

(1/4)

II.

I. PROJECT FUNDAMENTALS

 I.1 General
 (1) Code Number
 : 73220168
 (7) Number of Farmers
 : 875

(2) Name of Irrigation Scheme : Kanjiro (8) Water Resource River : Sungai Kanjiro (3) District (Kabupaten) : Luwu Utara (9) Catchment Area (km²) : 120 (4) Sub-district (Kecamatan) : Sukamaju (10) Completion / Last Rehabilitation Year : 1939/1994

(5) Registered Area (ha) : 1,491 (6) Technical Level : Semi Technical

I.2 Availability of Reports/Documents & References (A : Available, B : Available but partially, C : Not available/ No plan)

_	11 variability of 1te ports/2 ocuments ex 1terer ences	(11 111 and bie, 2 111 and bie but partially, C 11 tot a valuable, 1 to plan)				
	a. Design Reports of Existing System(Full set)	 b. Irrigation diagram 	 c. As-built drawings 	 d. Structure lists & diagram 		
	В	A	В	A		
	e. Rehabilitation plan & its references	 f. Crops and yield data 	g. Cropping Calender	h. WUAs data		
	С	A	A	13		

II. SUBJECT AREA FOR REHABILITATION PLAN

.1	Present and Planned Land Use			
	Category	Present (ha)	Plan (ha)	Increment (ha)
	a. Irrigated paddy field	1,198	1,301	103
	b. Rainfed paddy field	103	0	-103
	c. Upland Field	0	0	0
	d. Uncultivated Land	0	0	0
	e. Non-irrigable	0	0	0
	Total	1,301	1,301	0

III. AGRICULTURE

III.1 Present/Before Project Condition

(1) Irrigation Performance and Crop Production

Season	Cropped Area in Irrigated Paddy Field				Annual	Irrigated Paddy Yield	Crop l	Production (t	on) 1/
Season	Paddy (ha)	Palawija	Others (ha)	Total (ha)	Intensity	(GKG ton/ha)	Paddy	Palawija	Others
Season I (wet)	1,157			1,157	97%	3.5	4,307		
Season II (dry I)				0				21	
Season III (dry II)	1,157			1,157	97%	4.0	4,628		
Total/Annual	2,314	0	0	2,314	193%	3.8	8,935	21	0

1/: Irrigated & rainfed paddy & palawija

(2) Problems and Constraints

A. Irrigation & Agriculture Performances

- High irrigation performances attained; however water shortage in dry season reported; existence of rainfed field (103ha)
- Double cropping of paddy practiced almost in the entire irrigated area; paddy yield levels low to moderate; palawija not introduced yet
- B. Primary Constraint Identified through the Inventory Survey by the JICA Study

- Irrigation & Drainage: Water shortage at on-farm level in dry season - Palawija Marketing: - Agronomic Issues: Infestation of pest & diseases - Farmers Organizations: -

- Paddy Marketing Low marketing prices - Extension Services: Implementation of extension programs is limited

III.2 Development Plan

- (1) Development Approaches
 - Expansion of irrigated area & ensuring year round irrigation water supply at on-farm level through rehabilitation & upgrading
 - Double cropping of paddy in the entire scheme; productivity increase of paddy through intensification; introduction of palawija in dry season I
 - Strengthening of extension activities tailored to area specific needs; empowerment of farmer groups (KTs) to establish agri-business oriented KTs
- (2) Planned Irrigation Performances and Crop Production

Season	Cropp	Cropped Area in Irrigated Paddy Field				Irrigated Paddy Yield	Crop	Production ((ton)
Season	Paddy (ha)	Palawija	Others (ha)	Total (ha)	Intensity	(GKG ton/ha)	Paddy	Palawija	Others
Season I (wet)	1,301			1,301	100%	4.5	5,855		
Season II (dry I)		260		260	20%			1,300	
Season III (dry II)	1,301			1,301	100%	5.0	6,505		
Total/Annual	2,602	260	0	2,862	220%	4.8	12,360	1,300	0
Annual Increment	288	260	0	548	27%	1.0	3,425	1,279	0

IV. WUAs IV.1 Existing Condition (1) Number a. Target; 17 b. Established; 0 c. Not yet; 17 Registered 0 Performance a. Developed; 0 b. Under developing; 0 c. Not yet; 0 Not yet registered 0

(2) Problems and Constraints

☐ Operation ☐ Maintenance ☑ Management

(3) Causes of Problems and Constraints

- Late start of WUA establishment promotion.

IV.2 Development Plan

- (1) Proposed Countermeasures
 - Acceleration of WUA establishment.

(2) Development Plan

- WUA empowerment program.

V. IRRIGATION FACILITY

V.1 Existing Condition

(2) Water Resources Facilty

a. Type of facility : Headworks e. Scouring sluice gate : 1 nos. i. Condition : C

b. Type of weir : Gabion weir f. Intake gate : 2 nos. (A: Functioning well, B: Partially deteriorated, C: Not c. Length of weir : 20 m g. Settling basin : provided functioning well, D: Serious condition for operation)

d. Design intake discharge : 2.6 m3/s h. Inspection bridge : not provided (no info.: no information)

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined (m)	Total (m)	Structure (nos)	Inspection road (m)	Condition	(A: Functioning well,					
Main	3,278	2,673	5,951	41	2,077	C	B: Partially deteriorated,					
Secondary	condary 3,649 4,280 7,929 36 2,500 D											
	1											
Major Drobl	Major Problems and Constrains											

(4) Major Problems and Constrains

- Water Resources Facility

Physical operational problem on flood/scouring sluice gate(s) of headworks

Insufficient diversion water due to sedimentation in front of intake

Physical operational problem on intake gate(s)

- Irrigation Canal and Related Structure

Sedimentation or obstruction of water flow

Collapse of canal

Difficulty on maintenance of earth canal

Difficulty on O&M

(5) Causes of Major Problems and Constraints

- Water Resources Facility

Improper design, installation and/or maintenance of flood/scouring sluice gate(s); breakdown of hoist, stem, guide frame or leaf Sedimentation in front of intake

Improper design, installation and/or maintenance of intake gate(s); breakdown of hoist, stem, guide frame or leaf

- Irrigation Canal and Related Structure

Insufficient function of settling basin(sediments), improper management of canal (sediments, water plant)

Improper maintenance; insufficient nos. of cross drain, berm width, or catch drain; and/or steep slope of canal

Fallen down and collapse of side slope, water plants or weed at inside of canal

No provision or damage of inspection road, difficulty on passing of inspection road due to damage, broken

V.2 Development Plan

(1) Proposed Countermeasures for Major Problems

- Water Resources Facility

Replacement of control system or damaged equipment of flood/scouring sluice gate(s) $\,$

Dredging or flushing of sediment, proper gate operation of headworks and intake

Replacement of intake gate(s)

- Irrigation Canal and Related Structure

Removal of sediment soil and foreign materials from canal, grass cutting

Redesign of canal section; provision of cross drain, proper width of berm, catch drain, and/or proper slope

Provision of concrete lining

Provision or repair of inspection road with all weather type/pavement

(2) Water Resources Facility

Settling basin : replacement or new

3) Irrigation Canal and Related Structure

Works		No rehabilitation	Rehabilitation	New construction	Total	
Canal (m)	Main	0	5,177	518	5,695	
Callai (III)	Secondary	0	6,898	1,380	8,278	
Structure	Main	0	36	7	43	
(nos)	Secondary	0	31	11	42	

(4) On-farm Development (Unit: ha)
a. Potential Irrigated paddy field 1,198 d. Non-potential paddy field 0
b. Potential non-irrigated paddy field 103 e. Non-potential non-paddy field 0
c. Potential non-paddy field 0 Total 1,301

5) Rehabilitation Cost (Direct Cost)

Kenaomianc	ni Cost (Dife		(Onit. Million Kp.)				
W.R.F	Irrigation	Drainage	On-Farm	Project	Total	Cost	
***	migation		Develop.	Facility		per ha	l
2 2 10	15 (50	1.5/5	2.520	1.0.00	25 (16		/×× :

 2,249
 17,652
 1,765
 2,720
 1,260
 25,646
 19.7
 (W.R.F: Water Resources Facility, Develop:: Development)

VI. PROJECT EVALUATION
VI.1 FIRR 12.1%

VI.2 Prioritization Scoring

Evaluation I	ndex	Full Score	Score	Evaluation Index	Full Score	Score	Total Score
Irrigation	rigation Utilization of Irrigation Potential		5.0	Agricultural Productivity	20.0	14.0	68.5
System	em Urgency		21.0	Social Problem	15.0	10.5	
	Sustainability		9.0	Economic Impact	15.0	9.0	

(Unit: Million Dn)

VI.3 Priority Group Group II: Second priority group VI.4 Priority Ranking in the Province 15

Scheme	Kanjiro	District	Luwu Utara
Technical Level	Semi-technical	Registered Area	1,491 ha Year of Construction 1939/94
SS.35.144			Category Irrigation (Headworks) Structure Retaining Wall Condition □ A □ B ☑ C □ D Problems Fallen down, incline or washed away of retaining wal weir; sedimentation in front of intake.
SS.35.145	B SUBASTICO)	ENDS/ARG	Category Irrigation (Headworks) Structure Intake Gate Condition ABBCCDD Problems Leakage from gate leaf; insufficient strength against design load due to rust, decay of steel material; proble on management due to lack of periodically maintenar
SS:33.148			Category Irrigation (Main Canal) Structure Earth Canal Condition □ A □ B ☑ C □ D Problems Sedimentation; collapse of canal; leakage from canal; difficulty on maintenance of earth canal; no inspectio road.

Condition: A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation

Scheme	Kanjiro	District	Luwu Utara
Technical Level	Semi-technical	Registered Area	1,491 ha Year of Construction 1939/94
SS.35.161			Category Irrigation (Main Canal) Structure Division Structure Condition □ A □ B □ C ☑ D Problems Steel gates are out of service; lower function due to sedimentation in front of structure.
			Category Ariculture, On-Farm Activity Paddy Cultivation Condition □ A □ B ☑ C □ D Problems Low density of on-farm canals and farm roads.
			Category Ariculture, On-Farm Activity Treshering Condition □ A □ B ☑ C □ D Problems Low density of on-farm canals and farm roads.

Condition: A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation

4)				I DDAIE	CT FIND	AMENTAL	S.			
Ţ 1	General			I. PKUJE	CTTUNDA	<u>AMENTAL</u>	i.S			
	Code Number		: 73220169		(7)	Number of F	Farmers	: 2,229		
	Name of Irrigation Scheme		: Bone-Bon		(8)	Water Resou		: Bone-Bone	2	
	District (Kabupaten)		: Luwu Utai		(9)	Catchment A	_	: 46		
	Sub-district (Kecamatan)		: Bone-Bon	e	(10)		/ Last Rehabilitation Year	: 1975/1983		
(5)	Registered Area (ha)		: 2,754			•				
(6)	Technical Level		: Technical							
I.2	Availability of Reports/Doc	uments & Re	ferences		(A : Availal	ole, B : Avai	lable but partially, C: I	Not available	/ No plan)	
	a. Design Reports of Exi	sting System(Full set)	b. I	Irrigation dia	gram	c. As-built drawings	d. Struc	cture lists & o	diagram
	I				A		В		A	
	e. Rehabilitation pla		ices	f. Cr	ops and yield	l data	g. Cropping Calender]	n. WUAs dat	a
	(2			A		A		29	
II 1	Danson to and Diamond Lond	I.	II. SUBJI	ECT AREA	FOR REH	IABILITAT	ΓΙΟΝ PLAN			
11.1	Present and Planned Land Category	Use	Prese	nt (ha)	Plan	(ha)	Increment (ha)	1		
	a. Irrigated paddy field		11050	2,625		2,625	0	1		
	b. Rainfed paddy field			0		0	0			
	c. Upland Field			0		0	0			
	d. Uncultivated Land			0			0			
	e. Non-irrigable		<u> </u>	0		0	0			
	Total		<u> </u>	2,625		2,625	0]		
	D 40 D 1 40			III.	AGRICUL	TURE				
	Present/Before Project Con Irrigation Performance and C		n							
. /	Season			rigated Padd	y Field	Annual	Irrigated Paddy Yield	Crop	Production	(ton)
		Paddy (ha)	Palawija	Others (ha)	Total (ha)	Intensity	(GKG ton/ha)	Paddy	Palawija	Others
	Season I (wet)	2,625			2,625	100%	4.0	10,500		
	Season II (dry I)	2 005			0		4.0	0.000		
	Season III (dry II) Total/Annual	2,005	0	0	2,005			8,020 18,520	0	
	Total/Allitual	4,630	0	U	4,630	176%	4.0	18,320	0	<u>'</u>
111 2	A. Irrigation & Agriculture P - High irrigation performance - Double cropping of paddy p B. Primary Constraint Identif - Irrigation & Drainage: - Agronomic Issues: - Paddy Marketing	s attained; poor	ost of the entine Inventory S ge sed by rat	ire irrigated a	rea; paddy yi	- Palawija M	Marketing: Low market rganizations: Managerial	ing prices		
(1)	Development Approaches - Ensuring year round irrigati - Double cropping of paddy ir - Strengthening of extension a Planned Irrigation Performan	n the entire scl activities tailor ces and Crop I	heme; production production	ctivity increas pecific needs;	se of paddy the empowerment	nrough furthen nt of farmer g	groups (KTs) to establish a	gri-business	oriented KTs	3
	Season	Paddy (ha)		rigated Padd		Annual	Irrigated Paddy Yield (GKG ton/ha)		Production	` /
	Season I (wet)	2,625	Palawija	Others (ha)	Total (ha) 2,625	Intensity 100%	. ,	Paddy 13,125	Palawija	Others
	Season II (dry I)	2,023	263		263	10%		15,125	1,315	
	Season III (dry II)	2,625			2,625	100%		13,125		
	Total/Annual	5,250	263	0	5,513	210%	5.0	26,250	1,315	
	Annual Increment	620	263	0	883	34%	1.0	7,730	1,315	
					IV. WUA	6				
	Existing Condition									
(1)	Number a. Target;		b. Establishe			c. Not yet;	8	Registered		
	Performance a. Developed;	0	b. Under dev	veloping;	13	c. Not yet;	8	Not yet regis	tered	2
(3)	Problems and Constraints Operation Causes of Problems and Cons No close coordination with Less internal coordination o Development Plan Proposed Countermeasures	District WRS. f WUA.	Maintenance	e 🗸	Managemen	t				
(2)	- Improvement of internal coordinates - Improvement Plan - WUA empowerment trainin									

On-farm: C

36. Bone-Bone Scheme (2/4) V. IRRIGATION FACILITY V.1 Existing Condition

(1) Overall Irrigation System: C
Water Resources Facility: B

(A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation)

Main Canal System: C

Secondary Canal System: D

On-face

On-fac

a. Type of facility : Headworks e. Scouring sluice gate : 1 nos. i. Condition : B
b. Type of weir : Fixed weir f. Intake gate : 2 nos. (A: Functioning well, B: Partially deteriorated, C: Not
c. Length of weir : 40 m g. Settling basin : provided functioning well, D: Serious condition for operation)

d. Design intake discharge : 3.8 m3/s h. Inspection bridge : provided (no info.: no information)

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined (m)	Total (m)	Structure (nos)	Inspection road (m)	Condition	(A: Functioning well,					
Main	9,771	7,207	16,978	58	16,978	C	B: Partially deteriorated,					
Secondary	1,405	5,017	6,422	15	6,422	D	C: Not functioning well,					
	I											
Major Drobl	Major Problems and Constrains											

(4) Major Problems and Constrains

Water Resources Facility

Lower strength against design load due to rust, decay of steel materials of flood/scouring sluice gate(s)

Physical operational problem on intake gate(s)

- Irrigation Canal and Related Structure

Sedimentation or obstruction of water flow

Difficulty on maintenance of earth canal

Lower function of regulating structure on canal

Settlement/deflection on foundation of aqueduct

(5) Causes of Major Problems and Constraints

- Water Resources Facility

No over coating on flood/scouring sluice gate(s) to prevent rust and decay

Improper design, installation and/or maintenance of intake gate(s); breakdown of hoist, stem, guide frame or leaf

- Irrigation Canal and Related Structure

Insufficient function of settling basin(sediments), improper management of canal (sediments, water plant)

Fallen down and collapse of side slope, water plants or weed at inside of canal

Deterioration of regulating structure on canal, especially gate and metal works

Insufficient strength of foundation of aqueduct or insufficient foundation treatment

V.2 Development Plan

(1) Proposed Countermeasures for Major Problems

- Water Resources Facility

Provision of overcoat or replacement of flood/scouring sluice gate(s) of headworks

Replacement of intake gate(s)

- Irrigation Canal and Related Structure

Removal of sediment soil and foreign materials from canal, grass cutting

Provision of concrete lining

Replacement and reconstruction of regulating structure on canal

Additional foundation treatment, protection around pier of aqueduct at river bed level

(2) Water Resources Facility

Settling basin : large rehabilitation

(3) Irrigation Canal and Related Structure

Works		No rehabilitation	Rehabilitation	New construction	Total						
Canal (m)	Main	0	16,978	0	16,978						
Callai (III)	Secondary	0	6,422	0	6,422						
Structure	Main	0	58	6	64						
(nos)	Secondary	0	15	3	18						

(4) On-farm Development (Unit: ha)
a. Potential Irrigated paddy field 2,625 d. Non-potential paddy field 0
b. Potential non-irrigated paddy field 0 e. Non-potential non-paddy field 0
c. Potential non-paddy field 0 Total 2,625

c. Potential non-paddy field 0 Total

(5) Rehabilitation Cost (Direct Cost) (Unit: Million Rp.)

W.R.F Irrigation Drainage On-Farm Develop. Facility Total Cost per ha

3,069 33,395 3,339 5,381 1,570 46,754 17.8 (W.R.F: Water Resources Facility, Develop.: Development)

		VI. PROJECT EVALUATION
VI.1 EIRR	13.5%	

VI.1 EIRR 13.5%

VI.2 Prioritization Scoring

Evaluation I	ndex	Full Score	Score	Evaluation Index	Full Score	Score	Total Score
Irrigation	Utilization of Irrigation Potential	10.0	-	Agricultural Productivity	20.0	-	-
System	Urgency	25.0	-	Social Problem	15.0	-	
	Sustainability	15.0	-	Economic Impact	15.0	•	

VI.3 Priority Group V: Acceralation of WUAs establishment VI.4 Priority Ranking in the Province

Scheme	Bone-Bone	District	Luwu Utara
Technical Level	Technical	Registered Area	2,754 ha Year of Construction 1983
SS.36.235		05/27/2003	Category Irrigation (Headworks) Structure Fixed Weir Condition □ A ☑ B C □ D Problems Insufficient diversion water due to sedimentation in front of intake.
88.36.243		05/27/2008	Category Irrigation (Headworks) Structure Intake Condition □ A ☑ B □ C □ D Problems Leakage from gate leaf; insufficient strength against design load due to rust, decay of steel material; problem on management due to lack of periodically maintenance
SS 36 249		05/27/2003	Category Irrigation (Main Canal) Structure Masonry Lined Canal Condition □ A □ B ☑ C □ D Problems Sedimentation; leakage from lined canal; crack on lined canal; deflection of lining toward inside of canal; less maintenance; and no inspection road.

Condition: A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation

Scheme	Bone-Bone	District	Luwu Utara
Technical Level	Technical	Registered Area	2,754 ha Year of Construction 1983
SS.36.256		5/27/2003	Category Irrigation (Secondary Canal) Structure Division Structure Condition □ A □ B □ C ☑ D Problems Lower function of division structure due to sedimentation; physical operation problem on structure; deterioration of steel gates
	0	5/27/2003	Category Agriculture, On-Farm Activity Paddy Cultivation Condition □ A □ B ☑ C □ D Problems Low density of on-farm canals and farm roads.
		5/27/2003	Category Agriculture, On-Farm Activity Secondary Crop Cultivation Condition □ A □ B ☑ C □ D Problems

Condition: A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation

I. PROJECT FUNDAMENTALS

I.1 General (1) Code Number : 73220170 Number of Farmers : 1,378 (7)(2) Name of Irrigation Scheme : Kalaena Kanan I : Kalaena (8)Water Resource River (3) District (Kabupaten) : Luwu Utara (9) 2543 Catchment Area (km²) (4) Sub-district (Kecamatan) Mangkutana, Wotu (10)Completion / Last Rehabilitation Year: 1980

(5) Registered Area (ha) : 6,615 (6) Technical Level : Technical

I.2 Availability of Reports/Documents & References (A: Available, B: Available but partially, C: Not available/ No plan)

_	11 variability of 1te ports/2 ocuments ex 1terer ences	(11111111111111111111111111111111111111	more out purting, cri	tot at anabite i to prair)
	a. Design Reports of Existing System(Full set)	 b. Irrigation diagram 	 c. As-built drawings 	 d. Structure lists & diagram
	В	A	В	A
	e. Rehabilitation plan & its references	 f. Crops and yield data 	g. Cropping Calender	h. WUAs data
	С	A	A	45

II. SUBJECT AREA FOR REHABILITATION PLAN

1 Present and Planned Land Use			
Category	Present (ha)	Plan (ha)	Increment (ha)
a. Irrigated paddy field	5,746	6,332	586
b. Rainfed paddy field	586	0	-586
c. Upland Field	0	0	0
d. Uncultivated Land	0	0	0
e. Non-irrigable	0	0	0
Total	6,332	6,332	0

III. AGRICULTURE

III.1 Present/Before Project Condition

(1) Irrigation Performance and Crop Production

inigation i enormance and crop i roddenon									
Season	Cropped Area in Irrigated Paddy Field				Annual	Irrigated Paddy Yield	Crop 1	Production (t	on) 1/
Season	Paddy (ha)	Palawija	Others (ha)	Total (ha)	Intensity	(GKG ton/ha)	Paddy	Palawija	Others
Season I (wet)	5,581			5,581	97%	4.0	23,789		
Season II (dry I)	5,731			5,731	100%	4.0	22,924	117	
Season III (dry II)				0					
Total/Annual	11,312	0	0	11,312	197%	4.0	46,713	117	0

1/: Irrigated & rainfed paddy & palawija

(2) Problems and Constraints

A. Irrigation & Agriculture Performances

- High irrigation performances attained in irrigated area; poor drainage problem reported; existence of rainfed field (586ha)
- Double cropping of paddy practiced almost in the entire irrigated area; paddy yield levels still low; palawija not introduced yet

B. Primary Constraint Identified through the Inventory Survey by the JICA Study

Poor drainage - Irrigation & Drainage:

- Palawija Marketing: Farmers not following recommended practices

- Farmers Organizations: Managerial capacity of KTs are limited

- Agronomic Issues: - Paddy Marketing Low marketing prices

- Extension Services: Shortage of operation funds of PPLs

III.2 Development Plan

- (1) Development Approaches
 - Ensuring year round irrigation water supply at on-farm level through rehabilitation
 - Double cropping of paddy in the entire scheme; productivity increase of paddy through further intensification; introduction of palawija in dry season II
 - Strengthening of extension activities tailored to area specific needs; empowerment of farmer groups (KTs) to establish agri-business oriented KTs

(2) Planned Irrigation Performances and Crop Production

Season	Cropped Area in Irrigated Paddy Field			Annual	Irrigated Paddy Yield	Crop	Production (ton)	
Season	Paddy (ha)	Palawija	Others (ha)	Total (ha)	Intensity	(GKG ton/ha)	Paddy	Palawija	Others
Season I (wet)	6,332			6,332	100%	5.0	31,660		
Season II (dry I)	6,332			6,332	100%	5.0	31,660		
Season III (dry II)		633		633	10%			3,165	
Total/Annual	12,664	633	0	13,297	210%	5.0	63,320	3,165	0
Annual Increment	1,352	633	0	1,985	13%	1.0	16,607	3,048	0

IV. WUAs IV.1 Existing Condition 67 b. Established; (1) Number a. Target; 49 c. Not yet; Registered Performance a. Developed; 2 b. Under developing 29 c. Not yet; 18 Not yet registered

(2)	Problems	and	Constraints
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Operation Maintenance Management

- (3) Causes of Problems and Constraints
 - Not effective guidance to WUA.
 - No close coordination with District WRS.

IV.2 Development Plan

- (1) Proposed Countermeasures
 - Encouragement of farmers to organize WUA and its federation.
- (2) Development Plan
 - WUA empowerment training.

												(2/4
					V. IRF	RIGATION	FACILITY	Y				
	Existing Con Overall Irriga		: C	(A: Functioni	ng well. B: Pa	rtially deterior	ated. C: Not f	unctioning wel	D: Serious c	ondition for o	peration)	
	Water Resour	rces Facility			nal System :	-		Secondary Ca			On-farm	: C
	Water Resour Type of facili		: -		e. Scouring	sluice gate	:-		i. Condition	: -		
b.	Type of weir		: -		f. Intake gate	e	:-		(A: Functioni	ng well, B: Pa		
	Length of we Design intake		: -		g. Settling bah. Inspection		: - : -		functioning w (no info.: no i	rell, D: Serious	s condition fo	r operation)
u.	Design make	discharge	. -		ii. iiispectioi	rorruge			(IIO IIIIO IIO I	inormation)		
(3)	Irrigation Car			T (1()	Gtt	()	T	1 ()	C	ttat	. F	
	Canal Main	Lined (m) 1,371	Unlined (m) 4,989	Total (m) 6,360	Structu	re (nos)	Inspectio	n road (m) 6,360	Conc)	(A: Function B: Partially	
	Secondary	14,687	25,184	39,871		108		35,245	I)	C: Not funct D: Serious c	
(4)	Major Proble	ms and Cons	trains								operation)	ondition for
	Water Resour											
	-											
-	Irrigation Car											
		tation or obs										
		y on O&M										
	Causes of Ma		and Constra	aints								
-	Water Resour	rces Facility										
	-											
		1 101	1.0									
-	Irrigation Car No provi			iments), imp	roper manage	ement of cana	ıl (sediments	, water plant)				
	Fallen do	own and colla	apse of side	slope, water j	plants or wee	d at inside of	canal					
	No provi	ision or dama	age of inspec	tion road, di	fficulty on pa	ssing of inspe	ection road d	ue to damage	, broken			
	Proposed Cou		e for Major l	Problems								
	Water Resour		s for iviajor i	Toblems								
	-											
-	Irrigation Car				C 1							
		n of sediment		eign material	s from canal,	grass cutting						
				oad with all	weather type/	pavement						
(2)	Water Resour	ces Facility										
	Dam/Headwo Settling basin	-	: - : -		Intake, civil	: -		Intake	, mechanical	: -		
(3)	Irrigation Car											
	Wor		No rehal	bilitation 0	Rehabi	ilitation	New cor	nstruction 0	Тс	otal		
	i (anai(m)⊢	Main Secondary		0		6,360 39,871		0		6,360 39,871		
	_	Main		0		34		3		37		
	(nos)	Secondary		0		108		22		130		
(4)	On-farm Dev							(Unit: ha)	i			
	a. Potential Ir b. Potential no					ntial paddy fi nttial non-pad		0				
	c. Potential no				Total	ittiai iioii-pac	luy fielu	6,332				
(5)	D 1 130 3	G + (D)	. (2 .)			ar :	Marie D		•			
(5)	Rehabilitation	ì		On-Farm	Project)	: Million Rp.) Cost)]				
	W.R.F	Irrigation	Drainage	Develop.	Facility	Total	per ha	1				
	365	78,677	7,868	13,281	2,590	102,780	16.2	(W.R.F: Wate	er Resources F	acility, Develo	p.: Developr	nent)
					VI. PR	OJECT EV	ALUATIO	N				
VI.1	EIRR	12.9%										
VI.2	Prioritization	n Scoring										
	Evaluation In	dex			Full Score	Score	Evaluation I			Full Score	Score	Total Sco
	_	Utilization of Urgency	Irrigation P	otential	10.0 25.0		Agricultural Social Probl	Productivity		20.0 15.0		-
		Sustainability	/		15.0		Economic II			15.0		_

Group V: Acceralation of WUAs establishment

VI.3 Priority Group

VI.4 Priority Ranking in the Province

Scheme	Kalaena Kanan I	District	Luwu Utara
Technical Level	Technical	Registered Area	6,615 ha Year of Construction 1980
SS.40.194			Category Irrigation (Headworks) Structure Fixed Weir Condition □ A ☑ B □ C □ D Problems Crack or damage on weir crest; settlement of weir body.
SS 40.196			Category Main Canal Structure Division Structure Condition □ A □ B □ C ☑ D Problems Lower function of division structure due to sedimentation in front of gate; physical operation problem on structure; deterioration of steel gates.
SS.40.195			Category Irrigation (Main Canal) Structure Masonry Lined Canal Condition □ A □ B □ C ☑ D Problems Sedimentation; leakage from lined canal; crack on lined canal; deflection of lining toward inside of canal; less maintenance; and no inspection road.

Condition: A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation

Scheme	Kalaena Kanan I	District	Luwu Ut	ara	
Technical Level	Technical	Registered Area	6,615 ha	Year of Construction	1980
\$.40.200			Category Irrigation (M Structure Earth Canal	fain Canal)	
			Condition A	□ B □ C	☑ D
			Problems Sedimentation difficulty on road.	on; collapse of canal; leak maintenance of earth can	age from canal; al; no inspection
			<u>Category</u> Ariculture, (On-farm	
			<u>Structure</u> On-Farm Ca	nal	
			Condition A	□ B ☑ C	□ D
	0.	5/28/2003	<u>Problems</u>		
			Structure Post-harvest	Facility	
			Activity Drying Yard	and Storage	
			Condition ☐ A Problems	□ B	□ D
	0	5/28/2003			
31					

Condition: A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation

4)										
				I. PROJE	ECT FUNDA	MENTAL	S			
	General									
()	Code Number		: 73220171		()	Number of F		: 2,234		
	Name of Irrigation Scheme District (Kabupaten)		: Kalaena K : Luwu Utai		(-)	Water Resou Catchment A		: Kalaena : 945		
	Sub-district (Kecamatan)		: Mangkuta				Area (Km.) / Last Rehabilitation Yea			
	Registered Area (ha)		: 4,671		()	p	,			
(6)	Technical Level		: Technical							
I.2	Availability of Reports/Docu			1. 1. 1			lable but partially, C:			P
	a. Design Reports of Exi		Full set)	b. I	Irrigation diag A	ram	c. As-built drawings	d. Struc	ture lists &	diagram
	e. Rehabilitation plan		nces	f. Cı	rops and vield	data	g. Cropping Calender	ŀ	n. WUAs dat	a
	C				A		A		58	
			H CUDI	CCT ADEA	EOD DEU	ADILITAT	PLON DI AN			
TT 1	Present and Planned Land U	Ise	II. SUBJ	ECT AREA	I FUK KEH	ABILITA	ΓΙΟΝ PLAN			
11.1	Category	J SC	Prese	nt (ha)	Plan	(ha)	Increment (ha)			
	a. Irrigated paddy field			2,959		3,536	577			
	b. Rainfed paddy field			577		0	-577			
	c. Upland Field			0		0	0			
	d. Uncultivated Land e. Non-irrigable			0		0	0	-		
	Total			3,536		3,536	0	-		
				,	*		V	4		
				III.	AGRICUL	TURE				
	Present/Before Project Cone Irrigation Performance and Cr									
(1)	-		ned Area in Ir	rigated Padd	v Field	Annual	Irrigated Paddy Yield	Crop	Production (ton) 1/
	Season	Paddy (ha)	Palawija	Others (ha)		Intensity	(GKG ton/ha)	Paddy	Palawija	Others
	Season I (wet)	2,413	ž	ì	2,413	82%	4.0	11,095	•	
	Season II (dry I)				0					
	Season III (dry II) Total/Annual	2,403	0	0	2,403	81% 163%		9,612 20,707	115 115	
	Total/Allitual	4,816	U	U	4,816	103%		20,707		
	Substantially high irrigation Double cropping of paddy p B. Primary Constraint Identification & Drainage: Agronomic Issues: Paddy Marketing	racticed most ied through the	of the irrigate in the Inventory Soft pest & dise	ed area; padd Survey by the	ly yield levels JICA Study	still low; pai	lawija not introduced yet farketing: - rganizations: Managerial	capacity of Kation of extensi		
(1)	Development Plan Development Approaches - Expansion of irrigated area & - Expansion of double croppee - Strengthening of extension a Planned Irrigation Performan	d area of pado activities tailo	ly; productivi red to area sp	ity increase o	of paddy throu	gh intensifica	ation; introduction of pala	wija in dry sea		
(-)	Season		ed Area in Ir			Annual	Irrigated Paddy Yield	Crop	Production	(ton)
		Paddy (ha)	Palawija	Others (ha)	\ /	Intensity	(GKG ton/ha)	Paddy	Palawija	Others
	Season I (wet) Season II (dry I)	3,536			3,536	100%	5.0	17,680		
	Season III (dry II)	3,182	354		3,536	100%	5.0	15,910	1,770	
	Total/Annual	6,718			, ,	200%		33,590	1,770	
	Annual Increment	1,902				37%		12,883	1,655	
					IV. WUA	s				
	Number a. Target;	5.5	b. Establishe		10	a Nat	1.5	Di.etd		
(1)	Number a. Target; Performance a. Developed;		b. Under dev			c. Not yet;	15 18	Registered Not yet regis	tered	40
	u. Beveropeu,		o. onder de	, eroping,		e. 1 (or yer,	10	rior yer regio	10104	
	Problems and Constraints Operation Causes of Problems and Cons		Maintenance	e 🗆	Management	i				
(1)	- Not practice of irrigation wa Development Plan Proposed Countermeasures - Encouragement of farmers to Development Plan									
	- WUA empowerment training	σ								

V. IRRIGATION FACILITY

(1) Overall Irrigation System: C (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation) Water Resources Facility: B Main Canal System: D

Secondary Canal System : D On-farm: C

(2) Water Resources Facilty

a. Type of facility : Headworks

e. Scouring sluice gate : 2 nos. i. Condition: B (A: Functioning well, B: Partially deteriorated, C: Not b. Type of weir : Fixed weir f. Intake gate : 2 nos. functioning well, D: Serious condition for operation) c. Length of weir : 104 m g. Settling basin : provided

d. Design intake discharge : 8.0 m3/s h. Inspection bridge : provided (no info.: no information)

(3) Irrigation Canal and Inspection Road

C	anal	Lined (m)	Unlined (m)	Total (m)	Structure (nos)	Inspection road (m)	Condition	(A: Functioning well,	
Main	1	2,500	14,578	17,078	52	7,689	D	B: Partially deteriorated,	
Seco	ndary	1,000	16,306	17,306	59	10,500	D	C: Not functioning well,	
Major Problems and Constrains							operation)		

(4) Major Problems and Constrains

- Water Resources Facility

Insufficient diversion water due to sedimentation in front of intake Inflow of bed loads into canal and decrease canal flow capacity

- Irrigation Canal and Related Structure

Sedimentation or obstruction of water flow Impassable of inspection road along canal General O&M problems Difficulty on O&M

(5) Causes of Major Problems and Constraints

- Water Resources Facility

Sedimentation in front of intake

Insufficient function of settling basin, no proper gate operation of intake during flood

- Irrigation Canal and Related Structure

Insufficient function of settling basin(sediments), improper management of canal (sediments, water plant) Improper routine O&M works due to no or narrow wide of road, slope erosion by rainfall then in flow into canal No kilo and hectometer post, no structure plate or mark on structures and no identification for repair/maintenance No provision or damage of inspection road, difficulty on passing of inspection road due to damage, broken

V.2 Development Plan

- (1) Proposed Countermeasures for Major Problems
 - Water Resources Facility

Dredging or flushing of sediment, proper gate operation of headworks and intake Rehabilitation of settling basin, proper gate operation of intake during flood

- Irrigation Canal and Related Structure

Removal of sediment soil and foreign materials from canal, grass cutting Provision of inspection road both main and secondary canal with pavement Provision of kilo, hect-m posts, marking to each structure with structure name Provision or repair of inspection road with all weather type/pavement

Water Resources Facility

Dam/Headworks body : minor rehabilitation Intake civil: minor rehabilitation Intake mechanical: minor rehabilitation · minor rehabilitation

Settling basin Irrigation Canal and Related Structure

irrigation Canar and Related Structure							
Works		No rehabilitation	Rehabilitation	New construction	Total		
Canal (m)	Main	0	14,858	0	14,858		
Callai (III)	Secondary	0	15,056	0	15,056		
Structure	Main	0	45	5	50		
(nos)	Secondary	0	51	10	62		

(4)	On-farm Development			(Unit: ha)
	a. Potential Irrigated paddy field	2,959	d. Non-potential paddy field	0
	b. Potential non-irrigated paddy field	577	e. Non-potenttial non-paddy field	0
	c. Potential non-paddy field	0	Total	3 536

Rehabilitation Cost (Direct Cost) (Unit: Million Rp.) On-Farm Project Cost

W.K.F	irrigation	Drainage	Develop.	Facility	1 otai	per ha	
1,319	56,664	5,666	7,545	1,570	72,763	20.6	(W.R.F: Water Resources Facility, Develop.: Development)

		VI. PROJECT EVALUATION
VII LIDD	12 20/	

V1.2	Prioritization	on Scoring						
	Evaluation Index		Full Score	Score	Evaluation Index	Full Score	Score	Total Score
	Irrigation	Utilization of Irrigation Potential	10.0	5.0	Agricultural Productivity	20.0	14.0	68.7
	System	Urgency	25.0	20.4	Social Problem	15.0	10.5	
	-	Sustainability	15.0	8.3	Economic Impact	15.0	10.5	

VI.3 Priority Group	Group II: Second priority group	VI.4 Priority Ranking in the Province	14

Scheme	Kalaena Kiri	District	Luwu Utara
Technical Level	Technical	Registered Area	4,671 ha Year of Construction 1980
SS.38.168			Category Irrigation (Main Canal) Structure Earth Canal Condition □ A □ B □ C ☑ D Problems Sedimentation; collapse of canal; leakage from canal; difficulty on maintenance of earth canal; no inspection road.
SS.38.170			Category Irrigation (Main Canal) Structure Masonry Lined Canal Condition □ A □ B □ C ☑ D Problems Sedimentation; leakage from lined canal; crack on lined canal; deflection of lining toward inside of canal; less maintenance; and no inspection road.
SS.38.173			Category Irrigation (Secondary Canal) Structure Earth Canal Condition □ A □ B □ C ☑ D Problems Sedimentation; collapse of canal; leakage from canal; difficulty on maintenance of earth canal; no inspection road.

Condition: A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation

Scheme	Kalaena Kiri	District	Luwu Utara
Technical Level	Technical	Registered Area	4,671 ha Year of Construction 1980
SS.38.179			Category Irrigation (Secondary Canal)
Ž.			Structure Earth Canal
12110			Condition □ A □ B □ C ✓ D
			Problems Sedimentation; leakage from lined canal; crack on lined canal; deflection of lining toward inside of canal; less maintenance; and no inspection road.
			Category Ariculture, On-Farm
-1			Activity Paddy Cultivation
			Condition □ A □ B ☑ C □ D
			Problems Low density of on-farm canals and farm roads. Category
		De	Ariculture, On-Farm
			Activity Cacao Cultivation
			Condition □ A □ B ☑ C □ D Problems

Condition: A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation