

50. Kaliwadas

PEMALANG DISTRICT

37. Sragi

PEKALONGAN

BATANG DISTRICT

45. Kosar

36. Pesantren Kletak

38. Sudikampir

39. Padurekso

PEKALONGAN DISTRICT

BANJARNEGARA DISTRICT

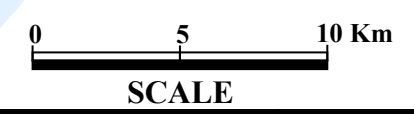
LEGEND

- ⊙ Capital Town of District
- Sub-District Town
- - - District Boundary
- - - Sub-District Boundary
- ▬ Railway
- Provincial Road
- District Road
- ~ River
- ▭ Irrigation Scheme
- ▨ Technical Irrigation

Irrigation Scheme

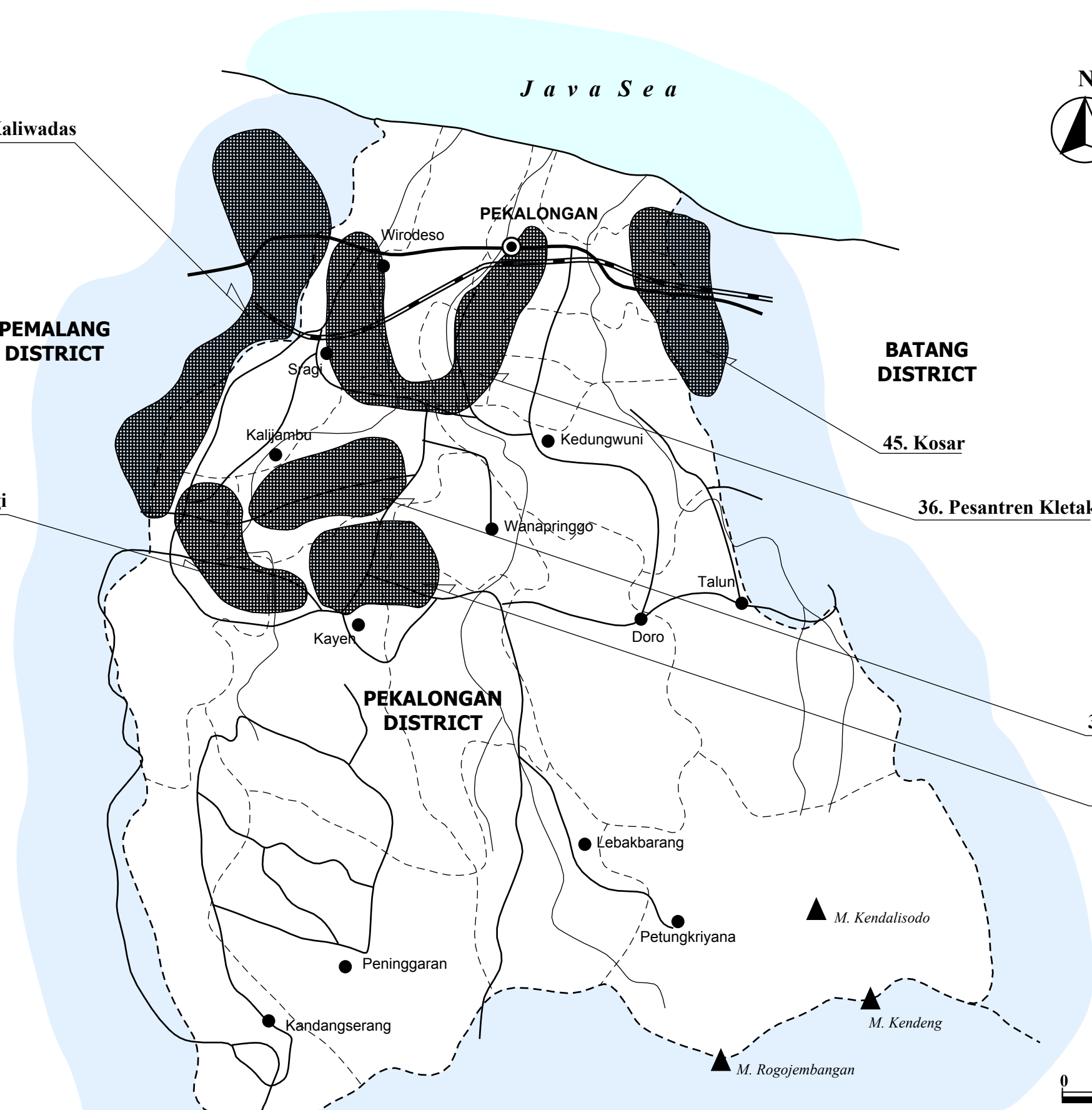
Name of Scheme	Registered Area (Ha)	Subject Area (Ha)
36. Pesantren Kletak	4,263 T	3,636
37. Sragi	3,540 T	3,539
38. Sudikampir	1,564 T	1,550
39. Padurekso	2,764 T	2,764
45. Kosar	1,617 T	3,243
50. Kaliwadas	7,520 T	7,722

T : Technical Irrigation



The Study on Comprehensive Recovery Program of Irrigation Agriculture
Japan International Cooperation Agency

Location Map of Irrigation Schemes in Pekalongan District



I. PROJECT FUNDAMENTALS																																																																												
I.1 General																																																																												
(1) Code Number	: 33005121-30	(7)	Number of Farmers	: 18,180																																																																								
(2) Name of Irrigation Scheme	: Pesantren Kletak	(8)	Water Resource River	: Sengkarang																																																																								
(3) District (Kabupaten)	: Pekalongan & Kodia P.	(9)	Catchment Area (km ²)	: 289.04																																																																								
(4) Sub-district (Kecamatan)	: Kedungwuni	(10)	Completion / Last Rehabilitation Year	: 1918/1995																																																																								
(5) Registered Area (ha)	: 4,263																																																																											
(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																																																																						
A		A		A		A																																																																						
e. Rehabilitation plan & its references		f. Crops and yield data		g. Cropping Calender		h. WUAs data																																																																						
C		A		A		1																																																																						
II. SUBJECT AREA FOR REHABILITATION PLAN																																																																												
II.1 Present and Planned Land Use																																																																												
<table border="1"> <thead> <tr> <th>Category</th> <th>Present (ha)</th> <th>Plan (ha)</th> <th>Increment (ha)</th> </tr> </thead> <tbody> <tr> <td>a. Irrigated paddy field</td> <td>3,636</td> <td>3,636</td> <td>0</td> </tr> <tr> <td>b. Rainfed paddy field</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>c. Upland field</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>d. Uncultivated land</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>e. Non-irrigable land</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Total</td> <td>3,636</td> <td>3,636</td> <td>0</td> </tr> </tbody> </table>										Category	Present (ha)	Plan (ha)	Increment (ha)	a. Irrigated paddy field	3,636	3,636	0	b. Rainfed paddy field	0	0	0	c. Upland field	0	0	0	d. Uncultivated land	0	0	0	e. Non-irrigable land	0	0	0	Total	3,636	3,636	0																																							
Category	Present (ha)	Plan (ha)	Increment (ha)																																																																									
a. Irrigated paddy field	3,636	3,636	0																																																																									
b. Rainfed paddy field	0	0	0																																																																									
c. Upland field	0	0	0																																																																									
d. Uncultivated land	0	0	0																																																																									
e. Non-irrigable land	0	0	0																																																																									
Total	3,636	3,636	0																																																																									
III. AGRICULTURE																																																																												
III.1 Present/Before Project Condition																																																																												
(1) Irrigation Performance and Crop Production																																																																												
<table border="1"> <thead> <tr> <th rowspan="2">Season</th> <th colspan="4">Cropped Area in Irrigated Paddy Field (ha)</th> <th rowspan="2">Annual Intensity</th> <th rowspan="2">Irrigated Paddy Yield (GKG ton/ha)</th> <th colspan="3">Crop Production (ton)</th> </tr> <tr> <th>Paddy</th> <th>Palawija</th> <th>Sugarcane</th> <th>Total</th> <th>Paddy</th> <th>Palawija</th> <th>Others</th> </tr> </thead> <tbody> <tr> <td>Season I (wet)</td> <td>3,264</td> <td></td> <td>371</td> <td>3,635</td> <td>100%</td> <td>4.5</td> <td>14,688</td> <td></td> <td>24,115</td> </tr> <tr> <td>Season II (dry I)</td> <td>3,264</td> <td></td> <td></td> <td>3,264</td> <td>90%</td> <td>4.5</td> <td>14,688</td> <td></td> <td></td> </tr> <tr> <td>Season III (dry II)</td> <td></td> <td>2,547</td> <td></td> <td>2,547</td> <td>70%</td> <td></td> <td></td> <td>3,056</td> <td></td> </tr> <tr> <td>Total/Annual</td> <td>6,528</td> <td>2,547</td> <td>371</td> <td>9,446</td> <td>260%</td> <td>4.5</td> <td>29,376</td> <td>3,056</td> <td>24,115</td> </tr> </tbody> </table>										Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)			Paddy	Palawija	Sugarcane	Total	Paddy	Palawija	Others	Season I (wet)	3,264		371	3,635	100%	4.5	14,688		24,115	Season II (dry I)	3,264			3,264	90%	4.5	14,688			Season III (dry II)		2,547		2,547	70%			3,056		Total/Annual	6,528	2,547	371	9,446	260%	4.5	29,376	3,056	24,115										
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)																																																																					
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others																																																																			
Season I (wet)	3,264		371	3,635	100%	4.5	14,688		24,115																																																																			
Season II (dry I)	3,264			3,264	90%	4.5	14,688																																																																					
Season III (dry II)		2,547		2,547	70%			3,056																																																																				
Total/Annual	6,528	2,547	371	9,446	260%	4.5	29,376	3,056	24,115																																																																			
(2) Problems and Constraints																																																																												
<p><i>A. Irrigation & Agriculture Performances</i></p> <ul style="list-style-type: none"> - High irrigation performances achieved - Double cropping of paddy practiced in the entire irrigated area; paddy yield levels moderate; palawija produced extensively <p><i>B. Primary Constraint Identified through the Inventory Survey by the JICA Study</i></p> <ul style="list-style-type: none"> - Irrigation & Drainage: Flooding - Agronomic Issues: Damage caused by rat - Paddy Marketing: Low marketing prices - Palawija Marketing: Low marketing prices - Farmers Organizations: Economic activities are limited - Extension Services: Implementation of extension programs is limited 																																																																												
III.2 Development Plan																																																																												
(1) Development Approaches																																																																												
<ul style="list-style-type: none"> - Ensuring year round irrigation water supply at on-farm level through rehabilitation - Expansion of palawija production in dry season II; productivity increase of paddy & palawija through further intensification - 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																																																																												
<table border="1"> <thead> <tr> <th rowspan="2">Season</th> <th colspan="4">Cropped Area in Irrigated Paddy Field (ha)</th> <th rowspan="2">Annual Intensity</th> <th rowspan="2">Irrigated Paddy Yield (GKG ton/ha)</th> <th colspan="3">Crop Production (ton)</th> </tr> <tr> <th>Paddy</th> <th>Palawija</th> <th>Sugarcane</th> <th>Total</th> <th>Paddy</th> <th>Palawija</th> <th>Others</th> </tr> </thead> <tbody> <tr> <td>Season I (wet)</td> <td>3,265</td> <td></td> <td>371</td> <td>3,636</td> <td>100%</td> <td>5.0</td> <td>16,325</td> <td></td> <td>24,115</td> </tr> <tr> <td>Season II (dry I)</td> <td>3,265</td> <td></td> <td></td> <td>3,265</td> <td>90%</td> <td>5.0</td> <td>16,325</td> <td></td> <td></td> </tr> <tr> <td>Season III (dry II)</td> <td></td> <td>2,909</td> <td></td> <td>2,909</td> <td>80%</td> <td></td> <td></td> <td>4,073</td> <td></td> </tr> <tr> <td>Total/Annual</td> <td>6,530</td> <td>2,909</td> <td>371</td> <td>9,810</td> <td>270%</td> <td>5.0</td> <td>32,650</td> <td>4,073</td> <td>24,115</td> </tr> <tr> <td>Annual Increment</td> <td>2</td> <td>362</td> <td>0</td> <td>364</td> <td>10%</td> <td>0.5</td> <td>3,274</td> <td>1,017</td> <td>0</td> </tr> </tbody> </table>										Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)			Paddy	Palawija	Sugarcane	Total	Paddy	Palawija	Others	Season I (wet)	3,265		371	3,636	100%	5.0	16,325		24,115	Season II (dry I)	3,265			3,265	90%	5.0	16,325			Season III (dry II)		2,909		2,909	80%			4,073		Total/Annual	6,530	2,909	371	9,810	270%	5.0	32,650	4,073	24,115	Annual Increment	2	362	0	364	10%	0.5	3,274	1,017	0
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)																																																																					
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others																																																																			
Season I (wet)	3,265		371	3,636	100%	5.0	16,325		24,115																																																																			
Season II (dry I)	3,265			3,265	90%	5.0	16,325																																																																					
Season III (dry II)		2,909		2,909	80%			4,073																																																																				
Total/Annual	6,530	2,909	371	9,810	270%	5.0	32,650	4,073	24,115																																																																			
Annual Increment	2	362	0	364	10%	0.5	3,274	1,017	0																																																																			
IV. WUAs																																																																												
IV.1 Existing Condition																																																																												
(1)																																																																												
Number	a. Target;	47	b. Established;	40	c. Not yet;	9	Registered		0																																																																			
Performance	a. Developed;	4	b. Under developing;	31	c. Not yet;	5	Not yet registered		40																																																																			
(2) Problems and Constraints																																																																												
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management																																																																												
(3) Causes of Problems and Constraints																																																																												
- Delay in administrative procedure for WUA establishment.																																																																												
IV.2 Development Plan																																																																												
(1) Proposed Countermeasures																																																																												
- Acceleration of administrative process.																																																																												
(2) Development Plan																																																																												
- WUA management 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 | : 3 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 | : 123 m | g. Settling basin | : provided | (no info.: no information) | |
| d. Design intake discharge | : 6.0 m ³ /s | h. Inspection bridge | : not provided | | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	1,300	12,747	14,047	34	9,686	C
Secondary	14,139	24,016	38,155	126	20,000	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

- Irrigation Canal and Related Structure
Leakage from canal
Collapse of 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

- Irrigation Canal and Related Structure
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
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

- Irrigation Canal and Related Structure
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
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 : large rehabilitation

(3) Irrigation Canal and Related Structure

	Works	No rehabilitaion	Rehabilitation	New construction	Total
Canal (m)	Main	260	13,787	0	14,047
	Secondary	2,827	35,328	0	38,155
Structure (nos)	Main	6	28	3	37
	Secondary	9	117	25	151

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	3,636	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	3,636

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
2,537	57,528	5,753	7,454	1,570	74,841	20.6

(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	57.3	
	Urgency	25.0	18.0	Social Problem	15.0	9.0		
	Sustainability	15.0	6.8	Economic Impact	15.0	7.5		

VI.3 Priority Group

VI.4 Priority Ranking in the Province

Scheme		District	
Pesantren Kletak		Pekalongan & Kodia Pekalongan	
Technical Level	Technical	Registered Area	4,263 ha
		Year of Construction	1918/1995
		<p><u>Category</u> Irrigation (Headworks)</p>	
		<p><u>Structure</u> Fixed Weir, Downstream</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> Require minor repair of civil works and to replace gate leaf by steel construction</p>	
		<p><u>Category</u> Irrigation (Headworks)</p>	
		<p><u>Structure</u> Fixed Weir, Weir Body</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> Require minor repair for retaining walls</p>	
		<p><u>Category</u> Irrigation (Headworks)</p>	
		<p><u>Structure</u> Settling Basin</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> Require provision of inspection road along basin</p>	

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

Scheme		District	
Pesantren Kletak		Pekalongan & Kodia Pekalongan	
Technical Level	Technical	Registered Area	4,263 ha
		Year of Construction	1918/1995
		<i>Category</i> Irrigation (Main 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>Problems</i> Require removal of sediments and repair of lining	
		<i>Category</i> Irrigation (Main Canal)	
		<i>Structure</i> Canal and Bridge	
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	
		<i>Problems</i> Require removal of sediments and repair of lining	
		<i>Category</i> Irrigation (Paddy Field)	
		<i>Structure</i> Field Canal and Paddy Field	
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	
		<i>Problems</i> Require provision of farm road and division box on canal	

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	: 33005090-92	(7) Number of Farmers	: 11,797						
(2) Name of Irrigation Scheme	: Sragi	(8) Water Resource River	: Paingan						
(3) District (Kabupaten)	: Pekalongan & Kodia P.	(9) Catchment Area (km ²)	: 23.00						
(4) Sub-district (Kecamatan)	: Sragi	(10) Completion / Last Rehabilitation Year	: 1974						
(5) Registered Area (ha)	: 3,540								
(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			
A		A		A		A			
e. Rehabilitation plan & its references		f. Crops and yield data		g. Cropping Calender		h. WUAs data			
C		A		A		1			
II. SUBJECT AREA FOR REHABILITATION PLAN									
II.1 Present and Planned Land Use									
Category	Present (ha)	Plan (ha)	Increment (ha)						
a. Irrigated paddy field	3,539	3,539	0						
b. Rainfed paddy field	0	0	0						
c. Upland field	0	0	0						
d. Uncultivated land	0	0	0						
e. Non-irrigable land	0	0	0						
Total	3,539	3,539	0						
III. AGRICULTURE									
III.1 Present/Before Project Condition									
(1) Irrigation Performance and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	2,996		543	3,539	100%	4.5	13,482		35,295
Season II (dry I)	2,996			2,996	85%	4.5	13,482		
Season III (dry II)		1,921		1,921	54%			2,305	
Total/Annual	5,992	1,921	543	8,456	239%	4.5	26,964	2,305	35,295
(2) Problems and Constraints									
<i>A. Irrigation & Agriculture Performances</i>									
- High irrigation performances achieved									
- Double cropping of paddy practiced in the entire irrigated area; paddy yield levels moderate; palawija produced extensively									
<i>B. Primary Constraint Identified through the Inventory Survey by the JICA Study</i>									
- Irrigation & Drainage:		Flooding		- Palawija Marketing:		Low marketing prices			
- Agronomic Issues:		Damage caused by rat		- Farmers Organizations:		Economic activities 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 palawija production in dry season II; productivity increase of paddy & palawija through further intensification									
- Strengthening of extension activities tailored to area specific needs; empowerment of farmer groups (KTs) to establish agri-business oriented KT									
(2) Planned Irrigation Performances and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	2,996		543	3,539	100%	5.0	14,980		35,295
Season II (dry I)	2,996			2,996	85%	5.0	14,980		
Season III (dry II)		2,477		2,477	70%			3,468	
Total/Annual	5,992	2,477	543	9,012	255%	5.0	29,960	3,468	35,295
Annual Increment	0	556	0	556	16%	0.5	2,996	1,163	0
IV. WUAs									
IV.1 Existing Condition									
(1) Number	a. Target;	39	b. Established;	38	c. Not yet;	1	Registered		0
	Performance	a. Developed;	0	b. Under developing;	38	c. Not yet;	0	Not yet registered	38
(2) Problems and Constraints									
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management									
(3) Causes of Problems and Constraints									
- Not so active members									
IV.2 Development Plan									
(1) Proposed Countermeasures									
- Encouragement of member farmers to take positive action for O&M works.									
(2) Development Plan									
- WUA O&M 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 : C Main Canal System : C Secondary Canal System : C On-farm : C
- (2) Water Resources Facility
- | | | | | | |
|----------------------------|----------------|-------------------------|------------|---|-----|
| a. Type of facility | : Headworks | e. Scouring sluice gate | : - | i. Condition | : C |
| b. Type of weir | : Movable weir | f. Intake gate | : no info. | (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation) | |
| c. Length of weir | : 25 m | g. Settling basin | : no info. | (no info.: no information) | |
| d. Design intake discharge | : no info. | h. Inspection bridge | : provided | | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined (m)	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	3,626	2,967	6,593	18	1,500	C
Secondary	5,703	25,303	31,006	38	5,000	C

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

(4) Major Problems and Constrains

- Water Resources Facility
 - Washed away of ripraps or blocks after stilling basin
 - Problem on management for flood/scouring sluice gate(s) operation
 - Insufficient diversion water due to sedimentation in front of intake
 - Irrigation Canal and Related Structure
 - Leakage from canal
 - Collapse of canal
 - Impassable of inspection road along canal
 - General O&M problems
 - Lower function of regulating structure on canal
- (5) Causes of Major Problems and Constraints
- Water Resources Facility
 - Insufficient weight of ripraps or blocks for stilling basin, insufficient length of protection work after stilling basin
 - Improper maintenance of flood or scouring sluice gate(s) of headworks (no greasing and anti-rust painting)
 - Sedimentation in front of intake
 - Irrigation Canal and Related Structure
 - 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
 - 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

V.2 Development Plan

(1) Proposed Countermeasures for Major Problems

- Water Resources Facility
 - Provision of additional ripraps or blocks after stilling basin of weir as required
 - Replacement of control system or damaged equipment of flood/scouring sluice gate(s) of headworks
 - Dredging or flushing of sediment, proper gate operation of headworks and intake
- Irrigation Canal and Related Structure
 - 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
 - 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

(2) Water Resources Facility

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

(3) Irrigation Canal and Related Structure

Works	No rehabilitaion		Rehabilitation		New construction		Total	
	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)
Main	0	0	6,593	18	0	2	6,593	20
Secondary	0	0	31,006	38	0	8	31,006	46

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	3,539	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	3,539

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
3,737	47,578	4,758	7,255	1,570	64,897	18.3

(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	20.0	Social Problem	15.0	10.5
	Sustainability	15.0	8.3	Economic Impact	15.0	7.5

VI.3 Priority Group

VI.4 Priority Ranking in the Province

Scheme	Sragi	District	Pekalongan & Kodia Pekalongan		
Technical Level	Technical	Registered Area	3,540 ha	Year of Construction	1974
		<i>Category</i> Irrigation (Headworks)			
		<i>Structure</i> Fixed Weir, Downstream View			
		<i>Condition</i> <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D			
		<i>Problems</i> Require repair / provision of stilling			
		<i>Category</i> Irrigation (Headworks)			
		<i>Structure</i> Intake Gate			
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D			
		<i>Problems</i> Require replacement of intake gate from wooden to steel			
		<i>Category</i> Irrigation (Main 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>Problems</i> Require provision of bottom lining			

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

Scheme	Sragi	District	Pekalongan & Kodia Pekalongan		
Technical Level	Technical	Registered Area	3,540 ha	Year of Construction	1974
		<p><u>Category</u> Irrigation (Main Canal)</p>			
		<p><u>Structure</u> Masonry Lined Canal</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require removal of sediments at inside of canal and repair of lining</p>			
		<p><u>Category</u> Irrigation (Secondary Canal)</p>			
		<p><u>Structure</u> Division Box</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require replacement of gates and provision of inspection road</p>			
		<p><u>Category</u> Irrigation (Tertiary System)</p>			
		<p><u>Structure</u> Off-take / Division Box</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require division box, farm road for tertiary canal</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	: 33005100	(7) Number of Farmers	: 7,850						
(2) Name of Irrigation Scheme	: Sudikampir	(8) Water Resource River	: Boro						
(3) District (Kabupaten)	: Pekalongan & Kodia P.	(9) Catchment Area (km ²)	: 289.04						
(4) Sub-district (Kecamatan)	: Bojong	(10) Completion / Last Rehabilitation Year	: 1931~1975						
(5) Registered Area (ha)	: 1,564								
(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			
A		A		A		A			
e. Rehabilitation plan & its references		f. Crops and yield data		g. Cropping Calender		h. WUAs data			
C		A		A		1			
II. SUBJECT AREA FOR REHABILITATION PLAN									
II.1 Present and Planned Land Use									
Category	Present (ha)	Plan (ha)	Increment (ha)						
a. Irrigated paddy field	1,550	1,550	0						
b. Rainfed paddy field	0	0	0						
c. Upland field	0	0	0						
d. Uncultivated land	0	0	0						
e. Non-irrigable land	0	0	0						
Total	1,550	1,550	0						
III. AGRICULTURE									
III.1 Present/Before Project Condition									
(1) Irrigation Performance and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	1,380		170	1,550	100%	4.5	6,210		11,050
Season II (dry I)	1,380			1,380	89%	4.0	5,520		
Season III (dry II)		873		873	56%			1,048	
Total/Annual	2,760	873	170	3,803	245%	4.3	11,730	1,048	11,050
(2) Problems and Constraints									
<i>A. Irrigation & Agriculture Performances</i>									
- High irrigation performances achieved									
- Double cropping of paddy practiced in the entire irrigated area; paddy yield levels moderate; palawija produced extensively									
<i>B. Primary Constraint Identified through the Inventory Survey by the JICA Study</i>									
- Irrigation & Drainage: Implementation of extension programs is limited - Palawija Marketing: Low competitiveness with other producing areas									
- Agronomic Issues: Farmers not following recommended practices - 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 palawija production in dry season II; productivity increase of paddy & palawija through further intensification									
- 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 (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	1,380		170	1,550	100%	5.0	6,900		11,050
Season II (dry I)	1,380			1,380	89%	4.5	6,210		
Season III (dry II)		1,085		1,085	70%			1,519	
Total/Annual	2,760	1,085	170	4,015	259%	4.8	13,110	1,519	11,050
Annual Increment	0	212	0	212	14%	0.5	1,380	471	0
IV. WUAs									
IV.1 Existing Condition									
(1) Number	a. Target;	19	b. Established;	19	c. Not yet;	0	Registered		0
	Performance	a. Developed;	0	b. Under developing;	19	c. Not yet;	0	Not yet registered	19
(2) Problems and Constraints									
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management									
(3) Causes of Problems and Constraints									
- Not so active members									
IV.2 Development Plan									
(1) Proposed Countermeasures									
- Encouragement of member farmers to take positive action for O&M works.									
(2) Development Plan									
- WUA O&M 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 : C Main Canal System : C Secondary Canal System : D On-farm : C

(2) Water Resources Facility

- a. Type of facility : Headworks e. Scouring sluice gate : 1 nos. i. Condition : C
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 : 37 m g. Settling basin : provided
d. Design intake discharge : 1.2 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
Main	2,595	7,777	10,372	0	3,000	C
Secondary	4,582	7,774	12,356	39	10,200	D

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

(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
Difficulty on O&M

- Irrigation Canal and Related Structure

Leakage from canal
Collapse of canal
Overage, lower strength of canal
Cracks or partial damage on lined canal
Lower function of regulating structure on canal

(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
No provision of inspection/access road, no provision of inspection bridge/deck

- Irrigation Canal and Related Structure

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
Deterioration of canal, no or insufficient rehabilitation due to budget problem
Improper regular maintenance or long leave of repair, insufficient provision of budget
Deterioration of regulating structure on canal, especially gate and metal works

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
Provision of inspection/access road, inspection bridge/deck

- Irrigation Canal and Related Structure

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
Replace and reconstruction of canal
Replace and reconstruction, provision of special treatment at cross drain to prevent settlement
Replacement and reconstruction of regulating structure on canal

(2) Water Resources Facility

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

(3) Irrigation Canal and Related Structure

Works	No rehabilitation		Rehabilitation		New construction		Total	
	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)
Main	0	0	10,372	0	0	0	10,372	0
Secondary	0	0	12,356	0	0	0	12,356	0
Main	0	0	0	37	37	0	37	0
Secondary	0	0	39	8	8	0	47	0

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	1,550	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	1,550

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
2,361	33,915	3,392	3,178	1,260	44,105	28.5

(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
	Urgency	25.0	21.0	Social Problem	15.0	9.0	
	Sustainability	15.0	8.3	Economic Impact	15.0	7.5	

VI.3 Priority Group

VI.4 Priority Ranking in the Province

Scheme	Sudikampir	District	Pekalongan & Kodia Pekalongan	
Technical Level	Technical	Registered Area	1,564 ha	Year of Construction 1931~1975
		<u>Category</u> Irrigation (Headworks)		
		<u>Structure</u> Fixed Weir, Upstream		
		<u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<u>Problems</u> Require major repair of weir body and gate works, removal of debris and sediment		
		<u>Category</u> Irrigation (Headworks)		
		<u>Structure</u> Intake Gate		
		<u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D		
		<u>Problems</u> Require replacement totally from wooden to steel		
		<u>Category</u> Irrigation (Headworks)		
		<u>Structure</u> Intake, Rear View		
		<u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<u>Problems</u> Require provision of settling basin		

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

Scheme	Sudikampir	District	Pekalongan & Kodia Pekalongan		
Technical Level	Technical	Registered Area	1,564 ha	Year of Construction	1931~1975
		<p><u>Category</u> Irrigation (Secondary Canal)</p>			
		<p><u>Structure</u> Masonry Lined Canal</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require major repair of canal lining and provision of inspection road</p>			
		<p><u>Category</u> Irrigation (Secondary Canal)</p>			
		<p><u>Structure</u> Canal</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require major repair of canal lining and provision of inspection road</p>			
		<p><u>Category</u> Irrigation (Tertiary System)</p>			
		<p><u>Structure</u> Tertiary System</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require provision of farm road and canal with related structures</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	: 33005112-15	(7) Number of Farmers	: 13,820						
(2) Name of Irrigation Scheme	: Padurekso	(8) Water Resource River	: Sengkarang						
(3) District (Kabupaten)	: Pekalongan & Kodia P.	(9) Catchment Area (km ²)	: 106.165						
(4) Sub-district (Kecamatan)	: Kajen/Karanganyar	(10) Completion / Last Rehabilitation Year	: 1915						
(5) Registered Area (ha)	: 2,764								
(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			
A		A		A		A			
e. Rehabilitation plan & its references		f. Crops and yield data		g. Cropping Calender		h. WUAs data			
C		A		A		1			
II. SUBJECT AREA FOR REHABILITATION PLAN									
II.1 Present and Planned Land Use									
Category	Present (ha)	Plan (ha)	Increment (ha)						
a. Irrigated paddy field	2,764	2,764	0						
b. Rainfed paddy field	0	0	0						
c. Upland field	0	0	0						
d. Uncultivated land	0	0	0						
e. Non-irrigable land	0	0	0						
Total	2,764	2,764	0						
III. AGRICULTURE									
III.1 Present/Before Project Condition									
(1) Irrigation Performance and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	2,454		310	2,764	100%	4.5	11,043		20,150
Season II (dry I)	2,454			2,454	89%	4.5	11,043		
Season III (dry II)	65	1,259		1,324	48%	4.0	260	1,511	
Total/Annual	4,973	1,259	310	6,542	237%	4.5	22,346	1,511	20,150
(2) Problems and Constraints									
<i>A. Irrigation & Agriculture Performances</i>									
- High irrigation performances achieved; however water shortage in dry season reported									
- Double cropping of paddy practiced in the entire irrigated area; paddy yield levels moderate; palawija produced extensively									
<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 competitiveness with other producing areas									
- Agronomic Issues: Farmers not following recommended practices - Farmers Organizations: Managerial capacity of KT's 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 palawija production in dry season II; productivity increase of paddy & palawija through further intensification									
- 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 (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	2,454		310	2,764	100%	5.0	12,270		20,150
Season II (dry I)	2,454			2,454	89%	5.0	12,270		
Season III (dry II)		1,658		1,658	60%			2,321	
Total/Annual	4,908	1,658	310	6,876	249%	5.0	24,540	2,321	20,150
Annual Increment	-65	399	0	334	12%	0.5	2,194	810	0
IV. WUAs									
IV.1 Existing Condition									
(1)	Number	a. Target;	28	b. Established;	28	c. Not yet;	0	Registered	0
	Performance	a. Developed;	0	b. Under developing;	20	c. Not yet;	8	Not yet registered	28
(2) Problems and Constraints									
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management									
(3) Causes of Problems and Constraints									
- Low collection level of membership fee.									
IV.2 Development Plan									
(1) Proposed Countermeasures									
- Calling attention of WUA members to their obligation.									
(2) Development Plan									
- WUA management training									

V. IRRIGATION FACILITY

V.1 Existing Condition

- (1) Overall Irrigation System : D (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation)
Water Resources Facility : C Main Canal System : D Secondary Canal System : D On-farm : C
- (2) Water Resources Facility
- | | | | | | |
|----------------------------|-------------------------|-------------------------|----------------|---|-----|
| a. Type of facility | : Headworks | e. Scouring sluice gate | : 2 nos. | i. Condition | : C |
| 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 | : 64 m | g. Settling basin | : provided | (no info.: no information) | |
| d. Design intake discharge | : 6.5 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	550	3,000	3,550	10	3,550	D
Secondary	4,857	14,571	19,428	104	7,500	D

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

(4) Major Problems and Constrains

- Water Resources Facility
 - Physical O&M problem due to overage facility
 - Problem on management for flood/scouring sluice gate(s) operation
 - Difficulty on O&M
- Irrigation Canal and Related Structure
 - Leakage from canal
 - Collapse of canal
 - Overage, lower strength of canal
 - Cracks or partial damage on lined canal
 - Difficulty on O&M
- (5) Causes of Major Problems and Constraints
 - Water Resources Facility
 - Deterioration of weir, no or insufficient rehabilitation due to budget problem
 - Improper maintenance of flood or scouring sluice gate(s) of headworks (no greasing and anti-rust painting)
 - No provision of inspection/access road, no provision of inspection bridge/deck
 - Irrigation Canal and Related Structure
 - 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
 - Deterioration of canal, no or insufficient rehabilitation due to budget problem
 - Improper regular maintenance or long leave of repair, insufficient provision of budget
 - 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
 - Replace and reconstruction of weir
 - Replacement of control system or damaged equipment of flood/scouring sluice gate(s) of headworks
 - Provision of inspection/access road, inspection bridge/deck
- Irrigation Canal and Related Structure
 - 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
 - Replace and reconstruction of canal
 - Replace and reconstruction, provision of special treatment at cross drain to prevent settlement
 - Provision or repair of inspection road with all weather type/pavement

(2) Water Resources Facility

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

(3) Irrigation Canal and Related Structure

Works	No rehabilitaion		Rehabilitation		New construction		Total	
	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)
Main	0	0	3,550	10	0	1	3,550	11
Secondary	0	0	19,428	104	0	21	19,428	125

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	2,764	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	2,764

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
12,033	38,509	3,851	5,666	1,570	61,629	22.3

(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
			Urgency	25.0	22.4	Social Problem	15.0	9.0
			Sustainability	15.0	11.3	Economic Impact	15.0	7.5

VI.3 Priority Group

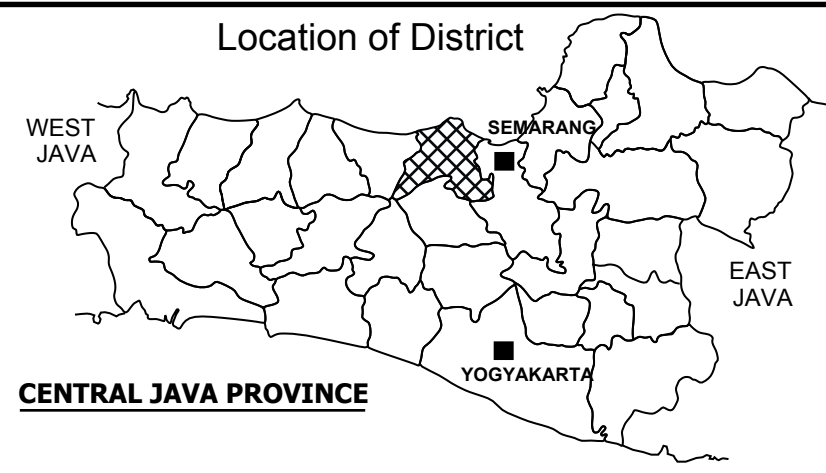
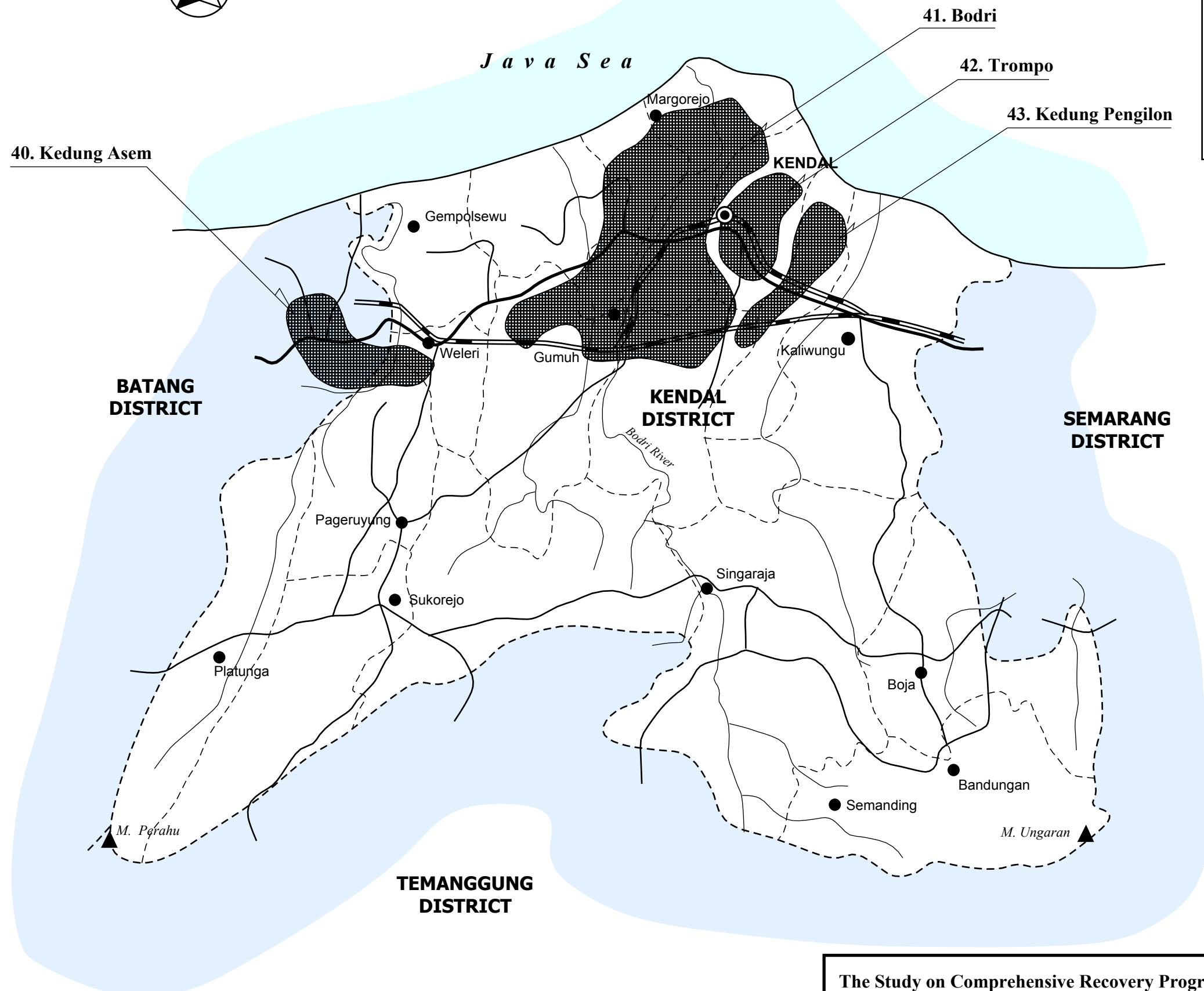
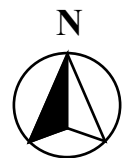
VI.4 Priority Ranking in the Province

Scheme	Padurekso	District	Pekalongan & Kodia Pekalongan		
Technical Level	Technical	Registered Area	2,764 ha	Year of Construction	1915
		<i>Category</i> Irrigation (Headworks)			
		<i>Structure</i> Fixed Weir, Upstream View			
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D			
		<i>Problems</i> Require new construction (nearly 100 years after construction)			
		<i>Category</i> Irrigation (Headworks)			
		<i>Structure</i> Fixed Weir, Downstream View			
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D			
		<i>Problems</i> Require new construction (nearly 100 years after construction)			
		<i>Category</i> Irrigation (Headworks)			
		<i>Structure</i> Intake, Rear View			
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D			
		<i>Problems</i> Require new construction (nearly 100 years after construction)			











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

Scheme	Padurekso	District	Pekalongan & Kodia Pekalongan		
Technical Level	Technical	Registered Area	2,764 ha	Year of Construction	1915
		<p><u>Category</u> Irrigation (Main Canal)</p>			
		<p><u>Structure</u> Division Structure</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require major repair of civil works and provision of steel gates</p>			
		<p><u>Category</u> Irrigation (Secondary Canal)</p>			
		<p><u>Structure</u> 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>Problems</u> Require total repair of lining and provision of inspection road</p>			
		<p><u>Category</u> Irrigation (Tertiary Canal)</p>			
		<p><u>Structure</u> Farm Ditch</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> Require division box and farm road</p>			

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



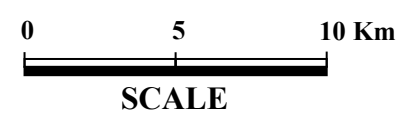
LEGEND

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

Irrigation Scheme

Name of Scheme	Registered Area (Ha)		Subject Area (Ha)
40. Kedung Asem	3,726	T	2,845
41. Bodri	8,538	T	7,710
42. Trompo	1,263	T	1,229
43. Kedung Pengilon	3,134	T	2,686

T : Technical Irrigation



The Study on Comprehensive Recovery Program
of Irrigation Agriculture

Japan International Cooperation Agency

Location Map of Irrigation Schemes
in Kendal District

I. PROJECT FUNDAMENTALS									
I.1 General									
(1) Code Number	: 33007157	(7) Number of Farmers	: 5,426						
(2) Name of Irrigation Scheme	: Kedung Asem	(8) Water Resource River	: Kali Kuto						
(3) District (Kabupaten)	: Kendal & Kodja Semar	(9) Catchment Area (km ²)	: 200						
(4) Sub-district (Kecamatan)	: Weleni	(10) Completion / Last Rehabilitation Year	: 1990						
(5) Registered Area (ha)	: 3,726								
(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			
A		A		A		A			
e. Rehabilitation plan & its references		f. Crops and yield data		g. Cropping Calender		h. WUAs data			
C		A		A		1			
II. SUBJECT AREA FOR REHABILITATION PLAN									
II.1 Present and Planned Land Use									
Category	Present (ha)	Plan (ha)	Increment (ha)						
a. Irrigated paddy field	2,645	2,845	200						
b. Rainfed paddy field	200	0	-200						
c. Upland field	0	0	0						
d. Uncultivated land	0	0	0						
e. Non-irrigable land	0	0	0						
Total	2,845	2,845	0						
III. AGRICULTURE									
III.1 Present/Before Project Condition									
(1) Irrigation Performance and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton) 1/		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	2,645			2,645	100%	5.0	13,225	600	
Season II (dry I)	2,645			2,645	100%	5.0	13,225		
Season III (dry II)				0		5.0			
Total/Annual	5,290	0	0	5,290	200%	5.0	26,450	600	0
1/: Include palawija in rainfed field									
(2) Problems and Constraints									
<i>A. Irrigation & Agriculture Performances</i>									
- High irrigation performances achieved; however water shortage in dry season reported									
- Double cropping of paddy practiced in the entire irrigated area; paddy yield levels high; 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: Farmers not following recommended practices - 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									
- Ensuring year round irrigation water supply at on-farm level through rehabilitation									
- Introduction of palawija production in dry season II; productivity increase of paddy & palawija through further intensification									
- Extension activities toward improvement of post-harvest & marketing; 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 (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	2,845			2,845	100%	5.5	15,648		
Season II (dry I)	2,845			2,845	100%	5.5	15,648		
Season III (dry II)		1,423		1,423	50%			1,992	
Total/Annual	5,690	1,423	0	7,113	250%	5.5	31,295	1,992	0
Annual Increment	400	1,423	0	1,823	50%	0.5	4,845	1,392	0
IV. WUAs									
IV.1 Existing Condition									
(1)	Number	a. Target;	28	b. Established;	14	c. Not yet;	14	Registered	0
	Performance	a. Developed;	0	b. Under developing;	2	c. Not yet;	2	Not yet registered	14
(2) Problems and Constraints									
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input type="checkbox"/> Management									
(3) Causes of Problems and Constraints									
- Low awareness of farmers to WUA activities									
IV.2 Development Plan									
(1) Proposed Countermeasures									
- Acceleration of WUA establishment.									
(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 : C Main Canal System : C Secondary Canal System : C On-farm : C
- (2) Water Resources Facility
- | | | | | | |
|----------------------------|-------------------------|-------------------------|------------|---|-----|
| a. Type of facility | : Headworks | e. Scouring sluice gate | : 1 nos. | i. Condition | : C |
| 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 | : 45 m | g. Settling basin | : provided | (no info.: no information) | |
| d. Design intake discharge | : 4.9 m ³ /s | h. Inspection bridge | : no info. | | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined (m)	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	2,500	0	2,500	10	2,250	C
Secondary	28,854	0	28,854	151	9,325	C

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

(4) Major Problems and Constrains

- Water Resources Facility
 - Problem on management for flood/scouring sluice gate(s) operation
 - Insufficient diversion water due to sedimentation in front of intake
 - Overage, Lower strength of intake gate(s)
- Irrigation Canal and Related Structure
 - 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
 - Improper maintenance of flood or scouring sluice gate(s) of headworks (no greasing and anti-rust painting)
 - Sedimentation in front of intake
 - Deterioration of intake gate(s), no or insufficient rehabilitation due to budget problem
- 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
 - 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
 - Replacement of control system or damaged equipment of flood/scouring sluice gate(s) of headworks
 - Dredging or flushing of sediment, proper gate operation of headworks and intake
 - Replace and reconstruction 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
 - 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 : large rehabilitation Intake, civil : large rehabilitation Intake, mechanical : large rehabilitation
Settling basin : large rehabilitation

(3) Irrigation Canal and Related Structure

Works	No rehabilitaion		Rehabilitation		New construction		Total	
	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)
Main	0	0	2,500	10	0	1	2,500	11
Secondary	0	0	28,854	151	0	30	28,854	181

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	2,645	d. Non-potential paddy field	0
b. Potential non-irrigated paddy field	200	e. Non-potential non-paddy field	0
c. Potential non-paddy field	0	Total	2,845

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
2,898	36,915	3,692	5,935	1,570	51,010	17.9

(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
	Urgency	25.0	20.0	Social Problem	15.0	10.5	
	Sustainability	15.0	6.8	Economic Impact	15.0	7.5	

VI.3 Priority Group

VI.4 Priority Ranking in the Province

Scheme	Kedung Asem	District	Kendal & Kodia Semarang	
Technical Level	Technical	Registered Area	3,726 ha	Year of Construction 1990
		<p><u>Category</u> Irrigation (Headworks)</p>		
		<p><u>Structure</u> Fixed Weir, Upstream View</p>		
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>		
		<p><u>Problems</u> Require repair for civil and gate works and widening of inspection bridge</p>		
		<p><u>Category</u> Irrigation (Headworks)</p>		
		<p><u>Structure</u> Fixed Weir, Downstream View</p>		
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>		
		<p><u>Problems</u> Require repair for civil ad gate works and widening of inspection bridge</p>		
		<p><u>Category</u> Irrigation (Headworks)</p>		
		<p><u>Structure</u> Intake, Rear View</p>		
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>		
		<p><u>Problems</u> Require provision of settling basin</p>		

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

Scheme	Kedung Asem	District	Kendal & Kodia Semarang		
Technical Level	Technical	Registered Area	3,726 ha	Year of Construction	1990
		<p><u>Category</u> Irrigation (Secondary Canal)</p>			
		<p><u>Structure</u> Earth Canal</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require canal lining and provision of inspection road</p>			
		<p><u>Category</u> Irrigation (Tertiary Canal)</p>			
		<p><u>Structure</u> Earth Canal</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require division box, crossing structure, farm road, etc.</p>			
		<p><u>Category</u> Irrigation (Paddy Field)</p>			
		<p><u>Structure</u> Paddy Field</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require farm ditch and road</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	: 33007028-35	(7)	Number of Farmers	: 21,000					
(2) Name of Irrigation Scheme	: Bodri	(8)	Water Resource River	: Kali Bodri					
(3) District (Kabupaten)	: Kendal & Kodia Semarang	(9)	Catchment Area (km ²)	: 320					
(4) Sub-district (Kecamatan)	: Cepiring	(10)	Completion / Last Rehabilitation Year	: -					
(5) Registered Area (ha)	: 8,538								
(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			
A		A		A		A			
e. Rehabilitation plan & its references		f. Crops and yield data		g. Cropping Calendar		h. WUAs data			
C		A		A		1			
II. SUBJECT AREA FOR REHABILITATION PLAN									
II.1 Present and Planned Land Use									
Category		Present (ha)		Plan (ha)		Increment (ha)			
a. Irrigated paddy field		7,710		7,710		0			
b. Rainfed paddy field		0		0		0			
c. Upland field		0		0		0			
d. Uncultivated land		0		0		0			
e. Non-irrigable land		0		0		0			
Total		7,710		7,710		0			
III. AGRICULTURE									
III.1 Present/Before Project Condition									
(1) Irrigation Performance and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	7,313	397		7,710	100%	5.0	36,565	1,191	
Season II (dry I)	7,313			7,313	95%	5.0	36,565		
Season III (dry II)				0					
Total/Annual	14,626	397	0	15,023	195%	5.0	73,130	1,191	0
(2) Problems and Constraints									
<i>A. Irrigation & Agriculture Performances</i>									
- High irrigation performances achieved; however water shortage in dry season reported									
- Double cropping of paddy practiced almost in the entire irrigated area; paddy yield levels high; 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:		Farmers not following recommended practices			- 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									
- Ensuring year round irrigation water supply at on-farm level through rehabilitation									
- Introduction of palawija production in dry season II; productivity increase of paddy & palawija through further intensification									
- Extension activities toward improvement of post-harvest & marketing; empowerment of farmer groups (KTs) to establish agri-business oriented KT									
(2) Planned Irrigation Performances and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	7,710			7,710	100%	5.5	42,405		
Season II (dry I)	7,710			7,710	100%	5.5	42,405		
Season III (dry II)		2,313		2,313	30%			3,238	
Total/Annual	15,420	2,313	0	17,733	230%	5.5	84,810	3,238	0
Annual Increment	794	1,916	0	2,710	35%	0.5	11,680	2,047	0
IV. WUAs									
IV.1 Existing Condition									
(1)	Number	a. Target;	110	b. Established;	110	c. Not yet;	0	Registered	0
	Performance	a. Developed;	3	b. Under developing;	69	c. Not yet;	38	Not yet registered	110
(2) Problems and Constraints									
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management									
(3) Causes of Problems and Constraints									
- Low collection level of membership fee.									
IV.2 Development Plan									
(1) Proposed Countermeasures									
- Calling attention of WUA members to their obligation.									
(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 : C 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 | : C |
| b. Type of weir | : Fixed weir | f. Intake gate | : 2 nos. | (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation) | |
| c. Length of weir | : 60 m | g. Settling basin | : provided | (no info.: no information) | |
| d. Design intake discharge | : 11.3 m ³ /s | h. Inspection bridge | : provided | | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	3,429	0	3,429	46	2,200	C
Secondary	60,499	0	60,499	149	30,000	C

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

(4) Major Problems and Constrains

- Water Resources Facility
 - Washed away of ripraps or blocks after stilling basin
 - Insufficient diversion water due to sedimentation in front of intake
 - Difficulty on O&M
- Irrigation Canal and Related Structure
 - 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 weight of ripraps or blocks for stilling basin, insufficient length of protection work after stilling basin
 - Sedimentation in front of intake
 - No provision of inspection/access road, no provision of inspection bridge/deck
- 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
 - 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
 - Provision of additional ripraps or blocks after stilling basin of weir as required
 - Dredging or flushing of sediment, proper gate operation of headworks and intake
 - Provision of inspection/access road, inspection bridge/deck
- 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
 - 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 : large rehabilitation Intake, civil : large rehabilitation Intake, mechanical : replacement or new
 Settling basin : replacement or new

(3) Irrigation Canal and Related Structure

Works	No rehabilitaion	Rehabilitation	New construction	Total
Canal (m)				
Main	0	3,429	0	3,429
Secondary	0	60,499	0	60,499
Structure (nos)				
Main	0	46	5	51
Secondary	0	149	30	179

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	7,710	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	7,710

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
6,529	78,063	7,806	15,806	2,590	110,793	14.4

(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	20.0	Social Problem	15.0	10.5
	Sustainability	15.0	6.8	Economic Impact	15.0	7.5

VI.3 Priority Group

VI.4 Priority Ranking in the Province

Scheme	Bodri	District	Kendal & Kodia Semarang	
Technical Level	Technical	Registered Area	8,538 ha	Year of Construction
		<i>Category</i> Irrigation (Headworks)		
		<i>Structure</i> Fixed Weir and Intake		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require removal of sediment in front of intake, require repair of civil and gate works		
		<i>Category</i> Irrigation (Headworks)		
		<i>Structure</i> Fixed Weir, Retaining Wall		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require repair of retaining wall		
		<i>Category</i> Irrigation (Headworks)		
		<i>Structure</i> Fixed Weir, Downstream View		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D		
		<i>Problems</i> Require repair of stilling basin and provision of concrete blocks as protection work		

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

Scheme	Bodri	District	Kendal & Kodja Semarang	
Technical Level	Technical	Registered Area	8,538 ha	Year of Construction
		<i>Category</i> Irrigation (Main Canal)		
		<i>Structure</i> Canal at Downstream of Intake		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require provision of settling basin and inspection road		
		<i>Category</i> Irrigation (Secondary Canal)		
		<i>Structure</i> Division Structure		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require repair of civil and gate works, inspection road		
		<i>Category</i> Irrigation (Paddy Field)		
		<i>Structure</i> Paddy Field		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require division box and farm road		

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	: 33007144-45	(7) Number of Farmers	: 5,426						
(2) Name of Irrigation Scheme	: Trompo	(8) Water Resource River	: K. Bodri						
(3) District (Kabupaten)	: Kendal & Kodia Semar	(9) Catchment Area (km ²)	: 26						
(4) Sub-district (Kecamatan)	: Kendal	(10) Completion / Last Rehabilitation Year	: 1990						
(5) Registered Area (ha)	: 1,263								
(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			
A		A		A		A			
e. Rehabilitation plan & its references		f. Crops and yield data		g. Cropping Calendar		h. WUAs data			
C		A		A		1			
II. SUBJECT AREA FOR REHABILITATION PLAN									
II.1 Present and Planned Land Use									
Category	Present (ha)	Plan (ha)	Increment (ha)						
a. Irrigated paddy field	1,229	1,229	0						
b. Rainfed paddy field	0	0	0						
c. Upland field	0	0	0						
d. Uncultivated land	0	0	0						
e. Non-irrigable land	0	0	0						
Total	1,229	1,229	0						
III. AGRICULTURE									
III.1 Present/Before Project Condition									
(1) Irrigation Performance and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	1,167	62		1,229	100%	5.0	5,835	186	
Season II (dry I)	1,167	62		1,229	100%	5.0	5,835	186	
Season III (dry II)				0					
Total/Annual	2,334	124	0	2,458	200%	5.0	11,670	372	0
(2) Problems and Constraints									
<i>A. Irrigation & Agriculture Performances</i>									
- High irrigation performances achieved; however water shortage in dry season reported									
- Double cropping of paddy practiced almost in the entire irrigated area; paddy yield levels high; 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:	Farmers not following recommended practices			- 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									
- Ensuring year round irrigation water supply at on-farm level through rehabilitation									
- Introduction of palawija production in dry season II; productivity increase of paddy & palawija through further intensification									
- Extension activities toward improvement of post-harvest & marketing; empowerment of farmer groups (KTs) to establish agri-business oriented KT									
(2) Planned Irrigation Performances and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	1,229			1,229	100%	5.5	6,760		
Season II (dry I)	1,229			1,229	100%	5.5	6,760		
Season III (dry II)		369		369	30%			517	
Total/Annual	2,458	369	0	2,827	230%	5.5	13,519	517	0
Annual Increment	124	245	0	369	30%	0.5	1,849	145	0
IV. WUAs									
IV.1 Existing Condition									
(1) Number	a. Target;	20	b. Established;	20	c. Not yet;	0	Registered		0
Performance	a. Developed;	0	b. Under developing;	20	c. Not yet;	0	Not yet registered		20
(2) Problems and Constraints									
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management									
(3) Causes of Problems and Constraints									
- Not so active members									
IV.2 Development Plan									
(1) Proposed Countermeasures									
- Encouragement of member farmers to take positive action for O&M works.									
(2) Development Plan									
- WUA O&M training.									

V. IRRIGATION FACILITY

V.1 Existing Condition

- (1) Overall Irrigation System : D (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation)
 Water Resources Facility : D Main Canal System : C Secondary Canal System : C On-farm : C
- (2) Water Resources Facility
- | | | | | | |
|----------------------------|-------------------------|-------------------------|----------------|---|-----|
| a. Type of facility | : Headworks | e. Scouring sluice gate | : - | i. Condition | : D |
| b. Type of weir | : Movable weir | f. Intake gate | : 2 nos. | (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation) | |
| c. Length of weir | : 15 m | g. Settling basin | : not provided | (no info.: no information) | |
| d. Design intake discharge | : 3.5 m ³ /s | h. Inspection bridge | : provided | | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	1,200	0	1,200	3	0	C
Secondary	10,690	0	10,690	42	2,000	C

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

(4) Major Problems and Constrains

- Water Resources Facility
 - Problem on management for flood/scouring sluice gate(s) operation
 - Insufficient diversion water due to sedimentation in front of intake
 - Difficulty on O&M
 - 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
 - Improper maintenance of flood or scouring sluice gate(s) of headworks (no greasing and anti-rust painting)
 - Sedimentation in front of intake
 - No provision of inspection/access road, no provision of inspection bridge/deck
 - 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
 - Replacement of control system or damaged equipment of flood/scouring sluice gate(s) of headworks
 - Dredging or flushing of sediment, proper gate operation of headworks and intake
 - Provision of inspection/access road, inspection bridge/deck
- 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 : large rehabilitation Intake, civil : large rehabilitation Intake, mechanical : large rehabilitation
 Settling basin : replacement or new

(3) Irrigation Canal and Related Structure

Works	No rehabilitaion	Rehabilitation	New construction	Total
Canal (m)				
Main	0	1,200	0	1,200
Secondary	0	10,690	0	10,690
Structure (nos)				
Main	0	3	0	3
Secondary	0	42	8	50

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	1,229	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	1,229

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
3,932	10,606	1,061	2,519	1,260	19,378	15.8

(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	5.0	Agricultural Productivity	20.0	11.0
	Urgency	25.0	22.0	Social Problem	15.0	10.5
	Sustainability	15.0	6.8	Economic Impact	15.0	7.5

VI.3 Priority Group

VI.4 Priority Ranking in the Province

Scheme	Trompo	District	Kendal & Kodia Semarang		
Technical Level	Technical	Registered Area	1,263 ha	Year of Construction	1990
		<i>Category</i> Irrigation (Headworks)			
		<i>Structure</i> Movable Weir, Upstream View			
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D			
		<i>Problems</i> Require major repair for civil and gate works			
		<i>Category</i> Irrigation (Headworks)			
		<i>Structure</i> Movable Weir, Rear View			
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D			
		<i>Problems</i> Require major repair for civil and gate works			
		<i>Category</i> Irrigation (Main Canal)			
		<i>Structure</i> Off-take Structure			
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D			
		<i>Problems</i> Require major repair for civil and gate works and removal of sediment			

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

Scheme	Trompo	District	Kendal & Kodia Semarang		
Technical Level	Technical	Registered Area	1,263 ha	Year of Construction	1990
		<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>Problems</i> Require major repair and removal of sediment			
		<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>Problems</i> Require major repair and removal of sediment			
		<i>Category</i> Irrigation (Paddy Field)			
		<i>Structure</i> Paddy Field			
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D			
		<i>Problems</i> Require farm road and ditch			

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	: 33007019-21	(7)	Number of Farmers	: 11,192						
(2) Name of Irrigation Scheme	: Kedung Pengilon	(8)	Water Resource River	: Kali Blorong						
(3) District (Kabupaten)	: Kendal & Kodia Semar	(9)	Catchment Area (km ²)	: 150						
(4) Sub-district (Kecamatan)	: Pegandon	(10)	Completion / Last Rehabilitation Year	: -						
(5) Registered Area (ha)	: 3,134									
(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				
A		A		A		A				
e. Rehabilitation plan & its references		f. Crops and yield data		g. Cropping Calendar		h. WUAs data				
C		A		A		1				
II. SUBJECT AREA FOR REHABILITATION PLAN										
II.1 Present and Planned Land Use										
Category		Present (ha)		Plan (ha)		Increment (ha)				
a. Irrigated paddy field		2,686		2,686		0				
b. Rainfed paddy field		0		0		0				
c. Upland field		0		0		0				
d. Uncultivated land		0		0		0				
e. Non-irrigable land		0		0		0				
Total		2,686		2,686		0				
III. AGRICULTURE										
III.1 Present/Before Project Condition										
(1) Irrigation Performance and Crop Production										
Season		Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
		Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)		2,686			2,686	100%	5.0	13,430		
Season II (dry I)		2,036	650		2,686	100%	5.0	10,180	1,950	
Season III (dry II)			700		700	26%			840	
Total/Annual		4,722	1,350	0	6,072	226%	5.0	23,610	2,790	0
(2) Problems and Constraints										
<i>A. Irrigation & Agriculture Performances</i>										
- High irrigation performances achieved; however water shortage in dry season reported										
- Double cropping of paddy practiced almost in the entire irrigated area; paddy yield levels high; palawija introduced substantially										
<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:		Farmers not following recommended practices			- Farmers Organizations:		Most members are not active			
- Paddy Marketing		Unstable 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 further intensification; expansion of palawija in dry season II										
- Extension activities toward improvement of post-harvest & marketing; 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 (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
		Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)		2,686			2,686	100%	5.5	14,773		
Season II (dry I)		2,686			2,686	100%	5.5	14,773		
Season III (dry II)			1,343		1,343	50%			1,880	
Total/Annual		5,372	1,343	0	6,715	250%	5.5	29,546	1,880	0
Annual Increment		650	-7	0	643	24%	0.5	5,936	-910	0
IV. WUAs										
IV.1 Existing Condition										
(1)	Number	a. Target;	44	b. Established;	44	c. Not yet;	0	Registered		0
	Performance	a. Developed;	0	b. Under developing;	44	c. Not yet;	0	Not yet registered		44
(2) Problems and Constraints										
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management										
(3) Causes of Problems and Constraints										
- Not so active members										
IV.2 Development Plan										
(1) Proposed Countermeasures										
- Encouragement of member farmers to take positive action for O&M works.										
(2) Development Plan										
- WUA O&M 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 : C 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 | : C |
| b. Type of weir | : Fixed weir | f. Intake gate | : 2 nos. | (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation) | |
| c. Length of weir | : 25 m | g. Settling basin | : not provided | (no info.: no information) | |
| d. Design intake discharge | : 4.0 m ³ /s | h. Inspection bridge | : no info. | | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	655	0	655	16	655	C
Secondary	32,620	0	32,620	79	7,800	C

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

(4) Major Problems and Constrains

- Water Resources Facility
 - Problem on management for flood/scouring sluice gate(s) operation
 - Insufficient diversion water due to sedimentation in front of intake
 - Difficulty on O&M
- Irrigation Canal and Related Structure
 - 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
 - Improper maintenance of flood or scouring sluice gate(s) of headworks (no greasing and anti-rust painting)
 - Sedimentation in front of intake
 - No provision of inspection/access road, no provision of inspection bridge/deck
- 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
 - 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
 - Replacement of control system or damaged equipment of flood/scouring sluice gate(s) of headworks
 - Dredging or flushing of sediment, proper gate operation of headworks and intake
 - Provision of inspection/access road, inspection bridge/deck
- 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
 - 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 : large rehabilitation Intake, civil : large rehabilitation Intake, mechanical : large rehabilitation
Settling basin : replacement or new

(3) Irrigation Canal and Related Structure

	Works	No rehabilitaion	Rehabilitation	New construction	Total
Canal (m)	Main	0	655	0	655
	Secondary	0	32,620	0	32,620
Structure (nos)	Main	0	16	2	18
	Secondary	0	79	16	95

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	2,686	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	2,686

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
5,341	26,393	2,639	5,506	1,570	41,450	15.4

(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	20.0	Social Problem	15.0	10.5
	Sustainability	15.0	6.8	Economic Impact	15.0	7.5

VI.3 Priority Group

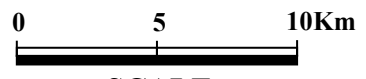
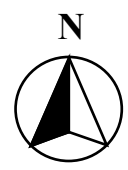
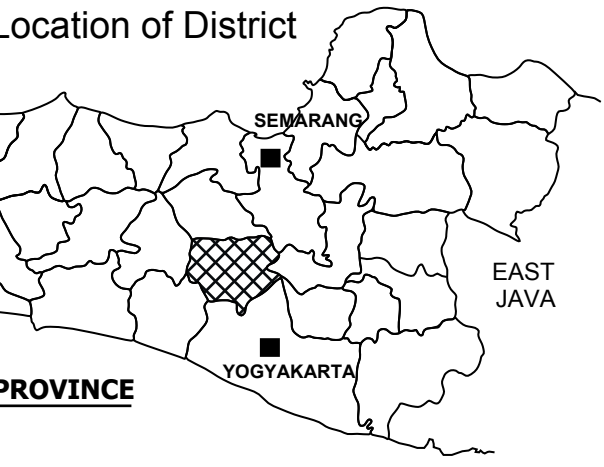
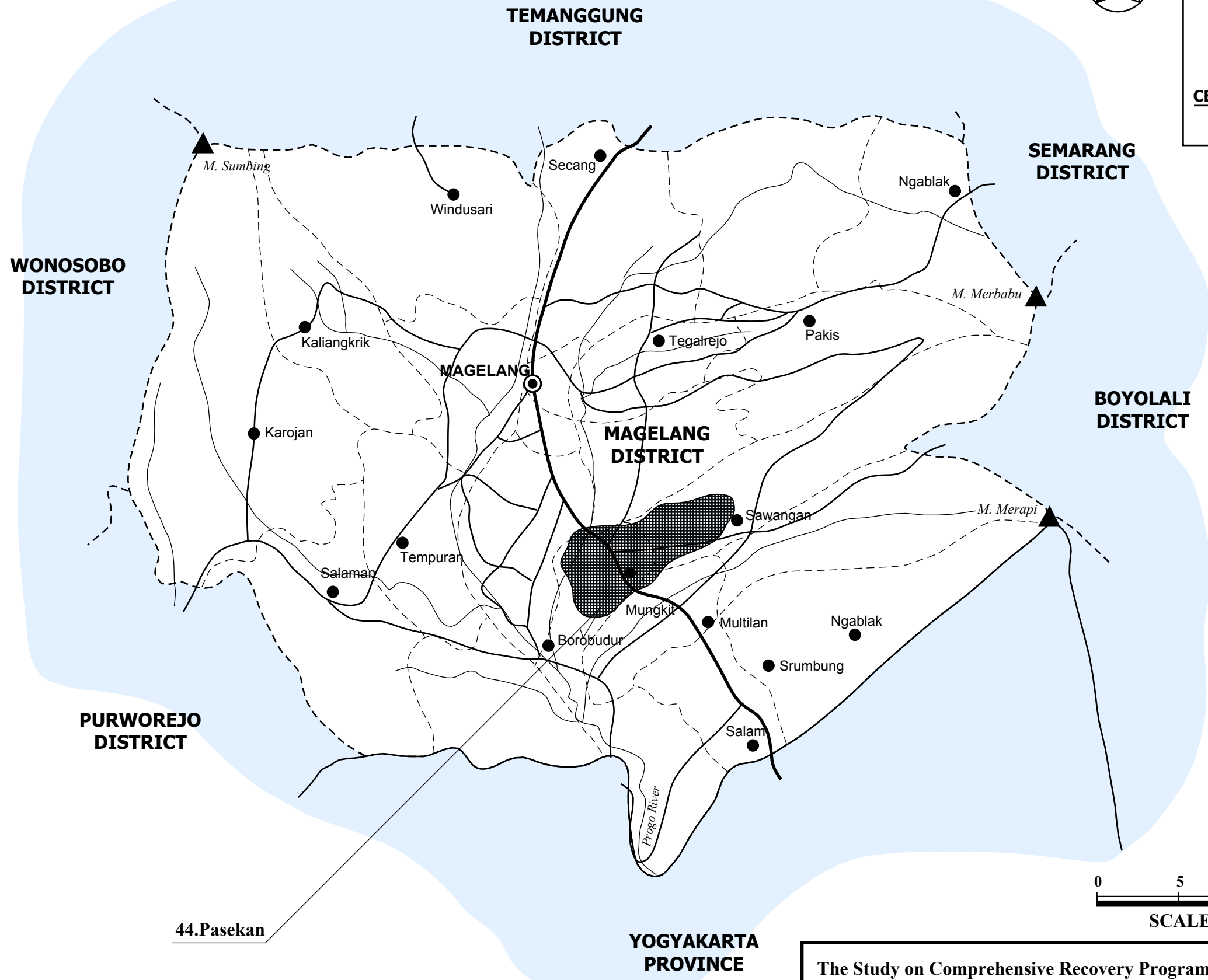
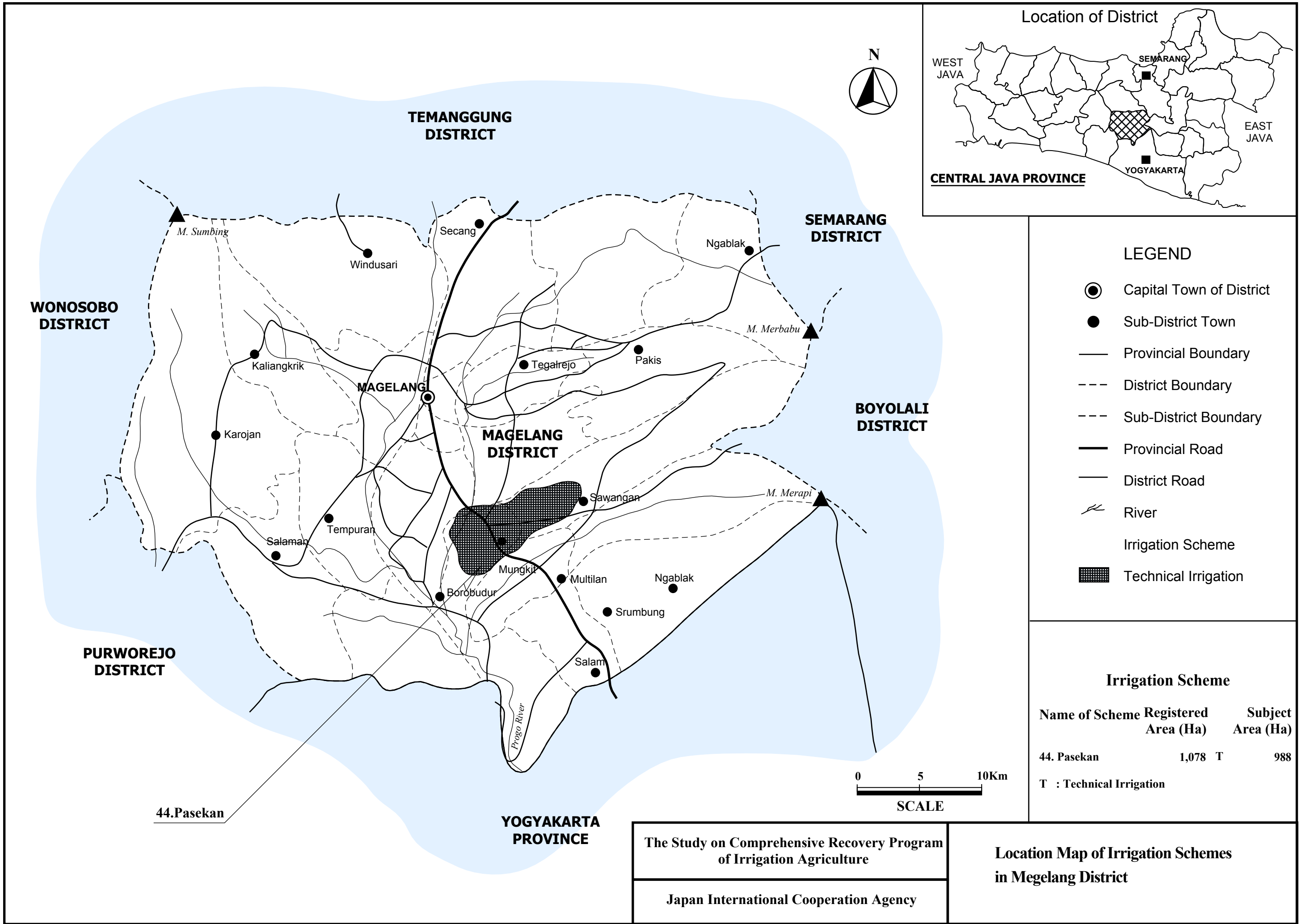
VI.4 Priority Ranking in the Province

Scheme		District	
Kedung Pengilon		Kendal & Kodia Semarang	
Technical Level	Technical	Registered Area	3,134 ha
		Year of Construction	
		<i>Category</i> Irrigation (Headworks)	
		<i>Structure</i> Fixed Weir, Downstream View	
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D	
		<i>Problems</i> Require new construction	
		<i>Category</i> Irrigation (Headworks)	
		<i>Structure</i> Fixed Weir, Intake	
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D	
		<i>Problems</i> Require new construction	
		<i>Category</i> Irrigation (Main Canal)	
		<i>Structure</i> Masonry Lined Canal at Downstream of Intake	
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	
		<i>Problems</i> Require provision of settling basin and inspection road	

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

Scheme	Kedung Pengilon	District	Kendal & Kodia Semarang	
Technical Level	Technical	Registered Area	3,134 ha	Year of Construction
		<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>Problems</i> Require major repair of canal and removal of sediments		
		<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>Problems</i> Require major repair of canal and removal of sediments		
		<i>Category</i> Irrigation (Tertiary Canal)		
		<i>Structure</i> Tertiary Canal		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input checked="" type="checkbox"/> D		
		<i>Problems</i> Require tertiary development and provision of farm road		

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



The Study on Comprehensive Recovery Program of Irrigation Agriculture

Japan International Cooperation Agency

Location Map of Irrigation Schemes in Megelang District

I. PROJECT FUNDAMENTALS									
I.1 General									
(1) Code Number	: 33022366-67	(7) Number of Farmers	: 9,980						
(2) Name of Irrigation Scheme	: Pasekan	(8) Water Resource River	: S. Pabelru, Kunjang, Prasung, Kuning						
(3) District (Kabupaten)	: Magelang dan Kodia Mag	(9) Catchment Area (km ²)	: 73.47						
(4) Sub-district (Kecamatan)	: Mungkid	(10) Completion / Last Rehabilitation Year	: 1999/2000						
(5) Registered Area (ha)	: 1,078								
(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			
A		A		A		A			
e. Rehabilitation plan & its references		f. Crops and yield data		g. Cropping Calender		h. WUAs data			
C		A		A		1			
II. SUBJECT AREA FOR REHABILITATION PLAN									
II.1 Present and Planned Land Use									
Category	Present (ha)	Plan (ha)	Increment (ha)						
a. Irrigated paddy field	988	988	0						
b. Rainfed paddy field	0	0	0						
c. Upland field	0	0	0						
d. Uncultivated land	0	0	0						
e. Non-irrigable land	0	0	0						
Total	988	988	0						
III. AGRICULTURE									
III.1 Present/Before Project Condition									
(1) Irrigation Performance and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	839			839	85%	4.5	3,776		
Season II (dry I)	604			604	61%	4.5	2,718		
Season III (dry II)	520			520	53%	4.0	2,080		
Total/Annual	1,963	0	0	1,963	199%	4.4	8,574	0	0
(2) Problems and Constraints									
<i>A. Irrigation & Agriculture Performances</i>									
- High irrigation performances achieved; however water shortage in dry season reported									
- Double cropping of paddy practiced almost in the entire irrigated area; paddy yield levels high; 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:	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									
- Ensuring year round irrigation water supply at on-farm level through rehabilitation									
- Introduction of triple cropped area of paddy partly; 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 (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	988			988	100%	5.0	4,940		
Season II (dry I)	593	395		988	100%	5.0	2,965	1,975	
Season III (dry II)	494			494	50%	4.5	2,223		
Total/Annual	2,075	395	0	2,470	250%	4.9	10,128	1,975	0
Annual Increment	112	395	0	507	51%	0.5	1,555	1,975	0
IV. WUAs									
IV.1 Existing Condition									
(1)	Number	a. Target;	11	b. Established;	9	c. Not yet;	2	Registered	0
	Performance	a. Developed;	0	b. Under developing;	9	c. Not yet;	0	Not yet registered	9
(2) Problems and Constraints									
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management									
(3) Causes of Problems and Constraints									
- Not so active members									
IV.2 Development Plan									
(1) Proposed Countermeasures									
- Encouragement of member farmers to take positive action for O&M works.									
(2) Development Plan									
- WUA O&M 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 : C 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 | : C |
| b. Type of weir | : Fixed weir | f. Intake gate | : 2 nos. | (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation) | |
| c. Length of weir | : 35 m | g. Settling basin | : provided | (no info.: no information) | |
| d. Design intake discharge | : 1.1 m ³ /s | h. Inspection bridge | : not provided | | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	0	0	0	0	0	C
Secondary	8,350	1,754	10,104	191	0	C

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

(4) Major Problems and Constrains

- Water Resources Facility
 - Problem on management for flood/scouring sluice gate(s) operation
 - Insufficient diversion water due to sedimentation in front of intake
 - Difficulty on O&M
- Irrigation Canal and Related Structure
 - 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
 - Improper maintenance of flood or scouring sluice gate(s) of headworks (no greasing and anti-rust painting)
 - Sedimentation in front of intake
 - No provision of inspection/access road, no provision of inspection bridge/deck
- 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
 - 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
 - Replacement of control system or damaged equipment of flood/scouring sluice gate(s) of headworks
 - Dredging or flushing of sediment, proper gate operation of headworks and intake
 - Provision of inspection/access road, inspection bridge/deck
- 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
 - 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 : large rehabilitation
Settling basin : large rehabilitation

(3) Irrigation Canal and Related Structure

Works	No rehabilitaion	Rehabilitation	New construction	Total
Canal (m)				
Main	0	0	0	0
Secondary	0	10,104	0	10,104
Structure (nos)				
Main	0	0	0	0
Secondary	0	191	38	229

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	988	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	988

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
1,931	16,735	1,674	2,025	1,260	23,625	23.9

(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	-	0.0
	Urgency	25.0	- Social Problem	15.0	-	
	Sustainability	15.0	- Economic Impact	15.0	-	

VI.3 Priority Group

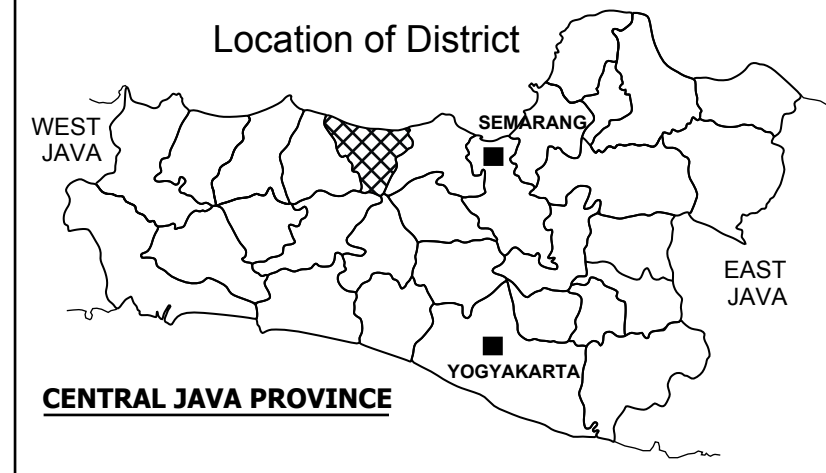
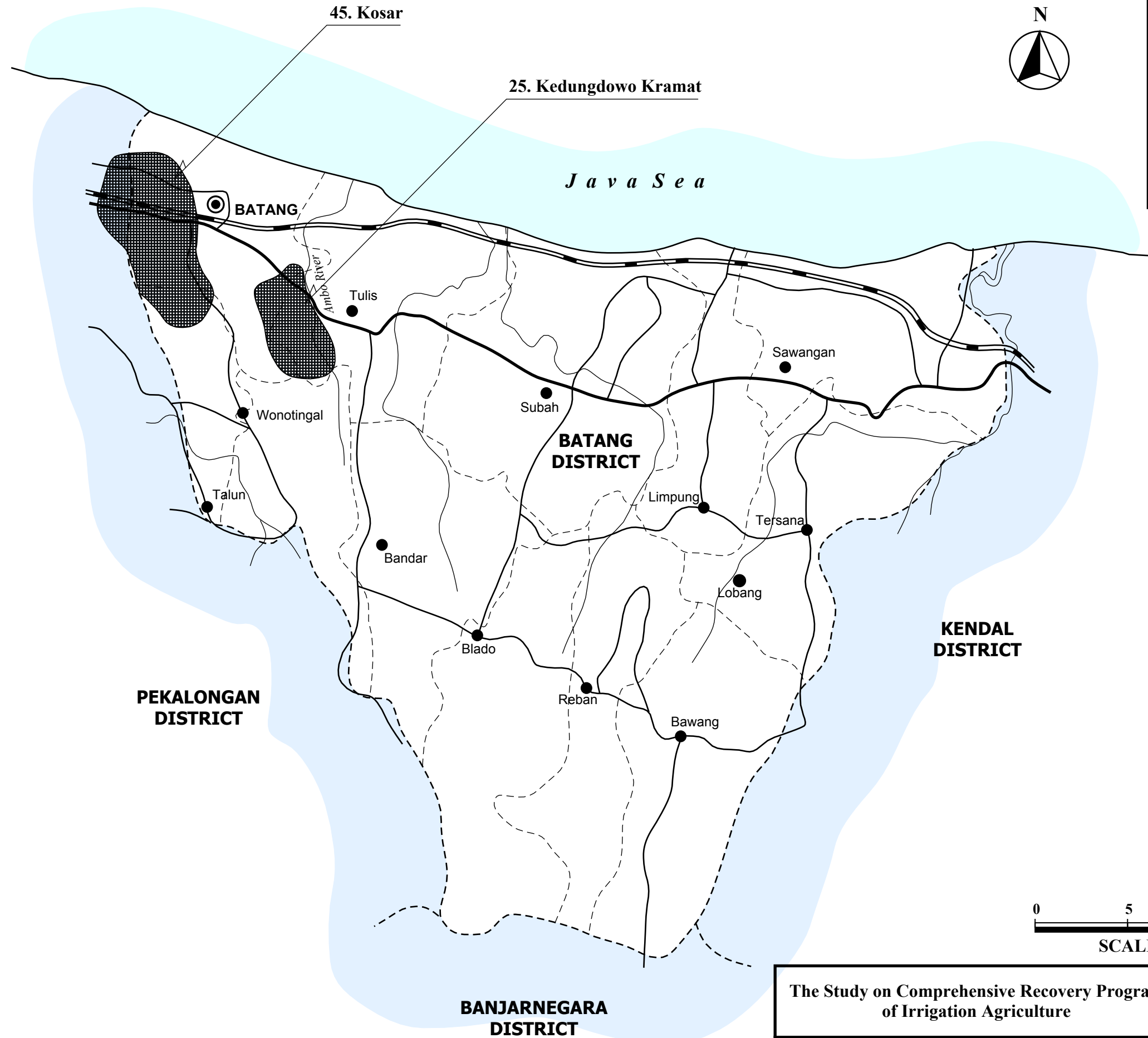
VI.4 Priority Ranking in the Province

Scheme	Pasekan	District	Magelang & Kodia Magelang		
Technical Level	Technical	Registered Area	1,078 ha	Year of Construction	1999/2000
		<i>Category</i> Irrigation (Headworks)			
		<i>Structure</i> Intake and Scouring Sluice			
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D			
		<i>Problems</i> Require major repair for civil and gate works			
		<i>Category</i> Irrigation (Headworks)			
		<i>Structure</i> Fixed Weir, Rear View			
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D			
		<i>Problems</i> Require major repair for civil and gate works			
		<i>Category</i> Irrigation (Headworks)			
		<i>Structure</i> Intake, Rear View			
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D			
		<i>Problems</i> Require provision of settling basin and farm road			

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

Scheme	Pasekan	District	Magelang & Kodia Magelang	
Technical Level	Technical	Registered Area	1,078 ha	Year of Construction 1999/2000
		<p><u>Category</u> Irrigation (Main Canal)</p>		
		<p><u>Structure</u> Masonry Lined Canal</p>		
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>		
		<p><u>Problems</u> Require repair of lining and provision of inspection road</p>		
		<p><u>Category</u> Irrigation (Secondary Canal)</p>		
		<p><u>Structure</u> 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>Problems</u> Require new construction</p>		
		<p><u>Category</u> Irrigation (Paddy Field)</p>		
		<p><u>Structure</u> Paddy Field</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> Require tertiary development</p>		

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

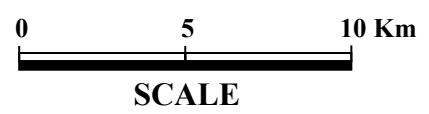


- LEGEND**
- Capital Town of District
 - Sub-District Town
 - - - District Boundary
 - - - Sub-District Boundary
 - ▬ Railway
 - ▬ Provincial Road
 - ▬ District Road
 - ~ River
 - ▭ Irrigation Scheme
 - ▭ Technical Irrigation

Irrigation Scheme

Name of Scheme	Registered Area (Ha)	Subject Area (Ha)
25. Kedungdowo Kramat	1,250 T	1,250
45. Kosar	1,617 T	3,243

T : Technical Irrigation



The Study on Comprehensive Recovery Program
of Irrigation Agriculture

Japan International Cooperation Agency

Location Map of Irrigation Schemes
in Batang District

I. PROJECT FUNDAMENTALS									
I.1 General									
(1) Code Number	:	33006026-27 ~ 05002-03	(7)	Number of Farmers	:	12,972			
(2) Name of Irrigation Scheme	:	Kosar	(8)	Water Resource River	:	Kupang			
(3) District (Kabupaten)	:	Batang / Pekalongan	(9)	Catchment Area (km ²)	:				
(4) Sub-district (Kecamatan)	:	Batang	(10)	Completion / Last Rehabilitation Year	:	1975			
(5) Registered Area (ha)	:	1,617							
(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		
A		A			A		A		
e. Rehabilitation plan & its references		f. Crops and yield data			g. Cropping Calender		h. WUAs data		
C		A			A		1		
II. SUBJECT AREA FOR REHABILITATION PLAN									
II.1 Present and Planned Land Use									
Category	Present (ha)	Plan (ha)	Increment (ha)						
a. Irrigated paddy field	3,243	3,243	0						
b. Rainfed paddy field	0	0	0						
c. Upland field	0	0	0						
d. Uncultivated land	0	0	0						
e. Non-irrigable land	0	0	0						
Total	3,243	3,243	0						
III. AGRICULTURE									
III.1 Present/Before Project Condition									
(1) Irrigation Performance and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	3,215	28		3,243	100%	4.5	14,468	84	
Season II (dry I)	3,208	35		3,243	100%	4.5	14,436	105	
Season III (dry II)	2,339	904		3,243	100%	4.0	9,356	1,085	
Total/Annual	8,762	967	0	9,729	300%	4.4	38,260	1,274	0
(2) Problems and Constraints									
<i>A. Irrigation & Agriculture Performances</i>									
- Maximum irrigation performances achieved; however water shortage in dry season reported									
- Triple cropping of paddy practiced almost in the entire irrigated area; paddy yield levels moderate; palawija introduced substantially									
<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:		-		
- Agronomic Issues:		Damage caused by rat			- 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									
- Ensuring year round irrigation water supply at on-farm level through rehabilitation									
- Productivity increase of paddy through intensification									
- Strengthening of extension activities tailored to area specific needs; empowerment of farmer groups (KTs) to establish agri-business oriented KT									
(2) Planned Irrigation Performances and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	3,243			3,243	100%	5.0	16,215		
Season II (dry I)	3,243			3,243	100%	5.0	16,215		
Season III (dry II)	2,270	973		3,243	100%	4.5	10,215	1,362	
Total/Annual	8,756	973	0	9,729	300%	4.9	42,645	1,362	0
Annual Increment	-6	6	0	0	0%	0.5	4,386	88	0
IV. WUAs									
IV.1 Existing Condition									
(1) Number	a. Target;	20	b. Established;	7	c. Not yet;	13	Registered		0
Performance	a. Developed;	1	b. Under developing;	2	c. Not yet;	4	Not yet registered		7
(2) Problems and Constraints									
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management									
(3) Causes of Problems and Constraints									
- Delay in administrative procedure for WUA establishment.									
IV.2 Development Plan									
(1) Proposed Countermeasures									
- Acceleration of administrative process.									
(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 : C Main Canal System : C Secondary Canal System : C On-farm : C

(2) Water Resources Facility

- | | | | | | |
|----------------------------|-------------------------|-------------------------|----------------|---|-----|
| a. Type of facility | : Headworks | e. Scouring sluice gate | : 1 nos. | i. Condition | : C |
| 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 | : 37 m | g. Settling basin | : provided | (no info.: no information) | |
| d. Design intake discharge | : 6.7 m ³ /s | h. Inspection bridge | : not provided | | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	1,246	4,854	6,100	19	2,660	C
Secondary	9,895	34,145	44,040	164	34,000	C

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

(4) Major Problems and Constrains

- Water Resources Facility

- Physical O&M problem due to overage facility
- Insufficient diversion water due to sedimentation in front of intake
- Difficulty on O&M

- Irrigation Canal and Related Structure

- Leakage from canal
- Collapse of canal
- Overage, lower strength of canal
- Cracks or partial damage on lined canal
- Lower function of regulating structure on canal

(5) Causes of Major Problems and Constraints

- Water Resources Facility

- Deterioration of weir, no or insufficient rehabilitation due to budget problem
- Sedimentation in front of intake
- No provision of inspection/access road, no provision of inspection bridge/deck

- Irrigation Canal and Related Structure

- 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
- Deterioration of canal, no or insufficient rehabilitation due to budget problem
- Improper regular maintenance or long leave of repair, insufficient provision of budget
- Deterioration of regulating structure on canal, especially gate and metal works

V.2 Development Plan

(1) Proposed Countermeasures for Major Problems

- Water Resources Facility

- Replace and reconstruction of weir
- Dredging or flushing of sediment, proper gate operation of headworks and intake
- Provision of inspection/access road, inspection bridge/deck

- Irrigation Canal and Related Structure

- 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
- Replace and reconstruction of canal
- Replace and reconstruction, provision of special treatment at cross drain to prevent settlement
- Replacement and reconstruction of regulating structure on canal

(2) Water Resources Facility

- | | | | | | |
|--------------------|------------------------|---------------|------------------------|--------------------|------------------------|
| Dam/Headworks body | : large rehabilitation | Intake, civil | : large rehabilitation | Intake, mechanical | : large rehabilitation |
| Settling basin | : large rehabilitation | | | | |

(3) Irrigation Canal and Related Structure

	Works	No rehabilitaion	Rehabilitation	New construction	Total
Canal (m)	Main	0	6,100	0	6,100
	Secondary	0	44,040	0	44,040
Structure (nos)	Main	0	19	2	21
	Secondary	0	164	33	197

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	3,243	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	3,243

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
2,270	64,808	6,481	6,648	1,570	81,777	25.2

(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	5.0	Agricultural Productivity	20.0	9.0	57.3	
	Urgency	25.0	20.0	Social Problem	15.0	7.5		
	Sustainability	15.0	8.3	Economic Impact	15.0	7.5		

VI.3 Priority Group

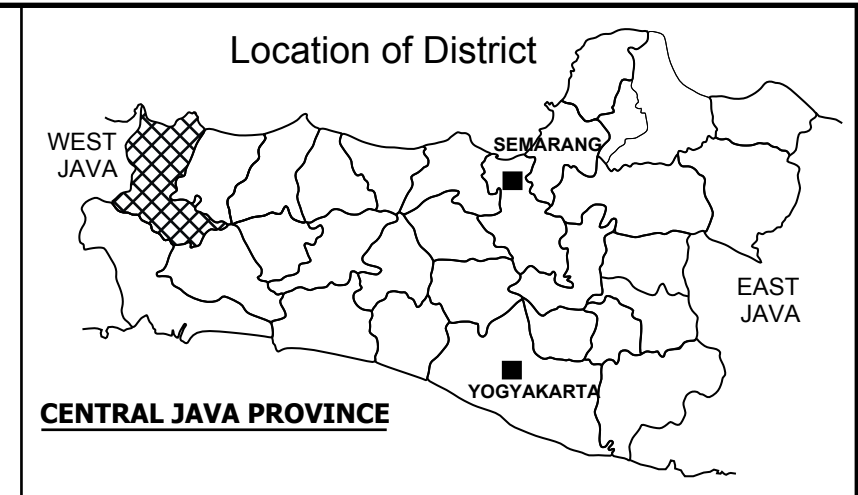
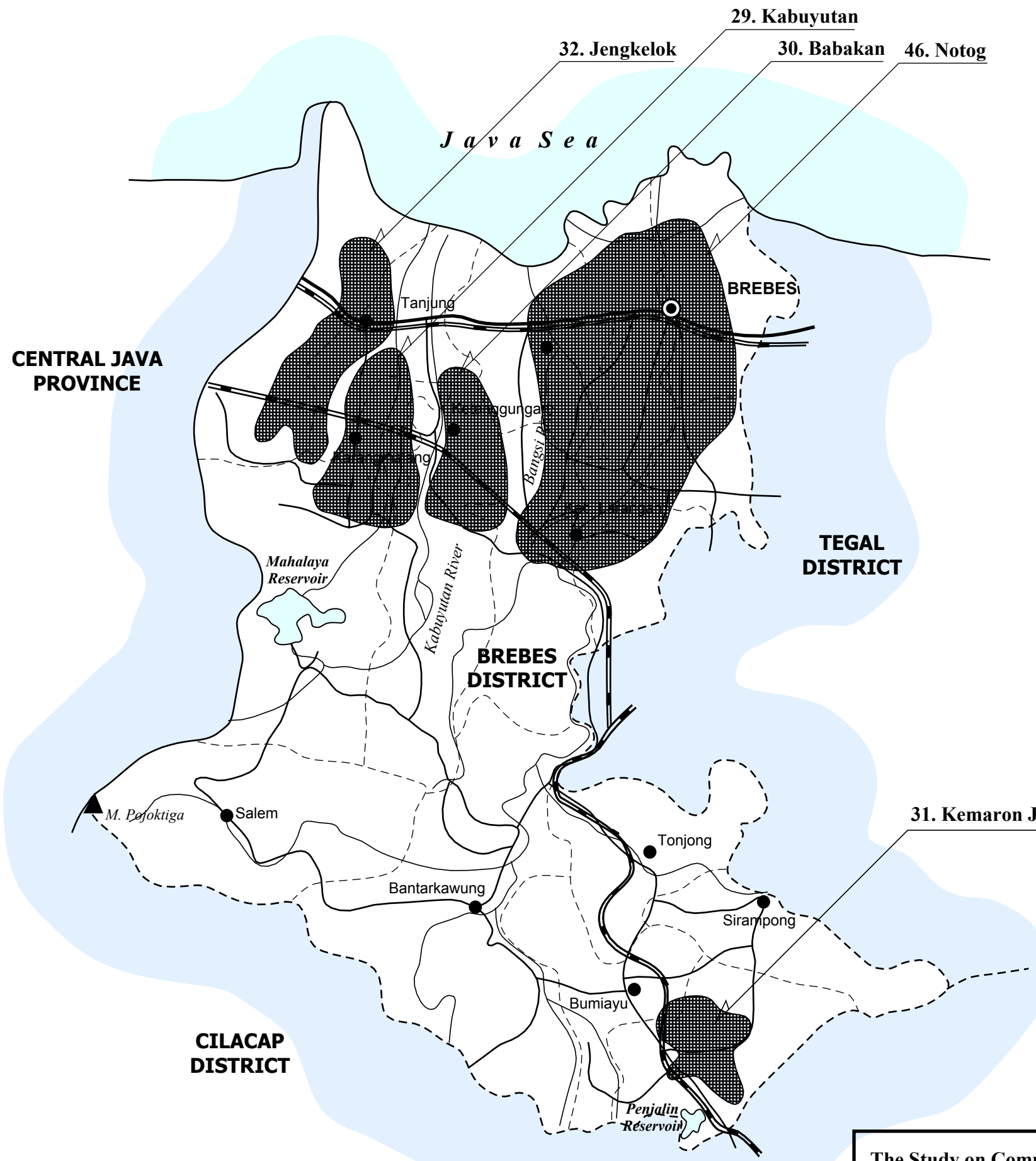
VI.4 Priority Ranking in the Province

Scheme	Kosar	District	Batang / Pekalongan	
Technical Level	Technical	Registered Area	1,617 ha	Year of Construction 1975
		<p><u>Category</u> Irrigation (Headworks)</p>		
		<p><u>Structure</u> Fixed Weir, Upstream View</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 (Headworks)</p>		
		<p><u>Structure</u> Fixed Weir, Downstream View</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> Masonry Lined Canal</p>		
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>		
		<p><u>Problems</u> Require total repair or replacement</p>		
		<p><u>Problems</u> Require total repair or replacement</p>		
		<p><u>Problems</u> Require total repair or replacement and provision of inspection road</p>		

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

Scheme	Kosar	District	Batang / Pekalongan	
Technical Level	Technical	Registered Area	1,617 ha	Year of Construction 1975
		<p><u>Category</u> Irrigation (Secondary Canal)</p>		
		<p><u>Structure</u> Masonry Lined Canal</p>		
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>		
		<p><u>Problems</u> Require total repair or replacement and provision of inspection road</p>		
		<p><u>Category</u> Irrigation (Tertiary Canal)</p>		
		<p><u>Structure</u> Tertiary Canal and Paddy Field</p>		
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>		
		<p><u>Problems</u> Require tertiary development</p>		
		<p><u>Category</u> Irrigation (Paddy Field)</p>		
		<p><u>Structure</u> Tertiary Canal and Paddy Field</p>		
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>		
		<p><u>Problems</u> Require tertiary development</p>		

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



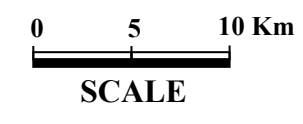
LEGEND

- ⊙ Capital Town of District
- Sub-District Town
- Provincial Boundary
- - - District Boundary
- - - Sub-District Boundary
- ▬ Railway
- Provincial Road
- District Road
- ~ River
- ▭ Irrigation Scheme
- ▧ Technical Irrigation

Irrigation Scheme

Name of Scheme	Registered Area (Ha)	Subject Area (Ha)
29. Kabuyutan	4,182	T 3,867
30. Babakan	2,181	T 2,528
31. Kemaron Jambe	1,026	T 1,483
32. Jengkelok	6,505	T 6,173
46. Notog	27,682	T 25,540

T : Technical Irrigation



The Study on Comprehensive Recovery Program
of Irrigation Agriculture

Japan International Cooperation Agency

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

I. PROJECT FUNDAMENTALS									
I.1 General									
(1) Code Number	: 33001176	(7) Number of Farmers	: 271,700						
(2) Name of Irrigation Scheme	: Notog	(8) Water Resource River	:						
(3) District (Kabupaten)	: Brebes / Tegal	(9) Catchment Area (km ²)	:						
(4) Sub-district (Kecamatan)	: Bumiayu	(10) Completion / Last Rehabilitation Year	: 1972						
(5) Registered Area (ha)	: 27,682								
(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				
A	A		A		A				
e. Rehabilitation plan & its references	f. Crops and yield data		g. Cropping Calender		h. WUAs data				
C	A		A		1				
II. SUBJECT AREA FOR REHABILITATION PLAN									
II.1 Present and Planned Land Use									
Category	Present (ha)	Plan (ha)	Increment (ha)						
a. Irrigated paddy field	25,540	25,540	0						
b. Rainfed paddy field	0	0	0						
c. Upland field	0	0	0						
d. Uncultivated land	0	0	0						
e. Non-irrigable land	0	0	0						
Total	25,540	25,540	0						
III. AGRICULTURE									
III.1 Present/Before Project Condition									
(1) Irrigation Performance and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	6,910	15,262	3,368	25,540	100%	5.0	34,550	45,786	218,920
Season II (dry I)	18,625	3,730		22,355	88%	5.0	93,125	11,190	
Season III (dry II)	131	18,457		18,588	73%	5.0	655	22,148	
Total/Annual	25,666	37,449	3,368	66,483	260%	5.0	128,330	79,124	218,920
(2) Problems and Constraints									
<i>A. Irrigation & Agriculture Performances</i>									
- High irrigation performances achieved; however, intensity of paddy is limited & water shortage in dry season reported									
- Single cropping of paddy prevailing; paddy yield levels high; palawija cropped area larger then that of paddy									
<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:		Unstable marketing prices		
- Agronomic Issues:		Damage caused by rat			- Farmers Organizations:		Managerial capacity of KTs are limited		
- Paddy Marketing		Unstable marketing prices			- Extension Services:		Implementation of extension programs is limited		
III.2 Development Plan									
(1) Development Approaches									
- Expansion of irrigated area of paddy & ensuring year round irrigation water supply at on-farm level through rehabilitation									
- Introduction of double cropping of paddy; productivity increase through further intensification									
- Extension activities toward improvement of post-harvest & marketing; 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 (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	12,770	9,402	3,368	25,540	100%	6.0	76,620	28,206	218,920
Season II (dry I)	22,172			22,172	87%	5.5	121,946		
Season III (dry II)		20,432		20,432	80%			28,605	
Total/Annual	34,942	29,834	3,368	68,144	267%	5.7	198,566	56,811	218,920
Annual Increment	9,276	-7,615	0	1,661	7%	0.7	70,236	-22,313	0
IV. WUAs									
IV.1 Existing Condition									
(1) Number	a. Target;	288	b. Established;	276	c. Not yet;	12	Registered		6
Performance	a. Developed;	33	b. Under developing;	227	c. Not yet;	16	Not yet registered		270
(2) Problems and Constraints									
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management									
(3) Causes of Problems and Constraints									
- Low collection level of membership fee.									
IV.2 Development Plan									
(1) Proposed Countermeasures									
- Calling attention of WUA members to their obligation.									
(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 : C Main Canal System : C Secondary Canal System : C On-farm : C
- (2) Water Resources Facility
- | | | | | | |
|----------------------------|--------------------------|-------------------------|----------------|---|-----|
| a. Type of facility | : Headworks | e. Scouring sluice gate | : 4 nos. | i. Condition | : C |
| 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 | : 85 m | g. Settling basin | : provided | (no info.: no information) | |
| d. Design intake discharge | : 27.0 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	3,750	13,350	17,100	9	31,000	C
Secondary	159,563	239,345	398,908	504	250,000	C

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

(4) Major Problems and Constrains

- Water Resources Facility
 - Problem on management for flood/scouring sluice gate(s) operation
 - Insufficient diversion water due to sedimentation in front of intake
 - Difficulty on O&M
 - Irrigation Canal and Related Structure
 - Leakage from canal
 - Collapse of canal
 - Overage, lower strength of canal
 - Cracks or partial damage on lined canal
 - Lower function of regulating structure on canal
- (5) Causes of Major Problems and Constraints
- Water Resources Facility
 - Improper maintenance of flood or scouring sluice gate(s) of headworks (no greasing and anti-rust painting)
 - Sedimentation in front of intake
 - No provision of inspection/access road, no provision of inspection bridge/deck
 - Irrigation Canal and Related Structure
 - 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
 - Deterioration of canal, no or insufficient rehabilitation due to budget problem
 - Improper regular maintenance or long leave of repair, insufficient provision of budget
 - Deterioration of regulating structure on canal, especially gate and metal works

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) of headworks
 - Dredging or flushing of sediment, proper gate operation of headworks and intake
 - Provision of inspection/access road, inspection bridge/deck
- Irrigation Canal and Related Structure
 - 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
 - Replace and reconstruction of canal
 - Replace and reconstruction, provision of special treatment at cross drain to prevent settlement
 - Replacement and reconstruction of regulating structure on canal

(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 rehabilitaion		Rehabilitation		New construction		Total	
	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)	Canal (m)	Structure (nos)
Main	0	0	17,100	9	0	0	17,100	9
Secondary	0	0	398,908	504	0	0	398,908	504
Total	0	0	416,008	513	0	0	416,008	513

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	25,540	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	25,540

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
8,359	702,606	70,261	52,357	3,600	837,183	32.8

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

VI. PROJECT EVALUATION

VI.1 EIRR 5.1%

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	-	0.0
	Urgency	25.0	- Social Problem	15.0	-	
	Sustainability	15.0	- Economic Impact	15.0	-	

VI.3 Priority Group


Group VI: Development by other category
(High rehabilitation cost)

VI.4 Priority Ranking in the Province

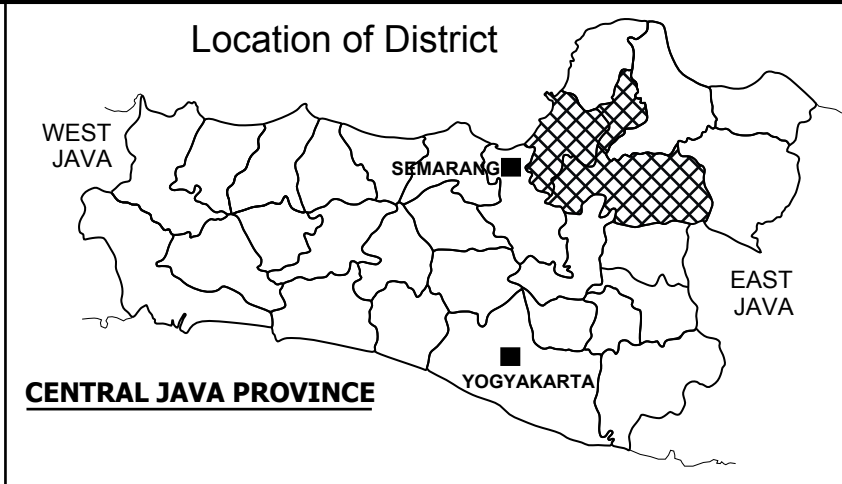
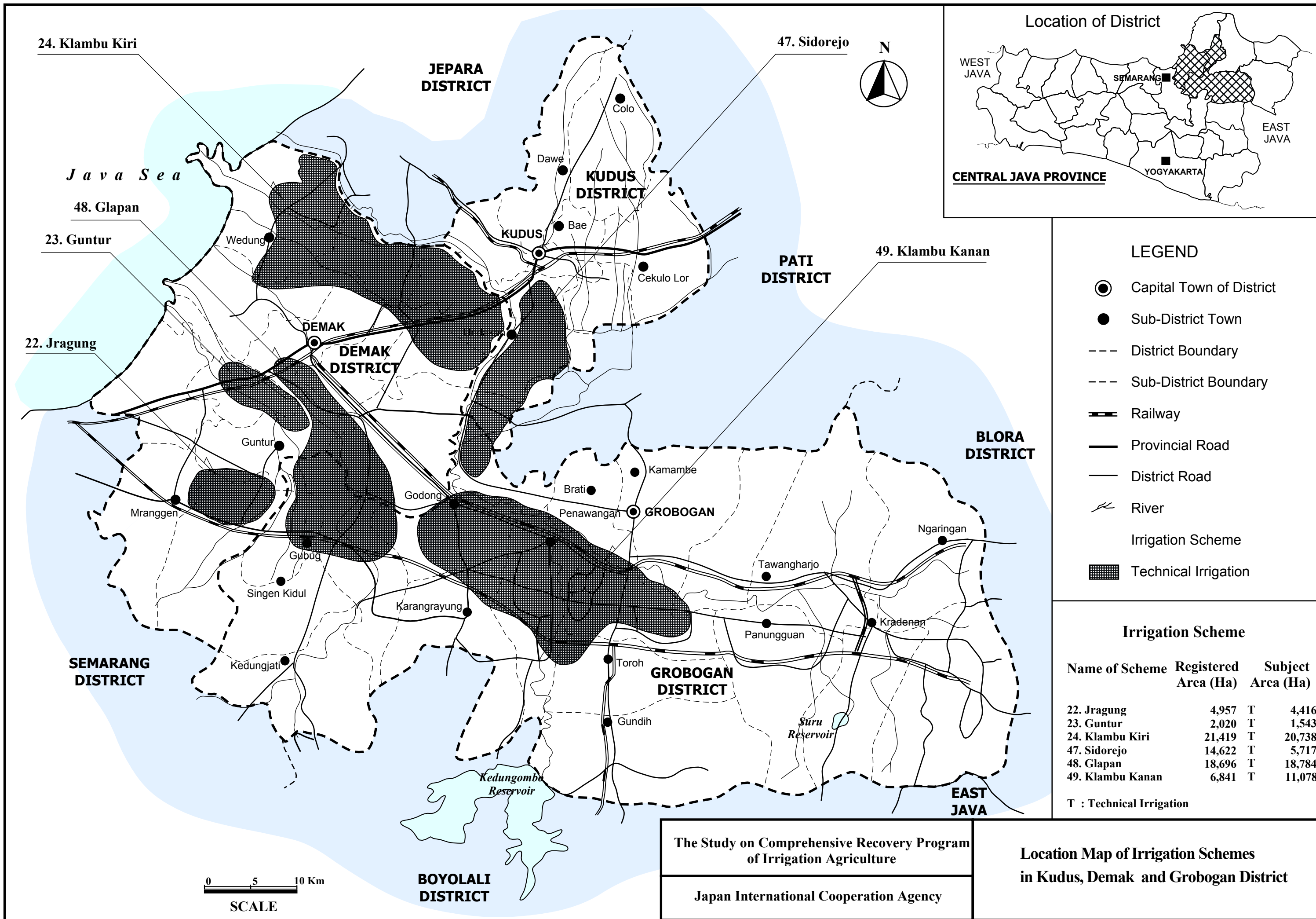
-

Scheme	Notog	District	Brebes / Tegal	
Technical Level	Technical	Registered Area	27,682 ha	Year of Construction 1972
		<i>Category</i> Irrigation (Headworks)		
		<i>Structure</i> Fixed Weir, Intake and Scouring Sluice		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require major repair of civil works and to replace gate leaf by steel construction		
		<i>Category</i> Irrigation (Headworks)		
		<i>Structure</i> Intake		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require major repair of civil works and to replace gate leaf by steel construction		
		<i>Category</i> Irrigation (Headworks)		
		<i>Structure</i> Overflow Weir		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require major repair		

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

Scheme	Notog	District	Brebes / Tegal	
Technical Level	Technical	Registered Area	27,682 ha	Year of Construction 1972
		<i>Category</i> Irrigation (Main Canal)		
		<i>Structure</i> Masonry Lined Canal		
		<i>Condition</i> <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require removal of sediments and repair of lining		
		<i>Category</i> Irrigation (Secondary Canal)		
		<i>Structure</i> Canal		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require removal of sediments and repair / replacement of lining		
		<i>Category</i> Irrigation (Paddy Field)		
		<i>Structure</i> Field Canal and Paddy Field		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require provision of farm road and division box on canal		

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



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

Irrigation Scheme

Name of Scheme	Registered Area (Ha)	Subject Area (Ha)
22. Jragung	4,957	T 4,416
23. Guntur	2,020	T 1,543
24. Klambu Kiri	21,419	T 20,738
47. Sidorejo	14,622	T 5,717
48. Glapan	18,696	T 18,784
49. Klambu Kanan	6,841	T 11,078

T : Technical Irrigation

The Study on Comprehensive Recovery Program
of Irrigation Agriculture

Japan International Cooperation Agency

Location Map of Irrigation Schemes
in Kudus, Demak and Grobogan District



I. PROJECT FUNDAMENTALS										
I.1 General										
(1) Code Number	:	33009039-46	(7)	Number of Farmers	:	8,074				
(2) Name of Irrigation Scheme	:	Sidorejo	(8)	Water Resource River	:	Serang				
(3) District (Kabupaten)	:	Grobogan / Boyolali	(9)	Catchment Area (km ²)	:	63				
(4) Sub-district (Kecamatan)	:	Toroh	(10)	Completion / Last Rehabilitation Year	:	1989/1990				
(5) Registered Area (ha)	:	14,622								
(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			
A		A			A		A			
e. Rehabilitation plan & its references		f. Crops and yield data			g. Cropping Calendar		h. WUAs data			
C		A			A		1			
II. SUBJECT AREA FOR REHABILITATION PLAN										
II.1 Present and Planned Land Use										
Category		Present (ha)		Plan (ha)		Increment (ha)				
a. Irrigated paddy field		5,717		5,717		0				
b. Rainfed paddy field		0		0		0				
c. Upland field		0		0		0				
d. Uncultivated land		0		0		0				
e. Non-irrigable land		0		0		0				
Total		5,717		5,717		0				
III. AGRICULTURE										
III.1 Present/Before Project Condition										
(1) Irrigation Performance and Crop Production										
Season		Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
		Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)		5,717			5,717	100%	5.5	31,444		
Season II (dry I)		5,717			5,717	100%	5.5	31,444		
Season III (dry II)			5,400		5,400	94%			6,480	
Total/Annual		11,434	5,400	0	16,834	294%	5.5	62,887	6,480	0
(2) Problems and Constraints										
<i>A. Irrigation & Agriculture Performances</i>										
- High irrigation performances achieved; however water shortage in dry season reported										
- Double cropping of paddy practiced in the entire irrigated area; paddy yield levels high; palawija produced extensively										
<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:		Unstable marketing prices			
- Agronomic Issues:		Damage caused by rat			- 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										
- Ensuring year round irrigation water supply at on-farm level through rehabilitation										
- Introduction of triple cropped area of paddy partly; productivity increase through further intensification										
- 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 (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
		Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)		5,717			5,717	100%	6.0	34,302		
Season II (dry I)		5,717			5,717	100%	6.0	34,302		
Season III (dry II)		1,143	4,574		5,717	100%	5.5	6,287	6,404	
Total/Annual		12,577	4,574	0	17,151	300%	6.0	74,891	6,404	0
Annual Increment		1,143	-826	0	317	6%	0.5	12,004	-76	0
IV. WUAs										
IV.1 Existing Condition										
(1) Number	a. Target;	102	b. Established;	67	c. Not yet;	35	Registered		1	
Performance	a. Developed;	13	b. Under developing;	45	c. Not yet;	9	Not yet registered		66	
(2) Problems and Constraints										
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input type="checkbox"/> Management										
(3) Causes of Problems and Constraints										
- Limited WUA supplied with irrigation water due to insufficient water resource.										
IV.2 Development Plan										
(1) Proposed Countermeasures										
- Promotion of rotation irrigation system introduction.										
(2) Development Plan										
- WUA O&M 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 | : 2 nos. | (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation) | |
| c. Length of weir | : 80 m | g. Settling basin | : provided | (no info.: no information) | |
| d. Design intake discharge | : 11.0 m ³ /s | h. Inspection bridge | : provided | | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	13,500	0	13,500	133	13,500	C
Secondary	20,000	17,000	37,000	316	37,000	C

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

(4) Major Problems and Constrains

- Water Resources Facility
Headworks is maintained by PLN.
- Irrigation Canal and Related Structure
Leakage from canal
Collapse of canal
Lower function of regulating structure on canal
Difficulty on O&M

(5) Causes of Major Problems and Constraints

- Water Resources Facility
Headworks is maintained by PLN.
- Irrigation Canal and Related Structure
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
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
Headworks is maintained by PLN.
- Irrigation Canal and Related Structure
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
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 : maintained by PLN Intake, civil : minor rehabilitation Intake, mechanical : minor rehabilitation
Settling basin : not required

(3) Irrigation Canal and Related Structure

Works	No rehabilitaion	Rehabilitation	New construction	Total
Canal (m)	Main	0	13,500	0
	Secondary	0	37,000	0
Structure (nos)	Main	0	133	13
	Secondary	0	316	63

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	5,717	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	5,717

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
232	103,354	10,335	11,720	2,590	128,232	22.4

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

VI. PROJECT EVALUATION

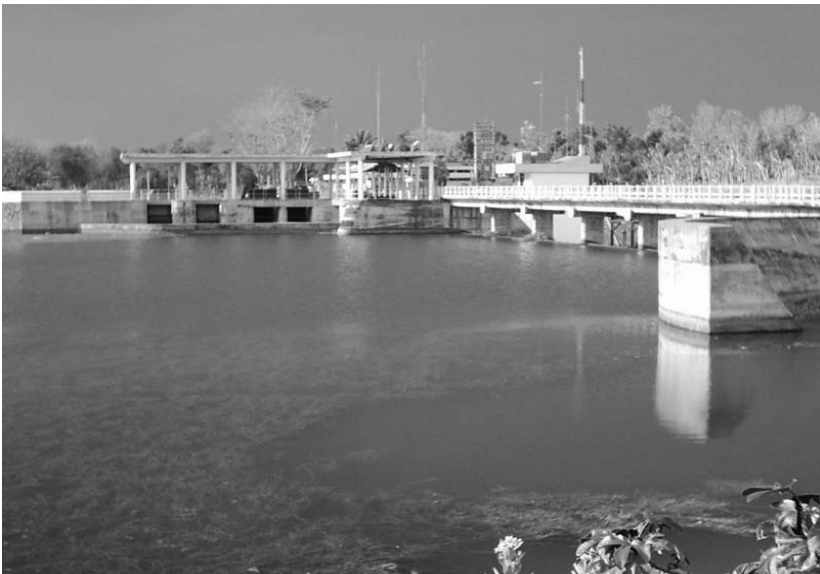

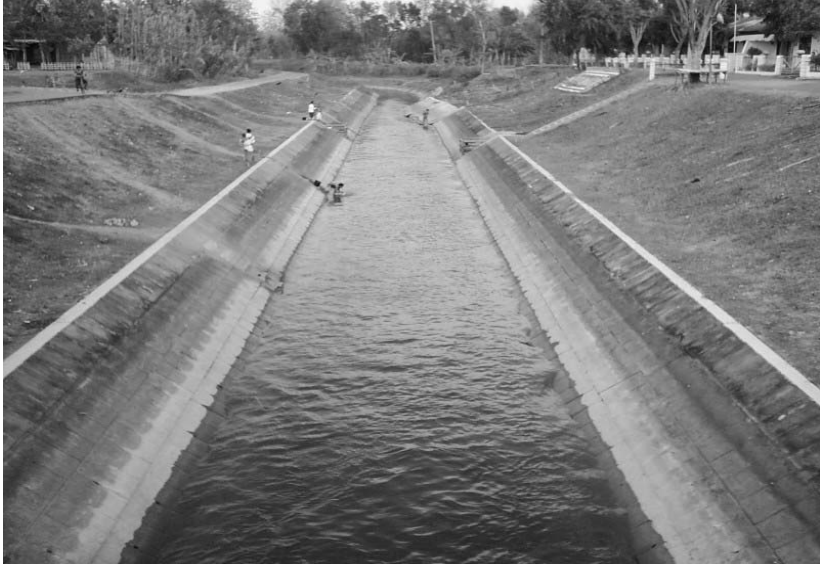
VI.1 EIRR

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	9.0
	Urgency	25.0	18.0	Social Problem	15.0	6.0
	Sustainability	15.0	6.8	Economic Impact	15.0	7.5

VI.3 Priority Group

VI.4 Priority Ranking in the Province

Scheme	Sidorejo	District	Grobogan / Boyolali		
Technical Level	Technical	Registered Area	14,622 ha	Year of Construction	1989/1990
		<i>Category</i> Irrigation (Headworks)			
		<i>Structure</i> Fixed Weir, Upstream View (operated by PLN)			
		<i>Condition</i> <input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D			
		<i>Problems</i> Irrigation and mini-hydro power purpose			
		<i>Category</i> Irrigation (Headworks)			
		<i>Structure</i> Fixed Weir, Downstream View			
		<i>Condition</i> <input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D			
		<i>Problems</i> Irrigation and mini-hydro power purpose			
		<i>Category</i> Irrigation (Main Canal)			
		<i>Structure</i> Concrete Lined Canal at Downstream of Intake			
		<i>Condition</i> <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D			
		<i>Problems</i> Require repair of canal lining			

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

Scheme	Sidorejo	District	Grobogan / Boyolali		
Technical Level	Technical	Registered Area	14,622 ha	Year of Construction	1989/1990
		<p><u>Category</u> Irrigation (Main Canal)</p>			
		<p><u>Structure</u> Concrete Lined Canal (slope sliding)</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require repair of canal lining</p>			
		<p><u>Category</u> Irrigation (Main Canal)</p>			
		<p><u>Structure</u> Constant Water Level Gate</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> Require minor repair of civil works</p>			
		<p><u>Category</u> Irrigation (Tertiary System)</p>			
		<p><u>Structure</u> Paddy Field</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require tertiary development</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	:	33010029-42	(7)	Number of Farmers	:	67,080				
(2) Name of Irrigation Scheme	:	Glapan	(8)	Water Resource River	:	K. Tuntang				
(3) District (Kabupaten)	:	Grobogan / Demak	(9)	Catchment Area (km ²)	:	200				
(4) Sub-district (Kecamatan)	:	Tegewanu	(10)	Completion / Last Rehabilitation Year	:	1977				
(5) Registered Area (ha)	:	18,696								
(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			
A		A			A		A			
e. Rehabilitation plan & its references		f. Crops and yield data			g. Cropping Calendar		h. WUAs data			
C		A			A		2			
II. SUBJECT AREA FOR REHABILITATION PLAN										
II.1 Present and Planned Land Use										
Category		Present (ha)		Plan (ha)		Increment (ha)				
a. Irrigated paddy field		18,784		18,784		0				
b. Rainfed paddy field		0		0		0				
c. Upland field		0		0		0				
d. Uncultivated land		0		0		0				
e. Non-irrigable land		0		0		0				
Total		18,784		18,784		0				
III. AGRICULTURE										
III.1 Present/Before Project Condition										
(1) Irrigation Performance and Crop Production										
Season		Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
		Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)		18,784			18,784	100%	5.5	103,312		
Season II (dry I)		18,784			18,784	100%	5.0	93,920		
Season III (dry II)			13,405		13,405	71%			16,086	
Total/Annual		37,568	13,405	0	50,973	271%	5.3	197,232	16,086	0
(2) Problems and Constraints										
<i>A. Irrigation & Agriculture Performances</i>										
- High irrigation performances achieved; however water shortage in dry season reported										
- Double cropping of paddy practiced in the entire irrigated area; paddy yield levels high; palawija produced extensively										
<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:		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										
- Ensuring year round irrigation water supply at on-farm level through rehabilitation										
- Expansion of palawija production in dry season II; productivity increase of paddy & palawija through further intensification										
- 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 (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
		Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)		18,784			18,784	100%	6.0	112,704		
Season II (dry I)		18,784			18,784	100%	6.0	112,704		
Season III (dry II)			15,027		15,027	80%			21,038	
Total/Annual		37,568	15,027	0	52,595	280%	6.0	225,408	21,038	0
Annual Increment		0	1,622	0	1,622	9%	0.7	28,176	4,952	0
IV. WUAs										
IV.1 Existing Condition										
(1)	Number	a. Target;	162	b. Established;	99	c. Not yet;	63	Registered		0
	Performance	a. Developed;	34	b. Under developing;	61	c. Not yet;	4	Not yet registered		99
(2) Problems and Constraints										
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management										
(3) Causes of Problems and Constraints										
- Delay in administrative procedure for WUA establishment.										
IV.2 Development Plan										
(1) Proposed Countermeasures										
- Acceleration of administrative process.										
(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 : C Main Canal System : C Secondary Canal System : C On-farm : C
- (2) Water Resources Facility
- | | | | | | |
|----------------------------|--------------------------|-------------------------|----------------|---|-----|
| a. Type of facility | : Headworks | e. Scouring sluice gate | : 1 nos. | i. Condition | : C |
| b. Type of weir | : Fixed weir | f. Intake gate | : 2 nos. | (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation) | |
| c. Length of weir | : 100 m | g. Settling basin | : provided | (no info.: no information) | |
| d. Design intake discharge | : 14.0 m ³ /s | h. Inspection bridge | : not provided | | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	7,100	10,880	17,980	52	17,980	C
Secondary	14,931	36,619	51,550	205	16,000	C

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

(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)
 - Insufficient diversion water due to sedimentation in front of intake
 - Difficulty on O&M
- Irrigation Canal and Related Structure
 - Leakage from canal
 - Collapse of canal
 - Overage, lower strength of canal
 - Cracks or partial damage on lined canal
 - Difficulty on O&M
- (5) Causes of Major Problems and Constraints
 - Water Resources Facility
 - No over coating on flood/scouring sluice gate(s) to prevent rust and decay
 - Sedimentation in front of intake
 - No provision of inspection/access road, no provision of inspection bridge/deck
 - Irrigation Canal and Related Structure
 - 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
 - Deterioration of canal, no or insufficient rehabilitation due to budget problem
 - Improper regular maintenance or long leave of repair, insufficient provision of budget
 - 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
 - Provision of overcoat or replacement of flood/scouring sluice gate(s) of headworks
 - Dredging or flushing of sediment, proper gate operation of headworks and intake
 - Provision of inspection/access road, inspection bridge/deck
- Irrigation Canal and Related Structure
 - 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
 - Replace and reconstruction of canal
 - Replace and reconstruction, provision of special treatment at cross drain to prevent settlement
 - Provision or repair of inspection road with all weather type/pavement

(2) Water Resources Facility

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

(3) Irrigation Canal and Related Structure

Works	No rehabilitaion	Rehabilitation	New construction	Total
Canal (m)				
Main	0	17,980	0	17,980
Secondary	0	51,550	0	51,550
Structure (nos)				
Main	0	52	5	57
Secondary	0	205	41	246

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	18,784	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	18,784

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
9,002	128,730	12,873	38,507	3,600	192,712	10.3

(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	9.0
	Urgency	25.0	20.0	Social Problem	15.0	9.0
	Sustainability	15.0	8.3	Economic Impact	15.0	9.0

VI.3 Priority Group

VI.4 Priority Ranking in the Province

Scheme	Glapan	District	Grobogan / Demak	
Technical Level	Technical	Registered Area	18,696 ha	Year of Construction 1977
		<i>Category</i> Irrigation (Headworks)		
		<i>Structure</i> Fixed Weir, Downstream View		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require major repair of weir body and gate works		
		<i>Category</i> Irrigation (Headworks)		
		<i>Structure</i> Intake Gate and Hoist		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D		
		<i>Problems</i> Require replacement		
		<i>Category</i> Irrigation (Headworks)		
		<i>Structure</i> Intake, Rear View		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require major repair of civil works and provision of settling basin		

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

Scheme	Glapan	District	Grobogan / Demak		
Technical Level	Technical	Registered Area	18,696 ha	Year of Construction	1977
		<p><u>Category</u> Irrigation (Main Canal)</p>			
		<p><u>Structure</u> Check Structure</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require major repair of civil works and gate works</p>			
		<p><u>Category</u> Irrigation (Secondary Canal)</p>			
		<p><u>Structure</u> Masonry Lined Canal</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require major repair of canal lining and provision of inspection road</p>			
		<p><u>Category</u> Irrigation (Tertiary System)</p>			
		<p><u>Structure</u> Paddy Field</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require tertiary development</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	: 33009032-37	(7)	Number of Farmers	: 18,260						
(2) Name of Irrigation Scheme	: Klambu Kanan	(8)	Water Resource River	: Serang						
(3) District (Kabupaten)	: Grobogan / Kudus / Pat	(9)	Catchment Area (km ²)	: 868 km + 1.986 km						
(4) Sub-district (Kecamatan)	: Klambu	(10)	Completion / Last Rehabilitation Year	: 1990						
(5) Registered Area (ha)	: 6,841									
(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				
A		A		A		A				
e. Rehabilitation plan & its references		f. Crops and yield data		g. Cropping Calendar		h. WUAs data				
C		A		A		1				
II. SUBJECT AREA FOR REHABILITATION PLAN										
II.1 Present and Planned Land Use										
Category		Present (ha)		Plan (ha)		Increment (ha)				
a. Irrigated paddy field		11,078		11,078		0				
b. Rainfed paddy field		0		0		0				
c. Upland field		0		0		0				
d. Uncultivated land		0		0		0				
e. Non-irrigable land		0		0		0				
Total		11,078		11,078		0				
III. AGRICULTURE										
III.1 Present/Before Project Condition										
(1) Irrigation Performance and Crop Production										
Season		Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
		Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)		9,373		315	9,688	87%	5.0	46,865		20,475
Season II (dry I)		10,746			10,746	97%	5.0	53,730		
Season III (dry II)		4,165	4,386		8,551	77%	4.5	18,743	5,263	
Total/Annual		24,284	4,386	315	28,985	262%	4.9	119,338	5,263	20,475
(2) Problems and Constraints										
<i>A. Irrigation & Agriculture Performances</i>										
- High irrigation performances achieved										
- Double cropping of paddy practiced almost in the entire irrigated area; paddy yield levels high; palawija produced extensively										
<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:		Unstable marketing prices			
- Agronomic Issues:		Farmers not following recommended practices			- Farmers Organizations:		Most members are not active			
- Paddy Marketing		Unstable 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										
- Increasing cropping intensity of paddy through introduction of triple cropping partly; productivity increase through further intensification										
- 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 (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
		Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)		10,763		315	11,078	100%	5.5	59,197		20,475
Season II (dry I)		10,763			10,763	97%	5.5	59,197		
Season III (dry II)		4,431	4,431		8,862	80%	5.0	22,155	6,203	
Total/Annual		25,957	4,431	315	30,703	277%	5.4	140,548	6,203	20,475
Annual Increment		1,673	45	0	1,718	16%	0.5	21,211	940	0
IV. WUAs										
IV.1 Existing Condition										
(1) Number	a. Target;	109	b. Established;	85	c. Not yet;	24	Registered		0	
Performance	a. Developed;	55	b. Under developing;	30	c. Not yet;	0	Not yet registered		85	
(2) Problems and Constraints										
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management										
(3) Causes of Problems and Constraints										
- Delay in administrative procedure for WUA establishment.										
IV.2 Development Plan										
(1) Proposed Countermeasures										
- Acceleration of administrative process.										
(2) Development Plan										
- WUA management 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 | : no info. | i. Condition | : B |
| b. Type of weir | : no info. | f. Intake gate | : no info. | (A: Functioning well, B: Partially deteriorated, C: Not functioning well, D: Serious condition for operation) | |
| c. Length of weir | : no info. | g. Settling basin | : no info. | (no info.: no information) | |
| d. Design intake discharge | : no info. | h. Inspection bridge | : no info. | | |

(3) Irrigation Canal and Inspection Road

Canal	Lined (m)	Unlined	Total (m)	Structure (nos)	Inspection road (m)	Condition
Main	12,619	0	12,619	28	12,000	C
Secondary	45,057	5,533	50,590	132	30,000	C

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

(4) Major Problems and Constrains

- Water Resources Facility
No detail information is available

- Irrigation Canal and Related Structure
Sedimentation or obstruction of water flow
Overage, lower strength of canal
Cracks or partial damage on lined canal
Difficulty on O&M

(5) Causes of Major Problems and Constraints

- Water Resources Facility
No detail information is available

- Irrigation Canal and Related Structure
No provision or insufficient function of settling basin (sediments), improper management of canal (sediments, water plant)
Deterioration of canal, no or insufficient rehabilitation due to budget problem
Improper regular maintenance or long leave of repair, insufficient provision of budget
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
No detail information is available

- Irrigation Canal and Related Structure
Removal of sediment soil and foreign materials from canal, grass cutting
Replace and reconstruction of canal
Replace and reconstruction, provision of special treatment at cross drain to prevent settlement
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 : large rehabilitation
Settling basin : minor rehabilitation

(3) Irrigation Canal and Related Structure

	Works	No rehabilitaion	Rehabilitation	New construction	Total
Canal (m)	Main	0	12,619	0	12,619
	Secondary	0	50,590	0	50,590
Structure (nos)	Main	0	28	3	31
	Secondary	0	132	26	158

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	11,078	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	11,078

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
3,999	73,008	7,301	22,710	3,600	110,618	10.0

(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	9.0	55.3	
	Urgency	25.0	18.0	Social Problem	15.0	7.5		
	Sustainability	15.0	6.8	Economic Impact	15.0	9.0		

VI.3 Priority Group

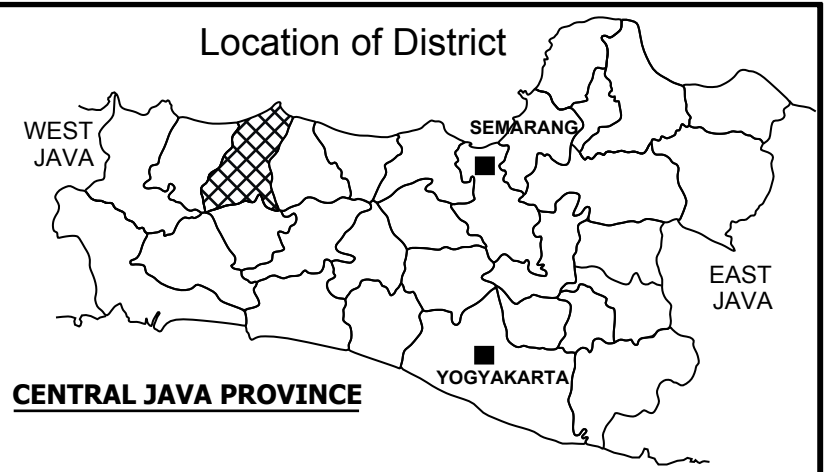
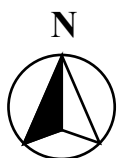
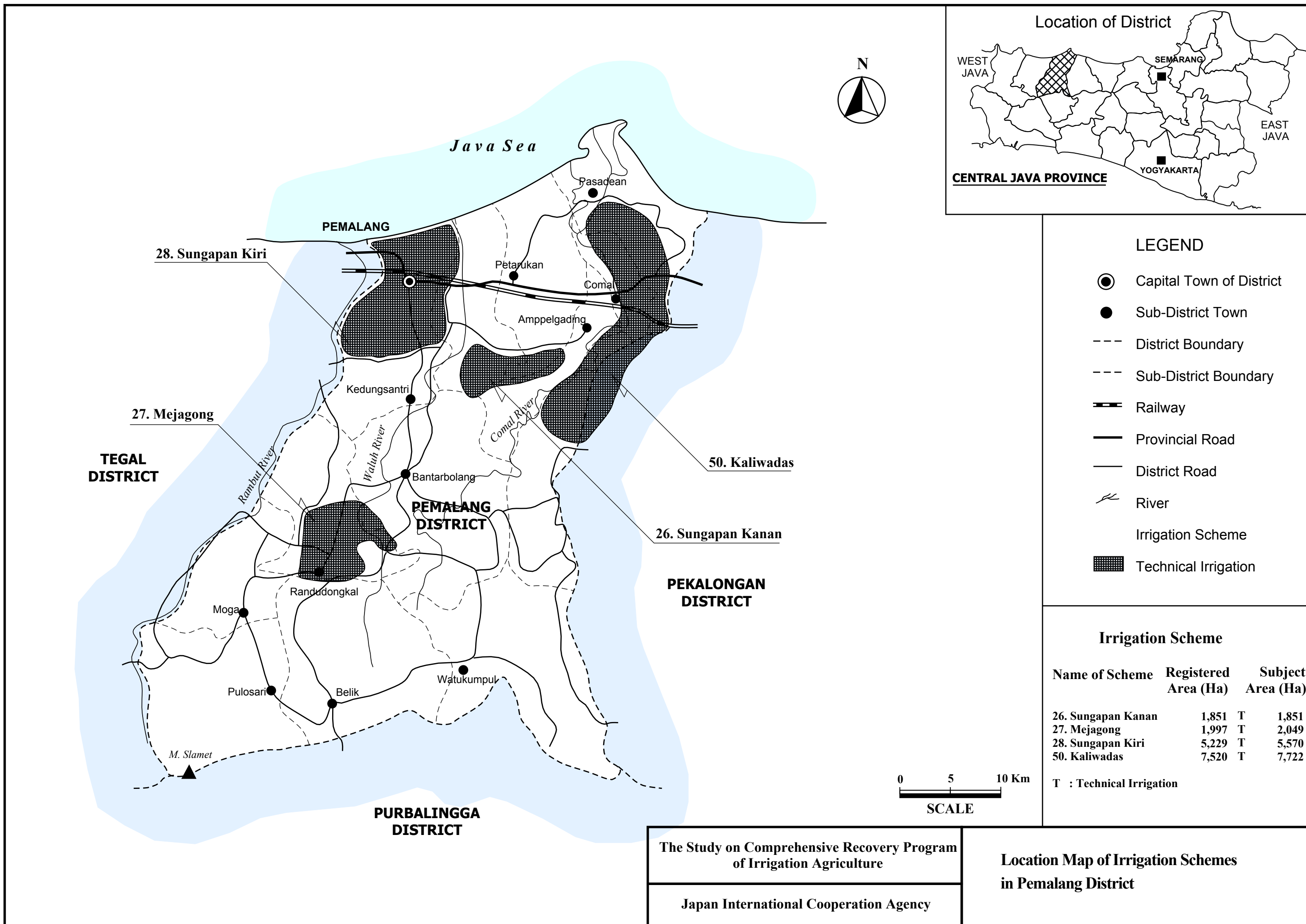
VI.4 Priority Ranking in the Province

Scheme	Klambu Kanan	District	Grobogan / Kudus / Pati		
Technical Level	Technical	Registered Area	6,841 ha	Year of Construction	1990
		<p><u>Category</u> Irrigation (Headworks)</p>			
		<p><u>Structure</u> Intake, Downstream View</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> Require minor repair of civil and gate works</p>			
		<p><u>Category</u> Irrigation (Main Canal)</p>			
		<p><u>Structure</u> Main Canal at Downstream of Intake</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> Require minor repair of civil works</p>			
		<p><u>Category</u> Irrigation (Secondary Canal)</p>			
		<p><u>Structure</u> Masonry Lined Canal</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require repair of lining and provision of inspection road</p>			

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

Scheme	Klambu Kanan	District	Grobogan / Kudus / Pati		
Technical Level	Technical	Registered Area	6,841 ha	Year of Construction	1990
		<p><u>Category</u> Irrigation (Secondary Canal)</p>			
		<p><u>Structure</u> Concrete Lined Canal</p>			
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>			
		<p><u>Problems</u> Require repair of lining and provision of inspection road</p>			
		<p><u>Category</u> Irrigation (Tertiary Canal)</p>			
		<p><u>Structure</u> Canal and Division Box</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> Require repair of structure</p>			
		<p><u>Category</u> Irrigation (Paddy Field)</p>			
		<p><u>Structure</u> Paddy Field</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> Require tertiary development</p>			

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



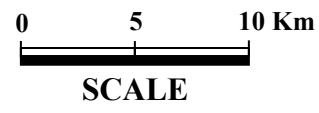
LEGEND

- Capital Town of District
- Sub-District Town
- - - District Boundary
- - - Sub-District Boundary
- +— Railway
- Provincial Road
- District Road
- ~ River
- ▭ Irrigation Scheme
- ▧ Technical Irrigation

Irrigation Scheme

Name of Scheme	Registered Area (Ha)		Subject Area (Ha)
26. Sungapan Kanan	1,851	T	1,851
27. Mejugong	1,997	T	2,049
28. Sungapan Kiri	5,229	T	5,570
50. Kaliwadas	7,520	T	7,722

T : Technical Irrigation



The Study on Comprehensive Recovery Program
of Irrigation Agriculture

Japan International Cooperation Agency

Location Map of Irrigation Schemes
in Pemalang District

I. PROJECT FUNDAMENTALS									
I.1 General									
(1) Code Number	:	33004034-36 ~ 05019-	(7)	Number of Farmers	:	38,650			
(2) Name of Irrigation Scheme	:	Kaliwadas	(8)	Water Resource River	:	Kali Genteng/Comal			
(3) District (Kabupaten)	:	Pekalongan / Pemalang	(9)	Catchment Area (km ²)	:	764.56			
(4) Sub-district (Kecamatan)	:	Kesesi	(10)	Completion / Last Rehabilitation Year	:	1920~1974			
(5) Registered Area (ha)	:	7,520							
(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			
A		A		A		A			
e. Rehabilitation plan & its references		f. Crops and yield data		g. Cropping Calender		h. WUAs data			
C		A		A		2			
II. SUBJECT AREA FOR REHABILITATION PLAN									
II.1 Present and Planned Land Use									
Category	Present (ha)	Plan (ha)	Increment (ha)						
a. Irrigated paddy field	7,722	7,722	0						
b. Rainfed paddy field	0	0	0						
c. Upland field	0	0	0						
d. Uncultivated land	0	0	0						
e. Non-irrigable land	0	0	0						
Total	7,722	7,722	0						
III. AGRICULTURE									
III.1 Present/Before Project Condition									
(1) Irrigation Performance and Crop Production									
Season	Cropped Area in Irrigated Paddy Field (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	6,344		1,378	7,722	100%	4.5	28,548		89,570
Season II (dry I)	6,344			6,344	82%	4.5	28,548		
Season III (dry II)		3,480		3,480	45%	4.0		4,176	
Total/Annual	12,688	3,480	1,378	17,546	227%	4.5	57,096	4,176	89,570
(2) Problems and Constraints									
<i>A. Irrigation & Agriculture Performances</i>									
- High irrigation performances achieved									
- Double cropping of paddy practiced in the entire irrigated area; paddy yield levels moderate; palawija produced extensively									
<i>B. Primary Constraint Identified through the Inventory Survey by the JICA Study</i>									
- Irrigation & Drainage:		Flooding		- Palawija Marketing:		Low marketing prices			
- Agronomic Issues:		Damage caused by rat		- Farmers Organizations:		-			
- 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 palawija production in dry season II; productivity increase of paddy & palawija through further intensification									
- Extension activities toward improvement of post-harvest & marketing; 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 (ha)				Annual Intensity	Irrigated Paddy Yield (GKG ton/ha)	Crop Production (ton)		
	Paddy	Palawija	Sugarcane	Total			Paddy	Palawija	Others
Season I (wet)	6,344		1,378	7,722	100%	5.0	31,720		89,570
Season II (dry I)	6,344			6,344	82%	5.0	31,720		
Season III (dry II)		4,633		4,633	60%			6,486	
Total/Annual	12,688	4,633	1,378	18,699	242%	5.0	63,440	6,486	89,570
Annual Increment	0	1,153	0	1,153	15%	0.5	6,344	2,310	0
IV. WUAs									
IV.1 Existing Condition									
(1) Number	a. Target;	65	b. Established;	64	c. Not yet;	1	Registered		0
	Performance	a. Developed;	3	b. Under developing;	49	c. Not yet;	12	Not yet registered	64
(2) Problems and Constraints									
<input type="checkbox"/> Operation <input type="checkbox"/> Maintenance <input checked="" type="checkbox"/> Management									
(3) Causes of Problems and Constraints (Good condition)									
IV.2 Development Plan									
(1) Proposed Countermeasures									
(2) Development Plan									

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 | : 3 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 | : 85 m | g. Settling basin | : provided | (no info.: no information) | |
| d. Design intake discharge | : 10.0 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	7,737	9,457	17,194	47	914	C
Secondary	38,976	31,890	70,866	128	22,712	C

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

(4) Major Problems and Constrains

- Water Resources Facility
No major problem (Functioning well)
- Irrigation Canal and Related Structure
Overage, lower strength of canal
Cracks or partial damage on lined canal
Difficulty on O&M

(5) Causes of Major Problems and Constraints

- Water Resources Facility
No major problem (Functioning well)
- Irrigation Canal and Related Structure
Deterioration of canal, no or insufficient rehabilitation due to budget problem
Improper regular maintenance or long leave of repair, insufficient provision of budget
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
No major problem (Functioning well)
- Irrigation Canal and Related Structure
Replace and reconstruction of canal
Replace and reconstruction, provision of special treatment at cross drain to prevent settlement
Provision or repair of inspection road with all weather type/pavement

(2) Water Resources Facility

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

(3) Irrigation Canal and Related Structure

Works	No rehabilitaion		Rehabilitation	New construction	Total
	Main	Secondary			
Canal (m)	Main	0	17,194	0	17,194
	Secondary	0	70,866	0	70,866
Structure (nos)	Main	0	47	5	52
	Secondary	0	128	26	154

(4) On-farm Development

(Unit: ha)

a. Potential Irrigated paddy field	7,722	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	7,722

(5) Rehabilitation Cost (Direct Cost)

(Unit: Million Rp.)

W.R.F	Irrigation	Drainage	On-Farm Develop.	Project Facility	Total	Cost per ha
3,216	150,497	15,050	15,830	2,590	187,182	24.2

(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	5.0	Agricultural Productivity	20.0	11.0
	Urgency	25.0	18.0	Social Problem	15.0	10.5
	Sustainability	15.0	8.3	Economic Impact	15.0	7.5

VI.3 Priority Group

VI.4 Priority Ranking in the Province

Scheme	Kaliwadas	District	Pekalongan / Pemalang	
Technical Level	Technical	Registered Area	7,520 ha	Year of Construction 1920~1974
		<i>Category</i> Irrigation (Headworks)		
		<i>Structure</i> Fixed Weir, Intake and Scouring Sluice		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require repair for civil and gate works		
		<i>Category</i> Irrigation (Headworks)		
		<i>Structure</i> Fixed Weir, Downstream View		
		<i>Condition</i> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require repairing of stilling basin and protection work		
		<i>Category</i> Irrigation (Main Canal)		
		<i>Structure</i> Masonry Lined Canal		
		<i>Condition</i> <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D		
		<i>Problems</i> Require minor repair of canal and widening of inspection road		

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

Scheme	Kaliwadas	District	Pekalongan / Pemalang	
Technical Level	Technical	Registered Area	7,520 ha	Year of Construction 1920~1974
		<p><u>Category</u> Irrigation (Main Canal)</p>		
		<p><u>Structure</u> Masonry Lined Canal</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> Require minor repairs of canal and widening of inspection road</p>		
		<p><u>Category</u> Irrigation (Tertiary Canal)</p>		
		<p><u>Structure</u> Masonry Lined Canal</p>		
		<p><u>Condition</u> <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D</p>		
		<p><u>Problems</u> Require division box, farm road, etc.</p>		
		<p><u>Category</u> Irrigation (Paddy Field)</p>		
		<p><u>Structure</u> Paddy Field</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> Require tertiary development</p>		

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