

I. PROJECT FUNDAMENTALS									
I.1 General									
(1) Code Number	: 73220172			(7) Number of Farmers	: 1,250				
(2) Name of Irrigation Scheme	: Kalaena Kanan II			(8) Water Resource River	: Kalaena				
(3) District (Kabupaten)	: Luwu Utara			(9) Catchment Area (km ²)	: 1,070				
(4) Sub-district (Kecamatan)	: Buran/Wotu			(10) Completion / Last Rehabilitation Year	: 1980				
(5) Registered Area (ha)	: 5,077								
(6) Technical Level	: Technical								
I.2 Availability of Reports/Documents & References (A : Available, B : Available but partially, C : Not available/ No plan)									
a. Design Reports of Existing System(Full set)		b. Irrigation diagram			c. As-built drawings		d. Structure lists & diagram		
B		A			B		A		
e. Rehabilitation plan & its references		f. Crops and yield data			g. Cropping Calender		h. WUAs data		
C		A			A		18		
II. SUBJECT AREA FOR REHABILITATION PLAN									
II.1 Present and Planned Land Use									
Category	Present (ha)		Plan (ha)		Increment (ha)				
a. Irrigated paddy field	3,072		3,787		715				
b. Rainfed paddy field	715		0		-715				
c. Upland Field	0		0		0				
d. Uncultivated Land	0		0		0				
e. Non-irrigable	0		0		0				
Total	3,787		3,787		0				
III. AGRICULTURE									
III.1 Present/Before Project Condition									
(1) Irrigation Performance and Crop Production									
Season	Cropped Area in Irrigated Paddy Field				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton) 1/		
	Paddy (ha)	Palawija	Others (ha)	Total (ha)			Paddy	Palawija	Others
Season I (wet)	1,808			1,808	59%	4.0	9,020		
Season II (dry I)				0	0%				
Season III (dry II)	1,808			1,808	59%	4.0	7,232	143	
Total/Annual	3,616	0	0	3,616	118%	4.0	16,252	143	0
1/: Irrigated & rainfed paddy & palawija									
(2) Problems and Constraints									
<i>A. Irrigation & Agriculture Performances</i>									
- Irrigation performances still poor; existence of rainfed field (715ha)									
- Double cropping of paddy introduced; paddy yield levels still low; palawija cultivation not yet introduced									
<i>B. Primary Constraint Identified through the Inventory Survey by the JICA Study</i>									
- Irrigation & Drainage: Poor O&M at tertiary level and below			- Palawija Marketing: -			- Farmers Organizations: Managerial capacity of KTs are limited			
- Agronomic Issues: Infestation of pest & diseases			- Extension Services: Capability & experiences of PPLs are limited						
- Paddy Marketing: Poor quality of products									
III.2 Development Plan									
(1) Development Approaches									
- Expansion of irrigated area & ensuring year round irrigation water supply at on-farm level through rehabilitation & upgrading									
- Expansion of double cropped area of paddy; 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	Cropped Area in Irrigated Paddy Field				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy (ha)	Palawija	Others (ha)	Total (ha)			Paddy	Palawija	Others
Season I (wet)	3,787			3,787	100%	5.0	18,935		
Season II (dry I)		379		379	10%			1,895	
Season III (dry II)	3,408			3,408	90%	5.0	17,040		
Total/Annual	7,195	379	0	7,574	200%	5.0	35,975	1,895	0
Annual Increment	3,579	379	0	3,958	82%	1.0	19,723	1,752	0
IV. WUAs									
IV.1 Existing Condition									
(1) Number	a. Target;	42	b. Established;	18	c. Not yet;	24	Registered		0
Performance	a. Developed;	0	b. Under developing;	4	c. Not yet;	14	Not yet registered		18
(2) Problems and Constraints									
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management									
(3) Causes of Problems and Constraints									
- Less attention of WUA activities among members.									
- Less coordination by District WRS office.									
IV.2 Development Plan									
(1) Proposed Countermeasures									
- Acceleration of WUA establishment and District WRS coordination.									
(2) Development Plan									
- WUA empowerment training.									

V. IRRIGATION FACILITY

V.1 Existing Condition

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

(2) Water Resources Facility
a. Type of facility : - e. Scouring sluice gate : - i. Condition : -
b. Type of weir : - f. Intake gate : - (A: Functioning well, B: Partially deteriorated, C: Not
c. Length of weir : - g. Settling basin : - functioning well, D: Serious condition for operation)
d. Design intake discharge : - h. Inspection bridge : - (no info.: no information)

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined (m)	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	0	14,533	14,533	28	14,533	D
Secondary	0	23,168	23,168	63	0	D

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

(4) Major Problems and Constrains

- Water Resources Facility

-

- Irrigation Canal and Related Structure

Sedimentation or obstruction of water flow
General O&M problems
Difficulty on maintenance of earth canal
Lower function of regulating structure on canal
Difficulty on O&M

(5) Causes of Major Problems and Constraints

- Water Resources Facility

-

- Irrigation Canal and Related Structure

No provision of settling basin (sediments), improper management of canal (sediments, water plant)
No kilo and hectometer post, no structure plate or mark on structures and no identification for repair/maintenance
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
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

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- Irrigation Canal and Related Structure

Removal of sediment soil and foreign materials from canal, grass cutting
Provision of kilo, hect-m posts, marking to each structure with structure name
Provision of concrete lining
Replacement and reconstruction of regulating structure on canal
Provision or repair of inspection road with all weather type/pavement

(2) Water Resources Facility

Dam/Headworks body : -

Intake, civil : -

Intake, mechanical : -

Settling basin : -

(3) Irrigation Canal and Related Structure

	Works	No rehabilitation	Rehabilitation	New construction	Total
Canal (m)	Main	0	10,900	0	10,900
	Secondary	0	17,376	0	17,376
Structure (nos)	Main	0	21	2	23
	Secondary	0	47	9	57

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	3,072	d. Non-potential paddy field	0
b. Potential non-irrigated paddy field	715	e. Non-potential non-paddy field	0
c. Potential non-paddy field	0	Total	3,787

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
218	43,257	4,326	8,130	1,570	57,501	15.2

(W.R.F: Water Resources Facility, Develop.: Development)

VI. PROJECT EVALUATION

VI.1 EIRR

VI.2 Prioritization Scoring




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

VI.3 Priority Group

VI.4 Priority Ranking in the Province

Scheme	Kalaena Kanan II	District	Luwu Utara	
Technical Level	Technical	Registered Area	5,077 ha	Year of Construction 1980
		<p><u>Category</u> Irrigation (Main Canal)</p>		
		<p><u>Structure</u> Earth Canal</p>		
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D</p>		
		<p><u>Category</u> Irrigation (Main Canal)</p>		
		<p><u>Structure</u> Earth Canal</p>		
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D</p>		
		<p><u>Category</u> Irrigation (Secondary Canal)</p>		
		<p><u>Structure</u> Siphon</p>		
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D</p>		
		<p><u>Problems</u> Sedimentation; collapse of canal; leakage from canal; difficulty on maintenance of earth canal; no inspection road.</p>		
		<p><u>Problems</u> Difficulty on maintenance of earth canal; no inspection road.</p>		
		<p><u>Problems</u> Clogging by dust, garbage.</p>		

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

Scheme	Kalaena Kanan II	District	Luwu Utara		
Technical Level	Technical	Registered Area	5,077 ha	Year of Construction	1980
		<p><u>Category</u> Irrigation (Secondary Canal)</p> <hr/> <p><u>Structure</u> Division Structure</p> <hr/> <p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D</p> <hr/> <p><u>Problems</u> Lower function of division structure due to sedimentation in front of gate; physical operation problem on structure; deterioration of steel gates; damage on structure.</p>			
		<p><u>Category</u> Irrigation (Secondary Canal)</p> <hr/> <p><u>Activity</u> Earth Canal</p> <hr/> <p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p> <hr/> <p><u>Problems</u> Sedimentation; collapse of canal; leakage from canal; difficulty on maintenance of earth canal; no inspection road.</p>			
		<p><u>Category</u> Ariculture, On-Farm</p> <hr/> <p><u>Activity</u> Secondary Crop Cultivation</p> <hr/> <p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p> <hr/> <p><u>Problems</u></p>			

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	: 73220173			(7) Number of Farmers	: 1,500					
(2) Name of Irrigation Scheme	: Kalaena (Rt. Bendung)			(8) Water Resource River	: Kalaena					
(3) District (Kabupaten)	: Luwu Utara			(9) Catchment Area (km ²)	: 1,070					
(4) Sub-district (Kecamatan)	: Mangkutana			(10) Completion / Last Rehabilitation Year	: 1980					
(5) Registered Area (ha)	: 2,730									
(6) Technical Level	: Technical									
I.2 Availability of Reports/Documents & References (A : Available, B : Available but partially, C : Not available/ No plan)										
a. Design Reports of Existing System(Full set)		b. Irrigation diagram			c. As-built drawings		d. Structure lists & diagram			
B		A			B		A			
e. Rehabilitation plan & its references		f. Crops and yield data			g. Cropping Calender		h. WUAs data			
C		A			A		30			
II. SUBJECT AREA FOR REHABILITATION PLAN										
II.1 Present and Planned Land Use										
Category		Present (ha)		Plan (ha)		Increment (ha)				
a. Irrigated paddy field		1,823		2,154		331				
b. Rainfed paddy field		331		0		-331				
c. Upland Field		0		0		0				
d. Uncultivated Land		0		0		0				
e. Non-irrigable		0		0		0				
Total		2,154		2,154		0				
III. AGRICULTURE										
III.1 Present/Before Project Condition										
(1) Irrigation Performance and Crop Production										
Season		Cropped Area in Irrigated Paddy Field				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton) 1/		
		Paddy (ha)	Palawija	Others (ha)	Total (ha)			Paddy	Palawija	Others
Season I (wet)		1,823			1,823	100%	4.5	9,031		
Season II (dry I)					0					
Season III (dry II)		1,823			1,823	100%	4.5	8,204	66	
Total/Annual		3,646	0	0	3,646	200%	4.5	17,235	66	0
1/: Irrigated & rainfed paddy & palawija										
(2) Problems and Constraints										
<i>A. Irrigation & Agriculture Performances</i>										
- High irrigation performances attained; poor drainage problem reported; existence of rainfed area (331ha)										
- Double cropping of paddy practiced in the entire irrigated area; paddy yield levels moderate; palawija not introduced yet										
<i>B. Primary Constraint Identified through the Inventory Survey by the JICA Study</i>										
- Irrigation & Drainage:		Poor drainage			- Palawija Marketing:		-			
- Agronomic Issues:		Damage caused by rat			- Farmers Organizations:		No collaboration among KT's			
- Paddy Marketing		Limited bargaining power of farmers			- Extension Services:		Extension activities of PPLs are 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 further 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 KT's										
(2) Planned Irrigation Performances and Crop Production										
Season		Cropped Area in Irrigated Paddy Field				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
		Paddy (ha)	Palawija	Others (ha)	Total (ha)			Paddy	Palawija	Others
Season I (wet)		2,154			2,154	100%	5.5	11,847		
Season II (dry I)			431		431	20%			2,155	
Season III (dry II)		2,154			2,154	100%	5.5	11,847		
Total/Annual		4,308	431	0	4,739	220%	5.5	23,694	2,155	0
Annual Increment		662	431	0	1,093	20%	1.0	6,460	2,089	0
IV. WUAs										
IV.1 Existing Condition										
(1) Number	a. Target;	30	b. Established;	22	c. Not yet;	8	Registered		0	
Performance	a. Developed;	1	b. Under developing;	3	c. Not yet;	18	Not yet registered		22	
(2) Problems and Constraints										
<input type="checkbox"/> Operation <input checked="" type="checkbox"/> Maintenance <input type="checkbox"/> Management										
(3) Causes of Problems and Constraints										
- No WUA action plan and membership fee collection system.										
IV.2 Development Plan										
(1) Proposed Countermeasures										
- Encouragement of farmers to vitalize WUA activities.										
- Acceleration of WUA establishment.										
(2) Development Plan										
- WUA empowerment training.										

V. IRRIGATION FACILITY

V.1 Existing Condition

- (1) Overall Irrigation System : B (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation)
 Water Resources Facility : B Main Canal System : C Secondary Canal System : C On-farm : C
- (2) Water Resources Facility
- | | | |
|---|----------------------------------|---|
| a. Type of facility : Headworks | e. Scouring sluice gate : 2 nos. | i. Condition : B |
| b. Type of weir : Fixed weir | f. Intake gate : 3 nos. | (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation) |
| c. Length of weir : 104 m | g. Settling basin : provided | (no info.: no information) |
| d. Design intake discharge : 19.3 m ³ /s | h. Inspection bridge : provided | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined (m)	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	11,331	0	11,331	29	11,331	C
Secondary	15,006	40	15,046	35	15,046	C

(A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for 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
 - Leakage from canal
 - Collapse of canal
- (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 regular maintenance of canal, settlement of canal then insufficient freeboard and overtopping
 - Improper maintenance; insufficient nos. of cross drain, berm width, or catch drain; and/or steep slope of canal

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
 - Repair of leakage from canal, widen canal wide, recompaction of embankment
 - Redesign of canal section; provision of cross drain, proper width of berm, catch drain, and/or proper slope

(2) Water Resources Facility

Dam/Headworks body : minor rehabilitation Intake, civil : minor rehabilitation Intake, mechanical : minor rehabilitation
 Settling basin : minor rehabilitation

(3) Irrigation Canal and Related Structure

	Works	No rehabilitation	Rehabilitation	New construction	Total
Canal (m)	Main	0	8,951	0	8,951
	Secondary	0	11,886	0	11,886
Structure (nos)	Main	0	23	2	25
	Secondary	0	28	6	33

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	1,823	d. Non-potential paddy field	0
b. Potential non-irrigated paddy field	331	e. Non-potential non-paddy field	0
c. Potential non-paddy field	0	Total	2,154

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
1,214	23,967	2,397	4,585	1,570	33,734	15.7

(W.R.F: Water Resources Facility, Develop.: Development)

VI. PROJECT EVALUATION

VI.1 EIRR 16.3%

VI.2 Prioritization Scoring




Evaluation Index		Full Score	Score	Evaluation Index		Full Score	Score	Total Score
Irrigation System	Utilization of Irrigation Potential	10.0	5.0	Agricultural Productivity	20.0	14.0	63.3	
	Urgency	25.0	18.0	Social Problem	15.0	7.5		
	Sustainability	15.0	8.3	Economic Impact	15.0	10.5		

VI.3 Priority Group




Group III: Third priority group

VI.4 Priority Ranking in the Province

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Scheme	Kalaena (Rt. Bendung)	District	Luwu Utara	
Technical Level	Technical	Registered Area	2,730 ha	Year of Construction 1980
		<p><u>Category</u> Irrigation (Main Canal)</p> <hr/> <p><u>Structure</u> Earth Canal</p> <hr/> <p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p> <hr/> <p><u>Problems</u> Sedimentation; collapse of canal; leakage from canal; difficulty on maintenance of earth canal; no inspection road.</p>		
		<p><u>Category</u> Irrigation (Main Canal)</p> <hr/> <p><u>Structure</u> Division Structure</p> <hr/> <p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p> <hr/> <p><u>Problems</u> Lower function of division structure due to sedimentation in front of gate; physical operation problem on structure; deterioration of steel gates.</p>		
		<p><u>Category</u> Irrigation (Main Canal)</p> <hr/> <p><u>Structure</u> Masonry Lined Canal</p> <hr/> <p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p> <hr/> <p><u>Problems</u> Sedimentation; leakage from lined canal; crack on lined canal; deflection of lining toward inside of canal; less maintenance; and no inspection road.</p>		

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

Scheme		District	
Kalaena (Rt. Bendung)		Luwu Utara	
Technical Level	Registered Area	Year of Construction	
Technical	2,730 ha	1980	
		<i>Category</i> Irrigation (Secondary Canal)	
		<i>Structure</i> Masonry Lined Canal	
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	
		<i>Category</i> Ariculture, On-Farm	
		<i>Activity</i> Paddy Cultivation	
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	
		<i>Category</i> Ariculture, On-Farm	
		<i>Activity</i> Nursery Preparation	
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	
		<i>Problems</i> Sedimentation; leakage from lined canal; crack on lined canal; deflection of lining toward inside of canal; less maintenance; and no inspection road.	
		<i>Problems</i> Low density of on-farm canals and farm roads.	
		<i>Problems</i>	

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	: 73220226			(7) Number of Farmers	: 257				
(2) Name of Irrigation Scheme	: Kuri-Kuri, Kasambi			(8) Water Resource River	: Masamba				
(3) District (Kabupaten)	: Luwu Utara			(9) Catchment Area (km ²)	: 102.2				
(4) Sub-district (Kecamatan)	: Masamba			(10) Completion / Last Rehabilitation Year	: 1993				
(5) Registered Area (ha)	: 3,000								
(6) Technical Level	: Semi Technical								
I.2 Availability of Reports/Documents & References (A : Available, B : Available but partially, C : Not available/ No plan)									
a. Design Reports of Existing System(Full set)		b. Irrigation diagram			c. As-built drawings		d. Structure lists & diagram		
B		B			B		B		
e. Rehabilitation plan & its references		f. Crops and yield data			g. Cropping Calender		h. WUAs data		
C		A			A		5		
II. SUBJECT AREA FOR REHABILITATION PLAN									
II.1 Present and Planned Land Use									
Category	Present (ha)		Plan (ha)		Increment (ha)				
a. Irrigated paddy field	995		3,000		2,005				
b. Rainfed paddy field	2,005		0		-2,005				
c. Upland Field	0		0		0				
d. Uncultivated Land	0		0		0				
e. Non-irrigable	0		0		0				
Total	3,000		3,000		0				
III. AGRICULTURE									
III.1 Present/Before Project Condition									
(1) Irrigation Performance and Crop Production									
Season	Cropped Area in Irrigated Paddy Field				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton) 1/		
	Paddy (ha)	Palawija	Others (ha)	Total (ha)			Paddy	Palawija	Others
Season I (wet)	995			995	100%	4.0	8,993		
Season II (dry I)	995			995	100%	4.0	3,980	401	
Season III (dry II)				0					
Total/Annual	1,990	0	0	1,990	200%	4.0	12,973	401	0
1/: Irrigated & rainfed paddy & palawija									
(2) Problems and Constraints									
<i>A. Irrigation & Agriculture Performances</i>									
- High irrigation performances attained; existence of extensive rainfed area (2,005ha)									
- Double cropping of paddy practiced in the entire irrigated area; paddy yield levels still low; palawija not introduced yet									
<i>B. Primary Constraint Identified through the Inventory Survey by the JICA Study</i>									
- Irrigation & Drainage:	Poor O&M at main & 2ry canals				- Palawija Marketing:	-			
- Agronomic Issues:	Infestation of pest & diseases				- Farmers Organizations:	Most members are not active			
- 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									
- Expansion of double cropped area of paddy; 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 KT's									
(2) Planned Irrigation Performances and Crop Production									
Season	Cropped Area in Irrigated Paddy Field				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy (ha)	Palawija	Others (ha)	Total (ha)			Paddy	Palawija	Others
Season I (wet)	3,000			3,000	100%	5.0	15,000		
Season II (dry I)	2,100	300		2,400	80%	5.0	10,500	1,500	
Season III (dry II)				0					
Total/Annual	5,100	300	0	5,400	180%	5.0	25,500	1,500	0
Annual Increment	3,110	300	0	3,410	-20%	1.0	12,527	1,099	0
IV. WUAs									
IV.1 Existing Condition									
(1) Number	a. Target;	0	b. Established;	0	c. Not yet;	0	Registered		0
Performance	a. Developed;	0	b. Under developing;	0	c. Not yet;	0	Not yet registered		0
(2) Problems and Constraints									
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input type="checkbox"/> Management									
(3) Causes of Problems and Constraints									
- Administrative issues on WUA establishment.									
IV.2 Development Plan									
(1) Proposed Countermeasures									
- Acceleration of WUA establishment.									
(2) Development Plan									

V. IRRIGATION FACILITY

V.1 Existing Condition

- (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 Facility
- | | | | | | |
|----------------------------|-------------------------|-------------------------|----------------|---|-----|
| a. Type of facility | : Headworks | e. Scouring sluice gate | : 1 nos. | i. Condition | : B |
| b. Type of weir | : Fixed weir | f. Intake gate | : 1 nos. | (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation) | |
| c. Length of weir | : 40 m | g. Settling basin | : not provided | (no info.: no information) | |
| d. Design intake discharge | : 2.9 m ³ /s | h. Inspection bridge | : not provided | | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined (m)	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	9	7,416	7,425	2	0	D
Secondary	0	769	769	2	0	D

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

(4) Major Problems and Constrains

- Water Resources Facility
 - Settlement or breakdown of stilling basin of weir
 - Physical operational problem on flood/scouring sluice gate(s) of headworks
 - 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
 - Lower function of regulating structure on canal
 - Difficulty on O&M
- (5) Causes of Major Problems and Constraints
- Water Resources Facility
 - Insufficient strength of weir foundation, not enough foundation treatment, or insufficient length of stilling basin
 - Improper design, installation and/or maintenance of flood/scouring sluice gate(s); breakdown of hoist, stem, guide frame or leaf
 - No provision of settling basin, no proper gate operation of intake during flood
 - Irrigation Canal and Related Structure
 - No provision 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
 - Deterioration of regulating structure on canal, especially gate and metal works
 - 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
 - Reconstruction of stilling basin of weir
 - Replacement of control system or damaged equipment of flood/scouring sluice gate(s)
 - Provision 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
 - Replacement and reconstruction of regulating structure on canal
 - Provision or repair of inspection road with all weather type/pavement

(2) Water Resources Facility

Dam/Headworks body : minor rehabilitation Intake, civil : large rehabilitation Intake, mechanical : large rehabilitation
Settling basin : replacement or new

(3) Irrigation Canal and Related Structure

	Works	No rehabilitation	Rehabilitation	New construction	Total
Canal (m)	Main	0	7,425	742	8,168
	Secondary	0	769	20,910	21,679
Structure (nos)	Main	0	2	15	17
	Secondary	0	2	100	102

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	995	d. Non-potential paddy field	2,005
b. Potential non-irrigated paddy field	0	e. Non-potential non-paddy field	0
c. Potential non-paddy field	0	Total	3,000

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
3,644	45,767	4,577	7,178	1,570	62,736	20.9

(W.R.F: Water Resources Facility, Develop.: Development)

VI. PROJECT EVALUATION

VI.1 EIRR

VI.2 Prioritization Scoring

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

VI.3 Priority Group

VI.4 Priority Ranking in the Province

Scheme	Kuri-Kuri, Kasambi	District	Luwu Utara		
Technical Level	Semi-technical	Registered Area	3,000 ha	Year of Construction	1993
		<p><u>Category</u> Irrigation (Headworks)</p> <hr/> <p><u>Structure</u> Scouring Sluice</p> <hr/> <p><u>Condition</u> <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D</p> <hr/> <p><u>Problems</u> Insufficient diversion water due to sedimentation at scouring sluice.</p>			
		<p><u>Category</u> Irrigation (Main Canal)</p> <hr/> <p><u>Structure</u> Masonry Lined Canal</p> <hr/> <p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p> <hr/> <p><u>Problems</u> Damage on lined canal; leakage from lined canal; deflection of lining toward inside of canal; no inspection road; less maintenance.</p>			
		<p><u>Category</u> Irrigation (Main Canal)</p> <hr/> <p><u>Structure</u> Masonry Lined Canal</p> <hr/> <p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p> <hr/> <p><u>Problems</u> Sedimentation; damage on lined canal; leakage from lined canal; deflection of lining toward inside of canal; no inspection road; less maintenance.</p>			

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

Scheme	Kuri-Kuri, Kasambi	District	Luwu Utara			
Technical Level	Semi-technical	Registered Area	3,000 ha	Year of Construction	1993	
	<p><i>Category</i> Irrigation (Secondary Canal)</p>	<p><i>Structure</i> Earth Canal</p>	<p><i>Condition</i></p> <p><input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
	<p><i>Problems</i> Sedimentation; collapse of canal; leakage from canal; difficulty on maintenance of earth canal; no inspection road.</p>					
		<p><i>Category</i> Agriculture, On-Farm</p>	<p><i>Activity</i> Paddy Cultivation</p>	<p><i>Condition</i></p> <p><input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>		
		<p><i>Problems</i> Low density of on-farm canals and farm roads.</p>				
		<p><i>Category</i> Agriculture, On-Farm</p>	<p><i>Activity</i> Land Preparation by Man Power</p>	<p><i>Condition</i></p> <p><input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>		
		<p><i>Problems</i> Low density of on-farm canals and farm roads.</p>				

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