

# 付 表



表-5.3.1 計画地区における作物栽培の現況

Scheme / Area / Major Crops	Farm Land (ha)	Cultivated Area (ha)		Cropping Intensity (%)	Unit Yield (ton/ha)	Crop Production (ton)		
		Rainy Season *1	Dry Season *2			Rainy Season *1	Dry Season *2	Total
<b>(1) Mgeta Scheme</b>								
Mindu system								
Maize / Pulse *3		16	0		1.0	16	0	16
Cabbage		0	3		10.0	0	30	30
Potato		0	2		3.0	0	6	6
Pulse crops		0	5		0.7	0	4	4
Sub-total	16	16	10	163				
Mzingu system								
Maize / Pulse *3		14	0		1.0	14	0	14
Cabbage		0	3		10.0	0	30	30
Potato		0	1		3.0	0	3	3
Pulse		0	4		0.7	0	3	3
Sub-total	14	14	8	157				
Whole area								
Maize / Pulse *3		30	0		1.0	30	0	30
Cabbage		0	6		10.0	0	60	60
Potato		0	3		3.0	0	9	9
Pulse		0	9		0.7	0	7	7
Total	30	30	18	160				
<b>(2) Mgongola Scheme</b>								
Mkindo pilot scheme								
Paddy	60	60	60	200	3.8	228	228	456
Mgongola area								
Paddy	520	520	0	100	1.6	832	0	832
Total	580	580	60	110		1,060	228	
<b>(3) Mkula Scheme</b>								
Paddy		108	0		2.0	216	0	216
Maize / Other crops *3		42	40		1.5	63	60	123
Sugarcane*4		11	11		0.0	0	0	0
Total	161	161	51	132				
<b>(4) Mwega Scheme</b>								
Malolo area								
Paddy		118	0		2.0	236	0	236
Maize / Pulse *3		266	0		1.5	399	0	399
Pulse crops		0	70		0.8	0	56	56
Onions		0	130		10.0	0	1,300	1,300
Sub-total	384	384	200	152				
Nyinga / Mgogozi-Mwega area								
Paddy		92	0		2.0	184	0	184
Maize / Pulse *3		0	114		1.5	0	171	171
Onions		0	52		10.0	0	520	520
Sub-total	166	92	166	155				
Whole area								
Paddy		210	0		2.0	420	0	420
Maize / Pulse *3		266	114		1.5	399	171	570
Pulse		0	70		0.8	0	56	56
Onions		0	182		10.0	0	1,820	1,820
Total	550	476	366	153				

Note )

\*1 Rainy season : It is defined between November to April, provisionally.

\*2 Dry season : It is defined between May to October, provisionally.

\*3 Although some area will be expected to cultivate maize and pulse crops under intercropping, maize is selected as a representative crop. That is, figures for maize is adopted concerning unit yield and production.

\*4 No harvesting for sugarcane is reported inside the Mkula scheme area.

表-5.3.2 モロゴロ州主要作物の市場及び農家庭先価格

	Market Price/Kg.		Farm Gate Price/Bag		Collection Place	Market destination
	Maximum	Minimum	Maximum	Minimum	City	City
<b>GRAINS</b>						
Dry Maize	100	125	11,500	12,000	Morogoro	Dar-es-Salaam
Maize Flour	230	250	NA	NA	Morogoro	NA
Rice	320	350	29,000	32,000	Morogoro	Arusha, Dar-es-Salaam
Paddy	NA	NA	11,000	12,000	Morogoro	Dar-es-Salaam
Wheat Flour	350	380	15,800	16,000	Dar-es-Salaam	--
Sorghum	200	250	10,000	11,000	Morogoro	Dar-es-Salaam
Finger Millet	280	300	13,500	14,500	Singida	Dar-es-Salaam
<b>PULSES</b>						
Beans	350	400	30,000	34,000	Morogoro	Dar-es-Salaam
<b>ROOT CROPS</b>						
Cassava	150	200	NA	NA	Morogoro	Dar-es-Salaam
Sweet Potato	100	120	NA	NA	Morogoro	Dar-es-Salaam
Irish Potato	180	200	16,000	17,000	Mbeya	
Groundnut	400	450	33,000	35,000	Dodoma	Dar-es-Salaam
<b>VEGETABLES</b>						
Onion	300	350	27,000	28,000	Morogoro	Dar-es-Salaam
Tomato	150	200	4,500	5,000	Morogoro	Dar-es-Salaam
Cabbage	250	300	7,500	8,000	Morogoro	Dar-es-Salaam

Note : 1 bag of maize = 100 kg ; 1 bag of rice = 100 kg. ; 1 bag of paddy = 75 kg. ; 1 bag of wheat flour = 50 kg ; 1 bag of sorghum = 100 kg. ; 1 bag of finger millet = 100 kg.

表-5.3.3 首都における基幹作物の価格（1997年8月）

Crops	Qty.	Value
<b>CEREALS</b>		
Maize, grain	1 kg	160
Maize, flour	1 kg	200
Rice, Husked (super)	1 kg	500
Rice, Husked (Ordinary)	1 kg	420
Wheat, Flour	1 kg	350
<b>ROOTS &amp; TUBERS</b>		
Cassava, fresh	1 bundle	100
Irish Potatoes	1 kg	200
Sweet Potatoes	1 bundle	100
<b>LEGUMES</b>		
Beans, Dry (Soya)	1 kg	500
Beans, Dry (Yellow)	1 kg	450
Beans, Green	1 kg	800
<b>VEGETABLES</b>		
Cabbage	1 kg	280
Mchicha	1 bundle	50
Spinach	1 bundle	50

Source : Marketing Development Bureau

表-5.3.4 地域市場における主要作物の卸売価格（1997年8月）

	(unit : Thous. TSh.)						
	Maize	Rice	Wheat	Sorghum	Millet	1 Potato	Beans
Arusha	11	34	13.5	15	14	15	25
DSM (Tandak)	15	36.5	22.5	--	13	13.5	37.5
Dodoma	--	--	--	--	--	--	--
Iringa	8.2	37.5	22	--	20	10	40
Songea	7	35	--	--	14	12	30
Mbeya	9	37.5	19	--	10	6	30
Morogoro	11.7	29.5	--	15.5	16.2	15.5	32.5
Moshi	--	--	--	--	--	--	--
Mwanza	22	35	--	11.5	19	30	37.5
Shinyanga	17	28	--	12	18	35	35
Singida	11.2	34	--	11.5	8.2	15.5	31.5
Tabora	15	33.5	--	--	20	22	37.5
Lindi	7.5	39	--	--	--	20	45
Musoma	23.5	39	--	18	30	35	38
Kigoma	13.8	45	--	--	--	30	30

Note : Prices are given for 100 kg of each crop

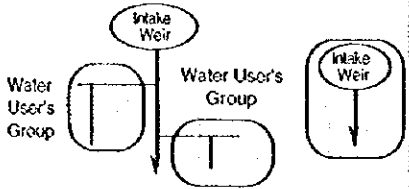
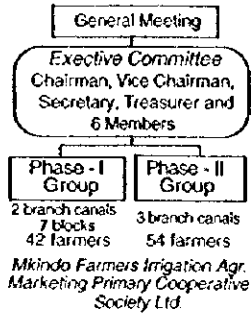
Source : Marketing Development Bureau

表 - 5.3.5 農家經濟分析—現況

(Unit : TSh.1,000)

	Land Holding (ha)	Harvested Area (ha)	Farm Income	Off-Farm Income	Gross Income	Production Cost	Net Income	Living Expenses	Tax and Others	Net Profit
<b>Mgeta Scheme</b>										
<b>Within the Project Area</b>	0.30									
<b>Crops</b>										
Maize		0.30	45			9				
Cabbage		0.06	54			7				
Potato		0.03	27			4				
Pulse crops		0.09	13			3				
Sub-total			139			24				
<b>Outside the Project Area</b>	0.50									
<b>Crops</b>										
Cabbage		0.17	153			20				
Maize		0.33	50			10				
Sub-total			203			30				
Grand Total			341	109	450	54	396	297	6	93
<b>Mgongola Scheme</b>										
<b>Within the Project Area</b>	0.34									
<b>Crops</b>										
Paddy		0.37	96			28				
Sub-total			96			28				
<b>Outside the Project Area</b>	1.28									
<b>Crops</b>										
Paddy		1.28	328			95				
Sub-total			328			95				
Grand Total			424	130	554	123	431	419	7	5
<b>Mkula Scheme</b>										
<b>Within the Project Area</b>	0.55									
<b>Crops</b>										
Paddy		0.37	118			30				
Maize		0.32	58			21				
Sub-total			176			51				
<b>Outside the Project Area</b>	0.74									
<b>Crops</b>										
Maize		0.74	133			48				
Sub-total			133			48				
Grand Total			309	85	394	99	295	256	4	35
<b>Mwega Scheme</b>										
<b>Within the Project Area</b>	0.79									
<b>Crops</b>										
Paddy		0.24	77			15				
Maize		0.55	99			20				
Pulse crops		0.14	22			5				
Onion		0.27	230			57				
Sub-total			428			97				
<b>Outside the Project Area</b>	0.49									
<b>Crops</b>										
Maize		0.49	88			18				
Sub-total			88			18				
Grand Total			516	67	583	116	467	375	12	81

表-5.5.1 計画地区内既存水利組合の現況 (1/3)

Schemes	Mgeta		Mgongola		
	Langali	Bumu	Mkindo	Dihombo	Hembeti
Village	Langali	Bumu	Mkindo	Dihombo	Hembeti
Population	3,000	1,400	4,220	1,850	2,400
Household	600	290	840	370	480
WUG	*1	*1	WUG-Mkindo	-	-
Year established	Before independence - present *2		Phase-I: 1984 Phase-II: 1986	-	-
No. of farmer	4 - 170 farmers/group *3		96	-	-
Organizational structure	 <p>(Almost same situation with Langali village)</p> <p>- A WUG has been organized by each intake weir or each branch canal. These groups have very simple organizational structure which has only one leader elected by farmers or no leader with loose organization.</p>		 <p>- No leader in each group.</p>	(No water users' group)	
Water allocation	- WUGs in the villages are divided into two types: one is the WUGs having rotational irrigation system and another one is for non-rotational irrigation. The former WUGs have generally a problem of water shortage, and the farmers take water in turn with fixed interval. Irrigation interval in each system varies from 3 to 8 days. The latter WUGs have a lot of water resource, and within a WUG, any farmer can take water at any time under traditional rule. For both WUGs, irrigation has been carried out in the daytime, but in case of water shortage, the farmers have taken water in the nighttime.		The farmers are divided into two groups; Phase-I and Phase-II groups. The former group consists of 7 irrigation blocks, and each block takes water for one day. It means that water is distributed to individual farmers at 7-day intervals. The latter group has three branch canals, and each canal takes water for one day. Namely, a farmer in the Phase-II group can take water at 3-day intervals.		
Maintenance	- In general, canal clearing has been carried out before season, and all families of the farmers join to this cleaning. - Absentees of communal work are punished with a fine.		- Communal work: 2 times/year and one week/time - Absentees: punished with a fine		
Water charge	No irrigation service charge (ISC)		One bag (70kg) of paddy / year *5		
Registration			Registered in 1997		
Water right			Exist		
By-laws					
Water dispute among the farmers in WUG	There are some water dispute among the farmers, and these have been settled by themselves or the leaders. If it is difficult, the village governments settle it.				
Water dispute among WUG	- There are some water dispute among the irrigation groups in the dry season. - These are settled by the farmers themselves, then by the village governments.		- Water dispute with the outside farmers for steal of water from upstream main canal.		
Major problems	- Water shortage - Damage of canals due to over flow of water - Damage of intake due to flood and stone - Leakage of intake weir and canals		- Water leakage - Inappropriate design of canal profile - Weeds along the canals - Water dispute with outside farmers.		
VEO *4	1		1		
IT *4	1		1		
Remarks	The farmers in the Langali and Bumu villages have a long experience for irrigation farming over 50 years.		No irrigation System		

\*1 There are many irrigation groups established by each intake or branch canal.

\*2 The farmers had constructed many irrigation facilities before the independence. Within the facilities surveyed by the study team, the most oldest facility is in 1936 and the latest one is in 1996.

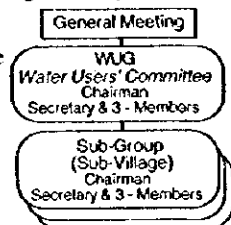
\*3 The size of each WUG differs largely. According to the interview survey to the farmers, the largest WUG is 170 farmers and smallest one is 4 farmers. No data is available for irrigation area.

\*4 VEO: Village extension officer, IT: Irrigation technician

\*5 In 1995, the Mkindo WUG had a plan for collecting fixed irrigation services charge of 1,000/year/acre, and its collecting progress was about 90% as of August 1997. In 1997, the cooperative has a plan for changing of payment method from "cash" to "in kind" with increasing of its amount.

Source: Information and data obtained from ward executive officer, village executive officer, village extension officer and farmers.

表-5.5.1 計画地区内既存水利組合の現況 (2/3)

Schemes	Mkula	Mwega		
Village	Mkula	Nyinga *3		
Population	2,940	(200) *3		
Household	480	(50) *3		
WUG	(WUG)*1	Upper Nyinga	Middle Nyinga	Lower Nyinga
Year established	(1994)*1	1940s	1980s	1996
No. of farmer	(110)*1	9	40 *4	60
Organizational Structure	At present, the existing irrigation system has only 4 acres. In 1978, the irrigation development plan having 60 ha in Mkula was commenced by the District Council, but the facilities were imperfectly constructed. In 1992, the Zonal Irrigation Office followed this plan under the budget of the Regional Government with farmers participation to the construction works. However, the area developed by them was only 4 acres. At this time, a WUG covering 60 ha was established in the Mkula village. The organizational structure of this WUG is as follows. There are three WUGs which are organized by each sub-village. Each WUG has a furrow committee which consists of 5 members. At present, almost no activity is shown in this WUG which has a chairman and a secretary only.	The irrigation group of the Upper Nyinga consists of only 9 farmers including a chairman.	The organizational structure of the committee consists of a chairman, a secretary, and 2 block leaders.	The organizational structure of the committee consists of a chairman, a secretary, and several block leaders.
Water allocation		No rotational irrigation Water allocation is decided by the leader, and any farmers can take water at any time, under the approval of the leader. In general, a farmer takes water twice a week.	Farmers are divided into 2 blocks. Each block takes water during 3 days, and the remaining one day is free. Within a block, water allocation is decided by a block leader, considering the crops, farm size and soils. Irrigation is carried out only in the daytime, but farmers can take water in the nighttime.	Farmers are divided into 4 blocks, and each block takes water for 3 days (rotational irrigation at 12-day intervals). Within a block, water allocation is decided by a block leader, depending on the farm size. Farmers can take water in the nighttime.
Maintenance	Communal work	Communal work: 1-2 times per year and 5 days per one time. All canal and intake weir are maintained by the all farmers. Absentees: punished with a fine (one chicken/person).	Communal work: 2 times per year and 5 days per one time. All farmers maintain all canals and intake weir. Absentees: punished with a fine (Tsh 2,500/person). All farmers have joined to the communal work.	Communal work: 2-3 times per year and 2-3 days per one time. All facilities are maintained by all farmers. (Not piece work) Absentees: punished with a fine of Tsh.500/person. (Almost no absentee)
Water charge	No ISC (Unclear punishment rule because of only 5 members)	No ISC	No ISC	No ISC
Registration	-	-	-	-
Water right	-	-	-	-
By-laws	-	-	-	-
Water dispute among the farmers	-	- There is no water dispute among the farmers, because the size of water users' groups in the upper and middle Nyinga areas are relatively small, and they have close communication for water allocation.	- There are often water dispute among the farmers. Settled by the canal leader, then sub-village government.	
Water dispute among WUGs.	-	- According to the leaders of irrigation groups in Nyinga, Malolo and Mgogozi, there is no water dispute among them, and they are helping each other for water allocation.	-	
Major problems	(Imperfect facilities)	- Frequent damage of canals due to over flow. No control of water because of no gate at intake weir. - Damage of intake weir due to flood	-	-
VEO *2	1	-	-	-
IT *2	-	-	-	-
Remarks	-	The farmers of Nyinga have a long experience for irrigation farming.		

\*1 WUG established in 1994. At present, this WUG has almost no activity, and total member is only 5 farmers.

\*2 VEO: Village extension officer, IT: Irrigation technician

Source: Information and data obtained from ward executive officer, village executive officer, village extension officer and farmers.

\*3 Sub-village of Malolo.

\*4 Nyinga farmers only.

表-5.5.1 計画地区内既存水利組合の現況 (3/3)

Schemes	Mwega			
Village	Malolo		Mgogozi	
Population	3,800 *1		1,270	
Household	480 *1		180	
WUG	Canal A	Canal B	Canal C	Canal D
Year established	1992-1993	1992-1993	1980s	Before independence
No. of farmer	300	200-250	80	30
Organizational Structure	<p>The village government has provided supporting services for maintenance work to Canals A and B.</p>			
Water allocation	<p>Rotational irrigation at 7-day intervals. There are 7 irrigation blocks, and each block takes water for 1 day. A block has different water allocation. In general, farmers in a block are divided into two groups, and each group takes water during 6 hrs. Irrigation is carried out in the daytime, and in case of water shortage, farmers can take water in the nighttime. A farmer takes water once a week and its irrigation period differs depending on the farm size.</p>		<p>Canal C has unclear water allocation, because its operation was started from 1996. Canal C had been used by the District Council, and handed over to the farmers in 1996.</p>	<p>Canal D has two branches, and one branch takes water for 4 days and another branch for 3 days. Within a branch canal, any farmers can take water at any time. Water is allocated to each farmer by mutual consent among the farmers.</p>
Maintenance	<ul style="list-style-type: none"> <li>- Communal work</li> <li>- Communal works are announced to farmers through the village government, and carried out 3-4 times per year. Each farmer takes over a portion of canals for those maintenance, while the maintenance of intake weir and emergency repair are carried out by all farmers. Almost all farmers have joined to canal cleaning.</li> <li>- All canals are cleaned by the communal work of 2 days/week and within 2-3 weeks. Absentees are punished with a fine (Tsh. 1,200-2,000). The village government takes these fines.</li> </ul>		<ul style="list-style-type: none"> <li>- Communal work: 2 time per year</li> <li>- Each farmer takes over a portion of canals, and maintenance of intake weir is carried out by all farmers. The arrangement of communal works is decided by the farmers themselves, and the village government does not touch it like canals A and B.</li> </ul>	<ul style="list-style-type: none"> <li>- No ISC</li> <li>- Communal work: 2 time per year (June &amp; Nov.) 2-3 days per time.</li> <li>- The arrangement of communal works is decided by the farmers themselves, and the village government does not touch it, as well as canal C. Absentees are punished with a fine of Tsh.1,000.</li> </ul>
Water charge	No ISC	No ISC	No ISC	No ISC
Registration	-	-	-	-
Water right	(Unclear)	(Unclear)	-	-
By-laws	-	-	-	-
Water dispute among the farmers	<p>There are some water dispute among the farmers, these are settled by the block leaders, then if it is difficult, the village government settle them.</p>		<p>There is no water dispute.</p>	<p>There are often water dispute among the farmers, but these are not serious. Settled by leaders, then by village government.</p>
Water dispute among WUGs.	<p>According to the leaders of irrigation groups in Nyinga, Malolo and Mgogozi, there is no water dispute among</p>			
Major problems	<ul style="list-style-type: none"> <li>- Soil siltation in canals</li> <li>- Damage of canals due to over flow</li> <li>- Water shortage</li> <li>- Small capacity of canal</li> </ul>	<ul style="list-style-type: none"> <li>- Water shortage</li> <li>- Poor maintenance of canals</li> <li>- Several block leaders have no leadership, because of break-down of gate at the intake weir.</li> </ul>	<ul style="list-style-type: none"> <li>- Drainage problem in the rainy season.</li> <li>- Excess water come from the upper canal (canal B)</li> </ul>	<ul style="list-style-type: none"> <li>- Water shortage</li> <li>- Frequent damage of canals due to over flow of water</li> <li>- Slashing out of intake weir due to flood</li> </ul>
VEO *3			1	
IT *3				1 *4
Others				

\*1 Excluding population and households of Nyinga sub-village

\*2 In 1996, the WUGs had a plan for collecting ISC (30 kg of onion/season/acre) under the guidance of TIP. But it is not conducted yet as of June 1997.

Source: Information and data obtained from ward executive officer, village executive officer, village extension officer and farmers.

\*3 VEO: Village extension officer

IT: Irrigation technician

\*4 Irrigation technician attached to TIP



表-7.2.1 作物栽培計画

Scheme / Area / Major Crops	Farm Land (ha)	Cultivated Area (ha)		Cropping Intensity (%)	Unit Yield (ton/ha)	Crop Production (ton)		
		Rainy Season *1	Dry Season *2			Rainy Season *1	Dry Season *2	Total
(1) Mgongola Scheme								
Paddy		620	310		5.0	3,100	1,550	4,650
Cereal crops / Vegetables*3		0	310		3.0	0	930	930
Total	620	620	620	200				
(2) Mgeta Scheme								
Mindu system								
Maize / Pulse *4		16	0		3.0	48	0	48
Cabbage		0	3		15.0	0	45	45
Potato		0	2		6.0	0	12	12
Pulse crops		0	11		1.5	0	17	17
Sub-total	16	16	16	200				
Mzinga system								
Maize / Pulse *4		14	0		3.0	42	0	42
Cabbage		0	3		15.0	0	45	45
Potato		0	1		6.0	0	6	6
Pulse crops		0	10		1.5	0	15	15
Sub-total	14	14	14	200				
Whole area								
Maize / Pulse *4		30	0		3.0	90	0	90
Cabbage		0	6		15.0	0	90	90
Potato		0	3		6.0	0	18	18
Pulse crops		0	21		1.5	0	32	32
Total	30	30	30	200				
(3) Mkula Scheme								
Paddy		108	0		5.0	540	0	540
Maize / Pulse *4		41	108		3.0	123	324	447
Pulse / Vegetables *5		0	41		1.5	0	62	62
Total	149	149	149	200				
(4) Mwega Scheme								
Maloto area								
Paddy		118	0		5.0	590	0	590
Maize / Pulse *4		266	118		3.0	798	354	1,152
Onion		0	266		15.0	0	3,990	3,990
Sub-total	384	384	384	200		0	3,990	3,990
Nyinga / Mgogozu-Mwega area								
Paddy		122	0		5.0	610	0	610
Maize / Pulse *4		74	18		3.0	222	54	276
Onion		0	178		15.0	0	2,670	2,670
Sub-total	196	196	196	200				
Whole area								
Paddy		240	0		5.0	1,200	0	1,200
Maize / Pulse *4		340	136		3.0	1,020	408	1,428
Onion		0	444		15.0	0	6,660	3,990
Total	580	580	580	200				

Note )

\*1 Rainy season : It is defined between November to April, provisionally.

\*2 Dry season : It is defined between May to October, provisionally.

\*3 Although some area will be expected to cultivate vegetables, maize is selected as a representative crop. That is, figures for maize is adopted concerning unit yield and production.

\*4 Although some area will be expected to cultivate maize and pulse crops under intercropping, maize is selected as a representative crop. That is, figures for maize is adopted concerning unit yield and production.

\*5 Although some area will be expected to cultivate vegetables, maize is selected as a representative crop. That is, figures for pulse is adopted concerning unit yield and production.

表-7.4.1 維持管理・運営および水利組合の強化・育成に関する教育訓練計画

Training Course	Total Period (day)	Persons of Course (Person)	Times/Year (Time)	Trainees	Contents of Training
Course-A	2	20	1	<ul style="list-style-type: none"> <li>- District Commissioner, District Executive Director, District Administrative Officer, Senior officials of the offices of RALDO, and RCO, and the Zonal Irrigation Office.</li> <li>- Senior officials of the offices involved in WUG's activities (DALDO, District Water Engineers, District Community Development Officers, DCO, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>- Outline of the project</li> <li>- Farmers' participant management system</li> <li>- Outline of O&amp;M by WUG</li> <li>- Organization and activities of WUG</li> <li>- Necessity of agricultural supporting services</li> <li>- Field investigation, etc.</li> </ul>
Course-B (for each district)	7	20	1	<ul style="list-style-type: none"> <li>- Officials involved in O&amp;M (Zonal Irrigation Office, RALDO and DALDO's offices, Division Extension Officers, DCO).</li> <li>- Village Extension Officers and Irrigation Technicians to be attached to the project.</li> </ul>	<ul style="list-style-type: none"> <li>- Development plan of smallholder irrigation project</li> <li>- Estimation of water requirement</li> <li>- Preparation of irrigation schedule</li> <li>- O&amp;M of facilities</li> <li>- Strengthening of WUG, articles and by-laws, water right, registration</li> <li>- Management of WUG</li> <li>- Collection of irrigation service charge</li> <li>- Monitoring system, measuring and surveying methods</li> <li>- Agricultural supporting services to WUG</li> <li>- Promoting women in development</li> <li>- Study tour at advanced areas, etc.</li> </ul>
Course-C (for each scheme)	10	20 - 30	2	Farmer's level training to leaders of WUG, gate keepers and key farmers.	<ul style="list-style-type: none"> <li>- Outline of the project</li> <li>- O&amp;M of facilities, water requirement, water delivery, etc.</li> <li>- Irrigation schedule and cropping calendar</li> <li>- Management of WUG such as accounting and book keeping and auditing</li> <li>- Articles and by-laws, water right, registration</li> <li>- Collection of irrigation service charge</li> <li>- Monitoring system, measuring and surveying methods</li> <li>- Marketing and credit, etc.</li> <li>- Promoting women in development.</li> <li>- Study tour at advanced areas, etc.</li> </ul>
Course-D (for each scheme)	2	20	2	Village Chairmen, Village Executive Officers, Chairmen of Ward Council, Ward Executive Officers, elder people, informal rural leaders in the villages related to the project, etc.	<ul style="list-style-type: none"> <li>- Outline of the project</li> <li>- Organization and activities of WUG</li> <li>- Required agricultural supporting services</li> <li>- Promoting women in development, etc.</li> </ul>

表-7.4.2 農民に関する教育訓練計画

Subject	Stage	Objectives	Resource	Remarks
1. Field training (Implementation of demonstration plots)	through the project implementation	<ul style="list-style-type: none"> <li>- Demonstration of proper farming practices to general farmers</li> <li>- Guidance for proper farming practices</li> <li>- Guidance for proper water management</li> <li>- Guidance for method on the yield analysis</li> </ul>	<ul style="list-style-type: none"> <li>- DEO</li> <li>- DIVEO</li> <li>- VEO</li> </ul>	<ul style="list-style-type: none"> <li>- Aggressive farmers should be selected for the field training.</li> <li>- Demonstration will be carried out through the construction period.</li> <li>- Farmer's field to be selected.</li> </ul>
	after the project implementation	<ul style="list-style-type: none"> <li>- Practical training for proper farming practices (Proper farming practices for major crops will be transferred to the farmers concerned through the actual crop cultivation.)</li> <li>- Guidance for proper water management</li> </ul>	<ul style="list-style-type: none"> <li>- DEO</li> <li>- SMS</li> <li>- DIVEO</li> <li>- VEO</li> </ul>	<ul style="list-style-type: none"> <li>- Group training will be required.</li> <li>- Aggressive farmers should be selected as block leader each block of every tertiary blocks.</li> <li>- Group training will be required.</li> <li>- Training schedule for each scheme is shown in relevant tables in each Division.)</li> <li>- Farmer's field to be selected.</li> </ul> <p>Mgeta scheme (see Table 3.3.7 in Division 2) Mgongola scheme (see Table 3.3.7 in Division 3) Mkula scheme (see Table 3.3.7 in Division 4) Mwega scheme (see Table 3.3.7 in Division 5)</p>
3. Field Tour	after the project implementation	<ul style="list-style-type: none"> <li>- Inspection to the advanced area</li> <li>- Exchange of information and experience with farmers in the advanced area.</li> </ul>	<ul style="list-style-type: none"> <li>- SMS</li> <li>- DIVEO</li> <li>- VEO</li> </ul>	<ul style="list-style-type: none"> <li>- Upland crops in high altitude and cool-climate</li> <li>- Lushoto, Iringa, Mbeya</li> <li>- Paddy and Maize</li> <li>- Major fields in FAO special programme</li> </ul>
4. Special training in KATC	through the project implementation	<ul style="list-style-type: none"> <li>- Training of advanced practices</li> </ul>	<ul style="list-style-type: none"> <li>- KATC</li> </ul>	<ul style="list-style-type: none"> <li>- Key-farmer's course (20 days per course)</li> </ul>

表-7.4.3 農業普及員および郡農業普及担当職員に関する教育訓練計画

Subject	Stage	Objectives	Resource	Remarks
1. Field training (Implementation of demonstration plots)	through the project implementation	<ul style="list-style-type: none"> <li>- Enlightenment of proper farming practices</li> <li>- Theory for crop cultivation</li> <li>- Training for monitoring and evaluation method</li> <li>- Review and monitor of the demonstration activities</li> <li>- Guidance for method on the yield analysis</li> <li>- Guidance for proper water management</li> </ul>	<ul style="list-style-type: none"> <li>- REO</li> <li>- SMSs</li> <li>- DEO</li> </ul>	<ul style="list-style-type: none"> <li>- VEOs concerned select some aggressive farmers.</li> <li>- Farm inputs such as seeds and agro-chemicals to be supplied from the Committee.</li> <li>- Farmer's field to be selected.</li> </ul>
	after the project implementation	<ul style="list-style-type: none"> <li>- Training of proper cultivation of major crops</li> <li>- Preparation of guideline for fertilizer dosage</li> <li>- Approach of high yielding practices</li> <li>- Guidance for method on the yield analysis</li> <li>- Guidance for proper water management</li> </ul>	<ul style="list-style-type: none"> <li>- REO</li> <li>- SMSs</li> <li>- DEO</li> </ul>	<ul style="list-style-type: none"> <li>- Farmer's field to be selected.</li> </ul>
2. Special training in KATC	through the project implementation	<ul style="list-style-type: none"> <li>- Training of advanced practices</li> </ul>	<ul style="list-style-type: none"> <li>- KATC</li> </ul>	<ul style="list-style-type: none"> <li>- Rice cultivation course (45 days per course)</li> <li>- Water management course (30 days per course)</li> </ul>

表-8.1.1 專業費

(Unit : 1,000Tshs)

Item	Whole Scheme			Mgongola			Mkula			Mwega			
	FC	LC	Total	FC	LC	Total	FC	LC	Total	FC	LC	Total	
1 Direct Construction Cost	2,443,035	2,434,856	4,877,890	54,396	25,714	80,110	1,340,161	916,604	137,604	320,335	865,746	1,354,934	2,220,681
2 Preparatory Works(5 % of Item 1)	122,152	121,743	243,895	2,720	1,286	4,005	67,008	45,830	9,137	16,017	43,287	67,747	111,034
3 O & M Facility and Equipment	0	133,694	133,694	0	11,627	11,627	0	48,707	0	24,653	0	48,707	48,707
4 Administration Cost	0	27,990	27,990	0	3,570	3,570	0	8,250	0	5,020	0	11,150	11,150
5 Engineering Services Cost**1	1,227,270	0	1,227,270	26,699	0	26,699	551,752	0	132,606	0	516,183	0	516,183
7 Sub-Total(1+2+3+4+5)	3,792,457	2,718,282	6,510,739	83,815	42,196	126,011	1,958,951	1,019,390	324,474	498,631	1,425,217	1,482,538	2,907,755
8 Physical Contingency(10 % of Item 1)	244,303	243,486	487,789	5,440	2,571	8,011	134,016	91,660	18,273	32,034	86,575	135,493	222,068
9 Sub-Total(1+2+3+4+5+6)	4,036,760	2,961,768	6,998,528	89,255	44,767	134,022	2,092,968	1,111,051	342,747	530,665	1,511,791	1,618,051	3,129,823
10 Price Contingency	261,928	1,300,447	1,562,375	5,023	16,519	21,542	139,443	495,969	19,365	88,707	98,097	718,618	816,714
11 Grand Total	4,298,688	4,262,215	8,560,903	94,277	61,286	155,564	2,232,410	1,607,020	362,112	619,372	1,609,888	2,356,649	3,946,537

\*\*1 Engineering Services Costs are estimated on the package basis so that these costs are allocated in each scheme according to irrigation area.

表 - 8.2.1 農家經濟分析—計畫實施後

(Unit: 1,000 TSh.)

	Holding Size (ha)	Harvested Area (ha)	Farm Income	Off-Farm Income	Gross Income	Production Cost	Net Income	Living Expenses	Tax and Others	Net Profit
<b>Mgeta Scheme</b>										
Inside the Project Area	0.30									
Crops										
Maize		0.30	135			38				
Cabbage		0.06	81			12				
Potato		0.03	54			6				
Pulse crops		0.21	63			22				
Sub-total			333		333	78				
Outside the Project Area	0.50									
Crops										
Cabbage		0.17	153			20				
Maize		0.33	50			10				
Sub-total			203		203	30				
Grand Total			536		536	108	428	297	6	125
<b>Mgongola Scheme</b>										
Inside the Project Area	0.36									
Crops										
Paddy		0.54	432			123				
Maize		0.18	65			27				
Sub-total			497		497	150				
Outside the Project Area	1.26									
Crops										
Paddy		1.26	323			93				
Sub-total			323		323	93				
Grand Total			819		819	243	576	419	7	150
<b>Mkula Scheme</b>										
Within the Project Area	0.30									
Crops										
Paddy		0.22	176			49				
Maize		0.30	108			47				
Pulse crops		0.08	24			11				
Sub-total			308		308	106				
Outside the Project Area	0.99									
Crops										
Maize		0.99	178			64				
Sub-total			178		178	64				
Grand Total			486		486	170	316	256	4	56
<b>Mwega Scheme</b>										
Inside the Project Area	0.79									
Crops										
Paddy		0.24	192			48				
Maize		0.79	284			100				
Onion		0.55	701			186				
Sub-total			1,178		1,178	334				
Outside the Project Area	0.49									
Crops										
Maize		0.49	88			18				
Sub-total			88		88	18				
Grand Total			1,266		1,266	352	914	375	12	527

表 - 8.2.2 資金繰り分析

(Unit: TSh. million)

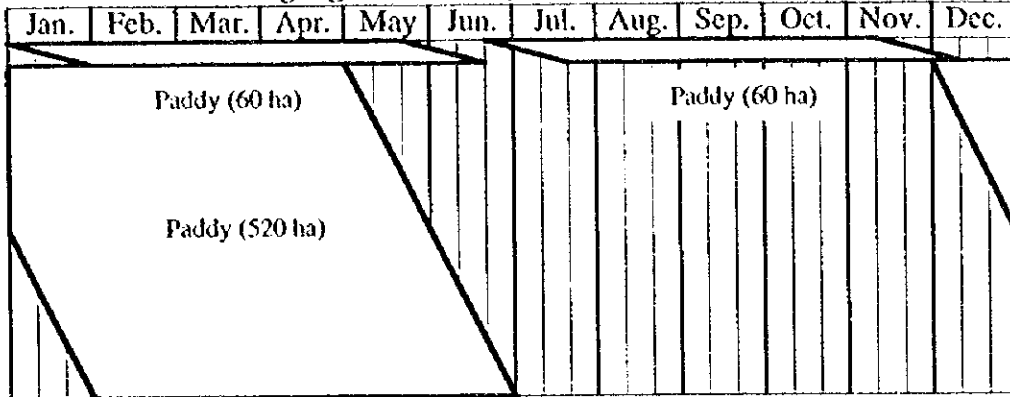
Year	Capital Cost		Cash Outflow				Cash Inflow			Total	Balance	Accumulated Balance
	FC	LC	Loan Repayment		O&M Cost	Replacement Cost	Production Cost	O&M Charges Collected from Farmers	Production Gross Value			
			Interest	Principal								
									FC	LC		
1	669.97	0.00	6.70						669.97	0.00	669.97	-6.70
2	2,457.80	2,835.16	31.28						2,457.80	2,835.16	5,292.96	-31.28
3	1,115.80	1,427.05	42.44		23.41	143.44			1,115.80	1,427.05	3,055.85	307.71
4	55.11	0.00	42.99		23.41	286.88			55.11	0.00	649.31	649.31
5			42.99		23.41	430.31			23.41		1,492.17	995.46
6			42.99		23.41	573.75			23.41		1,981.75	1,341.60
7			42.99		23.41	573.75			23.41		1,981.75	1,341.60
8			42.99		23.41	573.75			23.41		1,981.75	1,341.60
9			42.99		23.41	573.75			23.41		1,981.75	1,341.60
10			42.99		23.41	573.75			23.41		1,981.75	1,341.60
11			42.99	214.93	23.41	573.75			23.41		1,981.75	1,341.60
12			38.69	214.93	23.41	573.75	850.78		23.41		1,981.75	1,341.60
13			36.54	214.93	23.41	573.75	848.61		23.41		1,981.75	1,341.60
14			34.39	214.93	23.41	573.75	846.48		23.41		1,981.75	1,341.60
15			32.24	214.93	23.41	573.75	844.31		23.41		1,981.75	1,341.60
16			30.09	214.93	23.41	573.75	842.18		23.41		1,981.75	1,341.60
17			27.94	214.93	23.41	573.75	840.03		23.41		1,981.75	1,341.60
18			25.79	214.93	23.41	573.75	837.88		23.41		1,981.75	1,341.60
19			23.64	214.93	23.41	573.75	835.75		23.41		1,981.75	1,341.60
20			21.49	214.93	23.41	573.75	833.58		23.41		1,981.75	1,341.60
21			19.34	214.93	23.41	573.75	831.43		23.41		1,981.75	1,341.60
22			17.20	214.93	23.41	573.75	829.29		23.41		1,981.75	1,341.60
23			15.05	214.93	23.41	573.75	827.14		23.41		1,981.75	1,341.60
24			12.90	214.93	23.41	573.75	824.99		23.41		1,981.75	1,341.60
25			10.75	214.93	23.41	573.75	822.84		23.41		1,981.75	1,341.60
26			8.60	214.93	23.41	573.75	820.69		23.41		1,981.75	1,341.60
27			6.45	214.93	23.41	573.75	818.54		23.41		1,981.75	1,341.60
28			4.30	214.93	23.41	573.75	816.35	47.46	23.41		1,981.75	1,341.60
29			2.15	214.93	23.41	573.75	814.24		23.41		1,981.75	1,341.60
30			0.00	214.93	23.41	573.75	812.09		23.41		1,981.75	1,341.60
31				214.93	23.41	573.75	809.16		23.41		1,981.75	1,341.60
32				214.93	23.41	573.75	807.16		23.41		1,981.75	1,341.60
33				214.93	23.41	573.75	805.16		23.41		1,981.75	1,341.60
34				214.93	23.41	573.75	803.16		23.41		1,981.75	1,341.60
35				214.93	23.41	573.75	801.16		23.41		1,981.75	1,341.60
36				214.93	23.41	573.75	799.16		23.41		1,981.75	1,341.60
37				214.93	23.41	573.75	797.16		23.41		1,981.75	1,341.60
38				214.93	23.41	573.75	795.16		23.41		1,981.75	1,341.60
39				214.93	23.41	573.75	793.16		23.41		1,981.75	1,341.60
40				214.93	23.41	573.75	791.16		23.41		1,981.75	1,341.60
41				214.93	23.41	573.75	789.16		23.41		1,981.75	1,341.60
42				214.93	23.41	573.75	787.16		23.41		1,981.75	1,341.60
43				214.93	23.41	573.75	785.16		23.41		1,981.75	1,341.60
44				214.93	23.41	573.75	783.16		23.41		1,981.75	1,341.60
45				214.93	23.41	573.75	781.16		23.41		1,981.75	1,341.60
46				214.93	23.41	573.75	779.16		23.41		1,981.75	1,341.60
47				214.93	23.41	573.75	777.16		23.41		1,981.75	1,341.60
48				214.93	23.41	573.75	775.16		23.41		1,981.75	1,341.60
49				214.93	23.41	573.75	773.16		23.41		1,981.75	1,341.60
50				214.93	23.41	573.75	771.16		23.41		1,981.75	1,341.60

付 図

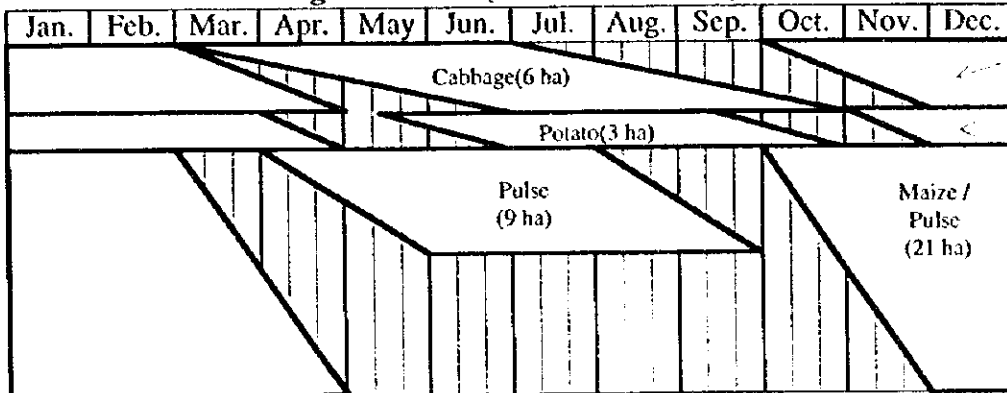




Mgongola Scheme (Farm land : 580 ha)



Mgeta Scheme (Farm land : 30 ha)



Maize /  
Pulse  
(6 ha)

Maize /  
Pulse  
(3 ha)

Mkula Scheme (Farm land : 161 ha)

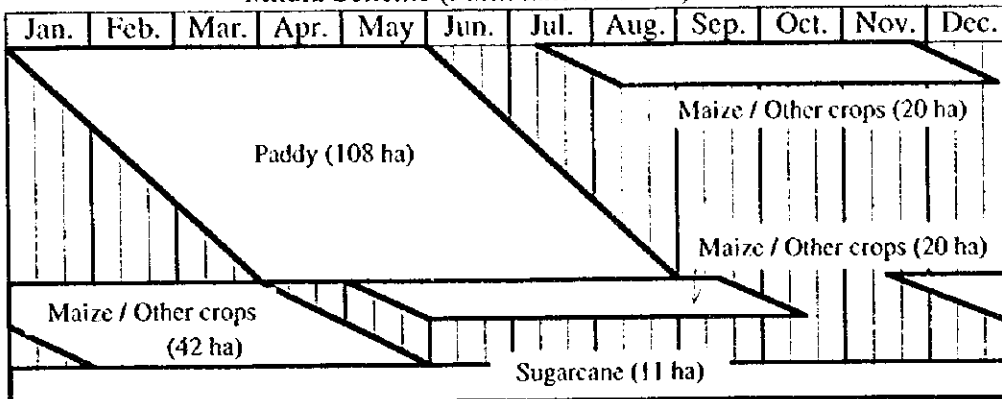
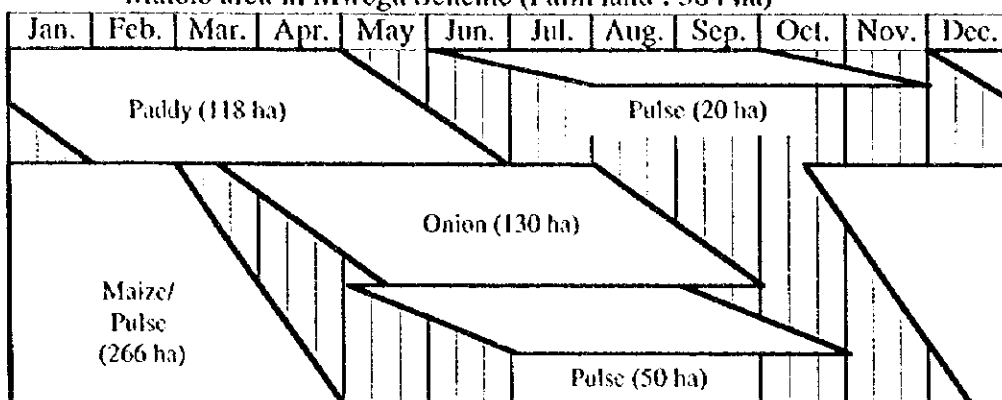


図-5.3.1 現況作付体系 (1/2)

Malolo area in Mwega Scheme (Farm land : 384 ha)



Nyinga and Mgogozzi-Mwega Area in Mwega Scheme (Farm land : 166 ha)

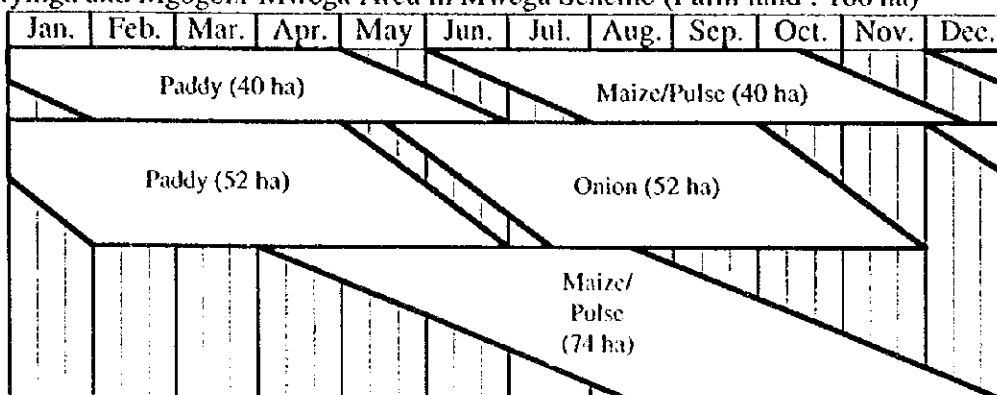
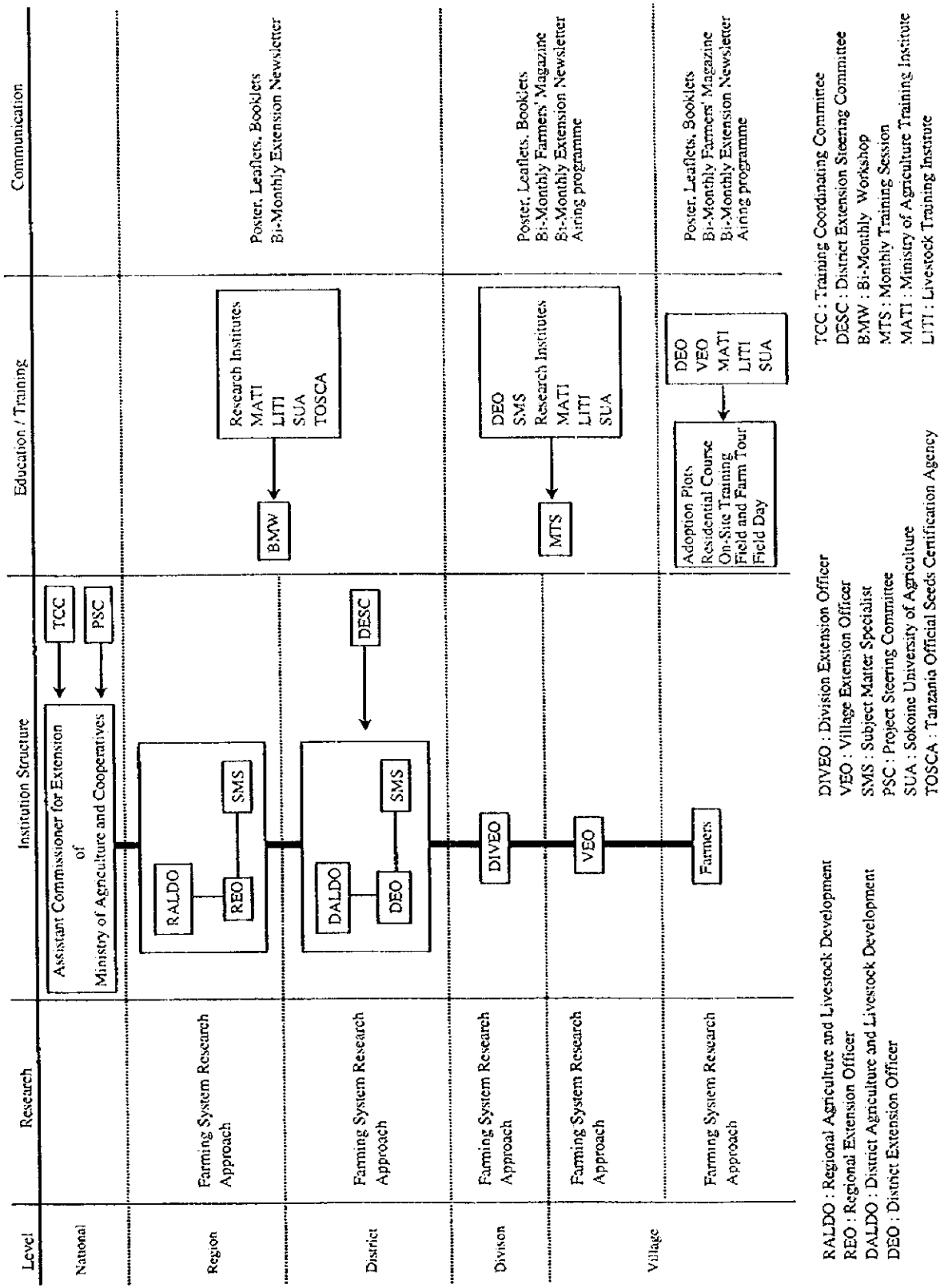


図-5.3.1 現況作付体系 (2/2)



TCC : Training Coordinating Committee  
 DESC : District Extension Steering Committee  
 BMW : Bi-Monthly Workshop  
 MTS : Monthly Training Session  
 MATI : Ministry of Agriculture Training Institute  
 LITI : Livestock Training Institute  
 DIVEO : Division Extension Officer  
 VEO : Village Extension Officer  
 SMS : Subject Matter Specialist  
 PSC : Project Steering Committee  
 SUA : Sokome University of Agriculture  
 TOSCA : Tanzania Official Seeds Certification Agency  
 RALDO : Regional Agriculture and Livestock Development  
 REO : Regional Extension Officer  
 DALDO : District Agriculture and Livestock Development  
 DEO : District Extension Officer

図-5.3.2 農業普及システムの現状 (NAEP-II)

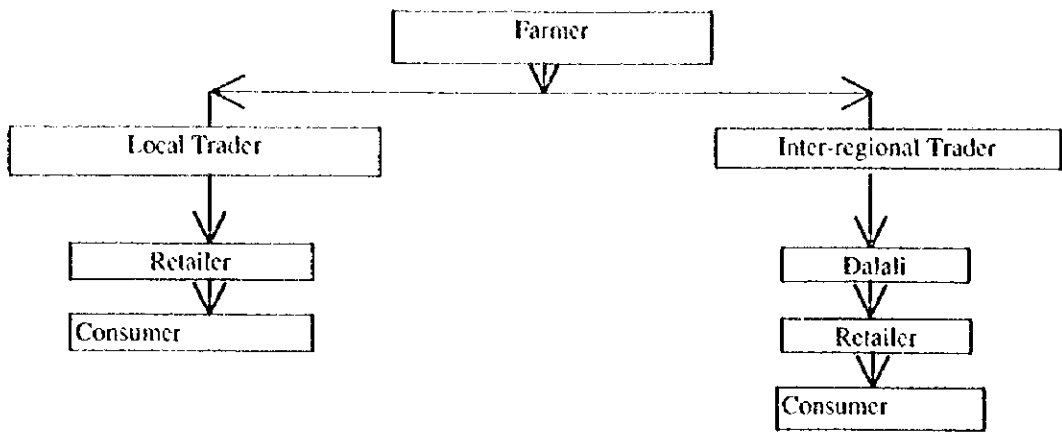


図-5.3.3 農産物の市場流通経路 - トウモロコシ

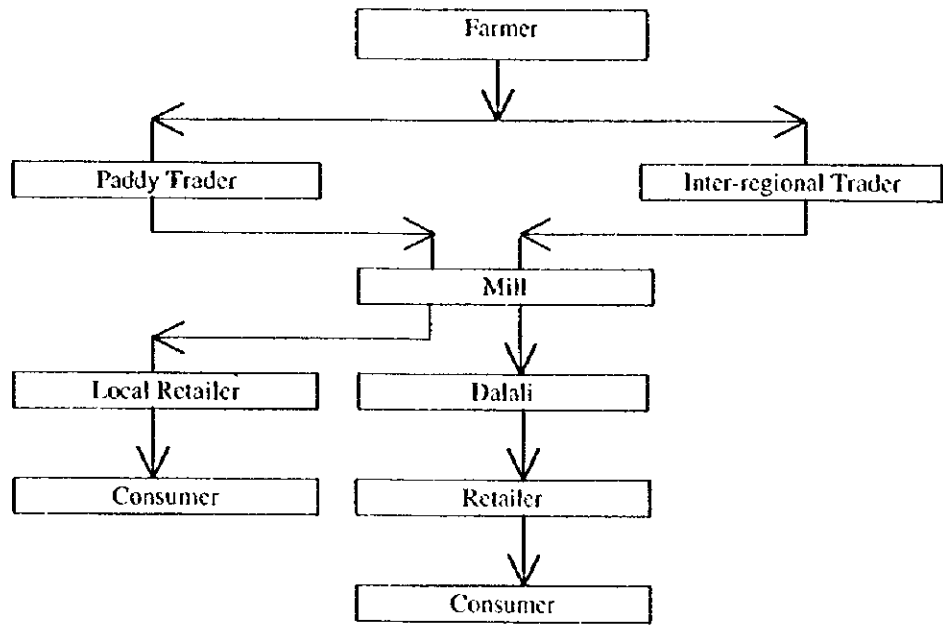


図-5.3.4 農産物の市場流通経路 - 米

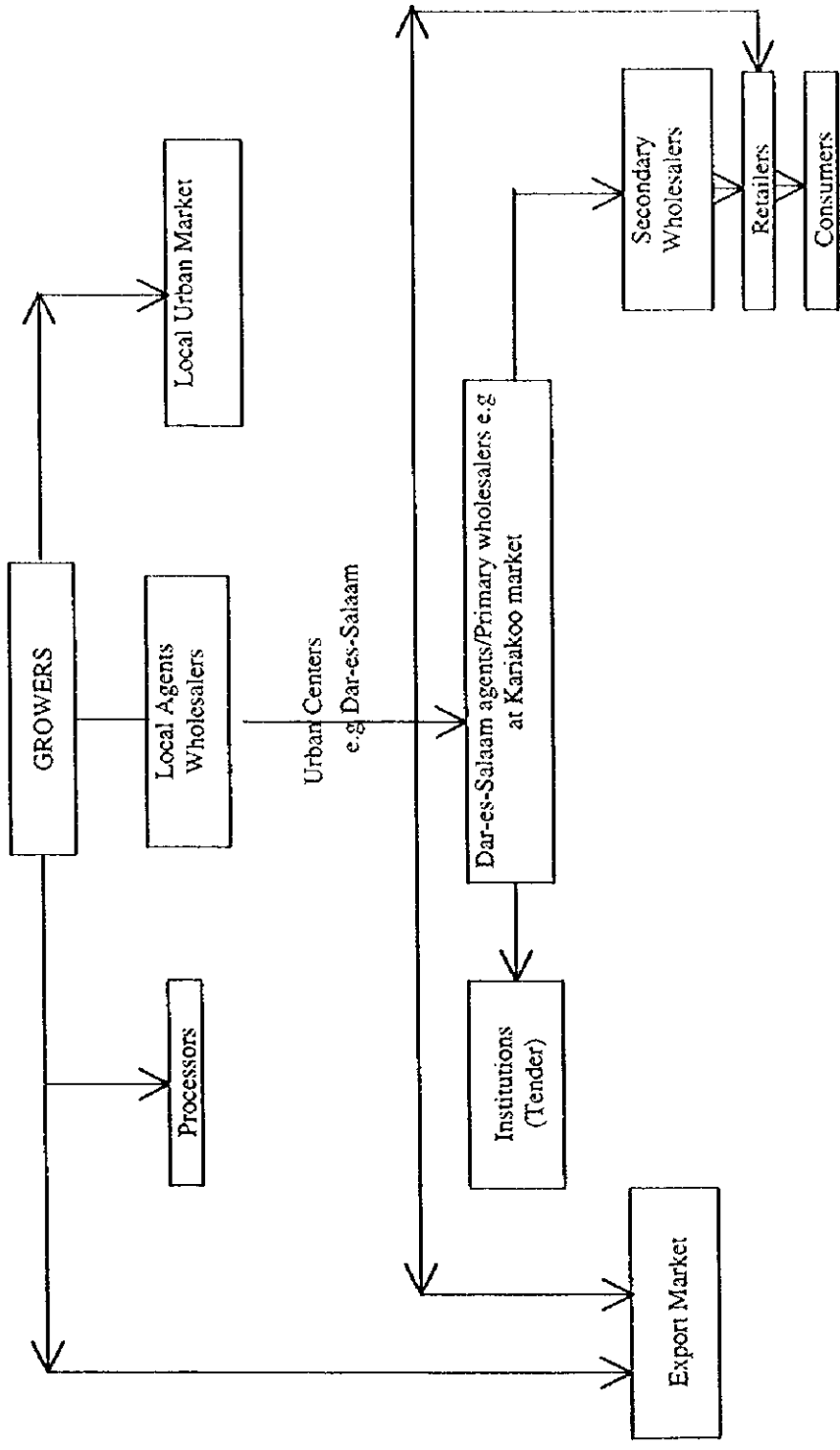


図-5.3.5 農産物の市場流通経路 - 野菜

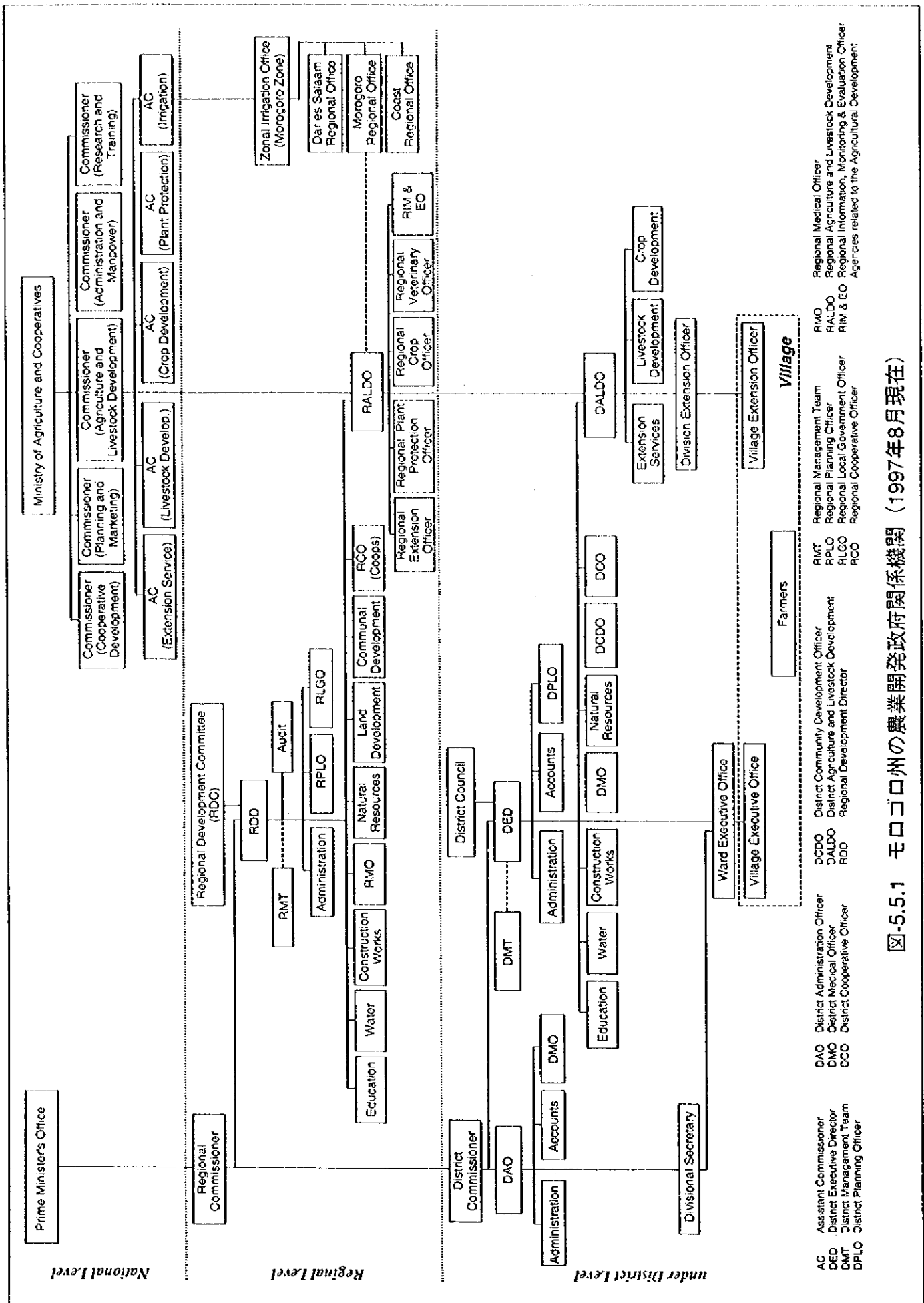
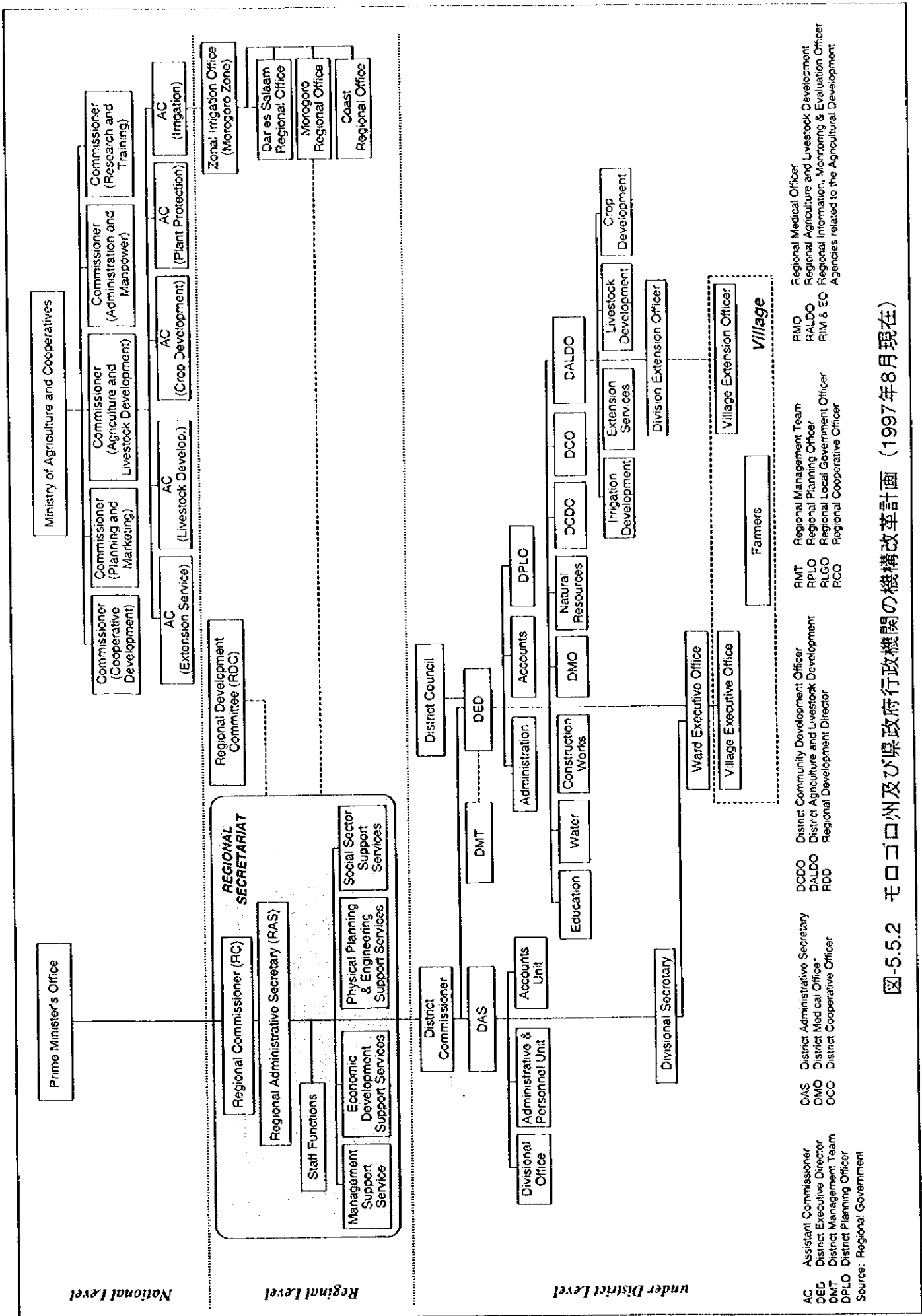


図-5.5.1 モロゴロ州の農業開発政府関係機関 (1997年8月現在)



AC Assistant Commissioner  
 RMO Regional Medical Officer  
 RALDO Regional Agriculture and Livestock Development  
 RIM & EO Regional Information, Monitoring & Evaluation Officer  
 Agencies related to the Agricultural Development

RMT Regional Medical Officer  
 RPLD Regional Planning Officer  
 RLGO Regional Local Government Officer  
 RCO Regional Cooperative Officer

DCDO District Cooperative Director  
 DALDO District Agricultural and Livestock Development  
 RDD Regional Development Director

DAS District Administrative Secretary  
 DMO District Medical Officer  
 OCC District Cooperative Officer

AC Commissioner (Extension Service)  
 AC Commissioner (Livestock Develop.)  
 AC Commissioner (Crop Development)  
 AC Commissioner (Plant Protection)  
 AC Commissioner (Irrigation)

District Commissioner  
 DAS  
 DMT  
 DED  
 Accounts  
 DPLD  
 Administration  
 DMO  
 Construction Works  
 Water  
 Education  
 Natural Resources  
 DCDO  
 DCO  
 DALDO  
 Irrigation Development  
 Extension Services  
 Livestock Development  
 Crop Development  
 Divisional Secretary  
 Ward Executive Office  
 Village Executive Office  
 Farmers  
 Village Extension Officer

図-5.5.2 モロゴロ州及び県政府行政機関の機構改革計画（1997年8月現在）

**Regional Commissioner (RC)**

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**Regional Administrative Secretary (RAS)**

<i>Staff Functions</i>	
- Personal Assistance to RC	1
- Admini. Officer	1
- Estab. Officer	1
- Accountant	1
- Office Mgt. Secretary	2
- Accounts Assistance	2
- Machine Operator	1
- Internal Auditor	1
<b>Total</b>	<b>10</b>

<i>Management Support Service</i>	
- Local Government Officer	2
- Economist/Planner	2
- Statistician	1
- Legal Officer	1
- Auditor for Local Government	1
- Labour Officer	1
<b>Total</b>	<b>8</b>

<i>Economic Development Support Services</i>	
- Agricultural Officer*	1
- Livestock Officer	1
- Cooperative Officer**	1
- Trade Officer	1
- Natural Res. Officer	1
<b>Total</b>	<b>5</b>

<i>Physical Planning &amp; Engineering Support Services</i>	
- Civil Engineer	1
- Structural Engineer	1
- Roads Engineer	1
- Technicians	2
- Draughtsman	1
- Town Plan/Surveying Officer	2
<b>Total</b>	<b>8</b>

<i>Social Sector Support Services</i>	
- Educ. Officer/TSC Admini..	5
- Social Welfare Officer	1
- Community Development	1
- Health Specialist	1
- Water Engineer	1
<b>Total</b>	<b>9</b>

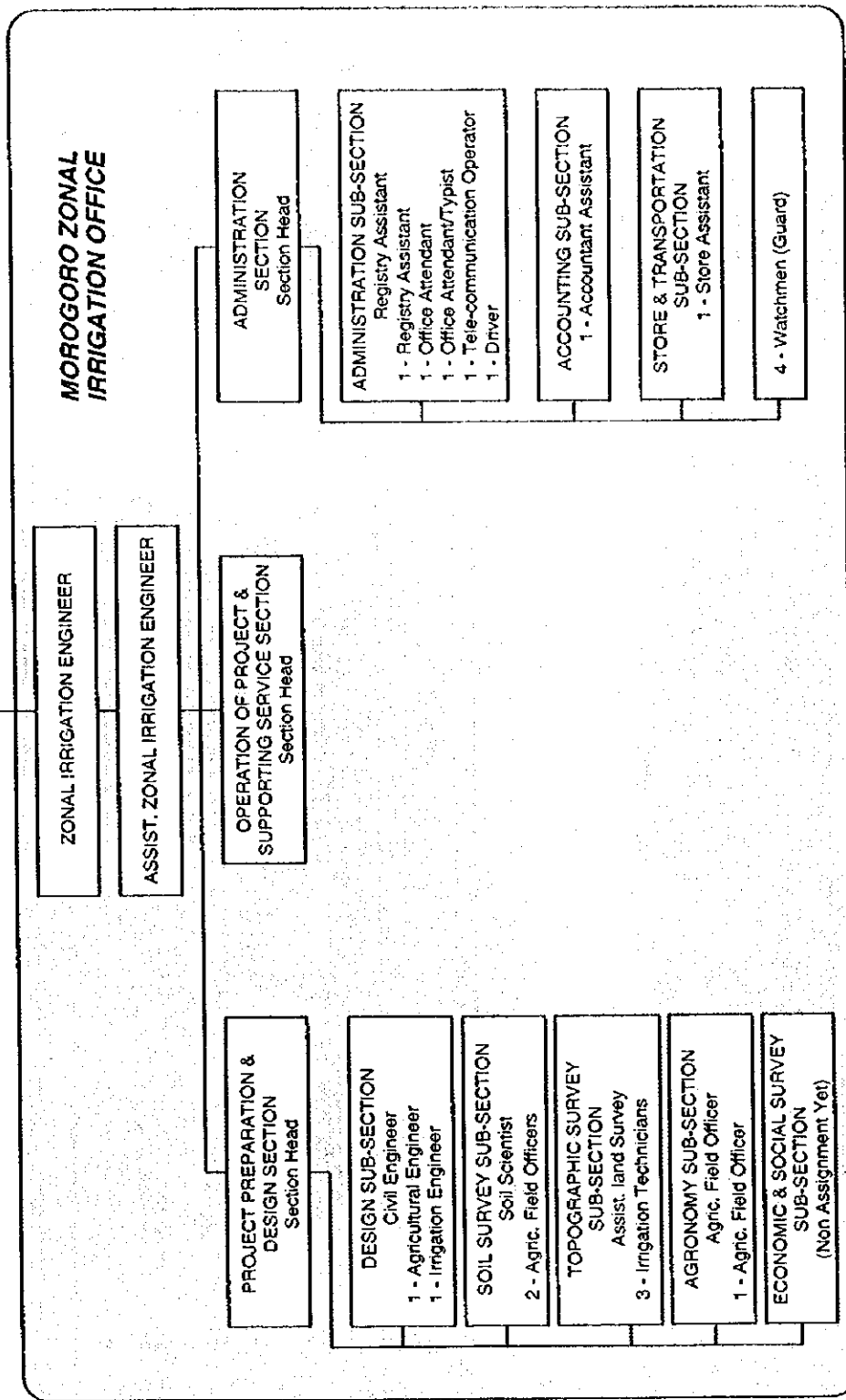
<i>Common Cadre and Operational Staff</i>	
- Personal Secretary/Typist	8
- Office Supervisor	1
- Registry Assistant	5
- Receptionsist/Telephonist	2
- Driver	8
- Officer Attendant	7
- Watchman	9
- Stores Officer/Supply	1
<b>Total</b>	<b>41</b>

\* Former RALDO    \*\* Former RCO  
Source: Regional Government

図-5.5.3 毛口口州政府機構改革計画 (1997年8月現在)



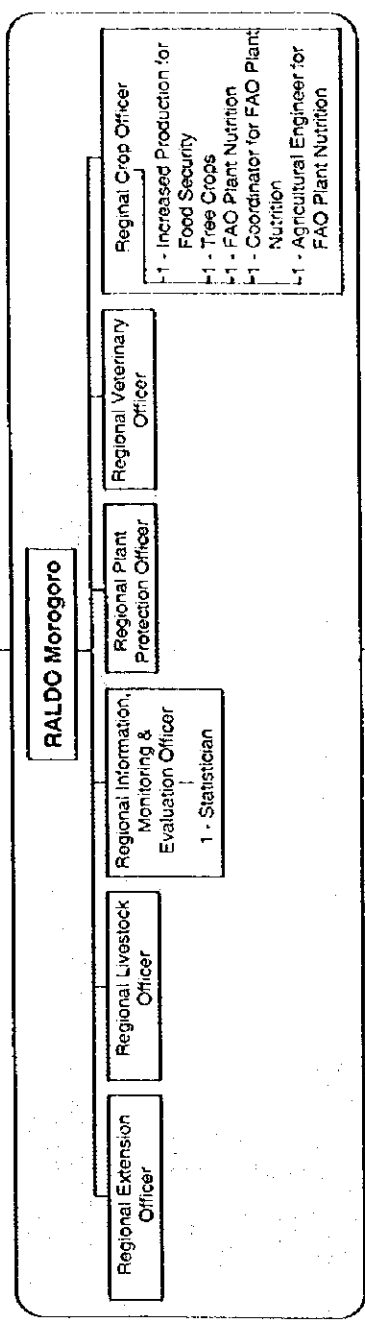
MINISTRY OF AGRICULTURAL & COOPERATIVES  
 COMMISSIONER  
 AGRICULTURAL & LIVESTOCK DEVELOPMENT  
 ASSISTANT COMMISSIONER  
 IRRIGATION



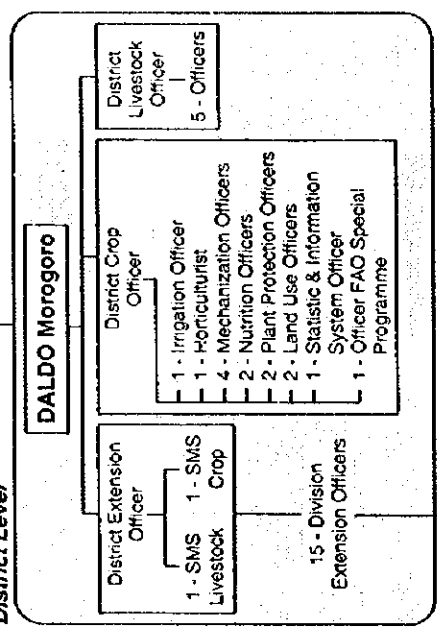
Source: Zonal Irrigation Office

図-5.5.4 毛ゴ口地域灌漑事務所組織図 (1997年8月現在)

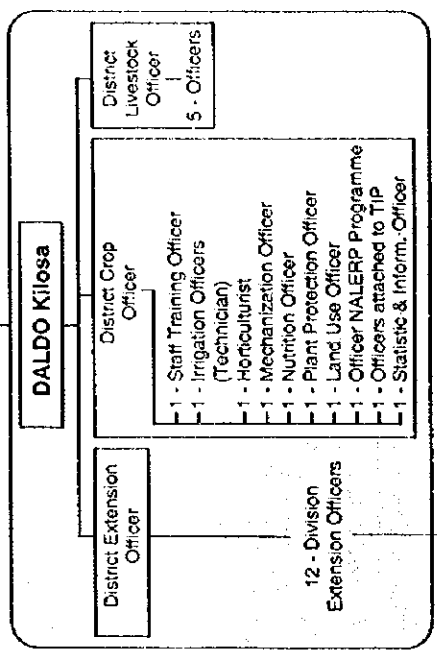
Ministry of Agriculture and Cooperatives  
Commissioner  
Agricultural & Livestock Development



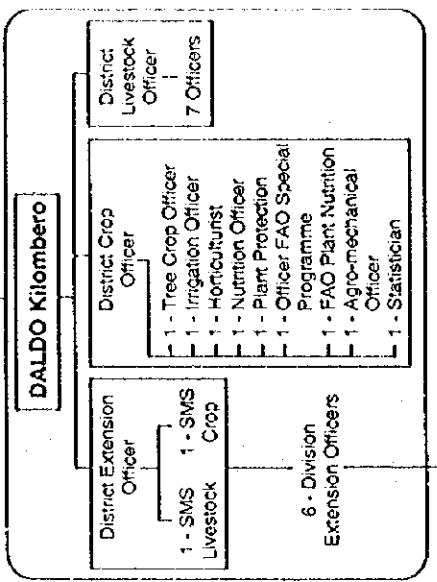
**District Level**



100 - Village Extension Officers (VEO)  
Migeta Mngongola 7  
3+1\*  
No. of VEO in the Project Areas



56 - Village Extension Officers (VEO)  
Malolo Mngogazi 1+1\*  
No. of VEO in the Project Areas



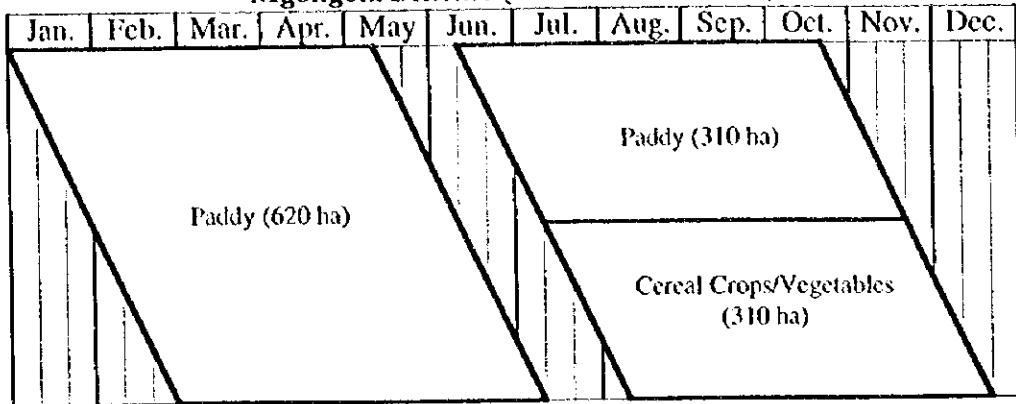
36 - Village Extension Officers (VEO)  
Mkula 1  
No. of VEO in the Project Areas

**Village Level**

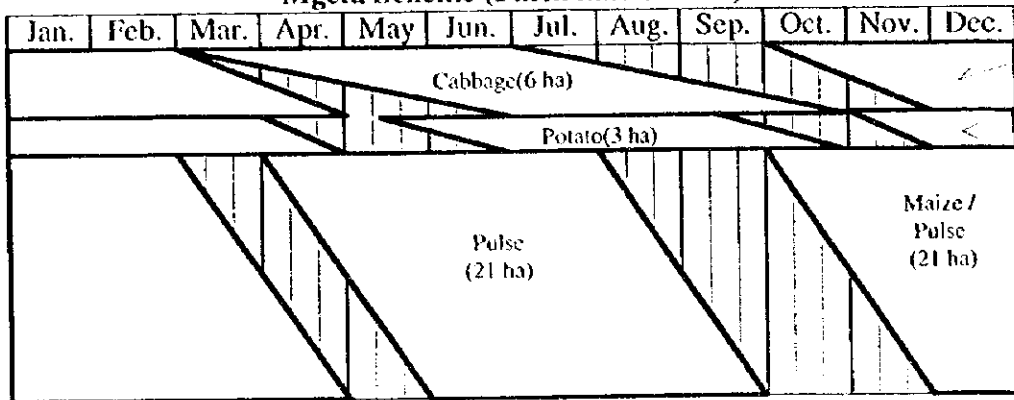
\* Irrigation Technician Source: Offices of RALDO and DALDO

図-5.5.5 州及び県農業畜産開発事務所組織図 (1997年8月現在)

Mgongola Scheme (Farm land : 620 ha)



Mgeta Scheme (Farm land : 30 ha)



Mkula Scheme (Farm land : 149 ha)

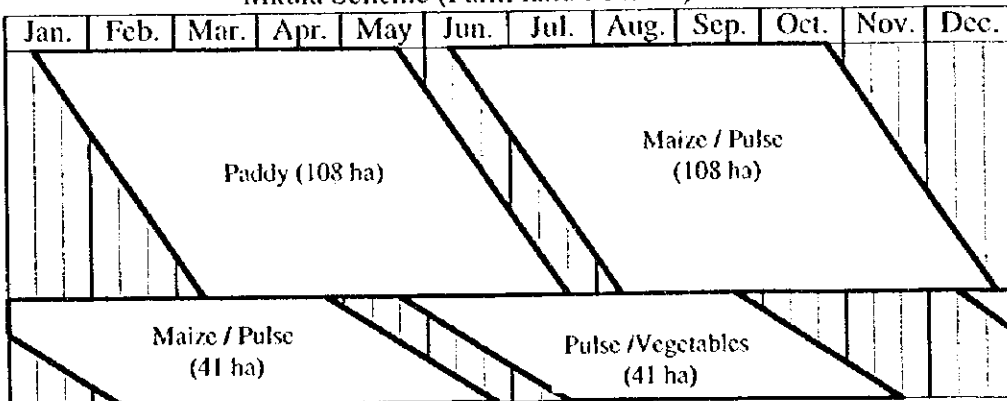


図-7.2.1 計画作付体系 (1/2)

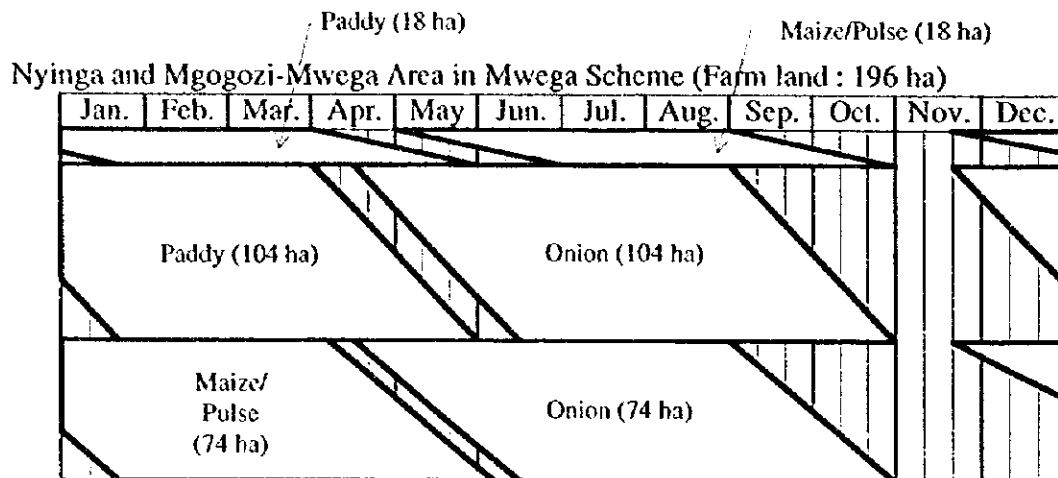
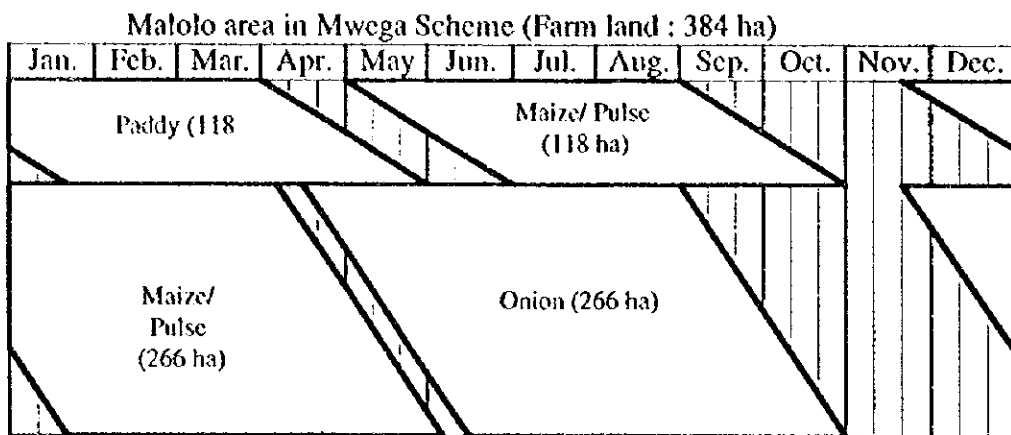


図-7.2.1 計画作付体系 (2/2)

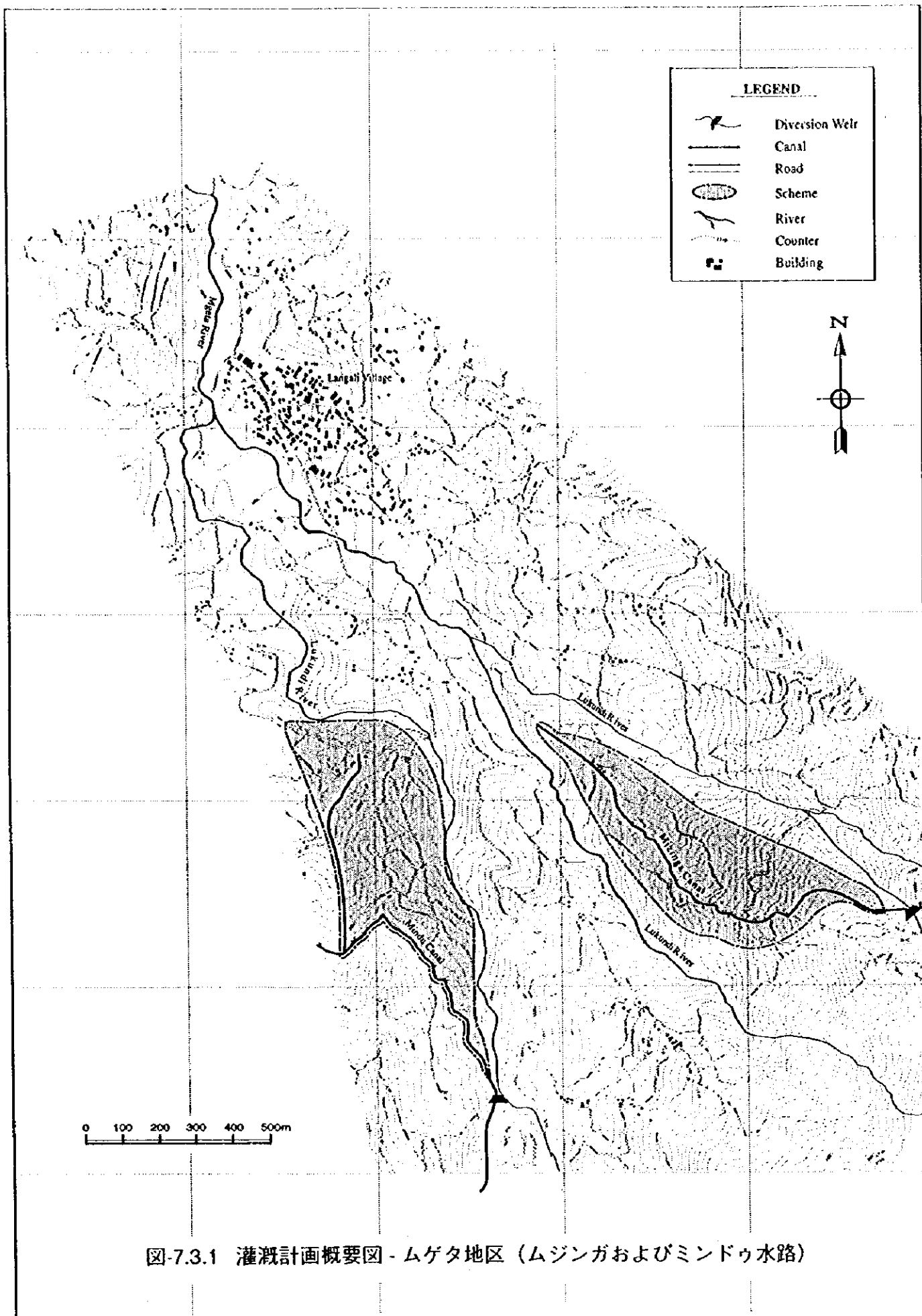


図-7.3.1 灌漑計画概要図 - ムゲタ地区 (ムジンガおよびミンドウ水路)

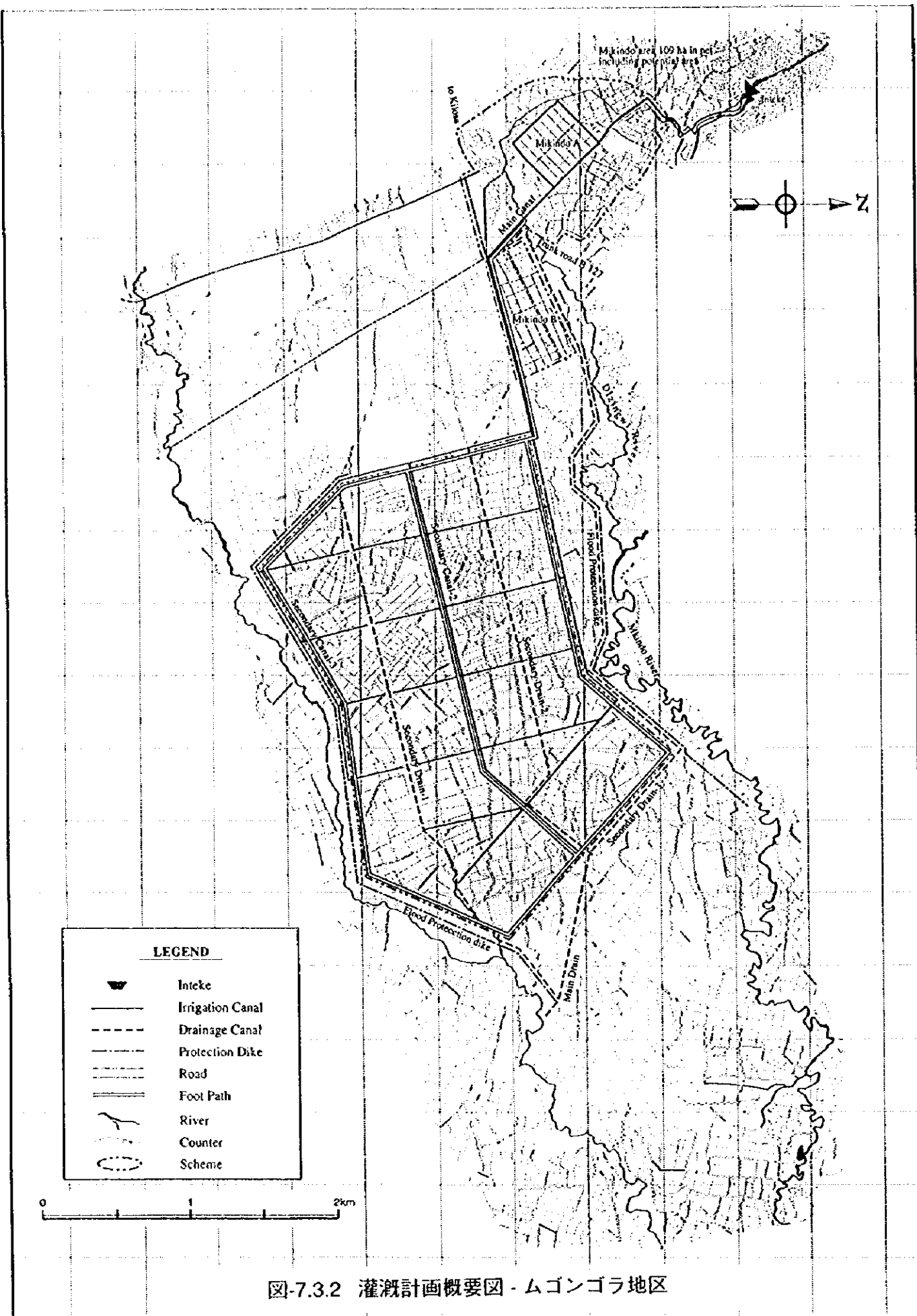


図-7.3.2 灌漑計画概要図 - ムゴンゴラ地区

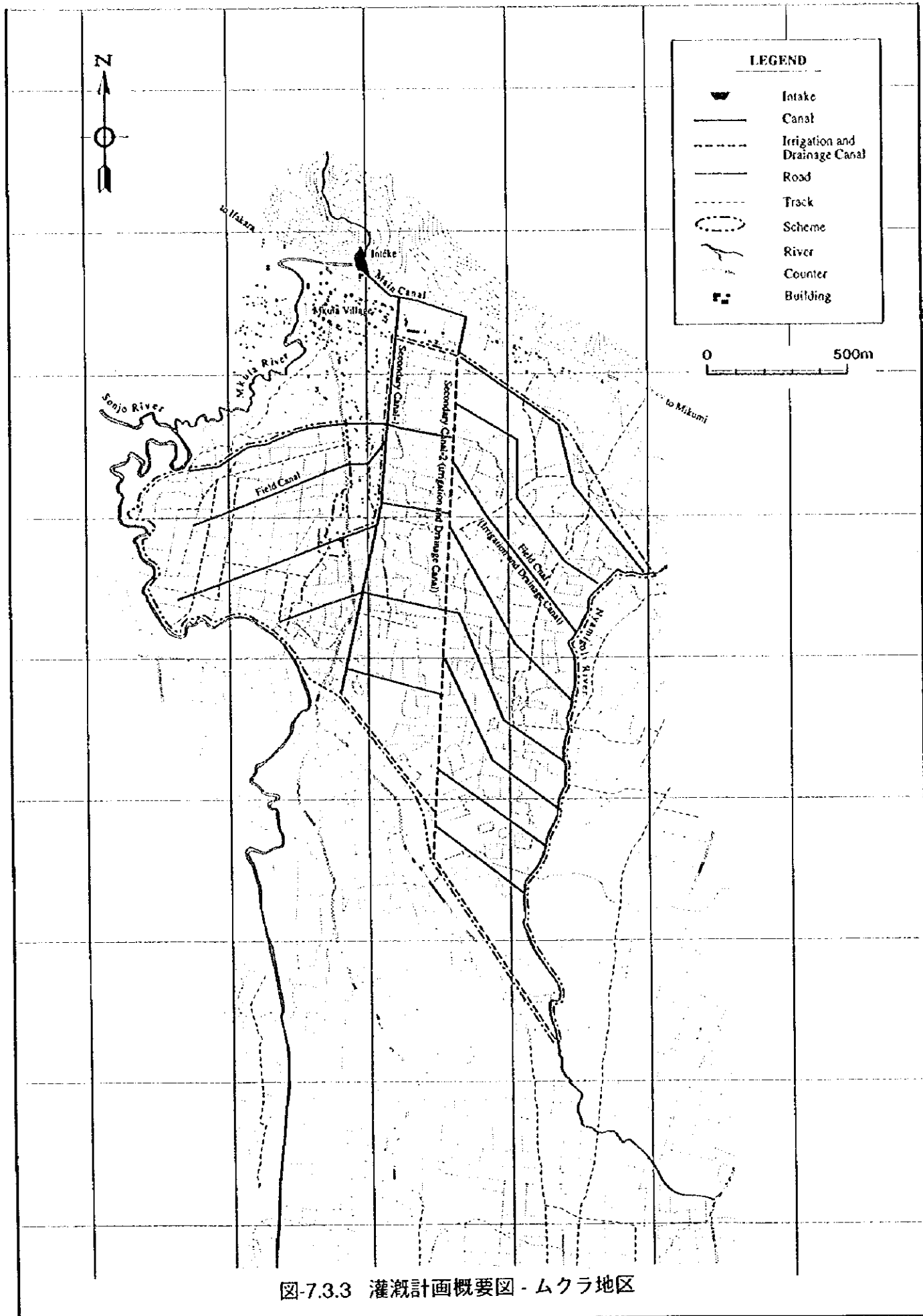
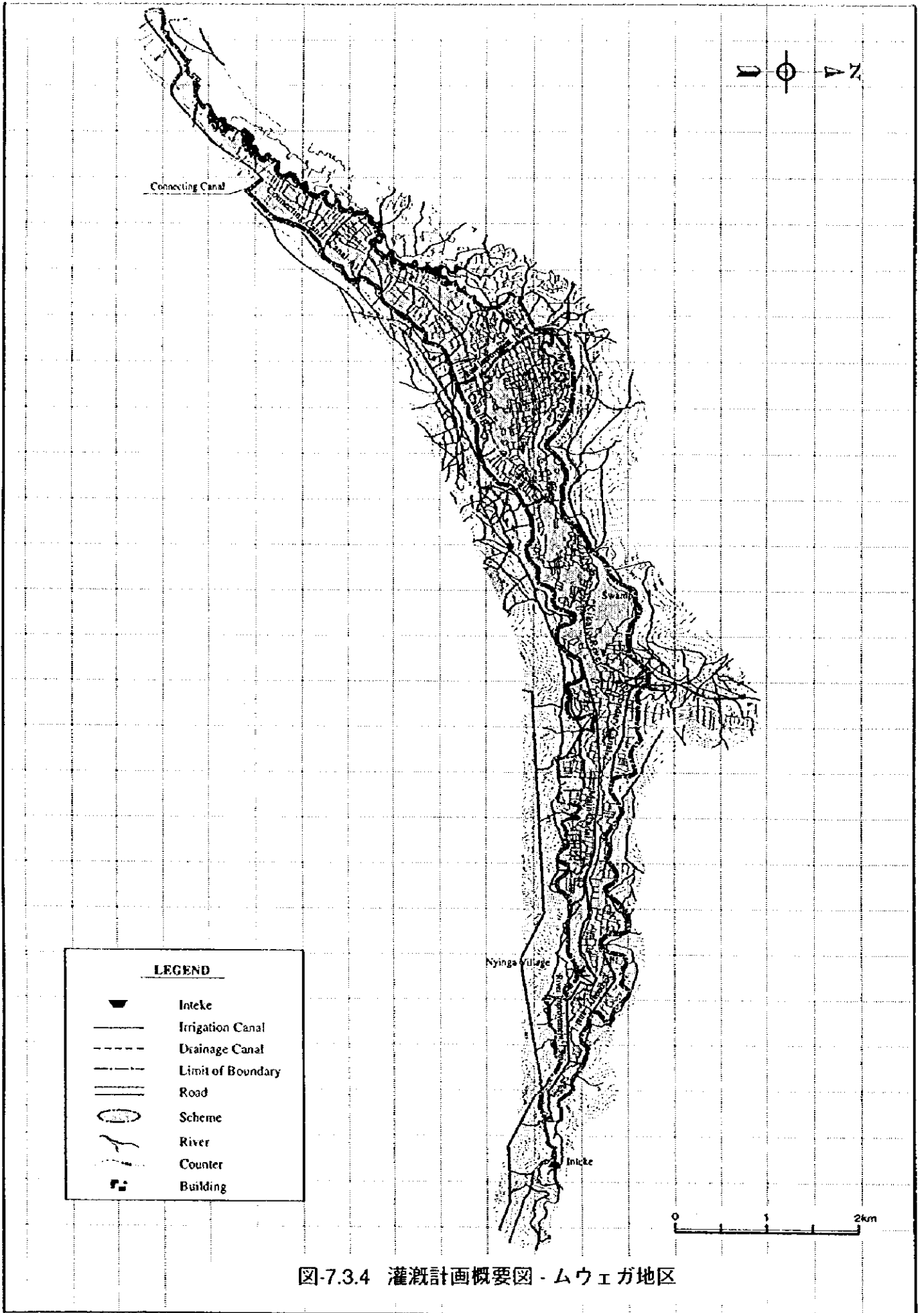


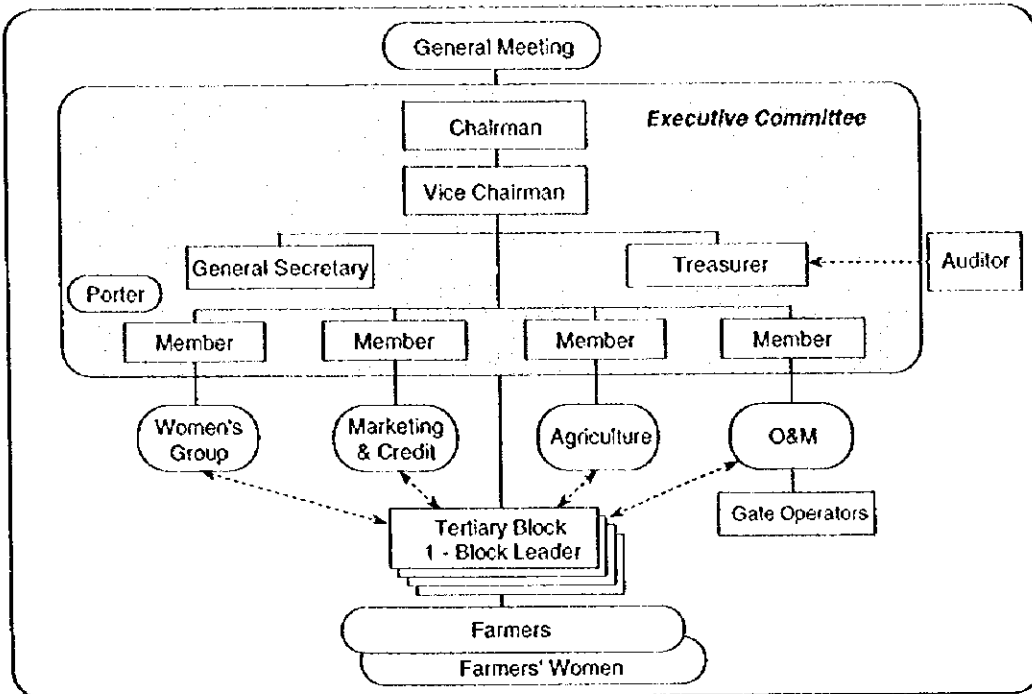
図-7.3.3 灌漑計画概要図 - ムクラ地区



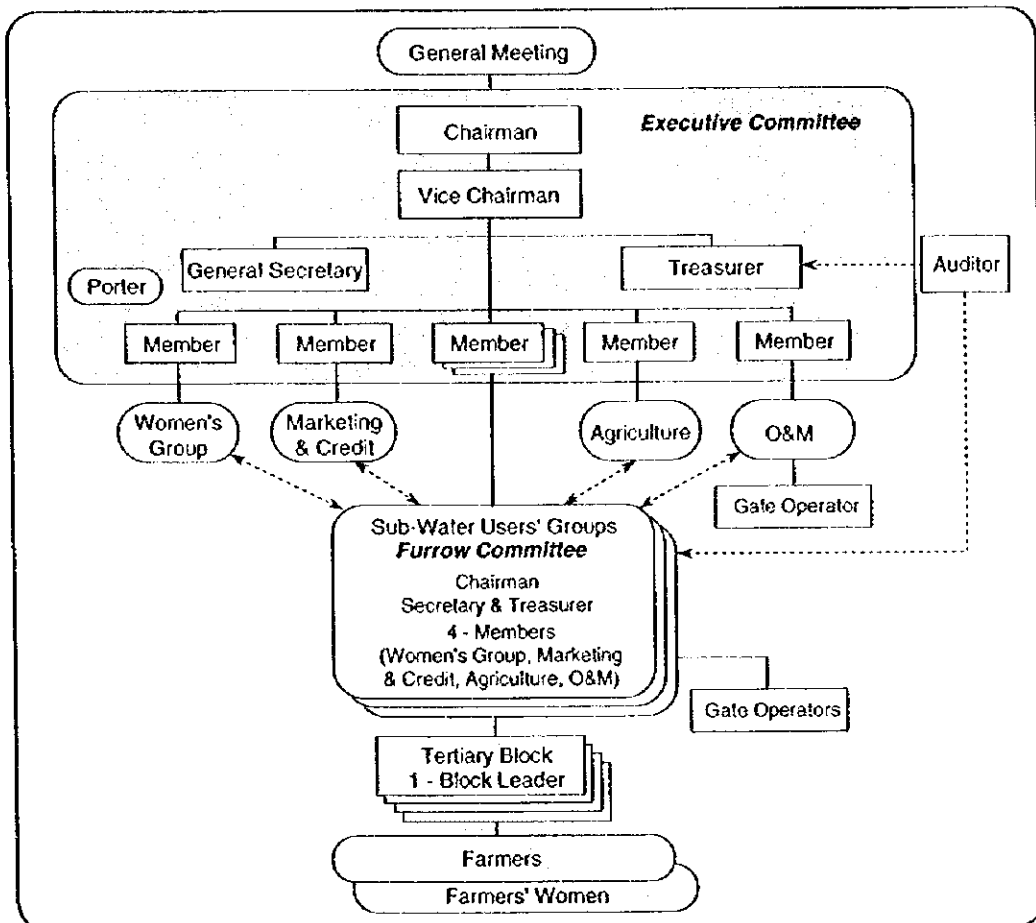
LEGEND	
	Intake
	Irrigation Canal
	Drainage Canal
	Limit of Boundary
	Road
	Scheme
	River
	Counter
	Building

図-7.3.4 灌漑計画概要図 - ムウエガ地区





**Proposed Water Users' Group Type-A  
(Small Scale WUA below 100 Members)**



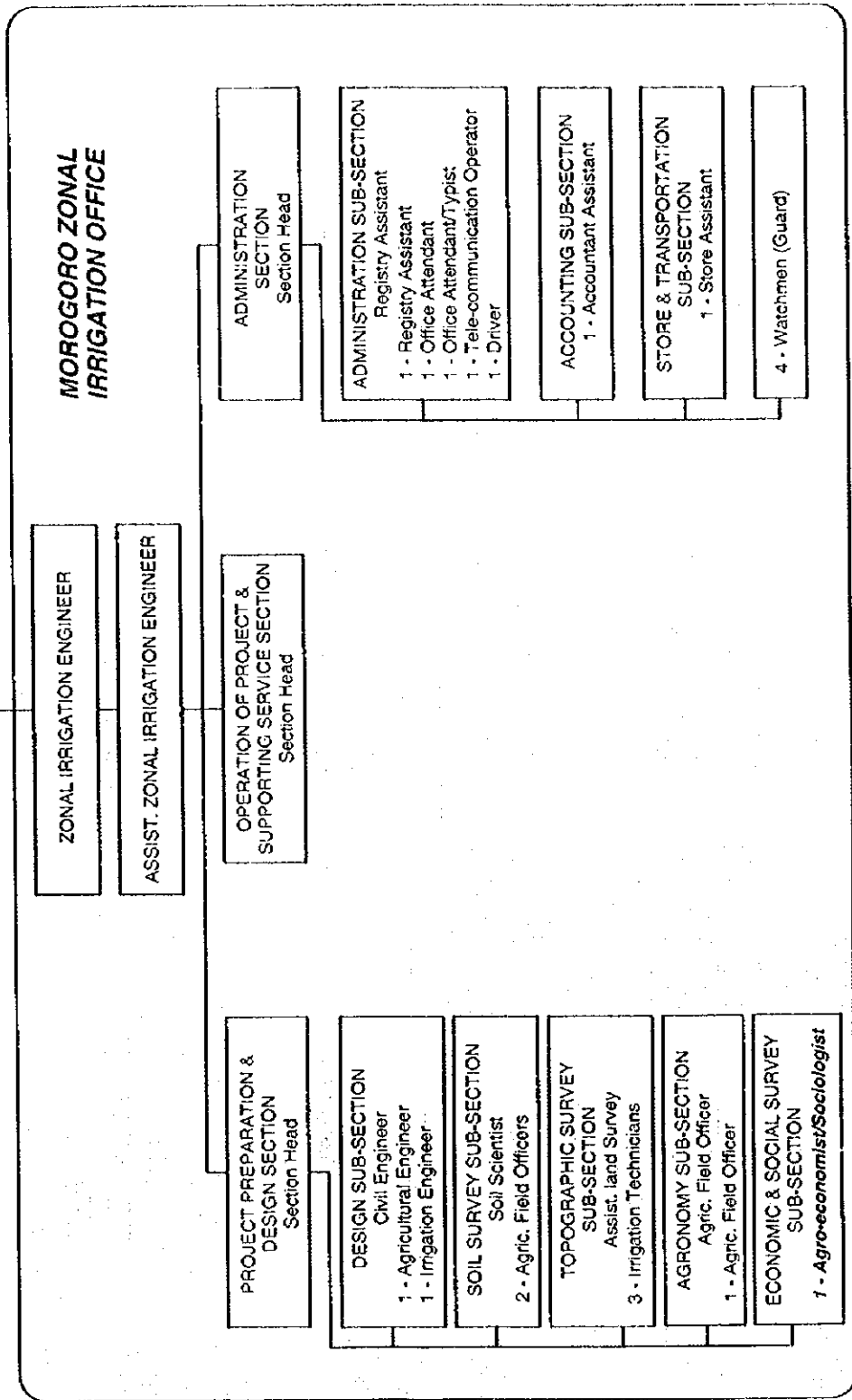
**Proposed Water Users' Group Type-B  
(Large Scale WUA over 100 Members)**

図-7.4.1 水利組合組織計画

図-9.1.1 事業実施計画

Work Item	1st Year												2nd Year												3rd Year												4th Year											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M							
<b>Construction Schedule</b>																																																
Survey and Design	-----																																															
Tendering													-----																																			
Construction Supervision													-----												-----																							
<b>Mgeta Scheme</b>																																																
Construction of major project facilities													-----																																			
Preparatory works													-----																																			
Improvement of intake													-----																																			
Irrigation system													-----																																			
Construction of on-farm works by beneficiaries													-----																																			
													DRY SEASON Stop water supply from the existing intake																																			
													No water supply period : 5 months																																			
																									Commencement of full water supply																							
<b>Mgongola Scheme</b>																																																
Construction of major project facilities													-----																																			
Preparatory works													-----																																			
Improvement of intake													-----																																			
Flood protection dike													-----																																			
Drainage system													-----																																			
Irrigation system													-----																																			
Road													-----																																			
Land leveling													-----																																			
Other works													-----																																			
Construction of on-farm works by beneficiaries													-----																																			
													DRY SEASON Stop water supply from the existing intake												DRY SEASON Stop water supply from the existing intake																							
													No water supply period : 6 months for Mkindo area intakes												Commencement of water supply to Mkindo area												Commencement of full water supply											
																									Commencement of water supply to a part of Mgongola area																							
<b>Mkula Scheme</b>																																																
Construction of major project facilities													-----																																			
Preparatory works													-----																																			
Improvement of intake													-----																																			
Irrigation & Drainage system													-----																																			
Other works													-----																																			
Construction of on-farm works by beneficiaries													-----																																			
													DRY SEASON Stop water supply from the existing intake												DRY SEASON Stop water supply from the existing intake																							
																									Commencement of water supply to whole area																							
<b>Mwega Scheme</b>																																																
Construction of major project facilities													-----																																			
Preparatory works													-----																																			
Headworks													-----																																			
River improvement													-----																																			
Irrigation system													-----																																			
Road & Drainage													-----																																			
Other works													-----																																			
Construction of on-farm works by beneficiaries													-----																																			
																									Stop water supply from existing intakes																							
																									No water supply period : Three months																							
																									Commencement of water supply from the headworks												Commencement of full water supply											

MINISTRY OF AGRICULTURAL & COOPERATIVES  
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 AGRICULTURAL & LIVESTOCK DEVELOPMENT  
 ASSISTANT COMMISSIONER  
 IRRIGATION



"1 - Agro-economist" : Officers to be appointed newly to the office

図-9.2.1 事業実施機関 (地域灌漑事務所) 組織計画

図-9.2.2 水利組合強化・育成に係る実施計画 (1/2)

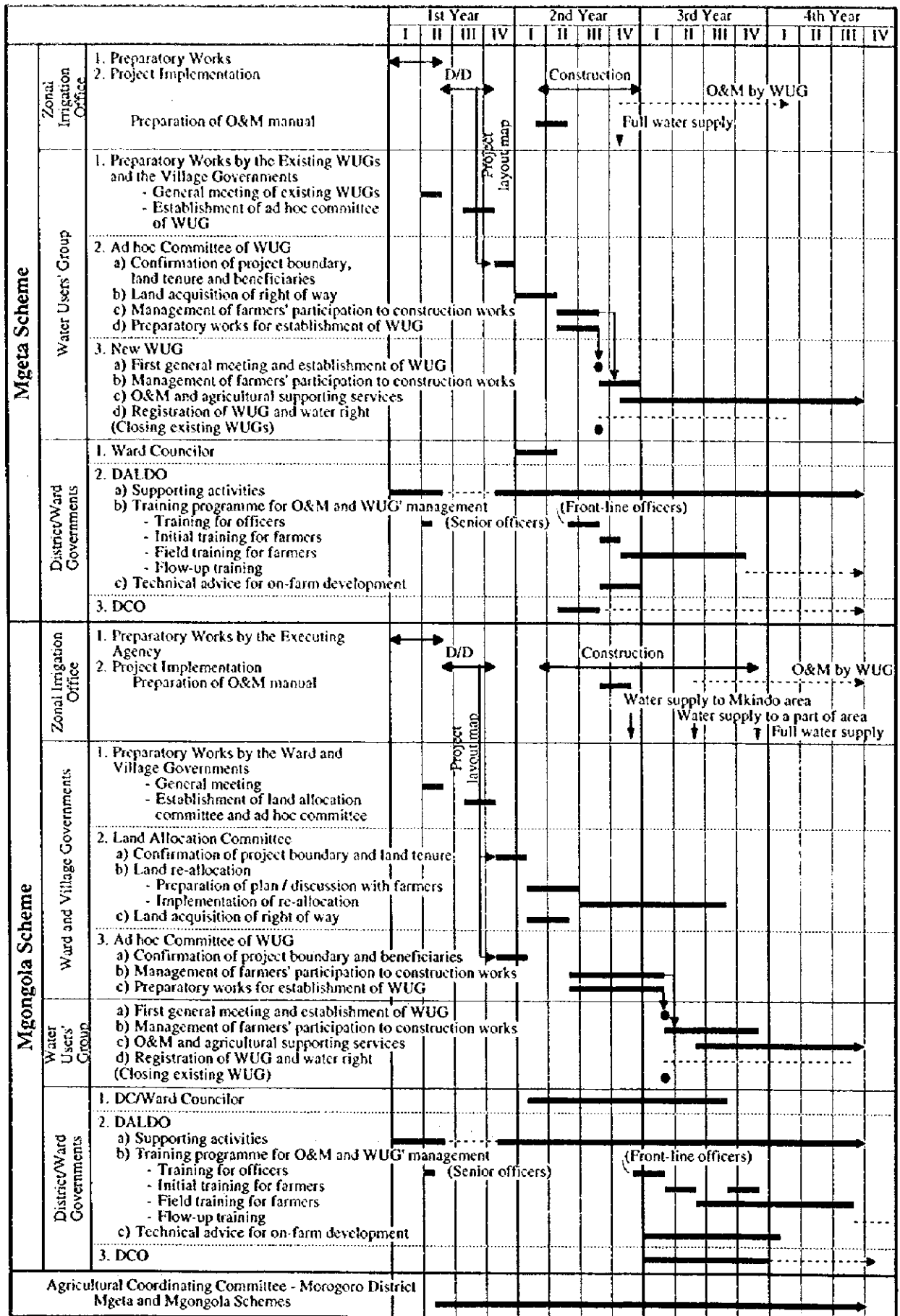
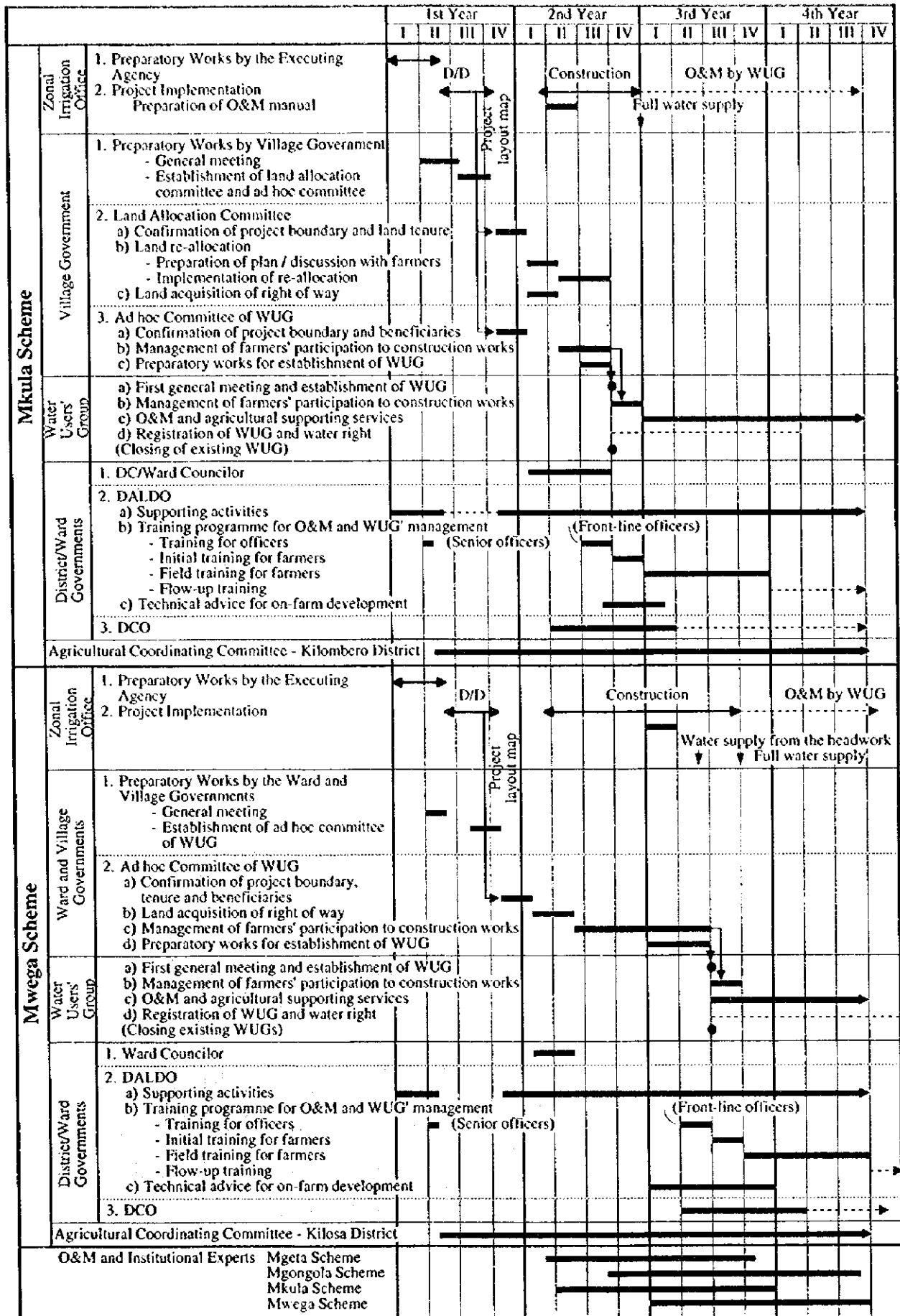
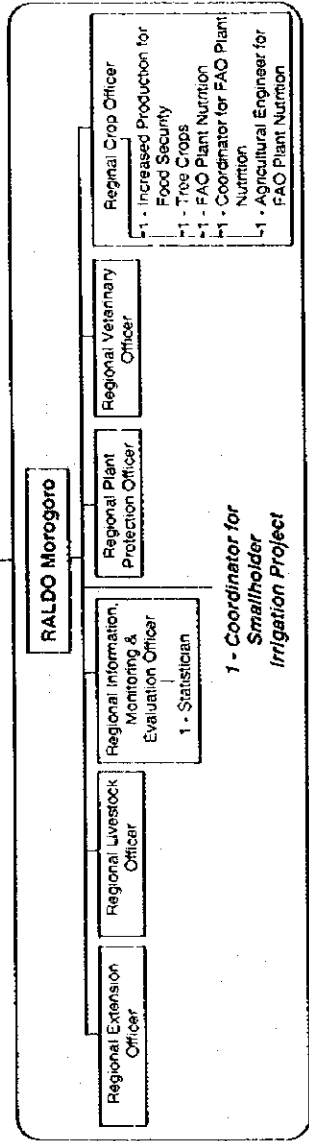


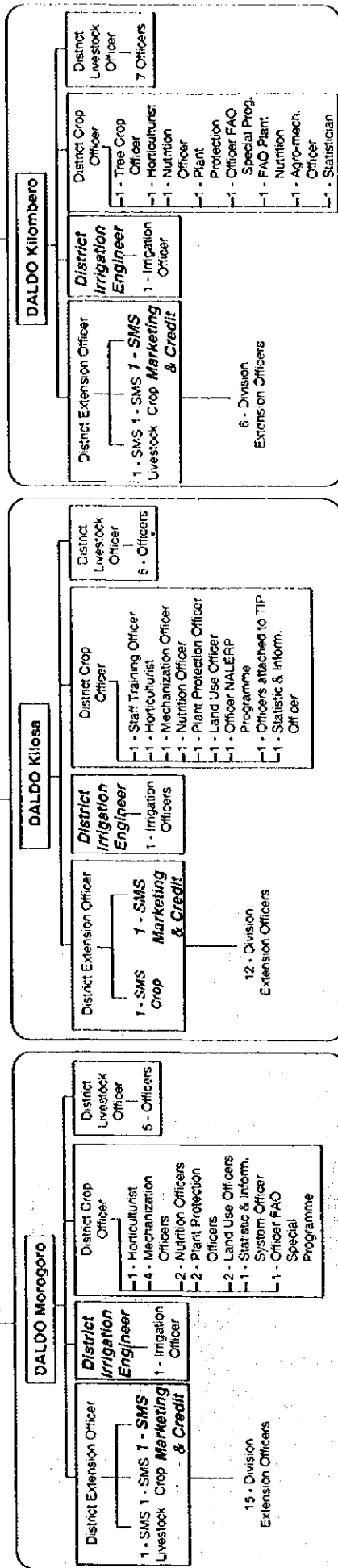
図-9.2.2 水利組合強化・育成に係る実施計画 (2/2)



Ministry of Agriculture and Cooperatives  
Commissioner  
Agricultural & Livestock Development



**District Level**



**Irrigation Schemes**

	Villages	VEO	IT
Mgeta	2	2	1*
Mgongola	3	3	1

**Supporting Services**

	Villages	VEO	IT
Nyinga	2	2	2
Malolo	1	1	-
Mgogozo	1	1	1

**Supporting Services**

	Villages	VEO	IT
Mkula	1	1	1

\*1 Appointed to each Ward  
\*2 Sub-village of Malolo, and covered by VEO and IT in Malolo.

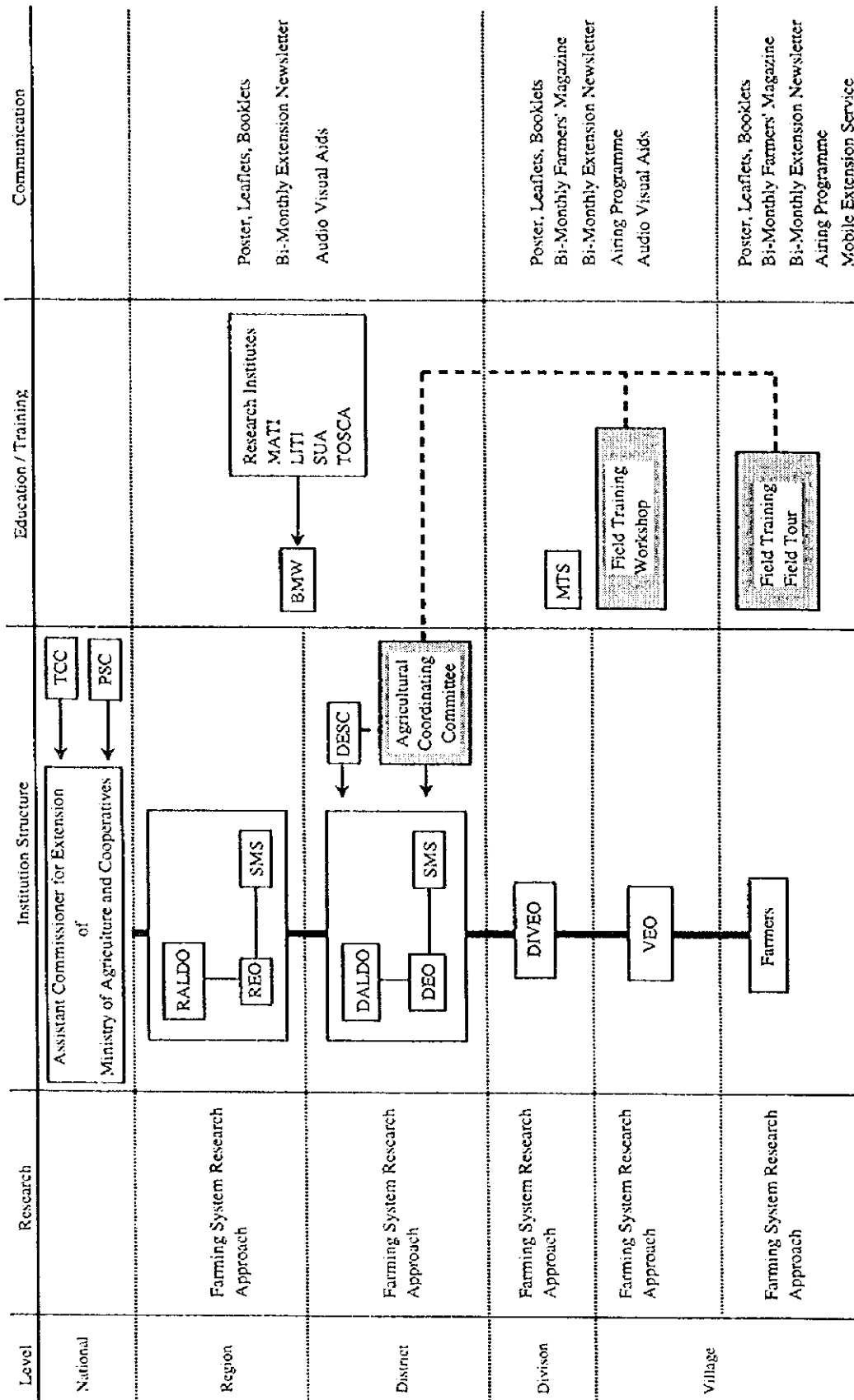
VEO : Village Extension Officer  
IT : Irrigation Technician

\* District Irrigation Engineer or IT : Officers to be appointed newly to the offices of RALDO and DALDO

図-9.2.3 州および県農業畜産開発事務所組織計画

図-9.2.4 農業普及担当職員並びに農業者に対する地区別教育・訓練計画

	1st Year					2nd Year					3rd Year					4th Year				
	J	F	M	A	M	J	F	M	A	M	J	F	M	A	M	J	F	M	A	M
Project Implementation																				
Survey and design																				
Construction																				
Mgeta scheme																				
Mgongola scheme																				
Mkula scheme																				
Mwega scheme																				
Agricultural Activities after the Project Implementation																				
Mgeta scheme																				
Mgongola scheme																				
Mkula scheme																				
Mwega scheme																				
Reinforcement of Agricultural Extension Services																				
Mgeta Scheme																				
1. Major Activities of Agricultural Coordinating Committee																				
1.1 Establishment of the Committee																				
1.2 Preparation of training materials																				
- Training programme																				
- Guideline of farming practices																				
1.3 Monitoring and review of the programme																				
2. Field Training through the Project Implementation																				
2.1 VEO and DIVEO																				
2.2 Aggressive farmer																				
3. Field Training after the Project Implementation																				
3.1 VEO and DIVEO																				
3.2 Block leaders and farmers concerned																				
3.3 Field tour																				
4. Workshop for VEO and DIVEO																				
Mgongola Scheme																				
1. Major Activities of Agricultural Coordinating Committee																				
1.1 Establishment of the Committee																				
1.2 Preparation of training materials																				
- Training programme																				
- Guideline of farming practices																				
1.3 Monitoring and review of the programme																				
2. Field Training through the Project Implementation																				
2.1 VEO and DIVEO																				
2.2 Aggressive farmer																				
2.3 Special training in KATC																				
3. Field Training after the Project Implementation																				
3.1 VEO and DIVEO																				
3.2 Block leaders and farmers concerned																				
3.3 Field tour																				
4. Workshop for VEO and DIVEO																				
Mkula Scheme																				
1. Major Activities of Agricultural Coordinating Committee																				
1.1 Establishment of the Committee																				
1.2 Preparation of training materials																				
- Training programme																				
- Guideline of farming practices																				
1.3 Monitoring and review of the programme																				
2. Field Training through the Project Implementation																				
2.1 VEO and DIVEO																				
2.2 Aggressive farmer																				
2.3 Special training in KATC																				
3. Field Training after the Project Implementation																				
3.1 VEO and DIVEO																				
3.2 Block leaders and farmers concerned																				
3.3 Field tour																				
4. Workshop for VEO and DIVEO																				
Mwega Scheme																				
1. Major Activities of Agricultural Coordinating Committee																				
1.1 Establishment of the Committee																				
1.2 Preparation of training materials																				
- Training programme																				
- Guideline of farming practices																				
1.3 Monitoring and review of the programme																				
2. Field Training through the Project Implementation																				
2.1 VEOs and DIVEO																				
2.2 Aggressive farmer																				
2.3 Special training in KATC																				
3. Field Training after the Project Implementation																				
3.1 VEOs and DIVEO																				
3.2 Block leaders and farmers concerned																				
3.3 Field tour																				
4. Workshop for VEO and DIVEO																				
Extension Expert																				
Mgeta scheme																				
Mgongola scheme																				
Mkula scheme																				
Mwega scheme																				



▨: Function in training programme for extension staffs and farmers

Note: Refer Figure 1.3.2 for abbreviations

図-9.2.5 農業普及システムの強化体制



# 添付資料

- 添付資料 - 1. 調査実施細則
- 添付資料 - 2. インセプション・レポートに係る協議議事録
- 添付資料 - 3. プログレス・レポート (I) に係る協議議事録
- 添付資料 - 4. インテリム・レポートに係る協議議事録
- 添付資料 - 5. プログレス・レポート (II) に係る協議議事録
- 添付資料 - 6. ドラフト・ファイナル・レポート に係る協議議事録




(a) S/W

SCOPE OF WORK  
FOR  
THE STUDY  
ON  
THE SMALLHOLDER IRRIGATION PROJECTS  
IN  
CENTRAL WAMI RIVER BASIN  
IN  
THE UNITED REPUBLIC OF TANZANIA  
AGREED UPON BETWEEN  
MINISTRY OF AGRICULTURE AND COOPERATIVES,  
THE UNITED REPUBLIC OF TANZANIA  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY

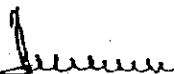
Dar es Salaam, March 19, 1996



Mr. Raphael O.S. Moll  
Principal Secretary,  
Ministry of Agriculture and Cooperatives (MAC),  
The United Republic of Tanzania



Mr. Takeaki Sato  
Leader of Preparatory Study Team,  
Japan International Cooperation Agency



pp Mr. M. T. Kibwana  
Commissioner for External Finance and Technical Cooperation,  
Ministry of Finance,  
The United Republic of Tanzania

## 1. INTRODUCTION

In response to the request of the Government of The United Republic of Tanzania(hereinafter referred to as "Tanzania"), The Government of Japan has decided to conduct a Study on the Smallholder Irrigation Projects in Central Wami River Basin in Tanzania(hereinafter referred as "the Study")in accordance with the relevant laws and regulations in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with authorities concerned of the Government of Tanzania.

The present document sets forth the Scope of Work with regard to the Study.

## 2. OBJECTIVES OF THE STUDY

The objectives of the Study are

- 1.To conduct a field reconnaissance survey in order to prioritize the 16 irrigation projects (existing 13 and proposed three(3) projects) and formulate a master plan for the improvement of irrigated agricultural development by smallholder of study area,
- 2.To conduct a feasibility study on priority project(s) to be selected from the master plan, and
- 3.To carry out, in the course of the Study, technology transfer to the Tanzanian counterpart personnel concerned.

## 3. STUDY AREA

The study consists of 16 irrigation projects scattered over the Morogoro region, an area of approximately 8,000ha in total.(See the location map attached as ANNEX 1)

## 4. SCOPE OF THE STUDY

In order to achieve the above mentioned objectives, the Study consist of two(2) phases and will cover the following items.

### 1.Phase 1

Formulation a Master Plan for Irrigated Agricultural Development in Morogoro Region and Selection of priority project(s) out of 16 proposed projects.

- 1.1 Review of existing development plans and projects related to the Study with reference to the National Irrigation Development Plan (NIDP).
- 1.2 Collection and analysis of the following data and information, through the field survey and interviewing the farmers.

(1)Nature

a)topography

- b) meteorology
- c) hydrology
- d) geology
- e) soil
- f) water resources
- g) water quality
- i) others

(2) Socio-economic condition

- a) population, birthrate, food situation, etc
- b) educational level (literacy rate), etc
- c) administrative organizations related to the projects
- d) social infrastructure
- e) regional and other donors' development plan
- f) others

(3) Agriculture and livestock

- a) land use
- b) land tenure
- c) cultivation technique
- d) cropping pattern and yield
- e) others

(4) Agro-economy

- a) trend of supply and demand of rice crop
- b) farmer's economy
- b) needs and mechanism of agricultural credit system
- c) others

(5) Infrastructure

- a) irrigation and drainage facilities
- b) farm road networks
- c) post-harvest and marketing facilities
- d) construction materials
- e) others

(6) Agricultural supporting service

- a) government institutions
- b) farmer's organizations
- c) extension service  
(extension worker, farmers' recognition level of irrigation)
- d) support of seed, fertilizer and chemicals
- e) mechanization
- f) others

(7) Operation and management

- a) water management organizations
- b) customs of water use, water right, water charge, etc

(8) Women in Development (WID)

a)role of women in irrigated agriculture

(9)Environmental aspects

a)natural environmental aspects

b)social environmental aspects

- 1.3 Making of inventory list of 16 irrigation projects.
- 1.4 Identification of constraints of operation and maintenance of the irrigation facilities.
- 1.5 Initial Environmental Examination (IEE)
- 1.6 Preparation of M/P for Irrigated Agricultural Development of Morogoro Region and prioritization of sixteen(16) projects.
- 1.7 Selection of the priority project(s) for a feasibility study.
- 1.8 Preparation of topographic map(s) at scale of 1/5,000 for the priority project(s)

## 2.Phase 2

Feasibility Study on priority project(s).

- 2.1 Field survey to collect supplementary data and information on the priority project(s)
- 2.2 Formulation of the optimum improvement plan(s) for irrigation development of priority project(s) considering following items;

- (1)Hydrology and meteorology
- (2)Geology
- (3)Soil classification and land use
- (4)Land tenure
- (5)Cropping pattern and yield
- (6)Water resources
- (7)Irrigation and drainage
- (8)Socio-economic and farmers' economy
- (9)Agro-infrastructure
- (10)Social-infrastructure
- (11)Agricultural supporting system
- (12)Environmental aspects
- (13)Operation and management
- (14)Post-harvest and marketing system
- (15)Water-born diseases
- (16)others

- 2.3 Preliminary design for the rehabilitation of facilities
- 2.4 Formulation of operation and maintenance plans
- 2.5 Environmental Impact Assessment (EIA)
- 2.6 Preparation of implementation schedule

- 2.7 Estimation of the project costs and benefits
- 2.8 Overall evaluation of the project
- 2.9 Recommendations

## 5. STUDY SCHEDULE

The Study will be carried out in accordance with the attached tentative schedule.(ANNEX 2)

## 6. REPORTS

JICA shall prepare and submit the following reports in English to the Government of Tanzania.

### 1.Inception Report

Twenty (20) copies at the commencement of the Phase 1 field work.

### 2.Progress Report(1)

Twenty (20) copies at the end of the Phase 1 field work.

### 3.Interim Report

Twenty (20) copies at the after of the Phase 1 home office work.

### 4.Progress Report(2)

Twenty (20) copies at the end of the Phase 2 field work.

### 5.Draft Final Report

Thirty (30) copies after the Phase 2 home office work. The Government of Tanzania shall provide its comments in the Draft Final Report to JICA within one (1) month after receiving the Draft Final Report.

### 6.Final Report

Fifty (50) copies within two (2) months after the receipt of comments on the Draft Final Report.

## 7. UNDERTAKING OF THE GOVERNMENT OF TANZANIA

1.To facilitate the smooth conduct of the Study, the Government of Tanzania shall take necessary measures;

- (1)to secure the safety of the Japanese study team,
- (2)to permit the members of the Japanese study team to enter, leave and sojourn in the United Republic of Tanzania for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees,
- (3)to exempt the members of the Japanese study team from taxes, duties, fees and other charges on equipment, machinery and other materials brought into and out of the United Republic of Tanzania for the conduct of the Study,
- (4)to exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the



implementation of the Study,

- (5) to provide necessary facilities to the Japanese study team for remittance as well as utilization of the funds introduced into the United Republic of Tanzania from Japan in connection with the implementation of the Study,
- (6) to secure permission for entry into private properties or restricted areas for the implementation of the Study,
- (7) to secure permission for the Japanese study team to take all data and documents (including photographs and maps) related to the Study out of the United Republic of Tanzania to Japan,
- (8) to provide medical services as needed. Its expenses will be chargeable to members of the Japanese study team.

2. The Government of Tanzania shall bear claims, if any arises, against the members of the Japanese study team resulting from , occurring in the courses of , or otherwise connected with , the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Japanese study team.

3. Ministry of Agriculture and Cooperatives (hereinafter refers to as "MAC") shall act as a counterpart executing agency to the Japanese Study team and also a coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

4. MAC shall, at its own expense, provide the Japanese study team with the following, in cooperation with other organizations concerned:

- (1) available maps, data and information (hydrological and meteorological etc.) related to the Study,
- (2) a counterpart group, including a project coordinator responsible for the study and resolving any trouble arising throughout the study period,
- (3) logistic support including office space with appurtenant furniture and cleaning and guard services in Dar es salaam and Morogoro,
- (4) credentials or identification cards.

## 8. UNDERTAKING OF JICA

For the implementation of the Study , JICA shall take the following measures;

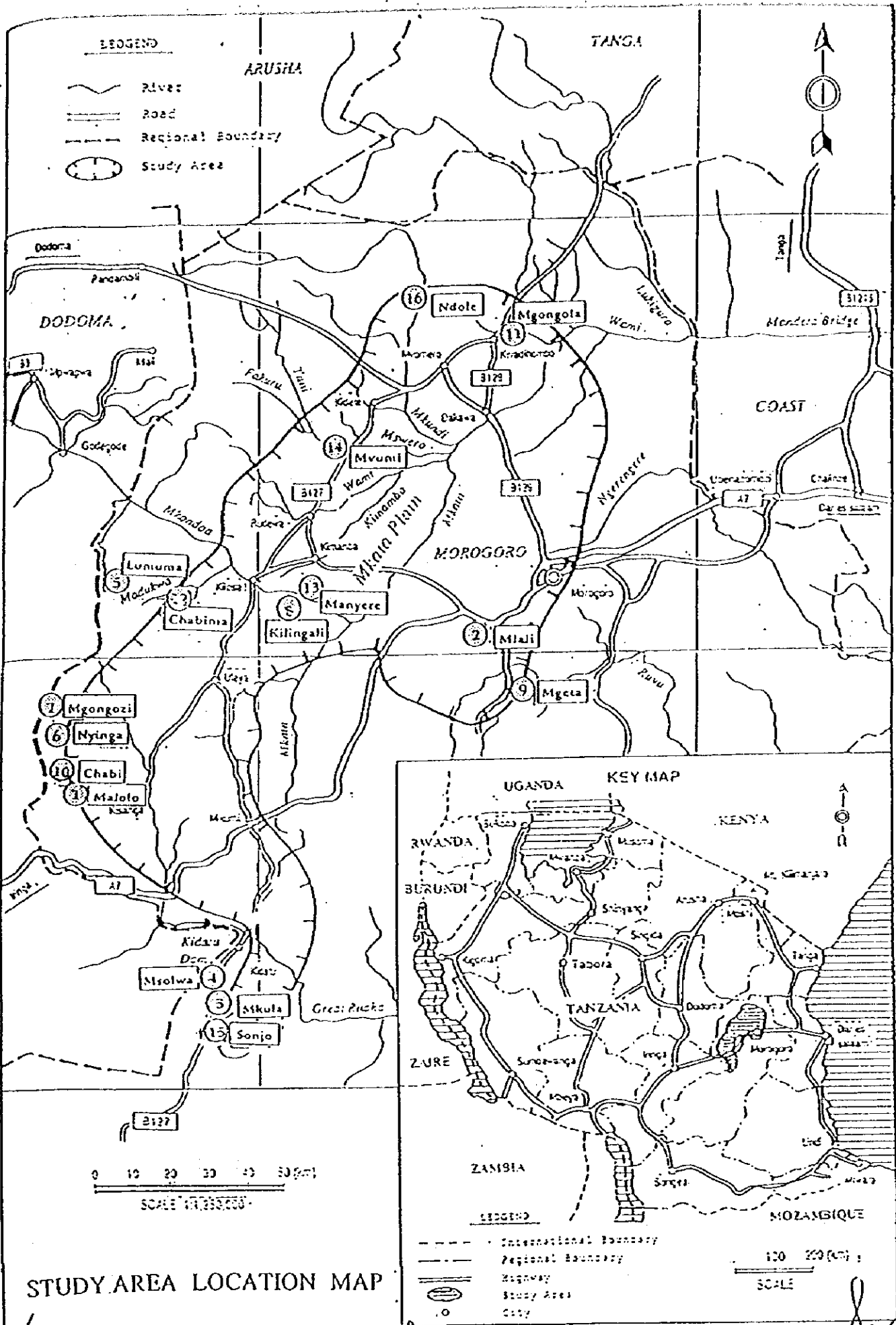
- (1) to dispatch at its own expense, the study team to the United Republic of Tanzania,
- (2) to pursue technology transfer to the Tanzanian counterpart personnel in the course of the Study.

## 9. CONSULTATION

MAC and JICA shall consult with each other in respect of any matter that may arise from or in connection with the Study.







ANNEX 2

TENTATIVE SCHEDULE

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Item																		
Work in Tanzania		█				█					█				█			
Work in Japan	▢				▢									▢				
Mapping						█												
Phase	← Phase I →										← Phase II →							
Reports	△ Ic/R	△ P/R(I)			△ Ic/R											△ P/R(II)	△ DF/R	△ F/R

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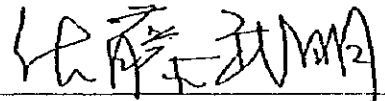
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MINUTES OF MEETING  
 ON  
 SCOPE OF WORK  
 FOR  
 THE STUDY  
 ON  
 THE SMALLHOLDER IRRIGATION PROJECTS  
 IN  
 CENTRAL WAMI RIVER BASIN  
 IN  
 THE UNITED REPUBLIC OF TANZANIA  
 AGREED UPON BETWEEN  
 MINISTRY OF AGRICULTURE AND COOPERATIVES,  
 THE UNITED REPUBLIC OF TANZANIA  
 AND  
 JAPAN INTERNATIONAL COOPERATION AGENCY

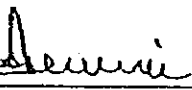
Dar es Salaam, March 19, 1996



Mr. Raphael O.S. Mollé  
 PRINCIPAL SECRETARY  
 MINISTRY OF AGRICULTURE,  
 Principal Secretary,  
 P.O. Box 9192  
 Ministry of Agriculture and Cooperatives (MAC),  
 D.A.R. SALAMU  
 The United Republic of Tanzania



Mr. Takeaki Sato  
 Leader of Preparatory Study Team,  
 Japan International Cooperation Agency



Mr. M. T. Kibwana  
 Commissioner for External Finance and Technical Cooperation,  
 Ministry of Finance,  
 The United Republic of Tanzania

1

The preparatory study team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), and headed by Mr. Takeaki Sato, visited the United Republic of Tanzania March 11 to 20, 1996 for the purpose of discussing and conforming the Scope of Work for the Study on the Smallholder Irrigation Projects in Central Wami River Basin in Tanzania (hereinafter referred to as "the Study")

The Team had a series of discussions with the officials concerned at Ministry of Agriculture and Cooperatives (hereinafter referred to as "MAC") and other organizations on the Scope of Work for the Study. The list of participants in the meetings is attached in the ANNEX 1.

As a result of the discussions, the Team and MAC agreed upon by both sides in relation to the Scope of Work the Study.

The following are the main issues discussed and agreed upon by both sides in relation to the Scope of Work for the Study.

1. Both sides confirmed that rehabilitation and/or improvement of existing smallholder irrigation projects should take a priority over the projects with new development in line with Tanzanian Government's policy.
2. MAC pointed out that, the participatory approach is very important at the planning and implementation stage, therefore it should be considered in the Study. The Team agreed with MAC.
3. MAC requested that the criteria for selection of priority projects should be discussed between MAC and JICA study team. The Team agreed with MAC.
4. MAC requested that a mission for the explanation of Interim Report (It/R) should be dispatched to Tanzania to discuss and confirm priority projects with Tanzanian side. The Team agreed with MAC.
5. MAC mentioned that, for the implementation of any agricultural developing project in Tanzania, Environmental Impact Assessment (EIA) must be carried out based on inter-ministerial agreement.
6. MAC shall provide two office spaces with the JICA study team with enough numbers of desks and chairs, electricity, telephone(s) in Dar es salaam and Morogoro city by the commencement of the Study.
7. MAC requested a counterparts' training in Japan. The Team promised to convey the request to the Government of Japan.
8. MAC requested that the following equipment necessary for the Study to be arranged by JICA and the Team promised to convey the request to the JICA headquarters in Tokyo, Japan.
  - vehicles(4WD)
  - photocopy machine
  - fax machine
9. MAC will assign appropriate numbers of drivers for vehicles.





## LIST OF PARTICIPANTS

## 1. Tanzanian Side

MOF(Ministry of Finance)

Mr. Angelo I. Muneni	Acting Commissioner for External Finance and Technical Cooperation
Mr. P.A. Mwafongo	Senior Finance Officer (Desk Officer for Japan)


MAC(Ministry of Agriculture and Cooperatives)

Mr. Raphael O. S. Mollel	Principal Secretary
Mr. Wilfred Ngirwa	Commissioner for Planning & Marketing Division
Mrs. J. Bitegeko	Assistant Commissioner Planning & Marketing Division (Agriculture)
Mr. J.S. Lugaganya	Economist
Mr. B.K. Nkuba	Irrigation Engineer & Ag.Assistant Commissioner for Irrigation
Mr. J.L. Bayaga	Zonal Irrigation Engineer (Morogoro Zonal Office)
Mr. M.N.W. Mnzava	Irrigation Agronomist
Mr. A.L. Simukanga	Assistant Public Health Engineer
Mrs. R.A. Kweka	Soil Scientist
Mr. E.J. Lujuo	Ag. Assistant Commissioner for Crop Development
Mrs. Nnyiti	Zonal Soil Scientist (Morogoro Zonal Office)
Mr. H. Medadi	Agricultural Field Officer
Mr. E. H. Masija	Assistant Commissioner for Irrigation
Ms. Catherine Joseph	Ag. Assistant Commissioner Planning & Marketing(Agriculture)

## 2. Japanese Side

The Preparatory Team

Mr. Takeaki Sato	Team Leader
Mr. Kazuhiro Takai	Irrigation & Drainage Planning
Mr. Takeshi Furusawa	Agronomy
Mr. Makoto Takahashi	Coordinator
Mr. Hiroshi Nagata	Operation and Management
Mr. Isao Dojun	Environment




MINUTES OF MEETING  
FOR  
INCEPTION REPORT  
ON  
THE STUDY ON THE SMALL HOLDER IRRIGATION PROJECTS  
IN  
CENTRAL WAMI RIVER BASIN

12 JULY, 1996



Mr. Raphael O. S. MOLLEL  
Principal Secretary  
Ministry of Agriculture and Cooperatives  
The United Republic of Tanzania



Mr. Susumu HOMMA  
Leader  
The Study Team  
Japan International Cooperation Agency

Witnessed by



Mr. Makoto TAKAHASHI  
Coordinator  
Japan International Cooperation Agency


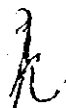
MINUTES OF MEETING  
FOR  
INCEPTION REPORT  
ON  
THE STUDY ON SMALLHOLDER IRRIGATION PROJECTS  
IN  
CENTRAL WAMI RIVER BASIN

1. Date :           9th July 1996 ( 3 : 00 PM - 4 : 20 PM)  
                  10th July 1996 ( 9 : 00 AM - 11 : 20 AM)
2. Venue :         Irrigation Department of Ministry of Agriculture and  
                      Cooperatives
3. Attendants :    See attached list
4. Summary of Discussion :

The JICA Study Team (the Study Team) submitted 20 copies of the Inception Report (the Report) to Ministry of Agriculture and Cooperatives of the United Republic of Tanzania (MAC) on 9th of July 1996 in accordance with the Scope of Work for the Study on the Smallholder Irrigation Projects in Central Wami River Basin (the Study) agreed upon between MAC and Japan International Cooperation Agency (JICA) on 19 March, 1996.

In the meeting, Mr. S. Homma, Leader of the Study Team, explained the contents of the Report and further highlighted the outline and basic approach of the study work. MAC technical staff (the Counterparts) and the Study Team discussed with the following subjects. As a result of the discussion, the Report was accepted by the Counterparts with the consent to the outline and basic approach of the study work.


- (1) The Counterparts requested the budgetary allocation for the deployment of the counterpart group to JICA. As for this allocation, it was reminded that the counterpart group, including a project coordinator responsible for the Study and resolving any trouble arising throughout the study period be provided to the Study Team at the own expenses of the Counterparts, as mentioned in Chapter 7 Section 4 Item 2 of Scope of Work. In the review of the existing counterpart personnel, the Study Team requested that counterparts for irrigation and drainage, rural sociology, and farm economy be arranged from the zonal / regional irrigation office in Morogoro.
- (2) The Counterparts suggested, due to labour scarceness during peak period, irrigation




should be integrated with other farming system existing in the schemes, i.e. rainfed farming. The Study Team fully agreed to this points and offered that the farm and irrigation management should be formulated, taking into consideration labour availability, the existing situation in the study area, gender issue, etc.

- (3) As for the incentives to the beneficiaries for activation of the irrigated farming, the Counterparts advised the Study Team to pay a careful attention concerning the existing situation of land tenure. Additionally, the Counterparts disclosed that it is difficult for peasant farmers who possess no security to obtain any financial support, no matter how the peasants are eager to request a credit. The Study Team was requested to propose the way which the beneficiaries can obtain a high incentives from the Project, considering the existing situation on financial support system. The Study Team consented to the suggestion of the Counterparts and emphasized to pay a careful attention about this subject.
- (4) The Counterparts reminded the Study Team that the development planning shall be made not only in the light with the government development policy but also fully referred to the wishes and development needs to be requested by the local farmers. The Study Team has also the equal opinion and express into perform development planning with emphasize on the farmers participatory approach to the project implementation
- (5) As for Water Users Association (WUA), the Counterparts suggested that the study on the improvement of the farmer's society should be focused to integrate the both function of the O&M of the irrigation facilities and the control of farming practices in an irrigation scheme as well as marketing of the products. The Study Team agreed to pay a careful attention to this matter.
- (6) The Counterparts informed the Study Team that the present regional authority structure has no positions and functions of RDD, DDD, etc. The Study Team presented to confirm the present organization to the regional administration and pay an attention on establishment of the steering committee. Furthermore, the Study Team added that the steering committee which was proposed in the Report should be modified to the coordination committee, considering the present situation which was elaborated by the Counterparts .
- (7) The Counterparts suggested that "Usangu Irrigation Project is explicitly not categorized as a successful project as regard to participatory approach. Projects supported by IFAD in Dodoma Region and elsewhere and the Malolo and Msoza schemes which are supported by SNV (a NGO of Netherlands) are useful as successful model for the Study.



## LIST OF ATTENDANTS

Tanzania Side

## 1. Ministry of Agriculture and Cooperatives

Mr. T. N. KIRWAY	Ag. Principal Secretary of Agriculture
Mr. P. M. MAJUVA	Ag. Commissioner of Agriculture and Livestock Development
Mr. A. A. MBWELE	Ag. Assistant Commissioner of Crop Development
Mr. B. K. NKUBA	Ag. Assistant Commissioner Irrigation
Mr. I. I. NKUBA	Principal Irrigation Engineer (Irrigation Department)
Mr. F. ASSENGA	Irrigation Engineer (Irrigation Department)
Mr. O. WAHURE	Sociologist (Irrigation Department)
Mr. P. MAFURU	Agricultural Economist (Irrigation Department)

Japanese Side

## 1. Advisory Team :

JICA Headquarters (JAPAN)

Mr. Makoto TAKAHASHI      Coordinator

JICA Tanzania Office :

Mrs. D. G. SUNGUSIA      Assistant Director

## 2. JICA Study Team :

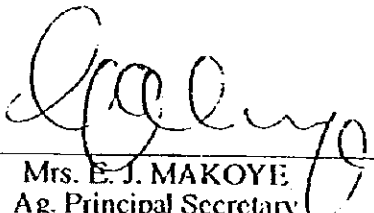
Mr. Susumu HOMMA	Leader
Mr. Hiroyoshi MATSUURA	Irrigation and Drainage Engineer
Mr. Yoshiyuki ISHIZAKI	Agronomy and Farm Management
Mr. Akira NAKAMURA	Meteorology and Hydrology






MINUTES OF MEETING  
FOR  
PROGRESS REPORT - I  
ON  
THE STUDY ON THE SMALLHOLDER IRRIGATION PROJECTS  
IN  
CENTRAL WAMI RIVER BASIN

30 SEPTEMBER, 1996

  
Mrs. E. J. MAKOYE  
Ag. Principal Secretary  
Ministry of Agriculture and Cooperatives  
The United Republic of Tanzania

  
Mr. Susumu HOMMA  
Leader  
The Study Team  
Japan International Cooperation Agency

MINUTES OF MEETING  
FOR  
PROGRESS REPORT - I  
ON  
THE STUDY ON THE SMALLHOLDER IRRIGATION PROJECTS  
IN  
CENTRAL WAMI RIVER BASIN

1. **Date :** 26 September 1996 ( 10 : 00 AM - 1 : 30 PM)
2. **Venue :** Conference Room of Ministry of Agriculture and Cooperatives
3. **Attendants :** Refer to the attendants list as per attached hereto
4. **Summary of Discussion :**

This is the second coordinating meeting for the study and development planning on the Smallholder Irrigation Projects in Central Wami River Basin, Morogoro region (the Project).

The JICA Study Team (the Study Team) submitted 20 copies of the Progress Report - I (the Report) to Ministry of Agriculture and Cooperatives of the United Republic of Tanzania (the MAC) on 24th of September 1996 in accordance with the Scope of Work for the Study on the Project agreed upon between the MAC and Japan International Cooperation Agency (JICA) on 19 March, 1996.

The essential topics of the meeting are of the basic development concept of the Project and approach to the master plan study, and the selection of priority development schemes which are subject to the feasibility study in the forthcoming schedule on the Phase III work in May 1997. The priority schemes preliminarily selected are as follows:

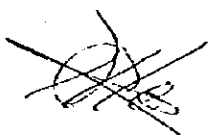
(1) Mountainous slope zone	Mgeta scheme	50 ha
(2) Alluvial plain zone	Mgongola scheme	660 ha
(3) Piedmont plain & fans zone	Mkula scheme	310 ha
(4) Valley & riverine terrace zone	Nyinga / Mgogozi / Malolo schemes	550 ha

The meeting appreciated the technical assistance of JICA and accepted the basic development concept and approach to the master plan study, which was proposed by the Study Team. The meeting also agreed with the Study Team about the selection of priority development schemes described above.

As for the Master Plan study, the meeting reminded that the Project shall be implemented based on the sustainable smallholder farmers' participatory approach, and especially emphasized on the following subjects:

- (1) The development schemes shall be economically cum financially viable, ecologically sound, socially applicable, and also be considered gender aspects which in particular affect women and youth.
- (2) The project implementation shall be scheduled on a stepwise approach considering technical cum financial capability of the farmers.
- (3) The development plan shall be made based on the sustainable management approach especially with due consideration of efficient utilization of water resources and easiness in irrigation facilities.
- (4) The design of irrigation system be made on a flexible designing approach with particular attention to environmental aspects, i.e. heavy sediment load of river, soil erosion in slope land, etc.
- (5) In implementation of the Project, farmers' training is essentially needed for keeping up sustainable development, therefore, it shall take the practical farmers' participatory approach into the design and then construction work on the irrigation system.

The Study Team took note of the above mentioned subjects, and reminded to fully consider and incorporate them into the successive compilation of the master plan in Japan.



## LIST OF ATTENDANTS

Tanzania Side

Mr. J. S. MAWALLA	Ag. Assistant Commissioner (Planning and Marketing), MAC - Chairman
Mr. E. H. MASIJA	Assistant Commissioner (Irrigation), MAC
Mr. G. K. KAMUZORA	Director of Agriculture and Natural Resources Department of the Planning Commission in the President Office
Mr. P. M. MAFURU	Agricultural Economist (Irrigation Department), MAC
Mrs. E. R. MSEFYA	Rural Sociologist (Irrigation Department), MAC
Mr. F. ASSENGA	Irrigation Engineer (Irrigation Department), MAC
Mrs. C. JOSEPH	Economist (Planning and Marketing Department), MAC
Dr. W. KIMARYO	Ag. Regional Agriculture and Livestock Development Officer, Morogoro Region
Mr. B. J. MWELUPUNGWI	Regional Planning Officer, Morogoro Region
Mr. J. BAYAGA	Zonal Irrigation Engineer, Morogoro zone

Japanese Side

## 1. JICA Tanzania Office :

Mr. H. MORONAGA	Assistant Resident Representative
Mrs. D. G. SUNGUSIA	Assistant Director

## 2. JICA Study Team :

Mr. Susumu HOMMA	Leader
Mr. Hiroyoshi MATSUURA	Irrigation and Drainage Engineering
Mr. Tadaharu MURONO	Rural Sociology and Farmer's Organization
Mr. Yoshiyuki ISHIZAKI	Agronomy and Farm Management
Mr. Jorge TOKESHI	Farm Economy and Project Economy
Mr. Akira NAKAMURA	Meteorology and Hydrology
Mr. Shozo INOUE	Structure Design and Cost Estimation
Mr. Hisashi ISHIKAWA	Soil and Land Suitability Assessment
Mr. Hisashi KOBAYASHI	Environment Impact Assessment

MINUTES OF MEETING  
FOR  
THE INTERIM REPORT  
ON  
THE STUDY ON THE SMALLHOLDER IRRIGATION PROJECTS  
IN  
CENTRAL WAMI RIVER BASIN

6 DECEMBER, 1996

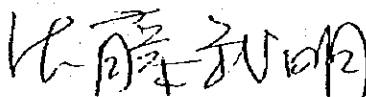


Mr. Raphael MOLLEL  
Principal Secretary  
Ministry of Agriculture and Cooperatives  
The United Republic of Tanzania



Mr. Susumu HOMMA  
Leader of  
the Study Team  
Japan International Cooperation Agency

Witnessed by



Mr. Takeaki SATO  
Leader of the Advisory Team  
Japan International Cooperation Agency

MINUTES OF MEETING  
FOR  
THE INTERIM REPORT  
ON  
THE STUDY ON THE SMALLHOLDER IRRIGATION PROJECTS  
IN  
CENTRAL WAMI RIVER BASIN

1. **Date :** 5 December 1996 ( 10 : 00 AM - 12 : 00 noon)
2. **Venue :** Conference Room in the Ministry of Agriculture and Cooperatives
3. **Attendants :** Refer to the attendants list as per attached hereto
4. **Summary of Discussions :**

This is the third coordinating meeting for the study and development planning on the Smallholder Irrigation Projects (the Project) in Central Wami River Basin, Morogoro region.

The JICA Study Team (the Study Team) submitted 20 copies of the Interim Report (the Report) to the Ministry of Agriculture and Cooperatives (the MAC) of the United Republic of Tanzania on 2nd of December 1996 in accordance with the Scope of Work for the Study on the Project agreed upon between the MAC and Japan International Cooperation Agency (JICA) on 19 March, 1996.

The essential topics of the meeting are of the development features of the Project in the master plan study, and further the selection of priority development schemes which are subject to the feasibility study in the forthcoming schedule on the Phase III work to be started from May 1997.

The Meeting appreciated the technical assistance of JICA, and accepted the development framework studied in the master plan. The Meeting also agreed to the proposed priority development schemes as follows:

(1) Zone-I : Mountainous steep slope	Mgeta scheme	50 ha
(2) Zone-II : Alluvial plain	Mgongola scheme	660 ha
(3) Zone-III : Piedmont plain / fans	Mkula scheme	320 ha
(4) Zone-IV : Valley & riverine terraces	Nyinga scheme	90 ha
	Mgongozi-Mwega scheme	60 ha





	Malolo scheme	400 ha
<hr/>		
Total		1,580 ha

As for the feasibility study, the Meeting reminded that the Project shall be implemented based on the sustainable smallholder farmers' participatory approach, and especially emphasized on the following subjects:

- (1) The project executing agencies shall be proposed to be brought into a district focus. Therefore, the district offices would be involved more in the project implementation. On the other hand, the Morogoro zonal irrigation office shall be involved in all the technical aspects of the Project.
- (2) It is also proposed to enhance a certain function of the district offices especially for a monitoring system on O&M in each scheme, in order to ensure the implementation of sustainable O&M activities.
- (3) The development of Mgeta scheme shall be scheduled based on the sustainable O&M activities especially with due consideration of soil conservation and cost effectiveness.
- (4) It is desired to implement the Project as early as the feasibility study is completed.

The Study Team took note of the above mentioned subjects, and reminded to fully consider and incorporate them into the further feasibility study on the priority development schemes to be undertaken in the forthcoming Phase-III stage.



## LIST OF ATTENDANTS

Tanzania Side

Mr. J. S. MAWALLA	Assistant Commissioner (Planning and Marketing), MAC - Chairman
Mr. E. H. MASIJA	Assistant Commissioner (Irrigation), MAC
Mr. F. ASSENGA	Irrigation Engineer (Irrigation Department), MAC
Mr. R. J. MASIKA	Irrigation Engineer (Irrigation Department), MAC
Mr. J. BAYAGA	Zonal Irrigation Engineer, Morogoro Zone
Mr. S. P. LUSWEMA	Regional Irrigation Engineer, Morogoro Region

Japanese Side

## 1. Advisory Team :

JICA Headquarters (JAPAN)

Mr. Takeaki SATO	Leader (Director of Agricultural Development Study Division)
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Mr. Kazuhiro YOSHIDA	Coordinator (Staff of Agricultural Development Study Division)
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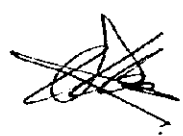
JICA Tanzania Office :

Mr. Hiroyuki MORONAGA	Assistant Resident Representative
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## 2. JICA Study Team :

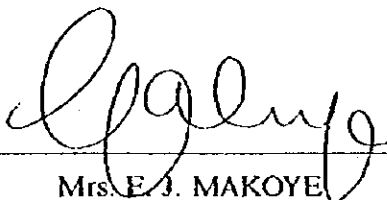
Mr. Susumu HOMMA	Leader
Mr. Hiroyoshi MATSUURA	Irrigation and Drainage Engineering
Mr. Yoshiyuki ISHIZAKI	Agronomy and Farm Management






MINUTES OF MEETING  
FOR  
PROGRESS REPORT - II  
ON  
THE FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION  
PROJECTS  
IN  
CENTRAL WAMI RIVER BASIN

20 AUGUST, 1997



Mrs. E. J. MAKOYE  
Ag. Principal Secretary  
Ministry of Agriculture and Cooperatives  
The United Republic of Tanzania



Mr. Susumu HOMMA  
Leader of  
the Study Team  
Japan International Cooperation Agency

MINUTES OF MEETING  
FOR  
PROGRESS REPORT - II  
ON  
THE FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECTS  
IN  
CENTRAL WAMI RIVER BASIN

1. **Date :** 18 August 1997 ( 11 : 30 AM - 02 : 00 PM)
2. **Venue :** Conference Room in the Ministry of Agriculture and Cooperatives
3. **Attendants :** Refer to the attendants list as per attached hereto
4. **Summary of Discussions :**

This is the fourth coordinating meeting for the feasibility study on the Smallholder Irrigation Projects in Central Wami River Basin, Morogoro Region (the Project).

The JICA Study Team (the Study Team) submitted 20 copies of the Progress Report-II (the Report) to the Ministry of Agriculture and Cooperatives (the MAC) of the United Republic of Tanzania on 15th of August 1997 in accordance with the Scope of Work for the Study on the Project agreed upon between the MAC and Japan International Cooperation Agency (JICA) on 19 March, 1996.

The essential topics of the meeting are of the development framework and features formulated on each of four priority schemes, i.e. Mgeta, Mgongola, Mkula, and Mwega (Malolo - Nyinga - Mgogozi/Mwega complex schemes).

- 1) The development framework and features proposed by the Study Team are generally accepted by the MAC.
- 2) The MAC will have to be fully responsible for administration of the project implementation.
- 3) The Zonal Irrigation Office, Morogoro will be in charge of the project execution.
- 4) Regional Administrative Secretary (RAS) and District Executive Director (DED) should be involved as the supporting agencies.
- 5) For the successful implementation of the project, it is essential to organize the water users' cooperative societies before the end of the detailed design stage to enable farmers' participation into the construction work efficiently.

The further comments will be sent to the Study Team for reflecting the Draft Final Report. Finally, the MAC appreciated the technical assistance of JICA.

## LIST OF ATTENDANTS

Tanzania Side

Mr. E. J. LUJUO	Ag. Commissioner (Agriculture and Livestock Development), MAC - Chairman
Mr. G. M. KALINGA	Ag. Assistant Commissioner (Irrigation), MAC
Mr. O. M. ISHUMI	Regional Agriculture and Livestock Development Officer (RALDO), Morogoro Region
Mr. A. G. RUHANGISA	Zonal Irrigation Engineer, Morogoro Zone
Ms. G. F. MWALEMBA	Ag. Regional Planning Officer (RPLO), Morogoro Region
Mr. S. P. LUSWEMA	Regional Irrigation Engineer, Morogoro Region

Japanese Side

## 1. Advisory Team :

JICA Tanzania Office :

Mr. Tadanobu ONO

Assistant Resident Representative

## 2. JICA Study Team :

Mr. Susumu HOMMA

Leader

Mr. Hiroyoshi MATSUURA

Irrigation and Drainage Engineering

Mr. Tadaharu MURONO

Rural Sociology and Farmer's Organization

Mr. Yoshiyuki ISHIZAKI

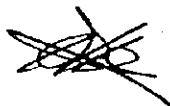
Agronomy and Farm Management

Mr. Jorge TOKESHI

Farm Economy and Project Economy

Mr. Shozo INOUE

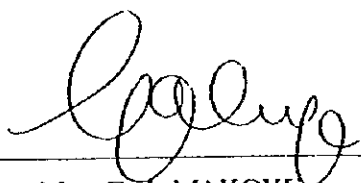
Structure Design and Cost Estimation



MINUTES OF MEETING  
FOR  
DRAFT FINAL REPORT  
ON  
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECTS  
IN  
THE CENTRAL WAMI RIVER BASIN

12 NOVEMBER, 1997

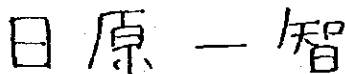


Mrs. E. J. MAKOYE  
Ag. Principal Secretary  
Ministry of Agriculture and Cooperatives  
The United Republic of Tanzania



Mr. Susumu HOMMA  
Leader of  
the Study Team  
Japan International Cooperation Agency

Witnessed by



Mr. Kazutomo HIHARA  
Coordinator  
Japan International Cooperation Agency

MINUTES OF MEETING  
FOR  
DRAFT FINAL REPORT  
ON  
FEASIBILITY STUDY ON THE SMALLHOLDER IRRIGATION PROJECTS  
IN  
THE CENTRAL WAMI RIVER BASIN

1. **Date :** 10 November 1997
2. **Time :** at 1 : 30 PM - 4 : 50 PM
3. **Venue :** Conference Room in the Ministry of Agriculture and Cooperatives
4. **Attendants :** Refer to the attendants list as per attached hereto
5. **Particular :** Submission and Discussion on Draft Final Report on Feasibility Study on the Smallholder Irrigation Projects in the Central Wami River Basin

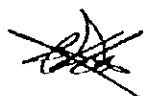
This is the fifth coordinating meeting for feasibility study on the Smallholder Irrigation Projects in the Central Wami River Basin, Morogoro Region (the Project).

The JICA Study Team submitted 30 sets of the Draft Final Report to the Ministry of Agriculture and Cooperatives (MAC) of the United Republic of Tanzania on 6th of November 1997 in accordance with the Scope of Work for the study on the Project that was agreed upon between MAC and Japan International Cooperation Agency (JICA) on 19 March, 1996. The Report consists of three volumes, i.e. Main Report, Annexes, and Drawings.

**6. Summary of Discussions :**

The essential topics of the meeting are as follows;

- 1) The development plan and project features proposed in the Draft Final Report are generally accepted by MAC. Further comments for reflecting the Final Report will be sent to the JICA Study Team through JICA Tanzania office until 25th of December.
- 2) MAC accepted that the implementation schedule of the Project will be step-wise, depending on the development fund to be granted by donor countries and/or multilateral agencies and possible budgetary arrangement in the Government of Tanzania. To this, development priority shall be given for each scheme according to the priority ranking evaluated in the Master Plan on the Project.
- 3) As for the environmental aspects and gender issues, JICA Study Team suggested MAC to undertake continuous monitoring through and after the project





implementation. If any unexpected negative effects are observed, further countermeasures shall be applied so as to maintain a sustainability of the Project.

- 4) The JICA Study Team confirmed that the Zonal Irrigation Office, Morogoro will be in charge of the project execution, while the Regional Administrative Secretary (RAS) and District Executive Director (DED) will have a responsibility for extending the institutional supporting services to the beneficiaries farmers.

The following subjects were taken note as supplemental issues;

- 1) MAC requested JICA to provide one photo-copy machine and two vehicles which were used by the JICA Study Team during the field work. These are essentially needed for undertaking the preparatory work on the project efficiently. The study team took note this request of MAC and suggested MAC to inquire the official procedure for settlement of this issue to JICA Tanzania office.
- 2) JICA offered MAC that Final Report would be available to any person who has interest in the Study. MAC agreed about this issue.

Finally, MAC appreciated the technical assistance of JICA.



**LIST OF ATTENDANTS**

**Tanzania Side**

Mrs. E. J. MAKOYE	Ag. Principal Secretary (Chair person)
Dr. J. N. MALLEWAS	Ag. Commissioner (Agriculture and Livestock Development), MAC
Mr. G. M. KALINGA	Ag. Assistant Commissioner (Irrigation), MAC
Mr. J. S. LUGAGANYA	Economist (Japanese desk officer)
Mr. C. D. KALAMBO	Agricultural Economist (Irrigation Department), MAC
Mr. F. A. ASSENGA	Irrigation Engineer (Irrigation Department), MAC
Mr. A. G. RUHANGISA	Zonal Irrigation Engineer, Morogoro Zone
Ms. G. F. MWALEMBA	Ag. Regional Planning Officer (RPLO), Morogoro Region
Mr. S. P. LUSWEMA	Regional Irrigation Engineer, Morogoro Region

**Japanese Side**

**1. Advisory Team :**

JICA Headquarters (JAPAN)

Mr. Kazutomo HIIHARA                      Coordinator

JICA Tanzania Office :

Mrs. D. G. SUNGUSIA                      Assistant Director

**2. JICA Study Team :**

Mr. Susumu HOMMA                      Leader

Mr. Hiroyoshi MATSUURA              Irrigation and Drainage Engineering

Mr. Yoshiyuki ISHIZAKI                Agronomy and Farm Management











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