

LEGEND

- Capital Town of District
- Sub-District Town
- District Boundary
- Sub-District Boundary
- Provincial Road
- District Road
- River
- Irrigation Scheme
- Technical Irrigation

Irrigation Scheme

Name of Scheme	Registered Area (Ha)	Subject Area (Ha)
32. Maloso, Sekka	2,991 T	2,357
33. Lakejo	1,265 T	960
34. Gamo-Gamo	4,820 T	4,743

T : Technical Irrigation

The Study on Comprehensive Recovery Program
of Irrigation Agriculture

Japan International Cooperation Agency

**Location Map of Irrigation Schemes
in Polmas District**

I. PROJECT FUNDAMENTALS										
I.1 General										
(1) Code Number	: 73190018	(7)	Number of Farmers	: 3,185						
(2) Name of Irrigation Scheme	: Maloso, Sekka	(8)	Water Resource River	: Maloso						
(3) District (Kabupaten)	: Polmas	(9)	Catchment Area (km ²)	: 808.00						
(4) Sub-district (Kecamatan)	: Wonomulyo	(10)	Completion / Last Rehabilitation Year	: 1937/1996						
(5) Registered Area (ha)	: 2,991									
(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		b. Irrigation diagram	A		c. As-built drawings	B		d. Structure lists & diagram	A
e. Rehabilitation plan & its references	C		f. Crops and yield data	A		g. Cropping Calender	A		h. WUAs data	26
II. SUBJECT AREA FOR REHABILITATION PLAN										
II.1 Present and Planned Land Use										
Category	Present (ha)	Plan (ha)	Increment (ha)							
a. Irrigated paddy field	1,911	2,357	446							
b. Rainfed paddy field	446	0	-446							
c. Upland Field	0	0	0							
d. Uncultivated Land	0	0	0							
e. Non-irrigable	0	0	0							
Total	2,357	2,357	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)	1,911			1,911	100%	4.5	9,715			
Season II (dry I)	1,911			1,911	100%	5.0	9,555			
Season III (dry II)				0	0%			223		
Total/Annual	3,822	0	0	3,822	200%	4.8	19,270	223	0	
1/: Irrigated & rainfed paddy & palawija										
(2) Problems and Constraints										
<i>A. Irrigation & Agriculture Performances</i>										
- High irrigation performances attained in irrigated area; however water shortage in dry season reported; existence of rainfed field (446ha)										
- Double cropping of paddy practiced in the entire irrigated area; paddy yield levels low to moderate; palawija not introduced yet										
<i>B. Primary Constraint Identified through the Inventory Survey by the JICA Study</i>										
- Irrigation & Drainage:	Water shortage at on-farm level in dry season			- Palawija Marketing:	Low marketing prices					
- Agronomic Issues:	Damage caused by rat			- Farmers Organizations:	Managerial capacity of KTs are limited					
- 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										
- Extension activities toward improvement of post-harvest & marketing; 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)	2,357			2,357	100%	5.5	12,964			
Season II (dry I)	2,121	236		2,357	100%	5.5	11,666	1,180		
Season III (dry II)				0						
Total/Annual	4,478	236	0	4,714	200%	5.5	24,629	1,180	0	
Annual Increment	656	236	0	892	0%	0.7	5,359	957	0	
IV. WUAs										
IV.1 Existing Condition										
(1) Number	a. Target;	26	b. Established;	26	c. Not yet;	0	Registered		0	
Performance	a. Developed;	4	b. Under developing;	22	c. Not yet;	0	Not yet registered		26	
(2) Problems and Constraints										
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input type="checkbox"/> Management										
(3) Causes of Problems and Constraints (No information)										
IV.2 Development Plan										
(1) Proposed Countermeasures										
(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 : C Secondary Canal System : D On-farm : D
- (2) Water Resources Facility
- | | | | | | |
|----------------------------|-------------------------|-------------------------|----------------|---|-----|
| a. Type of facility | : Free Intake | e. Scouring sluice gate | : - | i. Condition | : B |
| b. Type of 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 | : - | g. Settling basin | : not provided | (no info.: no information) | |
| d. Design intake discharge | : 4.9 m ³ /s | h. Inspection bridge | : - | | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined (m)	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	6,714	0	6,714	1	6,714	C
Secondary	0	18,723	18,723	23	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
 - 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
 - Impassable of inspection road along canal
 - General O&M problems
 - Difficulty on maintenance of earth canal
 - Difficulty on O&M
- (5) Causes of Major Problems and Constraints
 - Water Resources Facility
 - 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
 - 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
 - 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
 - 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
 - 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 of concrete lining
 - Provision or repair of inspection road with all weather type/pavement

(2) Water Resources Facility

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

(3) Irrigation Canal and Related Structure

	Works	No rehabilitation	Rehabilitation	New construction	Total
Canal (m)	Main	0	5,304	0	5,304
	Secondary	0	14,791	0	14,791
Structure (nos)	Main	0	1	24	25
	Secondary	0	18	4	22

(4) On-farm Development

(Unit: ha)

a. Potential irrigated paddy field	1,911	d. Non-potential paddy field	0
b. Potential non-irrigated paddy field	446	e. Non-potential non-paddy field	0
c. Potential non-paddy field	0	Total	2,357

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
3,112	24,344	2,434	5,060	1,570	36,520	15.5

(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	5.0	Agricultural Productivity	20.0	11.0
	Urgency	25.0	19.6	Social Problem	15.0	12.0
	Sustainability	15.0	6.8	Economic Impact	15.0	9.0

VI.3 Priority Group

VI.4 Priority Ranking in the Province

Scheme	Maloso, Sekka	District	Polmas		
Technical Level	Technical	Registered Area	2,991 ha	Year of Construction	1937/96
180		<p><u>Category</u> Irrigation (Headworks)</p> <hr/> <p><u>Structure</u> Weir Crest, Rear View</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> Crack or damage on weir crest; settlement of weir body.</p>			
183		<p><u>Category</u> Irrigation (Headworks)</p> <hr/> <p><u>Structure</u> Intake, Scouring Sluice Gate</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> Leakage from gate leaf; insufficient strength against design load due to rust, decay of steel material.</p>			
184		<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	
Maloso, Sekka		Polmas	
Technical Level	Technical	Registered Area	2,991 ha
		Year of Construction	1937/96
		<u>Category</u> Agriculture, On-Farm	
		<u>Structure</u> Paddy Field	
		<u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D	
		<u>Problems</u> Tranplanting	
		<u>Category</u> Agriculture, On-Farm	
		<u>Activity</u> Paddy Cultivation	
		<u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D	
		<u>Problems</u> Low density of on-farm canals and farm roads.	
		<u>Category</u> _____	
		<u>Activity</u> _____	
		<u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	
		<u>Problems</u> _____	

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	: 73190019	(7) Number of Farmers	: 837							
(2) Name of Irrigation Scheme	: Lakejo	(8) Water Resource River	: Lakejo/Riso							
(3) District (Kabupaten)	: Polewali	(9) Catchment Area (km ²)	: 39.375							
(4) Sub-district (Kecamatan)	: Wonomulyo/Tadango	(10) Completion / Last Rehabilitation Year	: 1969/1986							
(5) Registered Area (ha)	: 1,265									
(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		b. Irrigation diagram	A		c. As-built drawings	B		d. Structure lists & diagram	A
e. Rehabilitation plan & its references	C		f. Crops and yield data	A		g. Cropping Calender	A		h. WUAs data	12
II. SUBJECT AREA FOR REHABILITATION PLAN										
II.1 Present and Planned Land Use										
Category	Present (ha)	Plan (ha)	Increment (ha)							
a. Irrigated paddy field	960	960	0							
b. Rainfed paddy field	0	0	0							
c. Upland Field	0	0	0							
d. Uncultivated Land	0	0	0							
e. Non-irrigable	0	0	0							
Total	960	960	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)	960			960	100%	4.0	3,840			
Season II (dry I)	761			761	79%	4.5	3,425			
Season III (dry II)				0						
Total/Annual	1,721	0	0	1,721	179%	4.2	7,265	0	0	
1/: Irrigated & rainfed paddy & palawija										
(2) Problems and Constraints										
<i>A. Irrigation & Agriculture Performances</i>										
- High irrigation performances attained; however water shortage in dry season reported										
- Double cropping of paddy practiced in most of the entire irrigated area; paddy yield levels low to moderate; palawija not introduced yet										
<i>B. Primary Constraint Identified through the Inventory Survey by the JICA Study</i>										
- Irrigation & Drainage:	Water shortage at on-farm level in dry season				- Palawija Marketing:	Limited bargaining power of farmers				
- Agronomic Issues:	Farmers not following recommended practices				- Farmers Organizations:	No collaboration among KTs				
- Paddy Marketing	Poor quality of products				- Extension Services:	Capability & experiences of PPLs are limited				
III.2 Development Plan										
(1) Development Approaches										
- Ensuring year round irrigation water supply at on-farm level through rehabilitation										
- 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)	960			960	100%	5.0	4,800			
Season II (dry I)	864	96		960	100%	5.5	4,752	115		
Season III (dry II)				0						
Total/Annual	1,824	96	0	1,920	200%	5.2	9,552	115	0	
Annual Increment	103	96	0	199	21%	1.0	2,288	115	0	
IV. WUAs										
IV.1 Existing Condition										
(1) Number	a. Target;	15	b. Established;	15	c. Not yet;	0	Registered		0	
Performance	a. Developed;	0	b. Under developing;	15	c. Not yet;	0	Not yet registered		15	
(2) Problems and Constraints										
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management										
(3) Causes of Problems and Constraints										
- No collection of WUA membership fee.										
IV.2 Development Plan										
(1) Proposed Countermeasures										
- Improvement of administration management system										
(2) Development Plan										
- WUA management 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 : B Main Canal System : D Secondary Canal System : D On-farm : D
- (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 | : 36 m | g. Settling basin | : not provided | (no info.: no information) | |
| d. Design intake discharge | : 3.0 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	402	0	402	1	0	D
Secondary	7,307	1,400	8,707	24	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
 - Fallen down, inclined, or washed away of retaining wall of weir
 - Insufficient diversion water due to sedimentation in front of intake
 - Physical operational problem on intake gate(s)
- Irrigation Canal and Related Structure
 - Impassable of inspection road along canal
 - 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
 - Insufficient quality of concrete or masonry material, over acting earth pressure more than design
 - 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
 - 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
 - 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
 - Reconstruction of retaining wall of weir
 - Dredging or flushing of sediment, proper gate operation of headworks and intake
 - Replacement of intake gate(s)
- Irrigation Canal and Related Structure
 - 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 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 : 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	306	0	306
	Secondary	0	6,617	0	6,617
Structure (nos)	Main	0	1	0	1
	Secondary	0	18	4	22

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	960	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	960

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
2,587	5,897	590	1,968	1,260	12,302	12.8

(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

(Subject area is less than 1,000 ha)

VI.4 Priority Ranking in the Province

Scheme	Lakejo	District	Polmas	
Technical Level	Technical	Registered Area	1,265 ha	Year of Construction 1969/86
 <p>SS.33.156</p>		<p><u>Category</u> Irrigation (Headworks)</p> <p><u>Structure</u> Stilling Basin, Ripraps</p> <p><u>Condition</u> <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D</p> <p><u>Problems</u> Washed away of stilling basin; washed away of ripraps or gabions at downstream of stilling basin.</p>		
 <p>SS.33.148</p>		<p><u>Category</u> Irrigation (Headworks)</p> <p><u>Structure</u> Intake</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> Insufficient diversion water due to sedimentation in front of intake; broken of gates.</p>		
 <p>SS.33.158</p>		<p><u>Category</u> Irrigation (Secondary Canal)</p> <p><u>Structure</u> Division Structure</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> Lower function of division structure due to sedimentation in front gate; physical operation problem on structure; deterioration of steel gates..</p>		

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

Scheme	Lakejo	District	Polmas		
Technical Level	Technical	Registered Area	1,265 ha	Year of Construction	1969/86
		<p><u>Category</u> Irrigation (Secondary Canal)</p> <hr/> <p><u>Structure</u> Earth Canal</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> Sedimentation; collapse of canal; leakage from canal; difficulty on maintenance of earth canal; no inspection road.</p>			
		<p><u>Category</u> Agriculture, On-Farm</p> <hr/> <p><u>Activity</u> Transportation of Products</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> Bicycle transportation due to no farm roads.</p>			
		<p><u>Category</u> Agriculture, On-Farm</p> <hr/> <p><u>Activity</u> Treshering by Power Engine</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></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	: 73190198	(7) Number of Farmers	: 2,151							
(2) Name of Irrigation Scheme	: Gamo-Gamo	(8) Water Resource River	: Sungai Andau							
(3) District (Kabupaten)	: Polmas	(9) Catchment Area (km ²)	: 70.625							
(4) Sub-district (Kecamatan)	: Wonomulyo	(10) Completion / Last Rehabilitation Year	: 1937/1996							
(5) Registered Area (ha)	: 4,820									
(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		b. Irrigation diagram	A		c. As-built drawings	B		d. Structure lists & diagram	A
e. Rehabilitation plan & its references	C		f. Crops and yield data	A		g. Cropping Calender	A		h. WUAs data	28
II. SUBJECT AREA FOR REHABILITATION PLAN										
II.1 Present and Planned Land Use										
Category	Present (ha)	Plan (ha)	Increment (ha)							
a. Irrigated paddy field	2,371	4,743	2,372							
b. Rainfed paddy field	2,372	0	-2,372							
c. Upland Field	0	0	0							
d. Uncultivated Land	0	0	0							
e. Non-irrigable	0	0	0							
Total	4,743	4,743	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)	2,367			2,367	100%	4.0	15,398			
Season II (dry I)	2,310	41		2,351	99%	4.5	10,395	515		
Season III (dry II)				0						
Total/Annual	4,677	41	0	4,718	199%	4.2	25,793	515	0	
1/: Irrigated & rainfed paddy & palawija										
(2) Problems and Constraints										
<i>A. Irrigation & Agriculture Performances</i>										
- High irrigation performances attained; however water shortage in dry season reported										
- Double cropping of paddy practiced in the entire irrigated area; paddy yield levels low to moderate; palawija introduced limitedly										
<i>B. Primary Constraint Identified through the Inventory Survey by the JICA Study</i>										
- Irrigation & Drainage:	Water shortage at on-farm level in dry season				- Palawija Marketing:	Low marketing prices				
- Agronomic Issues:	Damage caused by rat				- Farmers Organizations:	Managerial capacity of KTs are limited				
- Paddy Marketing	Low marketing prices				- Extension Services:	Implementation of extension programs is limited				
III.2 Development Plan										
(1) Development Approaches										
- Ensuring year round irrigation water supply at on-farm level through rehabilitation										
- 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)	4,743			4,743	100%	5.0	23,715			
Season II (dry I)	2,846	948		3,794	80%	5.5	15,653	2,986		
Season III (dry II)				0						
Total/Annual	7,589	948	0	8,537	180%	5.2	39,368	2,986	0	
Annual Increment	2,912	907	0	3,819	-19%	1.0	13,575	2,471	0	
IV. WUAs										
IV.1 Existing Condition										
(1) Number	a. Target;	31	b. Established;	31	c. Not yet;	0	Registered		0	
Performance	a. Developed;	4	b. Under developing;	27	c. Not yet;	0	Not yet registered		31	
(2) Problems and Constraints										
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input type="checkbox"/> Management										
(3) Causes of Problems and Constraints (No information)										
IV.2 Development Plan										
(1) Proposed Countermeasures										
(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 : C Secondary Canal System : D On-farm : C
- (2) Water Resources Facility
- | | | | | | |
|----------------------------|-------------------------|-------------------------|------------|---|-----|
| a. Type of facility | : Headworks | e. Scouring sluice gate | : 6 nos. | i. Condition | : B |
| b. Type of weir | : Fixed weir | f. Intake gate | : 7 nos. | (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation) | |
| c. Length of weir | : 14 m | g. Settling basin | : provided | (no info.: no information) | |
| d. Design intake discharge | : 5.2 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	300	770	1,070	2	1,070	C
Secondary	3,614	26,376	29,990	43	7,389	D

(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
 - 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
 - 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)
 - 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
 - Dredging or flushing of sediment, proper gate operation of headworks and intake
 - Replacement 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 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 : minor rehabilitation Intake, civil : minor rehabilitation Intake, mechanical : minor rehabilitation
Settling basin : replacement or new

(3) Irrigation Canal and Related Structure

	Works	No rehabilitation	Rehabilitation	New construction	Total
Canal (m)	Main	0	1,070	0	1,070
	Secondary	0	29,990	0	29,990
Structure (nos)	Main	0	2	0	2
	Secondary	0	43	9	52

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	2,371	d. Non-potential paddy field	300
b. Potential non-irrigated paddy field	2,072	e. Non-potential non-paddy field	0
c. Potential non-paddy field	0	Total	4,743

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
5,898	32,680	3,268	10,939	1,570	54,355	11.5

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

VI. PROJECT EVALUATION

VI.1 EIRR 18.8%

VI.2 Prioritization Scoring




Evaluation Index	Full Score	Score	Evaluation Index	Full Score	Score	Total Score
Irrigation System	Utilization of Irrigation Potential	10.0	10.0	Agricultural Productivity	20.0	16.0
	Urgency	25.0	19.0	Social Problem	15.0	13.5
	Sustainability	15.0	6.8	Economic Impact	15.0	12.0

VI.3 Priority Group


Group I: First priority group

VI.4 Priority Ranking in the Province

3

Scheme	Gamo-Gamo	District	Polmas	
Technical Level	Technical	Registered Area	4,820 ha	Year of Construction 1937.96
169		<p><u>Category</u> Irrigation (Headworks)</p> <hr/> <p><u>Structure</u> Fixed Weir</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> Not in use at present</p>		
171		<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 gate; physical operation problem on structure.</p>		
170		<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 gate; physical operation problem on structure.</p>		

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

Scheme		District	
Gamo-Gamo		Polmas	
Technical Level	Technical	Registered Area	4,820 ha
		Year of Construction	1937.96
		<u>Category</u> Agriculture, On-Farm	
		<u>Activity</u> Paddy Cultivation	
		<u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	
		<u>Category</u> Agriculture, On-Farm	
		<u>Activity</u> Harvesting	
		<u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	
		<u>Problems</u> Low density of on-farm canals and farm roads.	
		<u>Category</u>	
		<u>Activity</u>	
		<u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	
		<u>Problems</u>	

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