

Appendix G
Irrigation Development Programme

**THE STUDY
ON
THE NATIONAL IRRIGATION MASTER PLAN
IN
THE UNITED REPUBLIC OF TANZANIA**

MASTER PLAN

APPENDIX G

IRRIGATION DEVELOPMENT PROGRAMME

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APPENDIX G

IRRIGATION DEVELOPMENT PROGRAMME

CHAPTER 1 PRIORITY GROUPING OF INVENTORIZED SCHEMES

1.1 Criteria for Priority Grouping

(1) General

As for irrigation development, several criteria/guidelines for scheme prioritization have been developed for such irrigation development programs as RBMSIIP, ASPS-IC, and PIDP so as to select suitable schemes to meet objective of the programme. Those criteria shown in Tables 1.1.1 to 1.1.4 are facilitated so that the schemes can be evaluated by various aspects, such as technical factors, economical factors, environmental aspects, social aspects. The criteria were reviewed and the following two criteria are discussed in this section:

- Criteria for screening schemes
- Criteria for scheme prioritization

(2) Criteria for screening of inventorized schemes

Criteria for screening of the inventorized schemes are set up to examine the minimum qualification of the proposed irrigation schemes for implementation. The proposed schemes should have the following conditions:

Screening Criteria for Inventorized Schemes

	<i>Item</i>	<i>Description</i>
(a)	Needs of rehabilitation	The schemes requiring rehabilitation shall be selected.
(b)	Type of scheme	The small-holder irrigation schemes shall be selected.
(c)	History of rehabilitation	No rehabilitation/improvement works has been conducted for last 5 years shall be selected.
(d)	Availability of basic data	Basic data for scheme prioritization shall be available for prioritization.

(3) Criteria for prioritization of inventorized schemes

(a) Factors for Prioritization

Prioritization shall be made by using the factors, such as:

- Technical factors
- Economic factors
- Environmental factors
- Ease of implementation
- Social factors

- Regional condition

(b) Technical factors

The schemes shall be evaluated in technical viewpoints, such as slope, possibility of salinity and alkalinity problem in soil, occurrence of flood, and drainage problem.

(c) Economic factors

The level of economic viability can be represented by EIRR. EIRR may be supplemented by size of potential area and water abstraction method. In addition, financial viability of farmers can be considered based on incremental benefits with irrigation.

(d) Environmental factors

The schemes shall be prioritized according to possibility of environmental status, such as sedimentation, water-borne diseases, and water quality.

(e) Factors for ease of implementation

The ease of implementation for each scheme shall be evaluated based on accessibility to the site, including distance from main road and road condition in rainy season.

(f) Social factors

The readiness for implementation shall be directly related to the social aspects such as formation of farmers' organization for irrigation, farmers' abilities for operation and maintenance of the schemes, existence of water right, because these factors are fundamental requirement for commencement of the rehabilitation / construction works.

(g) Regional conditions

The objective of NIMP in line with that of ASDS is to realize the sustainability of irrigation development through effective use of national resources, and it consequently contributes to regional food security and poverty reduction. Regional condition of those factors, such as development potential, regional self-sufficiency ratio of food crop, and poverty index, shall be assessed for prioritization of schemes.

Considering the above, the criteria for prioritization are prepared, as shown in the following pages:

Criteria for Scheme Prioritization

Factors for Evaluation		Points
A	Technical Factors (15 points)	1. Slope (4 points) (a) Flat (less than 0.5%) 4 (b) Mild (0.5 - 2.0%) 3 (c) Moderate (2.0 - 4.0%) 2 (d) Steep (more than 4.0%) 1
		2. Salinity / Alkalinity of Soil (7 points) (a) Observed 0 (b) Not observed 7
		3. Damage by flood (2 points) (a) Observed 0 (b) Not observed 2
		4. Drainage Problem (2 points) (a) Observed 0 (b) Not observed 2
2	Economic Factors (30 points)	1. Size of potential area (7 points) (a) Less than 500 ha 2 (b) 500 - 1000 ha 4 (c) 1000 - 2000 ha 5 (d) More than 2000 ha 7
		2. Water abstraction method (8 points) (a) Gravity 8 (b) Pump 2
		3. EIRR (10 points) (a) Less than 8.0% 1 (b) 8.0 - 12.0 % 3 (c) 12.0 - 16.0 % 5 (d) 16.0 - 20.0 % 7 (e) More than 20.0 % 10
		4. Financial Viability (5 points) 5
3	Possibility of Environmental Status Factor (10 points)	1. Sedimentation (5 points) (a) Serious 0 (b) Fair 1 (c) Little 4 (d) None 5
		2. Water-borne Diseases (2 points) (a) Serious 0 (b) Fair 1 (c) None 2
		3. Water quality (3 points) (a) Serious 0 (b) Fair 1 (c) Little 2 (d) None 3
4	Ease of implementation (5 points)	1. Accessibility to site (a) Serious 5 (b) Fair 3 (c) Little 1
5	Social Factors (20 points)	1. Organization set-up (3 points) (a) Established 3 (b) Not yet established 1
		2. Establishment of O&M committee (2 points) (a) Organization set-up 2 (b) Not yet established 0
		3. Linkage with village (1 point) (a) Good 1 (b) Poor 0

Factors for Evaluation		Points
Social Factors (Continued)	4. Operation body of schemes (3 points)	
	(a) Farmers' organization	3
	(b) Other bodies	1
	5. Training for O&M (2 points)	
	(a) Satisfactory	2
	(b) Not satisfactory	1
	6. Maintenance of scheme (1 point)	
	(a) By Farmers' organization	1
(b) By Other bodies	0	
6 Regional condition (20 points)	7. Existence of water right (8 points)	
	(a) Existence	8
	(b) Non-existence	0
	8. Average farm size (1 point)	
	(a) 0 - 1.0 ha per household	1
	(b) Others	0
	1. Development ratio (3 points) (existing irrigated area / potential area)	
	(a) Less than 30%	3
(b) 30 - 60%	2	
(c) More than 60%	1	
	2. Self-sufficiency ratio of food crop (10 points)	
	(a) Less than 20 %	10
	(b) 20 - 40 %	8
	(c) 40 - 60 %	6
	(d) 60 - 80 %	4
	(e) More than 80 %	2
	3. Poverty index (BIN) (7 points)	
(a) More than 40	7	
(b) 30 - 40	5	
(c) 20 - 30	3	
(d) Less than 20	1	

1.2 Priority Grouping of Inventorized Schemes

(1) Objectives of Priority Grouping

Priority grouping of the inventorized schemes aims to facilitate the formulation of 15-year scheme-wise development programme for the NIMP. In order to utilize the nation's endowed resources effectively for irrigation development, the proposed schemes should be investigated, planned, designed and implemented in proper manner in accordance with the proposed criteria, and only those schemes that will pass the screening criteria should be allowed to proceed for implementation.

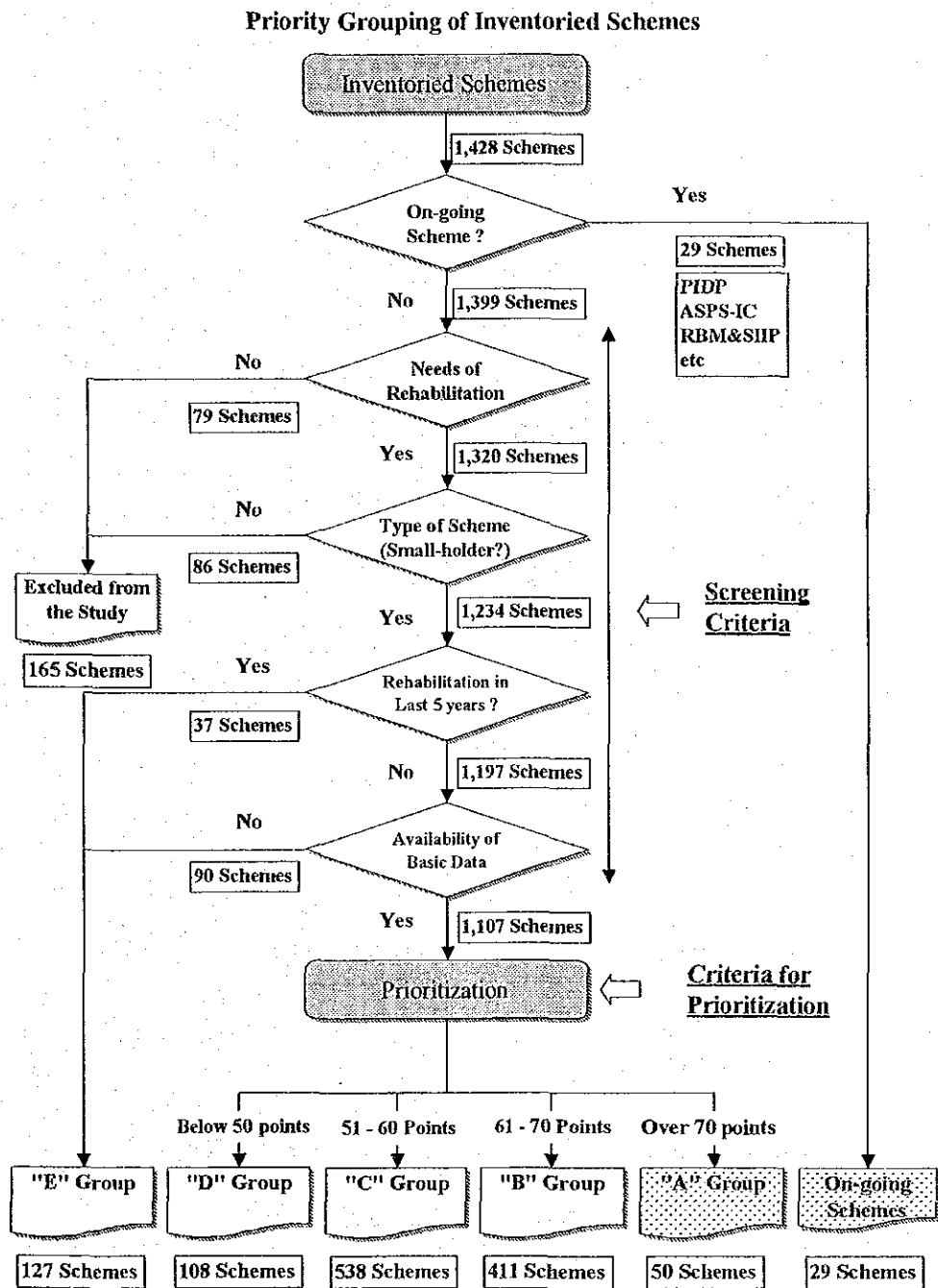
The implementation schedule of NIMP should therefore be based on the priority groupings which will classify the inventorized schemes into 5 groups of "A" group to "E" group.

(2) Method and Process of Priority Grouping

The inventorized schemes are classified into three priority groups through the assessments of the following factors:

- Present status of schemes,
- Needs of rehabilitation,
- Management type of schemes,
- History of rehabilitation/improvement,
- Availability of basic data
- Prioritization of schemes

The work flow of the priority grouping is as follows:.



Present status of schemes

Among the inventorized schemes, the schemes, which are under implementation or are committed to be implemented, are confirmed. The implementation schedule for those scheme shall be reflected in the NIMP.

- On-going or committed schemes : 29
- Another schemes : 1,399

Necessity of rehabilitation

Schemes which are recently constructed or rehabilitated, or well-functioned and do not require rehabilitation/improvement works, are to be excluded from the list of schemes for implementation under the NIMP. The schemes requiring rehabilitation works are further examined for the priority grouping.

- Schemes not requiring rehabilitation works : 79
- Schemes requiring rehabilitation works : 1,320

Management type of schemes

In line with the approach of the NIMP, aiming finally to improve productivity of smallholders through rehabilitation of irrigation infrastructure, the NAFCO and private schemes are to be excluded from the list of schemes for implementation under the NIMP. The 1,320 schemes requiring rehabilitation works are further examined for the priority grouping.

- NAFCO and private schemes : 86
- Smallholder irrigation schemes : 1,234

History of rehabilitation/improvement

The schemes, where rehabilitation/improvement works were carried out in last 5 years, are excluded:

- Rehabilitation in last 5 years : 37
- No rehabilitation in last 5 years : 1,197

Availability of basic data

Availability of the basic data should be checked before prioritization of the schemes is carried out in the light of the "criteria for prioritization". Check of data availability is made for the above 1,197 schemes. The data required are as follows:

- Name and location of scheme
- Present irrigated area and potential area
- Description of rehabilitation/improvement

The number of schemes to meet the above condition is 1,107

Prioritization according to the criteria

1,107 schemes are classified into four groups according to the criteria for prioritization as shown right:

Criteria for Prioritization

Points	Group
Over 70	"A" Group
61 - 70	"B" Group
51 -- 60	"C" Group
Below 50	"D" Group

1.3 Results of Priority Grouping

(1) "A" to "D" Groups

Among the inventorized schemes, 50 schemes are finally as the "A" Group (schemes to be implemented) through the following steps:

	<u>No. of Schemes</u>
- No rehabilitation work is in progress	: 1,320
- They are small-holder irrigation schemes	: 1,235
- No rehabilitation work has been conducted for 5 years	: 1,198
- Basic data for prioritization are available	: 1,107
- "A" Group	(50)
- "B" Group	(411)
- "C" Group	(538)
- "D" Group	(108)

(2) "E" Group:

The "E" group (schemes to be investigated) consists of 127 schemes. These schemes have the following characteristics:

- No rehabilitation work is in progress;
- They are NAFCO schemes or private irrigation schemes, or
- They are smallholder irrigation schemes, but rehabilitation works have been conducted for 5 years;

The results of the priority grouping are shown in Table 1.3.1 and Attachment 1, and summarized as follows:

Summary of Priority Grouping

No.	Group	Nos.	Potential Area (ha)
(1)	On-going Schemes	29	13,573
(2)	"A" Group	50	34,783
(3)	"B" Group	411	199,016
(4)	"C" Group	538	158,718
(5)	"D" Group	108	19,254
(6)	"E" Group	127	343,129
(7)	Excluded	165	85,820
	Total	1,428	854,293

Source: JICA Study Team

(3) General features of "A" Group schemes

The general features of the "A" Group schemes are as follows:

Distribution of "A" Group Schemes by Region

Region	Nos.	Potential Area (ha)
Arusha	2	240
Coast	2	2,300
Dar es Salaam	-	-
Dodoma	-	-
Iringa	1	120
Kagera	-	-
Kigoma	-	-
Kilimanjaro	6	2,180
Lindi	4	3,200
Mara	1	50
Mbeya	-	-
Morogoro	3	6,793
Mtwara	-	-
Mwanza	14	8,610
Rukwa	-	-
Ruvuma	2	2,700
Shinyanga	6	3,700
Singida	6	3,140
Tabora	-	-
Tanga	3	1,750
Total	50	34,783

Source: JICA Study Team

CHAPTER 2 SCHEME-WISE DEVELOPMENT PROGRAMME

2.1 Development Target

The possible irrigation development areas by 2017 are estimated at 405,400 ha under the “High Case” of financial resources. These areas are ensured by developing 626 irrigation schemes which are selected from the “A” and “B” Groups and Part of “C” Group as discussed in Clause 1.3 of this Appendix. The breakdown of 626 irrigation schemes are as follows:

Irrigation Development Areas by 2017

Type of Development	Nos.	Total Irrigation Area
Rehabilitation of Traditional Irrigation Schemes	462	274,600 ha
Rehabilitation/ New Construction of Water Harvesting Schemes	122	68,200 ha
New Construction of Smallholder Irrigation Schemes	42	62,600 ha
Total	626	405,400 ha

Source: JICA Study Team

2.2 Stage-wise Development Programme

Based on the results of prioritization of irrigation schemes and possibly available development budget, the irrigation development areas for 3 terms are estimated as follows:

Accumulated Irrigation Development Area

Type of Irrigation Schemes to Be Developed	Short Term	Medium Term	Long Term
	2003 - 2007	by 2012	by 2017
(a) Rehabilitation of Traditional Irrigation Scheme	180,000 ha	216,000 ha	274,000 ha
(b) Development of Water Harvesting Schemes	42,000 ha	57,000 ha	68,000 ha
(c) New Smallholder Schemes	44,000 ha	52,000 ha	63,000 ha
Total	266,000 ha	325,000 ha	405,000 ha

Source: JICA Study Team

Details of scheme-wise development are mentioned in Tables 2.2.1 to 2.2.4.

2.3 Regional Development Programme

Irrigation development area of 405,000 ha would contribute to achievement of rice self-sufficiency by 2017 at national level. As well, rice status at regional level should also be examined taking into consideration the policy of “suitable product in suitable land”. The comparison of projected demand of rice and development of selected priority schemes indicates the following surplus and shortage of rice in 2017 at regional level.

Rice Status in 2017 at Regional Level

Region	Developed Area (ha)	Demand (ton)	Supply (ton)	Balance(ton)
Arusha	64,200	78,900	21,700	-57,200
Coast	8,200	32,200	90,500	58,300
Dar es Salaam	0	86,900	0	-86,900
Dodoma	13,400	64,100	1,500	-62,600
Iringa	141,00	64,500	21,600	-42,900
Kagera	600	72,600	3,200	-69,400
Kigoma	12,600	45,800	26,600	-19,200
Kilimanjaro	82,100	76,700	32,700	-44,000
Lindi	9,300	32,400	47,600	15,200
Mara	2,900	52,700	7,500	-45,200
Mbeya	59,100	81,600	279,500	197,900
Morogoro	54,000	66,400	174,900	108,500
Mtwara	4,800	42,200	32,700	-9,500
Mwanza	15,600	99,300	180,400	81,100
Rukwa	8,600	42,400	70,900	28,500
Ruvuma	4,900	44,100	50,900	6,800
Shinyanga	11,900	96,200	65,200	-31,000
Singida	8,400	41,500	17,200	-24,300
Tabora	12,500	53,800	51,400	-2,400
Tanga	18,200	66,200	65,700	-500
Total	405,400	1,240,500	1,241,700	1,200

Source: JICA Study Team

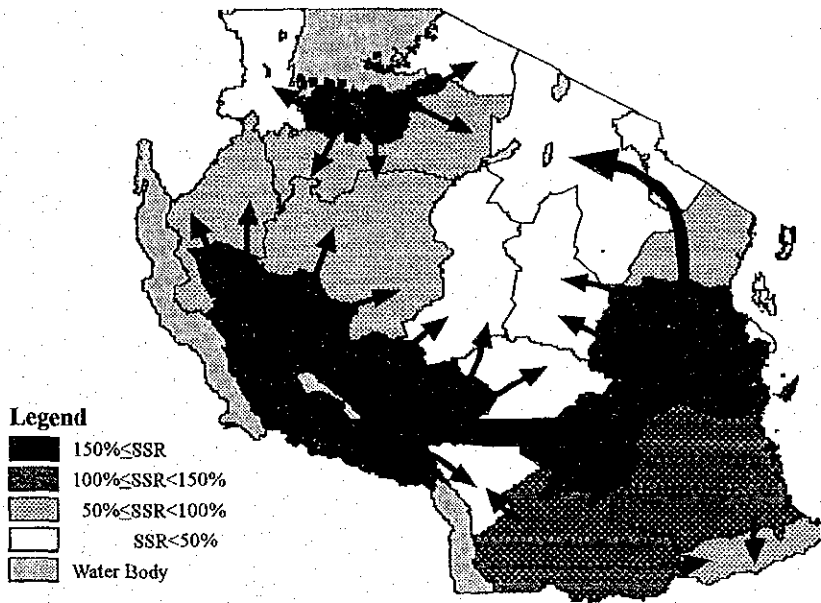
As can be seen in this table, rice surplus in 2017 would occur at 5 regions out of 20 regions. Judging from the surplus amount of rice and road condition, the following distribution plan is recommended:

- Surplus rice in Mwanza region will be supplied for surrounding areas only because of poor road condition.
- Surplus rice in Rukwa region will be supplied for its northern and eastern areas and also for Dar es Salaam through national road.
- Surplus rice in Mbeya region will be supplied for its eastern areas and also for Dar es Salaam through national road.
- Surplus rice in Morogoro region will be supplied for its northern areas and also for Dar es Salaam and Kilimanjaro and Arusha regions via national road.
- Surplus rice in Coast region will be supplied for Dar es Salaam and Kilimanjaro and Arusha regions through national road.

Estimated production of paddy by each region is shown in Table 2.2.5.

A following figure presents the flow of surplus rice :

Flow of Rice on Regional Basis



Note: SSR (Self-sufficient Ratio) is the ratio of "Rice Production" to "Rice Demand".

2.4 Cost Estimate

The project cost for irrigation schemes is estimated by referring to the guidelines on irrigation development level. The estimated project costs for 626 irrigation schemes are shown in Table 2.2.6, and tabulated as follows:

Annually Required Cost for Scheme-wise Development

Items	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	Total
Total	6.1	15.4	23.5	27.6	30.8	34.3	36.0	36.7	37.7	41.4	47.2	49.5	52.6	55.5	58.9	553.1
GOT ¹	4.9	12.3	18.8	22.1	24.6	27.4	28.8	29.4	30.1	33.1	37.8	39.6	42.1	44.4	47.1	442.5
Farmers ²	1.2	3.1	4.7	5.5	6.2	6.9	7.2	7.3	7.5	8.3	9.4	9.9	10.5	11.1	11.8	110.6

Unit : million US\$, 1 : 80 % of project cost, 2 : 20 % of project cost

Source: JICA Study Team

Table

Table 1.1.1 Scheme Evaluation Criteria in NIDP

Scheme Selection Procedure

(1.Scheme Screening)====>(2.Allocation of Scores)====>(3.Weighting by Policy Weighting Factors)====>(Ranking)

1. Scheme Screening:

Schemes are firstly screened to eliminate. The schemes are not considered further if following four criteria are accorded with.

- (1) The motivation of the farmers is poor and there is strong evidence of their lack of interest and capacity to undertake irrigated agriculture
- (2) Most of the proposed area has severely saline or alkaline soils
- (3) The water proposed for the irrigation supply is severely saline
- (4) There is no water readily available for irrigation (in the case of new or extended schemes)

Then, schemes are classified as low priority if following three conditions are accorded with.

- (1) In the case of lifting water, there is a net pumping head in excess of 10 metres.
- (2) The predominant slope of the land proposed for irrigation development is over 4 %.
- (3) The Regional or District authorities have clearly stated that they are not interested in the scheme.

2. Allocation of Scores::

Remaining schemes are evaluated and ranked on the basis of desirability, this allocates a percentage score to each scheme applying following six criteria:

Category	Ranking Percentage	Score	Remarks
1 Technical Aspects	25%	10	High good=10, Normal=5, Very poor=1
2 Ease of Implementation or	15%	3	Good=3, Fair=2, Poor=1
3 Economic Aspects	20%	10	High good=10, Normal=5, Very poor=1
4 Agriculture and	15%	3	Good=3, Fair=2, Poor=1
5 Social Aspects	20%	10	High good=10, Normal=5, Very poor=1
6 General Points	5%	3	Good=3, Fair=2, Poor=1
Total	100%		

3.Policy Weighting Factors:

Region	Priority	Primary Purpose of Scheme Intervention			Region	Priority	Primary Purpose of Scheme Intervention		
		Improved River Basin Water Management	Food Security, Increased	Others			Improved River Basin Water Management	Food Security, Increased	Others
1 Arusha	1st Rehab./Upgrade	100%	100%	70%	11 Mbeya	1st Rehab./Upgrade	100%	100%	70%
	2nd -	-	-	-		2nd New Scheme	100%	90%	60%
	3rd -	-	-	-		3rd -	-	-	-
2 Coast	1st Rehab./Upgrade	100%	100%	70%	12 Morogoro	1st Rehab./Upgrade	100%	100%	70%
	2nd -	-	-	-		2nd New Scheme	100%	90%	60%
	3rd -	-	-	-		3rd -	-	-	-
3 Dar es Salaam	1st Rehab./Upgrade	100%	100%	70%	13 Mtwara	1st New Scheme	100%	100%	70%
	2nd New Scheme	100%	90%	60%		2nd -	-	-	-
	3rd -	-	-	-		3rd -	-	-	-
4 Dodoma	1st Water harvest	100%	100%	70%	14 Mwanza	1st Water harvest	100%	100%	70%
	2nd New Scheme	100%	90%	60%		2nd New Scheme	100%	90%	60%
	3rd -	-	-	-		3rd -	-	-	-
5 Iringa	1st Rehab./Upgrade	100%	100%	70%	15 Rukwa	1st Rehab./Upgrade	100%	100%	70%
	2nd New Scheme	100%	90%	60%		2nd New Scheme	100%	90%	60%
	3rd -	-	-	-		3rd -	-	-	-
6 Kagera	1st New Scheme	100%	100%	70%	16 Ruvuma	1st Rehab./Upgrade	100%	100%	70%
	2nd -	-	-	-		2nd -	-	-	-
	3rd -	-	-	-		3rd -	-	-	-
7 Kigoma	1st New Scheme	100%	100%	70%	17 Shinyanga	1st Water harvest	100%	100%	70%
	2nd -	-	-	-		2nd -	-	-	-
	3rd -	-	-	-		3rd -	-	-	-
8 Kilimanjaro	1st Rehab./Upgrade	100%	100%	70%	18 Singida	1st Water harvest	100%	100%	70%
	2nd New Scheme	100%	90%	60%		2nd New Scheme	100%	90%	60%
	3rd -	-	-	-		3rd -	-	-	-
9 Lindi	1st New Scheme	100%	100%	70%	19 Tabora	1st Water harvest	100%	100%	70%
	2nd -	-	-	-		2nd Rehab./Upgrade	100%	90%	60%
	3rd -	-	-	-		3rd -	-	-	-
10 Mara	1st New Scheme	100%	100%	70%	20 Tanga	1st Rehab./Upgrade	100%	100%	70%
	2nd Water harvest	100%	90%	60%		2nd New Scheme	100%	90%	60%
	3rd Rehab./Upgrade	100%	80%	50%		3rd -	-	-	-

Table 1.1.2 Scheme Evaluation Criteria in ASPS-IC

Category	Total Full Score	Item	Full Score	Remarks	
1	Technical Aspects	110	Current status of the scheme	10	Fully operational=10, Partially operational=7, Abandoned=4, Newly proposed=1
			Scale of problem on Topography	10	None=10, Some=5, Severe=1
			Scale of problem on Slopes	10	None=10, Some=5, Severe=1
			Scale of problem on fertility of soil	10	None=10, Some=5, Severe=1
			Scale of problem on salinity/alkalinity of soil	10	None=10, Some=5, Severe=1
			Scale of problem on quality of water	10	None=10, Some=5, Severe=1
			Scale of problem on quantity of water	10	None=10, Some=5, Severe=1
			Scale of problem on drainage	10	None=10, Some=5, Severe=1
			Scale of problem on flooding	10	None=10, Some=5, Severe=1
			Potential irrigable area	10	>200ha=10, 50 - 200ha=5, <50ha=1
			Average annual rainfall	10	<800mm=10, 800 - 1000mm=5, >1000mm=1
2	Economic Aspects	50	Side of land holding per farmer	10	0.3 - 2ha=10, <0.3ha=5, >2ha=1
			Economic importance of irrigated agriculture	10	High=10, Medium=5, Low=1
			Accessibility to the scheme	10	No problem=10, Some problems=5, Severe problems=1
			Likely marketing problems	10	No problem=10, Some problems=5, Severe problems=1
			Likely problems on the future operation costs	10	No problem=10, Some problems=5, Severe problems=1
3	Environmental Aspects	50	Extent of catchment degradation	10	No problem=10, Some problems=5, Severe problems=1
			Sediment load in river/irrigation system	10	No problem=10, Some problems=5, Severe problems=1
			Existence of soil and water conservation measures	10	None=1, Some=5, Adequate=10
			Agroforestry/forestry	10	None=1, Some=5, Adequate=10
			Education/awareness campaign	10	None=1, Some=5, Adequate=10
4	Agricultural Aspects	40	Importance of irrigated agriculture in relation to rainfed agriculture	10	High=10, Medium=5, Low=1
			Suitability of land for irrigated crops	10	No problem=10, Some problems=5, Severe problems=1
			Farmers familiarity with irrigated crops	10	No problem=10, Some problems=5, Severe problems=1
			Frequency of visit by Extension/Irrigation officer	10	Frequent=10, Sometimes=5, Never=1
5	Social Aspects	90	Problems on land ownership and tenure	10	No problem=10, Some problems=5, Severe problems=1
			Water conflicts between irrigators	10	No problem=10, Some problems=5, Severe problems=1
			Water conflicts between irrigators and pastoralists	10	No problem=10, Some problems=5, Severe problems=1
			Water conflicts between irrigators and domestic users	10	No problem=10, Some problems=5, Severe problems=1
			Number of farmers expected to benefit	10	>200=10, 50 - 200=5, <50=1
			Farmers' motivation towards irrigation	10	High=10, Medium=5, Low=1
			Existence of Farmers Organization	10	Yes=10, Started=5, No=1
			Function of farmers' organization	10	Very active=10, Fairly active=5, Inactive=1
Total	340				

Source: Guidelines For Participatory Improvement To Farmer Initiated And Managed Smallholder Irrigation Schemes in Tanzania, ASPS, March 2002

Given scores applying above criteria are then adjusted by weighting in accordance with following percentage.

Technical Aspects	20	28(adjusted full score)
Economic Aspects	15	10(adjusted full score)
Environmental Aspects	15	10(adjusted full score)
Agricultural and management Factors	10	5(adjusted full score)
Social Aspects	40	47(adjusted full score)

Table 1.1.3 Scheme Evaluation Criteria in RBM-SIIP

Category	Total Full Score	Item	Full Score	Remarks
1	10	Type of scheme	5	Traditional=5, Improved traditional=4, Modern=0, Others=0
		Area of scheme	5	(100ha<area<500ha)=5, (Area>500ha)=0, (Area<100ha)=0
2	15	Area topography	5	Flat=5, Mild=3, Moderate=1, Steep=0
		Salinity problems	5	No=5, Slight=3, Moderate=2, High=1
		Water availability to the offtake deliver	5	Too much=5, Enough=5, Insufficient=2, Difficult=0
3	10	Accessibility to roads	5	Yes=5, No=0
		Weir installation	5	Existed=5, Not existed=2
4	15	Irrigated crops	5	(Paddy, maize, vegetables)=5, (Banana, coffee)=2, Others=0
		Distance to the main road to the nearest town	5	<20km=5, <20km=3, Not accessible=0
		Water abstraction method	5	Gravity=5, Artesian pressure=2, Pumping=1, Others=0
5	50	Marketing/Farmers Society	5	Accessible=5, Not accessible=0
		farmers' motivation towards upgrading scheme	5	Highly motivated=5, Moderately motivated=3, Not interested=0
		Community willingness to invest in upgrading works	5	Yes=5, No=0
		Scheme management body	5	Formal water users association=5, Village government=4, Government irrigation officers=2, Donors personnel=2, Not applicable=0
		Defined organization for O&M set-up	5	Yes=5, No=0
		Existence of O&M committee	5	Yes=5, No=0
		Preparing timetable/schedule for scheme operation	5	Yes=5, No=0
		Willingness of farmers for O&M	5	High=5, Moderate=3, Poor=0, Inexistent=0
		Farmers' contribution to construction of scheme	5	Total construction=5, Partly=3, Not at all=0
Farmers' ability for O&M	5	High=5, Moderate=3, Poor=0, Inexistent=0		
Total	100			

Source: Database Outputs for Ranking Purposes for Inventory of the Schemes in RBM-SIIP

Table 1.1.4 Scheme Evaluation and Ranking Criteria in PIDP

Category	Total Score	Item	Sub-Score	Remarks
1	20	(1) Hydrology	6	(i) Reliable and sustainable water source (ii) Distance from water source to site (iii) Suitability of River for weir construction
		(2) Soils	6	(i) No salinity (ii) Not water logged (iii) Mbuga (clay) soil
		(3) Potential area	8	(i) Big area, more than 200 ha (ii) Suitable for rice production
2	20	(1) Demand	5	(i) Showing initiative e.g. letter writing to the authority concerned demanding project
		(2) Technical viability	5	(i) Capability of executing on Irrigation Project
		(3) Conflict of interest	5	(i) No claiming of water or land with neighbours or neighbouring villages
		(4) Commitment of Farmers	5	(i) Number of Paddy farms in the area
3	10	(1) Financial viability	3	(i) Present wealth of farmers
		(2) Market access	3	(i) Reliable road (All weather) from site to trunk road or railway station
		(3) Economic viability	4	(i) Will the project raise the standard of living of the villagers
4	20	(1) Beneficiary experience	6	(i) Participation of people on rice farming
		(2) Farmers organization	8	(i) Presence of agricultural organization in the village
		(3) Labour	6	(i) Availability and willingness to work
5	10	(1) Topography	4	(i) Flatness of the lands, no on thills or gulleys
		(2) Vegetation cover	3	(i) No shrubs, bushes and trees
		(3) Access to construction materials	3	(i) Not difficult to fetch construction materials e.g. stones and sand
Total	80			

Source: Site evaluation report in Manyoni District, prepared by District Programme Manager, on June 2001

Table 1.3.1 Result of Priority Grouping by Region

REGION	Description	On-going	A Group	B Group	C Group	D Group	E Group	Excluded	Total
ARUSHA	Nos. of Schemes	5	2	38	80	17	26	55	223
	Potential Area (ha)	2,313	240	22,565	31,761	3,251	24,515	15,362	100,007
COAST	Nos. of Schemes		2	6	6	1	6	5	26
	Potential Area (ha)		2,300	3,570	2,150	75	44,500	6,160	58,755
DAR-ES-SALAAM	Nos. of Schemes				7	5			12
	Potential Area (ha)				3,598	1,927			5,525
DODOMA	Nos. of Schemes	2		5	18	9	11	6	51
	Potential Area (ha)	870		6,126	6,980	2,000	23,213	4,500	43,689
IRINGA	Nos. of Schemes	2	1	13	50	6	4	18	94
	Potential Area (ha)	1,000	120	6,085	9,242	826	3,708	2,354	23,335
KAGERA	Nos. of Schemes			3	10	3	2		18
	Potential Area (ha)			231	3,895	240	12,800		17,166
KIGOMA	Nos. of Schemes	3		17	4			3	27
	Potential Area (ha)	1,700		9,780	1,350		9,700		22,530
KILIMANJARO	Nos. of Schemes	1	6	111	217	52	5	47	439
	Potential Area (ha)	450	2,180	38,546	48,987	8,995	884	17,891	117,933
LINDI	Nos. of Schemes	1	4	8	1	1			15
	Potential Area (ha)	200	3,200	5,458	400	100			9,358
MARA	Nos. of Schemes	2	1	7	8	2	4	5	29
	Potential Area (ha)	430	50	2,270	2,181	195	11,110	1,240	17,476
MBEYA	Nos. of Schemes	1		53	24	2	14	9	103
	Potential Area (ha)	30		37,512	11,351	400	18,864	11,100	79,257
MOROGORO	Nos. of Schemes		3	33	31	3	13	5	88
	Potential Area (ha)		6,793	25,373	12,712	610	111,744	19,500	176,732
MTWARA	Nos. of Schemes	3		2			4	1	10
	Potential Area (ha)	2,000		2,200			9,046	2,075	15,321
MWANZA	Nos. of Schemes		14	28	5	1	5	3	56
	Potential Area (ha)		8,610	6,568	230	15	9,035	428	24,886
RUKWA	Nos. of Schemes			9	8		1		18
	Potential Area (ha)			4,710	3,362		39,600		47,672
RUVUMA	Nos. of Schemes		2	2			5	2	11
	Potential Area (ha)		2,700	700			4,100	350	7,850
SHINYANGA	Nos. of Schemes	2	6	12	4	1	15	3	43
	Potential Area (ha)	1,400	3,700	5,550	750	250	3,710	3,310	18,670
SINGIDA	Nos. of Schemes	5	6	3	3		2		19
	Potential Area (ha)	2,050	3,140	2,500	750		3,400		11,840
TABORA	Nos. of Schemes	2		24	29	4	3		62
	Potential Area (ha)	1,130		8,630	12,930	290	11,900		34,880
TANGA	Nos. of Schemes		3	37	33	1	4	6	84
	Potential Area (ha)		1,750	10,642	6,089	80	1,300	1,550	21,411
Total	Nos. of Schemes	29	50	411	538	108	127	165	1,428
	Potential Area (ha)	13,573	34,783	199,016	158,718	19,254	343,129	85,820	854,293

Source: JICA Study Team

Table 1.3.2 Result of Priority Grouping by District (1/3)

REGION	DISTRICT	Description	On-going	A Group	B Group	C Group	D Group	E Group	Excluded	Total
ARUSHA	ARUMERU	Nos. of Schemes			19	54	9	14	48	144
		Potential Area			15,805	18,404	1,803	21,500	11,527	69,039
	ARUSHA	Nos. of Schemes			1	1			1	3
		Potential Area			110	160			2,000	2,270
	BABATI	Nos. of Schemes	2	1	3	10		1	1	18
		Potential Area	1,612	201	2,260	3,699		3,015	0	10,787
	HANANG	Nos. of Schemes			1	1			3	5
		Potential Area			86	600			635	1,321
	KARATU	Nos. of Schemes		1	3	3	1		1	9
		Potential Area		29	1,930	1,068	300		400	3,737
	MBULU	Nos. of Schemes	1		10	1				12
		Potential Area	26		2,094	400				2,590
	MONDULI	Nos. of Schemes	2		2	2	2	11		17
		Potential Area	605			154	128	0		897
	SIMANIRO	Nos. of Schemes			1	8	5		1	15
		Potential Area			280	7,276	1,010		800	9,366
		SUB-TOTAL	Nos. of Schemes	5	2	38	80	17	26	55
		Potential Area	2,313	240	22,565	31,761	3,251	24,515	15,362	100,007
COAST	BAGAMOYO	Nos. of Schemes		1	2	3			4	10
		Potential Area		2,000	2,500	1,250			6,100	11,850
	KIBAHA	Nos. of Schemes		1	1	1		3	1	7
		Potential Area		300	300	50		11,500	60	12,210
	KISARAWA	Nos. of Schemes			1	1				2
		Potential Area			370	750				1,120
	MAFLA	Nos. of Schemes					1			1
		Potential Area					75			75
	MKURANGA	Nos. of Schemes			2			2		4
		Potential Area			400			17,500		17,900
	RUFJI	Nos. of Schemes				1		1		2
Potential Area					100		15,500		15,600	
	SUB-TOTAL	Nos. of Schemes	2	6	6	1	6	5	26	
		Potential Area	2,300	3,570	2,150	75	44,500	6,160	58,755	
DAR-ES-SALAAM	ILALA	Nos. of Schemes			4				4	
		Potential Area			3,400				3,400	
	KINONDONI	Nos. of Schemes			2	2				4
		Potential Area			190	1,890				2,080
	TEMEKE	Nos. of Schemes			1	3				4
		Potential Area			8	37				45
		Nos. of Schemes			7	5			12	
		Potential Area			3,598	1,927			5,525	
DODOMA	DODOMA RURAL	Nos. of Schemes	2					1	4	7
		Potential Area	870					300	4,300	5,470
	DODOMA URBAN	Nos. of Schemes				2	2			4
		Potential Area				1,600	900			2,500
	KONDOA	Nos. of Schemes			2	11	5	3		21
		Potential Area			3,000	2,840	910	6,140		12,890
	KONGWA	Nos. of Schemes			2	2	1	4	2	11
		Potential Area			1,526	140	60	13,308	200	15,234
MPWAPWA	Nos. of Schemes			1	3	1	3		8	
	Potential Area			1,600	2,400	130	3,465		7,595	
	SUB-TOTAL	Nos. of Schemes	2	5	18	9	11	6	51	
		Potential Area	870	6,126	6,980	2,000	23,213	4,500	43,689	
IRINGA	IRINGA RURAL	Nos. of Schemes	2	1	10	35	5	3	5	61
		Potential Area	1,000	120	5,890	6,197	770	460	194	14,631
	LUDEWA	Nos. of Schemes				3				3
		Potential Area				2,004			170	2,174
	MUFINDI	Nos. of Schemes			1	7	1	1	1	11
		Potential Area			15	731	56	3,248	10	4,060
	NJOMBE	Nos. of Schemes			2	5				9
Potential Area				180	310			1,980	2,470	
	SUB-TOTAL	Nos. of Schemes	2	1	13	50	6	4	18	94
		Potential Area	1,000	120	6,085	9,242	826	3,708	2,354	23,335
KAGERA	BIHARAMULO	Nos. of Schemes			2	1				3
		Potential Area			325	100				425
	BUKOBA	Nos. of Schemes			3			1		4
		Potential Area			2,900			3,800		6,700
	KARAGWE	Nos. of Schemes			2	1				3
		Potential Area			170	40				210
	MULEBA	Nos. of Schemes			3	1				4
		Potential Area			500	160				660
	NGARA	Nos. of Schemes			3			1		4
Potential Area				231			9,000		9,231	
	SUB-TOTAL	Nos. of Schemes	3	10	3	2			18	
		Potential Area		231	3,895	240	12,800		17,166	
KIGOMA	KASULU	Nos. of Schemes	1		8	2		2		13
		Potential Area	600		4,050	550		7,200		12,400
	KIBONDO	Nos. of Schemes			5					5
		Potential Area			3,130					3,130
	KIGOMA RURAL	Nos. of Schemes	1		4	2		1		8
		Potential Area	100		2,600	800		2,500		6,000
	KIGOMA RURAL	Nos. of Schemes	1							1
Potential Area		1,000							1,000	
	SUB-TOTAL	Nos. of Schemes	3		17	4	3		27	
		Potential Area	1,700		9,780	1,350	9,700		22,530	

Table 1.3.2 Result of Priority Grouping by District (2/3)

REGION	DISTRICT	Description	On-going	A Group	B Group	C Group	D Group	E Group	Excluded	Total
KILIMANJARO	HAI	Nos. of Schemes	1	2	20	28	2	1	8	62
		Potential Area	450	240	3,869	10,059	530	0	1,355	16,503
	MOSHI RURAL	Nos. of Schemes		4	83	138	11	3	31	270
		Potential Area		1,940	25,617	20,269	1,864	884	13,616	64,190
	MWANGA	Nos. of Schemes			3	14	4		5	26
		Potential Area			2,700	4,754	410		1,460	9,324
	SAME	Nos. of Schemes			5	37	35	1	3	81
		Potential Area			6,360	13,905	6,191	0	1,460	27,916
	SUB-TOTAL	Nos. of Schemes	1	6	111	217	52	5	47	439
		Potential Area	450	2,180	38,546	48,987	8,995	884	17,891	117,933
LINDI	KILWA	Nos. of Schemes			2					2
		Potential Area			2,558					2,558
	LINDI RURAL	Nos. of Schemes		4	4	1				9
		Potential Area		3,200	2,600	400				6,200
	LIWALE	Nos. of Schemes			1					1
		Potential Area			200					200
	NACHINGWEA	Nos. of Schemes			1		1			2
		Potential Area			100		100			200
	RUANGWA	Nos. of Schemes	1							1
		Potential Area	200							200
SUB-TOTAL	Nos. of Schemes	1	4	8	1	1			15	
	Potential Area	200	3,200	5,458	400	100			9,358	
MARA	BUNDA	Nos. of Schemes			1	3	1		2	7
		Potential Area			150	431	180		850	1,611
	MUSOMA	Nos. of Schemes			4	5		3	1	13
		Potential Area			1,860	1,750		11,050	300	14,960
	SERENGETI	Nos. of Schemes	1						1	2
		Potential Area		50					50	100
	FARIME	Nos. of Schemes	2		2		1	1	1	7
		Potential Area	430		260		15	60	40	805
	SUB-TOTAL	Nos. of Schemes	2	1	7	8	2	4	5	29
		Potential Area	430	50	2,270	2,181	195	11,110	1,240	17,476
MBEYA	CHUNYA	Nos. of Schemes			1			1		2
		Potential Area			300			3,000		3,300
	HEJE	Nos. of Schemes	1			1	1	1		4
		Potential Area	30			150	100	20		300
	KVELA	Nos. of Schemes			6			1	1	8
		Potential Area			2,970			6,000	1,000	9,970
	MBARALI	Nos. of Schemes			36	9		10	4	59
		Potential Area			32,290	7,200		9,750	9,200	58,440
	MBEYA RURAL	Nos. of Schemes			9	11		1	2	23
		Potential Area			1,752	3,591		94	250	5,687
MBOZI	Nos. of Schemes			1				2	3	
	Potential Area			350				650	1,000	
RUNGWE	Nos. of Schemes			1	2	1			4	
	Potential Area			150	110	300			560	
SUB-TOTAL	Nos. of Schemes	1		53	24	2	14	9	103	
	Potential Area	30		37,512	11,351	400	18,864	11,100	79,257	
MOROGORO	KILOMBERO	Nos. of Schemes			2	4		6	1	13
		Potential Area			720	690		94,990	12,500	108,900
	KILOSA	Nos. of Schemes		2	18	7		4	1	32
		Potential Area		4,043	16,271	3,938		6,154	0	30,406
	MOROGORO RURAL	Nos. of Schemes		1	10	12		3	2	28
		Potential Area		2,750	4,682	4,094		10,600	6,500	28,626
	ULANGA	Nos. of Schemes			3	8	3		1	15
		Potential Area			3,700	3,990	610		500	8,800
	SUB-TOTAL	Nos. of Schemes		3	33	31	3	13	5	88
		Potential Area		6,793	25,373	12,712	610	111,744	19,500	176,732
MTWARA	MASASI	Nos. of Schemes							1	1
		Potential Area							2,075	2,075
	MTWARA RURAL	Nos. of Schemes	3		1			2		6
		Potential Area	2,000		1,000			3,446		6,446
	NEWALA	Nos. of Schemes						1		1
		Potential Area						1,600		1,600
	TANDAHIMBA	Nos. of Schemes			1			1		2
		Potential Area			1,200			4,000		5,200
	SUB-TOTAL	Nos. of Schemes	3		2			4	1	10
		Potential Area	2,000		2,200			9,046	2,075	15,321
MWANZA	GEITA	Nos. of Schemes		2	9					11
		Potential Area		900	1,430					2,330
	KWIMBA	Nos. of Schemes		4	6				1	11
		Potential Area		1,500	2,080				200	3,780
	MAGU	Nos. of Schemes			4	2	1	1	1	9
		Potential Area			1,150	135	15	2,400	200	3,990
	MISUNGWI	Nos. of Schemes		4	4	1		2		11
		Potential Area		4,600	653	20		6,605		11,878
	MWANZA	Nos. of Schemes		1	2			2	1	6
		Potential Area		10	35			30	28	103
SENGEREMA	Nos. of Schemes		3	2					5	
	Potential Area		1,600	1,020					2,620	
UKEREWE	Nos. of Schemes			1	2				3	
	Potential Area			200	75				275	
SUB-TOTAL	Nos. of Schemes		14	28	5	1	5	3	56	
	Potential Area		8,610	6,568	230	15	9,035	428	24,886	

Table 1.3.2 Result of Priority Grouping by District (3/3)

REGION	DISTRICT	Description	On-going	A Group	B Group	C Group	D Group	E Group	Excluded	Total
RUKWA	MPANDA	Nos. of Schemes			1	1		1		3
		Potential Area			700	2,400		39,600		42,700
	NKASI	Nos. of Schemes			1					1
		Potential Area			2,000					2,000
	SUMBAWANGA RURAL	Nos. of Schemes			6	7				13
		Potential Area			1,980	962				2,942
	SUMBAWANGA URBAN	Nos. of Schemes			1					1
		Potential Area			30					30
SUB-TOTAL	Nos. of Schemes			9	8			1		18
	Potential Area			4,710	3,362			39,600		47,672
RUVUMA	MBINGA	Nos. of Schemes		1	1			1		3
		Potential Area		1,500	300			4,000		5,800
	SONGEA	Nos. of Schemes		1				4	1	6
		Potential Area		1,200				100	100	1,400
	TUNDURU	Nos. of Schemes			1				1	2
		Potential Area			400				250	650
	SUB-TOTAL	Nos. of Schemes		2	2			5	2	11
		Potential Area		2,700	700			4,100	350	7,850
SHINYANGA	BARIADI	Nos. of Schemes		2	1				1	4
		Potential Area		1,000	200				1,000	2,200
	BUKOMBE	Nos. of Schemes					2		9	11
		Potential Area					150		0	150
	KAHAMA	Nos. of Schemes		1	1					2
		Potential Area		1,000	100					1,100
	MASWA	Nos. of Schemes		2	5			2		9
		Potential Area		1,200	1,950			400		3,550
	MEATU	Nos. of Schemes			1	1				2
		Potential Area			300	400			2,000	2,700
	SHINYANGA RURAL	Nos. of Schemes	2	1	4	1	1	2		11
		Potential Area	1,400	500	3,000	200	250	0		5,350
	SHINYANGA URBAN	Nos. of Schemes						2	1	3
		Potential Area						3,310	310	3,620
SUB-TOTAL	Nos. of Schemes	2	6	12	4	1	15	3	43	
	Potential Area	1,400	3,700	5,550	750	250	3,710	3,310	18,670	
SINGIDA	IRAMBA	Nos. of Schemes		1	3					4
		Potential Area		350	2,340	2,500		2,400		7,590
	MANYONI	Nos. of Schemes		4	3					7
		Potential Area		1,700	800					2,500
	SINGIDA	Nos. of Schemes					3		1	4
		Potential Area					750		1,000	1,750
	SUB-TOTAL	Nos. of Schemes		5	6	3		2		19
		Potential Area		2,050	3,140	2,500	750	3,400		11,840
TABORA	IGUNGA	Nos. of Schemes		1	2	2				5
		Potential Area		500	2,960	1,100				4,560
	NZEGA	Nos. of Schemes		1		6	1	3		11
		Potential Area		630		3,430	140	11,900		16,100
	SIKONGE	Nos. of Schemes				7				7
		Potential Area				3,120				3,120
	TABORA RURAL	Nos. of Schemes			1	8	1			10
		Potential Area			1,500	3,530	50			5,080
	TABORA URBAN	Nos. of Schemes				2	2			4
		Potential Area				400	100			500
URAMBO	Nos. of Schemes			21	4				25	
	Potential Area			4,170	1,350				5,520	
SUB-TOTAL	Nos. of Schemes		2	24	29	4	3		62	
	Potential Area		1,130	8,630	12,930	290	11,900		34,880	
TANGA	KOROGWE	Nos. of Schemes		3	23	17	1	3		48
		Potential Area		1,750	8,668	2,809	80	1,000		14,307
	LUSHOTO	Nos. of Schemes			13	14		3		33
		Potential Area			1,874	2,940		1,300	550	6,664
	MUHEZA	Nos. of Schemes			1	2				3
		Potential Area			100	340				440
	SUB-TOTAL	Nos. of Schemes		3	37	33	1	4	6	84
		Potential Area		1,750	10,642	6,089	80	1,300	1,550	21,411
TOTAL	Nos. of Schemes		29	50	411	538	108	127	165	1,428
	Potential Area		13,573	34,783	199,016	158,718	19,254	343,129	85,820	854,293

Source: JICA Study Team

Table 2.2.1 Accumulated Irrigation Development Area (All Categories)

Unit : ha

REGION	YEAR														
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
ARUSHA	51,374	51,383	51,541	51,625	53,825	54,920	55,647	55,647	56,512	56,719	57,735	59,928	61,241	62,004	64,182
COAST	3,085	3,380	3,380	3,380	5,380	6,050	6,150	6,150	6,650	6,650	6,650	6,945	6,945	7,445	8,195
DAR ES SALAAM	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
DODOMA	4,313	4,313	4,313	4,313	4,313	4,313	4,313	4,313	7,339	9,939	9,939	10,439	10,439	11,539	13,439
IRINGA	6,424	6,424	6,424	6,424	6,424	8,503	8,503	8,503	9,283	9,403	9,403	9,412	10,992	10,994	14,051
KAGERA	15	15	15	15	15	15	15	15	125	125	165	231	231	431	551
KIGOMA	4,800	4,800	4,800	4,800	5,800	8,970	10,500	10,500	10,810	11,875	12,230	12,230	12,230	12,470	12,570
KILIMANJARO	46,548	46,738	47,428	49,038	49,448	49,801	50,035	52,708	56,678	58,445	59,525	60,851	71,237	76,307	82,050
LINDI	1,406	4,206	4,206	4,206	8,264	8,264	8,264	8,264	8,264	8,562	8,862	8,862	8,862	8,862	9,262
MARA	661	661	661	661	2,351	2,351	2,841	2,841	2,841	2,841	2,841	2,841	2,841	2,861	2,861
MBEYA	35,249	35,249	36,189	39,289	39,289	43,189	43,189	46,148	50,158	51,676	54,522	55,212	56,709	57,482	59,237
MOROGORO	28,921	30,806	32,496	34,856	35,546	35,546	35,903	35,956	38,796	40,345	45,296	48,478	50,348	53,012	54,044
MTWARA	2,690	2,690	2,690	2,690	3,690	3,690	3,690	3,690	3,690	3,690	3,690	3,690	4,840	4,840	4,840
MWANZA	6,865	9,365	10,152	11,702	11,922	11,922	12,572	13,892	14,552	14,702	15,382	15,382	15,422	15,517	15,557
RUKWA	6,436	7,936	8,306	8,606	8,606	8,606	8,606	8,606	8,606	8,606	8,606	8,606	8,606	8,606	8,606
RUVUMA	198	198	198	433	433	433	433	433	433	2,283	2,314	3,054	3,604	4,894	4,894
SHINYANGA	4,000	6,100	6,500	8,500	10,100	10,100	10,300	11,100	11,400	11,460	11,510	11,510	11,510	11,510	11,910
SINGIDA	2,655	3,155	5,195	5,195	5,195	5,195	5,495	6,695	6,695	7,695	7,695	7,695	7,695	8,445	8,445
TABORA	3,121	3,121	3,121	3,121	3,121	3,121	3,121	5,051	5,101	5,301	5,501	10,521	11,121	11,621	12,521
TANGA	8,876	8,876	11,476	11,500	11,500	11,512	11,512	13,532	14,017	14,454	15,192	15,912	17,409	17,868	18,203
TOTAL	217,641	229,420	239,095	250,358	265,226	276,505	281,093	294,048	311,954	324,875	337,062	351,803	372,306	386,711	405,421

Source: JICA Study Team

Table 2.2.2 Accumulated Irrigation Development Area (Rehabilitation of Traditional Irrigation Schemes)

Unit : ha

REGION	YEAR														
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
ARUSHA	49,517	49,526	49,664	49,748	51,948	53,043	53,770	53,770	54,635	54,762	55,778	57,971	59,264	60,027	62,205
COAST	325	620	620	620	620	620	620	620	620	620	620	915	915	915	915
DAR ES SALAAM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DODOMA	1,812	1,812	1,812	1,812	1,812	1,812	1,812	1,812	1,812	1,812	1,812	1,812	1,812	1,812	1,812
IRINGA	5,604	5,604	5,604	5,604	5,604	7,683	7,683	7,683	8,463	8,583	8,583	8,592	10,172	10,174	13,231
KAGERA	15	15	15	15	15	15	15	15	125	125	165	231	231	431	551
KIGOMA	4,200	4,200	4,200	4,200	4,200	7,370	8,900	8,900	9,210	10,275	10,630	10,630	10,630	10,870	10,970
KILIMANJARO	36,730	36,920	37,610	39,220	39,630	39,983	40,217	42,890	43,260	45,027	46,107	47,433	57,819	62,889	68,632
LINDI	1,406	3,006	3,006	3,006	5,864	5,864	5,864	5,864	5,864	5,962	6,162	6,162	6,162	6,162	6,162
MARA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MBEYA	28,170	28,170	29,110	32,210	32,210	36,110	36,110	39,069	43,079	44,597	47,443	48,133	49,630	50,403	52,158
MOROGORO	10,962	12,847	14,537	14,977	15,667	15,667	16,024	16,024	18,864	18,913	22,264	24,506	25,276	25,676	25,788
MTWARA	990	990	990	990	990	990	990	990	990	990	990	990	2,140	2,140	2,140
MWANZA	272	272	279	379	389	389	389	389	399	399	399	399	399	399	399
RUKWA	4,836	6,336	6,706	7,006	7,006	7,006	7,006	7,006	7,006	7,006	7,006	7,006	7,006	7,006	7,006
RUVUMA	198	198	198	433	433	433	433	433	433	683	714	1,454	2,004	2,094	2,094
SHINYANGA	270	770	770	770	770	770	770	770	770	830	880	880	880	880	880
SINGIDA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABORA	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	2,240	2,240
TANGA	8,656	8,656	10,856	10,880	10,880	10,892	10,892	12,912	13,397	13,834	14,572	15,192	16,689	17,148	17,483
TOTAL	155,703	161,682	167,717	173,610	179,778	190,387	193,235	200,887	210,667	216,158	225,865	234,046	252,769	261,265	274,665

Source: JICA Study Team

Table 2.2.3 Accumulated Irrigation Development Area (Development of Water Harvesting Schemes)

Unit : ha

REGION	YEAR														
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
ARUSHA	740	740	760	760	760	760	760	760	760	840	840	840	840	840	840
COAST	0	0	0	0	0	370	370	370	370	370	370	370	370	370	370
DAR ES SALAAM	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
DODOMA	2,301	2,301	2,301	2,301	2,301	2,301	2,301	2,301	5,327	7,927	7,927	8,427	8,427	9,527	11,427
IRINGA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KAGERA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KIGOMA	600	600	600	600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600
KILIMANJARO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LINDI	0	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
MARA	615	615	615	615	2,305	2,305	2,795	2,795	2,795	2,795	2,795	2,795	2,795	2,795	2,795
MBEYA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOROGORO	1,680	1,680	1,680	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,800	3,800
MTWARA	1,700	1,700	1,700	1,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700
MWANZA	6,323	8,823	9,603	11,053	11,183	11,183	11,633	11,933	12,583	12,583	12,833	12,833	12,833	12,893	12,893
RUKWA	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
RUVUMA	0	0	0	0	0	0	0	0	0	1,600	1,600	1,600	1,600	1,600	1,600
SHINYANGA	3,620	5,220	5,620	7,620	9,220	9,220	9,420	10,220	10,520	10,520	10,520	10,520	10,520	10,520	10,920
SINGIDA	2,655	3,155	5,195	5,195	5,195	5,195	5,495	6,695	6,695	7,695	7,695	7,695	7,695	8,445	8,445
TABORA	751	751	751	751	751	751	751	2,681	2,731	2,931	3,131	7,281	7,881	7,881	8,781
TANGA	0	0	400	400	400	400	400	400	400	400	400	400	400	400	400
TOTAL	21,389	27,189	30,829	36,199	41,619	41,989	43,429	47,659	51,685	57,165	57,615	62,265	62,865	64,975	68,175

Source: JICA Study Team

Table 2.2.4 Accumulated Irrigation Development Area (New Smallholder Schemes)

Unit : ha

REGION	YEAR														
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
ARUSHA	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,137	1,137	1,137
COAST	2,760	2,760	2,760	2,760	4,760	5,060	5,160	5,160	5,660	5,660	5,660	5,660	5,660	6,160	6,910
DAR ES SALAAM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DODOMA	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
IRINGA	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820
KAGERA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KIGOMA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KILIMANJARO	9,818	9,818	9,818	9,818	9,818	9,818	9,818	9,818	13,418	13,418	13,418	13,418	13,418	13,418	13,418
LINDI	0	0	0	0	1,200	1,200	1,200	1,200	1,200	1,500	1,500	1,500	1,500	1,500	1,900
MARA	46	46	46	46	46	46	46	46	46	46	46	46	66	66	66
MBEYA	7,079	7,079	7,079	7,079	7,079	7,079	7,079	7,079	7,079	7,079	7,079	7,079	7,079	7,079	7,079
MOROGORO	16,279	16,279	16,279	16,279	16,279	16,279	16,279	16,332	16,332	17,832	19,432	20,372	21,472	23,536	24,456
MTWARA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MWANZA	270	270	270	270	350	350	550	1,570	1,570	1,720	2,150	2,150	2,190	2,225	2,265
RUKWA	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
RUVUMA	0	0	0	0	0	0	0	0	0	0	0	0	0	1,200	1,200
SHINYANGA	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
SINGIDA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TABORA	630	630	630	630	630	630	630	630	630	630	630	1,500	1,500	1,500	1,500
TANGA	220	220	220	220	220	220	220	220	220	220	220	320	320	320	320
TOTAL	40,549	40,549	40,549	40,549	43,829	44,129	44,429	45,502	49,602	51,552	53,582	55,492	56,672	60,471	62,581

Source: JICA Study Team

Table 2.2.5 Estimated Production of Paddy by Region

Unit : tons

REGION	YEAR														
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
ARUSHA	12,200	12,309	12,674	13,111	13,493	13,580	13,650	13,814	14,552	15,351	17,278	18,485	20,198	20,750	21,720
COAST	60,200	60,200	60,200	60,200	63,858	67,516	72,394	72,394	76,709	81,185	87,099	88,123	88,931	90,008	90,487
DAR ES SALAAM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DODOMA	500	514	557	605	644	644	644	644	644	644	644	644	807	1,110	1,494
IRINGA	12,600	12,600	12,805	13,417	14,098	14,642	14,642	14,642	15,188	16,610	18,214	19,414	20,083	20,764	21,620
KAGERA	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,600	2,720	2,840	3,043	3,167
KIGOMA	8,200	8,246	9,089	9,948	11,011	11,011	11,011	11,011	11,656	14,108	17,560	20,793	23,133	24,677	26,588
KILIMANJARO	21,400	21,465	21,529	21,707	22,058	22,625	23,212	24,094	24,828	25,719	26,052	26,933	27,932	30,547	32,699
LINDI	15,200	15,424	15,647	15,945	16,266	19,843	23,526	27,988	33,282	38,616	45,514	45,514	45,994	46,717	47,599
MARA	1,700	1,910	2,121	2,435	2,469	2,515	2,515	2,656	3,818	5,360	7,055	7,500	7,500	7,500	7,500
MBEYA	189,800	189,822	189,844	189,873	189,873	190,466	191,809	194,536	200,382	208,402	221,722	235,483	253,635	267,273	279,472
MOROGORO	103,200	103,200	103,200	103,200	104,528	109,453	120,052	130,881	141,991	146,817	151,797	152,729	154,578	161,204	174,944
MTWARA	26,000	26,000	26,195	27,535	28,939	30,466	30,466	30,466	31,144	31,822	32,727	32,727	32,727	32,727	32,727
MWANZA	109,200	109,200	109,200	111,166	120,556	134,948	149,836	158,465	161,511	165,401	166,847	171,100	174,443	179,051	180,423
RUKWA	67,200	67,200	67,200	67,200	69,441	75,199	82,264	87,512	88,259	88,259	88,259	88,259	88,259	88,259	88,259
RUVUMA	29,800	29,800	29,800	29,800	29,800	29,800	29,977	30,155	30,392	30,392	30,392	30,392	30,574	31,987	33,462
SHINYANGA	44,600	44,600	44,600	45,235	47,608	50,930	54,354	56,564	58,896	61,147	62,579	63,418	64,138	65,134	65,246
SINGIDA	2,900	2,900	3,308	4,709	6,556	8,190	9,870	11,136	12,824	13,010	13,196	14,189	14,933	16,547	17,167
TABORA	44,500	44,500	44,657	45,041	45,477	45,781	45,781	45,781	45,781	45,781	46,036	47,111	48,380	49,690	51,382
TANGA	30,500	30,500	30,500	30,945	31,389	32,586	36,555	40,725	45,236	45,260	46,020	50,174	55,336	61,673	65,747
TOTAL	782,300	782,990	785,726	794,672	820,667	862,794	915,156	956,061	999,690	1,036,481	1,081,590	1,115,705	1,154,418	1,198,660	1,241,702

Source: JICA Study Team

Table 2.2.6 Annually Requires Cost by GOT for Scheme-wise Development

Unit : thousand US\$

REGION	YEAR														
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
ARUSHA	96	175	152	183	1,894	3,774	5,577	6,311	5,360	3,200	2,560	3,697	4,009	3,904	4,584
COAST	640	1,104	1,200	736	1,600	2,893	3,342	2,129	680	1,000	400	288	480	672	1,700
DAR ES SALAAM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DODOMA	0	0	0	0	0	0	0	0	726	1,713	2,025	1,842	924	396	888
IRINGA	43	72	29	0	0	1,012	1,606	1,074	984	857	892	548	558	1,073	2,583
KAGERA	0	0	0	0	0	0	0	0	40	66	41	63	74	170	326
KIGOMA	0	0	0	0	240	1,950	3,754	4,012	3,516	2,896	3,060	1,952	240	216	576
KILIMANJARO	559	980	1,197	1,933	1,854	1,749	1,487	1,511	2,766	4,270	5,151	5,400	8,713	11,653	13,850
LINDI	0	1,308	2,012	1,712	3,668	4,002	3,930	2,588	0	408	824	512	96	0	480
MARA	18	30	12	0	439	672	751	624	106	0	0	0	24	40	16
MBEYA	0	0	536	1,464	1,584	3,346	4,230	5,812	8,654	7,916	6,989	5,505	5,751	5,905	4,785
MOROGORO	1,157	2,738	5,044	6,742	5,824	3,746	1,903	946	1,729	3,831	8,514	12,043	11,720	10,370	7,812
MTWARA	0	0	0	0	240	360	360	240	0	0	0	0	576	864	864
MWANZA	1,414	2,806	2,897	2,728	1,722	893	748	1,357	1,651	1,630	1,744	1,190	466	128	180
RUKWA	288	1,152	1,800	2,064	1,272	144	0	0	0	0	0	0	0	0	0
RUVUMA	0	0	0	180	300	120	0	0	0	696	1,138	1,632	1,968	2,764	2,986
SHINYANGA	224	1,056	1,648	1,656	1,536	1,224	984	696	444	564	532	244	72	0	144
SINGIDA	216	540	934	854	734	490	108	468	504	672	648	360	240	149	248
TABORA	0	0	0	0	0	0	0	463	726	693	550	2,202	3,474	2,976	2,148
TANGA	210	350	1,340	1,838	1,703	1,073	12	1,157	2,248	2,678	2,699	2,126	2,720	3,112	2,972
TOTAL	4,866	12,310	18,800	22,090	24,610	27,447	28,791	29,388	30,133	33,089	37,768	39,604	42,106	44,389	47,144

Source: JICA Study Team