Contents

		Page
Ack	cnowledgements	v
1	Introduction	1
1.1	Background to this study	1
1.2	Irrigation development and rural development	
1.3	Irrigation in Indonesia	2 8
1.4	Irrigation projects and project financing	10
	1.4.1 General	10
	1.4.2 The Netherlands-assisted projects (the case studies)	12
1.5	Reasons for concern	14
1.6	Problem identification and general research outline	15
1.7	Organization of the text	19
Note	S	20
2	A Framework for Analysing Irrigation Situations	21
-	11 I tuniework for Amarysing Irrigation Situations	21
2.1	Introduction	21
	2.1.1 Typology of irrigation systems	22
	2.1.2 Layout and operation principles of technical	
	irrigation systems	25
2.2	Trends in thinking on irrigation	29
	2.2.1 Introduction to the literature on irrigation	29
	2.2.2 'Water supply-centred' approaches	33
	2.2.3 An example of a 'people-centred' approach	39
	2.2.4 'Whole system' approaches	40
2.3	Basic socio-economic conditions and trends in irrigation areas	45
	2.3.1 Access to resources: land	46
	2.3.2 Access to resources: water	47
	2.3.3 Incomes in rural areas	47
	2.3.4 Government policy in rice production areas	48
2.4	Irrigation: some additional considerations	50
Note	S	52

Access	to	Water:	Irrigation	in	Indonesia
766633	w	TTOLC!.	migation	,,,	mountain

viii

3	The C	Origins of Indonesia's Irrigation Policy	54
3.1	Introdu	action	54
3.2	Irrigati	on development in the pre-Independence era	55
	3.2.1	Government initiatives in irrigation before 1900	55
	3.2.2	Expansion of the area under government irrigation (1900-1942)	57
	3.2.3	Early principles in water and irrigation system management	60
	3.2.4	System management in tertiary units: two options	64
	3.2.5	The unit watermaster	67
3.3	Irrigati	on development after Independence	68
	3.3.1	Irrigation and rice production	69
	3.3.2		71
3.4	Water	supply-orientation as the leading principle	74
Note	es		74
4	The I	ntegrated Irrigation Development Approach	78
4.1	Introd		78
4.2	The II	D-Approach	78
	4.2.1	Principles of the IID-approach	79
	4.2.2	The IID-approach in irrigation development projects	82
	4.2.3	The concept of the P3A	85
	4.2.4	The standard tertiary canal system	88
	4.2.5	Implementation of the IID-approach	92
4.3	The II	D-approach evaluated	104
	4.3.1	Deteriorated tertiary canal systems	105
	4.3.2	Inactive P3As	111
	4.3.3	The real problem: uneven water distribution	115
	4.4.4	The IID-approach: a participatory approach or an attempt	
		to mobilize people?	119
4.4	The ba	sic inadequacy of the IID-approach	120
Note			121
5	Acces	ss to Resources in Irrigated Rice Production Areas	124
5.1	Introdu	action	124
5.2	Develo	pment of the project areas as rice production areas	124
5.3	Irrigate	ed rice cultivation from a regional perspective	129
5.4		incomes and poverty	136
	5.4.1	Access to land	136
	5.4.2	Incomes from irrigated rice	140

	Content	's ix
	5.4.3 Poverty in irrigated rice production areas	142
5.5	Access to water	144
	5.5.1 Water appropriation by upstream water-users	144
	5.5.2 Water appropriation by downstream water-users	146
	5.5.3 Water appropriation by other categories of water-users	148
	5.5.4 Water acquisition by watermasters	150
5.6	Irrigation development: a reconsideration of relevant factors	153
Note	es	156
6	The Netherlands-Assisted Projects in Execution	159
6.1	Introduction	159
6.2	Origins of the projects	159
	6.2.1 The Sedeku project	159
	6.2.2 The Pompengan project	161
	6.2.3 The Cidurian project	163
6.3	Evolution of the project objectives	165
	6.3.1 The Sedeku project	165
	6.3.2 The Pompengan project	166
	6.3.3 The Cidurian project	168
6.4		169
6.5	The Netherlands-assisted projects: irrigation development projects	107
	or rural development projects?	173
Note		174
7	Irrigation Development: The Lessons Learned and	
	Recommendations for Policy	176
7.1	Introduction	176
7.2	Irrigation development in practice: the need for an area development	
	perspective	176
7.3	Irrigation development in practice: the need for demand orientation	180
7.4	Target groups, participation, and farmers' groups	183
7.5	Recommendations for irrigation development in Indonesia	185
	7.5.1 Area-specific recommendations	186
	7.5.2 Project implementation recommendations	186
	7.5.3 Recommendations related to irrigation development	
	at field level	188
7.6	Irrigation development and rural development: the relationship	
	reconsidered	189
Note	es	191

Access to Water: Irrigation in Indonesia	ccess to) Vvater:	Irrigation	in	Indonesia
--	----------	-----------	------------	----	-----------

Samenvat	ting	192
References		
Curriculum vitae		
Maps, Fig	gures and Tables	
Chapter 1: Map 1.1	Location of the three Netherlands-assisted irrigation	
F	implementation projects	13
Chapter 2: Figure 2.1	Layout of technical irrigation system	26
Table 2.1	Irrigation system tasks, by institutional and	20
	organizational element	35
Figure 2.2	Schematic interpretation of Coward's 'ecological	33
	approach to irrigation institutions and organizations'	42
Figure 2.3	Model for interpreting ecological complexes	43
Chapter 4:		
Figure 4.1	Organization of support to water users' associations (P3A)	81
Figure 4.2	Organizational structure of a water users' association (P3A)	86
Figure 4.3	Layout of standard tertiary canal system	89
Figure 4.4	Layout of deteriorated tertiary canal system	111
Figure 4.5	Average seasonal supplies, Cidurian dry season 1989	117
Chapter 5:		
Map 5.1	Location of the Cidurian project area relative to the	
	Jabotabek urban conglomeration	130
Map 5.2	Present and predicted irrigation development in	
	and around the Cidurian project area	132
Table 5.1	Distribution of agricultural land over land ownership	
	categories in the Gubug, Cidurian and Pompengan areas	
	(in percentage of population)	137
Figure 5.1	Proportion of land owned by land ownership category	139
Table 5.2	Average annual household incomes, Cidurian and Pompengan	
	areas, in thousands of Rupiah (percentage)	141
Figure 5.2	Indication of poverty, Cidurian 1988	142
Chapter 6:		
Table 6.1	Person-months invested by foreign experts of different	
	disciplines in the three Netherlands-assisted projects	170