Table 5.2-6 Summary of Drainage Canal Design of Ream Kon Rehabilitation Sub-project

Drainge Canal	Canal Length			Design	
	Total	Rehab.	New	Bottom Width	Height
MD 1	7,200	0	7,200	10.0 m - 7.5 m	2.8 m - 2.6 m
CD-1	9,400	0	9,400	7.0 m - 5.0 m	2.1 m - 1.9 m
CD-2	6,400	3,800	2,600	10.0 m - 5.0 m	1.7 m
CD-3	3,600	0	3,600	7.0 m	2.2 m
Sub-Total	26,600	3,800	22,800		
SD-1	4,100	0	4,100	2.2 m	1.2 m
SD-2	4,100	0	4,100	2.6 m	1.4 m
SD-3	3,600	0	3,600	2.6 m	1.4 m
SD-4	3,100	0	3,100	2.8 m	1.5 m
SD-5	3,400	0	3,400	4.0 m	1.6 m
SD-6	2,500	0	2,500	2.8 m	1.5 m
SD-7	1,500	0	1,500	2.0 m	1.0 m
SD-8	1,400	0	1,400	2.0 m	1.0 m
SD-9	1,400	0	1,400	2.2 m	1.2 m
Total of SD	25,100	0	25,100		
Grand Total	51,700	3,800	47,900		

Prepared by JICA Study Team

Table 5.2-7 Type and Number of Drainage Related Structures of Ream Kon Rehabilitation Sub-project

Structure	nos.	Structure	nos.
Drainage Culvert	29	Drainage Gate	1

Prepared by JICA Study Team

Table 5.3-1 Present/Without-project & With-project Crop Production: Por Canal Rehabilitation Sub-project

A. Present/Without-project Crop Production

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Direct Sowing)				Wet Season (Transplanting)				Wet Season (Direct Sowing)				Dry Season				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																				
Normal Irrigation Paddy Field	0																			
Supplemental Irrigation Paddy Field	100	100	5	2.5	250	50	2	2.2	110	50	2	1.5	75					200	10	435
Rainfed Paddy Field 1/	1,970	310	15	2.5	775	985	48	1.7	1,675	985	48	1.0	985					2,280	110	3,435
Rice Total	**2,070**	**410**	**20**	**2.5**	**1,025**	**1,035**	**50**	**1.7**	**1,785**	**1,035**	**50**	**1.0**	**1,060**					**2,480**	**120**	**3,870**
Upland Crops/Vegetables:																				
Upland Crops	-																	0		0
Vegetables	-																	0		0
Upland Crops/Vegetables Total																		**0**		**0**
Overall	-	410	20	-	-	1,035	50	-	-	1,035	50	-	-	0				**2,480**	**120**	-

1/: Rice production under pumping irrigation in early wet season

B. With-project Crop Production

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Direct Sowing)				Wet Season (Transplanting)				Wet Season (Direct Sowing)				Dry Season				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																				
Normal Irrigation Paddy Field	1,940	1,120	58	3.0	3,360	610	31	3.5	2,135	610	31	2.8	1,708					2,340	121	7,203
Supplemental Irrigation Paddy Field																				
Rainfed Paddy Field 1/						360	19	1.7	612	360	19	1.0	360					720	37	972
Rice Total	**1,940**	**1,120**	**58**	**3.0**	**3,360**	**970**	**50**	**2.8**	**2,747**	**970**	**50**	**2.1**	**2,068**					**3,060**	**158**	**8,175**
Upland Crops/Vegetables:																				
Upland Crops (≒70%) 2/	-	130	7	1.0	130									70	4	1.0	70	200	10	200
Vegetables (≒30%) 3/	-	60	3	9.5	570									30	2	9.5	285	90	5	855
Upland Crops/Vegetables Total		**190**	**10**	-	**700**									**100**	**5**	-	**355**	**290**	**15**	**1,055**
Overall	-	1,310	68	-	-	970	50	-	-	970	50	-	-	100	5	-	-	**3,350**	**173**	-

1/: Cultivation of wet season rice under rainfed conditions 2/: Average of mungbeans & soybeans 3/: Average of watermelon & cucumber

C. Increment (With-project - Without-project)

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Direct Sowing)				Wet Season (Transplanting)				Wet Season (Direct Sowing)				Dry Season				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																				
Normal Irrigation Paddy Field	1,940	1,120	58		3,360	610	31		2,135	610	31		1,708					2,340	121	7,203
Supplemental Irrigation Paddy Field	-100	-100	-5		-250	-50	-2		-110	-50	-2		-75					-200	-10	-435
Rainfed Paddy Field 1/	-1,970	-310	-15		-775	-625	-29		-1,063	-625	-29		-625					-1,560	-73	-2,463
Rice Total	**-130**	**710**	**38**	**0.5**	**2,335**	**-65**	**0**	**1.1**	**963**	**-65**	**0**	**1.1**	**1,008**	**0**	-	-	**0**	**580**	**38**	**4,306**
Upland Crops/Vegetables:																				
Upland Crops	-	130	7		130									70	4		70	200	10	200
Vegetables	-	60	3		570									30	2		285	90	5	855
Upland Crops/Vegetables Total		**190**	**10**	-	**700**	**0**	-	-	**0**	**0**	-	-	**0**	**100**	**5**	-	**355**	**290**	**15**	**1,055**
Overall	-	900	48	-	-	-65	0	-	-	-65	0	-	-	100	5	-	-	**870**	**53**	-

Table 5.3-2 Summary of Irrigation Canal Design of Por Canal Rehabilitation Sub-project

Irrigation Canal	Canal Length				Design			
	Total	Rehab.	New	Design Q(m3/s)	Bottom Width	Height	Left Bank Top Width	Right Bank Top Width
Main Canal 1	6,600	6,600	0	2.74 - 0.21	8.0 m - 4.0 m	3.3 m - 1.4 m	1.5 m - 1.0 m	4.0 m
S1 - 1	1,700	1,700	0	0.25	1.1 m	1.0 m	4.0 m	1.0 m
S1 - 2	1,600	1,600	0	0.24	1.0 m	1.0 m	4.0 m	1.0 m
S1 - 3	600	600	0	0.14	0.8 m	0.9 m	4.0 m	1.0 m
S1 - 4	1,000	1,000	0	0.23	1.0 m	1.0 m	4.0 m	1.0 m
S1 - 5	1,600	1,600	0	0.27	1.1 m	1.0 m	4.0 m	1.0 m
S1 - 6	1,700	1,700	0	0.17	0.9 m	1.0 m	4.0 m	1.0 m
S1 - 7	1,500	0	1,500	0.21	1.0 m	1.0 m	4.0 m	1.0 m
Total of S1	9,700	8,200	1,500					
Main Canal 2	6,100	5,100	1,000	1.20 - 0.28	4.0 m - 2.0 m	1.7 m - 1.3 m	1.5 m - 1.0 m	4.0 m
S2L - 1	500	0	700	0.14	0.8 m	0.9 m	4.0 m	1.0 m
S2L - 2	1,000	0	500	0.18	0.9 m	1.0 m	4.0 m	1.0 m
S2L - 3	1,500	0	700	0.28	1.1 m	1.1 m	4.0 m	1.0 m
S2L - 4	1,600	0	500	0.24	1.0 m	1.0 m	4.0 m	1.0 m
S2L - 5	1,500	0	700	0.28	1.1 m	1.1 m	4.0 m	1.0 m
Total of S2	6,100	0	3,100					

Table 5.3-3 Type and Number of Irrigation Canal Related Structures of Por Canal Rehabilitation Sub-project

Structure	nos.	Structure	nos.
Turnout	54	Foot Path Bridge	5
Check	31	Bridge	2
Terminal Structure	14		

Table 5.3-4 Summary of Drainage Canal Design of Por Canal Rehabilitation Sub-project

Drainage Canal	Canal Length			Design	
	Total	Rehab.	New	Bottom Width	Height
MD 1	9,300	0	9,300	13.0 m - 1.6 m	2.7 m - 0.9 m
CD-1	5,400	0	5,400	8.0 m - 7.0 m	2.6 m - 2.2 m
CD-2	4,600	0	4,600	2.8 m - 1.2 m	1.6 m - 0.7 m
Sub-Total	19,300	0	19,300		
SD-1	1,700	0	1,700	2.2 m	1.2 m
SD-2	1,800	0	1,800	2.6 m	1.5 m
SD-3	1,900	0	1,900	2.4 m	1.4 m
SD-4	1,100	0	1,100	2.0 m	1.1 m
SD-5	1,200	0	1,200	2.6 m	1.4 m
SD-6	1,800	0	1,800	2.6 m	1.4 m
SD-7	1,500	0	1,500	2.6 m	1.4 m
SD-8	1,500	0	1,500	2.6 m	1.5 m
SD-9	1,400	0	1,400	2.2 m	1.2 m
SD-10	900	0	900	2.0 m	1.1 m
Total of SD	14,800	0	13,900		
Grand Total	34,100	0	33,200		

Table 5.3-5 Type and Number of Drainage Structures of Por Canal Rehabilitation Sub-project

Structure	nos.	Structure	nos.
Drainage Culvert	9		

Table 5.4-1 Present/Without-project & With-project Crop Production: Damnak Ampil Rehabilitation Sub-project

A. Present/Without-project Crop Production

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Transplanting)				Wet Season (Transplanting)				Dry Season (Transplanting)				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																
Normal Irrigation Paddy Field	0															
Supplemental Irrigation Paddy Field	500					500	21	2.0	1,000	60	2	2.5	150	560	23	1,150
Rainfed Paddy Field	1,930					1,930	79	1.5	2,895					1,930	79	2,895
Rice Total	**2,430**					**2,430**	**100**	**1.6**	**3,895**	**60**	**2**	**2.5**	**150**	**2,490**	**102**	**4,045**
Upland Crops/Vegetables:																
Upland Crops	-													0		0
Vegetables	-													0		0
Upland Crops/Vegetables Total														**0**		**0**
Overall	-	0	0	-	-	2,430	100	-	-	60	2	-	-	**2,490**	**102**	-

B. With-project Crop Production

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Transplanting)				Wet Season (Transplanting)				Dry Season (Transplanting)				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																
Normal Irrigation Paddy Field	1,770					1,770	78	3.3	5,841					1,770	78	5,841
Pump Irrigation Field	500					500	22	3.3	1,650					500	22	1,650
Rainfed Paddy Field																
Rice Total	**2,270**					**2,270**	**100**	**3.3**	**7,491**					**2,270**	**100**	**7,491**
Upland Crops/Vegetables:																
Upland Crops (≒70%) 1/	-	240	11	1.1	264									240	11	264
Vegetables (≒30%) 2/	-	100	4	9.5	950									100	4	950
Upland Crops/Vegetables Total		**340**	**15**	-	**1,214**									**340**	**15**	**1,214**
Overall	-	340	15	-	-	2,270	100	-	-	0	0	-	-	**2,610**	**115**	-

1/: Average of mungbeans & groundnut 2/: Average of watermelon & cucumber

C. Increment (With-project - Without-project)

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Transplanting)				Wet Season (Transplanting)				Dry Season (Transplanting)				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																
Normal Irrigation Paddy Field	1,770					1,770	78		5,841					1,770	78	5,841
Pump Irrigation Field	500					500	22		1,650					500	22	1,650
Supplemental Irrigation Paddy Field	-500					-500	-21		-1,000	-60	-2		-150	-560	-23	-1,150
Rainfed Paddy Field 1/	-1,930					-1,930	-79		-2,895					-1,930	-79	-2,895
Rice Total	**-160**	**0**	-	-	**0**	**-160**	**0**	**1.7**	**3,596**	**-60**	**-2**	-	**-150**	**-220**	**-2**	**3,446**
Upland Crops/Vegetables:																
Upland Crops	-	240	11		264									240	11	264
Vegetables	-	100	4		950									100	4	950
Upland Crops/Vegetables Total		**340**	**15**	-	**1,214**	**0**	-	-	**0**	**0**	-	-	**0**	**340**	**15**	**1,214**
Overall	-	340	15	-	-	-160	0	-	-	-60	-2	-	-	**120**	**13**	-

Table 5.4-2 Summary of Irrigation Canal Design of Damnak Ampil Rehabilitation Sub-project

Irrigation Canal	Canal Length			Design				
	Total	Rehab.	New	Design Q (m3/s)	Bottom Width	Height	Left Bank Top Width	Right Bank Top Width
S1	4,800	4,800	0	1.07	11.0m - 2.0m	1.8m - 1.0m	4.0 m	1.0 m
S2	5,000	5,000	0	0.79	6.0m - 0.8m	1.4m - 1.0m	4.0 m	1.0 m
S3	7,800	7,800	0	0.98	11.0m - 2.0m	1.8m - 0.9m	4.0 m	1.0 m
Total of S	17,600	17,600	0					

Table 5.4-3 Type and Number of Irrigation Related Structures of Damnak Ampil Rehabilitation Sub-project

Structure	nos.	Structure	nos.
Turnout	62	Road Culvert	32
Check	15	Regulator (Temporary)	1
Terminal Structure	3		

Table 5.4-4 Summary of Drainage Canal Design of Damnak Ampil Rehabilitation Sub-project

Drainage Canal	Canal Length			Design	
	Total	Rehab.	New	Bottom Width	Height
SD-1	6,400	0	6,400	2.2 m - 1.8 m	1.1 m - 1.0 m
SD-2	6,800	0	6,800	5.5 m - 2.0 m	2.0 m - 1.0 m
SD-3	7,800	0	7,800	5.0 m - 2.0 m	1.8 m - 1.0 m
SD-4	7,200	7,200	0	-	-
Total	28,200	7,200	21,000		

Table 5.4-5 Type and Number of Drainage Structures Damnak Ampil Rehabilitation Sub-project

Structure	nos.	Structure	nos.
Drainage Culvert	35		

Table 5.5-1 Present/Without-project & With-project Crop Production: Wat Loung Rehabilitation Sub-project

A. Present/Without-project Crop Production

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Transplanting)				Wet Season (Transplanting)				Dry Season (Transplanting)				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																
Normal Irrigation Paddy Field	0															
Supplemental Irrigation Paddy Field	130					130	5	2.0	260	45	2	2.5	113	175	6	373
Rainfed Paddy Field	2,590					2,590	95	1.5	3,885					2,590	95	3,885
Rice Total	**2,720**					**2,720**	**100**	**1.5**	**4,145**	**45**	**2**	**2.5**	**113**	**2,765**	**102**	**4,258**
Upland Crops/Vegetables:																
Upland Crops	-													0		0
Vegetables 1/	-									30	1	5.8	174	30	1	174
Upland Crops/Vegetables Total										**30**	**1**	**-**	**174**	**30**	**1**	**174**
Overall	-	0	0	-	-	2,720	100	-	-	75	3	-	-	**2,795**	**103**	-

1/: Average of watermelon & cucumber

B. With-project Crop Production

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Transplanting)				Wet Season (Transplanting)				Dry Season (Transplanting)				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																
Normal Irrigation Paddy Field	1,740					1,740	69	3.3	5,742					1,740	69	5,742
Pump Irrigation Field	800					800	31	3.3	2,640					800	31	2,640
Rainfed Paddy Field																
Rice Total	**2,540**					**2,540**	**100**	**3.3**	**8,382**					**2,540**	**100**	**8,382**
Upland Crops/Vegetables:																
Upland Crops (≒70%) 1/	-	270	11	1.1	297									270	11	297
Vegetables (≒30%) 2/	-	110	4	9.5	1,045									110	4	1,045
Upland Crops/Vegetables Total		**380**	**15**	**-**	**1,342**									**380**	**15**	**1,342**
Overall	-	380	15	-	-	2,540	100	-	-	0	0	-	-	**2,920**	**115**	-

1/: Average of mungbeans & groundnut 2/: Average of watermelon & cucumber

C. Increment (With-project - Without-project)

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Transplanting)				Wet Season (Transplanting)				Dry Season (Transplanting)				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																
Normal Irrigation Paddy Field	1,740					1,740	69		5,742					1,740	69	5,742
Pump Irrigation Field	800					800	31		2,640					800	31	2,640
Supplemental Irrigation Paddy Field	-130					-130	-5		-260	-45	-2		-113	-175	-6	-373
Rainfed Paddy Field 1/	-2,590					-2,590	-95		-3,885					-2,590	-95	-3,885
Rice Total	**-180**	**0**	**-**	**-**	**0**	**-180**	**0**	**1.8**	**4,237**	**-45**	**-2**		**-113**	**-225**	**-2**	**4,125**
Upland Crops/Vegetables:																
Upland Crops	-	270	11		297					0	0		0	270	11	297
Vegetables	-	110	4		1,045					-30	-1		-174	80	3	871
Upland Crops/Vegetables Total		**380**	**15**	**-**	**1,342**	**0**	**-**	**-**	**0**	**-30**	**-1**	**-**	**-174**	**350**	**14**	**1,168**
Overall	-	380	15	-	-	-180	0	-	-	-75	-3	-	-	**125**	**12**	-

Table 5.5-2 Summary of Irrigation Canal Design of Wat Loung Rehabilitation Sub-project

Irrigation Canal	Canal Length			Design				
	Total	Rehab.	New	Design Q (m3/s)	Bottom Width	Height	Left Bank Top Width	Right Bank Top Width
Main Canal	20,300	17,200	3,100	4.84 - 1.39	11.0m - 4.0m	3.8 m - 1.2 m	4.0 m	1.5 m
S - 1	6,700	0	6,700	0.57	1.8 m	1.1 m	1.0 m	4.0 m
S - 2	2,600	0	2,600	0.23	1.0 m	1.0 m	1.0 m	4.0 m
S - 3	5,600	0	5,600	0.39	1.2 m	1.1 m	1.0 m	4.0 m
S - 4	3,600	0	3,600	0.34	1.2 m	1.1 m	1.0 m	4.0 m
S - 5	3,000	0	3,000	0.35	1.2 m	1.1 m	1.0 m	4.0 m
S - 6	1,600	0	1,600	0.19	1.0 m	1.0 m	1.0 m	4.0 m
S - 7	2,000	0	2,000	0.37	1.2 m	1.1 m	1.0 m	4.0 m
S - 8	1,800	1,800	0	0.20	1.0 m	1.0 m	1.0 m	4.0 m
S - 9	2,400	0	2,400	0.24	1.0 m	1.0 m	1.0 m	4.0 m
S - 10	1,800	0	1,800	0.24	1.0 m	1.0 m	1.0 m	4.0 m
Total of S	31,100	1,800	29,300					

Table 5.5-3 Type and Number of Irrigation Canal Related Structure of Wat Loung Rehabilitation Sub-project

Structure	nos.	Structure	nos.
Turnout	64	Bridge	4
Check	34	Footpath Bridge	8
Terminal Structure	6	Syphon	1
Road Culvert	14		

Table 5.5-4 Summary of Drainage Canal Design of Wat Loung Rehabilitation Sub-project

Drainage Canal	Canal Length			Design	
	Total	Rehab.	New	Bottom Width	Height
SD-1	2,700	0	2,700	6.0 m - 2.4 m	2.3 m - 1.4 m
SD-2	3,300	0	3,300	5.5 m - 2.4 m	2.2 m - 1.4 m
SD-3	4,200	0	4,200	5.0 m - 2.4 m	1.9 m - 1.2 m
SD-4	4,500	0	4,500	4.5 m - 3.0 m	1.7 m - 1.6 m
SD-5	3,700	0	3,700	2.2 m	1.2 m
SD-6	6,100	0	6,100	7.5 m - 5.0 m	2.4 m - 1.8 m
SD-7	9,500	0	9,500	5.5 m - 4.5 m	2.2 m - 1.7 m
SD-8	3,700	0	3,700	4.5 m	1.6 m
Total	37,700	0	37,700		

Figure 5.5-5 Type and Number of Drainage Structures of Wat Loung Rehabilitation Sub-project

Structure	nos.	Structure	nos.
Drainage Culvert	13	Footpath Bridge	8

Table 5.6-1 Present/Without-project & With-project Crop Production: Wat Chre Rehabilitation Sub-project

A. Present/Without-project Crop Production

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Transplanting)				Wet Season (Transplanting)				Dry Season (Transplanting)				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																
Normal Irrigation Paddy Field	0															
Supplemental Irrigation Paddy Field	60					60	6	2.0	120					60	6	120
Rainfed Paddy Field	1,030					1,030	94	1.5	1,545					1,030	94	1,545
Rice Total	**1,090**					**1,090**	**100**	**1.5**	**1,665**					**1,090**	**100**	**1,665**
Upland Crops/Vegetables:																
Upland Crops	-													0		0
Vegetables 1/	-	15	1	5.8	87					15	1	5.8	87	30	3	174
Upland Crops/Vegetables Total		**15**	**1**	-	**87**					**15**	**1**	-	**87**	**30**	**3**	**174**
Overall	-	15	1	-	-	1,090	100	-	-	15	1	-	-	**1,120**	**103**	-

1/: Average of watermelon & cucumber

B. With-project Crop Production

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Transplanting)				Wet Season (Transplanting)				Dry Season (Transplanting)				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																
Normal Irrigation Paddy Field	620					620	61	3.3	2,046					620	61	2,046
Pump Irrigation Field	400					400	39	3.3	1,320					400	39	1,320
Rainfed Paddy Field																
Rice Total	**1,020**					**1,020**	**100**	**3.3**	**3,366**					**1,020**	**100**	**3,366**
Upland Crops/Vegetables:																
Upland Crops (≒70%) 1/	-	100	10	1.1	110									100	10	110
Vegetables (≒30%) 2/	-	50	5	9.5	475									50	5	475
Upland Crops/Vegetables Total		**150**	**15**	-	**585**									**150**	**15**	**585**
Overall	-	150	15	-	-	1,020	100	-	-	0	0	-	-	**1,170**	**115**	-

1/: Average of mungbeans & groundnut 2/: Average of watermelon & cucumber

C. Increment (With-project - Without-project)

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Transplanting)				Wet Season (Transplanting)				Dry Season (Transplanting)				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																
Normal Irrigation Paddy Field	620					620	61		2,046					620	61	2,046
Pump Irrigation Field	400					400	39		1,320					400	39	1,320
Supplemental Irrigation Paddy Field	-60					-60	-6		-120					-60	-6	-120
Rainfed Paddy Field 1/	-1,030					-1,030	-94		-1,545					-1,030	-94	-1,545
Rice Total	**-70**	**0**	-	-	**0**	**-70**	**0**	**1.8**	**1,701**	**0**	-	-	**0**	**-70**	**0**	**1,701**
Upland Crops/Vegetables:																
Upland Crops	-	100	10		110					0	0		0	100	10	110
Vegetables	-	35	4		388					-15	-1		-87	20	2	301
Upland Crops/Vegetables Total		**135**	**13**	-	**498**	**0**	-	-	**0**	**-15**	**-1**	-	**-87**	**120**	**12**	**411**
Overall	-	135	13	-	-	-70	0	-	-	-15	-1	-	-	**50**	**12**	-

Table 5.6-2 Summary of Canal Design of Wat Chre Rehabilitation Sub-project

Irrigation Canal	Canal Length			Design				
	Total	Rehab.	New	Design Q (m3/s)	Bottom Width	Height	Left Bank Top Width	Right Bank Top Width
Main Canal	4,700	4,000	700	0.31 - 1.39	2.6m - 8.0m	1.7m - 2.0m	4.0 m	1.0m - 1.5m
S - 1	6,100	1,700	4,400	0.20- 0.46	1.0m - 1.4m	1.0m - 1.2m	1.0 m	4.0 m
SS - 1 -1	1,300	1,300	0	0.18	1.0 m	1.0 m	1.0 m	4.0 m
S - 2	1,200	0	1,200	0.08	0.7 m	0.8 m	4.0 m	1.0 m
S - 3	2,900	0	2,900	0.23	1.0 m	1.0 m	4.0 m	1.0 m
S - 4	1,700	0	1,700	0.14	0.8 m	0.9 m	4.0 m	1.0 m
S - 5	1,500	1,500	0	0.24	1.0 m	1.0 m	4.0 m	1.0 m
Total of S	14,700	4,500	10,200					

Prepared by JICA Study Team

Table 5.6-3 Type and Number of Irrigation Related Structures of Wat Chre Rehabilitation Sub-project

Structure	nos.	Structure	nos.
Turnout	31	Road Culvert	3
Check	17	Bridge	1
Terminal Structure	4	Syphon	1

Prepared by JICA Study Team

Table 5.6-4 Summary of Drainage Canal Design of Wat Chre Rehabilitation Sub-project

Drainage Canal	Canal Length			Design	
	Total	Rehab.	New	Bottom Width	Height
SD-1	2,200	0	2,200	2.2 m	1.2 m
SD-2	2,200	0	2,200	2.8 m	1.5 m
SD-3	3,500	0	3,500	2.8 m	1.5 m
SD-4	2,100	0	2,100	1.8 m	1.0 m
SD-5	1,500	0	1,500	1.8 m	1.0 m
SD-6	1,800	0	1,800	2.8 m	1.5 m
SD-7	1,500	0	1,500	1.8 m	0.9 m
Total	14,800	0	14,800		

Prepared by JICA Study Team

Table 5.6-5 Type and Number of Drainage Structures of Wat Chre Rehabilitation Sub-project

Structure	nos.	Structure	nos.
Drainage Culvert	14		

Prepared by JICA Study Team

Table 5.7-1 Present/Without-project & With-project Crop Production: Lum Hach Rehabilitation Sub-project

A. Present/Without-project Crop Production

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Transplanting)				Wet Season (Transplanting)				Dry Season (Transplanting)				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																
Normal Irrigation Paddy Field	0															
Supplemental Irrigation Paddy Field	200					200	6	1.7	340					200	6	340
Rainfed Paddy Field	3,120					3,120	94	1.2	3,744					3,120	94	3,744
Rice Total	**3,320**					**3,320**	**100**	**1.2**	**4,084**					**3,320**	**100**	**4,084**
Upland Crops/Vegetables:																
Upland Crops	-													0		0
Vegetables 1/	-									40	1	5.8	232	40	1	232
Upland Crops/Vegetables Total										**40**	**1**	-	**232**	**40**	**1**	**232**
Overall	-	0	0	-	-	3,320	100	-	-	40	1	-	-	**3,360**	**101**	-

1/: Average of watermelon & cucumber

B. With-project Crop Production

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Transplanting)				Wet Season (Transplanting)				Dry Season (Transplanting)				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																
Normal Irrigation Paddy Field	2,690	1,030	33	3.0	3,090	2,690	87	3.0	8,070	100	3	3.0	300	3,820	123	11,460
Pump Irrigation Field	410	170	5	3.0	510	410	13	3.0	1,230					580	19	1,740
Rainfed Paddy Field																
Rice Total	**3,100**	**1,200**	**39**	**3.0**	**3,600**	**3,100**	**100**	**3.0**	**9,300**	**100**	**3**	**3.0**	**300**	**4,400**	**142**	**13,200**
Upland Crops/Vegetables:																
Upland Crops (≒70%) 1/	-	150	5	1.1	165					290	9	1.1	319	440	14	484
Vegetables (≒30%) 2/	-	60	2	9.5	570					120	4	9.5	1,140	180	6	1,710
Upland Crops/Vegetables Total		**210**	7	-	**735**					**410**	**13**	-	**1,459**	**620**	**20**	**2,194**
Overall	-	1,410	45	-	-	3,100	100	-	-	510	16	-	-	**5,020**	**162**	-

1/: Average of mungbeans & groundnut 2/: Average of watermelon & cucumber

C. Increment (With-project - Without-project)

Crop/Land Use Sub-category	Area (ha)	Early Wet Season (Transplanting)				Wet Season (Transplanting)				Dry Season (Transplanting)				Annual		
		Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Yield (ton/ha)	Production (ton)	Cropped Area (ha)	Cropping Intensity (%)	Production (ton)
Rice:																
Normal Irrigation Paddy Field	2,690	1,030	33		3,090	2,690	87		8,070	100	3		300	3,820	123	11,460
Pump Irrigation Field	410	170	5		510	410	13		1,230	0	0		0	580	19	1,740
Supplemental Irrigation Paddy Field	-200	0	0		0	-200	-6		-340	0	0		0	-200	-6	-340
Rainfed Paddy Field	-3,120	0	0		0	-3,120	-94		-3,744	0	0		0	-3,120	-94	-3,744
Rice Total	**-220**	**1,200**	**39**	-	**3,600**	**-220**	**0**	**1.8**	**5,216**	**100**	**3**	-	**300**	**1,080**	**42**	**9,116**
Upland Crops/Vegetables:																
Upland Crops	-	150	5		165					290	9		319	440	14	484
Vegetables	-	60	2		570					80	3		908	140	5	1,478
Upland Crops/Vegetables Total		**210**	7	-	**735**	**0**	-	-	**0**	**370**	**12**	-	**1,227**	**580**	**19**	**1,962**
Overall	-	1,410	45	-	-	-220	0	-	-	470	15	-	-	**1,660**	**61**	-

Table 5.7-2 Summary of Irrigation Canal Design of Lum Hach rehabilitation Sub-project

Irrigation Canal	Canal Length			Design				
	Total	Rehab.	New	Design Q(m3/s)	Bottom Width	Canal Height	Left Bank Top Width	Right Bank Top Width
Main Canal	16,400	11,400	5,000	6.6 - 0.83	50.0m - 4.0m	3.7 m - 1.7m	4.0 m	1.5 m
S - 1	500	0	500	0.23	1.0 m	1.0 m	1.0 m	4.0 m
S - 2	1,000	0	1,000	0.26	1.0 m	1.1 m	1.0 m	4.0 m
S - 3	800	0	800	0.23	1.0 m	1.0 m	1.0 m	4.0 m
S - 4	900	0	900	0.23	1.0 m	1.0 m	1.0 m	4.0 m
S - 5	2,000	0	2,000	0.43	1.2 m	1.2 m	1.0 m	4.0 m
S - 6	11,300	0	11,300	0.58	1.8 m	1.2 m	1.0 m	4.0 m
S - 7	11,800	0	11,800	1.51	2.8 m	1.4 m	4.0 m	1.0 m
SS7 -1	3,400	0	3,400	0.26	1.0 m	1.1 m	1.0 m	1.0 m
SS7 -2	2,700	0	2,700	0.34	1.2 m	1.1 m	4.0 m	1.0 m
S - 8	2,400	0	2,400	1.15	2.4 m	1.3 m	4.0 m	1.0 m
S - 9	5,600	0	5,600	0.83	2.2 m	1.2 m	4.0 m	1.0 m
Total of S	42,400	0	42,400					

Table 5.7-3 Type and Number of Irrigation Related Structures of Lum Hach Rehabilitation Sub-project

Structure	nos.	Structure	nos.
Turnout	81	Road Culvert	26
Check	38	Bridge	2
Terminal Structure	10	Syphon	1

Table 5.7-4 Summary of Drainage Canal Design of Lum Hach Rehabilitation Sub-project

Drainage Canal	Canal Length			Design	
	Total	Rehab.	New	Bottom Width	Height
SD-1	4,000	0	4,000	7.0 m - 4.0 m	2.2 m - 1.6 m
SD-2	6,400	0	6,400	4.5 m	1.6 m
SD-3	6,400	0	6,400	4.0 m	1.5 m
SD-4	4,500	0	4,500	4.0 m	1.6 m
SD-5	3,200	0	3,200	4.0 m	1.5 m
SD-6	2,800	0	2,800	4.5 m	1.6 m
SD-7	3,300	0	3,300	4.0 m	1.5 m
SD-8	6,100	6,100	0	min. 2.4 m	min. 1.2 m
SD-9	3,000	0	3,000	2.0 m	1.1 m
SD-10	10,300	10,300	0	min. 2.8 m	min. 1.5 m
SD-11	3,900	0	3,900	4.0 m	1.5 m
Total	53,900	16,400	37,500		

Table 5.7-5 Type and Number of Drainage Related Structures of Lum Hach Rehabilitation Sub-project

Structure	nos.	Structure	nos.
Drainage Culvert	25	Footpath Bridge	120
Drainage Gate	1		