Improving maintenance should also concern how funds are spent. It is necessary to check on physical output. Better budgetary control is necessary through appropriate objects and item codes.

k. Incentives for better maintenance should go hand in hand with disincentives for poor maintenance. Rent-free quarters for maintenance staff was considered a necessary incentive to improve maintenance.

l. Scenario 4 had not figured very much in the discussions. Options of farmer joint-management and the feasibility of channelling of funds through such arrangements should be considered. Government policy is to handover maintenance to farmers.

m. Improving maintenance of irrigation schemes should always be considered in the context of implications for improving agriculture. All too often water distribution and irrigation management is considered in isolation from its implications for the practice of agriculture.

3. SESSION 2 : AGRICULTURAL DEVELOPMENT AND PROTECTION OF THE ENVIRONMENT

Mr.A.K.S.B.Jinendradasa, Team Member of the JICA Study Team, presenting the findings in respect of agricultural development and protection of the environment reiterated the importance of recognizing that water and agriculture go together. Targets to improve incomes and uplift living conditions is mainly through agriculture.

The presentation reviewed the cropping patterns of the three

schemes studied, viz., Walawe, Muruthalawe and Badagiriya. The staggering of cultivation, extent to which other field crops (OFCs) are cultivated and the pattern of paddy/OFC rotation reflected the adjustment of cultivation practices to water availability. The three schemes presented water situations ranging from water shortages to floods. Muruthalawe presented situations of no water to flooding.

Key issues identified by the study were presented. These are as follows:

Agriculture:

- a. the demand for land preparation capacity during the peak cultivation period,
- b. the assurance of the availability of good quality seed paddy,
- c. assuring the availability of straight fertilizers in quantity and place,
- d. the increasing costs and environmental hazards of chemical weed control and the feasibility of machine transplanting on account of the high cost of labour,
- e. the high costs of chemical pest control and the sustainability of Integrated Pest Management (IPM) after FAO project is over,
- f. making available agricultural extension to the farmer on a day to day basis following the withdrawal of krushi vyapthi sevaka (KVS),
- g. making available credit and marketing facilities for encouraging crop diversification, and,
- h. the tendency for agricultural insurance to be perceived as a pre-condition for bank loans.

Environment:

- a. the environmental hazards of using chemicals and fertilizers and measures for control, monitoring and feedback, and,
- b. health hazards arising from stagnant water pools.

Dr. Terrence Abeysekera, Programme Officer of the World Bank, Colombo, leading the discussion, emphasised the need to keep the means-ends relationship in view. Agricultural development issues can be considered from two perspectives.

Scope for Improvement:

- a. Area expansion, can the area under cultivation be

increased. This concerns the intensity of land use and land available for new cultivation. While the project area may present some potential in respect of the first, there is not much scope in respect of the second.

b. Increasing yields, can yields be increased. There may be potential in some areas.

c. Better crop mix, scope for diversification. The project area is paddy dominant, but it is possible to aim at a better crop mix.

d. Sustainability of cultivation, scope for eliminating fluctuations in the supply of water.

Problem Areas for Project Benefits:

a. Supply of good quality seed.

b. Crop diversification.

c. After care operations for agriculture.

In the discussion that followed following points were made.

a. Stagnant water pools have been viewed as health hazards, however these have been kept for other uses of water during the closed season.

b. It is necessary to look for other uses of water when planning for the rehabilitation of irrigation schemes. The question of water for what purposes. The tendency has been to consider water primarily in terms of paddy cultivation, however rice yields between Rs.700 - 800 per acre. Hence the need to look at water in a new way, in terms of high value crops, inland fisheries, industry etc.

c. Improve land productivity for example through the introduction of mechanization for transplanting, introduction of new crops.

d. Mechanization should not exclude labour but introduce a mix of machinery and labour. It is important that one should not get carried away by mechanization as a solution to the low output of labour. Agriculture needs to be modernised, and modernisation is not necessarily mechanization. What is important is the better use of resources. The south has highest unemployment as well as educated youths and in view of the project location in the south it is important to keep in view the social aspects.

e. It is necessary to consider how the area under OFCs can be extended.

f. The measures to address problems of the availability of agricultural extension must be viewed in the context of the current extension system. The present agricultural extension system is an integrated one where the departments of Agriculture, Export agriculture and Coconut Cultivation Board comes together to operate Field Extension Teams (FETs) which work with FOs. The closure of the extension office on several days of the week is necessitated by the withdrawal of the KVS from the extension system.

g. There is a tendency to take a pessimistic view of paddy as a low value crop. It is necessary to address the question of how to produce a high value product to the market. The international price of rice is increasing and hence there is the question of food security. Further the OFC option is also a limited one.

h. In the project area the main crop will continue to remain paddy and therefore the critical question is as to how costs can be reduced and yields improved in order to get a better margin. If rehabilitation can save water then that excess can be used for other purposes rather than replace paddy with other uses for water.

i. Paddy is a low labour intensive crop and therefore alternative employment opportunities for farmers by way of off-farm employment needs to be explored.

4. SESSION 3 : SOCIAL ASPECTS

Mr.N.Gamathige, Member, JICA Study Team, presented the findings of the benchmark socio-economic survey. The survey was conducted in 25 representative FO areas selected from the three irrigation schemes and a sample of 307 farm families. Farm families were interviewed using a structured questionnaire. Information gathered was in the following areas:

- a. Demographic characteristics of beneficiaries,
- b. Socio-economic characteristics of farm families,
- c. Land tenure and cultivated area,
- d. Rural institutions,
- e. Health care, housing and welfare,
- f. Income, expenditure and savings,
- g. Women participation and activities,
- h. Water allocation and distribution, and,
- i. Handing over to farmers.

The basic objective of the survey was to assess rehabilitation status and assess level of community participation. The survey revealed that,

a. Farmers show a keen interest in supporting the proposed rehabilitation programme on account of the poor status of maintenance and the socio-economic benefits to be gained thereby.

b. The existence of different categories of farming interests such as small farmers, lessees and ande cultivators calls for the definition and identification of the target population in developing a strategy for strong community participation.

c. Past experiences of beneficiary participation has not been satisfactory and hence it is necessary to work out how more responsibilities would be handed over to beneficiaries in respect of planning, execution and after care of rehabilitation.

d. The extent to which rural communities are prepared and can be prepared for accepting more responsibilities and under what conditions they can contribute in ensuring sustainability of rehabilitation.

e. While there are women's organizations in the area only about 25% of the women of the farm families surveyed were members and reported engaging in income generating activities. Hence strategies for involvement of women in FO activities need to be worked out.

Mr.S.M.K.P.Nanadaratna, Research Associate of Irrigation Rehabilitation Management Unit, NIRP leading the discussion stated that the focus is on sustainability and participatory management, as being the two critical issues of the workshop. He considered sustainability to extend to economic, social and environmental aspects, and participatory management to mean getting farmers involvement from the very beginning.

There are several socio-economic factors that bear on these issues.

a. The proportion of ande cultivators is about 50% and how they could be brought into FOs is an issue.

b. Unemployed youth is about 40% and how they could be absorbed in productive employment is a further important issue that must be addressed.

c. The experience of building FOs at the village/tract/unit level has not been that successful, the approach has been wrong, their problems have not been addressed, and wrong things have been given. Key questions are as to how farmer interest can be sustained as a major stakeholder and how can their problems be addressed, such as credit and input supplies.

How far does the project provide the possibility of testing out institutional models suitable to the social and cultural situation of the area that would permit handing/taking over schemes for maintenance and aftercare.

The following points were made in the discussion that followed.

a. The Gambaraya system which is an important institutional arrangement for paddy cultivation in the area is not evident in the survey findings.

b. There is 40% tenancy and how does this affect productivity. How can tenants be supported to improve productivity.

c. How can a machinery unit be made to become participatory. While there is a need for enhancing maintenance capacity through selective mechanization, it is necessary to work out how a machinery unit can be integrated in a participatory management process.

5. SESSION 4 : PARTICIPATORY MANAGEMENT AND SYSTEMS TURNOVER

Mr.K.S.R.de Silva, Project Director, NIRP, presenting the aftercare experience of the NIRP stated that the project has so far rehabilitated 170 minor and 3 major schemes. The hierarchy of NIRP aftercare objectives are raising the standard of living by increasing incomes through increasing agricultural production. rehabilitation of essential infrastructure to distribute water to all farmers is an essential pre-condition for increasing agricultural production.

The necessary condition for scheme completion is turnover to FOs, distributory works and below immediately after completion and main channels and headworks two years later. Therefore FO sustainability is a necessary condition for project success. Two conditions for viability of FOs are that they should be financially sound and that they should have management capability. The NIRP's experience of FO sustainability is based upon the completed major and minor schemes. It has been found that FOs generate approximately 25% of maintenance costs.

It was noted that there are bound to be many errors in construction and hence there are bound to be some rehabilitated schemes that have operational problems. In this context FOs will face problems in maintenance of the schemes that have been handed over. It is necessary to introduce and instal a maintenance programme for which purpose a manual has been prepared and is being tested. Strengthening FO capability involves training. The aftercare programme which was not a project component originally was introduced at its mid-term review. The aftercare programme is

therefore a project within a project.

The project framework is as follows.

Outputs:

- a. Improved O&M,
- b. Viable FOs,
- c. Strengthened Implementing Agencies (Irrigation Department, Provincial Engineering Units and Department of Agrarian Services), and,
- d. Conserved environment.

Activities:

- a. O&M improvements, and,
- b. Institutional development.

Inputs:

- a. Institutional support,
- b. Engineering backup,
- c. Water management,
- d. Environment and forestry, and,
- e. Agricultural extension.

Mr. I. K. Weerawardena, Consultant, NIRP, following up as discussant noted that during rehabilitation all the efforts are focussed upon civil works and institutional development takes backstage. It is necessary to ensure that civil works run to target and hence there is slippage in institutional development activities. The purpose of aftercare is precisely to ensure that the project focusses on institutional strengthening.

He noted that aftercare is a new concept which has institutional development as its major objective. Hence the programme seeks to ensure that,

- a. O&M plan is implemented,
- b. FO capacity for water management is established, any other activities to be undertaken only if the FO can handle them, and,
- c. Any errors in rehabilitation are attended to.

Mr. Nanda Abeywickrema, Member, JICA Study Team, making his presentation of findings proceeded from the NIRP strategy that rehabilitated irrigation projects need aftercare. However he noted that while NIRP experience is based largely upon minor schemes, the proposed Southern Integrated Rehabilitation Project (SIRP) is about the rehabilitation of major irrigation schemes. He noted that any programme for participatory management must necessarily take into account the determinants for long-term sustainability of all institutions, both FOs and government agencies, involved in irrigated agriculture as well as the milestones of participatory management and systems turnover.

Reviewing the current situation in SIRP, Mr. Abeywickrama noted that, while some degree of participatory management is evident in all systems, there is no system turnover other than in Badagiriya. The FOs in SIRP demonstrate different stages of institutional evolution. While they demonstrate a high degree of awareness the institutions show much variability in terms of capacity for participatory management.

He proceeded to raise several issues.

- a. The split in the project management system between the ID and the Irrigation Management Division (IMD) of the Ministry.
- b. The establishment of Project Management Committees (PMCs) and Project Managers (PMs) for Walawe and for Muruthalawe.
- c. Rationalization of FO boundaries according to hydrological boundaries.
- d. Linkages and coordination between MIPE and MALF to rationalize and strengthen FOs.
- e. Establishment of an M&E programme for FOs.

The following were the highlights of the discussion.

- a. Whether we are looking at aftercare in a holistic manner, are we looking at the whole unit in all its aspects including agriculture etc. It was noted that this may be possible in the case of minor schemes and settlements where the location of paddy and homesteads is known, but in SIRP it is not possible to identify the whole farm.
- b. What are the linkages between AMA with common group and IAEP with a reference group? Can reference group members become members of FOs? Can DAS and DOA activities in this regard be coordinated if not integrated?
- c. That different agricultural pursuits such as paddy, coconut, livestock etc., by themselves not viable and hence the rationale for integration in the PMC.
- d. That the aftercare and mainstream NIRP strategy are the same, they deploy social mobilizers and institutional organizers respectively for institutional development. Can FOs be really improved by the aftercare programme. Are we addressing the real problems of FO institutional strengthening?
- e. The aftercare programme cannot address all the problems of irrigated agriculture. Its objective is to turn around

the 80:20 emphasis on civil works to institutional development during the early phase of rehabilitation to one of 80:20 in favour of institutional development and then also to linkup with other institutional development programmes.

f. In looking at the NIRP experience and drawing lessons for SIRP the question was raised as to whether the first phase of rehabilitation should necessarily be focussed on civil works, with its primary concern being on preparation of estimates, contracts for FOs. It was noted that this emphasis on civil works also has a tendency to reduce the role of IOs to one of supervisors of FO contracts. Hence the question as to why SIRP cannot start with institutional development and then follow up with rehabilitation.

g. In the above context the question was raised whether it would be possible to sustain FO interest and involvement without rehabilitation work. It was suggested that FOs should be formed without the carrot of rehabilitation. In fact there are several examples of successful FO formation built around water issues, the rallying point for farmer involvement being water issue problems. Hence institutional development should start with addressing water management problems of farmers and develop the institution around that common concern.

h. Where farmer needs are met/addressed through FOs they have done well, focussing on the question of incentives for participation. Hence farmer needs should be addressed.

6. SESSION 5 : LEGAL ASPECTS

Mr. R.P.Wimalasena, Commissioner of Labour, in his presentation focussed on the provisions of the Agrarian Services Act No. 58 of 1979 as ammended by Act No. 4 of 1991 in conjunction with the Irrigation Ordinance No. 32 of 1946.

Purposes of the Agrarian Services Act:

- a. Provide security of tenure to tenant cultivators.
- b. Regulate the rent payable to farmers.
- c. Provide for the regulation of the productivity of agricultural lands.
- d. Establish Agrarian Services Committees.
- e. Settle disputes relating to agricultural lands.

Historical Background of Agrarian Services Laws:

- a. The Paddy Lands Act No. 1 of 1958.
- b. The Agricultural Productivity Law No. 2 of 1972.
- c. Agricultural Lands Law No 43 of 1973.
- d. Agrarian Services Act No. 58 of 1979.

e. Agrarian Services Ammendment Act No. 4 of 1991.

Parallel Legislation:

- a. The Irrigation Ordinance No. 32 of 1946.
- b. The Land Development Ordinance No. 19 of 1935.
- c. Mahaweli Authority of Sri Lanka Act No. 23 of 1979.

The presentation proceeded to examine the provisions of the Agrarian Services Act.

a. Efficient cultivation of Agricultural lands.

b. Tenurial aspects, whereby legal provisions which were under the Common Law were built into the Paddy Lands Act. The criticism of the concept of tenant cultivator whereby obligations of the Common Law which had established a relationship in this regard was changed by the Paddy Lands Act setting out the rights and obligations of owners and cultivators was noted.

c. Powers of the commissioner to make rules regarding productivity and efficient management of agricultural lands.

d. Appointment of Cultivation Officers, vested with the powers of Vel Vidanes.

e. Offences relating to irrigation.

f. Agrarian Services Committee established as a body corporate, to coordinate agricultural activities and implement government policy on agriculture, thereby making it an agent of the government.

g. Farmer Organizations. It was noted that the elected Cultivation Committees under the Paddy Lands Act gave way to appointed Farmer Organizations under the Agricultural Lands Law. During the period 1979-91 there was no statutory body for farmer organization until the ammendment to the Agrarian Services Act in 1991 whereby FOs were established.

h. Interpretations, of minor and major irrigation.

Mr.I.K.Weerawardena, Consultant, NIRP, presented the provisions of the Irrigation (Amendments) Act No. 13 of 1994 which sets out new institutional arrangements for managing irrigated agriculture.

a. The substitution of Farmer Organization for Cultivation Committees, and the powers and functions of FOs.

b. The exemption of payment of irrigation rate in respect of interprovincial schemes and the empowerment of FOs that have

taken over O&M of distributory canals to impose and recover a levy.

c. Establishment of Project Management Committees, and Sub-Project Management Committees as specified by the Secretary to the Ministry.

d. The composition of PMCs.

e. The appointment of Project Managers.

The discussion that followed raised the following matters.

a. That FOs are not aware of the registration process, legal powers arising from the amendments to the Irrigation Ordinance. Hence awareness creation, farmer education is necessary and ID, IMD, DAS have a key role to play in this regard.

b. There are weaknesses in the enforcement of legal provisions in the absence of mechanisms to enforce. There are no Rural Courts now and FOs must take prosecutions to the Magistrate's Courts which leads to a long process of litigation.

c. Primary courts have jurisdiction and hence the suggestion to establish such Courts in major schemes.

d. The role of an FO as a conflict resolution body. However it was noted that irrigation offences are not matters for conciliation.

e. Appoint and train special officers to take up offences in courts.

WORKSHOP PROGRAMME

WORKSHOP

on

Sustainability of Participatory Management for
Major Irrigation Systems after Rehabilitation

**Presentation of the Findings of the JICA Study Team on the
Rehabilitation of Irrigation and Drainage Systems in the
River Basins of Southern Sri Lanka**

Date : Tuesday 9th April

Venue : IIMI Board Room

8.15 am - 8.45 am: Registration

8.45 am - 9.15 am: Inauguration

- Address by Mr J. Medagama,
Secretary, M/IP&E
- Address by Mr L.T. Wijesooriya,
Director General, ID
- Address by Mr M. Fujioka,
JICA Study Team Leader

Chairman : Mr K Thurairajaretnam

9.15 am - 10.15 am : Session I

System Rehabilitation and O&M

Presentations:

- Mr M. Fujioka, JICA Study Team Leader
- Mr D.W.R.M. Weerakoon, Snr. Dy.D.,
(S.M & O.M), ID

Discussant:

- Mr Godfrey Silva, Coordinator,
SLNP, IIMI

10.15 am - 10.30 am : Coffee

10.30 am - 11.30 am : Session II

Agricultural Development and Protection of
the Environment

Presentations:

- Mr A.K.S.B. Jinendradasa, Member,
JICA Study Team
- Mr I. Seko, Member,
JICA Study Team

Discussant:

- Dr Terrence Abeysekera, Programme
Officer, World Bank, Colombo

11.30 am - 12.30 pm : **Session III**
Social Aspects
Presentation:
- Mr N.Gamaathige, Member,
JICA Study team
Discussant:
- Mr S.M.K.P. Nandarathna, Research
Associate, IRMU, NIRP

12.30 pm - 1.30 pm : **Lunch**

Chairman : Mr L.T.Wijesooriya

1.30 pm - 2.30 pm : **Session IV**
Participatory Management and Systems
Turnover
Presentations:
- Mr N.Abeywickrema, Member,
JICA Study Team
- Mr K.S.R.de Silva, Project Director,
NIRP
Discussant:
- Mr I.K.Weerawardena, Consultant, NIRP

2.30 pm - 2.45 pm : **Coffee**

2.45 pm - 3.45 pm : **Session V**

Legal Aspects

Presentation:

- Mr W.P.Wimalasena, Commissioner of
Labour

Discussant:

- Mr I.K.Weerawardena, Consultant, NIRP

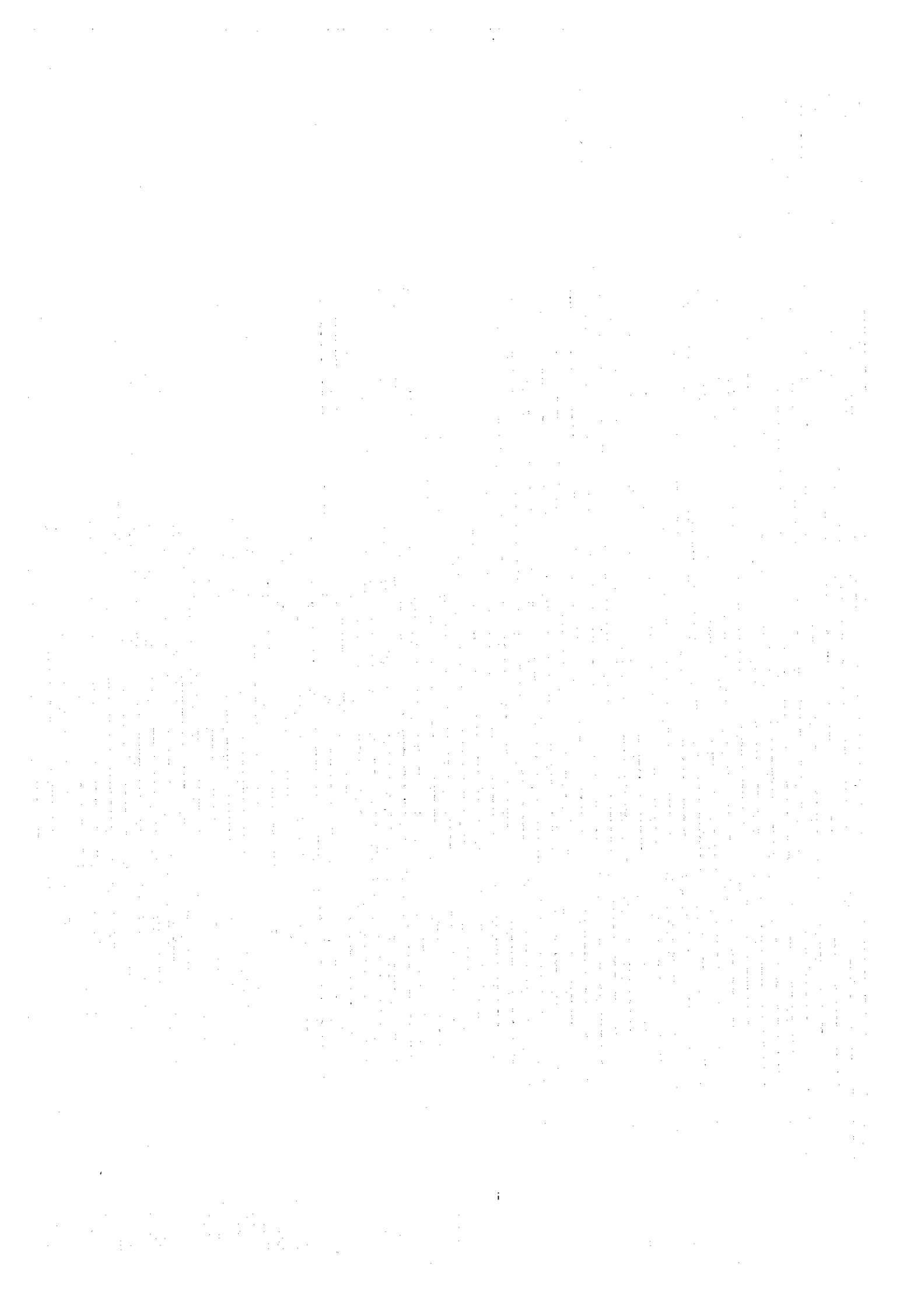
3.45 pm - 4.15 pm : **Concluding Session**

PARTICIPANTS

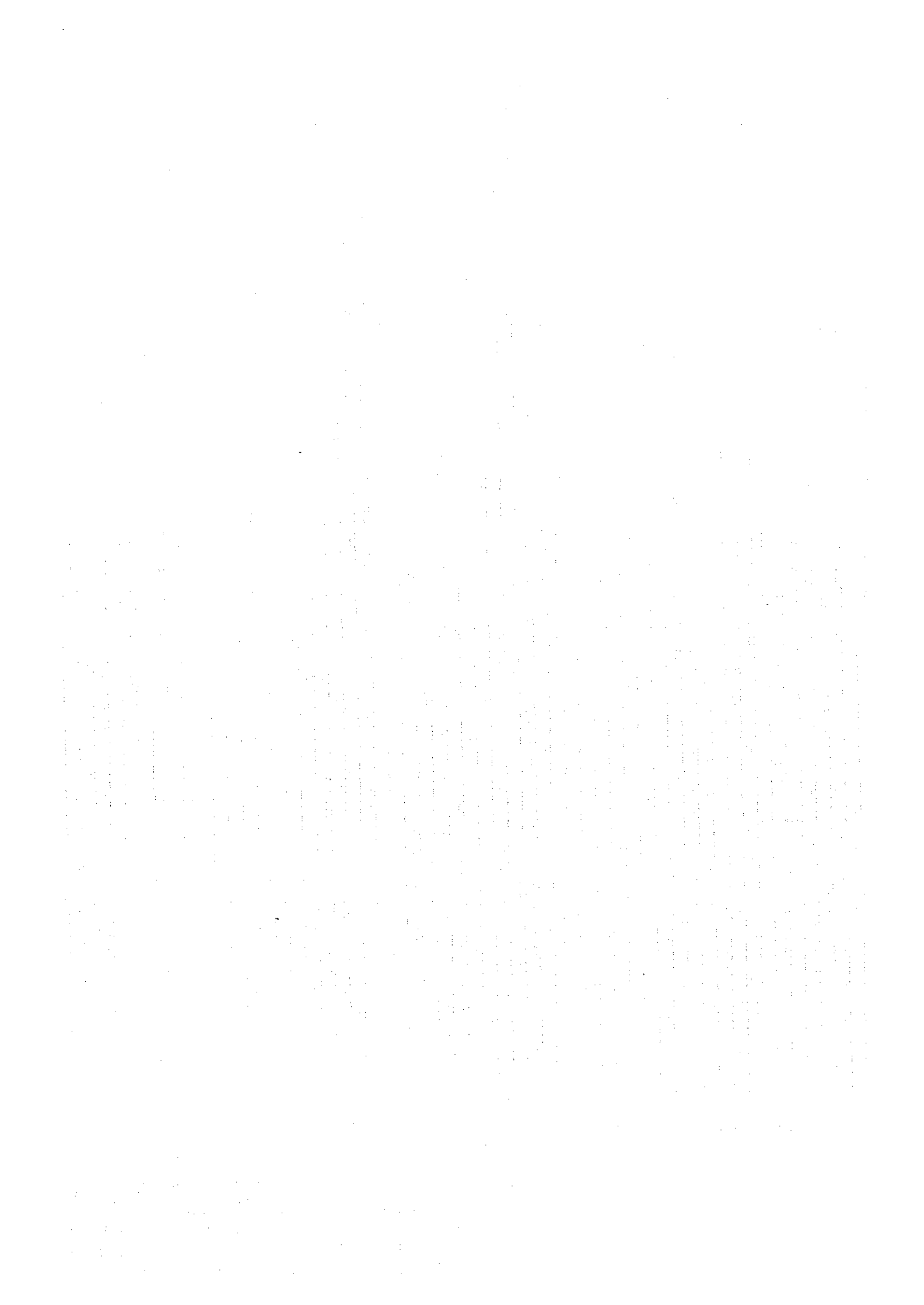
1. Mr K.Thuraijaretnam - Addl. Secy., M/IP&E
2. Mr L.T.Wijesooriya - Director General, ID
3. Mr Ananda Gunasekera - Director/IMD
4. Mr R.Ratnayaka - Director/WRD
5. Mr M.Sinnappoo - Snr. Dy.D., ID
6. Mr K.S.R. de Silva - Project Director, NIRP
7. Mr K.T.Atukorale - Dy.D., (O&M)/ID
8. Ms J.Amarakoon - Dy.D., Planning
9. Mr S.A.P.Samarasinghe - Addl. D.,/IMD
10. Mr N.J.Baranasooriya - C.I.E/ID
11. Mr S.P.P.Gamage - C.I.E/id
12. Dr S.L.Amarasiri - Director General, DOA
13. Mr D.B.Weeratunge - Extension Communication Centre, DOA
14. Mr R.S.Abeysekera - Provincial Director of Agriculture, Southern Province, PC
15. Dr Terrence Abeysekera - Programme Officer, World Bank, Colombo
16. Mr I.K.Weerawardena - Institutional Management Specialist, Central Management Cell, NIRP
17. Ms P.I.L.Imbulana - C.I.E./NIRP
18. Mr S.M.K.P.Nandarathna - Research Associate, IRMU, NIRP
19. Mr W.P.Wimalasena - Commissioner of Labour
20. Ms Kanti de Silva - National Resource Management, C.E.A

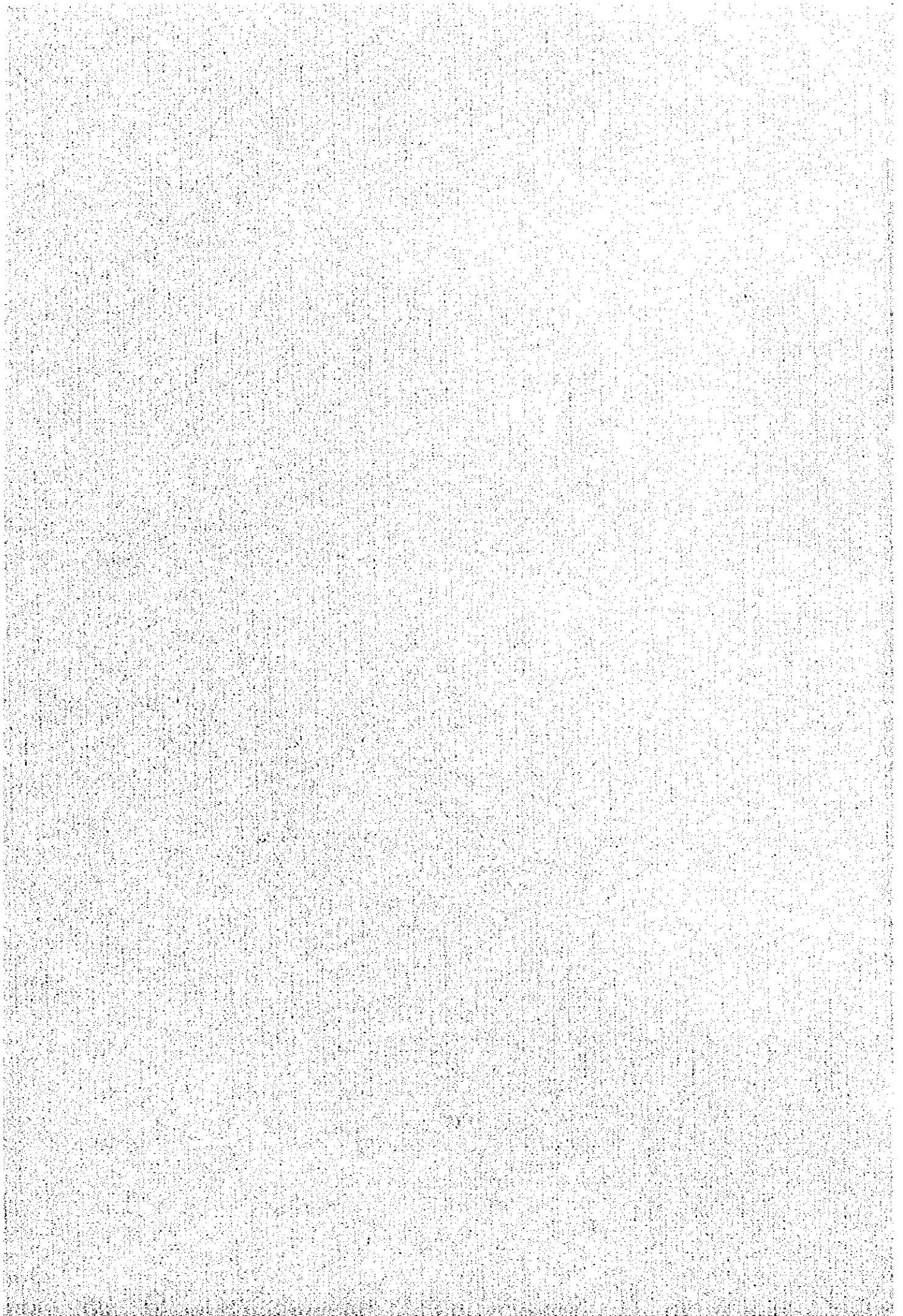
JICA STUDY TEAM

1. Mr M.Fujioka - Team Leader
2. Mr I.Seko - Member
3. Mr K.Iwata - Member
4. Mr N.Abewickrama - Member
5. Mr A.K.S.B.Jinendradasa - Member
6. Mr N.Gamaathige - Member



[The following text is extremely faint and largely illegible. It appears to be a multi-paragraph document, possibly a report or memorandum, containing various sections of text. Due to the low contrast and resolution, the specific content cannot be accurately transcribed.]





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