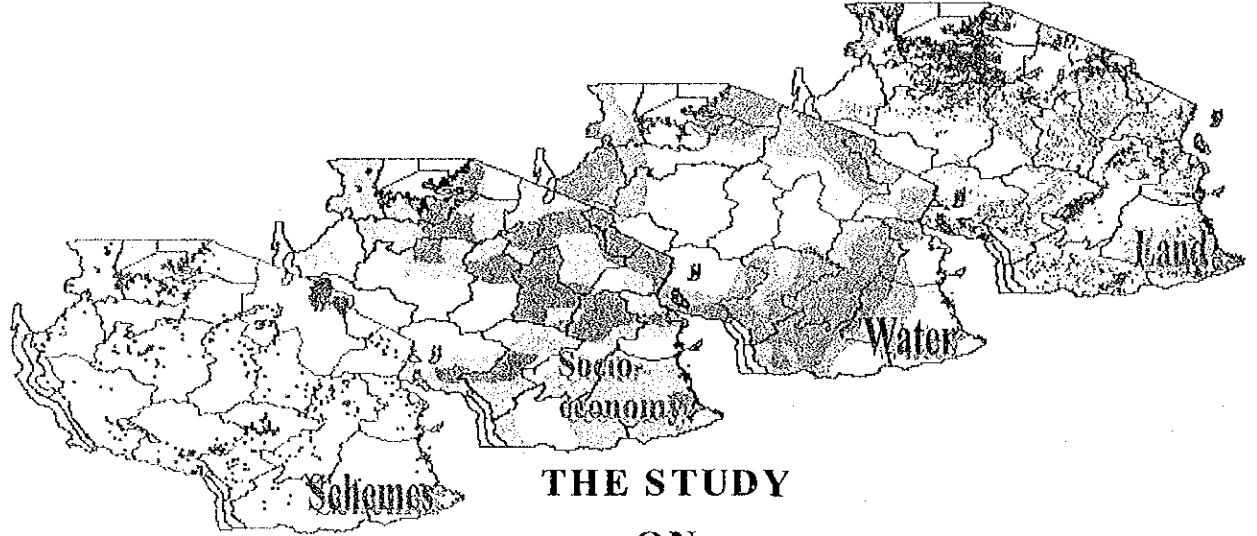


JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
MINISTRY OF AGRICULTURE AND FOOD SECURITY (MAFS)



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



MASTER PLAN  
VOLUME-II: APPENDIXES



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

MASTER PLAN

VOLUME-II:  
APPENDIXES

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***Appendix A***  
***Inventory Survey and Analysis***

**THE STUDY  
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**APPENDIX A**

**INVENTORY SURVEY AND ANALYSIS**

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## APPENDIX A

### INVENTORY SURVEY AND ANALYSIS

#### CHAPTER 1 INVENTORY SURVEY

##### 1.1 Methodology

An inventory survey for the existing irrigation schemes to be rehabilitated or improved and the new schemes to be constructed has been started so as to obtain further information in addition to the existing one. The inventory survey has been conducted centering the Zonal Irrigation Offices to District Offices using a questionnaire form. In this survey, attention has been paid on grasping the community based irrigation schemes, which have generally been overlooked so far.

##### 1.2 Questionnaire

The questionnaire for the inventory survey is prepared by the Study Team. The survey covers not only conditions of irrigation facilities, but also situations of farmers' organizations and marketing. The inventory survey form is given in Attachment 1. Items to be surveyed, which are prepared by making reference with those in RBMSIIP and PIDP, are summarized as follows:

- (1) Location, Administrative Information and Scheme History
- (2) Irrigation and Drainage
  - Physical conditions
  - Proposed plan
  - Topography
  - Soils
  - Water resources
  - Drainage and floods
  - Access road
- (3) Agriculture and Land Use
  - Cultivation area
  - Crop production
  - Farming calendar
  - Farm size distribution
  - Land capability for irrigation and crop suitability

- Major constraints in crop production
- (3) Farmers Supporting System
  - Post harvest
  - Input supply
  - Extension service
- (4) Farmers' Organization
  - General information
  - Institution
  - Office bearers
  - Activities
  - Training
- (5) Operation and Maintenance
  - Operation
  - Maintenance
  - Settlement of irrigation disputes
- (6) Environment
  - River water quality
  - Sedimentation in reservoir
  - Water borne diseases

### **1.3 Execution of the Inventory Survey**

The inventory survey has been almost completed by the end of January 2002. In order to analyze the inventory survey data, computerized database has been prepared by the Study Team using the Microsoft Excel. All the data collected by the inventory survey are encoded. Since many questionnaires had to be answered in a short time at every Region, it was anticipated that there would be improper answers. Therefore, the initial results of the inventory survey were verified in cooperation with the Zonal Irrigation Engineers. The verification of the survey results was completed by the end of June 2002.



## CHAPTER 2 PRESENT SITUATION OF INVENTORIZED SCHEMES

### 2.1 Inventory Survey

The inventory survey of the irrigation schemes was carried out in order to grasp the present situation and proposed plan of irrigation schemes including location, history, irrigation and drainage, agriculture and land use, farmers' supporting system, farmers' organization, operation and maintenance, and environment. The schemes to be inventorized are selected from the following source according to discussion with the Irrigation Section of MAFS.

- Schemes to be inventorized by NIMP
- Schemes inventorized by RBM&SIIP in 1995.

The inventorized schemes are 1,428 in total, covering about 854,000 ha as follows

**Inventorized Schemes**

Data Source	Nos. of Schemes	Potential Area (ha)
Inventory survey by NIMP	689	616,700
Inventory survey by RBM&SIIP	739	237,600
Total	1,428	854,300

Source: Inventory survey conducted by NIMP and RBM&SIIP

The inventorized schemes by NIMP cover the whole regions in the mainland while the schemes inventorized by RBM&SIIP are located in its project area, namely, Arusha, Kilimanjaro, Tanga, Mbeya, and Iringa Regions. The detail information is indicated in Table 2.1.1.

List of the inventorized schemes are given in Attachment 2

### 2.2 Classification of Inventorized Schemes

#### 2.2.1 Classification by Type of Irrigation

The inventorized irrigation schemes are classified into the following types according to the study results on Regional Irrigation Development Strategy in 1992.

**Inventorized Schemes by Type of Irrigation**

Type of Irrigation	Nos. of Schemes	Existing Area (ha)	Potential Area (ha)
Traditional Irrigation	982	122,600	518,700
Water Harvesting	205	7,900	150,700
Modern Irrigation	128	35,900	134,600
Improved Traditional Irrigation	113	25,500	50,300
Total	1,428	191,900	854,300

Source: Inventory survey conducted by NIMP and RBM&SIIP

Traditional Irrigation Schemes: schemes which have been initiated and operated

by farmers themselves, with no intervention from external agencies. These would include schemes based on traditional furrows for the production of fruit and vegetables in the highland areas, and simple diversion on the lowlands for paddies. As for this category, at present, the schemes in Arusha and Kilimanjaro accounts for over 60% of the total area.

Water Harvesting Schemes: water harvesting schemes and flood recession schemes, on which sub-subsistence farmers have themselves introduced simple techniques to artificially control the availability of water to crop. They are mainly located in such regions as Dodoma, Mara, Mwanza, Shinyanga, Singida, and Tabora.

Modern irrigation Schemes: the formally planned and designed fully developed smallholder schemes, on which full irrigation facilities have been provided by external agencies with or without some contribution from the beneficiaries, and on which there is usually a strong element of management provided by Government or other external agency. The major regions, where the schemes have been developed, are Morogoro followed by Kilimanjaro and Mbeya.

Improved Traditional Irrigation Scheme: schemes which have been initiated and operated by semi-subsistence farmers themselves and on which there has subsequently been some intervention by an external agency in the form of construction of a new diversion structure.

Regional Distribution of the inventorized schemes is shown in Tables 2.2.1 and 2.2.2.

### 2.2.2 Classification by Size of Potential Area

Out of 1,428 schemes, 1,111 schemes have a potential area of less than 500 ha. The irrigation schemes are categorized by size of irrigation area as presented below.

**Inventorized Schemes by Size of Potential Area** Unit : Nos.

Type of Irrigation	Less than 500 ha	500 – 2,000 ha	More than 2,00 ha	Total
Traditional Irrigation	810	136	36	982
Water Harvesting	133	54	18	205
Modern Irrigation	86	25	17	128
Improved Traditional Irrigation	82	30	1	113
Total	1,111	245	72	1,428

Source: Inventory survey conducted by NIMP and RBM&SIIP

Detail information of the inventorized schemes by size of potential area is given in Tables 2.2.3 to 2.2.7.

### 2.2.3 Classification by Type of Management

Out of Total schemes, 1,328 schemes are small-holder irrigation schemes while 85 private schemes and 15 government-managed schemes, such as NAFCO, and SUDECO, are identified. Some private scheme cultivated cash crops, namely, tea, coffee, cashew, sugarcane. The results of the classification are indicated in Table 2.2.8 and summarized below.

**Inventorized Schemes by Management Type** Unit : Nos.

Type of Irrigation	Small-holder	Private	Others	Total
Traditional Irrigation	924	52	6	982
Water Harvesting	204	1	0	205
Modern Irrigation	95	25	8	128
Improved Traditional Irrigation	105	7	1	113
Total	1,328	85	15	1,428

Source: Inventory survey conducted by NIMP and RBM&SIIP

### 2.2.4 Classification by Type of Water Abstraction

River water is main water resource of irrigation schemes in Tanzania. Some 1,300 schemes depends water source on rivers and streams. Pump irrigation schemes, which are mainly located in such regions as Kagera, Mara, and Mwanza, depends water source on and Groundwater and lakes like the Lake Victoria.

**Inventorized Schemes by Type of Water Abstraction** Unit : Nos.

Type of Irrigation	Gravity	Pump	Total
Traditional Irrigation	962	20	982
Water Harvesting	204	1	205
Modern Irrigation	74	54	128
Improved Traditional Irrigation	106	7	113
Total	1,346	82	1,428

Source: Inventory survey conducted by NIMP and RBM&SIIP

Detail of the information is shown in Table 2.2.9.

## CHAPTER 3 ANALYSIS OF INVENTORIZED DATA

### 3.1 Necessity of Cross-Checking

The inventory survey was carried out from December 2001 to January 2002, and the data verification and analysis were made in June 2002. As a result, the inventorized schemes for the Study became 1,428 in total.

However, it was observed that most of the schemes are not supported by the basic studies or feasibility studies. Thus, in most cases, the answered questionnaires involve a lot of questionable data or are completely lacking in such basic data as potential irrigable area, project costs, which are needed to estimate irrigation benefit as well as EIRR. In order to solve the problem and to formulate the scheme-wise development programs by the year 2017, the cross checking and supplement were required; in particular, potential irrigable area, development costs, irrigation benefits and Economic Internal Rate of Return (EIRR) were cross-checked and supplemented.

### 3.2 Cross-Checking of Potential Areas

It was expected that the cross-checking of the potential areas of the inventorized schemes are conducted by balancing estimated available river discharge and diversion irrigation water requirement of each inventorized scheme. The estimate of available water discharge need data of catchments area at diversion point. However the cross-checking of the data were in difficulty because of lack of the data of catchment area in the inventory survey. It was assumed, therefore, that the potential area answered in the inventory survey is to be the future irrigable area. Further, the inventorized schemes, that have no data of present irrigated area and potential area, were extracted to recommend re-study and investigation.

### 3.3 Estimation of Project Costs

#### 3.3.1 Needs of Rehabilitation

The needs of construction, improvement and rehabilitation of irrigation facilities are described below.

Needs of Rehabilitation

Unit : Nos.

Type of Irrigation	Construction/ Improvement	Rehabilitation	Total Scheme
Dam	5	3	1,346
Diversion weir	478	395	
Pump	78	2	82
Irrigation Canals	340	895	1,428

Source: Inventory survey conducted by NIMP and RBM&SIIP

Over 60% of gravity type irrigation scheme require construction, improvement, and rehabilitation of diversion weirs. It is stressed that most of the diversion weirs made by local materials in traditional irrigation schemes shall be replaced by permanent structures made by masonry or concrete. It is reported that the irrigation canal shall be rehabilitated or improved providing partial lining and diversion structure.

### 3.3.2 Estimate of Rehabilitation / Construction Cost

Through the classification and analysis of rehabilitation, improvement and construction costs, it has been found out that the works widely vary in scale from minor repair works to significant improvement or re-construction works. The minor repair works are replacement of intake gates, repair of small canal structures. Significant works include a total replacement of diversion weirs which are totally damaged by natural disasters, improvement of the existing temporary weirs to concrete weirs, and construction of new canals for extension areas. There are other improvement works such as concrete lining of the existing earth canals, and improvement or extension of drainage canals and farm roads.

Because of such a wide range of rehabilitation or construction works, it is expected that the project costs may vary widely without any relationship with development scale and topographic condition. Therefore, estimate of the project cost are assumed classifying the grades of rehabilitation or construction into four categories.

#### Classification of the Inventorized Scheme by Type of Construction / Improvement Works

Category	Diversion Weir	Irrigation Canal
Category 1	No need for rehabilitation	To be rehabilitated
Category 2	To be rehabilitated	To be rehabilitated or no need
Category 3	To be constructed / replaced	To be rehabilitated or no need
Category 4	To be constructed / replaced	To be constructed / extended

The project costs for rehabilitation, improvement and construction for each category were assumed and supplemented based on the previous performance of irrigation development because few data were obtained through the inventory survey.

#### Unit Project Costs by Type of Water Abstraction

Unit : US\$/ha

Type of Irrigation	Grade 1	Grade 2	Grade 3	Grade 4
Traditional Irrigation	1,500	2,000	2,500	3,000
Water Harvesting	500	1,000	1,200	1,500
Modern Irrigation	2,000	3,000	4,000	5,000
Improved Traditional Irrigation	2,000	3,000	4,000	5,000

### 3.4 Estimation of Irrigation Benefits

#### 3.4.1 General

The irrigation benefits were defined as the difference of net crop production values between future with and without project conditions, and were calculated according to the following equations.

- Net crop production values =  
{(unit yield of paddy x economic farm gate prices) – production cost per ha}  
+ {(unit yield of maize x economic farm gate prices) – production cost per ha }  
+ {(unit yield of beans x economic farm gate prices) – production cost per ha }
- Irrigation benefits =  
net crop production value (under with-project conditions)  
- net crop production value (under without-project conditions)

Basic information for estimation of irrigation benefits is shown in Clause 2.2 of Appendix C.

#### 3.4.2 Cropping Pattern and Land Use

The potential areas of inventorized schemes were assumed to be the future irrigated areas under with-project condition for both rehabilitation and new schemes. The present irrigation areas (actually irrigated area) in the rehabilitation schemes were assumed to be future irrigation areas under without-project condition for rehabilitation schemes. The balance in area between the potential area and the actually irrigated area was assumed to be the incremental irrigation area by the rehabilitation schemes. On the other hands, the balance between the potential areas and the present rainfed areas was assumed to be the incremental irrigated area by the new schemes. The present and future cropping patterns with intensities were assumed by region based on the results of the inventorized survey and other existing data and information.

#### 3.4.3 Unit Yield of Crops

Regional average unit yields of paddy, maize, and beans per ha under rainfed condition, present irrigated condition were estimated on the basis of the results of the inventorized survey and the agricultural statistics. Further, yield of those crops under future irrigated cultivation were assumed taking into account the recommended farming practice by MAFS. Regional average unit yields under present irrigated condition and rainfed condition were assumed to be those under without-project condition.

#### 3.4.4 Crop Budget

Economic farm gate prices of the traded farm inputs and products (paddy, maize

and beans) as well as crop production costs (seeds, fertilizer, and chemical, labor) are collected from MAFS.

### 3.5 Calculation of EIRRs

The economic internal of returns (EIRRS) were calculated on the basis of supplemented costs and estimated benefits under the following basic assumptions:

- Conversion factor to economic construction cost is 0.8.
- Conversion factor of agricultural inputs and labour force are based on the report on "The Study on the Smallholder Irrigation Projects in Central Wami River Basin, Morogoro" in 1998.
- Economic annual O&M cost is 0.5 % of the economic construction cost,
- Constriction period is 3 years for small-scale schemes, 4 years for medium-scale schemes, and 5 years for large-scale schemes,
- Build-up period is 3 years after completion of construction works
- Project economic life is 50 years for the large-scale schemes, 15 years for the water harvesting schemes, and 30 years for the other categories of the schemes.
- Replacement cost is estimated at 1% of the economic construction cost in every 10 years after completion of the construction works.

The supplemented financial cost data were converted to economic costs by applying a conversion factor of 0.8. The summary of EIRR is shown in the following tables.

**Results of EIRR Calculation**

Type of Irrigation	Less than 8%	8 - 12 %	12 - 16 %	16 - 20 %	More than 20 %	Total
Traditional Irrigation	151	207	241	148	63	810
Water Harvesting	5	61	6	11	67	150
Modern Irrigation	21	15	29	10	2	77
Improved Traditional Irrigation	18	14	13	9	16	70
Total	195	297	289	178	148	1,107

## ***Table***



Table 2.1.1 Inventorized Scheme by Data Source

REGION	Description	NIMP	RBM	Total
ARUSHA	Nos. of Schemes	80	143	223
	Potential Area	55,452	44,555	100,007
COAST	Nos. of Schemes	26		26
	Potential Area	58,755		58,755
DAR-ES-SALAAM	Nos. of Schemes	12		12
	Potential Area	5,525		5,525
DODOMA	Nos. of Schemes	51		51
	Potential Area	43,689		43,689
IRINGA	Nos. of Schemes	35	59	94
	Potential Area	11,209	12,126	23,335
KAGERA	Nos. of Schemes	18		18
	Potential Area	17,166		17,166
KIGOMA	Nos. of Schemes	27		27
	Potential Area	22,530		22,530
KILIMANJARO	Nos. of Schemes	15	424	439
	Potential Area	8,936	108,997	117,933
LINDI	Nos. of Schemes	15		15
	Potential Area	9,358		9,358
MARA	Nos. of Schemes	29		29
	Potential Area	17,476		17,476
MBEYA	Nos. of Schemes	39	64	103
	Potential Area	17,507	61,750	79,257
MOROGORO	Nos. of Schemes	88		88
	Potential Area	176,732		176,732
MTWARA	Nos. of Schemes	10		10
	Potential Area	15,321		15,321
MWANZA	Nos. of Schemes	56		56
	Potential Area	24,886		24,886
RUKWA	Nos. of Schemes	18		18
	Potential Area	47,672		47,672
RUVUMA	Nos. of Schemes	11		11
	Potential Area	7,850		7,850
SHINYANGA	Nos. of Schemes	43		43
	Potential Area	18,670		18,670
SINGIDA	Nos. of Schemes	19		19
	Potential Area	11,840		11,840
TABORA	Nos. of Schemes	62		62
	Potential Area	34,880		34,880
TANGA	Nos. of Schemes	35	49	84
	Potential Area	11,230	10,181	21,411
TOTAL	Nos. of Schemes	689	739	1,428
	Potential Area	616,684	237,609	854,293

Source ; National Irrigation Master Plan, and River Basin Management and Smallholder Irrigation Improvement Program

Table 2.2.1 Inventorized Schemes by Type of Irrigation and Region

REGION	Description	Type of Irrigation				Total
		1 Traditional	2 Water harvesting	3 Modern	4 Improved Traditional	
ARUSHA	Nos. of Schemes	192	3	15	15	15
	Potential Area	89,833	1,440	3,361	3,361	3,361
COAST	Nos. of Schemes	2	2	17	17	17
	Potential Area	11,500	12,870	33,660	33,660	33,660
DAR-ES-SALAAM	Nos. of Schemes	2	2	7	7	7
	Potential Area	142	190	5,185	5,185	5,185
DODOMA	Nos. of Schemes	12	34	1	1	1
	Potential Area	3,150	39,499	300	300	300
IRINGA	Nos. of Schemes	75		3	3	3
	Potential Area	15,981		1,534	1,534	1,534
KAGERA	Nos. of Schemes	18				
	Potential Area	17,166				
KIGOMA	Nos. of Schemes	25	2			
	Potential Area	20,930	1,600			
KILIMANJARO	Nos. of Schemes	412		9	9	9
	Potential Area	92,949		16,250	16,250	16,250
LINDI	Nos. of Schemes	10	2	3	3	3
	Potential Area	6,258	1,200	1,900	1,900	1,900
MARA	Nos. of Schemes		14	15	15	15
	Potential Area		5,511	11,965	11,965	11,965
MBEYA	Nos. of Schemes	71		3	3	3
	Potential Area	51,343		7,094	7,094	7,094
MOROGORO	Nos. of Schemes	50	3	31	31	31
	Potential Area	122,684	7,400	43,698	43,698	43,698
MTWARA	Nos. of Schemes	4	5			
	Potential Area	7,100	7,275			
MWANZA	Nos. of Schemes	5	30	18	18	18
	Potential Area	358	19,495	4,975	4,975	4,975
RUKWA	Nos. of Schemes	16	1	1	1	1
	Potential Area	43,272	2,000	2,400	2,400	2,400
RUVUMA	Nos. of Schemes	11				
	Potential Area	7,850				
SHINYANGA	Nos. of Schemes	3	36	1	1	1
	Potential Area	700	17,220	400	400	400
SINGIDA	Nos. of Schemes		19			
	Potential Area		11,840			
TABORA	Nos. of Schemes	8	50	1	1	1
	Potential Area	9,980	22,480	1,500	1,500	1,500
TANGA	Nos. of Schemes	66	2	3	3	3
	Potential Area	17,549	700	360	360	360
TOTAL	Nos. of Schemes	982	205	128	128	128
	Potential Area	518,745	150,720	134,582	134,582	134,582

Source ; National Irrigation Master Plan, and River Basin Management and Smallholder Irrigation Improvement Program

**Table 2.2.2 Inventorized Schemes by Type of Irrigation and District (1/4)**

REGION	DISTRICT	Description	Type of Irrigation				Total
			1 Traditional	2 Water harvesting	3 Modern	4 Improved Traditional	
ARUSHA	ARUMERU	Nos. of Schemes	121		14	9	144
		Potential Area	61,681		3,281	4,077	69,039
	ARUSHA	Nos. of Schemes	3				3
		Potential Area	2,270				2,270
	BABATI	Nos. of Schemes	18				18
		Potential Area	10,787				10,787
	HANANG	Nos. of Schemes	5				5
		Potential Area	1,321				1,321
	KARATU	Nos. of Schemes	8			1	9
		Potential Area	3,337			400	3,737
	MBULU	Nos. of Schemes	8	2	1	1	12
		Potential Area	2,274	140	80	96	2,590
MONDULI	Nos. of Schemes	16			1	17	
	Potential Area	897			0	897	
SIMANIRO	Nos. of Schemes	13		1	1	15	
	Potential Area	7,266	1,300		800	9,366	
SUB-TOTAL	Nos. of Schemes	192	3	15	13	223	
	Potential Area	89,833	1,440	3,361	5,373	100,007	
COAST	BAGAMOYO	Nos. of Schemes			10		10
		Potential Area			11,850		11,850
	KIBAHA	Nos. of Schemes	2		1	4	7
		Potential Area	11,500		60	650	12,210
	KISARAWE	Nos. of Schemes		1	1		2
		Potential Area		370	750		1,120
	MAFIA	Nos. of Schemes				1	1
		Potential Area				75	75
	MKURANGA	Nos. of Schemes		1	3		4
		Potential Area		12,500	5,400		17,900
RUFIT	Nos. of Schemes			2		2	
	Potential Area			15,600		15,600	
SUB-TOTAL	Nos. of Schemes	2	2	17	5	26	
	Potential Area	11,500	12,870	33,660	725	58,755	
DAR-ES-SALAAM	ILALA	Nos. of Schemes			4		4
		Potential Area			3,400		3,400
	KINONDONI	Nos. of Schemes	1	2	1		4
		Potential Area	130	190	1,760		2,080
	TEMEKE	Nos. of Schemes	1		2	1	4
Potential Area		12		25	8	45	
SUB-TOTAL	Nos. of Schemes	2	2	7	1	12	
	Potential Area	142	190	5,185	8	5,525	
DODOMA	DODOMA RURAL	Nos. of Schemes		7			7
		Potential Area		5,470			5,470
	DODOMA URBAN	Nos. of Schemes	2	1	1		4
		Potential Area	2,100	100	300		2,500
	KONDOA	Nos. of Schemes	3	15		3	21
		Potential Area	260	11,890		740	12,890
	KONGWA	Nos. of Schemes	4	7			11
		Potential Area	340	14,894			15,234
MPWAPWA	Nos. of Schemes	3	4		1	8	
	Potential Area	450	7,145		0	7,595	
SUB-TOTAL	Nos. of Schemes	12	34	1	4	51	
	Potential Area	3,150	39,499	300	740	43,689	
IRINGA	IRINGA RURAL	Nos. of Schemes	53		1	7	61
		Potential Area	9,527		184	4,920	14,631
	LUDEWA	Nos. of Schemes	4		1	1	6
		Potential Area	2,024		150	0	2,174
	MUFINDI	Nos. of Schemes	10			1	11
		Potential Area	3,940			120	4,060
	NCOMBE	Nos. of Schemes	8		1	7	16
		Potential Area	490		1,200	780	2,470
SUB-TOTAL	Nos. of Schemes	75		3	16	94	
	Potential Area	15,981		1,534	5,820	23,335	

Table 2.2.2 Inventorized Schemes by Type of Irrigation and District (2/4)

REGION	DISTRICT	Description	Type of Irrigation				Total	
			1 Traditional	2 Water harvesting	3 Modern	4 Improved Traditional		
KAGERA	BIHARAMULO	Nos. of Schemes	3				3	
		Potential Area	425				425	
	BUKOKA	Nos. of Schemes	4				4	
		Potential Area	6,700				6,700	
	KARAGWE	Nos. of Schemes	3				3	
		Potential Area	210				210	
	MULEBA	Nos. of Schemes	4				4	
		Potential Area	600				600	
	NGARA	Nos. of Schemes	4				4	
		Potential Area	9,231				9,231	
	SUB-TOTAL	Nos. of Schemes	18				18	
		Potential Area	17,166				17,166	
	KIGOMA	KASULU	Nos. of Schemes	12	1			13
			Potential Area	11,800	600			12,400
KIBONDO		Nos. of Schemes	5				5	
		Potential Area	3,130				3,130	
KIGOMA RURAL		Nos. of Schemes	8	1			9	
		Potential Area	6,000	1,000			7,000	
SUB-TOTAL		Nos. of Schemes	25	2			27	
		Potential Area	20,930	1,600			22,530	
KILIMANJARO	HAI	Nos. of Schemes	54		2	6	62	
		Potential Area	14,030		451	2,022	16,503	
	MOSHI RURAL	Nos. of Schemes	257		7	6	270	
		Potential Area	46,363		15,799	2,028	64,190	
	MWANGA	Nos. of Schemes	25			1	26	
		Potential Area	8,624			700	9,324	
	SAME	Nos. of Schemes	76			5	81	
		Potential Area	23,932			3,984	27,916	
	SUB-TOTAL	Nos. of Schemes	412		9	18	439	
		Potential Area	92,949		16,250	8,734	117,933	
LINDI	KILWA	Nos. of Schemes	2				2	
		Potential Area	2,558				2,558	
	LINDI RURAL	Nos. of Schemes	4	2	3		9	
		Potential Area	3,100	1,200	1,900		6,200	
	LIWALE	Nos. of Schemes	1				1	
		Potential Area	200				200	
	NACHINGWEA	Nos. of Schemes	2				2	
		Potential Area	200				200	
	RUANGWA	Nos. of Schemes	1				1	
		Potential Area	200				200	
	SUB-TOTAL	Nos. of Schemes	10	2	3		15	
		Potential Area	6,258	1,200	1,900		9,358	
MARA	BUNDA	Nos. of Schemes	2	5			7	
		Potential Area		291	1,320		1,611	
	MUSOMA	Nos. of Schemes	5	8			13	
		Potential Area		4,390	10,570		14,960	
	SERENGETI	Nos. of Schemes	2				2	
		Potential Area		100			100	
	TARIME	Nos. of Schemes	5	2			7	
		Potential Area		730	75		805	
SUB-TOTAL	Nos. of Schemes	14	15			29		
	Potential Area		5,511	11,965		17,476		
MBEYA	CHUNYA	Nos. of Schemes	1			1	2	
		Potential Area	3,000			300	3,300	
	ILEJB	Nos. of Schemes	2			2	4	
		Potential Area	250			50	300	
	KYELA	Nos. of Schemes	8				8	
		Potential Area	9,970				9,970	
	MBARALI	Nos. of Schemes	36		2	21	59	
		Potential Area	34,300		7,000	17,140	58,440	
	MBEYA RURAL	Nos. of Schemes	18		1	4	23	
		Potential Area	2,613		94	2,980	5,687	
	MBOZI	Nos. of Schemes	2			1	3	
		Potential Area	650			350	1,000	
	RUNGWE	Nos. of Schemes	4				4	
		Potential Area	560				560	
SUB-TOTAL	Nos. of Schemes	71		3	29	103		
	Potential Area	51,343		7,094	20,820	79,257		

Table 2.2.2 Inventorized Schemes by Type of Irrigation and District (3/4)

REGION	DISTRICT	Description	Type of Irrigation				Total
			1 Traditional	2 Water harvesting	3 Modern	4 Improved Traditional	
MOROGORO	KILOMBERO	Nos. of Schemes	9		4	1	13
		Potential Area	93,250		15,320	330	108,900
	KILOSA	Nos. of Schemes	24	1	6	1	32
		Potential Area	21,382	3,600	3,464	1,960	30,406
	MOROGORO RURAL	Nos. of Schemes	12	2	14		28
		Potential Area	4,462	3,800	20,364		28,626
	ULANGA	Nos. of Schemes	6		7	2	15
		Potential Area	3,590		4,550	660	8,800
	SUB-TOTAL	Nos. of Schemes	50	3	31	4	88
		Potential Area	122,684	7,400	43,698	2,950	176,732
MTWARA	MASASI	Nos. of Schemes		1			1
		Potential Area		2,075			2,075
	MTWARA RURAL	Nos. of Schemes	1	4		1	6
		Potential Area	300	5,200		946	6,446
	NEWALA	Nos. of Schemes	1				1
		Potential Area	1,600				1,600
TANDAHIMBA	Nos. of Schemes	2				2	
	Potential Area	5,200				5,200	
SUB-TOTAL	Nos. of Schemes	4	5		1	10	
	Potential Area	7,100	7,275		946	15,321	
MWANZA	GBITA	Nos. of Schemes	1	5	5		11
		Potential Area	300	1,450	580		2,330
	KWIMBA	Nos. of Schemes		10	1		11
		Potential Area		3,580	200		3,780
	MAGU	Nos. of Schemes		4	5		9
		Potential Area		1,060	2,840		3,900
	MISUNGWI	Nos. of Schemes	1	8	2		11
		Potential Area	13	11,805	60		11,878
	MWANZA	Nos. of Schemes	3			3	6
		Potential Area	45			58	103
SENGEREMA	Nos. of Schemes		3	2		5	
	Potential Area		1,600	1,020		2,620	
UKEREWE	Nos. of Schemes			3		3	
	Potential Area			275		275	
SUB-TOTAL	Nos. of Schemes	5	30	18	3	56	
	Potential Area	358	19,495	4,975	58	24,886	
RUKWA	MPANDA	Nos. of Schemes	2		1		3
		Potential Area	40,300		2,400		42,700
	NKASI	Nos. of Schemes		1			1
		Potential Area		2,000			2,000
	SUMBAWANGA RURAL	Nos. of Schemes	13				13
		Potential Area	2,942				2,942
SUMBAWANGA URBAN	Nos. of Schemes	1				1	
	Potential Area	30				30	
SUB-TOTAL	Nos. of Schemes	16	1	1		18	
	Potential Area	43,272	2,000	2,400		47,672	
RUVUMA	MBINGA	Nos. of Schemes	3				3
		Potential Area	5,800				5,800
	SONGEA	Nos. of Schemes	6				6
		Potential Area	1,400				1,400
	TUNDURU	Nos. of Schemes	2				2
Potential Area		650				650	
SUB-TOTAL	Nos. of Schemes	11				11	
	Potential Area	7,850				7,850	
SHINYANGA	BARIADI	Nos. of Schemes		4			4
		Potential Area		2,200			2,200
	BUKOMBE	Nos. of Schemes	1	10			11
		Potential Area	50	100			150
	KAHAMA	Nos. of Schemes		1		1	2
		Potential Area		1,000		100	1,100
	MASWA	Nos. of Schemes	1	7	1		9
		Potential Area	150	3,000	400		3,550
	MEATU	Nos. of Schemes		3			3
		Potential Area		2,700			2,700
SHINYANGA RURAL	Nos. of Schemes	1	8		2	11	
	Potential Area	500	4,600		250	5,350	
SHINYANGA URBAN	Nos. of Schemes		3			3	
	Potential Area		3,620			3,620	
SUB-TOTAL	Nos. of Schemes	3	36	1	3	43	
	Potential Area	700	17,220	400	350	18,670	

**Table 2.2.2 Inventorized Schemes by Type of Irrigation and District (4/4)**

REGION	DISTRICT	Description	Type of Irrigation				Total
			1 Traditional	2 Water harvesting	3 Modern	4 Improved Traditional	
SINGIDA	IRAMBA	Nos. of Schemes		8			8
		Potential Area		7,590			7,590
	MANYONI	Nos. of Schemes		7			7
		Potential Area		2,500			2,500
	SINGIDA	Nos. of Schemes		4			4
		Potential Area		1,750			1,750
	SUB-TOTAL	Nos. of Schemes		19			19
		Potential Area		11,840			11,840
TABORA	IGUNGA	Nos. of Schemes	2	2	1		5
		Potential Area	1,000	2,060	1,500		4,560
	NZEGA	Nos. of Schemes	4	4		3	11
		Potential Area	8,080	7,100		920	16,100
	SIKONGE	Nos. of Schemes		7			7
		Potential Area		3,120			3,120
	TABORA RURAL	Nos. of Schemes		10			10
		Potential Area		5,080			5,080
	TABORA URBAN	Nos. of Schemes		4			4
		Potential Area		500			500
	URAMBO	Nos. of Schemes	2	23			25
		Potential Area	900	4,620			5,520
	SUB-TOTAL	Nos. of Schemes	8	50	1	3	62
		Potential Area	9,980	22,480	1,500	920	34,880
TANGA	KOROGWE	Nos. of Schemes	39	1	1	7	48
		Potential Area	12,095	400	220	1,592	14,307
	LUSHOTO	Nos. of Schemes	27			6	33
		Potential Area	5,454			1,210	6,664
	MUHEZA	Nos. of Schemes		1	2		3
		Potential Area		300	140		440
	SUB-TOTAL	Nos. of Schemes	66	2	3	13	84
		Potential Area	17,549	700	360	2,802	21,411
TOTAL	Nos. of Schemes	982	205	128	113	1,428	
	Potential Area	518,745	150,720	134,582	50,246	854,293	

Source : National Irrigation Master Plan, and River Basin Management and Smallholder Irrigation Improvement Program

**Table 2.2.3 Inventorized Schemes by Size of Irrigation**

REGION	Description	Type of Irrigation			
		1 Small	2 Medium	3 Large	Total
ARUSHA	Nos. of Schemes	180	35	8	223
	Potential Area	31,658	39,984	28,365	100,007
COAST	Nos. of Schemes	16	4	6	26
	Potential Area	4,005	6,250	48,500	58,755
DAR-ES-SALAAM	Nos. of Schemes	8	4		12
	Potential Area	525	5,000		5,525
DODOMA	Nos. of Schemes	32	11	8	51
	Potential Area	5,310	12,726	25,653	43,689
IRINGA	Nos. of Schemes	83	10	1	94
	Potential Area	9,609	10,478	3,248	23,335
KAGERA	Nos. of Schemes	14	2	2	18
	Potential Area	1,766	2,600	12,800	17,166
KIGOMA	Nos. of Schemes	15	9	3	27
	Potential Area	3,930	8,900	9,700	22,530
KILIMANJARO	Nos. of Schemes	384	49	6	439
	Potential Area	45,613	50,740	21,580	117,933
LINDI	Nos. of Schemes	8	7		15
	Potential Area	1,900	7,458		9,358
MARA	Nos. of Schemes	25	2	2	29
	Potential Area	3,376	3,100	11,000	17,476
MBEYA	Nos. of Schemes	64	31	8	103
	Potential Area	14,357	29,900	35,000	79,257
MOROGORO	Nos. of Schemes	51	22	15	88
	Potential Area	10,485	27,397	138,850	176,732
MTWARA	Nos. of Schemes	1	6	3	10
	Potential Area	300	6,446	8,575	15,321
MWANZA	Nos. of Schemes	44	10	2	56
	Potential Area	6,886	9,000	9,000	24,886
RUKWA	Nos. of Schemes	13	3	2	18
	Potential Area	2,272	3,400	42,000	47,672
RUVUMA	Nos. of Schemes	8	2	1	11
	Potential Area	1,150	2,700	4,000	7,850
SHINYANGA	Nos. of Schemes	30	12	1	43
	Potential Area	5,070	10,600	3,000	18,670
SINGIDA	Nos. of Schemes	12	6	1	19
	Potential Area	3,200	6,240	2,400	11,840
TABORA	Nos. of Schemes	49	10	3	62
	Potential Area	11,590	11,390	11,900	34,880
TANGA	Nos. of Schemes	74	10		84
	Potential Area	11,756	9,655		21,411
TOTAL	Nos. of Schemes	1,111	245	72	1,428
	Potential Area	174,758	263,964	415,571	854,293

Source ; National Irrigation Master Plan, and River Basin Management and Smallholder Irrigation Improvement Program

**Table 2.2.4 Inventorized Schemes by Size of Irrigation (Traditional Irrigation Scheme)**

REGION	Description	Type of Irrigation			
		1 Small	2 Medium	3 Large	Total
ARUSHA	Nos. of Schemes	155	29	8	192
	Potential Area	27,704	33,764	28,365	89,833
COAST	Nos. of Schemes			2	2
	Potential Area			11,500	11,500
DAR-ES-SALAAM	Nos. of Schemes	2			2
	Potential Area	142			142
DODOMA	Nos. of Schemes	10	2		12
	Potential Area	1,050	2,100		3,150
IRINGA	Nos. of Schemes	69	5	1	75
	Potential Area	8,065	4,668	3,248	15,981
KAGERA	Nos. of Schemes	14	2	2	18
	Potential Area	1,766	2,600	12,800	17,166
KIGOMA	Nos. of Schemes	15	7	3	25
	Potential Area	3,930	7,300	9,700	20,930
KILIMANJARO	Nos. of Schemes	369	39	4	412
	Potential Area	42,904	39,645	10,400	92,949
LINDI	Nos. of Schemes	6	4		10
	Potential Area	1,200	5,058		6,258
MARA	Nos. of Schemes				
	Potential Area				
MBEYA	Nos. of Schemes	44	22	5	71
	Potential Area	7,993	20,350	23,000	51,343
MOROGORO	Nos. of Schemes	32	12	6	50
	Potential Area	6,751	15,533	100,400	122,684
MTWARA	Nos. of Schemes	1	2	1	4
	Potential Area	300	2,800	4,000	7,100
MWANZA	Nos. of Schemes	5			5
	Potential Area	358			358
RUKWA	Nos. of Schemes	13	2	1	16
	Potential Area	2,272	1,400	39,600	43,272
RUVUMA	Nos. of Schemes	8	2	1	11
	Potential Area	1,150	2,700	4,000	7,850
SHINYANGA	Nos. of Schemes	3			3
	Potential Area	700			700
SINGIDA	Nos. of Schemes				
	Potential Area				
TABORA	Nos. of Schemes	6		2	8
	Potential Area	2,480		7,500	9,980
TANGA	Nos. of Schemes	58	8		66
	Potential Area	9,224	8,325		17,549
TOTAL	Nos. of Schemes	810	136	36	982
	Potential Area	117,989	146,243	254,513	518,745

Source ; National Irrigation Master Plan, and River Basin Management and Smallholder Irrigation Improvement Program



**Table 2.2.5 Inventorized Schemes by Size of Irrigation (Water Harvesting Scheme)**

REGION	Description	Type of Irrigation			
		1 Small	2 Medium	3 Large	Total
ARUSHA	Nos. of Schemes	2	1		3
	Potential Area	140	1,300		1,440
COAST	Nos. of Schemes	1		1	2
	Potential Area	370		12,500	12,870
DAR-ES-SALAAM	Nos. of Schemes	2			2
	Potential Area	190			190
DODOMA	Nos. of Schemes	17	9	8	34
	Potential Area	3,220	10,626	25,653	39,499
IRINGA	Nos. of Schemes				
	Potential Area				
KAGERA	Nos. of Schemes				
	Potential Area				
KIGOMA	Nos. of Schemes		2		2
	Potential Area		1,600		1,600
KILIMANJARO	Nos. of Schemes				
	Potential Area				
LINDI	Nos. of Schemes		2		2
	Potential Area		1,200		1,200
MARA	Nos. of Schemes	12	1	1	14
	Potential Area	1,511	1,500	2,500	5,511
MBEYA	Nos. of Schemes				
	Potential Area				
MOROGORO	Nos. of Schemes	1		2	3
	Potential Area	200		7,200	7,400
MTWARA	Nos. of Schemes		3	2	5
	Potential Area		2,700	4,575	7,275
MWANZA	Nos. of Schemes	20	9	1	30
	Potential Area	4,895	8,000	6,600	19,495
RUKWA	Nos. of Schemes		1		1
	Potential Area		2,000		2,000
RUVUMA	Nos. of Schemes				
	Potential Area				
SHINYANGA	Nos. of Schemes	23	12	1	36
	Potential Area	3,620	10,600	3,000	17,220
SINGIDA	Nos. of Schemes	12	6	1	19
	Potential Area	3,200	6,240	2,400	11,840
TABORA	Nos. of Schemes	41	8	1	50
	Potential Area	8,820	9,260	4,400	22,480
TANGA	Nos. of Schemes	2			2
	Potential Area	700			700
TOTAL	Nos. of Schemes	133	54	18	205
	Potential Area	26,866	55,026	68,828	150,720

Source ; National Irrigation Master Plan, and River Basin Management and Smallholder Irrigation Improvement Program

**Table 2.2.6 Inventorized Schemes by Size of Irrigation (Modern Irrigation Scheme)**

REGION	Description	Type of Irrigation			
		1 Small	2 Medium	3 Large	Total
ARUSHA	Nos. of Schemes	14	1		15
	Potential Area	1,961	1,400		3,361
COAST	Nos. of Schemes	10	4	3	17
	Potential Area	2,910	6,250	24,500	33,660
DAR-ES-SALAAM	Nos. of Schemes	3	4		7
	Potential Area	185	5,000		5,185
DODOMA	Nos. of Schemes	1			1
	Potential Area	300			300
IRINGA	Nos. of Schemes	2	1		3
	Potential Area	334	1,200		1,534
KAGERA	Nos. of Schemes				
	Potential Area				
KIGOMA	Nos. of Schemes				
	Potential Area				
KILIMANJARO	Nos. of Schemes	5	2	2	9
	Potential Area	1,231	3,839	11,180	16,250
LINDI	Nos. of Schemes	2	1		3
	Potential Area	700	1,200		1,900
MARA	Nos. of Schemes	13	1	1	15
	Potential Area	1,865	1,600	8,500	11,965
MBEYA	Nos. of Schemes	1		2	3
	Potential Area	94		7,000	7,094
MOROGORO	Nos. of Schemes	15	9	7	31
	Potential Area	2,544	9,904	31,250	43,698
MTWARA	Nos. of Schemes				
	Potential Area				
MWANZA	Nos. of Schemes	16	1	1	18
	Potential Area	1,575	1,000	2,400	4,975
RUKWA	Nos. of Schemes			1	1
	Potential Area			2,400	2,400
RUVUMA	Nos. of Schemes				
	Potential Area				
SHINYANGA	Nos. of Schemes	1			1
	Potential Area	400			400
SINGIDA	Nos. of Schemes				
	Potential Area				
TABORA	Nos. of Schemes		1		1
	Potential Area		1,500		1,500
TANGA	Nos. of Schemes	3			3
	Potential Area	360			360
TOTAL	Nos. of Schemes	86	25	17	128
	Potential Area	14,459	32,893	87,230	134,582

Source ; National Irrigation Master Plan, and River Basin Management and Smallholder Irrigation Improvement Program

**Table 2.2.7 Inventorized Schemes by Size of Irrigation (Improved Traditional Irrigation Scheme)**

REGION	Description	Type of Irrigation			
		1 Small	2 Medium	3 Large	Total
ARUSHA	Nos. of Schemes	9	4		13
	Potential Area	1,853	3,520		5,373
COAST	Nos. of Schemes	5			5
	Potential Area	725			725
DAR-ES-SALAAM	Nos. of Schemes	1			1
	Potential Area	8			8
DODOMA	Nos. of Schemes	4			4
	Potential Area	740			740
IRINGA	Nos. of Schemes	12	4		16
	Potential Area	1,210	4,610		5,820
KAGERA	Nos. of Schemes				
	Potential Area				
KIGOMA	Nos. of Schemes				
	Potential Area				
KILIMANJARO	Nos. of Schemes	10	8		18
	Potential Area	1,478	7,256		8,734
LINDI	Nos. of Schemes				
	Potential Area				
MARA	Nos. of Schemes				
	Potential Area				
MBEYA	Nos. of Schemes	19	9	1	29
	Potential Area	6,270	9,550	5,000	20,820
MOROGORO	Nos. of Schemes	3	1		4
	Potential Area	990	1,960		2,950
MTWARA	Nos. of Schemes		1		1
	Potential Area		946		946
MWANZA	Nos. of Schemes	3			3
	Potential Area	58			58
RUKWA	Nos. of Schemes				
	Potential Area				
RUVUMA	Nos. of Schemes				
	Potential Area				
SHINYANGA	Nos. of Schemes	3			3
	Potential Area	350			350
SINGIDA	Nos. of Schemes				
	Potential Area				
TABORA	Nos. of Schemes	2	1		3
	Potential Area	290	630		920
TANGA	Nos. of Schemes	11	2		13
	Potential Area	1,472	1,330		2,802
TOTAL	Nos. of Schemes	82	30	1	113
	Potential Area	15,444	29,802	5,000	50,246

Source ; National Irrigation Master Plan, and River Basin Management and Smallholder Irrigation Improvement Program

Table 2.2.8 inventorized Schemes by Type of Management

REGION	Description	Type of Irrigation						Total
		1 S/HOLDER	2 PRIVATE	3 GOT-INST	3 NAFCO	4 SUDECO	5 Estate	
ARUSHA	Nos. of Schemes	174	47	1	1			223
	Potential Area	86,480	13,015	132	380			100,007
COAST	Nos. of Schemes	23	3					26
	Potential Area	54,155	4,600					58,755
DAR-ES-SALAAM	Nos. of Schemes	12						12
	Potential Area	5,525						5,525
DODOMA	Nos. of Schemes	51						51
	Potential Area	43,689						43,689
IRINGA	Nos. of Schemes	84	6	1			3	94
	Potential Area	21,251	1,244	160			680	23,335
KAGERA	Nos. of Schemes	18						18
	Potential Area	17,166						17,166
KIGOMA	Nos. of Schemes	27						27
	Potential Area	22,530						22,530
KILIMANJARO	Nos. of Schemes	414	22	1	1	1		439
	Potential Area	104,513	4,501	600	1,839	6,480		117,933
LINDI	Nos. of Schemes	15						15
	Potential Area	9,358						9,358
MARA	Nos. of Schemes	27	2					29
	Potential Area	16,626	850					17,476
MBEYA	Nos. of Schemes	98	1		2		2	103
	Potential Area	70,607	1,000		7,000		650	79,257
MOROGORO	Nos. of Schemes	84	2		1		1	88
	Potential Area	157,732	12,500		3,000		3,500	176,732
MTWARA	Nos. of Schemes	10						10
	Potential Area	15,321						15,321
MWANZA	Nos. of Schemes	55	1					56
	Potential Area	24,686	200					24,886
RUKWA	Nos. of Schemes	18						18
	Potential Area	47,672						47,672
RUVUMA	Nos. of Schemes	11						11
	Potential Area	7,850						7,850
SHINYANGA	Nos. of Schemes	42	1					43
	Potential Area	17,670	1,000					18,670
SINGIDA	Nos. of Schemes	19						19
	Potential Area	11,840						11,840
TABORA	Nos. of Schemes	62						62
	Potential Area	34,880						34,880
TANGA	Nos. of Schemes	84						84
	Potential Area	21,411						21,411
TOTAL	Nos. of Schemes	1,328	85	3	5	1	6	1,428
	Potential Area	790,962	38,910	892	12,219	6,480	4,830	854,293

Source ; National Irrigation Master Plan, and River Basin Management and Smallholder Irrigation Improvement Program

**Table 2.2.9 inventorized Schemes by Type of Water Abstraction**

REGION	Description	Type of Irrigation		
		1 Gravity	2 Pump	Total
ARUSHA	Nos. of Schemes	223		223
	Potential Area	100,007		100,007
COAST	Nos. of Schemes	8	18	26
	Potential Area	23,830	34,925	58,755
DAR-ES-SALAAM	Nos. of Schemes	3	9	12
	Potential Area	198	5,327	5,525
DODOMA	Nos. of Schemes	51		51
	Potential Area	43,689		43,689
IRINGA	Nos. of Schemes	94		94
	Potential Area	23,335		23,335
KAGERA	Nos. of Schemes	9	9	18
	Potential Area	13,551	3,615	17,166
KIGOMA	Nos. of Schemes	26	1	27
	Potential Area	22,030	500	22,530
KILIMANJARO	Nos. of Schemes	436	3	439
	Potential Area	116,903	1,030	117,933
LINDI	Nos. of Schemes	14	1	15
	Potential Area	9,258	100	9,358
MARA	Nos. of Schemes	16	13	29
	Potential Area	14,311	3,165	17,476
MBEYA	Nos. of Schemes	102	1	103
	Potential Area	79,163	94	79,257
MOROGORO	Nos. of Schemes	81	7	88
	Potential Area	175,142	1,590	176,732
MTWARA	Nos. of Schemes	10		10
	Potential Area	15,321		15,321
MWANZA	Nos. of Schemes	36	20	56
	Potential Area	20,208	4,678	24,886
RUKWA	Nos. of Schemes	18		18
	Potential Area	47,672		47,672
RUVUMA	Nos. of Schemes	11		11
	Potential Area	7,850		7,850
SHINYANGA	Nos. of Schemes	43		43
	Potential Area	18,670		18,670
SINGIDA	Nos. of Schemes	19		19
	Potential Area	11,840		11,840
TABORA	Nos. of Schemes	62		62
	Potential Area	34,880		34,880
TANGA	Nos. of Schemes	84		84
	Potential Area	21,411		21,411
TOTAL	Nos. of Schemes	1,346	82	1,428
	Potential Area	799,269	55,024	854,293

Source ; National Irrigation Master Plan, and River Basin Management and Smallholder Irrigation Improvement Program

***Attachment***

***Attachment 1***  
***Format of the Inventory Survey***

Japan International Cooperation Agency (JICA)

The Study  
on  
The National Irrigation Master Plan  
in  
The United Republic of Tanzania

**Questionnaire for Inventory Survey  
( Part 1)**

*This form is to be filled for each irrigation scheme*

"N.A." should be filled if the answer is not applicable

"-" should be filled if no answer is obtained.

**1 Information on Survey**

- 1101 Name of enumerator \_\_\_\_\_  
1102 Survey period \_\_\_\_\_  
1103 Professional category of enumerator \_\_\_\_\_

**2 General**

- 2101 Name of Scheme \_\_\_\_\_  
2102 Type of Scheme  
( ) Traditional irrigation scheme, ( ) Water-harvesting,  
( ) Modern irrigation scheme, ( ) Improved traditional irrigation scheme  
2103 Co-ordinates \_\_\_\_\_  
2104 Ward \_\_\_\_\_  
2105 District \_\_\_\_\_  
2106 Region \_\_\_\_\_  
2107 Zone \_\_\_\_\_  
2108 No. of Village(s) in the scheme \_\_\_\_\_  
2109 Name of Village(s) (for medium or small schemes only)  
(1) \_\_\_\_\_ (2) \_\_\_\_\_  
(3) \_\_\_\_\_ (4) \_\_\_\_\_  
(5) \_\_\_\_\_ (6) \_\_\_\_\_  
(7) \_\_\_\_\_ (8) \_\_\_\_\_  
(9) \_\_\_\_\_ (10) \_\_\_\_\_  
(11) \_\_\_\_\_ (12) \_\_\_\_\_



- 2110 No. of farmers in the commanding area \_\_\_\_\_  
2111 No. of farmers' organisation in the scheme \_\_\_\_\_

**3 Scheme History**

- 3101 Construction Year of the scheme: \_\_\_\_\_  
3202 Improvement/Rehabilitation Year of the scheme, if any: \_\_\_\_\_  
Project Name \_\_\_\_\_  
Financial source \_\_\_\_\_

3203 Are improvement / rehabilitation works being carried out ?

Yes  No  No answer

If yes, answer to the following questions:

- Project(Scheme) Name \_\_\_\_\_  
Financial source \_\_\_\_\_  
Period (year) : from \_\_\_\_\_ to \_\_\_\_\_

**4 Irrigation and Drainage**

**41 Physical Conditions**

4101 Problems/Reasons

For the existing scheme, describe the main physical problems envisaged if any.
For the abandoned scheme, describe the main physical reasons.

4102 Proposed Plan

Describe the proposals for rehabilitation/improvement of existing or abandoned schemes and for development of new scheme.

Rehabilitation/improvement of existing schemes.
Rehabilitation/improvement of abandoned schemes
Development of new schemes

4103 Location and Layout

Prepare a sketch of the project site using the 1:50,000 map, including present irrigation system and/or proposed works if possible.

4104 Topography

(1) Has a topographic survey been conducted for the scheme?

Yes     No     No answer

If yes, by whom has the survey been conducted ?

\_\_\_\_\_

(2) If topographic survey data are not available, try to estimate the following:

Area presently irrigated (ha.) : \_\_\_\_\_

Potentially Irrigable Area (ha.) : \_\_\_\_\_

Micro-relief : Regular/ Slightly Undulating/ Undulating/  
Broken

Average slopes : Flat (<0.5%) / Mild (0.5–2.0%) / Moderate  
(2.0 – 4.0%) / Steep (>4.0%)

4105 Soils

(1) Has a soil survey been conducted for the scheme?

Yes     No     No answer

If yes, by whom has the survey been conducted ?

\_\_\_\_\_

(2) If soil survey data are not available, answer to the following:

Prevalent Soil Types : Light (Sandy) / Medium(Loams) / Heavy(Clays)

Is drainage impeded by soil characteristics (such as waterlogging)?

Yes     No     No answer

Is there evidence of salinity/alkalinity problems?

Yes     No     No answer

If yes, reply to condition of salinity/alkalinity.

Serious,     Fair,     Little,     No answer

4106 Water Resources

(1) Has a hydrological study been carried out for the existing/proposed water resource?

Yes     No     No answer

If yes, when and by whom has the study been conducted ?

\_\_\_\_\_

(2) If no hydrological study reports are available, answer to the following:

Type of water resources: \_\_\_\_\_

Name of river: \_\_\_\_\_

Its catchment area at the existing/proposed intake site : \_\_\_\_\_

(3) Does a gauging station exist in the catchment or a neighboring catchment ?

Yes     No     No answer

If yes, describe its details in the following table:

Items	Description
Average annual rainfall	
Available flows	In wet season: _____ lit /sec. In dry season: _____ lit /sec.
Water quality	Electrical conductivity value in wet and dry seasons, if possible. In wet season : _____ In dry season : _____
Other water users	Number and size of abstractions upstream and downstream if possible. Upstream

Attachment - 1

	Number : _____, Size : _____ Downstream Number : _____, Size : _____ Is there any water conflict? ( ) Yes, ( ) No, ( ) No answer If yes, reply to the following: When : _____ Why : _____
Present Water Right	For existing/abandoned schemes, is there a water right? ( ) Yes, ( ) No, ( ) No answer If yes, reply to the following: Officially registered : ( ) Yes, ( ) No Traditional: ( ) Yes, ( ) No If yes, amount of water right: _____

4107 Drainage and Floods

(1) Is the existing/proposed irrigable area inundated by floods in wet season?

Yes     No     No answer

(2) If yes, identify the following:

Cause of flood : \_\_\_\_\_

Area affected by flood : \_\_\_\_\_

Frequency of flood : \_\_\_\_\_

4108 Guidelines for Describing Existing/Proposed Works

(1) Dam

Capacity of Reservoir		Mill.m3		Inundated Area		ha.	
Height		m		Length		m	
Type				Volume		m3	
Construction Cost(as of when)		Tsh. ( )		Name of Contractor			
Availability of Construction Materials (Good/Fair/None)							
Rock		Earth(fill)		Sand		Gravel	
						Clay	
						River Bed	
Abutment Slope in Left Bank				%		Abutment Slope in Right Bank	
						%	
Responsibility of O&M						Annual Cost for O&M	
						Tsh	
Remarks							

If possible, prepare a sketch with a plan and a cross section of the river at the existing/proposed dam site on a separate sheet.

(2) Intake (Diversion Weir)

Height	m	Length	m
Construction Material		Gate (s)	
Construction Cost (as of when)	Tsh. ( )	Name of Contractor	
Responsibility of O&M		Annual Cost for O&M	Tsh
Remarks			

If possible, prepare a sketch with a plan and a cross section of the river at the existing/proposed intake site on a separate sheet.

(3) Pump Station

Type of Pump		Capacity	li/sec.
Net Head	m	Power source	
Delivery Pipe	(material)	(length) m	(diameter) mm
Construction Cost (as of when)	Tsh. ( )	Name of Contractor	
Responsibility of O&M		Annual Cost for O&M	Tsh
Remarks			

If possible, include prepare with a plan and a cross section of the river at the existing/proposed pump site on a separate sheet.

(4) Wells

Type of Well		Capacity	lit/sec.
No. of Wells		Groundwater Level	m
Method of Lifting		Power source	
Type of Aquifer			
Dimension of Well	(material)	(depth) m	(diameter) mm
Construction Cost(as of when)	Tsh. ( )	Name of Contractor	
Responsibility of O&M		Annual Cost for the O&M	Tsh
Remarks			

(5) Major Canal

Top Width	m	Bottom Width	m
Depth	m	Length	m
Canal Gradient	%	Flow Capacity	lit/sec.
Construction Material		Lining (provided or not)	
Type of Excavation			
Rock	%	Weathered Rock	%
		Earth	%
		Others	
Construction Cost (as of when)	Tsh. ( )	Name of Contractor	
Responsibility of O&M		Annual Cost for O&M	Tsh
Remarks			

(6) Minor Canal

Top Width		m	Bottom Width		m
Depth		m	Length		m
Canal Gradient		%	Flow Capacity		lit/sec.
Construction Material			Lining (provided or not)		
Type of Excavation					
Rock	%	Weathered Rock	%	Earth	%
				Others	
Construction Cost (as of when)	Tsh.	( )	Name of Contractor		
Responsibility of O&M			Annual Cost for O&M	Tsh	
Remarks					

(7) On-Farm

Type of Irrigation		Irrigated Area		ha.
No. of Farmers		Name of WUA		
Dimension of Minor Canal				
(type)	(width)	m	(length)	m
	(depth)			m
Construction Cost (as of when)	Tsh.	( )	Name of Contractor	
Responsibility of O&M			Annual Cost for O&M	Tsh
Land Consolidation				
Land Levelling	( Yes / No )	Average Earth Movement		m <sup>3</sup> /ha.
Remarks				

(8) Drainage System

Existence of Drainage System	( Yes / No )	Drained Area	ha.
Dimension of Drainage Canal			
(type)	(width) m	(length) m	(depth) m
Construction Cost (as of when)	Tsh. ( )	Name of Contractor	
Who perform its O&M		Annual Cost for the O&M	Tsh
Remarks			

(9) Access Road

Existence of Access Roads	( Yes / No )	Covered Area	ha.
Traffic Volume (No. of cars and parsons/day)		Distance to all-weather road	km.
Dimension of Road	(material)	(length) m	(width) m
Construction Cost(as of when)	Tsh. ( )	Name of Contractor	
Who perform its O&M		Annual Cost for the O&M	Tsh
Remarks (include present condition of the road)			



5 Agriculture and Land Use

51 Cultivation Area in last 3 years

Year and Season	Paddy	Upland Crops
2001 Dry	ha	ha
2000/01 Wet	ha	ha
2000 Dry	ha	ha
1999/00 Wet	ha	ha
1999 Dry	ha	ha
1998/99 Wet	ha	ha
1998 Dry	ha	ha

52 Crop Production

Kind of crop	Area cropped	Average Yield	Irrigated or Rainfed	Water source if irrigated
(1)				
(2)				
(3)				
(4)				
(5)				

53 Farming Calendar

Wet season Paddy	from		to	
Dry season Paddy	from		to	
Upland Crops				
1.	from		to	
2.	from		to	
3.	from		to	
4.	from		to	

54 Land Tenure (Farm Size Distribution)

Land hold (ha)	Area (ha)	Number of Farmer
Tenant		
0-1		
1-3		
3-5		
5-10		
10-20		
20-50		
50-100		
100-		
Total		

**55 Land Capability for Irrigation and Crop Suitability**

Soil Type	Land capability for irrigation	Crop suitability			
		Paddy	Upland Crop		
			(1)	(2)	(3)

**56 Major Constraints in Crop Production**

Problems/Difficulties	Solutions/Measures Suggested	Remarks

**6 Farmers Supporting System**

**61 Post Harvest**

Crop	Harvest Method	Storage Method	Storage Facility	Selling Method
(1)				
(2)				
(3)				
(4)				
(5)				

**62 Input Supply**

Kind of Input	Obtained from where	Purchasing Method	Availability and Source of Loan	Availability of Subsidy
Fertilizer				
Chemical				
Machinery				
Others ( )				

**63 Extension Service**

1) Are you a member of any organizations or cooperatives?	
2) Which organization provides you with technical assistance?	
3) How frequently do you have technical assistance?	
4) What kind of support do you get from them?	

**7 Farmers' Organization (FO)**

**71 General**

- 7101 Name of FO \_\_\_\_\_
- 7102 Name of schemes covered by FO (1) \_\_\_\_\_  
 (2) \_\_\_\_\_  
 (3) \_\_\_\_\_  
 (4) \_\_\_\_\_
- 7103 Number of D-canals covered by FO \_\_\_\_\_

**72 Institution**

- 7201 No. of Field canal Groups, if any \_\_\_\_\_
- 7202 Date of formation \_\_\_\_\_
- 7203 Is the FO registered under Cooperative Act or Association Act ?

(a) Cooperative Act

Yes  No  No answer

If yes, answer to the following questions

Registration number \_\_\_\_\_

Date of registration \_\_\_\_\_

(b) Association Act

Yes  No  No answer

If yes, answer to the following questions

Registration number \_\_\_\_\_

Date of registration \_\_\_\_\_

- 7204 Present number of members of FO M \_\_\_\_\_ F \_\_\_\_\_
- 7205 Total No. of farmers within FO area \_\_\_\_\_
- 7206 Total number of non-farmers within FO area \_\_\_\_\_
- 7207 Do you have federation of FOs ?

Yes  No  No answer

**73 Office Bearers**

7301 Office bearers

	Available	Not Available	No answer
Leader	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secretary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Treasurer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Auditor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 7302 Selection of office bearers

	Open election	Secret ballot	Consensus	No answer	N.A.
Leader	( )	( )	( )	( )	( )
Secretary	( )	( )	( )	( )	( )
Treasurer	( )	( )	( )	( )	( )
Auditor	( )	( )	( )	( )	( )

## 7303 Frequency of election of office bearers

- ( ) Yearly  
 ( ) Every two years  
 ( ) Others \_\_\_\_\_  
 ( ) No answer

## 7304 Do existing committees have subcommittees?

( ) Yes ( ) No ( ) No answer

If yes, answer to the following questions :

What kind of subcommittees are organised in FO ?

- ( ) Water management  
 ( ) Agriculture  
 ( ) Marketing  
 ( ) Women's' affairs  
 ( ) Others \_\_\_\_\_  
 ( ) No answer

## 74 Activities

## 7401 Frequency of meetings

	Weekly	Monthly	Quarterly	Half Yearly	Yearly	According to needs	No meeting	No answer
General meeting	( )	( )	( )	( )	( )	( )	( )	( )
Committees	( )	( )	( )	( )	( )	( )	( )	( )
F canal Group	( )	( )	( )	( )	( )	( )	( )	( )

## 7402 Is a result of discussion documented?

	Always documented	Documented according to needs	Not Documented	No answer
General meeting	( )	( )	( )	( )
Committees	( )	( )	( )	( )
Field canal Group	( )	( )	( )	( )

## 7403 Issues discussed and decision made (Multiple answers, give 3 main topics)

- ( ) Water Shortage  
 ( ) Drainage problems  
 ( ) Encroachment problems

- ( ) Broken structures
- ( ) Illicit tapping
- ( ) Poor participation in O&M
- ( ) Land disputes
- ( ) Marketing problems
- ( ) Stray cattle problem
- ( ) Pests & diseases
- ( ) Irrigation service charge
- ( ) Change of by-laws and regulation
- ( ) Others \_\_\_\_\_
- ( ) No answer

7404 Problems in conducting effective general meetings (Multiple answers)

- ( ) Poor participation of farmers
- ( ) Poor participation of officers
- ( ) Farmers pay less attention on issues discussed
- ( ) Farmers bring minor issues for general meetings
- ( ) Some issues remain unsolved even after several discussions
- ( ) Poor knowledge on writing good minutes and submission
- ( ) Insufficient capability to conduct meetings smoothly
- ( ) Lack of time to have meetings
- ( ) Others \_\_\_\_\_
- ( ) No answer

7405 Describe leader's opinion to improve the quality of meetings

\_\_\_\_\_  
\_\_\_\_\_

7406 Have by-laws and regulations been adopted ?

Yes     No     No answer

7407 Collection of O&M fee

(1) Is registration fee collected ?

Yes     No     No answer

If yes, answer to the following questions

Person collecting the fee \_\_\_\_\_

Amount to be paid \_\_\_\_\_

(2) Is monthly / annual membership fee collected ?

Yes     No     No answer

If yes, answer to the following questions

Person collecting the fee \_\_\_\_\_

Amount to be paid \_\_\_\_\_

No. of farmers paid in this year \_\_\_\_\_

(3) Does FO have a bank account ?

- ( ) No, Cash in hands only
- ( ) Yes
- ( ) Others \_\_\_\_\_
- ( ) No answer

(4) Is a book-keeping prepared ?

Yes     No     No answer

If yes, answer to the following questions

Person collecting the fee \_\_\_\_\_

Amount to be paid \_\_\_\_\_

No. of farmers paid in this year \_\_\_\_\_

7408 Linkage to other agencies / FOs

	Excellent	Good	Fair	Poor	No answer
Zonal Irrigation Office (ZIO)	( )	( )	( )	( )	( )
Basin Water Office (BWO)	( )	( )	( )	( )	( )
Central Water Board (CWB)	( )	( )	( )	( )	( )
District	( )	( )	( )	( )	( )
Ward	( )	( )	( )	( )	( )
Village	( )	( )	( )	( )	( )
Non Governmental Organisation (NGO)					
Other FO	( )	( )	( )	( )	( )

**75 Training**

7501 Present situation

Description	available and satisfactory	available but unsatisfactory	not available	No answer
O & M	( )	( )	( )	( )
Accounting System	( )	( )	( )	( )
Water Management	( )	( )	( )	( )
Paddy Production	( )	( )	( )	( )
Upland Crops Production	( )	( )	( )	( )

7502 Future requirement

Description	Needed	Not needed	No answer
O & M	( )	( )	( )
Accounting System	( )	( )	( )
Water Management	( )	( )	( )
Paddy Production	( )	( )	( )
Upland Crops Production	( )	( )	( )

## 8 O &amp; M of Irrigation Scheme

## 81 Operation

8101 Daily water distribution is carried out by :

	Completely by FO	Completely by Village Govern.	Joint operation by Village G & FO	No answer
Intake	( )	( )	( )	( )
Main Canals	( )	( )	( )	( )
Minor Canals	( )	( )	( )	( )
Field Canals	( )	( )	( )	( )

8102 Is a cultivation meeting held ?

( ) Yes ( ) No ( ) No answer

8103 Problems faced in obtaining water (Multiple answer)

- ( ) Insufficient water resources  
 ( ) Imbalance water supply between fields  
 ( ) Too much water in fields  
 ( ) Defects in the irrigation system  
 ( ) Illicit tapping  
 ( ) Poor drainage  
 ( ) Poor maintenance  
 ( ) Others \_\_\_\_\_  
 ( ) No answer

## 82 Maintenance Works

8201 Who identifies the place to be repaired / rehabilitated ?

	Farmers	Farmers leader	Government Officials	Joint Operation	No answer	N.A.
Intake	( )	( )	( )	( )	( )	( )
Main Canals	( )	( )	( )	( )	( )	( )
Minor Canals	( )	( )	( )	( )	( )	( )
Field Canals	( )	( )	( )	( )	( )	( )

8202 Methods to identify the maintenance work (multiple answers possible)

- ( ) Walk through surveys with Officials and farmers in the area  
 ( ) through surveys by Irrigation Officers  
 ( ) Gather request from farmer  
 ( ) After discussion of FO meetings  
 ( ) Individual farmer directly goes to the officials  
 ( ) Others \_\_\_\_\_  
 ( ) No answer

8203 Involvement of farmers in the maintenance work (Multiple answers)

- ( ) Clearing of intake

- Desilting of canals
- Clearing of canals
- Bank forming of canals
- Repair of canal structures
- Cleaning of drainage canals
- Others \_\_\_\_\_
- No answer

8204 Major reasons to deteriorate the system (Multiple answers)

- Poor maintenance
- Damages by wild animal
- Over discharge of canal
- Encroachment of reservation area
- Illegal tapping of water
- Damages by farmers
- Floods
- Illegal cultivation
- Others \_\_\_\_\_
- No answer

8205 Is regular maintenance carried out before water issue ?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> No answer
------------------------------	-----------------------------	------------------------------------

If yes, answer to the following questions

- every cultivation
- every year
- once in several years
- no maintenance
- Others \_\_\_\_\_
- No answer

8206 Government' support in O&M by (Multiple answers)

- Zonal Irrigation Office (ZIO)
- Basin Water Office (BWO)
- District
- Ward
- Village
- Others \_\_\_\_\_
- No answer

8207 Present Involvement of Government officials in O&M

Description	available and satisfactory	available but unsatisfactory	not available	No answer
Preparation of annual maintenance programme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Execution of annual maintenance programme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Collecting irrigation service charge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Awareness on O&M to farmers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Collection of information on O&M	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Attachment - 1

Organise O&M	( )	( )	( )	( )
O&M of field canals	( )	( )	( )	( )
O&M of main and minor canals	( )	( )	( )	( )
Settlement of irrigation disputes	( )	( )	( )	( )
Carry out irrigation rotation	( )	( )	( )	( )
Settle stray cattle problem	( )	( )	( )	( )
Impose legal powers	( )	( )	( )	( )

8208 Future Involvement of Government officials in O&M

Description	Needed	Not-needed	No answer
Preparation of Annual Maintenance Programme	( )	( )	( )
Implementation of annual maintenance programme	( )	( )	( )
Collecting irrigation service charge	( )	( )	( )
Awareness on O&M to farmers	( )	( )	( )
Collection of information on O&M	( )	( )	( )
O&M of field canals	( )	( )	( )
O&M of main and minor canals	( )	( )	( )
Settlement of irrigation disputes	( )	( )	( )
Carryout irrigation rotation	( )	( )	( )
Settle stray cattle problem	( )	( )	( )
Impose legal powers	( )	( )	( )

8209 Rehabilitation work by FO

Is there any contracts for improvement / rehabilitation between the Government and and FO ?

Yes     No     No answer

If yes, answer the following questions:

(1) Approximate contract amount Tsh. \_\_\_\_\_

(2) Who carries out the work

- by the FO Chairman
- by the FO Secretary
- by the FO Treasurer
- by farmers in the area
- by a trader in the area
- by an outside contractor
- by government officials
- Others \_\_\_\_\_
- No answer

(3) What kind of works is undertaken ?

- Repair of irrigation canal
- Repair of irrigation structures
- Repair of gates
- Others \_\_\_\_\_

( ) No answer

8210 Annual O&M budget

by Government

Tsh. \_\_\_\_\_

by FO

Tsh. \_\_\_\_\_

**83 Settlement of irrigation disputes**

	Description	Discuss at FO Meetings	Representative of farmer attend	Discuss with the Gov'n't Officials	Take legal action	No answer
1	Irrigation disputes	( )	( )	( )	( )	( )
2	Water Shortages	( )	( )	( )	( )	( )
3	Broken structures	( )	( )	( )	( )	( )
4	Illicit Tapping	( )	( )	( )	( )	( )
5	Poor participation of meetings	( )	( )	( )	( )	( )
6	Encroachment	( )	( )	( )	( )	( )

**9 Environment**

**91 River water quality**

- ( ) Serious
- ( ) Fair
- ( ) Little
- ( ) Good /No Problem
- ( ) No answer

**92 Sedimentation in reservoir**

- ( ) Serious
- ( ) Fair
- ( ) Little
- ( ) Good /No Problem
- ( ) No answer

**93 Water-borne diseases**

- ( ) Serious
- ( ) Fair
- ( ) Little
- ( ) Good /No Problem
- ( ) No answer

Japan International Cooperation Agency (JICA)

The Study  
on  
The National Irrigation Master Plan  
in  
The United Republic of Tanzania

**Questionnaire for Inventory Survey**  
**{ Part 2: Irrigation Development Activities by Local Government (District) }**

*This form is to be filled for each irrigation scheme*

"N.A." should be filled if the answer is not applicable

"-" should be filled if no answer is obtained.

**1 Information on Survey**

- 101 Name of enumerator \_\_\_\_\_
- 102 Survey period \_\_\_\_\_
- 103 Professional category of enumerator \_\_\_\_\_

**2 General**

- 201 Name of interviewed (your) district \_\_\_\_\_
- 202 Name of region \_\_\_\_\_
- 203 Name of interviewee \_\_\_\_\_
- 204 Position of the interviewee in the district office \_\_\_\_\_
- 205 Name of section in the district office which deals with irrigation development  
\_\_\_\_\_
- 206 Number of staff of the district concerning to irrigation development  
\_\_\_\_\_
- 207 What are activities taken by your irrigation section ? (If yes, put  $\checkmark$ )
- ( ) Planning for village irrigation schemes
  - ( ) Construction for village irrigation schemes
  - ( ) Financial support for the scheme implementation
  - ( ) Technical assistance for villagers on their irrigation practice
  - ( ) Arbitration of farmers' conflict in irrigation water use
- Others \_\_\_\_\_
- 208 How much of annual district's budget was allocated for the activities in irrigation development in 2000/01 ?  
\_\_\_\_\_

**3 Information on Irrigated Condition in the District**

Hereinunder, salient features of village irrigation schemes are inquired. Village irrigation scheme means smaller irrigation system operated by villagers, excluding irrigation schemes being in the hand of zonal irrigation office concerned.

301 Fill out blanks for on-going village irrigation schemes concerning to your district office.

Irrigation Type	Number of village schemes	Total irrigated area (ha.)	Major crops harvested
Offtaking water from streams by weirs			
Storage water by impounding			
Water harvesting			
Lifting groundwater by pumps			
Watering by springs etc.			

302 Fill out features of village irrigation projects supported by donors or NGOs, if any.

Name of village irrigation project	Number of village schemes implemented under the project	Name of Donor or NGO supported

303 Fill out blanks for planning village irrigation schemes concerning to your district office.

Irrigation Type	Number of village schemes	Total irrigated area (ha.)	Major crops harvested
Offtaking water from streams by weirs			
Storage water by impounding			
Water harvesting			
Lifting groundwater by pumps			
Watering by springs etc.			

304 Fill out features of village irrigation schemes planned to be supported by donors or

NGOs, if any.

Name of village irrigation project	Number of village schemes implemented under the project	Name of Donor or NGO concerned

305 Fill out blanks for future potential of village irrigation scheme implementation concerning to your district office.

Irrigation Type	Number of village schemes	Total irrigated area (ha.)	Major crops harvested
Offtaking water from streams by weirs			
Storage water by impounding			
Water harvesting			
Lifting groundwater by pumps			
Watering by springs etc.			

**4 Others**

401 What are major constraints of district in irrigation promotion by farmers initiatives ?

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402 What is desire for zonal irrigation office or central government for your convenience of irrigation promotion ? If identified, write down below.

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403 Others (If you have opinion on irrigation development, write down below.)

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