

Figure 2.2 (1/3) Selection of Candidate Scheme for Inventory Survey (Surface Irrigation Scheme)

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FORMULATION OF IRRIGATION DEVELOPMENT PROGRAM
JAPAN INTERNATIONAL COOPERATION AGENCY

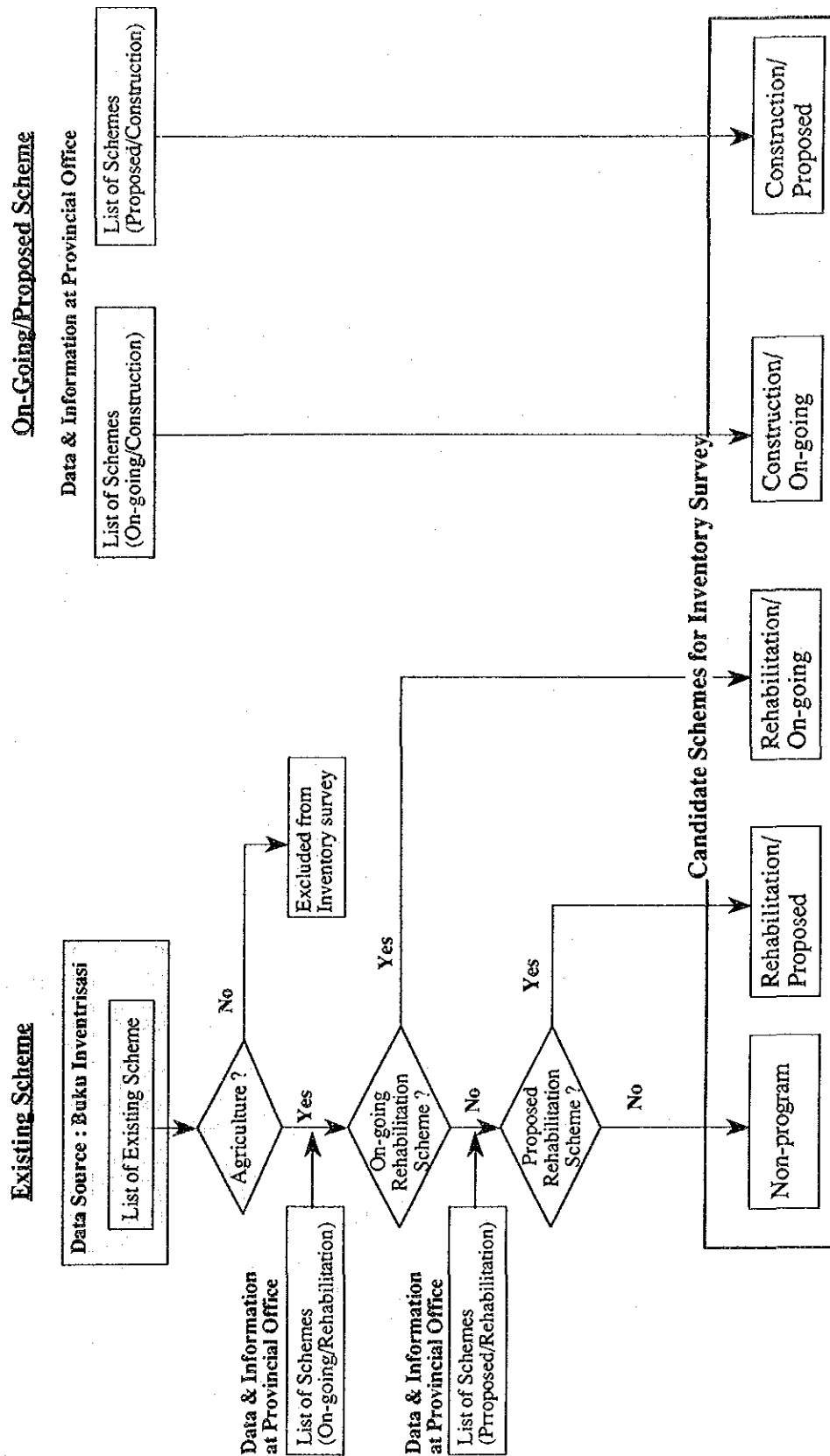


Figure 2.2 (2/3) Selection of Candidate Scheme for Inventory Survey (Swamp Irrigation Scheme)

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On-Going/Proposed Scheme

Data & Information at Provincial Office

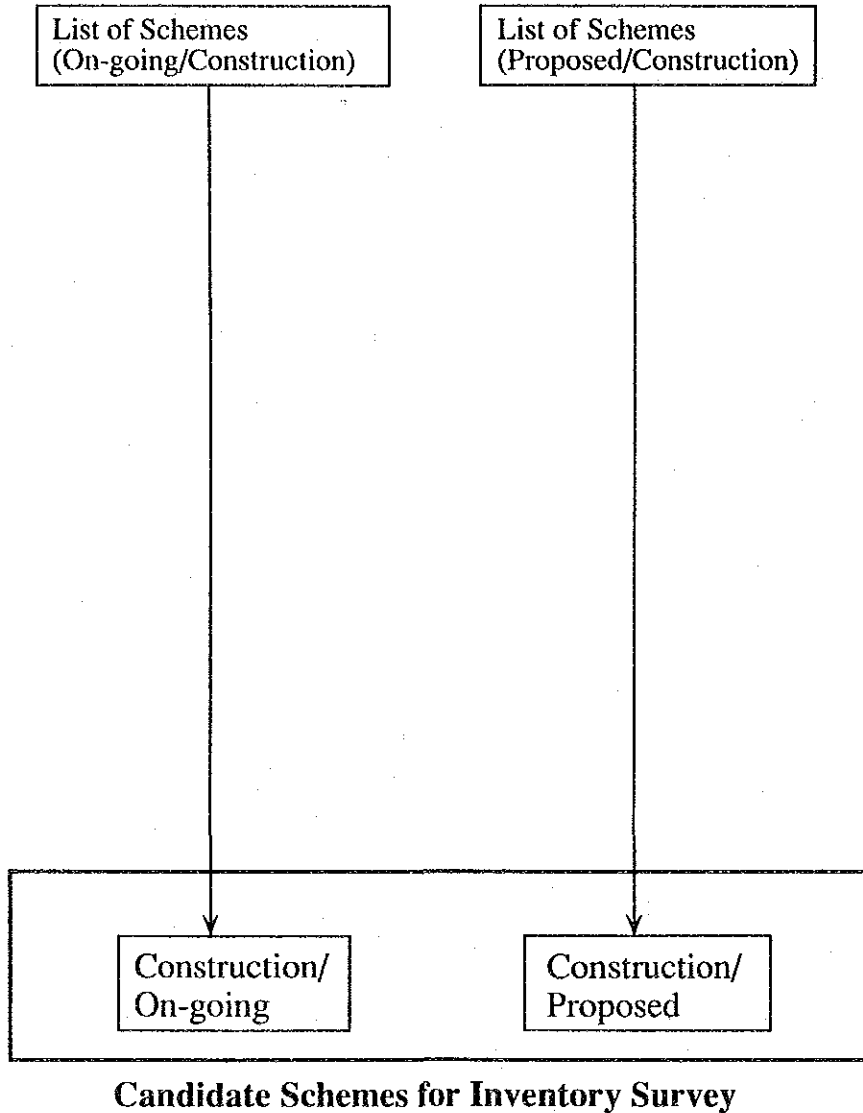


Figure 2.2 (3/3) Selection of Candidate Scheme for Inventory Survey (Groundwater Development)

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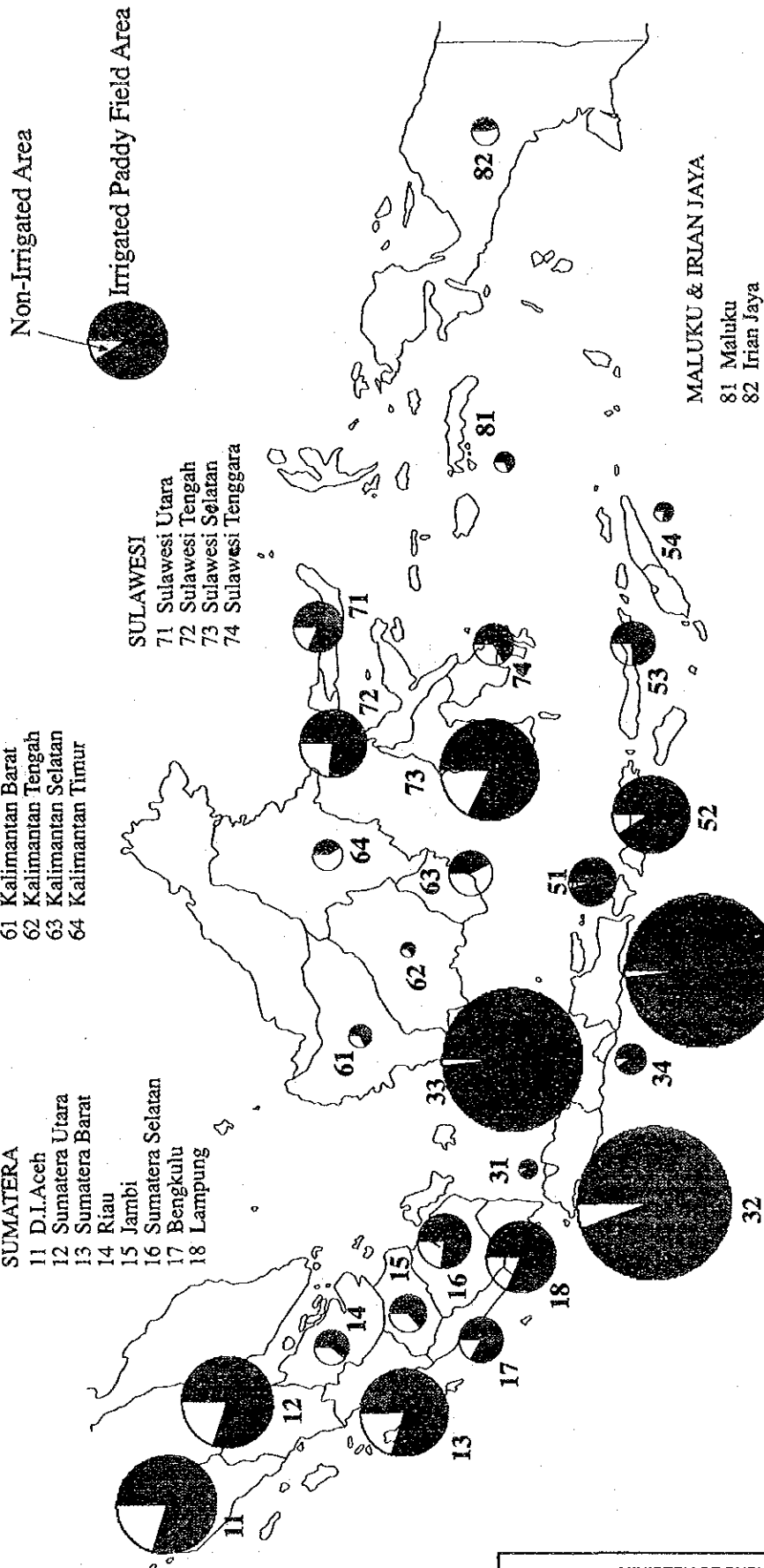


Figure 4.1 Present Status of Existing Surface Irrigation Scheme

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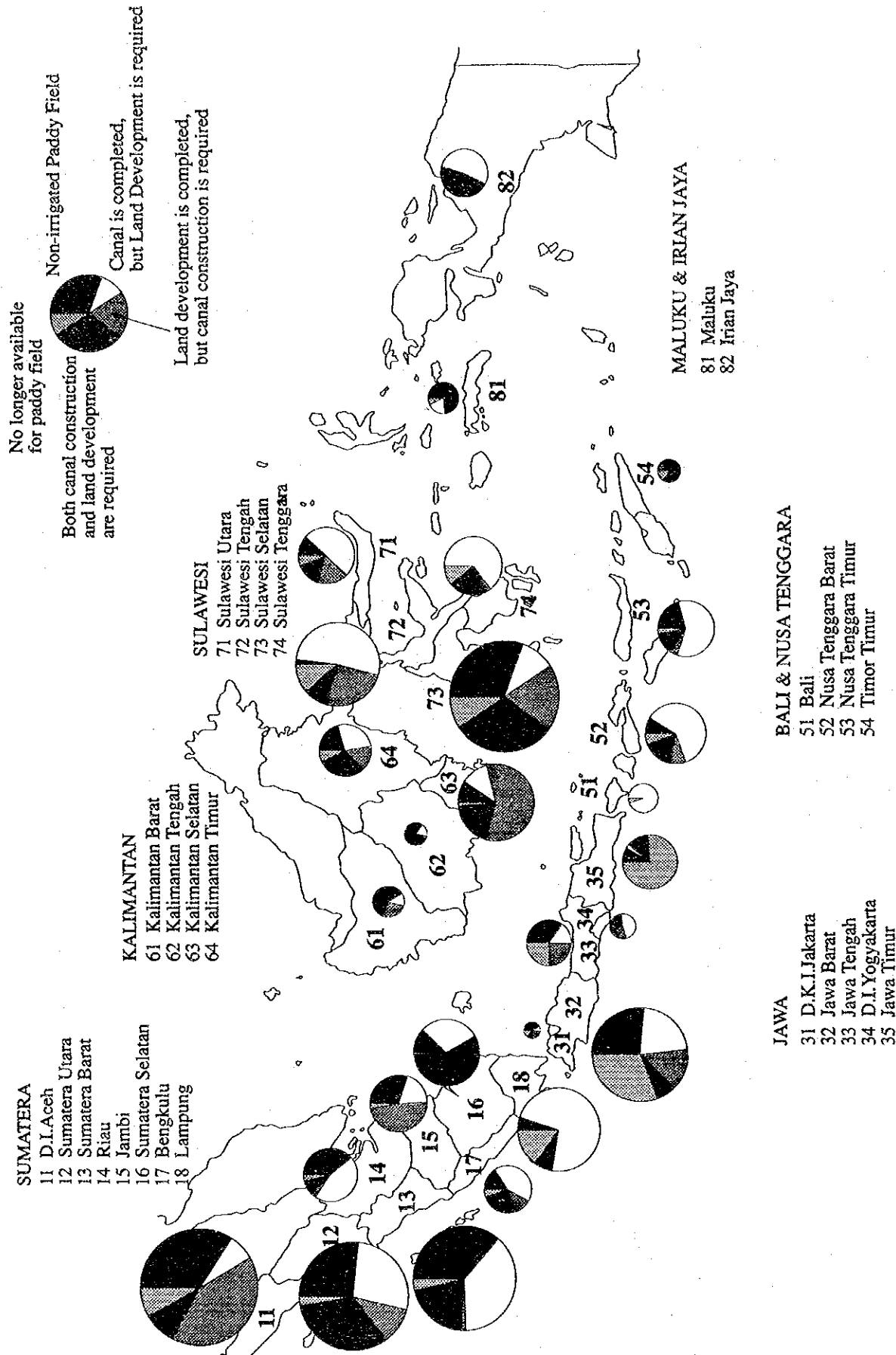
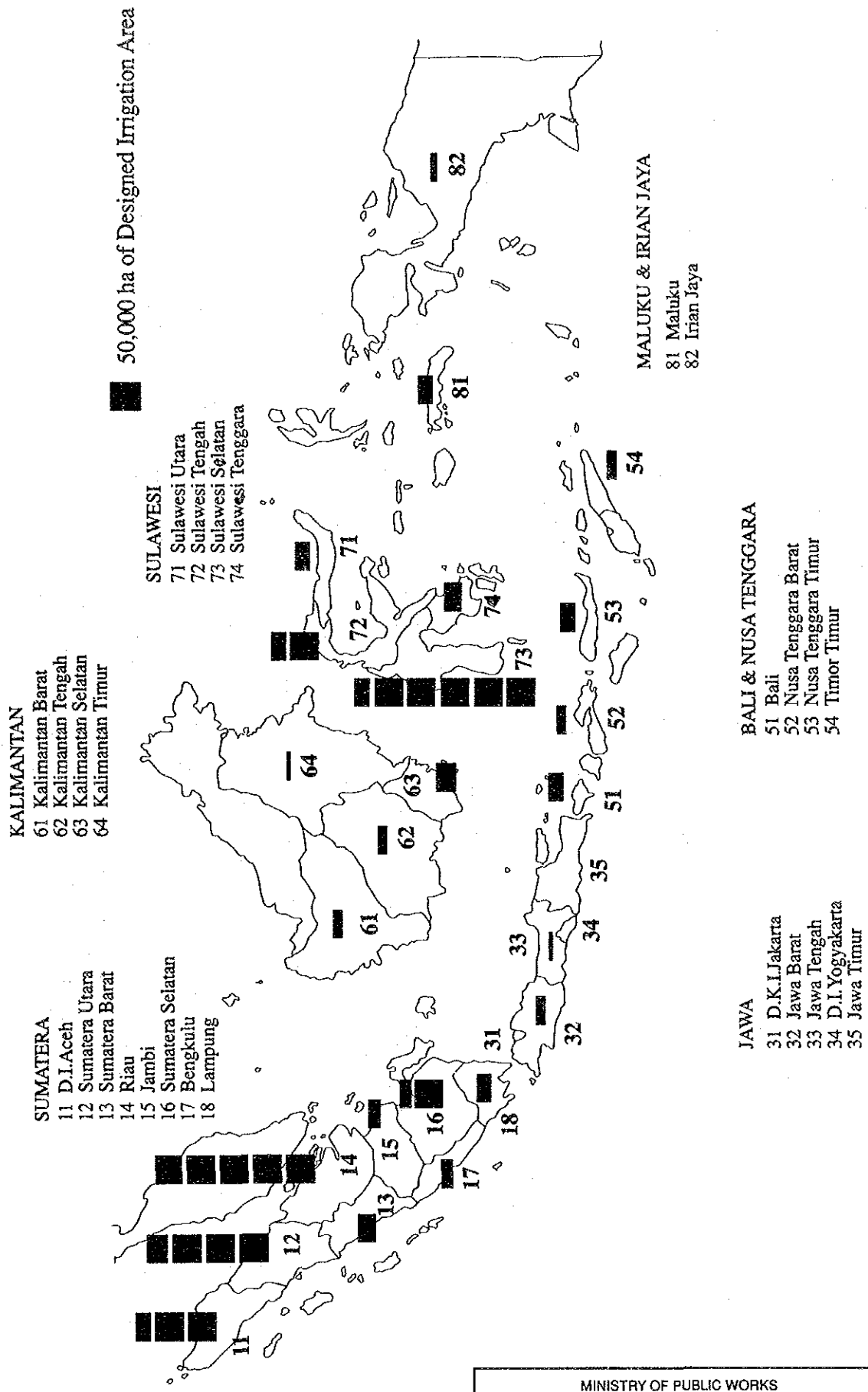


Figure 4.2 Non-irrigated Area in Existing Scheme

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Figure 4.3 Distribution of Construction Scheme (Surface Irrigation)



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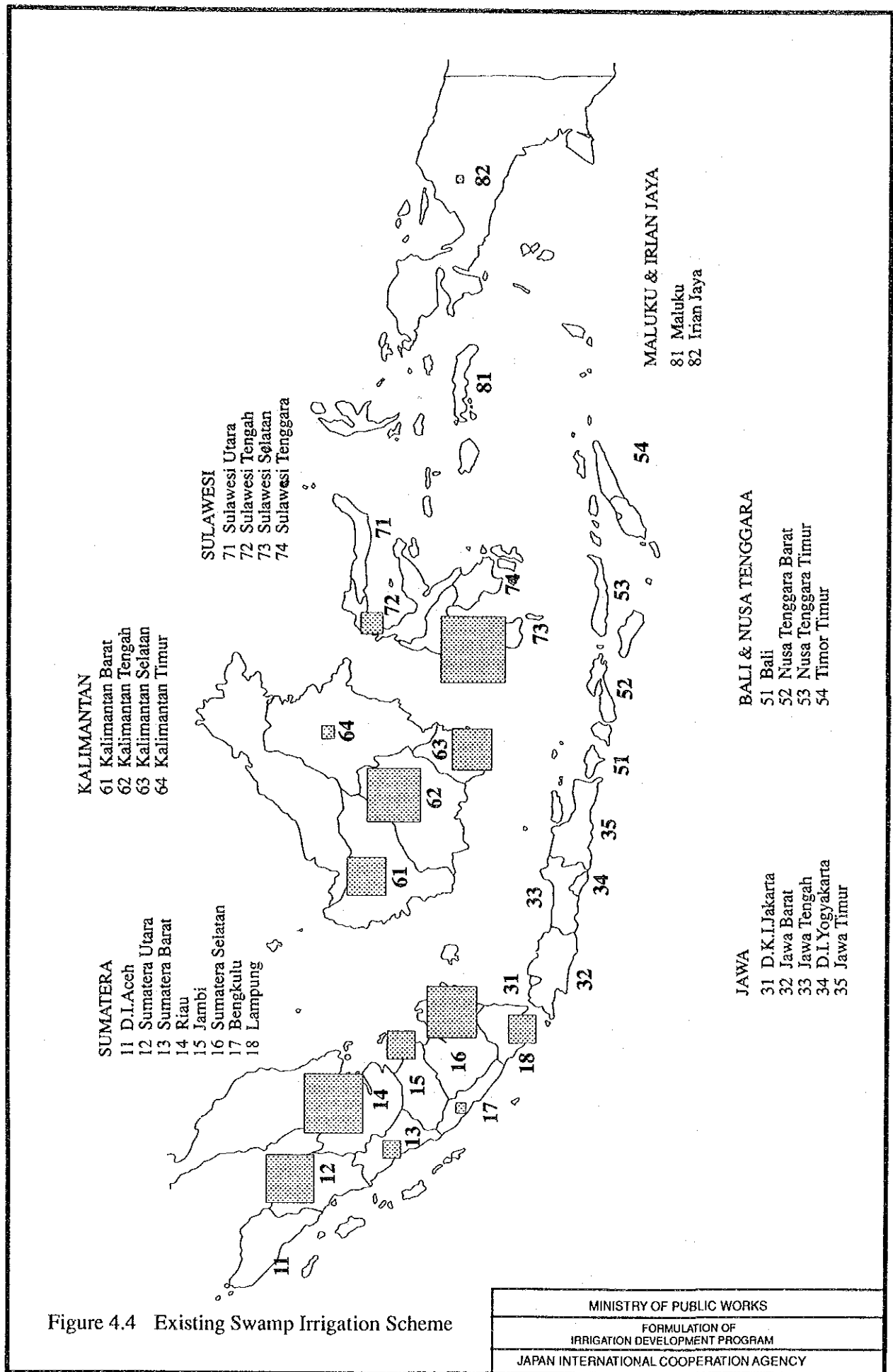
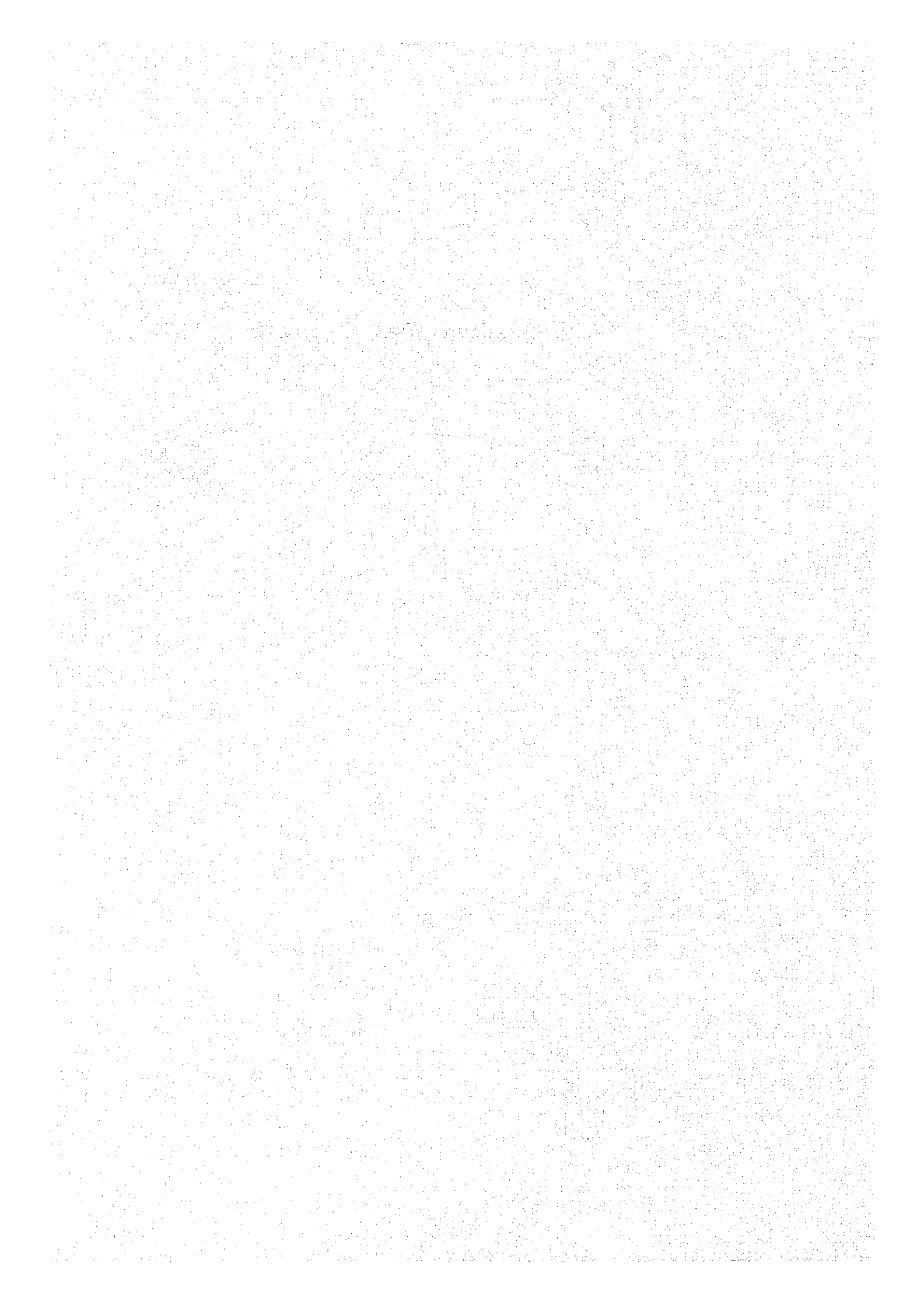


Figure 4.4 Existing Swamp Irrigation Scheme

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FORMULATION OF IRRIGATION DEVELOPMENT PROGRAM
JAPAN INTERNATIONAL COOPERATION AGENCY

Appendixes
Questionnaires for Inventory Survey





JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

THE STUDY
FOR
FORMULATION OF IRRIGATION DEVELOPMENT PROGRAM

**Questionnaire for Inventory Survey
(Irrigation Development)**

Notes:

1. Where the question has parenthesis, write the number or fill the appropriate spaces with " ✓ ".
2. On descriptive questions, answer either by specifying or writing down briefly and clearly.
3. For doubtful points, if any, please see the attached answer sample.

Name of Project: _____
Name of Responsible Office: _____
Filled by: _____

1. LOCATION

- 1.1 Province: Code _____
- 1.2 Kabupaten: Code _____
- 1.3 Kecamatan: 1. Code _____ Name _____
 2. Code _____ Name _____
 3. Code _____ Name _____
 4. Code _____ Name _____
 5. Code _____ Name _____
 6. Code _____ Name _____
 7. Code _____ Name _____
 8. Code _____ Name _____

- 1.4 I.D Number for Buku Pintar: _____
(Existing Sub-project only)

2. STATUS OF SCHEME

- 2.1 Select Present Status of Sub-project (not limited to one answer):
- | | |
|---|---------------------------|
| <input type="checkbox"/> Non-program | (Answer question No. 2.2) |
| <input type="checkbox"/> On-going/Rehabilitation | (Answer question No. 2.3) |
| <input type="checkbox"/> On-going/Construction or Extension | (Answer question No. 2.4) |
| <input type="checkbox"/> Proposed/Rehabilitation | (Answer question No. 2.5) |
| <input type="checkbox"/> Proposed/Construction or Extension | (Answer question No. 2.6) |

2.2 Non-program :

2.2.1 History

Year construction was completed

- before 1950
- 1951 - 1960
- 1961 - 1970
- 1971 - 1980
- 1981 - 1985
- 1986 - 1990
- 1991 -

After construction, was any rehabilitation conducted ?

- No
- Yes

2.2.2 Level of Irrigation

- Technical
- Semi-Technical
- Simple

2.3 On-going/Rehabilitation:

2.3.1 History

- Construction was completed in 19__.
- Last rehabilitation, if any, was made in 19__.
- F/S for rehabilitation was conducted in 19__.
- D/D for rehabilitation was conducted in 19__.
- Rehabilitation was commenced in 19__.
- Rehabilitation was suspended in 19__.

2.3.2 Kind of Rehabilitation

- Special Maintenance (SM)
- Efficient O/M (EOM)
- Rehabilitation/Upgrading

2.3.3 Level of Irrigation

Present Condition _____

- Technical
- Semi-Technical
- Simple

2.3.4 Lending Agency: _____

2.4 On-going/Construction or Extension:

2.4.1 History

- F/S for construction was conducted in 19__.
- D/D for construction was conducted in 19__.
- Construction was commenced in 19__.
- Construction was suspended in 19__.

2.4.3 Lending Agency: _____

2.5 Proposed/Rehabilitation:

2.5.1 History and Schedule

- Construction was completed in 19__.
- Last rehabilitation, if any, was made in 19__.
- F/S for rehabilitation was conducted in 19__.
- D/D for rehabilitation was conducted in 19__.
- Rehabilitation will be commenced in 19__.
- Rehabilitation will be completed in 19__.

2.5.2 Kind of Rehabilitation

- Special Maintenance (SM)
- Efficient O/M (EOM)
- Rehabilitation/Upgrading

2.5.3 Level of Irrigation

- Present Condition _____
- Technical
 - Semi-Technical
 - Simple

2.5.4 Lending Agency: _____

2.6 Proposed/Construction or Extension:

2.6.1 History

- No investigation was made so far.
- F/S for construction was conducted in 19__.
- D/D for construction was conducted in 19__.
- Construction will be commenced in 19__.
- Construction will be completed in 19__.

2.6.3 Lending Agency: _____

2.6.4 Is Area Affected by Floods ?:

- No floods:
- Annual floods
- Floods in every several years

2.6.5 Accessibility to Intake Site

- By car
- On foot

3. AREA (Present Condition)

Description	Potential Area			Area not yet potential
	Area where Tertiary block is completed	Area where Tertiary block is not yet completed	Total	
3.1 Total	<u> </u> ha (1)=(2)+(5)+(6)	<u> </u> ha (9)=(10)+(13)+(14)	<u> </u> ha (17)=(18)+(21)+(22)	<u> </u> ha (25)=(26)+(27)
3.2 Paddy Field	<u> </u> ha (2)=(3)+(4)	<u> </u> ha (10)=(11)+(12)	<u> </u> ha (18)=(18)+(19)	<u> </u> ha (26)
3.2.1 Irrigated Paddy	<u> </u> ha (3)	<u> </u> ha (11)	<u> </u> ha (19)	
3.2.2 Paddy field not yet irrigated	<u> </u> ha (4)	<u> </u> ha (12)	<u> </u> ha (20)	
3.3 Non-Paddy Field (Changeable to paddy field)	<u> </u> ha (5)	<u> </u> ha (13)	<u> </u> ha (21)	<u> </u> ha (27)
3.4 Non-paddy field (Unchangeable to paddy field)	<u> </u> ha (6)=(7)+(8)	<u> </u> ha (14)=(15)+(16)	<u> </u> ha (22)=(23)+(24)	
3.4.1 Area Converted from Paddy Field	<u> </u> ha (7)	<u> </u> ha (15)	<u> </u> ha (23)	
3.4.2 Area Converted from Non-Paddy Field	<u> </u> ha (8)	<u> </u> ha (16)	<u> </u> ha (24)	
3.4 Potential Area	<u> </u> ha (28)=(17)			
3.5 Not Yet Potential Area	<u> </u> ha (29)=(25)			
3.6 Designed Area	<u> </u> ha (30)=(28)+(29)			
3.7 Paddy Cultivation Area (Present Condition)				
3.7.1 1st Season	<u> </u> ha			
3.7.2 2nd Season	<u> </u> ha			
3.7.3 3rd Season	<u> </u> ha			

3.9 If designed area has not fully been developed, select reason.
(not limited to one answer)

- Delay of land development (Land clearing and / or sawah formation)
- Delay of tertiary canal construction
- Delay / suspension of construction of head works, main canal and secondary canals
- Topographic problem (elevation and / or land slope)
- Problem on land acquisition and / or land tenure
- Change of land utilization
- Shortage of irrigation water at intake site
- Damage of irrigation canals and its related structures
- Shortage of population (Necessity of new settlement)
- Farmers' preference for cultivating diversified crops

Still Expandable Area _____ ha

(In case of Non-Program Sub-project, You can finish answering questions)

4. AREA (After Project)

Description	Potential Area			Area not yet potential
	Area where Tertiary block is completed	Area where Tertiary block is not yet completed	Total	
4.1 Total	<u> </u> ha (1)=(2)+(5)+(6)	<u> </u> ha (9)=(10)+(13)+(14)	<u> </u> ha (17)=(18)+(21)+(22)	<u> </u> ha (25)=(26)+(27)
4.2 Paddy Field	<u> </u> ha (2)=(3)+(4)	<u> </u> ha (10)=(11)+(12)	<u> </u> ha (18)=(18)+(19)	<u> </u> ha (26)
4.2.1 Irrigated Paddy	<u> </u> ha (3)	<u> </u> ha (11)	<u> </u> ha (19)	
4.2.2 Paddy field not yet irrigated	<u> </u> ha (4)	<u> </u> ha (12)	<u> </u> ha (20)	
4.3 Non-Paddy Field (Changeable to paddy field)	<u> </u> ha (5)	<u> </u> ha (13)	<u> </u> ha (21)	<u> </u> ha (27)
4.4 Non-paddy field (Unchangeable to paddy field)	<u> </u> ha (6)=(7)+(8)	<u> </u> ha (14)=(15)+(16)	<u> </u> ha (22)=(23)+(24)	
4.4.1 Area Converted from Paddy Field	<u> </u> ha (7)	<u> </u> ha (15)	<u> </u> ha (23)	
4.4.2 Area Converted from Non-Paddy Field	<u> </u> ha (8)	<u> </u> ha (16)	<u> </u> ha (24)	
4.4 Potential Area	<u> </u> ha (28)=(17)			
4.5 Not Yet Potential Area	<u> </u> ha (29)=(25)			
4.6 Designed Area	<u> </u> ha (30)=(28)+(29)			
4.7 Paddy Cultivation Area (After project)				
4.7.1 1st Season	<u> </u> ha			
4.7.2 2nd Season	<u> </u> ha			
4.7.3 3rd Season	<u> </u> ha			

5. HEAD WORKS

() Dam	_____	Nos.
() Movable Weir	_____	Nos.
() Fixed Weir	_____	Nos.
() Pump	_____	Nos.
() Free Intake	_____	Nos.
() Others	_____	

6. IRRIGATION & DRAINAGE CANALS

Description	Already completed	to be constructed	to be rehabilitated
6.1 Irrigation Canals			
6.1.1 Main canals	_____ km	_____ km	_____ km
6.1.2 Secondary Canals	_____ km	_____ km	_____ km
6.1.3 Tertiary Canals	_____ km	_____ km	_____ km
6.2 Drainage Canals	_____ km	_____ km	_____ km
6.3 Land Development	_____ ha	_____ ha	_____ ha

7. CONSTRUCTION/REHABILITATION COST

Description	Construction Cost	SM & EOM Cost	Unit: Million Rp. Rehabilitation/ Upgrading Cost
7.1 Headworks	_____	_____	_____
7.2 Main canals	_____	_____	_____
7.3 Secondary Canals	_____	_____	_____
7.4 Tertiary Canals	_____	_____	_____
7.5 Drainage Canals	_____	_____	_____
7.6 Land Development	_____	_____	_____
7.7 Others	_____	_____	_____
7.8 Total Cost	_____	_____	_____

8. ENVIRONMENTAL ISSUES

Is there environmental problem in the sub-project ?

- No
- Yes If Yes, answer following questions (not limited to one answer)

What are Problems in the project area ?

- River Water Quality
- Deforestation in the Catchment Area
- Soil Erosion in the Catchment Area:
- Sedimentation in Intake and Canals:
- Quarrying in the river near the intake
- Existence of Schistosomiasis in the Area:
- Existence of Malaria in the Area:

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

THE STUDY
FOR
FORMULATION OF IRRIGATION DEVELOPMENT PROGRAM

**Questionnaire for Inventory Survey
(Swamp Development)**

Notes:

1. Where the question has parenthesis, write the number or fill the appropriate spaces with " ✓ ".
2. On descriptive questions, answer either by specifying or writing down briefly and clearly.
3. For doubtful points, if any, please see the attached answer sample.

Name of Project: _____
Name of Responsible Office: _____
Filled by: _____

1. LOCATION

- 1.1 Province: Code _____
- 1.2 Kabupaten: Code _____
- 1.3 Kecamatan: 1. Code _____ Name _____
 2. Code _____ Name _____
 3. Code _____ Name _____
 4. Code _____ Name _____
 5. Code _____ Name _____
 6. Code _____ Name _____
 7. Code _____ Name _____
 8. Code _____ Name _____

- 1.4 Type of Rawa:
 Tidal
 Non-Tidal

2. STATUS OF SCHEME

- 2.1 Select Present Status of Sub-project (not limited to one answer):
- | | |
|---|---------------------------|
| <input type="checkbox"/> Current O/M | (Answer question No. 2.2) |
| <input type="checkbox"/> On-going/Rehabilitation | (Answer question No. 2.3) |
| <input type="checkbox"/> On-going/Construction or Extension | (Answer question No. 2.4) |
| <input type="checkbox"/> Proposed/Rehabilitation | (Answer question No. 2.5) |
| <input type="checkbox"/> Proposed/Construction or Extension | (Answer question No. 2.6) |

2.2 Current O/M :

2.2.1 History

Year construction was completed

- before 1950
- 1951 - 1960
- 1961 - 1970
- 1971 - 1980
- 1981 - 1985
- 1986 - 1990
- 1991 -

After construction, was any rehabilitation conducted ?

- No
- Yes

2.2.2 Condition

Need of Rehabilitation

- Yes
- No

Number of Farming household _____ Nos.

2.3 On-going/Rehabilitation:

2.3.1 History

- Construction was completed in 19__.
- Last Rehabilitation, if any, was made in 19__.
- F/S for rehabilitation was conducted in 19__.
- D/D for rehabilitation was conducted in 19__.
- Rehabilitation was commenced in 19__.
- Rehabilitation was suspended in 19__.

2.3.2 Number of Farming household _____ Nos.

2.4 On-going/Construction or Extension:

2.4.1 History

- F/S for construction was conducted from 19__ to 19__.
- D/D for construction was conducted from 19__ to 19__.
- Construction was commenced in 19__.
- Construction was suspended in 19__.

2.4.2 Number of Farming household _____ Nos.

2.5 Proposed/Rehabilitation:

2.5.1 History and Schedule

- Construction was completed in 19__.
- Last Rehabilitation, if any, was made in 19__.
- F/S for rehabilitation was conducted in 19__.
- D/D for rehabilitation was conducted in 19__.
- Rehabilitation will be commenced in 19__.
- Rehabilitation will be completed in 19__.

2.5.2 Number of Farming household _____ Nos.

2.6 Proposed/Construction or Extension:

2.6.1 History

- () No investigation was made so far.
- () F/S for construction was conducted in 19____.
- () D/D for construction was conducted in 19____.
- () Construction will be commenced in 19____.
- () Construction will be completed in 19____.

2.6.2 Number of Farming household _____ Nos.

3. AREA

Description	Luas Sudah Berfungsi	Luas Belum Berfungsi	Jumlah
3.1 Pertanian	_____ ha (1)=(2)=(3)+(4)	_____ ha (8)=(9)=(10)+(11)	_____ ha (15)=(16)=(17)+(18)
Sawah	_____ ha (2)	_____ ha (9)	_____ ha (16)
Lodang	_____ ha (3)	_____ ha (10)	_____ ha (17)
Kebun	_____ ha (4)	_____ ha (11)	_____ ha (18)
3.2 Tambak	_____ ha (5)	_____ ha (12)	_____ ha (19)
3.3 Lainnya	_____ ha (6)	_____ ha (13)	_____ ha (20)
3.4 Jumlah	_____ ha (7)=(1)=(5)+(6)	_____ ha (14)=(8)=(12)+(13)	_____ ha (21)=(15)=(19)+(20)

4. DRAINAGE CANALS

Description	Already completed	to be constructed	to be rehabilitated
4.1 Canals			
4.1.1 Main canals	_____ km	_____ km	_____ km
4.1.2 Secondary Canals	_____ km	_____ km	_____ km
4.1.3 Tertiary Canals	_____ km	_____ km	_____ km

5. CONSTRUCTION/REHABILITATION COST

Description	Construction Cost	SM & EOM Cost	Unit: Million Rp.
			Rehabilitation/Upgrading Cost
5.1 Gate	_____	_____	_____
5.2 Main canals	_____	_____	_____
5.3 Secondary Canals	_____	_____	_____
5.4 Tertiary Canals	_____	_____	_____
5.5 Others	_____	_____	_____
5.6 Total Cost	_____	_____	_____

6. ENVIRONMENTAL ISSUES

Is there environmental problem in the sub-project ?

- No
 Yes If **Yes**, answer following questions (not limited to one answer)

What are Problems in the project area ?

- River / Sea Water Quality
 Deforestation in the Catchment Area
 Soil Erosion in the Catchment Area:
 Sedimentation in Intake and Canals:
 Quarrying in the river near the intake
 Existence of Schistosomiasis in the Area:
 Existence of Malaria in the Area:

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

THE STUDY
FOR
FORMULATION OF IRRIGATION DEVELOPMENT PROGRAM

**Questionnaire for Inventory Survey
(Groundwater Irrigation Development)**

**Please answer question only for on-going construction project and
proposed construction project**

Notes:

1. Where the question has parenthesis, write the number or fill the appropriate spaces with " 3 ".
2. On descriptive questions, answer either by specifying or writing down briefly and clearly.
3. For doubtful points, if any, please see the attached answer sample.

Name of Project: _____
Name of Responsible Office: _____
Filled by: _____

1. LOCATION

- 1.1 Province: Code _____
- 1.2 Kabupaten: Code _____
- 1.3 Kecamatan: 1. Code _____ Name _____
 2. Code _____ Name _____
 3. Code _____ Name _____
 4. Code _____ Name _____
 5. Code _____ Name _____
 6. Code _____ Name _____
 7. Code _____ Name _____
 8. Code _____ Name _____

2. STATUS OF SCHEME

2.1 Select Present Status of Sub-project (not limited to one answer):

- () On-going/Construction or Extension (Answer question No. 2.2)
() Proposed/Construction or Extension (Answer question No. 2.3)

2.2 On-going/Construction or Extension:

2.2.1 History

- F/S for construction was conducted in 19__.
- D/D for construction was conducted in 19__.
- Construction was commenced in 19__.
- Construction was suspended in 19__.

2.2.2 Lending Agency: _____

2.3 Proposed/Construction or Extension:

2.3.1 History

- No investigation was made so far.
- F/S for construction was conducted in 19__.
- D/D for construction was conducted in 19__.
- Construction will be commenced in 19__.
- Construction will be completed in 19__.

2.3.2 Lending Agency: _____

3. AREA

	Description	Present	Plan
3.1	Irrigated Paddy Field	_____ ha	_____ ha
3.2	Rainfed Paddy Field	_____ ha	_____ ha
3.3	Upland Field	_____ ha	_____ ha
3.4	Others	_____ ha	_____ ha
3.5	Total	_____ ha	_____ ha

4. WELL CHARACTERISTICS

	Description	Number	Average Depth
4.1	Shallow (ITTW)	_____ nos	_____ m
4.2	Deep (DTW)	_____ nos	_____ m

5. CONSTRUCTION COST

Unit : Million Rp.

Description	Construction Cost
5.1 Well	
5.1.1 Shallow	_____
5.1.2 Deep	_____
5.2 Canals	_____
5.3 Total	_____

Annex F

*Past Performance of
Irrigation Development*

ANNEX F

PAST PERFORMANCE OF IRRIGATION DEVELOPMENT

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Text

1 Introduction

1.1 General

The objectives of irrigation are to increase food production by increasing crop intensities and expanding the area under cultivation through the supply of irrigation water.

Irrigation in Indonesia is broadly divided by its water source and facilities into the following three types of irrigation.

- (1) Surface irrigation development to take water from river, spring and lake by means of such as free intake, irrigation tank (Embung), weir, pumping station, etc.
- (2) Groundwater development
- (3) Swamp development to take water from tidal river by using the change of water surface elevation.

Further, irrigation schemes in Indonesia are largely divided by implementing agencies / groups into the following.

- (1) Irrigation schemes under Directorate General of Water Resources (DGWRD) except swamp development which are usually classified into the following three types;
 - * Technical irrigation scheme
 - * Semi-technical scheme
 - * Simple scheme
- (2) Swamp development schemes under the Directorate of Swamp, DGWRD which are commonly divided into the following;
 - * Tidal irrigation scheme
 - * Non-Tidal irrigation scheme
- (3) Village irrigation schemes operate and maintained by farmers' groups
- (4) Others

In addition, irrigation development in Indonesia is treated as a sub-sector in the agriculture and irrigation sector for budgetary arrangement and implementation of development projects. The irrigation sub-sector consists of three programs

- (1) Program; Rehabilitation and Maintenance of Irrigation Networks
- (2) Program; Construction of New Irrigation Networks
- (3) Program; Development of Swamp Area

Both the above (1) and (2) include the sub-programs such as efficient operation and maintenance, new construction of irrigation systems, rehabilitation, special maintenance, handing over of small scheme and others. The new construction of irrigation systems in the above includes groundwater development. The above (3) mainly consists of development of swamp and upgrading swamp in connection with irrigation development.

As for the budgetary arrangement and project implementation of the whole DGWRD, the following two sectors and sub-sectors are included as the irrigation sub-sector

- (1) Sector; Education and Research
 - * Sub-Sector; Education of Agriculture and Irrigation
 - * Sub-Sector; Research of Agriculture and Irrigation
- (2) Sector; National Resources and Life Environment
 - * Sub-Sector; National resources

The sub-sector in the above (2) includes the program for preservation of forest, land and water with the sub-programs such as flood control, river maintenance and exploitation and the program for coastal area development, which are mainly operated by the Directorate of River, DGWRD.

After equipping the irrigation facilities, projects usually require the land development work to turn the area covered bush or right / heavy forests to arable land. The land development project mainly consisting of land clearing, land leveling and sawa formation has been operated by the Directorate of Land Rehabilitation and Development (DLRD), Directorate General of Food Crops Agriculture (DGFCA), Ministry of Agriculture.

In general, the rehabilitation and new construction schemes can be defined as follows;

- | | |
|--------------------------|---|
| Rehabilitation scheme: | Schemes in which irrigated paddy field will not increase after project. |
| Extension scheme: | Schemes in which irrigated paddy field area will increase after project |
| New construction scheme: | Schemes without irrigated paddy field before project. |

The main matters described in the above are summarized as shown in the following table.

Program/Subprogram of Irrigation Development

Program	Status	Subprogram	Related Matter
Surface Irrigation Development	Existing Schemes	Current O&M	
		Efficient O&M	Irrigation Service Fee
		Handing over small schemes	Training Program (PTGA)
		Special Maintenance	
		Rehabilitation	
		Extension	Main/Secondary development Tertiary development Land development
	New Schemes	New Construction	Preparation of OM (PROM)
Groundwater Development	New Schemes	Preparation of Handing over	
Swamp Development	Existing Schemes	Current O&M	
		Efficient O&M	
		Special Maintenance	
		Upgrading	
		Extension	Main/Secondary development Tertiary development Land development
	New Schemes	New Construction	
Village Irrigation	Existing Schemes	Upgrading/Extension	Land development
Land Development	New Areas	Farmers' Registration	Surface Irrigation
		Land Clearing	Swamp Development
		Land Leveling	Village Irrigation
		Sawa Formation	

Source: Prepared by JICA, FIDP Team

1.2 The Past Performance

The past performance of irrigation development is summarized by defining the programs broadly into four, namely, (i) the rehabilitation of existing irrigation schemes, (ii) the construction of extension of existing schemes and new irrigation schemes, (iii) the construction of river and flood control facilities and (iv) the development of tidal and non-tidal swamp.

Irrigation Development Achievements and Expenditure During Repelita I, II, III, IV and V

Program	Rep I	Rep II	Rep III	Rep IV	Repelita V Achievements and Targets a/					Total
	1969~ 1974	1974~ 1979	1979~ 1984	1984~ 1989	1989/ 1990	1990/ 1991	1991/ 1992	1992/ 1993	1993/ 1994	
<u>Physical Achievements ('000 ha)</u>										
Rehabilitation	957.8	513.5	320.7	401.3	171.7	236.9	262.1	282.4	212.2	b/ 1,165.3
New Construction c/	171.2	255.5	369.8	218.4	102.8	83.5	77.3	64.2	98.7	426.5
Flood Control	286.6	431.1	387.9	442.9	73.0	85.0	116.4	88.6	90.2	453.2
Swamp Development	199.6	218.6	438.9	191.9	135.1	43.9	60.4	n.a.	155.7	395.1
Total	1,615.2	1,418.7	1,517.3	1,254.5	482.6	449.3	516.2	435.2	556.8	2,440.1
<u>Development Expenditure (Rp. billion)</u>										
Rehabilitation and OM					198.6	206.9	314.4	256.0	330.6	1306.5
New Construction					383.8	483.3	531.6	667.6	705.1	2,771.4
Natural resources					330.2	353.1	292.5	353.4	454.6	1,783.8
Swamp development					50.3	58.9	43.9	116.0	66.1	335.2
Other Support Programs					18.0	20.5	35.3	15.0	20.8	109.7
Total	145.0	696.1	2,169.1	3,750.4	980.9	1,122.7	1,217.6	1,408.1	1,577.1	6,306.5
Including										
Foreign Aid	30.6	151.5	505.6	2,663.0	816.3	732.3	714.4	751.8	797.3	3,812.1
Foreign Aid as Percentage of Development Allocation (%)	21.	21.8	23.3	71.0	83.2	65.2	58.7	53.4	50.6	60.4
Routine Expenditures d/	1.4	7.0	21.0	48.5	9.5	109	12.7	15.1	18.7	66.9
Total (Rp billion)	146.4	705.1	2,169.1	3,798.9	1,077.7	1,150.3	1,260.6	1,415.4	1,595.9	6,499.9
Total (\$ million)	364.0	1,624.0	3,175.4	2,725.6	573.2	605.4	666.5	744.9	778.5	3,368.5

a/ Achievements until 1992/93 and target for 1993/94

b/ Includes about 717,000 ha of special maintenance

c/ Includes groundwater development in Repelita V

d/ Includes Salaries for Permanent staff, Office Equipment and supporting service, etc.

Source : Appraisal of the Integrated Irrigation Sector Project by ADB, March 1990, Mid Term Review, DGWRD, Oct. 1991 and DIP 1989/90 to 1993/94, BPP, DGWRD

During Repelitas I and II, emphasis in the irrigation subsector was placed on the rehabilitation of existing irrigation schemes to achieve quick functioning of existing irrigation systems and at low cost with comparative small percentage of foreign aid. During Repelita III, greater emphasis was on the development of new irrigation facilities and the construction of tertiary facilities with the biggest investment in the past Repelitas before Repelita III. (see Table 1.1)

Further, at the time of Repelita IV, the importance of operation and maintenance was recognized among Government officials and the recognition led to a further shift in emphasis towards: (i) the importance of O&M and the rehabilitation/improvement of existing irrigation schemes necessary to carry out improved O&M; and (ii) the involvement of the farmers in the management and financing of irrigation schemes. The percentage of the foreign aid to the total development expenditure reached at the level of 71.0% because of a result of budgetary constraints.

While maintaining its emphasis on O&M and cost recovery, the Government has carried during Repelita V on an integrated approach which combines the construction, rehabilitation, special maintenance, efficient O/M, handing over small schemes, upgrading swamp and others of the necessary physical infrastructure for irrigation and drainage to increase agricultural productivity and efficiency on a sustainable basis.

The program for Repelita V for irrigation subsector includes 1.1 million ha of rehabilitation including special maintenance ; 500,000 ha of new construction and 400,000 ha of swamp development. The progresses of each type of work for the Repelita V have been on schedule for rehabilitation, and behind schedule for new construction and swamp development as of the beginning of fiscal year 1993/94. (see Tables 1.2)

The development expenditure of DGWRD totaling actual expenditure from 1989/90 to 1992/93 and the development budget (DIP) for 1993/94 would amount to approximately Rp 6,300 billion (see Table 1.3) and the percentages of foreign aid to the expenditure in each fiscal year become gradually smaller with economical improvement from 83.2% to 50.6% during the period from 1989/90 to 1993/94.(see Table 1.4)

The routine allocation (DIK;Daftar Isian Kegiatan) for the central office of DGWRD has been prepared by the Ministry of Finance every year.(Table 1.5)

2 Achievement Of Irrigation Development up to PELITA IV

2.1 Surface Irrigation

The inventory survey on isurface irrigation schemes under DGWRD has been carried out by the Directorate of Irrigation I since 1982. The results are simply compiled using the report from each province, but the general feature of the irrigation in Indonesia can be presumed. According to the data in 1982, 1985, 1988 and 1989, the designed area and the irrigated area in 1982 were estimated at 4,675,000 ha and 3,600,000 ha and changed to those of 4,818,000 ha and 3,973,000 ha in 1989 respectively as summarized in the following Tables. The irrigated area was increased in Jawa and Sulawesi, and almost even in Sumatera. (see Table 2.1)

Change of Designed Area in Surface Irrigation Schemes during 1982 to 1989

Province	Unit: 1,000 ha				
	1982	1985	1988	1989	1989-1982
Sumatra	1,048	1,093	1,106	1,109	61
Jawa	2,787	2,783	2,780	2,770	-17
Bali/Nusa Tenggara	278	311	318	320	43
Kalimantan	124	91	93	92	-32
Sulawesi	409	469	485	501	92
Maluku/Irian Jaya	29	32	38	26	-3
Indonesia	4,675	4,779	4,819	4,818	143

Source: Rekapitulasi Daerah Irigasi PU

Change of Irrigated Area in Surface Irrigation Schemes during 1982 to 1989

Province	Unit: 1,000 ha				
	1982	1985	1988	1989	1989-1982
Sumatra	613	596	622	627	15
Jawa	2,500	2,537	2,587	2,615	115
Bali/Nusa Tenggara	202	245	255	261	59
Kalimantan	31	25	28	28	-3
Sulawesi	248	272	315	330	82
Maluku/Irian Jaya	6	7	12	12	6
Indonesia	3,600	3,682	3,819	3,873	273

Source: Rekapitulasi Daerah Irigasi PU

Further, the ratios between designed area and irrigated area in 1985, 1988 and 1989 which may imply the area to be possitively developed in the future are estimated as in the following table.(see Table 2.2) As a whole, the ratios gradually became increasing and it simply means that the non-irrigated area in the schemes was gradully developed during that time. Actually,

however, there are big differences among the regions. Java is the most developed region, but has limited area to be developed in the above sense. The ratio especially in East Java shows 0.99 and this means that there is almost no area to be developed inside the existing schemes. Bali and Nusa Tenggara region is the second developed, Sulawesi the third and Sumatra the fourth.

Change of Ratios between Designed Area and Irrigated Area for PU Irrigation Schemes

Unit : 1,000ha

Province	1985			1988			1989		
	Designed	Irrigated	(B)/(A)	Designed	Irrigated	(B)/(A)	Designed	Irrigated	(B)/(A)
	Area(A)	Area(B)		Area(A)	Area(B)		Area(A)	Area(B)	
Sumatera	1,093	596	0.55	1,106	622	0.56	1,109	627	0.57
Jawa	2,783	2,537	0.91	2,780	2,587	0.93	2,770	2,615	0.94
Bali/Nusa Tenggara	311	245	0.79	318	255	0.80	320	261	0.81
Kalimantan	91	25	0.27	93	28	0.30	92	28	0.30
Sulawesi	469	272	0.58	485	315	0.65	501	330	0.66
Maluku/Irian Jaya	32	7	0.23	38	12	0.32	26	12	0.46
INDONESIA	4,779	3,682	0.77	4,819	3,819	0.79	4,818	3,873	0.80

Source : Rekapitulasi Daerah Irigasi PU

The ratios between designed area and irrigated area by technical level of irrigation are also shown in the following tables. (see Table 2.3, Table 2.4 and Table 2.5) The ratios become bigger year by year in all the technical level and almost all the regions. Besides, the ratios become also bigger in proportion to technical level and it can be generally said that larger potential area to be developed remains in irrigation schemes with the lower technical level.

Change of Designed and Irrigated Areas (Technical) during 1985 to 1989

Unit: 1,000 ha

Province	1985			1988			1989		
	Designd Area	Irrigated Area	Ratio	Designd Area	Irrigated Area	Ratio	Designd Area	Irrigated Area	Ratio
	(A)	(B)	(B)/(A)	(A)	(B)	(B)/(A)	(A)	(B)	(B)/(A)
Sumatera	349	204	0.58	356	214	0.60	360	218	0.61
Jawa	1,962	1,849	0.94	1,952	1,864	0.95	1,977	1,913	0.97
Bali & Nusa Tenggara	62	47	0.77	55	48	0.87	83	75	0.91
Kalimantan	21	5	0.22	21	6	0.28	21	6	0.30
Sulawesi	233	139	0.60	252	175	0.69	262	186	0.71
Maluku & Irian Jaya	0	0		0	0		0	0	
Indonesia	2,627	2,244	0.85	2,635	2,306	0.88	2,702	2,398	0.89

Source: Rekapitulasi Daerah Irigasi PU

Change of Designed and Irrigated Areas (Semi-Technical) during 1985 to 1989

Unit: 1,000 ha

Province	1985			1988			1989		
	Designd Area	Irrigated Area	(B)/(A)	Designd Area	Irrigated Area	(B)/(A)	Designd Area	Irrigated Area	(B)/(A)
	(A)	(B)		(A)	(B)		(A)	(B)	
Sumatera	465	267	0.57	469	282	0.60	468	288	0.62
Jawa	415	357	0.86	427	374	0.88	393	351	0.89
Bali & Nusa Tenggara	215	178	0.83	241	193	0.80	219	172	0.79
Kalimantan	38	14	0.36	38	15	0.40	37	15	0.40
Sulawesi	153	92	0.60	145	90	0.62	151	92	0.61
Maluku & Irian Jaya	4	0	0.07	7	1	0.07	4	1	0.14
Indonesia	1,291	907	0.70	1,328	955	0.72	1,271	918	0.72

Source: Rekapitulasi Daerah Irigasi PU

Change of designed and Irrigated Areas (Simple) during 1985 to 1989

Unit: 1,000ha

Province	1985			1988			1989		
	Designd Area	Irrigated Area	(B)/(A)	Designd Area	Irrigated Area	(B)/(A)	Designd Area	Irrigated Area	(B)/(A)
	(A)	(B)		(A)	(B)		(A)	(B)	
Sumatera	278	125	0.45	282	126	0.45	281	121	0.43
Jawa	405	332	0.82	401	349	0.87	400	351	0.88
Bali & Nusa Tenggara	35	20	0.56	22	14	0.67	19	13	0.68
Kalimantan	33	7	0.20	35	7	0.20	35	7	0.20
Sulawesi	82	41	0.50	87	51	0.58	90	53	0.59
Maluku & Irian Jaya	28	7	0.26	31	12	0.38	22	11	0.52
Indonesia	861	531	0.62	857	558	0.65	847	556	0.66

Source: Rekapitulasi Daerah Irigasi PU

2.2 Swamp development

According to the Directorate of Swamp, the past performance of the swamp development in Pelita I, II, III and IV and the results of the inventory surveys carried out in 1989 and 1991 are shown as in the following tables respectively. In the past four Pelitas during the period from 1968/69 to 1988/89, about 864,000 ha of swamp were developed, which consisted of the tidal swamp of 708,000 ha and non-tidal swamp of 156,000 ha.(see Table 2.6) Especially in the Pelita II and III, approximately 600,000 ha of tidal swamp were developed. Riau, Sumatera Sulatan, Kalimantan Tengah and Kalimantan Barat were the remarkable provinces to be developed.

Progress of Swamp Development in Pelita I, II, III and IV

Province	Unit : ha									
	Pelita I		Pelita II		Pelita III		Pelita IV		Total	
	Non-Tidal	Tidal	Non-Tidal	Tidal	Non-Tidal	Tidal	Non-Tidal	Tidal	Non-Tidal	Tidal
Sumatera	10,250	17,533	11,813	184,292	38,645	233,782	29,893	60,900	90,601	496,507
Jawa	-	-	-	-	-	-	-	-	0	-
Bali/Nusa Tenggara	-	-	-	-	-	-	2,000	-	2,000	-
Kalimantan	16,565	15,559	8,463	64,430	26,583	118,993	13,701	12,504	65,312	211,486
Sulawesi	-	-	-	-	-	-	-	-	0	-
Maluku/Irian Jaya	-	-	-	-	-	-	-	-	0	-
INDONESIA	26,815	33,092	20,276	248,722	65,228	352,775	43,594	73,404	155,913	707,993

Source : pengembangan Daerah Rawa dalam Pelita IV, Direktorat Rawa Feb. 1990

Although there is almost no connection with the above table, the following table shows that paddy was cultivated in approximately 650,000 ha of swamp at the time of the inventory survey carried out by the Directorate of Swamp in 1989 for Sumatera and Kalimantan and in 1991 for Sulawesi. Sumatera Sulatan had the largest paddy field of 150,000 ha. The second largest paddy field of 125,000 ha was found in the Kalimantan Sulatan, the third of 80,000 ha in Kalimantan Sulatan and the fourth of 65,000 ha in Riau.(see Table 2.7)

Summary of Inventory Results for Swamp Scheme

Province	Unit : ha				
	Functional Area for Agriculture				Not Yet Functional for Agriculture
	Paddy	Upland	Treecrop	Total	
Sumatera*)	325,984	100,106	96,291	522,381	264,147
Kalimantan*)	251,846	85,555	11,630	349,031	122,149
Sulawesi **)	71,232	10,441	100,287	181,960	43,031
Total	649,062	196,102	208,208	1,053,372	429,327

Source: Directorate of Swamp, DGWRD

*) Inventarisasi Pemanfaatan Lahan RPS dan RNPS di SUMATERA dan KALIMANTAN, Direktorat Rawa, Tahun 1989

***) Inventarisasi Pemanfaatan Lahan RPS dan RNPS di SULAWESI, Direktorat Rawa, Tahun 1991

2.3 Groundwater Development

Public sector groundwater activities have been concentrated in East Java. Up to about a decade ago, there was little private participation except hand-dug and manually operated wells and minor developments on the sugar estates. In the mid-1970s, the private sector in East Java developed technology for construction of low-cost shallow tubewells in the shallow water table area, but this technology has not yet been exported to any of the other islands.

Efforts by the public sector to intensively develop groundwater irrigation were initiated in East Java since 1970. In 1972, systematic groundwater studies were commenced in Kediri-Nganjuk, Madiun and Madura. In 1982, East Java Groundwater Development Project was launched to provide irrigation to 6,300 ha in Kediri-Nganjuk, Tuban and Mojokerto. After that, groundwater development has been implemented getting the assistance from UK, EEC, IBRD, CIDA, etc. The past performance is summarized in the following Table. As shown in the Table, it can be said that almost all the groundwater development has been implemented in East Java.

Past Performance Of Groundwater Development

Province	Period	Well (nos)	Area (ha)
West Java	1979-86	(43)	-
	1989-91	14	162
		(8)	
	1991-92	8	280
	Sub-Total	73	442
Central Java	1988-91	52	441
East Java	1969-74	5	115
	1974-79	103	5,453
	1979-84	193	9,766
	1984-89	211	9,336
	1989-91	22	440
	1991-92	71	874
	Sub-Total	605	25,984
Central Sulawesi	1988-91	30	132
	1991-92	10	60
	Sub-Total	40	192
South Sulawesi	1988-91	48	364
	1991-92	47	260
	Sub-Total	95	624
NTB(Lombok)	1978-91	126	1,717
	total	991	29,400

Source : DOI-II, DGWRD

(): Exploratory well

2.4 Operation and Maintenance

Until 1983/84, the operation and maintenance for existing PU irrigation schemes was carried out using APBD through the Provincial Governments.

From 1984/85-1988/89, central Government allocations for O&M (APBN) were confined to specific areas that had been rehabilitated (North Sumatra, West Sumatra, South Sumatra, Lampung, West Java, Central Java, Yogyakarta, East Java, South Sulawesi and West Nusa Tenggara, 10 provinces in total) with APBD funds allocated to other areas.

In order to address the O&M-related issues, the Government, in October 1987, issued a Statement of Policies for Irrigation Operation and Maintenance. The Policy Statement stipulates that within a period of 15 years, efficient O&M cost will be introduced in irrigation systems throughout the country and that the O&M cost will be directly recovered from the beneficiaries. More specifically, it is stated that the Government will develop more effective funding mechanisms to substantially increase O&M funding through (i) the transfer of responsibility for funding O&M expenditures to local Governments; (ii) the introduction of a nationwide direct cost recovery system (irrigation service fee) that will eventually finance all O&M costs of main irrigation beneficiaries; (iii) improving indirect cost recovery; and (iv) the handing over of Government-controlled irrigation systems with an area of less than 500 ha to Water Users' Associations.

Being described about Repelita V, APBD funds have met the costs of O&M on non-EOM areas whereas APBN and loan have met those of EOM areas since 1989/90. (Aceh, Central Sulawesi, Maluku and Nusa Tenggara Timur were added to the above 10 provinces)

As shown in the following summarized tables, (see Table 2.8 to Table 2.12) usual O&M area becomes gradually smaller from about 5,200.000 ha in 1985/86 to 3,200.000 ha in 1992/93, whereas EOM area increased to about 1,278.000 ha in 1992/93. The average costs per ha on usual O&M and EOM in 1992/93 are 19,660 Rp/ha and 32,864 Rp/ha respectively.

Further, the subprograms such as PIK (Handing over small schemes less than 150 ha to farmers' groups) and ISF (Irrigation Service Fee) which have been implemented or prepared since 1988/89 showed their first returns in 1992/93 in connection with O&M and EOM.

Government Funding Of O&M (Current Cost)

Fiscal Year	APBD (Rp.Mill.)	APBN (Rp.Mill.)	Loan (Rp.Mill.)	Total (Rp.Mill.)	Area (Thousand ha)	Average (Rp/ha)
1979/80	13,267	0	0	13,267	4,475	2,965
1980/81	19,971	0	0	19,971	4,541	4,398
1981/82	26,009	0	0	26,009	4,575	5,685
1982/83	31,235	0	0	31,235	4,514	6,920
1983/84	32,895	0	0	32,895	4,638	7,092
1984/85	30,732	13,438	0	44,170	5,121	8,625
1985/86	32,425	13,999	0	46,424	5,203	8,923
1986/87	31,846	8,131	0	39,977	4,852	8,239
1987/88	30,279	7,173	2,612	40,064	4,889	8,195
1988/89	31,251	0	0	31,251	3,752	8,329
1989/90	41,589	0	0	41,589	3,716	11,192
1990/91	47,327	0	0	47,327	3,280	14,429
1991/92	58,096	0	0	58,096	3,250	17,876
1992/93	62,932	0	0	62,932	3,201	19,660

Source: Appraisal Report of IISP, March 1990 and DOI-1, DGWRD, OCT. 1992 and AUG. 1993

Government Funding of EOM (Current Cost)

Fiscal Year	Non-EOM (ha)	APBD EOM a/		APBN EOM b/		Total EOM (ha)	PIK (ha)	Total Area (ha)
		Not yet ISF (ha)	ISF (ha)	Not yet ISF (ha)	ISF (ha)			
1988/89	3,752,472	0	0	582,182	0	582,182	0	4,334,654
1989/90	3,715,709	0	0	880,784	0	880,784	0	4,596,493
1990/91	3,279,796	0	0	1,107,965	0	1,107,965	0	4,387,761
1991/92	3,250,155	0	0	1,151,075	0	1,151,075	0	4,401,230
1992/93	3,201,210	190,842	0	1,028,704	58,043	1,277,589	37,618	4,516,417

Fiscal Year	EOM		Total (Rp.1,000)	Average (Rp/ha)
	APBD a/ (Rp.1,000)	APBN b/ (Rp.1,000)		
1988/89	0	13,827	13,827	23,750
1989/90	0	21,122	21,122	23,981
1990/91	0	27,230	27,230	24,577
1991/92	0	31,718	31,718	27,555
1992/93	6,393	35,594	41,987	32,864

Source: DOI-1, DGWRD, OCT. 1992

a : after 5 years

b : before 5 years , including loan

3 Achievement And Analysis Of Irrigation Development in REPELITA V

3.1 Budgetary Arrangement and Actual Expenditure

3.1.1 General

(1) Introduction

The development budget allocation for DGWRD (DIP) in Repelita V are divided into three sectors, that is, (i) Agriculture and Irrigation, (ii) Education and Research and (iii) National Resources and Life Environment. The sectors are divided into some sub-sectors which consist of some programs as described as in the following.

- I. Sector : Agriculture and Irrigation
 - I-1 Sub-Sector : Irrigation
 - 1. Program : Rehabilitation and Maintenance of Irrigation Networks
 - 2. Program : Construction of New Irrigation Networks
 - 3. Program : Development of Swamp Area

- II Sector : Education and Research
 - II-1 Sub-Sector : Education of Agriculture and Irrigation
 - II-2 Sub-Sector : Research of Agriculture and Irrigation

- III Sector : National Resources and Life Environment
 - III-1 Sub-Sector : National Resources
 - 1. Program : Preservation of Forest, Land and Water
 - 2. Program : Coastal Area Development

Under Irrigation Sub-Sector, such type of works as new construction, rehabilitation, special maintenance, efficient O&M, current O&M, handing over of small schemes to farmers' organization and upgrading of swamp are often itemized mainly in connection with physical targets and achievement.

In addition, the development budget allocation (DIP) can be decided by taking into consideration of the program budget of Repelita V and the past actual expenditure as the progress every year.

Further, the above arrangements have been combined with the allocation of foreign aids mainly from IBRD, ADB and OECF. These arrangements are distributed to each Directorate under

Further, the above arrangements have been combined with the allocation of foreign aids mainly from IBRD, ADB and OECF. These arrangements are distributed to each Directorate under DGWRD such as Secretariat, Directorate of Planning and Programming, Directorate of Logistic, Directorate of Irrigation I, Directorate of Irrigation II, Directorate of Swamp and Directorate of River. Each Directorate has many projects divided into Central Government operated projects, Provincial Government operated projects and others.

As for the irrigation sub-sector, the numbers of on-going projects listed in DIPs in whole Repelita V are divided by the above classification and program into the following table.(see Table 3.1)

Number of Projects under Irrigation Sub-sector

Type of Project	Rehabilitation and Maintenance	Construction of New Irrigation System	Swamp Development	Total
Provincial	6	20	21	47
Central Government	7	21		28
Others				
Swamp(EOM)	7			7
Irrigation Tank		2		2
Groundwater		8		8
Logistic	3	2		5
Secretariat	1			1
Survey		4		4
Converted/Merged	4	9		13
Total	28	66	21	115

Source:BPP, DGWRD, April 1993

The conversion of project from the program of rehabilitation and maintenance to the program of construction of new irrigation system and its vice versa, and the mergers of Central Government operated project into provincial project have been carried out every year. The total number of projects for the irrigation sub-sector is counted at 102 as of DIP 1993.

Generally, the Directorate of Irrigation I operates provincial projects, some Central Government operated projects especially for rehabilitation and extension and O&M projects such as efficient OM and handing over small scheme, while the Directorate of Irrigation II operates new construction projects including the projects for groundwater development and irrigation tank.

The provincial projects under the program of rehabilitation and maintenance are carried out at the advanced provinces for irrigation development such as Jawa Barat, Jawa Tengah, D.I. Jogjakarta, Jawa Timur, Sumatera Utara and Sulawesi Selatan

(2) Development Budget

The annual development budget allocation (DIP) to DGWRD excluding O&M cost by APBD is summarized in the following tables. The share of allocated amount in Repelita V to the three sectors, that is, the agriculture and irrigation, the education and research and the national resources and life environment is 70.7 %, 1.9 % and 27.4.% respectively. (see Table 1.3 and Table 3.2)

Summary of Budgetary Program, DIP and Actual Expenditure(Million Rupiah)

Sector/ Sub-sector/Program	Program		DIP		Progress	
	Amount	%	Amount	%	Amount	%
DGWRD	7,469,036		6,433,055		6,306,514	
Ratio to DIP	1.16		1.00		0.98	
Sector: Agriculture and Irrigation	6,058,941	81.12%	4,538,397	70.55%	4,413,045	69.98%
Sub-Sector: Irrigation	6,058,941		4,538,397		4,413,045	
Ratio to DIP	1.34		1.00		0.97	
Program: Rehabilitation and Maintenance of Irrigation Networks	1,900,313	25.44%	1,352,433	21.02%	1,306,494	20.72%
Program: Construction of New Irrigation Networks	3,345,481	44.79%	2,882,885	44.81%	2,771,356	43.94%
Program: Development of Swamp Area	813,147	10.89%	303,079	4.71%	335,195	5.32%
Sector: Education and Research	55,535	0.74%	124,798	1.94%	109,669	1.74%
Sub-Sector: National Resources	1,354,560	18.14%	1,769,860	27.51%	1,783,801	28.29%

Source: Mid Term Review, DIP Every Year and DOI-I and II

Summary of Development Budget Allocation In Repelita V)

Sector/Sub-Sector/Program	Unit : Million Rp.					
	1989/90	1990/91	1991/92	1992/93	1993/94	Total
	DIP	DIP	DIP	DIP	DIP	
DGWRD	1,068,243	1,139,433	1,247,920	1,400,334	1,577,126	6,433,055
Sector; Agriculture and Irrigation	757,177	761,672	922,529	995,235	1,101,784	4,538,397
Sub-Sector; Irrigation	757,177	761,672	922,529	995,235	1,104,784	4,538,397
Program; Rehabilitation and Maintenance of Irrigation Networks	239,149	218,203	269,021	295,417	330,643	1,352,433
Program; Construction of New Irrigation Networks	462,351	490,728	585,070	639,660	705,075	2,882,885
Program; Development of Swamp Area	55,677	52,740	68,438	60,157	66,066	303,079
Sector; Education and Research	19,673	27,186	30,792	26,376	20,770	124,798
Sector; National Resources and Life Environment	291,392	350,575	294,599	378,723	454,572	1,769,860

Source: DIP April Every Fiscal Year

Remarks: excluding O&M Cost

(3) Allocation of Expenditure by Directorates and Provinces

As for the Budgetary expenditure for irrigation sub-sector to each Directorate under DGWRD, about 64.1% is for Directorate of Irrigation I, 22.1 % for Directorate of Irrigation II, 8.2 % for Directorate of Swamp, 4.5 % for Directorate of River and the remaining is for Directorate of Logistic and Secretariat. (see Table 3.3)

Summary of Budgetary Expenditure by Directorate for Irrigation Sub-Sector in Repelita V

Sub-Sector/Directorate	Unit in Million Rp.					
	1989/90	1990/91	1991/92	1992/93	1993/94	Total
	Actual	Actual	Actual	Actual	DIP	
Sub-Sector; Irrigation	632,681	749,081	889,884	1,039,615	1,101,784	4,413,045
Directorate of Irrigation I	425,427	477,985	575,968	617,968	729,290	2,826,638
Directorate of Irrigation II	112,510	153,560	211,437	256,420	241,049	974,977
Directorate of Swamp	52,887	63,320	48,952	122,064	72,655	359,878
Directorate of Logistic	2,218	23,488	9,343	5,478	3,929	44,456
Directorate of River	39,639	30,728	44,184	35,665	48,510	198,726
Secretariat	0	0	0	2,018	6,351	8,369

Source: Mid Term Review, DIP Every Year and Data from SETDITJEN

The budgetary expenditure for irrigation sub-sector to each province is shown in Table 3.4 and summarized as follows; As for the programs for rehabilitation, maintenance and new construction, approximately 41.1 % of the expenditure has been allocated to Jawa, 31.7% to Sumatera, 10.8% to Sulawesi, 10.7% to Bali/Nusa Tenggara and the remaining to Kalimantan and Maluku/Irian Jaya. The biggest budget is allocated to Jawa Tengah, the second to Aceh,

the third to Jawa Barat and the next are to Sumatera Utara, Sulawesi Selatan and Jawa Timur in order.

Budgetary Expenditure by Province for Irrigation Sub-Sector except Swamp Development

Region	Unit in Million Rupiah					Total
	1989/90 Actual	1990/91 Actual	1991/92 Actual	1992/93 Actual	1993/94 DIP	
Sumatera	193,512	227,194	235,963	289,499	339,288	1,285,456
Jawa	277,157	315,518	383,469	331,779	367,584	1,675,507
Bali /Nusa Tenggara	38,947	62,033	83,202	111,625	139,005	434,812
Kalimantan	5,449	31,284	49,910	72,434	35,032	194,109
Sulawesi	63,158	45,042	82,810	109,511	140,478	440,999
Maluku/ Irian Jaya	4,123	9,130	10,624	8,758	14,333	46,967
Indonesia	582,346	690,201	845,978	923,607	1,035,718	4,077,850

Source: Mid Term Review, DIP Every Year and Data from SETDITJEN

As for the swamp development, 58.8% of the expenditure has been allocated to Sumatera, 18.8% to Kalimantan and the remaining to Jawa, Sulawesi and Maluku/Irian Jaya. In the whole province, the biggest expenditure has been given to Sumatera sulatan, the second to Riau and the third to Lampung.(see Table 3.4)

Budgetary Expenditure by Province for Swamp Development in Repelita V

Region	Unit in Million Rupiah					Total
	1989/90 Actual	1990/91 Actual	1991/92 Actual	1992/93 Actual	1993/94 DIP	
Sumatera	32,073	34,043	22,841	76,126	32,076	197,159
Jawa	8,214	5,807	4,166	3,909	7,864	29,960
Bali /Nusa Tenggara	0	0	0	0	0	0
Kalimantan	3,788	12,301	8,339	25,502	13,224	63,154
Sulawesi	5,476	3,658	5,960	4,363	9,654	29,111
Maluku/ Irian Jaya	784	3,071	2,600	6,108	3,247	15,811
Indonesia	50,335	58,880	43,906	116,008	66,066	335,195

Source: Mid Term Review, DIP every Year and Data from SETDITJEN

3.1.2 Type of Works

The projects for irrigation sub-sector are divided into three programs, but each project consists of several combination among items of work types such as new construction, rehabilitation, special maintenance, efficient O&M and handing over small scheme, upgrading of swamp, development of fish pond and upgrading of fish pond. The list of projects for irrigation sub-sector is attached herein as Table 3.5 and Table 3.6, and summarized as follows;

Number Of Projects for Irrigation Sub-Sector by Type of Works and Type of Project

Type of Works	Type of Project	Rehabilitation and Maintenance	Construction of Irrigation System	Swamp Development
New Construction	Central Government Operated			
	New Construction	1	11	
	Extension	2	10	
	Provincial Project			
	New Construction	0	0	
	Extension	5	19	
	Groundwater Development	0	8	
	Irrigation Tank	0	2	
	Common(Survey/ Logistic)	0	4	
Converted/ Merged	3	9		
	Sub-total	11	63	
Rehabilitation	Central Government Operated	6	8	
	Provincial Project	6	19	
	Irrigation Tank	0	2	
	Converted/ Merged	3	4	
	Sub-total	15	33	
Special Maintenance	Provincial Project	7	15	
	Converted/ Merged	0	3	
	Sub-total	7	18	
Efficient O&M	Central Government Operated	1	0	
	Provincial Project	6	17	
	Swamp Development	5	0	
	Converted/ Merged	0	3	
	Sub-total	12	20	
Handing over Small Scheme	Provincial Project	7	6	
	Converted/ Merged	0	3	
	Sub-total	7	9	
Upgrading Swamp	Non-Tidal Swamp			14
	Tidal Swamp			6
	Sub-total			20
Development of Fish Pond	Non-Tidal Swamp			3
	Tidal Swamp			4
	Sub-total			7
Upgrading Fish Pond	Non-Tidal Swamp			7
	Tidal Swamp			1
	Sub-total			8
Total		52	143	35

Source; Mid Term Review and ,DIP, April 1993, BPP, DGWRD

About 53.9% of the total expenditure of irrigation sub-sector is for construction of new irrigation systems, 24.6 % is for rehabilitation 6.0 % is for upgrading of swamp as shown in the following table and Table 3.7

Summary of Actual Expenditures by Main Sub-Program for Irrigation Sub-Sector

Sub-Program	Unit : Million Rupiah					
	1989/1990 Actual	1990/1991 Actual	1991/1992 Actual	1992/93 Program	1993/94 Program	Total
Sub-Sector; Irrigation	632,681	749,081	889,884	1,396,670	1,414,993	5,083,309
Efficient O&M	23,669	31,666	39,788	60,658	82,282	238,063
New Construction	312,477	411,316	488,188	746,709	781,539	2,740,229
Handing over Small Schemes	1,721	2,954	7,099	24,366	32,724	68,864
Rehabilitation	235,066	224,864	234,427	299,809	257,179	1,251,345
Special Maintenance	9,413	19,401	76,476	70,081	73,751	249,122
Development of Fish Pond	0	0	0	0	3,000	3,000
Upgrading of Fish Pond	6,976	5,411	6,287	4,000	14,050	32,724
Upgrading of Swamp	43,359	53,469	37,619	191,047	170,468	304,915

Source: Mid Term Review

The following Table shows that new construction has been carried out with the share of 56.8% of the Directorate of Irrigation I (DOI-I) , 33.8% of the Directorate of Irrigation II (DOI-II) and 6.9% of the Directorate of River (SG), rehabilitation by DOI-I with the share of 80.2% and DOI-II for the remaining works, efficient O&M with share of 87.4% aof DOI-I and the Directorate of Swamp(RW), and all the works for special maintenance and handing over small scheme by DOI-I.(see Table 3.8)

Summary of Actual Expenditure by Sub-Program and Directorate for Irrigation Sub-Sector

Sub-Program/ Directorate	Unit in Million Rupiah					
	1989/1990 Actual	1990/1991 Actual	1991/1992 Actual	1992/93 Program	1993/94 Program	Total
Sub-Sector; Irrigation	632,681	749,081	889,884	1,396,670	1,414,993	5,083,309
New Construction	312,477	411,316	488,188	746,709	781,539	2,740,229
Dit. Irrigation I	187,142	240,797	255,163	390,257	482,736	1,556,095
Dit. of Irrigation II	83,478	116,303	179,498	300,690	247,290	927,259
Dit. of River	39,639	30,728	44,184	36,400	37,000	187,951
Dit. of Logistic	2,218	23,488	9,343	19,362	14,513	68,924
Rehabilitation	235,066	224,864	234,427	299,809	257,179	1,251,345
Dit. of Irrigation I	206,034	187,607	202,488	245,926	161,627	1,003,682
Dit. of Irrigation II	29,032	37,257	31,939	53,883	95,552	247,663
Special Maintenance	9,413	19,401	76,476	70,081	73,751	249,122
Dir. of Irrigation I	9,413	19,401	76,476	70,081	73,751	249,122
Upgrading of Swamp	43,359	53,469	37,619	191,047	170,468	495,962
Dit. of Swamp	43,359	53,469	37,619	191,047	170,468	495,962
Efficient O&M	23,669	31,666	39,788	60,658	82,282	238,063
Dit. of Irrigation I	21,117	27,226	34,742	53,070	72,823	208,978
Dit. of Swamp	2,552	4,440	5,046	7,588	9,459	29,085
Handing over Small Schemes	1,721	2,954	7,099	24,366	32,724	68,864
Dit. of Irrigation I	1,721	2,954	7,099	24,366	32,724	68,864
Development of Fish Pond	0	0	0	0	3,000	3,000
Dit. of Swamp	0	0	0	0	3,000	3,000
Upgrading of Fish Pond	6,976	5,411	6,287	4,000	14,050	36,724
Dit. of Swamp	6,976	5,411	6,287	4,000	14,050	36,724

Source: Mid Term Review

(1) New Construction

The actual expenditure for the whole new construction work by province is shown as in the attached Table 3.9 and summarized as follows; Actually, however, the construction work consists of the construction of new irrigation system, extension and groundwater development as described later.

Actual Expenditure for Whole New Construction Work by Province/Island in Repelita V

Province/Island	Unit in Million Rupiah					Total
	1989/90 Actual	1990/91 Actual	1991/92 Actual	1992/93 Program	1993/94 Program	
Sumatera	129,291	169,895	163,042	240,591	250,070	952,889
Jawa	110,750	138,647	146,976	181,855	206,405	784,633
Bali/Nusa Tenggara	25,497	37,051	64,756	65,681	92,966	285,951
Kalimantan	4,575	29,410	48,031	105,808	64,939	252,763
Sulawesi	41,714	33,016	61,345	128,096	139,493	403,664
Maluku/Irian Jaya	650	3,297	4,038	24,678	27,666	60,329
Indonesia	312,477	411,316	488,188	746,709	781,539	2,740,229

Source: Mid Term Review

1) Surface Irrigation

The actual expenditure for the construction of new surface irrigation systems has been used by region as in the following Table. Sumatera has been given the biggest investment and Jawa is the second. In all the provinces, Aceh gets the biggest expenditure, the second is Jawa Tengah and the third Kalimantan Sulatan.(see Table 3.10)

Actual Expenditure for Construction of New Irrigation System by Province/Island

Province	Unit in Million Rupiah					Total
	1989/1990 Actual	1990/1991 Actual	1991/1992 Actual	1992/93 Program	1993/94 Program	
Sumatera	78,943	97,037	79,879	64,024	74,504	394,387
Jawa	17,422	48,111	53,292	49,895	18,648	187,368
Bali/ Nusa Tenggara	12,118	21,754	37,173	23,476	19,665	114,186
Kalimantan	0	24,993	38,449	70,370	29,151	162,963
Sulawesi	2,300	1,193	8,214	32,640	42,695	87,042
Maluku/Irian Jaya	0	0	0	0	0	0
Indonesia	110,783	193,088	217,007	240,405	184,663	945,946

Source : Mid Term Review

2) Extension of Existing System

The following Table shows that the extension of the existing schemes has bigger expenditure than the construction of new schemes in the sub-program of new construction. The biggest expenditure has been given to Sumatera, the second to Jawa and the third to Sulawesi. In the whole provinces, Jawa Tengah gets the biggest allocation, Jawa Barat the second and Sumatera Sulatan the third.(see Table 3.11)

Actual Expenditure for Extension of Surface Irrigation Scheme by Province/Island

Province	Unit in Million Rupiah					
	1989/1990	1990/1991	1991/1992	1992/93	1993/94	Total
	Actual	Actual	Actual	Program	Program	
Sumatera	50,348	72,858	83,163	176,567	175,566	558,502
Jawa	61,708	51,612	72,321	75,125	132,500	393,266
Bali/ Nusa Tenggara	6,585	10,253	17,285	21,669	60,876	116,668
Kalimantan	4,575	4,417	9,582	35,438	35,788	89,800
Sulawesi	39,414	31,823	51,151	93,356	94,598	310,342
Maluku/Irian Jaya	650	3,297	4,038	24,678	27,666	60,329
Indonesia	163,280	174,260	237,540	426,833	526,994	1,528,907

Source : Mid Term Review

3) Groundwater

Almost all the expenditure for groundwater development have been allocated to Jawa and Bali/ Nusa Tenggara. As for the provinces, Jawa Timur, Jawa Tengah and Nusa Tenggara Timur are given the bigger allocation of expenditure in the above order.(see Table 3.12)

Actual Expenditure for Groundwater Development by Province/Island

Province	Unit in Million Rupiah					
	1989/1990	1990/1991	1991/1992	1992/93	1993/94	Total
	Actual	Actual	Actual	Program	Program	
Sumatera	0	0	0	0	0	0
Jawa	20,600	13,669	10,143	32,291	34,224	110,927
Bali/ Nusa Tenggara	6,794	5,044	10,298	20,536	12,425	55,097
Kalimantan	0	0	0	0	0	0
Sulawesi	0	0	1,980	2,100	2,200	6,280
Maluku/Irian Jaya	0	0	0	0	0	0
Indonesia	27,394	18,713	22,421	54,927	48,849	172,304

Source : Mid Term Review

(2) Rehabilitation

The allocation of development expenditure for rehabilitation by province is shown in the Table 3.13 and summarized as follows; About 65% of the expenditure for rehabilitation of schemes have been allocated to Jawa consisting of 28% for Jawa Tengah, 24% for Jawa Barat and 9% for Jawa Timur. the provinces with bigger allocation in other provinces are Sumatera Sulatan with 6%, Nusa Tenggara Timur with 5% and Sulawesi Sulatan with. 4%.

Actual Expenditure for Rehabilitation by Province/Island in Repelita V

Province	Unit: Million Rupiah					Total
	1989/90 Actual	1990/91 Actual	1991/92 Actual	1992/93 Program	1993/94 Program	
Sumatera	54,383	48,429	47,620	36,446	27,049	213,927
Jawa	146,275	139,013	149,587	204,530	172,804	812,209
Bali/Nusa Tenggara	12,730	24,240	17,478	32,560	29,950	116,958
Kalimantan	480	1,197	1,159	10,075	3,942	16,853
Sulawesi	17,725	6,152	11,997	16,198	23,434	75,506
Maluku/Irian Jaya	3,473	5,833	6,586	0	0	15,892
Indonesia	235,066	224,864	234,427	299,809	257,179	1,251,345

Source: Mid Term Review

(3) Special Maintenance

The expenditure to the special maintenance is as shown in Table 3.14 and summarized in the following table. Jawa has about 66% of the share. Especially, Jawa Barat is the first province to get much expenditure with 25%, Jawa Timur the second with 20% and Jawa Tengah the third with 18%.

Actual Expenditure for Special Maintenance by Province/Island in Repelita

Province/Island	Unit: Million Rupiah					Total
	1989/90 Actual	1990/91 Actual	1991/92 Actual	1992/93 Program	1993/94 Program	
Sumatera	4,187	567	13,545	20,694	18,281	57,274
Jawa	2,316	14,754	56,194	43,259	48,275	164,798
Bali/Nusa Tenggara	257	0	0	1,247	1,153	2,657
Kalimantan	0	0	0	0	0	0
Sulawesi	2,653	4,080	6,737	4,276	5,388	23,134
Maluku/Irian Jaya	0	0	0	605	654	1,259
Indonesia	9,413	19,401	76,476	70,081	73,751	249,122

Source: Mid Term Review

(4) Upgrading of Swamp

The actual expenditure for the upgrading of swamp is shown by province as in Table 3.15 and is summarized as follows; Almost all the works for upgrading swamp have been concentrated in Sumatera and Kalimantan. As for the provinces, Sumatera Selatan, Riau and Kalimantan Barat are given the bigger allocation of expenditure for upgrading swamp with the shares of 23%, 15% and 9% respectively.

Actual Expenditure for Upgrading of Swamp by Province in Repelita V

Province	Unit: Million Rupiah					Total
	1989/1990 Actual	1990/1991 Actual	1991/1992 Actual	1992/93 Program	1993/94 Program	
Sumatera	31,533	32,639	20,969	132,306	108,368	325,815
Jawa	7,254	5,458	4,166	12,402	12,500	41,780
Kalimantan	3,788	12,301	8,339	36,619	43,200	104,247
Sulawesi	0	0	1,545	3,520	4,000	9,065
Maluku/Irian Jaya	784	3,071	2,600	6,200	2,400	15,055
Total	43,359	53,469	37,619	191,047	170,468	495,962

Source: Mid Term Review

(5) EOM

As for the expenditure of efficient O&M for both the surface irrigation and swamp development, the detailed allocations are attached in Table 3.16 and Table 3.17, and summarized as shown in the following tables. Actually, however, efficient O&M for surface irrigation has been mostly operated in Jawa, some provinces in Sumatera, Nusa Tenggara Barat and Sulawesi Selatan as of the end of 1991/92. Whereas, the efficient O&M for swamp schemes have been operated in five provinces, namely, Sumatera Utara, Sumatera Barat, Sumatera Selatan, Lampung and Kalimantan Selatan.

Actual Expenditure for Efficient O&M for Surface Irrigation Scheme by Province/Island

Province	Unit in Million Rupiah					Total
	1989/1990 Actual	1990/1991 Actual	1991/1992 Actual	1992/93 Program	1993/94 Program	
Sumatera	2,667	3,640	5,278	8,988	13,645	34,218
Jawa	16,921	21,365	26,214	36,165	45,996	146,661
Bali/ Nusa Tenggara	463	592	712	2,784	5,234	9,785
Kalimantan	0	0	0	0	0	0
Sulawesi	1,066	1,629	2,538	4,971	7,599	17,803
Maluku/Irian Jaya	0	0	0	162	349	511
Indonesia	21,117	27,226	34,742	53,070	72,823	208,978

Source : Mid Term Review

Actual Expenditure for Efficient O&M for Swamp Development by Province/Island

Province	Unit in Million Rupiah					
	1989/1990	1990/1991	1991/1992	1992/93	1993/94	Total
	Actual	Actual	Actual	Program	Program	
Sumatera	2,639	4,509	5,131	8,444	10,871	31,594
Jawa	0	0	0	0	0	0
Bali/ Nusa Tenggara	0	0	0	0	0	0
Kalimantan	394	677	720	1,060	1,237	4,088
Sulawesi	0	0	0	0	0	0
Maluku/Irian Jaya	0	0	0	0	0	0
Indonesia	3,033	5,186	5,851	9,504	12,108	35,682

Source : Mid Term Review

(6) Handing over of Small Schemes

The sub-program, handing over of small schemes to the farmers' organization has been operated mostly in Jawa, some provinces in Sumatera, Nusa Tenggara Barat and Sulawesi Sulatan as shown in the following Table. As for the provinces, Jawa Barat, Sumatera Barat and Sumatera Utara are given the bigger allocation of expenditure in the above order.(see Table 3.18))

Actual Expenditure for Handing over Small Scheme by Province/Island

Province	Unit in Million Rupiah					
	1989/1990	1990/1991	1991/1992	1992/93	1993/94	Total
	Actual	Actual	Actual	Program	Program	
Sumatera	826	900	2,152	10,266	13,284	27,428
Jawa	895	1,739	4,498	9,900	13,932	30,964
Bali/ Nusa Tenggara	0	150	256	2,700	3,564	6,670
Kalimantan	0	0	0	0	0	0
Sulawesi	0	165	193	1,500	1,944	3,802
Maluku/Irian Jaya	0	0	0	0	0	0
Indonesia	1,721	2,954	7,099	24,366	32,724	68,864

Source : Mid Term Review

3.1.3 Distribution of Expenditure by Items

In general, the development budget for DGWRD is divided into seven (7) items, that is, salary, and acquisition, materials, equipment, transportation, construction and others. About 85% of the budget has been allocated to the construction. The detailed allocation by the above items is shown in the attached Tables 3.19 to 3.22.

Budgetary Distribution by Expenditure Item During 1990/91 to 1992/93

	1990/91*	1991/92*	1992/93	Unit: Million Rupiah 1993/94
Salary	23,156	31,809	34,220	36,454
Land Acquisition	56,200	75,357	84,203	90,976
Materials	9,912	12,608	17,283	20,871
Equipment	24,656	21,031	16,454	28,627
Transportation	7,331	9,193	13,470	17,159
Construction	822,679	989,367	1,218,830	1,358,832
Others	12,591	13,884	15,873	22,801
Total	956,526	1,153,248	1,400,334	1,577,126

Source: Anggaran Pembangunan, DGWRD

*: Net DIP

3.2 Physical Target and Achievement

3.2.1 General

(1) Summary of Physical Achievement

The projects for Irrigation sub-sector consisting of the programs of the rehabilitation and maintenance, the construction of new irrigation system and the swamp development can be classified by type of main sub-program and type of project as shown in the Table 3.5 and summarized as follows;

Number of Projects under Irrigation Sub-sector by Type of Program

Type of Program	Type of Works	Rehabilitation and Maintenance	Construction of Irrigation System	Swamp Development
New Construction	New Construction	1	11	
	Extension	7	29	
	Groundwater Development	0	8	
	Irrigation Tank	0	2	
	Common(Survey/ Logistic)	0	4	
	Converted/Merged	3	9	
Rehabilitation	Rehabilitation	12	27	
	Irrigation Tank	0	2	
	Converted/Merged	3	4	
Special Maintenance	Special Maintenance	7	15	
	Converted/Merged	0	3	
Efficient O&M	Surface Irrigation	7	17	
	Swamp Development	5	0	
	Converted/Merged	0	3	
Handing over Small Scheme	Handing over Small Scheme	7	6	
	Converted/Merged	0	3	
Upgrading Swamp				20
Development of Fishpond				7
Upgrading of Fish Pond				8
Total		52	143	35

Source: JICA, FIDP Team

The physical program, target and achievements of the sub-programs for irrigation sub-sector in Repelita V are shown in Table 3.23 and Table 3.24 using the Mid Term Review, DIP every year and DOI-I and II and summarized in the following table. Comparing the possible achievement with the original program, the progress of rehabilitation including special maintenance is on schedule, new construction of irrigation system consisting of construction of

new scheme, extension and groundwater development is a, little behind schedule and efficient O&M, handing over small schemes are behind schedule and upgrading swamp are behind schedule. The sub-programs such as tertiary development, village irrigation development, flood control and maintenance of river under irrigation sub-sector have been planned and carried out after approval of the concept of the DIP 1993/94.

Summary of Physical Program, Target and Achievement in Repelita V

Sub-Program	Unit	REPELITA V			
		Program	Target	Progress	Percentage
		(1)	(2)	(3)	(3)/(1)
Efficient O&M (EOM)	ha	2,328,400	1,283,458	1,283,458	55.12%
New Construction (NI)	ha	532,049	475,404	426,535	80.17%
Handing over Small Schemes (PIK)	ha	307,220	302,724	216,958	70.62%
Rehabilitation (REH)	ha	342,446	715,899	447,997	130.82%
Special Maintenance (SM)	ha	849,177	816,921	717,300	84.47%
Tertiary Development (TER)	ha	0	269,333	82,629	
Village Irrigation Development (ID)	ha	0	4,085	4,085	
Flood Control (FC)	ha	0	3,000	3,000	
Maintenance of River (RM)	ha	0	40	40	
Development of Fish Pond (DF)	ha	4,837	300	300	6.20%
Upgrading of Fish Pond (UF)	ha	40,439	300	10,818	26.75%
Upgrading of Swamp (US)	ha	505,322	129,868	358,771	71.00%

source: Mid Term Review, DIP 1993/94 and DOI-I and II for Progress in 1992/93

The following table shows the yearly progresses of type of works in irrigation sub-sector in Repelita V. Efficient O&M shows to meet the difficulties of expansion, new construction of irrigation systems decreases its progress gradually, but the progresses of rehabilitation including special maintenance are comparatively sound.

Physical Achievement by Sub-Program in Repelita V

Sub-Program	1989/90	1990/91	1991/92	1992/93	1993/94	Unit in ha Total
	Progress	Progress	Progress	Progress	Target	
Efficient O&M	979,994	1,267,875	1,360,987	1,337,945	1,283,458	1,283,458
New Construction	102,849	83,455	77,309	64,182	98,740	426,535
Handing over Small Schemes	14,358	19,696	33,726	0	96,541	216,958
Rehabilitation	104,411	99,912	79,595	95,909	68,170	447,997
Special Maintenance	67,303	136,940	182,480	186,539	144,038	717,300
Tertiary Development	0	0	0	0	82,629	82,629
Village Irrigation Development	0	0	0	0	4,085	4,085
Flood Control	0	0	0	0	3,000	3,000
Maintenance of River	0	0	0	0	40	40
Development of Fish Pond	0	0	0	n.a	300	300
Upgrading of Fish Pond	3,920	2,685	3,913	n.a	300	10,818
Upgrading of Swamp	131,224	41,227	56,452	n.a	129,868	358,771

Source : Mid Term Review, DIP 1993/94 and DOI- I and II for 1992/93

(2) Physical Achievement by Directorate

The following table summarizes the physical achievement of each work by Directorate. (see Table 3.25) The efficient O&M has been carried out dividing into surface irrigation and swamp area and DOI-I has the progress of about 85%. The new construction of irrigation system has been implemented by DOI-I, DOI-II and Directorate of River with the progress of 57%, 32% and 11% respectively. The rehabilitation has been done by DOI-I with the progress of 86% of the total and DOI-II with the remaining.

Physical Achievement by Sub-Program and Directorate In Repelita V

Sub-Program						Unit in ha
	1989/90	1990/91	1991/92	1992/93	1993/94	Total
	Progress	Progress	Progress	Progress	Target	
Efficient O&M	979,994	1,267,875	1,360,987	1,337,945	1,283,458	1,283,458
Directorate of Irrigation I	880,784	1,107,965	1,194,927	1,244,996	1,086,015	1,086,015
Directorate of Swamp	99,210	159,910	166,060	92,949	197,443	197,443
Village Irrigation Development	0	0	0	0	4,085	4,085
Directorate of Irrigation I	0	0	0	0	4,085	4,085
New Construction	102,849	83,455	77,309	64,182	98,740	426,535
Directorate of Irrigation I	47,812	52,766	44,145	34,188	63,682	242,593
Directorate of Irrigation II	39,287	19,939	21,654	29,994	27,628	138,502
Directorate of River	15,750	10,750	11,510	0	7,430	45,440
Handing over Small Schemes	14,358	19,696	33,726	0	96,541	216,958
Directorate of Irrigation I	14,358	19,696	33,726	0	96,541	216,958
Rehabilitation	104,411	99,912	79,595	95,909	68,170	447,997
Directorate of Irrigation I	88,106	85,718	67,617	82,320	59,468	383,229
Directorate of Irrigation II	16,305	14,194	11,978	13,589	8,702	64,768
Special Maintenance	67,303	136,940	182,480	186,539	144,038	717,300
Directorate of Irrigation I	67,303	136,940	182,480	186,539	144,038	717,300
Tertiary Development	0	0	0	0	82,629	82,629
Directorate of Irrigation I	0	0	0	0	42,607	42,607
Directorate of Irrigation II	0	0	0	0	16,947	16,947
Directorate of River	0	0	0	0	23,075	23,075
Flood Control	0	0	0	0	3,000	3,000
Directorate of Irrigation I					3,000	3,000
Maintenance of River	0	0	0	0	40	40
Directorate of River					40	40
Upgrading of Swamp	131,224	41,227	56,452	0	129,868	358,771
Directorate of Swamp	131,224	41,227	56,452		129,868	358,771

Source : Mid Term Review , DOI-Iabd II for 1992/93 and DIP 1993/94

3.2.2 Type of Works

Further, the physical program, target and achievements of main works dividing into some type of project are shown in Tables 3.26 to 3.35.

(1) New Construction

The new construction consisting of construction of new irrigation systems, extension of existing systems and groundwater development has shown its bigger achievement in Sumatera, Jawa and Sulawesi with the shares of 35%, 32% and 15% respectively.

The first province to have the possibility to show the big achievement in Repelita V is Jawa Tengah for 102,600 ha of development area, the second Sumatera Utara for 44,900 ha, the third Aceh for 39,500 ha and the next are Sulawesi Tengah and Nusa Tenggara Barat.(see Table 3.26)

Physical Achievement of New Construction in Repelita V

Province/Island	1989/90	1990/91	1991/92	1992/93	1993/94	Unit in ha
	Progress	Progress	Progress	Progress	Target	Total
Sumatera	41,619	31,452	19,112	16,241	41,094	149,518
Jawa	40,346	32,407	31,966	16,720	13,185	134,624
Bali/ Nusa Tenggara	5,609	3,747	10,390	8,042	18,559	46,347
Kalimantan	1,262	671	2,920	11,232	9,852	25,937
Sulawesi	13,455	14,395	11,122	10,427	15,154	64,553
Maluku/Irian Jaya	558	783	1,799	1,520	896	5,556
Indonesia	102,849	83,455	77,309	64,182	98,740	426,535

Source: Mid Term Review, DOI-I and II for 1992/93 and DIP 1993/94

1) New Irrigation Systems

The new construction in the above consists of construction of new irrigation systems of 155,100 ha including the development of irrigation tank, extension of existing irrigation systems for 251,000 ha and groundwater development for 20,300 ha. This simply means that the program of new construction of irrigation networks includes about 59 % of the extension of existing systems. The construction of new irrigation systems in Repelita V has been mostly carried out in Sumatera and Jawa as shown in the following table. In the provinces, Jawa Tengah shows the biggest progress of 47,100 ha mainly by Jratunseluna Project, Aceh the second of 27,000 ha by Jambu Aye Project and Aceh Utara Project, and Nusa Tenggara Barat the third of 22,000 ha by Lombok Selatan Sumbawa Project and Embung (irrigation tank) Project.(see Table 3.27)

Physical Achievement of Construction of New Irrigation Scheme in Repelita V

Province/Island	1989/90	1990/91	1991/92	1992/93	1993/94	Unit in ha
	Progress	Progress	Progress	Progress	Target	Total
Sumatera	12,849	24,106	7,930	6,740	9,083	60,708
Jawa	6,473	8,229	7,826	14,420	10,199	47,147
Bali/ Nusa Tenggara	2,461	1,686	6,549	3,053	12,141	25,890
Kalimantan	0	0	1,031	5,965	6,500	13,496
Sulawesi	805	0	896	0	6,148	7,849
Maluku/Irian Jaya	0	0	0	0	0	0
Total	22,588	34,021	24,232	30,178	44,071	155,090

Source: Mid Term Review, DOI-I and II for 1992/93 and DIP 1993/93

2) Extension of Existing Systems

The extension of existing systems has been carried out mostly in Sumatera, Jawa and Sulawesi as in the following table. In 251,000 ha of the whole provinces, about 52,800 ha of extension has been done in Jawa Barat, 33,900 ha in Sulawesi Tengah and 29,500 ha in Sumatera Utara.(see Table 3.28)

Physical Achievement of Extension of Existing Scheme in Repelita V

Province/Island	1989/90	1990/91	1991/92	1992/93	1993/94	Unit in ha
	Progress	Progress	Progress	Progress	Target	Total
Sumatera	28,770	7,346	11,182	9,016	32,011	88,325
Jawa	30,219	22,793	21,640	631	0	75,283
Bali/ Nusa Tenggara	210	1,000	2,451	3,186	6,418	13,265
Kalimantan	1,262	671	1,889	5,267	3,352	12,441
Sulawesi	12,650	14,395	10,226	10,007	8,856	56,134
Maluku/Irian Jaya	558	783	1,799	1,520	896	5,556
Indonesia	73,669	46,988	49,187	29,627	51,533	251,004

Source: Mid Term Review, DOI-I and II for 1992/93 and DIP 1993/94

3) Groundwater Development

Almost all the groundwater development has been implemented in Jawa and Bali/ Nusa Tenggara as shown in the following table. Jawa Timur has borne of about 7,300 ha of paddy field, Nusa Tenggara Barat 4,300 ha and Jawa Barat 2,700 ha. (see Table 3.29)

Physical Achievement of Groundwater Development in Repelita V

Province/Island	1989/90	1990/91	1991/92	1992/93	1993/94	Unit in ha Total
	Progress	Progress	Progress	Progress	Target	
Sumatera	0	0	0	310	0	310
Jawa	3,654	1,385	2,500	1,669	2,986	12,194
Bali/ Nusa Tenggara	2,938	1,061	1,390	1,803	0	7,192
Kalimantan	0	0	0	0	0	0
Sulawesi	0	0	0	420	150	570
Maluku/Irian Jaya	0	0	0	0	0	0
Indonesia	6,592	2,446	3,890	4,202	3,136	20,266

Source: Mid Term Review, DOI-I and II for 1992/93 and DIP 1993/94

(2) Rehabilitation

The rehabilitation of existing systems of about 448,000 ha in total has been carried out in Repelita V. In six regions, about 54 % of the total achievement has been found in Jawa and 26% in Sumatera. Jawa Tengah has shown the biggest achievements, 130,900 ha of the rehabilitation works. The second biggest, 55,700 ha has been shown in Lampung, the third, 50,700 ha in Jawa Timur and the next are in Jawa Barat, Sulawesi Selatan and Sumatera Utara in order.(see Table 3.30)

Physical Achievement of Rehabilitation in Repelita V

Province/Island	1989/90	1990/91	1991/92	1992/93	1993/94	Unit in ha Total
	Progress	Progress	Progress	Progress	Target	
Sumatera	19,370	21,762	26,162	27,980	22,287	117,561
Jawa	72,284	65,879	29,682	39,476	34,428	241,749
Bali/ Nusa Tenggara	6,383	3,246	8,756	5,831	7,329	31,545
Kalimantan	892	1,810	1,352	108	33	4,195
Sulawesi	4,836	3,733	12,893	22,514	2,027	46,003
Maluku/Irian Jaya	646	3,482	750	0	2,066	6,944
Indonesia	104,411	99,912	79,595	95,909	68,170	447,997

Source: Mid Term Review, DOI-I and II for 1992/93 and DIP 1993/94

(3) Special Maintenance

About 73% of special maintenance has been carried out in Jawa. As for the province, Jawa Barat has shown the biggest achievement of 209,800 ha, Jawa Timur the second of 159,300 ha and Jawa Timur the third of 135,800 ha.(see 3.31)

Physical Achievement of Special Maintenance In Repelita V

Project/Island	1989/90	1990/91	1991/92	1992/93	1993/94	Unit in ha Total
	Progress	Progress	Progress	Progress	Target	
Sumatera	21,672	8,206	10,524	17,026	17,681	75,109
Jawa	28,235	87,670	158,768	144,129	110,967	529,769
Bali/ Nusa Tenggara	1,500	1,015	0	0	0	2,515
Kalimantan	0	0	0	0	0	0
Sulawesi	15,896	40,049	13,188	25,384	14,277	108,794
Maluku/Irian Jaya	0	0	0	0	1,113	1,113
Indonesia	67,303	136,940	182,480	186,539	144,038	717,300

Source: Mid Term Review, DOI-I and II for 1992/93 and DIP 1993/94

The upgrading of swamp connected with paddy production has been carried out mostly in Sumatera and Kalimantan. In Repelita V, Sumatera Selatan has become the first province to show the big achievements of ,153,000 ha and Lampung the second of 46,400 ha, Kalimantan Tengah and Kalimantan Barat the third and the Fourth. (see Table 3.32)

Physical Achievement of Upgrading Swamp In Repelita V

Province/Island	1989/90	1990/91	1991/92	1992/93	1993/94	Unit in ha Total
	Progress	Progress	Progress	Progress	Target	
Sumatera	123,484	22,496	26,540	0	94,758	267,278
Jawa	0	0	0	0	0	0
Bali/ Nusa Tenggara	0	0	0	0	0	0
Kalimantan	6,240	16,831	24,012	0	33,150	80,233
Sulawesi	0	0	1,300	0	1,960	3,260
Maluku/Irian Jaya	1,500	1,900	4,600	0	0	8,000
Indonesia	131,224	41,227	56,452	0	129,868	358,771

Source : Mid Term Review and DIP 1993/94

(5) EOM

Efficient O&M has been operated in both the surface irrigation and the swamp development. Actually, however, efficient O&M for swamp development has been carried out in five provinces; Sumatera Utara, Sumatera Barat, Sumatera Selatan, Lampung and Kalimantan Selatan and that for surface irrigation in 13 provinces; Aceh, Sumatera Utara, Sumatera Barat, Sumatera Selatan, Lampung, Jawa Barat, Jawa Tengah, D.I. Jogyakarta, Jawa Timur, Nusa Tenggara Barat, Sulawesi Tengah., Sulawesi Selatan and Maluku. The progress of efficient

O&M is shown as accumulated value. About 70% of the total efficient O&M for surface irrigation has been rendered in Jawa as shown in the following table. Jawa Barat, Jawa Tengah and Jawa Timur present bigger performance of 345,800 ha, 329,600 ha and 321,100 ha as of the end of 1992/93 respectively.(see Table 3.33)

Physical Achievement of Efficient O&M for Surface Irrigation Scheme in Repelita V

Province/Island	Unit in ha					Total
	1989/90	1990/91	1991/92	1992/93	1993/94	
	Progress	Progress	Progress	Progress	Target	
Sumatera	123,968	151,874	164,951	177,697	159,845	159,845
Jawa	688,050	868,964	918,027	1,023,739	768,692	768,692
Bali/ Nusa Tenggara	20,693	22,193	22,193	23,255	24,890	24,890
Kalimantan	0	0	0	0	0	0
Sulawesi	48,073	64,934	89,756	19,590	132,588	132,588
Maluku/Irian Jaya	0	0	0	715	0	0
Indonesia	880,784	1,107,965	1,194,927	1,244,996	1,086,015	1,086,015

Source: Mid Term Review, DOI-I and II for 1992/93 and DIP 1993/94

As described in the above, efficient O&M for swamp development has been implemented in five provinces, in Sumatera and Kalimantan, and Sumatera slattern exhibits the biggest work of 85,500 ha, Kalimantan Sulatan the second of 46,200 ha and Lampung the third of 31,200 ha.(see Table 3.34)

Physical Achievement of Efficient O&M for Swamp Development in Repelita V

Province/Island	Unit in ha					Total
	1989/90	1990/91	1991/92	1992/93	1993/94	
	Progress	Progress	Progress	Progress	Target	
Sumatera	83,910	135,510	142,360	0	151,243	151,243
Jawa	0	0	0	0	0	0
Bali/ Nusa Tenggara	0	0	0	0	0	0
Kalimantan	15,300	24,400	23,700	92,949	46,200	46,200
Sulawesi	0	0	0	0	0	0
Maluku/Irian Jaya	0	0	0	0	0	0
Indonesia	99,210	159,910	166,060	92,949	197,443	197,443

Source: Mid Term Review, DOI-I and II for 1992/93 and DIP 1993/94

(6) Handing over of Small Schemes

Handing over of small schemes of less than 500 ha to farmers' organization has been mostly carried out in Jawa and the next performance for this sub-program is shown in Sumatera Barat

and Sumatera Utara as in the following table. Jawa Tengah, Jawa Barat and Jawa Timur have presented the bigger performance of 59,600 ha, 48,100 ha and 39,400 ha.(see Table 3.35)

Physical Achievement of Handing over Small Schemes in Repelita V

Province/Island	1989/90	1990/91	1991/92	1992/93	1993/94	Unit in ha
	Progress	Progress	Progress	Progress	Target	Total
Sumatera	6,885	6,000	7,628	0	23,770	50,283
Jawa	7,473	11,596	23,664	0	65,651	152,932
Bali/ Nusa Tenggara	0	1,000	1,413	0	4,831	7,913
Kalimantan	0	0	0	0	0	0
Sulawesi	0	1,100	1,021	0	2,289	5,830
Maluku/Irian Jaya	0	0	0	0	0	0
Indonesia	14,358	19,696	33,726	0	96,541	216,958

Source: Mid Term Review and DIP 1993/94

3.3 Routine Expenditure

The routine budget allocation (DIK: Daftar Isian Kegiatan) for the central office of DGWRD is usually divided into three, that is, general administration expenditure for the Directorates of Secretariate, Planning and Programming Logistic, irrigation development ones for the Directorates of Irrigation - I and Irrigation - II and swamp and river development ones for the Directorates of Swamp and River.

Further, these costs consists of the allowances for wages, rice, overtime and others, the office supply such as office expenditure, equipment supply, electricity, phone and others, and the maintenance cost for office building, residence, vehicle and others, the costs for duty trip and subsidy. The details are shown in Table 1.5 and Table 3.36 and summarized in the following table,

Routine Budget Allocation in Repelita V

Division	Unit : Thousand Rupiah					Total
	1989/90	1990/91	1991/92	1992/93	1993/94	
General Administration Cost	2,243	2,326	2,698	3,932	4,114	15,314
Irrigation Development	4,278	5,343	6,179	6,746	9,325	31,873
Swamp and River Development	2,959	3,261	3,773	4,433	5,224	19,649
Total	9,480	10,930	12,651	15,111	18,663	66,835

Source : SETDITDJEN, DGWRD

3.4 Foreign Aid

3.4.1 Share of Foreign Aid

The following table shows that in the three sub-sectors of DIPs, the biggest amount of the foreign aid loan has been allocated to the agriculture and irrigation, but the biggest ratio of the loan is found in the sector, education and research and that the ratio of the loan for the whole becomes gradually smaller and smaller from 76.4% in 1989/90 to 50.6% in 1993/94 (see Table 3.37 and Table 3.38)

Foreign Aid to Budgetary Arrangement in Repelita V

Sector/ Division	Unit in Million Rupiah					
	1989/90 DIP	1990/91 DIP	1991/92 DIP	1992 / 93 DIP	1993/94 DIP	Total DIP
DGWRD						
APBN	251,939	407,135	533,508	648,493	779,851	2,620,926
Loan	816,303	732,298	714,412	751,841	797,275	3,812,130
Total	1,068,243	1,139,433	1,247,920	1,400,334	1,577,126	6,433,056
Ratio	76.42%	64.27%	57.20%	53.69%	50.55%	59.26%
Sub-Sector; Irrigation						
APBN	150,473	257,466	389,028	472,740	546,125	1,815,832
Loan	606,704	504,206	533,502	522,495	555,659	2,722,566
Total	757,177	761,672	922,530	995,235	1,101,784	4,538,398
Ratio	80.13%	66.20%	57.83%	52.50%	50.43%	59.99%
Sector; Education and Research						
APBN	3,249	5,060	6,440	7,855	8,518	31,122
Loan	16,424	22,126	24,352	18,521	12,252	93,676
Total	19,673	27,186	30,792	26,376	20,770	124,798
Ratio	83.49%	81.39%	79.09%	70.22%	58.99%	75.06%
Sector; National Resources and Life Environment						
APBN	98,217	144,609	138,040	167,898	225,207	773,971
Loan	193,175	205,966	156,559	210,824	229,365	995,889
Total	291,392	350,575	294,599	378,723	454,572	1,769,860
Ratio	66.29%	58.75%	53.14%	55.67%	50.46%	56.27%

Source: Anggaran Pendapatan dan Belanja Negara, April 1989, 1990, 1991, 1992 and 1993

3.4.2 Distribution of Foreign Aid

As described in 3.1.3, the development budget (DIP) for DGWRD is divided into seven (7) items, that is, salary, land acquisition, materials, equipment, transportation, construction and others. About 97 % of the loan amount has been allocated to construction, but the ratio of the loan in the construction cost becomes smaller gradually from 67.8 % in 1990/91 to 57.0 % in 1993/94. No allocation of loan is made for land acquisition as shown in the following table. (see Table 3.19 to Table 3.22)

Budgetary Arrangement by Expenditure in 1990/91, 1991/92 and 1992/93

		Unit: Million Rupiah			
		1990/91*	1991/92*	1992/93	1993/94
Salary	Rupiah	21,778	31,506	32,931	35,101
	Loan	1,378	303	1,289	1,353
Land Acquisition	Rupiah	56,200	75,357	84,203	90,976
	Loan	0	0	0	0
Materials	Rupiah	7,507	9,986	13,816	16,753
	Loan	2,405	2,622	3,467	4,118
Equipment	Rupiah	3,236	8,034	9,102	16,577
	Loan	21,420	12,997	7,352	12,050
Transportation	Rupiah	6,649	8,621	11,476	15,100
	Loan	682	572	1,994	2,059
Construction	Rupiah	265,139	386,742	481,525	584,839
	Loan	557,540	602,625	737,305	773,993
	%	67.8	60.9	60.5	57.0
Others	Rupiah	12,169	13,262	15,440	20,504
	Loan	422	622	433	2,297
Total	Rupiah	372,679	533,507	648,493	779,851
	Loan	583,848	619,741	751,841	797,275
Grand-Total		956,526	1,153,248	1,400,334	1,577,126

Source: Anggaran Pembangunan, DGWRD

*: Net DIP

3.4.3 Source of Loan

The following table exhibits the amounts of the loans from IBRD, ADB and OECF which cover almost all the loan amount to DIP, 88% on an average in the following table. The program of swamp development has been assisted by only IBRD and OECF loan has been concentrated to the program of construction of new irrigation networks. (see Table 3.39 and Table 3.40)

Main Foreign Aid by Agency for Projects of Irrigation Sub-Sector in Repelita V

		Unit : Million Rupiah						
Program	Loan	1989/90	1990/91	1991/92	1992/93	1993/94	Total	Ratio
		DIP	DIP	DIP	DIP	DIP	DIP	
I. Rehabilitation and Maintenance of Irrigation Networks								
	IBRD	94,641	68,892	139,880	113,361	88,251	505,026	64%
	ADB	71,319	18,359	44,756	42,768	69,740	246,942	31%
	OECF	3,350	1,780	11,802	8,000	13,521	38,453	5%
	Sub-Total	169,311	89,031	196,438	164,129	171,512	790,421	
II. Construction of New Irrigation Networks								
	IBRD	105,143	67,084	73,894	55,881	56,567	358,569	24%
	ADB	105,027	132,713	164,123	119,462	152,239	673,564	44%
	OECF	63,572	50,698	95,112	159,570	122,219	491,170	32%
	Sub-Total	273,742	250,495	333,129	334,913	331,025	1,523,303	
III. Development of Swamp								
	IBRD	28,628	15,181	17,101	9,284	7,326	77,520	95%
	ADB	0	0	0	2,100	1,744	3,844	5%
	Sub-Total	28,628	15,181	17,101	11,384	9,070	81,364	
Total (Irrigation Sub-Sector)								
	IBRD	228,412	151,156	230,875	178,526	152,144	941,114	39%
	ADB	176,346	151,072	208,879	164,330	223,723	924,350	39%
	OECF	66,922	52,478	106,914	167,570	135,740	529,624	22%
	Total	471,680	354,707	546,668	510,426	511,607	2,395,087	
Loan Total		606,704	504,206	533,502	522,495	555,659	2,722,566	
%		77.7	70.3	*102.5	97.7	92.0	88.0	

Source: DIP Every Year and Realisasi Anggaran Proyek-Projek Pengairan

Note : DIP April every year is increased by program loan ,etc.

The following table presents the list of the loan projects from IBRD, ADB and OECF for irrigation sub-sector.

List of Foreign Aid Projects for Irrigation Sub-Sector in Repelita V(1/2)

No.	Loan No.	Project Name	Effective Date	Closing Date	Extended Date
I B R D					
1	2431-IND	Second Swamp Reclamation Project	Sep. 1984	Jun. 1992	Jun. 1993
2	2543-IND	Kedung Ombo Dam & Jratunseluna Irrigation	Jun. 1985	Dec. 1992	
3	2560-IND	Jatiluhur Irrigation Project	Mar. 1985	Dec. 1991	Apr. 1992
4	2649-IND	Central & West Jawa Irrigation	Mar. 1983	Dec. 1992	
5	2773-IND	Fisheries Support Services	May 1987	Dec. 1994	
6	2880-IND	Irrigation Sub-Sector (ISSP)	Dec. 1988	Dec. 1991	
7	3219-IND	Jatiluhur Irrigation Project II	Jul. 1990	Dec. 1996	
8	3302-IND	Provincial Irrigated Agricultural Development Project (PIADP)	Jul. 1991	Dec. 1996	
9	3392-IND	I S S P II	Sep. 1991	Mar. 1995	
A D B					
1	581-INO	Irrigation Package	Sep. 1982	Sep. 1989	
2	627-INO	Second Irrigation Package	May 1987	Dec. 1991	Jun. 1992
3	638-INO	Second Irrigation Sector	Apr. 1984	Jul. 1992	Mar. 1992
4	685-INO	Arakundo-Jambu Aye Irrigation and Flood Control	Jul. 1984	Jul. 1991	Dec. 1993
5	769-INO	Central Jawa Groundwater Irrigation Development (TA)	Jun. 1986	Jun. 1991	Jun. 1992
6	799-INO	Third Irrigation Package	Mar. 1987	Mar. 1993	
7	818-INO	Irrigation Command Area	Apr. 1987	Dec. 1992	
8	860-INO	Third Irrigation Sector	Nov. 1987	Sep. 1993	
9	861-INO	Third Irrigation Sector	Nov. 1987	Sep. 1993	
10	952-INO	Nusa Tenggara Agricultural Development Project (NTADP)	Feb. 1989	Sep. 1994	
11	953-INO	N T A D P	Feb. 1989	Sep. 1994	
12	959-INO	Jakarta Swamp Development Project	-	-	
13	1017-INO	Integrated Irrigation Sector Project (IISP)	Aug. 1989	Sep. 1995	
14	1018-INO	I I S P	Aug. 1989	Sep. 1995	
15	1078-INO	West Sumatera Irrigation Project	-	-	
16	1126-INO	Central Jawa Groundwater Irrigation	-	-	

Source : Realisasi Anggaran Proyek-Proyek Rengairan

List of Foreign Aid Projects for Irrigation Sub-Sector in Repelita V(2/2)

No.	Loan No.	Project Name	Effective Date	Closing Date	Extended Date
O E C F					
1	IP-278	Riam Kanan Irrigation Project	Jun. 1984	Jun. 1993	
2	IP-284	Bengawan Solo	Feb. 1985	Jan. 1994	
3	IP-301	Langkeme Irrigation	Dec. 1985	Dec. 1991	
4	IP-313	Lampung Irrigation Project	Jan. 1987	Jan. 1992	
5	IP-324	way Rarem Abung Irrigation Project	Dec. 1987	Oct. 1992	
6	IP-334	Lampung Irrigation Project	Jul. 1988	Sep. 1993	
7	IP-341	Pamarayan Irrigation	Oct. 1988	Sep. 1994	
8	IP-343	Small Scale Irrigation Management Project (SSIMP)	Dec. 1989	Dec. 1996	
9	IP-347	Rehabilitation of Irrigation scheme & Flood Alleviation works	Dec. 1989	Dec. 1996	
10	IP-363	Krueng Aceh Irrigation	Dec. 1990	Dec. 1997	
11	IP-364	Bila Irrigation	Dec. 1990	Dec. 1997	
12	IP-368	Lampung Irrigation Project(Way Curup)	Sep. 1991	Sep. 1998	
13	IP-369	Way Rarem Irrigation	Sep. 1991	Sep. 1997	
14	IP-387	Way Sekampung Irrigation Development Stage I	-	-	
15	IP-388	Bila Irrigation Stage II	-	-	

Source : Realisasi Anggaran Proyek-Proyek Rengairan

The following table shows the ratio between the amounts of the loans from IBRD, ADB and OECF in the irrigation sub-sector in DIP and the disbursed amounts at the end of fiscal year.(see Table 3.39 and Table 3.40) The progress of disbursement is on an average 80 % , but comparative low in 1991/92 and 1992/93 because the time of data collection is March and some amounts may remain on the way of administrative works.

Summary of Main Foreign Aid for Projects of Irrigation Sub-Sector in Repelita V

		Unit : Million Rupiah					
No.	Program	1989/90	1990/91	1991/92	1992/93	1993/94	Total
I	Rehabilitation and Maintenance of Irrigation Networks						
	DIP	169,311	89,031	196,438	164,129	171,512	790,421
	Real	154,285	78,065	117,103	102,994		623,960
	%	91.13%	87.68%	59.61%	62.75%		78.94%
II	Construction of New Irrigation Networks						
	DIP	273,742	250,495	333,129	334,913	331,025	1,523,303
	Real	229,021	204,385	225,559	240,397		1,230,387
	%	83.66%	81.59%	67.71%	71.78%		80.77%
III	Development of Swamp						
	DIP	28,628	15,181	17,101	11,384	9,070	81,364
	Real	25,303	11,319	7,520	9,038		62,249
	%	88.38%	74.56%	43.97%	79.39%		76.51%
	Total(Irrigation Sub-Sector)						
	DIP	471,680	354,707	546,668	510,426	511,607	2,395,087
	Real	408,609	293,769	350,182	352,429		1,916,596
	%	86.63%	82.82%	64.06%	69.05%		80.02%

Source: DIP and Realisasi Anggaran Proyek-Projek Pengairan , Aug. 1992 and March 1993

Note: Foreign Aid ; Loan from IBRD, ADB and OECF excluding other loans and program loan from OECF.

3.5 Unit Cost by Sub-Program

Available data to estimate unit costs in 1992/93 of existing projects by sub-program are found in three years data from 1989/90 to 1991/92 in the Mid Term Review. The equivalent unit cost in 1991/92 of the average unit cost of existing projects during 1989/90 to 1991/90 is estimated by sub-program using the wholesale price index of construction materials for Public Works in Agriculture in Indikator Ekonomi, and then the unit cost for 1992/93 is estimated using the ratio of 9% for annual increase to the unit cost in 1992 as summarized in Table 3.41. The following table shows the results of the above estimation and Tables from 3.42 to 3.57 gives the results of average unit costs by projects or by province during 1989/90 to 1991/92.

Summary of Unit Costs for 1992/93 by Sub-Program

No.	Sub-Program	Type	Unit	Unit Cost in 1992/93
1	New Construction	New Construction	Rp. 1000/ha	7,500
		Extension	Rp. 1000/ha	4,200
		Groundwater Development	Rp. 1000/ha	6,300
2	Rehabilitation	Rehabilitation	Rp. 1000/ha	3,000
		Provincial	Rp. 1000/ha	2,200
		Central Government	Rp. 1000/ha	4,500
3	Special Maintenance		Rp. 1000/ha	300
4	Handing over small projects		Rp. 1000/ha	200
5	O&M	Current O&M	Rp./ha	16,000
		Surface Irrigation	Rp./ha	17,300
		Swamp Development	Rp./ha	11,700
6	EOM	EOM	Rp./ha	31,300
		Surface Irrigation	Rp./ha	31,000
		Swamp Development	Rp./ha	33,600
7	Upgrading of Swamp	Upgrading of Swamp	Rp. 1000/ha	700
		Tidal Swamp	Rp. 1000/ha	700
		Non-Tidal Swamp	Rp. 1000/ha	700
8	Land Development	Land Clearing/Leveling	Rp. 1000/ha	500
9	Village Irrigation		Rp. 1000/ha	500

Source : JICA, FIDP Team

Tables

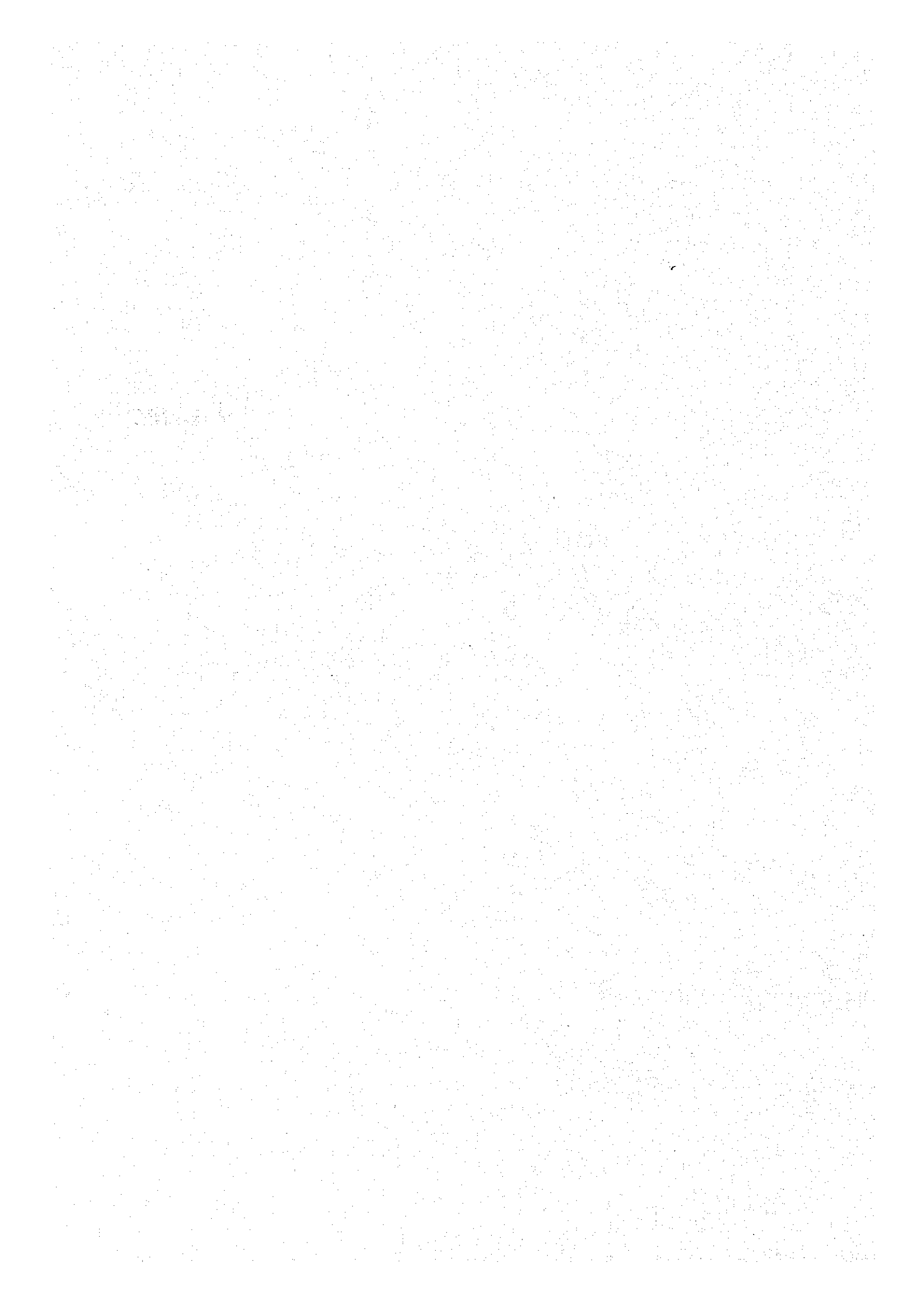


Table 1.1 Irrigation Development Achievements and Expenditures during Repelita I, II, III and IV

Division	Rep I		Rep II		Rep III		Repelita IV				Total	
	1969/74	Total	1974/79	Total	1979/84	Total	1984/1985	1985/1986	1986/1987	1987/1988		1988/1989
Physical Achievements ('000 ha)												
Irrigation Rehabilitation	957.8	513.5	320.7	60.2	31.0	36.5	153.3	120.3	401.3			
Irrigation Extension	171.2	255.5	369.8	49.1	63.8	21.9	59.9	23.7	218.4			
River and Flood Control	286.6	431.1	387.9	83.0	150.7	24.4	50.9	133.9	442.9			
Swamp & Tidal Development	199.6	218.6	438.9	48.0	54.4	45.1	18.0	26.4	191.9			
Total	1,615.2	1,418.7	1,517.3	240.3	299.9	127.9	282.1	304.3	1,254.5			
Development Budget Allocation (Rp billion)												
Irrigation Rehabilitation	50.0	144.0	416.4	89.9	77.1	34.1	38.9	21.7	261.7			
Irrigation Extension	25.0	195.7	658.4	142.0	125.2	67.6	43.1	39.4	417.3			
River and Flood Control				90.4	89.5	51.0	36.7	62.3	329.9			
Swamp & Tidal Development				23.0	19.6	7.4	5.0	19.8	74.8			
Other Support Programs	39.4	204.9	588.7				1.6	2.1	3.7			
Subtotal	114.4	544.6	1,663.5	345.3	311.4	160.1	125.3	145.3	1,087.4			
Routine Expenditures a/ (Rp billion)	1.4	7.0	21.0	7.0	8.6	11.4	10.6	10.9	48.5			
Foreign Aid b/ (Rp billion)	30.6	151.5	505.6	206.2	181.3	264.4	646.8	1,364.3	2,663.0			
Expenditure Total (Rp billion)	146.4	703.1	2,190.1	558.5	501.3	435.9	782.7	1,520.5	3,798.9			
Expenditure Total (\$ million) c/	364.0	1,624.0	3,206.1	564.1	475.2	310.5	476.1	899.7	2,725.6			
Foreign Aid as Percentage of Total Development Expenditure (20.9	21.5	23.1	36.9	36.2	60.7	82.6	89.7	70.1			

a/ Includes Salaries for Permanent staff, Office Equipment and supporting service, etc.

b/ Exchange rates used to convert foreign currency to Rp were the official rates prevailing in year of disbursement.

c/ Conversation rates for 1969/71 - \$1 = Rp 380; 1971/72 to 1977/78 - \$1 = Rp 415; 1978/79 - \$1 Rp 485; 1979/81 to 1982/83 - \$1 = Rp 625; 1983/84 - \$1 = Rp 970; 1984/85 - \$1 = Rp 990; 1985/86 - \$1 = Rp 1055; 1986/87 - \$1 = 1404; 1987/88 - \$1 = 1644; 1988/89 - \$1 = 1690

Source : Appraisal of the Integrated Irrigation Sector Project by ADB, March 1990

Table 1.2 Physical Program, Target and Progress for DGWRD in Repelika V

Program / Project	Unit	1990/91		1991/92		1992/93		1993/94		REPELITA V						
		Program	Target	Program	Target	Program	Target	Program	Target	Program	Target					
Sub-Sector: Irrigation																
Efficient O&M (EOM)	ha	831,600	912,170	979,994	1,202,300	1,277,975	1,267,875	1,573,400	1,392,935	1,360,987	1,869,300	1,270,444	1,337,945	2,328,400	1,283,458	1,283,458
New Construction (NF)	ha	104,810	102,431	102,849	99,950	83,068	83,455	94,847	88,860	77,309	100,237	102,905	64,182	532,049	475,404	428,535
Handing over Small Schemes (PK)	ha	21,000	39,602	14,358	44,000	52,787	19,696	60,000	61,177	33,726	81,220	52,637	0	307,220	302,724	216,958
Rehabilitation (REH)	ha	68,307	146,239	104,411	67,561	168,078	99,912	76,833	246,351	79,595	72,100	87,061	95,909	342,446	715,899	447,997
Special Maintenance (SM)	ha	160,900	46,824	67,303	150,000	45,883	136,940	150,000	389,284	182,480	196,651	190,892	186,539	849,177	816,921	717,500
Tertiary Development (TER)	ha	0	62,459	0	0	73,024	0	0	49,221	0	0	0	0	82,629	269,333	82,629
Village Irrigation Development (II)	ha	0	0	0	0	0	0	0	0	0	0	0	0	4,085	0	4,085
Flood Control (FC)	ha	0	0	0	0	0	0	0	0	0	0	0	0	3,000	3,000	3,000
Maintenance of River (RM)	ha	0	0	0	0	0	0	0	0	0	0	0	0	40	40	40
Development of Fish Pond (DF)	ha	500	0	0	1,218	0	0	2,119	0	0	0	0	n.a.	4,837	300	300
Upgrading of Fish Pond (UF)	ha	9,067	0	3,820	12,507	0	2,685	10,816	0	3,913	1,410	0	n.a.	40,499	300	10,818
Upgrading of Swamp (US)	ha	86,264	0	131,224	88,304	0	41,227	86,835	0	56,452	143,987	0	n.a.	505,322	129,868	353,771
Rehabilitation (REH)	ha	0	0	0	0	0	0	0	0	0	0	0	0	11,290	0	11,290
New Construction (NS)	ha	0	0	0	0	0	0	0	0	0	0	0	0	10,404	0	10,404
Flood Control (FC)	ha	0	0	0	0	0	0	0	0	0	0	0	0	3,500	0	3,500
Sector: Education and Research																
Education (ED)	nos	0	n.a.	0	0	n.a.	0	0	n.a.	0	0	0	n.a.	0	0	0
Research (RE)	nos	44	n.a.	10	41	n.a.	23	83	n.a.	38	38	n.a.	n.a.	40	40	149
Sub-Sector: National Resources																
Exploitation (EPS)	nos	0	n.a.	0	0	n.a.	0	0	n.a.	0	113	n.a.	n.a.	226	226	226
Flood Control (FC)	ha	69,250	n.a.	73,008	87,950	n.a.	85,031	18,569	n.a.	116,450	88,634	n.a.	n.a.	354,553	453,273	453,273
Maintenance of River (RM)	km	2,520	n.a.	629	2,667	n.a.	2,253	2,830	n.a.	1,816	2,969	n.a.	n.a.	14,168	14,168	10,849
Central Area Development (CP)	nos	2	n.a.	0	2	n.a.	1	2	n.a.	0	2	n.a.	n.a.	10	10	5

source: Mid Term Review, DIP Every Year and DQI and II for Progress in 1992/93

Table 1.3 Summary of Budgetary Program, Target (DIP) and Actual Expenditure by Sector/Program in Repelita V

Unit: Million Rp.

Sector/ Sub-sector/Program	1989/90		1990/91		1991/92		1992/93		1993/94		Repelita V						
	Program	DIP	Actual	Program	DIP	Actual	Program	DIP	Actual	Program	DIP	Actual					
DGWRD	728,560	1,068,243	980,941	1,553,356	1,139,433	1,122,719	1,570,244	1,247,920	1,217,638	1,770,121	1,400,334	1,408,090	1,846,755	1,577,126	7,489,036	6,433,055	6,306,514
Sector: Agriculture and Irrigation	574,828	757,177	632,681	1,328,137	761,672	749,081	1,344,313	922,529	889,884	1,396,670	995,235	1,039,615	1,414,993	1,101,784	6,038,941	4,538,397	4,413,045
Sub-Sector: Irrigation	574,828	757,177	632,681	1,328,137	761,672	749,081	1,344,313	922,529	889,884	1,396,670	995,235	1,039,615	1,414,993	1,101,784	6,038,941	4,538,397	4,413,045
Program: Rehabilitation and Maintenance of Irrigation Networks	134,767	239,149	198,580	395,286	218,203	206,854	562,929	269,021	314,396	381,786	295,417	256,021	425,545	330,643	1,900,313	1,352,433	1,306,494
Program: Construction of New Irrigation Networks	369,246	462,351	383,766	757,003	490,728	483,347	597,465	585,070	531,582	819,837	639,660	667,586	801,930	705,075	3,345,481	2,882,885	2,771,356
Program: Development of Swamp	70,815	55,677	50,335	175,848	52,740	58,880	183,919	68,438	43,906	195,047	60,157	116,008	187,518	66,066	813,147	303,079	335,195
Sector: Education and Research	10,900	19,673	18,025	14,100	27,186	20,543	15,400	30,792	35,289	11,015	26,376	15,041	4,120	20,770	55,535	124,798	109,669
Sub-Sector: Education of Irrigation	3,600	5,219	5,200	4,700	5,237	4,014	5,000	4,592	5,000	0	4,413	3,224	0	3,760	13,300	23,221	21,199
Sub-Sector: Research of Irrigation	7,300	14,454	12,825	9,400	21,949	16,529	10,400	26,201	30,289	11,015	21,964	11,817	4,120	17,010	42,235	101,577	88,470
Sector: National Resources and Life Environment	142,832	291,392	330,235	211,119	350,575	353,095	210,531	294,599	292,465	362,436	378,723	353,434	427,642	454,572	1,334,560	1,769,860	1,783,801
Sub-Sector: National Resources	142,832	291,392	330,235	211,119	350,575	353,095	210,531	294,599	292,465	362,436	378,723	353,434	427,642	454,572	1,334,560	1,769,860	1,783,801
Program: Preservation of Forest, Land and Water	138,931	291,122	329,985	205,719	348,578	351,098	204,701	287,770	285,637	354,436	374,665	349,230	418,142	443,892	1,321,929	1,746,027	1,759,842
Program: Coastal Area Developer	3,901	279	250	5,400	1,997	1,997	5,830	6,828	6,828	8,000	4,058	4,204	9,500	10,680	32,631	23,833	23,959

Source: Mid Term Review, DIP every year and Data from SEITDIEN

Table 1.4 Share of Foreign Aid to Actual Expenditure in Repelita V

Unit : Million Rp.

Sector/Program	1989/90			1990/91			1991/92			1992/1993			1993/94			Total		
	Total Actual	Loan DIP	%	Total Actual	Loan DIP	%	Total Actual	Loan DIP	%	Total Actual	Loan DIP	%	Total DIP	Loan DIP	%	Total Actual	Loan DIP	%
DGWRD	980,941	816,303	83.2	1,122,719	732,298	65.2	1,217,638	714,412	58.7	1,408,090	751,841	53.4	1,577,126	797,275	50.6	6,306,514	3,812,130	60.4
Sub-Sector: Irrigation	632,681	606,704	95.9	749,081	504,206	67.3	889,884	533,502	60.0	1,039,615	522,495	50.3	1,101,784	555,659	50.4	4,413,045	2,722,566	61.7
Program: Rehabilitation and Maintenance of Irrigation Networks	198,580	185,192	93.3	206,854	126,088	61.0	314,396	152,655	48.6	256,021	171,727	67.1	330,643	191,595	57.9	1,306,484	827,257	63.3
Program: Construction of Irrigation Networks	383,766	382,127	99.6	483,347	348,098	72.0	531,582	348,361	65.5	667,586	335,075	50.2	705,075	349,343	49.5	2,771,356	1,763,004	63.6
Program: Development of Swamp	50,335	39,386	78.2	58,880	30,020	51.0	43,906	32,485	74.0	116,008	15,693	13.5	66,066	14,721	22.3	335,195	132,305	39.5
Sector: Education and Research	18,025	16,424	91.1	20,543	22,126	##	35,289	24,352	69.0	15,041	18,521	123.1	20,770	12,252	59.0	109,669	93,676	85.4
Sub-Sector: National Resources	330,235	193,175	58.5	353,095	205,966	58.3	292,465	156,559	53.5	353,434	210,824	59.7	454,572	229,365	50.5	1,788,801	995,888	55.8

Source: Mid Term Review, Data from SETDIJEN and Anggaran Pendapatan dan Belanja Negara, April 1989, 1990, 1991, 1992 and 1993

Table 1.5 Routine Expenditure for DGWRD during 1989/90 to 1993/94

Unit: Thousand Rp

Fiscal year	Division	Wage, Rice, Office Expenditure Office, Vehicle Official Trip				Total
		Overtime and Others	Electricity, Phone, and Other Service	Maintenance	and Subsidy	
1989/90	General Administration	1,660	352	108	124	2,243
	Irrigation Development	3,941	213	106	19	4,278
	Swamp and River Development	2,673	193	68	25	2,959
	Total	8,275	758	281	167	9,480
1990/91	General Administration	1,742	346	115	124	2,326
	Irrigation Development	4,970	232	116	26	5,343
	Swamp and River Development	2,917	239	75	30	3,261
	Total	9,629	817	306	179	10,930
1991/92	General Administration	1,985	422	155	136	2,698
	Irrigation Development	5,660	338	149	32	6,179
	Swamp and River Development	3,323	317	96	37	3,773
	Total	10,968	1,078	401	205	12,651
1992/93	General Administration	3,150	481	159	142	3,932
	Irrigation Development	6,215	346	152	34	6,746
	Swamp and River Development	3,943	348	103	39	4,433
	Total	13,308	1,175	413	215	15,111
1993/94	General Administration	2,983	691	248	192	4,114
	Irrigation Development	8,556	483	226	61	9,325
	Swamp and River Development	4,513	500	167	43	5,224
	Total	16,052	1,675	641	296	18,663
Pelita V	General Administration	11,520	2,292	784	717	15,314
	Irrigation Development	29,342	1,611	749	170	31,873
	Swamp and River Development	17,368	1,598	509	173	19,649
	Total	58,231	5,502	2,042	1,061	66,835

Source : SETDITJEN, DGWRD

Table 2.1 Change of Designed Area and Irrigated Area for PU Irrigation Schemes during 1982 to 1989

Unit : ha

Cord No.	Province	1982		1983		1988		1989		Difference (1989-1982)	
		Designed Area	Irrigated Area	Designed Area	Irrigated Area	Designed Area	Irrigated Area	Designed Area	Irrigated Area	Designed Area	Irrigated Area
11	D.I.Aceh	193,817	131,731	212,938	107,105	214,163	107,280	214,163	107,280	20,346	(24,451)
12	Sumatera Utara	282,487	163,167	262,902	153,922	264,879	159,994	259,059	158,232	(23,428)	(4,935)
13	Sumatera Barat	230,659	155,646	237,184	161,319	237,144	161,319	234,308	158,142	3,649	2,496
14	Riau	27,038	9,258	33,085	8,010	35,856	8,307	33,621	8,307	6,583	(951)
15	Jambi	19,976	7,781	26,150	12,037	26,498	13,886	26,498	14,288	6,522	6,507
16	Sumatera Selatan	56,676	31,350	77,868	34,009	85,244	47,325	87,418	48,467	30,742	17,117
17	Bengkulu	70,360	38,280	69,236	36,706	69,176	36,706	81,653	46,317	11,293	8,037
18	Lampung	166,686	75,434	173,470	82,929	173,449	86,253	172,249	86,253	5,563	10,819
	Sumatera	1,047,699	612,647	1,092,803	596,037	1,106,409	621,591	1,108,969	627,286	61,270	14,639
31	D.K.I.Jakarta	25,108	8,483	20,528	8,945	20,528	8,945	20,528	8,945	(4,580)	462
32	Jawa Barat	921,350	794,619	931,957	842,522	920,366	817,969	915,596	830,055	(5,754)	35,436
33	Jawa Tengah	813,234	704,465	804,656	700,830	831,653	781,900	834,181	790,709	20,947	86,244
34	D.I.Jogyakarta	67,733	59,143	68,746	59,789	58,982	52,550	61,150	54,873	(6,588)	(4,270)
35	Jawa Timur	959,547	933,288	956,719	924,919	948,699	925,418	938,395	930,449	(21,152)	(2,839)
	Jawa	2,786,972	2,499,998	2,782,606	2,537,005	2,780,228	2,586,782	2,769,850	2,615,031	(17,122)	115,033
51	Bali	60,019	57,218	85,379	75,243	88,812	79,319	89,123	82,612	29,104	25,394
52	Nusa Tenggara Barat	159,942	125,266	177,245	146,556	177,691	148,403	180,021	149,546	20,079	24,280
53	Nusa Tenggara Timur	46,267	17,594	42,865	19,339	43,272	21,415	43,462	22,456	(2,805)	4,862
54	Timor Timur	11,677	1,820	5,986	3,854	7,873	6,042	7,873	6,042	(3,804)	4,222
	Bali/Nusa Tenggara	277,905	201,898	311,475	244,792	317,648	255,179	320,479	260,656	42,574	58,758
61	Kalimantan Barat	12,867	6,777	22,783	9,104	22,783	9,104	21,931	9,038	9,064	2,261
62	Kalimantan Tengah	3,086	1,145	3,097	1,937	4,407	2,139	4,365	1,896	1,279	751
63	Kalimantan Selatan	32,087	9,043	33,098	8,558	33,241	10,729	33,241	11,214	1,154	2,171
64	Kalimantan Timur	75,980	13,606	32,315	5,164	32,315	5,619	32,315	5,619	(43,665)	(7,987)
	Kalimantan	124,920	30,571	91,293	24,763	92,746	27,591	91,852	27,767	(32,168)	(2,804)
71	Sulawesi Utara	51,827	37,491	64,051	44,960	66,263	48,149	66,688	48,984	14,861	11,493
72	Sulawesi Tengah	49,483	27,733	63,889	34,690	72,710	40,884	89,147	51,159	39,664	23,426
73	Sulawesi Selatan	276,637	176,260	287,052	181,485	291,407	210,244	291,214	210,641	14,577	34,381
74	Sulawesi Tenggara	31,388	6,906	53,844	11,311	54,138	16,098	54,138	19,679	22,750	12,773
	Sulawesi	409,335	248,390	468,836	272,446	484,518	315,375	501,187	330,463	91,852	82,073
81	Maluku	12,621	4,929	16,249	6,178	15,973	9,848	15,973	9,848	3,352	4,919
82	Irian Jaya	16,400	1,424	15,517	1,190	21,948	2,291	9,990	2,122	(6,410)	698
	Maluku/Irian Jaya	29,021	6,353	31,766	7,368	37,921	12,139	25,963	11,970	(3,058)	5,617
	INDONESIA	4,674,952	3,599,857	4,778,779	3,682,411	4,819,470	3,818,657	4,818,300	3,873,173	143,348	273,316

Source : Rekapitulasi Daerah Irigasi PU

Table 2.2 Change of Ratios between Designed Area and Irrigated Area for PU Irrigation Schemes (ha)

Cord No.	Province	1982				1983				1989			
		Designed Area(A)	Irrigated Area(B)	(B)/(A)		Designed Area(A)	Irrigated Area(B)	(B)/(A)		Designed Area(A)	Irrigated Area(B)	(B)/(A)	
11	D.I.Aceh	193,817	131,731	0.68	212,958	107,105	0.50	214,163	107,280	0.50	214,163	107,280	0.50
12	Sumatera Utara	282,487	163,167	0.58	262,902	153,922	0.59	264,879	159,994	0.60	259,059	158,232	0.61
13	Sumatera Barat	230,659	155,646	0.67	237,184	161,319	0.68	237,144	161,319	0.68	234,308	158,142	0.67
14	Riau	27,038	9,258	0.34	33,035	8,010	0.24	35,856	8,828	0.25	33,621	8,307	0.25
15	Jambi	19,976	7,781	0.39	26,150	12,037	0.46	26,498	13,886	0.52	26,498	14,288	0.54
16	Sumatera Selatan	56,676	31,350	0.55	77,868	34,009	0.44	85,244	47,325	0.56	87,418	48,467	0.55
17	Bengkulu	70,360	38,280	0.54	69,236	36,706	0.53	69,176	36,706	0.53	81,653	46,317	0.57
18	Lampung	166,686	75,434	0.45	173,470	82,929	0.48	173,449	86,253	0.50	172,249	86,253	0.50
	Sumatera	1,047,699	612,647	0.58	1,092,803	596,037	0.55	1,106,409	621,591	0.56	1,108,969	627,286	0.57
31	D.K.I.Jakarta	25,108	8,483	0.34	20,528	8,945	0.44	20,528	8,945	0.44	20,528	8,945	0.44
32	Jawa Barat	921,350	794,619	0.86	931,957	842,522	0.90	920,366	817,969	0.89	915,596	830,055	0.91
33	Jawa Tengah	813,234	704,465	0.87	804,656	700,830	0.87	831,653	781,900	0.94	834,181	790,709	0.95
34	D.I.Jogyakarta	67,733	59,143	0.87	68,746	59,789	0.87	58,982	52,550	0.89	61,150	54,873	0.90
35	Jawa Timur	959,547	933,288	0.97	956,719	924,919	0.97	948,699	925,418	0.98	938,395	930,449	0.99
	Jawa	2,786,972	2,499,998	0.90	2,782,606	2,537,005	0.91	2,780,228	2,586,782	0.93	2,769,850	2,615,031	0.94
51	Bali	60,019	57,218	0.95	85,379	75,243	0.88	88,812	79,319	0.89	89,123	82,612	0.93
52	Nusa Tenggara Barat	159,942	125,266	0.78	177,245	146,356	0.83	177,691	148,403	0.84	180,021	149,546	0.83
53	Nusa Tenggara Timur	46,267	17,594	0.38	42,865	19,339	0.45	43,272	21,415	0.49	43,462	22,456	0.52
54	Timor Timur	11,677	1,820	0.16	5,986	3,854	0.64	7,873	6,042	0.77	7,873	6,042	0.77
	Bali/Nusa Tenggara	277,905	201,898	0.73	311,475	244,792	0.79	317,648	255,179	0.80	320,479	260,656	0.81
61	Kalimantan Barat	12,867	6,777	0.53	22,783	9,104	0.40	22,783	9,104	0.40	21,931	9,038	0.41
62	Kalimantan Tengah	3,086	1,145	0.37	3,097	1,937	0.63	4,407	2,139	0.49	4,365	1,896	0.43
63	Kalimantan Selatan	32,087	9,043	0.28	33,098	8,558	0.26	33,241	10,729	0.32	33,241	11,214	0.34
64	Kalimantan Timur	75,980	13,606	0.18	32,315	5,164	0.16	32,315	5,619	0.17	32,315	5,619	0.17
	Kalimantan	124,020	30,571	0.25	91,293	24,763	0.27	92,746	27,591	0.30	91,852	27,767	0.30
71	Sulawesi Utara	51,827	37,491	0.72	64,051	44,960	0.70	66,263	48,149	0.73	66,688	48,984	0.73
72	Sulawesi Tengah	49,483	27,733	0.56	63,889	34,690	0.54	72,710	40,884	0.56	89,147	51,159	0.57
73	Sulawesi Selatan	276,637	176,260	0.64	287,052	181,485	0.63	291,407	210,244	0.72	291,214	210,641	0.72
74	Sulawesi Tenggara	31,388	6,906	0.22	53,844	11,311	0.21	54,138	16,098	0.30	54,138	19,679	0.36
	Sulawesi	409,335	248,390	0.61	468,836	272,446	0.58	484,518	315,375	0.65	501,187	330,463	0.66
81	Maluku	12,621	4,929	0.39	16,249	6,178	0.38	15,973	9,848	0.62	15,973	9,848	0.62
82	Irian Jaya	16,400	1,424	0.09	15,517	1,190	0.08	21,948	2,291	0.10	9,990	2,122	0.21
	Maluku/Irian Jaya	29,021	6,353	0.22	31,766	7,368	0.23	37,921	12,139	0.32	25,963	11,970	0.46
	INDONESIA	4,674,952	3,599,857	0.77	4,778,779	3,682,411	0.77	4,819,470	3,818,657	0.79	4,818,300	3,873,173	0.80

Source : Rekaptulasi Daerah Irigasi PU

Table 2.3 Change of Areas by Technical Level for Pu Irrigation Schemes (Technical)

Unit: ha

Code	Province	1985		1988		1989		Ratio (B)/(A)
		Designd Area (A)	Irrigated Area (B)	Designd Area (A)	Irrigated Area (B)	Designd Area (A)	Irrigated Area (B)	
11	D.I.Aceh	6,854	4,233	6,854	4,233	6,854	4,233	0.62
12	Sumatera Utara	86,203	63,190	91,922	68,756	87,135	67,077	0.77
13	Sumatera Barat	45,880	27,970	45,880	27,970	47,927	29,592	0.62
14	Riau	2,939	2,080	2,939	2,080	2,939	2,080	0.71
15	Jambi	3,671	373	2,443	799	2,443	799	0.33
16	Sumatera Selatan	27,899	25,665	29,848	26,782	29,848	26,782	0.90
17	Bengkulu	29,740	12,926	29,680	12,926	37,739	17,432	0.46
18	Lampung	146,250	67,890	146,250	70,388	145,050	70,388	0.49
	Sumatera	349,436	204,327	355,816	213,934	359,935	218,383	0.61
31	D.K.I.Jakarta	200	87	200	87	200	87	0.44
32	Jawa Barat	703,372	655,646	693,578	633,357	694,984	651,485	0.94
33	Jawa Tengah	486,595	444,807	494,920	482,138	520,031	506,856	0.97
34	D.I.Jogyakarta	28,111	24,797	26,076	22,804	24,511	21,343	0.87
35	Jawa Timur	744,120	723,298	737,493	725,238	737,314	733,299	0.99
	Jawa	1,962,398	1,848,635	1,952,267	1,863,624	1,977,040	1,913,070	0.97
51	Bali	0	0	0	0	27,745	26,385	0.95
52	Nusa Tenggara Barat	44,948	40,381	45,827	42,571	45,969	42,692	0.93
53	Nusa Tenggara Timur	16,569	6,986	8,793	5,000	8,793	6,226	0.71
54	Timor Timur	0	0	0	0	0	0	
	Bali & Nusa Tenggara	61,517	47,367	54,620	47,571	82,507	75,303	0.91
61	Kalimantan Barat	716	281	716	281	716	244	0.34
62	Kalimantan Tengah	0	0	0	0	0	0	
63	Kalimantan Selatan	19,786	4,302	19,786	5,511	19,839	5,876	0.30
64	Kalimantan Timur	0	0	0	0	0	0	
	Kalimantan	20,502	4,583	20,502	5,792	20,555	6,120	0.30
71	Sulawesi Utara	25,050	16,556	28,317	19,071	28,220	19,680	0.70
72	Sulawesi Tengah	20,223	9,336	21,488	11,760	32,576	19,763	0.61
73	Sulawesi Selatan	156,413	109,765	170,252	138,184	169,171	137,301	0.81
74	Sulawesi Tenggara	31,485	3,599	31,761	5,917	31,761	8,844	0.28
	Sulawesi	233,171	139,256	251,818	174,932	261,728	185,588	0.71
81	Maluku	0	0	0	0	0	0	
82	Irian Jaya	0	0	0	0	0	0	
	Maluku & Irian Jaya	0	0	0	0	0	0	
	Indonesia	2,627,024	2,244,168	2,635,023	2,305,853	2,701,765	2,398,464	0.89

Source: Rekapitulasi Daerah Irigasi PU

Table 2.4 Change of Areas by Technical Level for PU Irrigation Schemes (Semi-Technical)

Unit: ha

Province	1985			1988			1989		
	Designd Area (A)	Irrigated Area (B)	(B)/(A)	Designd Area (A)	Irrigated Area (B)	(B)/(A)	Designd Area (A)	Irrigated Area (B)	(B)/(A)
	11 D.I.Aceh	90,124	70,225	0.78	90,124	70,225	0.78	90,124	70,225
12 Sumatera Utara	145,447	78,389	0.54	145,413	80,846	0.56	144,958	81,321	0.56
13 Sumatera Barat	93,149	65,612	0.70	93,109	65,612	0.70	87,337	65,395	0.75
14 Riau	30,096	5,930	0.20	32,917	6,748	0.21	30,232	6,227	0.21
15 Jambi	16,115	9,891	0.61	18,130	12,378	0.68	18,130	12,665	0.70
16 Sumatera Selatan	47,878	8,344	0.17	46,757	16,688	0.36	48,601	17,550	0.36
17 Bengkulu	22,897	16,059	0.70	22,897	16,059	0.70	28,797	21,364	0.74
18 Lampung	19,701	12,571	0.64	19,680	13,315	0.68	19,680	13,315	0.68
Sumatera	455,407	267,021	0.57	469,027	281,871	0.60	467,859	288,062	0.62
31 D.K.I.Jakarta	18,489	8,287	0.45	18,489	8,287	0.45	18,489	8,287	0.45
32 Jawa Barat	121,499	98,273	0.81	122,346	100,054	0.82	120,980	98,508	0.81
33 Jawa Tengah	107,155	94,745	0.88	121,592	112,451	0.92	110,795	105,261	0.95
34 D.I.Jogyakarta	31,299	27,036	0.86	28,444	26,164	0.92	32,394	30,133	0.93
35 Jawa Timur	136,787	128,288	0.94	136,157	127,524	0.94	110,637	108,713	0.98
Jawa	415,229	356,629	0.86	427,028	374,480	0.88	393,295	350,902	0.89
51 Bali	77,304	71,503	0.92	83,195	75,671	0.91	58,103	53,735	0.92
52 Nusa Tenggara Barat	121,936	99,032	0.81	123,758	99,866	0.81	126,311	101,203	0.80
53 Nusa Tenggara Timur	15,983	7,356	0.46	26,589	11,588	0.44	26,779	11,403	0.43
54 Timor Timur	0	0		7,873	6,042	0.77	7,873	6,042	0.77
Bali & Nusa Tenggara	215,223	177,891	0.83	241,415	193,167	0.80	219,066	172,483	0.79
61 Kalimantan Barat	20,401	7,865	0.39	20,401	7,865	0.39	19,415	7,720	0.40
62 Kalimantan Tengah	1,272	495	0.39	1,272	495	0.39	1,357	495	0.36
63 Kalimantan Selatan	7,852	2,787	0.35	7,807	3,660	0.47	7,807	3,689	0.47
64 Kalimantan Timur	8,075	2,506	0.31	8,075	2,868	0.36	8,075	2,868	0.36
Kalimantan	37,600	13,653	0.36	37,555	14,888	0.40	36,654	14,772	0.40
71 Sulawesi Utara	33,652	24,573	0.73	32,597	25,304	0.78	33,354	25,530	0.77
72 Sulawesi Tengah	27,874	16,271	0.58	35,486	20,909	0.59	39,962	22,063	0.55
73 Sulawesi Selatan	69,342	43,289	0.62	55,005	33,293	0.61	54,946	33,293	0.61
74 Sulawesi Tenggara	22,359	7,712	0.34	22,377	10,181	0.45	22,377	10,835	0.48
Sulawesi	153,227	91,845	0.60	145,465	89,687	0.62	150,639	91,721	0.61
81 Maluku	0	0		0	0		0	0	
82 Irian Jaya	4,063	300	0.07	7,063	510	0.07	3,959	550	0.14
Maluku & Irian Jaya	4,063	300	0.07	7,063	510	0.07	3,959	550	0.14
Indonesia	1,290,749	907,359	0.70	1,327,553	954,603	0.72	1,271,472	918,490	0.72

Source: Rekapulasi Daerah Irigasi PU

Table 2.5 Change of Areas by Technical Level for PU Irrigation Schemes (Simple)

Unit: ha

Code	Province	1985			1988			1989		
		Designd Area (A)	Irrigated Area (B)	(B)/(A)	Designd Area (A)	Irrigated Area (B)	(B)/(A)	Designd Area (A)	Irrigated Area (B)	(B)/(A)
11	D.I.Aceh	115,980	32,647	0.28	117,185	32,822	0.28	117,185	32,822	0.28
12	Sumatera Utara	31,252	12,343	0.39	27,544	10,392	0.38	26,966	9,834	0.36
13	Sumatera Barat	98,155	67,737	0.69	98,155	67,737	0.69	99,189	63,155	0.64
14	Riau	0	0		0	0		450	0	0.00
15	Jambi	6,364	1,773	0.28	5,925	709	0.12	5,925	824	0.14
16	Sumatera Selatan	2,091	8,639	0.00	8,639	3,855	0.45	8,969	4,135	0.46
17	Bengkulu	16,599	7,721	0.47	16,599	7,721	0.47	15,247	7,521	0.49
18	Lampung	7,519	2,468	0.33	7,519	2,550	0.34	7,519	2,550	0.34
	Sumatera	277,960	124,689	0.45	281,566	125,786	0.45	281,450	120,841	0.43
31	D.K.I.Jakarta	1,839	571	0.31	1,839	571	0.31	1,839	571	0.31
32	Jawa Barat	107,086	88,603	0.83	104,442	84,558	0.81	99,620	80,062	0.80
33	Jawa Tengah	210,906	161,278	0.76	215,141	187,311	0.87	203,355	178,592	0.88
34	D.I.Jogyakarta	9,336	7,956	0.85	4,462	3,582	0.80	4,245	3,397	0.80
35	Jawa Timur	75,812	73,333	0.97	75,049	72,656	0.97	90,561	88,437	0.98
	Jawa	404,979	331,741	0.82	400,933	348,678	0.87	399,620	351,059	0.88
51	Bali	8,075	3,740	0.46	5,617	3,648	0.65	3,275	2,492	0.76
52	Nusa Tenggara Barat	10,361	6,943	0.67	8,106	5,966	0.74	7,741	5,551	0.72
53	Nusa Tenggara Timur	10,313	4,997	0.48	7,890	4,827	0.61	7,890	4,827	0.61
54	Timor Timur	5,986	3,854	0.64	0	0		0	0	
	Bali & Nusa Tenggara	34,735	19,534	0.56	21,613	14,441	0.67	18,906	12,870	0.68
61	Kalimantan Barat	1,666	958	0.58	1,666	958	0.58	1,800	1,074	0.60
62	Kalimantan Tengah	1,825	1,442	0.79	3,135	1,644	0.52	3,203	1,401	0.44
63	Kalimantan Selatan	5,460	1,469	0.27	5,648	1,558	0.28	5,648	1,649	0.29
64	Kalimantan Timur	24,240	2,658	0.11	24,240	2,751	0.11	24,240	2,751	0.11
	Kalimantan	33,191	6,527	0.20	34,689	6,911	0.20	34,891	6,875	0.20
71	Sulawesi Utara	5,349	3,831	0.72	5,349	3,774	0.71	5,349	3,774	0.71
72	Sulawesi Tengah	15,792	9,083	0.58	15,736	8,215	0.52	17,231	9,333	0.54
73	Sulawesi Selatan	61,297	28,431	0.46	66,150	38,767	0.59	67,097	40,047	0.60
74	Sulawesi Tenggara	0	0		0	0		0	0	
	Sulawesi	82,438	41,345	0.50	87,235	50,756	0.58	89,677	53,154	0.59
81	Maluku	16,249	6,178	0.38	15,973	9,848	0.62	15,973	9,848	0.62
82	Irian Jaya	11,454	890	0.08	14,885	1,781	0.12	6,031	1,572	0.26
	Maluku & Irian Jaya	27,703	7,068	0.26	30,858	11,629	0.38	22,004	11,420	0.52
	Indonesia	861,006	530,904	0.62	856,894	558,201	0.65	846,548	556,219	0.66

Source: Rekapitulasi Daerah Irigasi PU

Table 2.6 Swamp Development Area during Pelita I, II, III and IV

Code	Province	Unit:ha													
		Pelita I		Pelita II		Pelita III		Pelita IV		Total		Non-Tidal Swamp	Tidal Swamp		
		Non-Tidal Swamp	Tidal Swamp	Non-Tidal Swamp	Tidal Swamp	Non-Tidal Swamp	Tidal Swamp	Non-Tidal Swamp	Tidal Swamp	Non-Tidal Swamp	Tidal Swamp				
11	D.I.Aceh	-	-	-	-	1,650	-	1,650	-	2,500	-	2,500	-	4,150	-
12	Sumatera Utara	3,800	-	1,512	-	2,100	-	2,100	-	4,900	-	4,900	-	12,312	-
13	Sumatera Barat	-	-	2,001	-	11,384	-	11,384	-	2,421	-	2,421	-	15,806	-
14	Riau	-	904	-	73,732	2,566	17,888	17,888	-	1,650	-	1,650	-	4,216	92,524
15	Jambi	-	6,802	-	32,280	1,865	26,320	26,320	1,882	1,900	1,900	3,747	3,747	66,702	66,702
16	Sumatera Selatan	6,450	9,827	6,050	78,280	2,400	189,574	189,574	250	39,600	39,600	15,150	15,150	317,281	317,281
17	Bengkulu	-	-	-	-	6,480	-	6,480	-	4,290	-	4,290	-	10,770	-
18	Lampung	-	-	2,250	-	10,200	-	10,200	-	12,000	20,000	24,480	24,480	20,000	20,000
	Sumatera	10,250	17,533	11,813	184,292	38,645	233,782	233,782	29,893	60,900	60,900	90,601	90,601	496,507	496,507
31	D.K.I.Jakarta	-	-	-	-	-	-	-	-	-	-	-	-	0	0
32	Jawa Barat	-	-	-	-	-	-	-	-	-	-	-	-	0	0
33	Jawa Tengah	-	-	-	-	-	-	-	-	-	-	-	-	0	0
34	D.I.Jogyakarta	-	-	-	-	-	-	-	-	-	-	-	-	0	0
35	Jawa Timur	-	-	-	-	-	-	-	-	-	-	-	-	0	0
	Jawa	-	-	-	-	-	-	-	-	-	-	-	-	0	0
51	Bali	-	-	-	-	-	-	-	-	-	-	-	-	0	0
52	Nusa Tenggara Barat	-	-	-	-	-	-	-	-	-	-	-	-	0	0
53	Nusa Tenggara Timur	-	-	-	-	-	-	-	-	1,000	-	1,000	-	1,000	-
54	Timor Timur	-	-	-	-	-	-	-	-	1,000	-	1,000	-	1,000	-
	Bali/Nusa Tenggara	-	-	-	-	-	-	-	-	2,000	-	2,000	-	2,000	-
61	Kalimantan Barat	4,213	2,730	2,563	35,964	8,710	28,605	28,605	3,172	6,999	6,999	18,658	18,658	74,298	74,298
62	Kalimantan Tengah	2,435	4,651	1,537	10,568	4,999	73,359	73,359	2,819	2,800	2,800	11,790	11,790	91,378	91,378
63	Kalimantan Selatan	9,917	8,178	4,363	17,898	7,750	17,029	17,029	6,050	2,705	2,705	28,080	28,080	45,810	45,810
64	Kalimantan Timur	-	-	-	-	5,124	-	5,124	-	1,660	-	1,660	-	6,784	-
	Kalimantan	16,565	15,559	8,463	64,430	26,583	118,993	118,993	13,701	12,504	12,504	65,312	65,312	211,486	211,486
71	Sulawesi Utara	-	-	-	-	-	-	-	-	-	-	-	-	0	0
72	Sulawesi Tengah	-	-	-	-	-	-	-	-	-	-	-	-	0	0
73	Sulawesi Selatan	-	-	-	-	-	-	-	-	-	-	-	-	0	0
74	Sulawesi Tenggara	-	-	-	-	-	-	-	-	-	-	-	-	0	0
	Sulawesi	-	-	-	-	-	-	-	-	-	-	-	-	0	0
81	Maluku	-	-	-	-	-	-	-	-	-	-	-	-	0	0
82	Irian Jaya	-	-	-	-	-	-	-	-	-	-	-	-	0	0
	Maluku/Irian Jaya	-	-	-	-	-	-	-	-	-	-	-	-	0	0
	INDONESIA	26,815	33,092	20,276	248,722	65,228	352,775	352,775	43,594	73,404	73,404	155,913	155,913	707,993	707,993

Source : Directorate of Swamp

Table 2.7 Summary of Inventory Results for Swamp Schemes

Code	Province	Functional Area for Agriculture				Not yet Functional for Agriculture (ha)
		Paddy (ha)	Upland (ha)	Treecrop (ha)	Total (ha)	
11	D.I.Aceh	2,980	0	100	3,080	24,830
12	Sumatera Utara	46,963	8,254	1,360	56,577	4,919
13	Sumatera Barat	6,022	1,977	1,422	9,421	5,426
14	Riau	64,656	20,227	58,996	143,879	45,468
15	Jambi	29,267	5,614	2,311	37,192	23,271
16	Sumatera Selatan	149,510	59,134	32,102	240,746	130,309
17	Bengkulu	3,590	3,150	0	6,740	8,910
18	Lampung	22,996	1,750	0	24,746	21,014
	Sumatera *)	325,984	100,106	96,291	522,381	264,147
31	D.K.I.Jakarta	-	-	-	-	-
32	Jawa Barat	-	-	-	-	-
33	Jawa Tengah	-	-	-	-	-
34	D.I.Jogyakarta	-	-	-	-	-
35	Jawa Timur	-	-	-	-	-
	Jawa	-	-	-	-	-
51	Bali	-	-	-	-	-
52	Nusa Tenggara Bara	-	-	-	-	-
53	Nusa Tenggara Timu	-	-	-	-	-
54	Timor Timur	-	-	-	-	-
	Bali/Nusa Tenggara	-	-	-	-	-
61	Kalimantan Barat	41,502	15,821	9,015	66,338	47,359
62	Kalimantan Tengah	125,185	57,989	0	183,174	27,475
63	Kalimantan Selatan	80,032	10,418	1,380	91,830	40,651
64	Kalimantan Timur	5,127	1,327	1,235	7,689	6,664
	Kalimantan *)	251,846	85,555	11,630	349,031	122,149
71	Sulawesi Utara	244	50	41	335	144
72	Sulawesi Tengah	3,325	125	375	3,825	9,687
73	Sulawesi Selatan	61,029	9,762	97,793	168,584	2,000
74	Sulawesi Tenggara	6,634	504	2,078	9,216	31,200
	Sulawesi **)	71,232	10,441	100,287	181,960	43,031
81	Maluku	-	-	-	-	-
82	Irian Jaya	-	-	-	-	-
	Maluku/Irian Jaya	-	-	-	-	-
	Total	649,062	196,102	208,208	1,053,372	429,327

Source: Directorate of Swamp, DGWRD

*) Inventarisasi Pemanfaatan Lahan RPS dan RNPS di SUMATERA dan KALIMANTAN
 Direktorat Rawa, Tahun 1989

**) Inventarisasi Pemanfaatan Lahan RPS dan RNPS di SULAWESI
 Direktorat Rawa, Tahun 1991

Table 2.8 Budgetary Arrangement of Current O&M and EOM for Irrigation, 1988/89

No.	Provinces	Area (ha)										Budget (Rp. 1,000.-)		
		O&M	EOM	Total	EOM/A.P.B.N.			APBD DAI/II			Total			
					Incremental Loan	GOI	Recurrent	Rupiah	Rp. + Loan	Total	Rupiah	Rp. + Loan		
3	4	5=3+4	6	7	8	9=7+8	10=6+9	11	12	13=11+12	14=9-13	15=10+13	16=15-5	
11	D.I.Aceh	128,706	0	128,706	0	0	0	0	0	0	0	1,140,390	1,140,390	8.86
12	Sumatera Utara	178,385	19,695	198,080	22,554	0	0	22,554	0	0	0	2,116,197	2,138,751	10.80
13	Sumatera Barat	189,452	14,207	203,659	184,691	0	168,634	353,325	0	0	0	1,297,010	1,650,335	8.10
14	Riau	24,424	0	24,424	0	0	0	0	0	0	0	134,678	134,678	5.51
15	Jambi	25,877	0	25,877	0	0	0	0	0	0	0	153,464	153,464	5.93
16	Sumatera Selatan	54,856	5,450	60,306	65,000	0	0	65,000	0	0	0	263,277	328,277	5.44
17	Bengkulu	53,164	0	53,164	0	0	0	0	0	0	0	217,267	217,267	4.09
18	Lampung	126,936	42,066	169,002	475,346	0	564,738	1,040,084	0	0	0	1,049,495	2,089,579	12.36
	Sumatera	781,800	81,418	863,218	747,591	0	733,372	1,480,963	0	0	0	6,371,778	7,852,741	9.10
31	D.K.I.Jakarta	15,053	0	15,053	0	0	0	0	0	0	0	685,000	685,000	45.51
32	Jawa Barat	414,853	159,873	574,726	2,188,801	0	193,905	2,382,706	0	0	0	4,835,000	7,217,706	12.56
33	Jawa Tengah	658,919	110,593	769,512	1,395,472	0	2,285,199	3,678,671	0	0	0	6,755,199	8,148,671	10.59
34	D.I.Yogyakarta	57,040	13,566	70,606	159,528	0	0	159,528	0	0	0	695,000	854,528	12.10
35	Jawa Timur	775,481	180,417	955,898	2,545,421	0	2,112,511	4,657,922	0	0	0	7,717,511	10,262,932	10.74
	Jawa	1,921,346	464,449	2,385,795	6,287,222	0	4,591,615	10,878,837	0	0	0	16,290,000	27,168,837	11.39
51	Bali	86,867	0	86,867	0	0	0	0	0	0	0	1,034,000	1,034,000	11.90
52	Nusa Tenggara Barat	162,801	10,500	173,301	128,100	0	936,500	1,064,600	0	0	0	1,742,000	2,806,600	16.19
53	Nusa Tenggara Timur	38,234	0	38,234	0	0	0	0	0	0	0	685,000	685,000	17.92
54	Timor Timur	5,426	0	5,426	0	0	0	0	0	0	0	79,000	79,000	14.56
	Bali/Nusa Tenggara	293,328	10,500	303,828	128,100	0	936,500	1,064,600	0	0	0	3,540,000	4,604,600	15.16
61	Kalimantan Barat	12,148	0	12,148	0	0	0	0	0	0	0	44,000	44,000	3.62
62	Kalimantan Tengah	4,186	0	4,186	0	0	0	0	0	0	0	18,482	18,482	4.42
63	Kalimantan Selatan	21,215	0	21,215	0	0	0	0	0	0	0	60,096	60,096	2.83
64	Kalimantan Timur	19,938	0	19,938	0	0	0	0	0	0	0	372,534	372,534	18.68
	Kalimantan	57,487	0	57,487	0	0	0	0	0	0	0	495,112	495,112	8.61
71	Sulawesi Utara	63,308	0	63,308	0	0	0	0	0	0	0	710,000	710,000	11.22
72	Sulawesi Tengah	67,931	0	67,931	0	0	0	0	0	0	0	850,000	850,000	12.51
73	Sulawesi Selatan	204,919	9,790	214,709	80,278	0	115,650	195,928	0	0	0	2,230,650	2,310,928	10.76
74	Sulawesi Tenggara	29,069	0	29,069	0	0	0	0	0	0	0	295,000	295,000	10.15
	Sulawesi	365,227	9,790	375,017	80,278	0	115,650	195,928	0	0	0	3,970,000	4,165,928	11.11
81	Mahuku	14,325	0	14,325	0	0	0	0	0	0	0	190,000	190,000	13.26
82	Irian Jaya	3,979	0	3,979	0	0	0	0	0	0	0	94,366	94,366	23.72
	Mahuku/Irian Jaya	18,304	0	18,304	0	0	0	0	0	0	0	284,366	284,366	15.54
	Total	3,437,492	566,157	4,003,649	7,243,191	0	6,377,137	13,620,328	0	0	0	30,951,256	44,571,584	11.13
	Jatuhur	314,980	16,025	331,005	206,723	0	0	206,723	0	0	0	300,000	306,723	1.53
	Total including	3,752,472	582,182	4,334,654	7,449,914	0	6,377,137	13,827,051	0	0	0	31,251,256	45,078,307	10.40

Note: 1. Based on meeting on May 13, 1988
 a. regarding the letter 'Mendagri No.611/416' from Bangda, Ministry of Home Affairs on February 15, 1988
 b. Provincial Inpres dependant on the letter from Director General of Bangda, No.950/901/Bangda on April 6.
 2. APBN and EOM based on DIP 1988/89 after revision
 Source: Sub-Div. of O&M, DOI-I
 Jakarta, November 16, 1988

Table 2.9 Budgetary Arrangement of Current O&M and EOM for Irrigation, 1989/90

No.	Province	Area (ha)				EOM/APBN										APBD DAI I			Total	Component Average/ha Rp.* Loan 15=10+13 16=15/5
		O&M	EOM	Total	Total	Incremental		Recurrent	Total	Total	INPRES	PBB	Total	Component						
		3	4	5=3+4	Total	Loan	GOI	8	Rupiah	Rp.* Loan 10=6+9	11	12	13=11+12	Rupiah	Rp.* Loan 15=10+13					
11	D.I.Aceh	127,815	3,800	131,615	53,200	0	9,000	9,000	62,200	1,325,040	0	1,325,040	1,334,040	1,387,240	10.54					
12	Sumatera Utara	173,978	32,815	206,793	408,674	55,146	194,534	249,680	658,154	2,101,771	0	2,101,771	2,351,251	2,759,925	13.35					
15	Sumatera Barat	244,297	21,085	265,382	259,767	33,423	156,682	192,105	451,872	2,637,504	0	2,637,504	2,829,409	3,089,176	11.64					
14	Riau	11,826	0	11,826	0	0	0	0	0	258,275	0	258,275	258,275	354,466	21.84					
15	Jambi	26,085	0	26,085	0	0	0	0	0	354,466	0	354,466	354,466	2,439,212	13.59					
16	Sumatera Selatan	87,350	15,238	102,588	187,732	25,600	63,880	89,480	277,212	2,162,000	0	2,162,000	2,251,480	675,000	23.78					
17	Bengkulu	26,888	0	26,888	0	0	0	0	0	675,000	0	675,000	675,000	2,770,714	25.10					
18	Lampung	124,269	51,030	175,299	628,690	83,730	508,245	590,975	1,219,665	1,551,049	0	1,551,049	2,142,024	15,81						
	Sumatera	822,508	123,968	946,476	1,538,063	201,899	929,141	1,131,040	2,669,103	0	0	11,066,945	12,195,945	13,734,008	14.51					
31	D.K.I.Jakarta	6,230	0	6,230	0	0	0	0	0	470,000	0	470,000	470,000	470,000	75.44					
32	Jawa Barat	349,995	204,131	554,126	2,514,894	342,940	2,316,282	2,659,222	5,174,116	1,868,812	0	1,868,812	3,169,254	10,684,148	19.28					
33	Jawa Tengah	655,738	158,102	813,840	1,947,817	263,611	1,694,340	1,960,451	3,908,268	6,825,449	0	6,825,449	8,773,266	1,223,840	10.78					
34	D.I. Yogyakarta	65,574	24,149	89,723	297,516	40,570	231,155	271,725	569,241	8,828,444	0	8,828,444	11,470,114	14,388,044	15.02					
35	Jawa Timur	721,359	236,845	958,204	2,917,930	397,900	2,243,770	2,641,670	5,559,600	20,328,073	0	20,328,073	27,861,141	35,539,298	14.67					
	Jawa	1,798,696	623,227	2,421,923	7,678,157	1,047,021	6,485,047	7,533,068	15,211,225	1,065,484	0	1,065,484	1,065,484	2,331,914	12.27					
51	Bali	86,867	0	86,867	0	0	0	0	0	649,994	0	649,994	649,994	82,589	15.04					
52	Nusa Tenggara Barat	164,694	20,693	185,387	254,938	34,764	173,400	208,164	463,102	82,589	0	82,589	82,589	13,88						
53	Nusa Tenggara Timur	43,213	0	43,213	0	0	0	0	0	3,875,043	0	3,875,043	4,129,981	12.85						
54	Timor Timur	5,952	0	5,952	0	0	0	0	0	792,853	0	792,853	792,853	45,359						
	Bali/Nusa Tenggara	300,726	20,693	321,419	254,938	34,764	173,400	208,164	463,102	0	0	0	0	193,952						
61	Kalimantan Barat	98,036	0	98,036	0	0	0	0	0	255,000	0	255,000	255,000	9.64						
62	Kalimantan Tengah	4,224	0	4,224	0	0	0	0	0	1,287,164	0	1,287,164	1,287,164	36.13						
63	Kalimantan Selatan	20,117	0	20,117	0	0	0	0	0	845,530	0	845,530	845,530	9.94						
64	Kalimantan Timur	7,058	0	7,058	0	0	0	0	0	964,800	0	964,800	964,800	13.04						
	Kalimantan	129,435	0	129,435	0	0	0	0	0	3,204,279	0	3,204,279	3,796,538	11.08						
71	Sulawesi Utara	64,856	0	64,856	0	0	0	0	0	348,240	0	348,240	348,240	15.25						
72	Sulawesi Tengah	87,065	0	87,065	0	0	0	0	0	5,362,849	0	5,362,849	5,955,108	10.04						
73	Sulawesi Selatan	200,822	48,073	248,895	592,259	80,763	393,976	474,739	1,066,998	155,000	0	155,000	155,000	1.42						
74	Sulawesi Tenggara	34,674	0	34,674	0	0	0	0	0	198,848	0	198,848	198,848	21.42						
	Sulawesi	387,418	48,073	435,491	592,259	80,763	393,976	474,739	1,066,998	0	0	0	353,848	353,848	56.70					
81	Mahuku	7,237	0	7,237	0	0	0	0	0	50,935,990	0	50,935,990	60,999,407	14.30						
82	Irian Jaya	3,507	0	3,507	0	0	0	0	0	912,708	0	912,708	1,711,327	5.17						
	Mahuku/Irian Jaya	10,744	0	10,744	0	0	0	0	0	0	0	0	0	0						
	Total	3,449,527	815,961	4,265,488	10,062,417	1,364,447	7,982,564	9,347,011	19,410,428	0	0	41,588,979	50,935,990	60,999,407	14.30					
	Jatituhur	266,182	64,823	331,005	798,619	199,655	713,033	912,708	1,711,327	0	0	0	912,708	1,711,327	5.17					
	Total including Jatituhur	3,715,709	880,784	4,596,493	10,862,036	1,564,102	8,695,617	10,259,719	21,121,755	0	0	41,588,979	51,848,698	62,710,734	13.84					

Notes:
 1. Area and budget (Provincial INPRES and PBB) depended on Allocation of APBD for Irrigation O&M from Bangda, September 1989.
 2. Area and budget for EOM based on revised DIP, September 1989 for each province.
 3. Cost for Jatituhur Project was paid by Jatituhur Authority.

Source:
 Sub-Dit. of O&M, DOI-I
 Jakarta, November 16, 1988

Table 2.10 Budgetary Arrangement of Current O&M and EOM for Irrigation, 1990/91

No.	Province	Area (ha)										Budget (Rp. 1,000,-)				
		O&M		EOM		Total		EOM/A/PBN		APBD DAIRI		Total				
		3	4	5=3+4	6	7	8	9=7+8	Total Rp.+ Loan	10=6+9	11	12	13=11+12	Component Rupiah	Component Rp.+ Loan	Average/ha
1	2													14=9+13	15=10+13	16=15:5
11	D.I.Aceh	124,961	9,745	128,706	58,910	5,130	38,200	43,330	102,240			1,710,774	1,754,104	1,813,014	14.09	
12	Sumatera Utara	156,003	44,491	200,494	575,839	180,928	314,561	495,489	1,071,928			2,424,004	2,919,493	3,495,332	17.43	
13	Sumatera Barat	179,502	24,157	203,659	293,290	71,964	248,036	320,000	613,290			2,596,875	2,916,875	3,210,165	15.76	
14	Riau	24,424	0	24,424	0	0	0	0	0			283,021	283,021	283,021	11.59	
15	Jambi	26,190	0	26,190	0	0	0	0	0			239,608	239,608	239,608	9.15	
16	Sumatera Selatan	47,129	16,601	63,730	201,555	49,454	159,418	208,872	410,425			558,616	757,488	969,041	15.21	
17	Bengkulu	53,164	0	53,164	0	0	0	0	0			710,802	710,802	710,802	13.37	
18	Lampung	106,122	62,880	169,002	763,427	187,320	493,664	680,984	1,444,411			1,627,834	2,308,818	3,072,245	18.18	
	Sumatera	717,495	151,874	869,369	1,893,019	494,796	1,253,879	1,748,675	3,641,694	0	0	10,151,534	11,900,209	13,793,228	15.87	
31	D.K.I.Jakarta	15,053	0	15,053	0	0	0	0	0			750,000	750,000	750,000	49.82	
32	Jawa Barat	343,247	224,611	567,858	2,724,564	671,566	2,505,134	3,176,700	5,901,264			5,943,805	9,120,505	11,845,069	20.86	
33	Jawa Tengah	530,666	277,638	808,304	2,925,497	717,712	3,319,257	4,036,969	6,962,466			8,594,000	12,630,969	15,556,466	19.25	
34	D.I. Yogyakarta	32,347	25,399	57,746	308,367	75,664	266,816	342,480	650,847			820,000	1,162,480	1,470,847	25.47	
35	Jawa Timur	676,910	270,052	946,962	3,270,293	812,155	2,504,598	3,716,753	6,987,046			9,750,817	13,467,570	16,737,865	17.68	
	Jawa	1,598,223	797,700	2,395,923	9,228,721	2,277,097	8,995,805	11,272,902	20,501,623	0	0	25,358,622	37,131,524	46,360,245	19.35	
51	Bali	86,867	0	86,867	0	0	0	0	0			1,160,547	1,160,547	1,160,547	13.36	
52	Nusa Tenggara Barat	152,019	22,193	174,212	269,445	66,113	256,548	322,661	592,106			2,280,120	2,602,781	2,872,226	16.49	
53	Nusa Tenggara Timur	39,927	0	39,927	0	0	0	0	0			1,000,000	1,000,000	1,000,000	25.05	
54	Timor Timur	7,313	0	7,313	0	0	0	0	0			107,812	107,812	107,812	14.74	
	Bali/Nusa Tenggara	286,126	22,193	308,319	269,445	66,113	256,548	322,661	592,106	0	0	4,548,479	4,871,140	5,140,585	16.67	
61	Kalimantan Barat	12,148	0	12,148	0	0	0	0	0			125,271	125,271	125,271	10.51	
62	Kalimantan Tengah	4,096	0	4,096	0	0	0	0	0			33,323	33,323	33,323	8.14	
63	Kalimantan Selatan	21,873	0	21,873	0	0	0	0	0			118,505	118,505	118,505	5.42	
64	Kalimantan Timur	19,590	0	19,590	0	0	0	0	0			125,810	125,810	125,810	6.42	
	Kalimantan	57,707	0	57,707	0	0	0	0	0			402,909	402,909	402,909	6.98	
71	Sulawesi Utara	64,490	0	64,490	0	0	0	0	0			1,059,150	1,059,150	1,059,150	16.42	
72	Sulawesi Tengah	67,931	0	67,931	0	0	0	0	0			996,332	996,332	996,332	14.67	
73	Sulawesi Selatan	174,374	64,934	239,308	788,363	193,438	647,796	841,234	1,629,597			3,488,810	4,330,044	5,118,407	21.39	
74	Sulawesi Tenggara	31,818	0	31,818	0	0	0	0	0			480,331	430,331	430,331	13.52	
	Sulawesi	338,613	64,934	403,547	788,363	193,438	647,796	841,234	1,629,597	0	0	5,974,623	6,815,557	7,504,220	18.84	
81	Maluku	15,683	0	15,683	0	0	0	0	0			225,682	225,682	225,682	14.39	
82	Irian Jaya	6,884	0	6,884	0	0	0	0	0			165,216	165,216	165,216	24.00	
	Maluku/Irian Jaya	22,567	0	22,567	0	0	0	0	0			390,898	390,898	390,898	17.52	
	Total	3,020,791	1,036,701	4,057,492	12,179,548	3,031,444	11,154,028	14,185,472	26,365,020	0	0	47,327,065	61,512,537	73,692,085	18.16	
	Jatituhur	259,065	71,264	330,329	865,216	0	0	0	865,216			0	0	865,216	2.62	
	Total including Jatituhur	3,279,796	1,107,965	4,387,761	13,044,764	3,031,444	11,154,028	14,185,472	27,230,236	0	0	47,327,065	61,512,537	74,557,301	16.99	

Note: 1. O&M to be taken from DIP 1990/91

2. Area and APBD budget to be taken from DIPDA (regional DIP; Source: Baangda)

Unit cost per ha of APBD for irrigation = for swamp by each province

*) APBD budget not to be taken from DIPDA, but to be based on Home Affairs Decree

Source: Sub-Dit. of O&M, DOI-I
Jakarta, October 1991

Table 2.11 Budgetary Arrangement of Current O&M and EOM for Irrigation, 1991/92

No.	Province	Area (ha)										Budget (Rp. 1,000.-)					
		O&M		EOM		Total		EOM/A/PBN		EOM/A/PBN		Total		AFBD DATHI		Total	
		3	4	5-3+4	6	7	8	9-7+8	10=6+9	11	12	13=11+12	14=9+13	15=10+13	16=15/5		
11	D.I.Aceh	118,647	10,059	128,706	240,905	19,000	96,184	115,184	356,089	0	0	2,261,434	2,261,434	19,44			
12	Sumatera Utara	153,931	44,525	198,456	454,656	337,039	737,631	1,074,670	1,539,305	0	0	4,256,057	4,256,057	23.79			
13	Sumatera Barat	177,776	24,157	201,933	231,566	119,295	352,825	472,118	703,684	0	0	3,485,436	3,485,436	18.41			
14	Riau	21,866	0	21,866	0	0	0	0	0	0	491,985	491,985	22.50				
15	Jambi	26,190	0	26,190	0	0	0	0	0	0	631,721	631,721	24.12				
16	Sumatera Selatan	48,570	17,129	65,699	110,923	99,226	272,153	371,979	482,302	0	0	1,537,059	1,537,059	25.08			
17	Bengkulu	72,047	0	72,047	0	0	0	0	0	0	1,024,451	1,024,451	14.22				
18	Lampung	99,921	69,081	169,002	715,965	368,829	987,000	1,365,829	2,081,794	0	0	3,360,829	3,360,829	24.12			
	Sumatera	713,948	164,951	883,899	1,763,994	943,387	2,455,793	3,399,180	5,163,174	0	0	17,048,992	17,048,992	21.28			
31	D.K.I.Jakarta	15,053	0	15,053	0	0	0	0	0	0	825,000	825,000	54.81				
32	Jawa Barat	329,696	213,884	543,580	1,526,315	786,284	2,589,749	3,376,033	4,902,348	0	0	10,327,107	11,853,422	21.81			
33	Jawa Tengah	519,263	291,261	810,524	3,720,640	1,085,273	3,692,354	4,777,627	8,498,267	0	0	13,277,627	16,998,267	20.97			
34	D.I.Yogyakarta	34,515	25,999	60,514	312,996	161,240	356,257	517,497	830,493	0	0	1,398,488	1,711,484	28.57			
35	Jawa Timur	656,540	281,922	938,462	3,508,290	1,783,898	3,377,899	5,161,797	8,670,087	0	0	16,606,777	20,115,067	21.43			
	Jawa	1,555,067	812,466	2,367,533	9,068,241	3,816,695	10,016,259	13,832,954	22,901,195	0	0	42,494,999	51,503,240	21.75			
51	Bali	89,123	0	89,123	0	0	0	0	0	0	1,354,235	1,354,235	15.20				
52	Nusa Tenggara Barat	150,658	22,339	172,997	390,932	0	357,618	357,618	748,550	0	0	3,537,256	3,728,188	21.55			
53	Nusa Tenggara Timur	40,077	0	40,077	0	0	0	0	0	0	901,540	901,540	22.50				
54	Timor Timur	7,313	0	7,313	0	0	0	0	0	0	128,000	128,000	17.50				
	Bali/Nusa Tenggara	237,171	22,339	309,510	390,932	0	357,618	357,618	748,550	0	0	5,721,031	6,111,963	19.75			
61	Kalimantan Barat	12,512	0	12,512	0	0	0	0	0	0	216,464	216,464	17.30				
62	Kalimantan Tengah	3,788	0	3,788	0	0	0	0	0	0	29,213	29,213	7.71				
63	Kalimantan Selatan	21,926	0	21,926	0	0	0	0	0	0	53,517	53,517	2.44				
64	Kalimantan Timur	19,590	0	19,590	0	0	0	0	0	0	244,438	244,438	12.48				
	Kalimantan	57,816	0	57,816	0	0	0	0	0	0	543,632	543,632	9.40				
71	Sulawesi Utara	66,025	0	66,025	0	0	0	0	0	0	1,400,000	1,400,000	21.20				
72	Sulawesi Tengah	84,741	0	84,741	0	0	0	0	0	0	2,465,950	2,465,950	29.10				
73	Sulawesi Selatan	175,400	63,577	238,977	745,395	383,992	792,838	1,176,830	1,922,225	0	0	4,814,640	5,560,035	23.27			
74	Sulawesi Tenggara	45,541	0	45,541	0	0	0	0	0	0	1,122,293	1,122,293	24.64				
	Sulawesi	371,707	63,577	435,284	745,395	383,992	792,838	1,176,830	1,922,225	0	0	9,802,883	10,548,278	24.23			
81	Maluku	15,683	0	15,683	0	0	0	0	0	0	248,250	248,250	15.83				
82	Irian Jaya	5,040	0	5,040	0	0	0	0	0	0	312,829	312,829	62.07				
	Maluku/Irian Jaya	20,723	0	20,723	0	0	0	0	0	0	561,079	561,079	27.08				
	Total	3,011,432	1,063,333	4,074,765	11,968,582	5,144,074	13,622,508	18,766,582	30,735,144	0	0	57,346,034	76,112,616	88,081,178			
	Jatituhur	238,723	87,742	326,465	982,710	0	0	0	982,710	0	0	750,000	1,732,710	5.31			
	Total including Jatituhur	3,250,155	1,151,075	4,401,230	12,951,272	5,144,074	13,622,508	18,766,582	31,717,854	0	0	58,096,034	76,862,616	89,813,888			

Notes:
 1. Area and EOM budget to be taken from DIP 1991/92 including Kontang & 8 but excluding FROM.
 2. Area and APBD budget to be based on the letter from SK MENDAGRI No.050/651/Bugda dated on march 6,1991
 3. *) To be burdened to West Java Provincial Government

Source: Sub-Dit. of O&M, DOI

Table 2.12 Budgetary Arrangement of Current O&M and EOM for Irrigation, 1992/93

No.	Province	Potential (APBD+APBN +PIK) 3=12+13	Area (Rp)										Budget Rp.1,000		
			A P B D					A P B N					APBD DATA I		
			Non-EOM		Sub-Total		Before ISF	EOM (b)		Sub-Total		Before ISF	EOM (a)		Sub-Total
4	5	6	7=5+6	8=4+7	9	10	11=9+10	12=8+11	13	14	15	16=14+15	17		
11	D.I.Aceh	125,315	0	0	0	111,694	0	111,694	13,621	125,315	0	2,233,880	2,233,880	1,514,600	
12	Sumatera Utara	209,965	0	0	0	163,961	0	163,961	46,004	209,965	0	4,099,025	4,099,025	1,498,200	
13	Sumatera Barat	227,188	0	0	0	190,131	0	190,131	24,862	214,993	12,195	3,232,227	3,232,227	747,253	
14	Riau	26,710	0	0	0	26,710	0	26,710	0	26,710	0	507,490	507,490	0	
15	Jambi	21,181	0	0	0	21,181	0	21,181	0	21,181	0	635,430	635,430	0	
16	Sumatera Selatan	52,900	0	0	0	35,771	0	35,771	17,129	52,900	0	1,198,329	1,198,329	613,720	
17	Bengkulu	111,049	0	0	0	111,049	0	111,049	0	111,049	0	1,443,637	1,443,637	0	
18	Lampung	229,156	0	0	0	155,075	0	155,075	74,081	229,156	0	3,233,314	3,233,314	2,106,443	
	Sumatera	1,003,464	0	0	0	815,572	0	815,572	175,697	991,269	12,195	16,583,332	16,583,332	6,480,216	
31	D.K.I.Jakarta	14,759	0	0	0	14,759	0	14,759	0	14,759	0	280,421	280,421	0	
32	Jawa Barat	546,790	18,540	0	0	320,628	18,540	339,168	214,561	553,729	11,601	7,718,848	7,730,451	5,612,503	
33	Jawa Tengah	825,039	501,592	0	0	451,999	451,999	903,998	271,858	1,175,856	6,290	8,777,860	8,784,150	8,590,498	
34	D.I.Yogyakarta	62,239	32,652	0	0	32,652	0	32,652	27,262	59,914	2,325	930,582	932,907	947,032	
35	Jawa Timur	936,049	630,653	120,838	0	751,491	120,838	872,329	167,693	1,040,022	1,807	10,153,513	10,155,320	6,272,469	
	Jawa	2,384,876	1,481,744	184,577	0	1,666,321	184,577	1,850,898	670,325	2,521,223	22,123	27,860,724	27,882,847	21,422,522	
51	Bali	88,744	88,744	0	0	88,744	0	88,744	0	88,744	0	1,774,880	1,774,880	0	
52	Nusa Tenggara Barat	176,879	151,292	0	0	151,292	0	151,292	23,173	174,465	2,414	3,139,309	3,141,723	825,820	
53	Nusa Tenggara Timur	42,015	42,015	0	0	42,015	0	42,015	0	42,015	0	1,201,629	1,201,629	0	
54	Timor Timur	6,937	6,937	0	0	6,937	0	6,937	0	6,937	0	225,453	225,453	0	
	Bali/Nusa Tenggara	314,575	288,988	0	0	288,988	0	288,988	23,173	312,161	2,414	6,341,271	6,343,685	825,820	
61	Kalimantan Barat	14,968	14,968	0	0	14,968	0	14,968	0	14,968	0	344,264	344,264	0	
62	Kalimantan Tengah	5,070	5,070	0	0	5,070	0	5,070	0	5,070	0	101,400	101,400	0	
63	Kalimantan Selatan	23,124	23,124	0	0	23,124	0	23,124	0	23,124	0	647,472	647,472	0	
64	Kalimantan Timur	19,590	19,590	0	0	19,590	0	19,590	0	19,590	0	430,980	430,980	0	
	Kalimantan	62,752	62,752	0	0	62,752	0	62,752	0	62,752	0	1,524,116	1,524,116	0	
71	Sulawesi Utara	67,717	67,717	0	0	67,717	0	67,717	0	67,717	0	1,539,207	1,539,207	0	
72	Sulawesi Tengah	105,887	93,278	0	0	93,278	0	93,278	12,609	105,887	0	2,611,784	2,611,784	647,042	
73	Sulawesi Selatan	174,470	83,389	0	0	83,389	0	83,389	75,100	158,489	886	3,669,116	3,669,116	2,995,220	
74	Sulawesi Tenggara	49,360	49,360	0	0	49,360	0	49,360	0	49,360	0	1,209,320	1,209,320	0	
	Sulawesi	397,434	293,744	0	0	293,744	0	293,744	87,709	381,453	886	9,029,427	9,029,427	3,582,262	
81	Mahuku	15,683	14,968	0	0	14,968	0	14,968	715	15,683	0	254,456	254,456	30,123	
82	Irian Jaya	8,304	8,304	0	0	8,304	0	8,304	0	8,304	0	548,064	548,064	0	
	Maluku/Irian Jaya	23,987	23,272	0	0	23,272	0	23,272	715	23,987	0	802,520	802,520	30,123	
	Total	4,187,088	2,966,072	184,577	0	1,845,777	0	1,845,777	998,821	4,144,600	37,618	62,141,930	62,179,548	32,340,945	
	Jatuhur	329,329	235,138	6,265	0	241,403	6,265	247,668	71,085	318,753	0	790,122	790,122	1,000,000	
	Total including	4,516,417	3,201,210	190,842	0	1,908,422	0	1,908,422	1,070,406	4,463,353	37,618	62,931,512	62,969,164	35,594,205	

Note:
a. EOM after 5 years
b. EOM before 5 years including 5th year

Source: Sub-Dit. of O&M, DOI-I

Table 3.1 List of Projects for Irrigation Sub-Sector by Program and Type of Project

No.	Code	Province	DIT	Program/Project	Type of Project
I			Program: Rehabilitation and Maintenance of Irrigation Networks		
1	11	Aceh	11	Aceh Utara	Central Government Operated
2	12	Sumatera Utara	11	Simalungun	Merged into Provincil Project
3	12	Sumatera Utara	11	Sumatera Utara	Provincial Project
4	12	Sumatera Utara	Rw	P2S Sumatera Utara	EOM for Swamp
5	12	Sumatera Utara	Rw	Sumatera Utara	EOM for Swamp(New 1993/94)
6	13	Sumatera Barat	Rw	P2S Sumatera Barat	EOM for Swamp
7	16	Sumatera Selatan	Rw	P2S Sumatera Selatan	EOM for Swamp
8	18	Lampung	12	Way Sekampung Tulang Bawang	Central Government Operated
9	18	Lampung	Rw	Lampung	EOM for Swamp
10	18	Lampung	Rw	P2S Lampung	EOM for Swamp
11	31	DKI Jakarta	ST	PMPP	Secretariate Project
12	32	Jawa Barat	11	Jatiluhur	Central Government Operated
13	32	Jawa Barat	11	Jawa Barat	Provincial Project
14	32	Jawa Barat	12	Cisadane Ciujung	Central Government Operated
15	32	Jawa Barat	PR	Pprp Wilayah Barat	Logistic Project
16	33	Jawa Tengah	11	Jawa Tengah	Provincial Project
17	33	Jawa Tengah	11	Serayu Gambarsari	Central Government Operated
18	33	Jawa Tengah	11	Sumarang Barat	Merged into Provincil Project
19	33	Jawa Tengah	PR	Pprp Wilayah Tengah	Logistic Project
20	34	D.I. Yogyakarta	11	D.I. Yogyakarta	Provincial Project
21	35		11	Jawa Timur	Provincial Project
22	35	Jawa Timur	11	Warujayeng Turi Tunggorono	Central Government Operated
23	35	Jawa Timur	PR	Pprp Wilayah Timur	Logistic Project
24	52	Nusa Tenggara Barat	11	Lombok Selatan Sumbawa	Converted to Program II
25	53	Nusa Tenggara Timur	11	Lembor Sumba Mautenda	Converted to Program II
26	63	Kalimantan Selatan	Rw	Kalimantan Selatan	EOM for Swamp
27	73	Sulawesi Selatan	11	Sulawesi Selatan	Provincial Project
28	73	Sulawesi Selatan	12	Sadang - Maloso	Central Government Operated
II			Program: Construction of New Irrigation Networks		
1	11	Aceh	11	Baro Raya	Central Government Operated
2	11	Aceh	11	Dista Aceh	Provincial Project
3	11	Aceh	11	Jambu Aye	Central Government Operated
4	11	Aceh	12	Krieng Aceh	Central Government Operated
5	12	Sumatera Utara	11	Batang Gadis	Merged into Provincil Project
6	12	Sumatera Utara	11	Batang Ilung	Merged into Provincil Project
7	12	Sumatera Utara	11	Namu Sira-Sira	Merged into Provincil Project
8	12	Sumatera Utara	11	Sumatera Utara	Converted to Program I
9	12	Sumatera Utara	SG	Sungai Bah Bolon	Central Government Operated
10	12	Sumatera Utara	SG	Sungai Ular	Central Government Operated
11	13	Sumatera Barat	11	Pasaman	Merged into Provincil Project
12	13	Sumatera Barat	11	Sumatera Barat	Provincial Project
13	13	Sumatera Barat	12	Sungai Darch Sitiu	Merged into Provincil Project
14	14	Riau	11	Riau	Provincial Project
15	15	Jambi	11	Jambi	Provincial Project
16	16	Sumatera Selatan	11	Musi Rawas	Central Government Operated
17	16	Sumatera Selatan	11	Sumatera Selatan	Provincial Project
18	16	Sumatera Selatan	12	Komering	Central Government Operated
19	17	Bcngkulu	11	Bengkulu	Provincial Project
20	18	Lampung	11	Lampung	Provincial Project
21	18	Lampung	11	Way Rarem Abung	Central Government Operated
22	31	DKI Jakarta	11	Monitoring	Survey
23	31	DKI Jakarta	11	Perenc.Teknis Pemb. Irigasi I	Survey
24	31	DKI Jakarta	11	Tata Guna Air	Survey
25	31	DKI Jakarta	12	Perenc. Teknis Pemb.Irigasi II	Survey
26	31	DKI Jakarta	PR	Pengadaan Alat Dan Bahan	Logistic
27	32	Jawa Barat	11	Teluk Lada	Central Government Operated
28	32	Jawa Barat	12	Pat Jawa Barat	Groundwater Development
29	33	Jawa Tengah	11	Kedu Selatan	Central Government Operated
30	33	Jawa Tengah	12	Jratunseluna	Central Government Operated

Table 3.1 List of Projects for Irrigation Sub-Sector by Program and Type of Project

No.	Code	Province	DIT	Program/Project	Type of Project
31	33	Jawa Tengah	I2	Pat Jawa Tengah	Groundwater Development
32	33	Jawa Tengah	SG	Bengawan Solo	Central Government Operated
33	33	Jawa Tengah	SG	Cilanduy	Central Government Operated
34	34	D.I. Yogyakarta	I1	Yogyakarta	Converted to Program I
35	34	D.I. Yogyakarta	I2	Pat Di. Yogyakarta	Groundwater Development
36	35	Jawa Timur	I2	Pat Jawa Timur	Groundwater Development
37	35	Jawa Timur	PR	Pprp Wilayah Timur	Logistic
38	51	Bali	I1	Bali	Provincial Project
39	51	Bali	I2	Pat Bali	Groundwater Development
40	52	Nusa Tenggara Barat	I1	Embung Nusa Tenggara Barat	Irrigation Tank
41	52	Nusa Tenggara Barat	I1	Lombok Selatan Sumbawa	Central Government Operated
42	52	Nusa Tenggara Barat	I1	Nusa Tenggara Barat	Provincial Project
43	52	Nusa Tenggara Barat	I2	Pat Nusa Tenggara Barat	Groundwater Development
44	53	Nusa Tenggara Timur	I1	Embung Nusa Tenggara Timur	Irrigation Tank
45	53	Nusa Tenggara Timur	I1	Lembor Sumba Mautenda	Central Government Operated
46	53	Nusa Tenggara Timur	I1	Nusa Tenggara Timur	Provincial Project
47	53	Nusa Tenggara Timur	I2	Pat Nusa Tenggara Timur	Groundwater Development
48	54	Timor Timur	I1	Timor Timur	Provincial Project
49	61	Kalimantan Barat	I1	Kalimantan Barat	Provincial Project
50	62	Kalimantan Tengah	I1	Kalimantan Tengah	Provincial Project
51	63	Kalimantan Selatan	I1	Kalimantan Selatan	Provincial Project
52	63	Kalimantan Selatan	I2	Riam Kanan	Central Government Operated
53	64	Kalimantan Timur	I1	Kalimantan Timur	Provincial Project
54	71	Sulawesi Utara	I1	Sulawesi Utara	Provincial Project
55	71	Sulawesi Utara	I2	Paguyaman	Merged into Provincial Project
56	72	Sulawesi Tengah	I1	Sulawesi Tengah	Provincial Project
57	72	Sulawesi Tengah	I2	Gumbasa Parigi Poso	Central Government Operated
58	73	Sulawesi Selatan	I1	Luwu	Central Government Operated
59	73	Sulawesi Selatan	I1	Sulawesi Selatan	Converted to Program I
60	73	Sulawesi Selatan	I2	Bila	Central Government Operated
61	73	Sulawesi Selatan	I2	Langkeme	Central Government Operated
62	73	Sulawesi Selatan	I2	Pat Sulawesi Selatan	Groundwater Development
63	74	Sulawesi Tenggara	I1	Sulawesi Tenggara	Provincial Project
64	74	Sulawesi Tenggara	I1	Wawotobi	Central Government Operated
65	81	Maluku	I1	Maluku	Provincial Project
66	82	Irian Jaya	I1	Irian Jaya	Provincial Project

III

Program: Development of Swamp Area

1	11	Aceh	Rw	PDR D.I. Aceh	Provincial Project
2	12	Sumatera Utara	Rw	PDR Sumatera Utara	Provincial Project
3	13	Sumatera Barat	Rw	PDR Sumatera Barat	Provincial Project
4	14	Riau	Rw	P2S R i a u	Provincial Project
5	15	Jambi	Rw	P2S J a m b i	Provincial Project
6	16	Sumatera Selatan	Rw	P2S Sumatera Selatan	Provincial Project
7	16	Sumatera Selatan	Rw	PDR Sumatera Selatan	Provincial Project
8	17	Bengkulu	Rw	PDR Bengkulu	Provincial Project
9	18	Lampung	Rw	PDR Lampung	Provincial Project
10	31	DKI Jakarta	Rw	P2TPDR DKI Jakarta	Provincial Project
11	61	Kalimantan Barat	Rw	P2S Kalimantan Barat	Provincial Project
12	61	Kalimantan Barat	Rw	PDR Kalimantan Barat	Provincial Project
13	62	Kalimantan Tengah	Rw	P2S Kalimantan Tengah	Provincial Project
14	62	Kalimantan Tengah	Rw	PDR Kalimantan Tengah	Provincial Project
15	63	Kalimantan Selatan	Rw	P2S Kalimantan Selatan	Provincial Project
16	63	Kalimantan Selatan	Rw	PDR Kalimantan Selatan	Provincial Project
17	64	Kalimantan Timur	Rw	PDR Kalimantan Timur	Provincial Project
18	72	Sulawesi Tengah	Rw	Provincial Project	Provincial Project
19	73	Sulawesi Selatan	Rw	PDR Sulawesi Selatan	Provincial Project
20	74	Sulawesi Tenggara	Rw	PDR Sulawesi Tenggara	Provincial Project
21	82	Irian Jaya	Rw	PDR Irian Jaya	Provincial Project

Note: I1; Directorate of Irrigation I, I2; Directorate of Irrigation II
Rw; Directorate of Swamp, SG; Directorate of River
PR; Directorate of Logistic, ST; Secretariate