ANNEX Q

PROJECT COSTS

# **List of Tables**

# Q.2 Feasibility Study

Table Q.2-1	Project Cost and Disbursement Schedule for Rupingazi Ngerwe Irrigation Scheme
Table Q.2-2	Project Cost and Disbursement Schedule for Ngomano/Nyangati Water Furrow Project
Table Q.2-3	Project Cost and Disbursement Schedule for Nkunjumo Water Project
Table Q.2-4	Project Cost and Disbursement Schedule for Ruungu/Karocho Irrigation Project
Table Q.2-5	Project Cost Sharing and Disbursement Schedule by Sector and by Agency for
	Rupingazi Ngerwe Irrigation Scheme
Table Q.2-6	Project Cost Sharing and Disbursement Schedule by Sector and by Agency for
	Ngomano/Nyangati Water Furrow Project
Table Q.2-7	Project Cost Sharing and Disbursement Schedule by Sector and by Agency for
•	Nkunjumo Water Project
Table Q.2-8	Project Cost Sharing and Disbursement Schedule by Sector and by Agency for
	Ruungu/Karocho Irrigation Project
Table Q.2-9	Construction Cost for Irrigation/Drainage and Roads Improvement for Rupingazi
•	Ngerwe Irrigation Scheme
Table Q.2-10	Construction Cost for Irrigation/Drainage and Roads Improvement for
	Ngomano/Nyangati Water Furrow Project
Table Q.2-11	Construction Cost for Irrigation/Drainage and Roads Improvement for Nkunjumo
	Water Project
Table Q.2-12	Construction Cost for Irrigation/Drainage and Roads Improvement for
	Ruungu/Karocho Irrigation Project
Table Q.2-13	Project Cost for Agricultural Support Services
Table Q.2-14	Project Cost for Community Development
Table Q.2-15	Project Cost for Effective Water Management
Table Q.2-16	Project Cost for Marketing and Post-harvest Development
Table Q.2-17	Unit Costs

Project Cost and Disbursement Schedule for Rupingazi Ngerwe Irrigation Scheme **Table Q.2-1** 

Project Component		Disbursement Schedule	Schedule						Kemarks
	Total Cost	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	
		٠							
1. Construction Cost	3 713.856		1,856,928	1,856,928	•	,		t	
1) inganon & Dramage improvement	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,			•	•	•		
2) Marketing improvement	3.694.300		1,847,150	1,847,150		•	٠	1	
4) Village/Farm Roads Improvement	684,000	'	342,000	342,000	î	•	•	Ī	
5) Domestic Water Supply Improvement Sub-total	on to 0 all 8,092,156	, 0	4,046,078	4,046,078	. 0	, •	. •	, 0	
2. Community Development & Support Services	t Services 10 640 000	,	•	2,128,000	2,128,000	2,128,000	2,128,000	2,128,000	
2) Community Development	7,078,500	2,477,475	1,769,625	1,415,700	707,850	353,925	353,925		
3) Water Management Services	376.000		336,000			•			
5) Public Health Services	150,000	000,000	_	1			1	50,000	
Sub-total	al 20,844,500	3 2,527,475	3,045,625	4,413,700	3,715,850	2,481,925	2,481,925	2,1/8,000	
3. Associated Cost	306 481	-	306.481		•	.•	•	ı	7% of 1
1) Me-Engineering Cost	205,105	3 176.923		592,184	260,109	173,734	173,734	152,460	
2) Administration Cost	2 893 663				371,585	248,192	248,192	217,800	10% of 1 & 2
3) Consulting Services Sub-total			₩.	-		421,926	421,926	370,260	
4. Physical Contingency	809,214	0	404,607	404,607	0	Φ	0	0	<b>0</b> 10% of 1
Total	34,971,577	7 2,957,145	9,008,380	10,302,546	4,347,544	2,903,851	2,903,851	2,548,260	

Note: 1) Pre-engineering cost for irrigation & drainage improvement is not included since survey works have been conducted by JICA Shudy Team.

Project Cost and Disbursement Schedule for Ngomano/Nyangati Water Furrow Project Table Q.2-2

		Disbursement Schedule	t Schedule						Remarks
Project Component	Total Cost	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	
1. Construction Cost	P2# 52\$ C	1	1 791 994	1 781 883	•	•	ŧ	,	
1) Irrigation & Drainage Improvement		•	1,701,901	7,101,000	•	•	. *	•	
2) Marketing Improvement				• •		•	•		
Access roads improvement     Village/Farm Roads Improvement	1,824,000	•	912,000	912,000	•	•	•	•	
5) Domestic Water Supply Improvement		•	•	,	1	•	1	•	
Sub-total	5,387,767		2,693,884	2,693,883	0	0	0	0	
2. Community Development & Support Services	t Services								
1) Agricultural Support Services	12,950,000		•	2,590,000	2,590,000	2,590,000	2,590,000	2,590,000	
2) Community Development	7,080,000	2,478,000	1,770,000	1,416,000	708,000	354,000	354,000	•	
3) Water Management Services	1,810,000	•	940,000	435,000	435,000		•	1	
4) Marketing Support Services	374,000	•	334,000	40,000		1	•	t	
5) Public Health Services	150,000	20,000	,	1	50,000	ı	•	50,000	
Sub-total	tal 22,364,000	2,528,000	3,044,000	4,481,000	3,783,000	2,944,000	2,944,000	2,640,000	
3. Associated Cost									;
1) Pre-Engineering Cost	227,680		227,680	1	•	•		•	7% of 1
2) Administration Cost	1,942,622	176,960	401,651	502,241	264,810	206,080	206,080	184,800	7% of 1 & 2
3) Consulting Services	2,775,176	252,800	573,788	717,488	378,300	294,400	294,400	264,000	10% of 1 & 2
Sub-total		429,760	1,203,119	1,219,729	643,110	500,480	500,480	448,800	
4. Land Acquisition	175,000	_	175,000	0	. •	0	0	0	0 @500,000*0.35ha
5. Physical Contingency	538,776	,	269,388	269,388	0	•	0	0	10% of 1
Total	33.411.021	2,957,760	7.385.391	8.664.000	4,426,110	3,444,480	3,444,480	3,088,800	
57									

Note: 1) Pre-engineering cost for irrigation & drainage improvement is only for geological investigation cost at intake site since survey works have been conducted by JICA Study Team.

Table Q.2-3 Project Cost and Disbursement Schedule for Nkunjumo Water Project

Project Component		Disbursement Schedule	Schedule						Nemarks
	Total Cost	1st year	2nd year	3rd year	4th year	5th year	6th year 7	7th year	
1. Construction Cost	3 4 4	•	2 707 6	2 707 553	,	•	•	•	
<ol> <li>Imgation &amp; Drainage Improvement</li> <li>Marketing Improvement</li> </ol>	5,455,106 286,600,000	<b>1</b>	143,300,000	143,300,000	•		•	ſ	
3) Access Roads Improvement 4) Villace/Farm Roads Improvement	0 1,425,000		712,500	712,500	1 1				
5) Domestic Water Supply Improvement Sub-total	- 58	, 0	146,740,053	146,740,053 146,740,053	. 0	, <b>o</b>	. •	, 0	
2. Community Development & Support Services 1) Agricultural Support Services	Services 10,640,000 7,086,000	2 480 100	1771 500	2,128,000	2,128,000	2,128,000	2,128,000	2,128,000	
<ul><li>2) Community Development</li><li>3) Water Management Services</li><li>4) Marketing Support Services</li></ul>	1,960,000		940,000 340,000		φ.	5,225,000	5,225,000	5,225,000	
5) Public Health Services Sub-total	0 1 40,966,000	2,480,100	3,051,500	4,095,200	8,571,600	7,707,300	7,707,300	7,353,000	
3. Associated Cost	057.750	t	8.697.750		•	ı		- 3-7% of 1	% of 1
1) re-Engineering Cost 2) Administration Cost	10,484,226	173,607	4,753,408	4,826,467	234,262	173,761	173,761	148,960 3-7% of 1 & 212 800 3-10% of 1 &	3-7% of 1&2 3-10% of 1&2
3) Consulting Services Sub-total	11,292,610 1 <b>30,474,586</b>	248,010 <b>421,61</b> 7	4,948,155 1 <b>8,399,313</b>	9,878,992	554,000	421,991	421,991		
4, Physical Contingency	15,018,010	0	7,509,005	7,509,005	•	•	0	0 5.10% of 1	% of 1
Total	379,938,702	2,901,717	175,699,871	2,901,717 175,699,871 168,223,250	9,140,522	8,129,291	8,129,291	7,714,760	

Note: 1) Pre-engineering cost for irrigation & drainage improvement is not included since survey works have been conducted by JICA Study Team.

Table Q.2-4 Project Cost and Disbursement Schedule for Ruungu/Karocho Irrigation Project

		Disbursement Schedule	Schedule						Remarks
Project Component	Total Cost	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	
1. Construction Cost	00000	001.000	2 260 100		•			'	Include associate cost
1) Irrigation & Drainage Improvement	4,520,200	7,260,100	2,260,100		•		•	ı	and white the same of the same
2) Marketing Improvement	1,500,000	•	750,000		•	•	•	•	
3) Access Roads Improvement	19,660,000	1	9,830,000	9,830,000	•	•	*	1	
4) Village/Farm Roads Improvement	1,710,000	1	855,000	855,000	•		•	•	
5) Domestic Water Supply Improvement		í		•	•	•	•	•	
Sub-total	1 27,390,200	2,260,100	13,695,100	11,435,000	0	θ	0	Φ	
2. Community Development & Support Services	Services								
1) Apricultural Support Services	14,050,000	•	•	2,810,000	2,810,000	2,810,000	2,810,000	2,810,000	
2) Community Development	7,120,000	2,492,000	1,780,000	1,424,000	712,000	356,000	356,000	•	
3) Water Management Services	1,810,000	•	940,000	435,000	435,000		•	•	
A) Marketing Support Services	284,000	•	284,000	•	,		•,	•	
5) Public Health Services	150,000	50,000	1	,	50,000	•	•	50,000	
Sub-total	23,	2,542,000	3,004,000	4,669,000	4,007,060	3,166,000	3,166,000	2,860,000	
3. Associated Cost			,		:				19" /9"
1) Pre. Enoineering Cost	1,600,900	•	1,600,900	•	•	•	•		/% of 1
2) & dministration Cost	3,239,880	177.940	1,010,730	1,127,280	280,490	221,620	221,620	200,200	7% of 1 & 2
2) Consulting Continue	4 628 400	254,200	1,443,900		400,700	316,600	316,600	286,000	10% of 1 & 2
Sub-total		432,140	4,055,530	2,737,680	681,190	538,220	538,220	486,200	·
					•				
4. Physical Contingency	2,287,000		1,143,500	1,143,500	•	•	•		0 10% of 1
Total	1 62,560,380	5,234,240	21,898,130	19,985,180	4,688,190	3,704,220	3,704,220	3,346,200	
				٠			:		

Note: 1) Pre-engineering cost for irrigation & drainage improvement is not included since survey works have been conducted by JICA Study Team.

Table Q.2-5 Project Cost Sharing and Disbursement Schedule by Sector and by Agency for Rupingazi Ngerwe Irrigation Scheme

(Unit: Ksh)

Project Component	NUMA			5	D. C.	blin Contra			Remarks	
3,713,856         0	3,713,856 3,713,856 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Total Cost	Milyate Sector	MOALD	Г	П	Smbu CC		
3,713,856         3,713,856         3,713,856         0 <td>3,713,856 3,713,856 3,713,856 0 3,694,300 0 684,000 0 10,640,000 0 0 10,640,000 0 0 10,640,000 0 0 10,640,000 0 0 10,640,000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>1. Construction Cost</td> <td></td> <td></td> <td></td> <td>c</td> <td><u>چ</u></td> <td>c</td> <td>A=40ha</td> <td></td>	3,713,856 3,713,856 3,713,856 0 3,694,300 0 684,000 0 10,640,000 0 0 10,640,000 0 0 10,640,000 0 0 10,640,000 0 0 10,640,000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1. Construction Cost				c	<u>چ</u>	c	A=40ha	
3,694,300         0         3,694,300         0	3.694,300         0         3,694,300         0         684,000         1           6.84,000         0 <th< td=""><td>1) Irrigation &amp; Dramage Improvement</td><td>3,713,856</td><td></td><td><b>&gt;</b> ¢</td><td>, 0</td><td>o O</td><td>0</td><td></td><td></td></th<>	1) Irrigation & Dramage Improvement	3,713,856		<b>&gt;</b> ¢	, 0	o O	0		
684,000         0         0         0         684,000           684,000         0         0         0         684,000           6902,156         3,713,856         0         3,694,300         0         684,000           10,640,000         10,640,000         0         0         0         0         0           7,078,500         0         7,078,500         0         0         0         0         0         0           2,600,000         0         2,600,000         0	10,002,546	2) Marketing Improvement	0 00£ 404 £		0	3,694,300	Ģ	0	L=6.3km	
0         0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<ol> <li>Access Koads Improvement</li> <li>Village/Farm Roads Improvement</li> </ol>	684,000		0	0	Ō ¢	684,000	L=1.2km	
8,092,156         3,713,856         0         3,094,000         0 <td>8,092,156         3,713,856         0         0,0640,000         0         0         0           10,640,000         0         10,640,000         0<td>5) Domestic Water Supply Improvement</td><td>0</td><td></td><td>0 (</td><td>0 0000</td><td><b>, č</b></td><td>C84 MM</td><td></td><td></td></td>	8,092,156         3,713,856         0         0,0640,000         0         0         0           10,640,000         0         10,640,000         0 <td>5) Domestic Water Supply Improvement</td> <td>0</td> <td></td> <td>0 (</td> <td>0 0000</td> <td><b>, č</b></td> <td>C84 MM</td> <td></td> <td></td>	5) Domestic Water Supply Improvement	0		0 (	0 0000	<b>, č</b>	C84 MM		
10,640,000         0         10,640,000         0	10,640,000 0 10,640,000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Sub-total	8,092,156		<b>-</b>	3,694,300	•	200,000		
10,640,000         10,540,000         0         0         0           7,078,500         0         7,078,500         0	10,640,000	2. Community Development & Support Ser			000 010 01	c	Ç	0		
Activities   Act	Sub-total	1) Agricultural Support Services	_			> 0	Ç	· C		
Sub-total   20,844,500   0   2,600,000   0   0   0   0   0   0   0   0	Sub-total   20,844,500   0   2,600,000   0   0   0   0   0   0   0   0	2) Community Development	7,078,500			> <	<b>&gt;</b>	o c		
Sub-total   20,844,500   0   376,000   0   150,000   0	Sub-total   20,844,500   0   20,694,500   0   150,000   0	3) Water Management Services	2,600,000			<b>.</b>	<b>&gt;</b>			
Sub-total   20,844,500   0   0   0   150,000   0	Sub-total   20,844,500   0   0   150,000   0   150,000   0   0   0   150,000   0   0   0   0   0   0   0   0	A) Marketine Sumort Services	376,000			<b>~</b>	000	> <		
Sub-total   20,844,500   0 20,694,500   6 150,000   U	Sub-total   20,844,500   0   20,694,500   0   150,000   U	4) Indianal Cappor Commerces	150,000	-	0	0	150,000	> <		
g Cost 2,025,563 0 1,708,582 258,601 10,500 47,880 (8,400 47,880 15,005 68,400 47,880 15,005 68,400	g Cost         306,481         0         0         258,601         0         47,880           Cost         2,025,563         371,385         2,069,448         369,430         15,000         47,880           vices         Sub-total         5,225,707         371,385         2,069,448         369,430         15,000         68,400           sency         809,214         371,385         3,778,030         886,631         25,500         164,160           hedule)         369,430         0         369,430         47,800           pency         809,214         371,385         2,065,448         369,430         0         68,400           hedule)         369,430         4,950,362         2,560,362         1,550,06         68,400           hedule)         369,430         4,956,32         2,560,362         1,550,362         1,550,06         68,400           hedule)         2,957,145         4,456,625         24,472,530         4,950,362         1,550,06         4,32,340           10,302,546         2,228,312         3,593,66         2,203,811         0         58,500         0           2,903,851         0         2,903,81         0         2		20,844,500			0	150,000	<b>&gt;</b>		
g Cost 306,481 0 0 2.28,501 10,500 47,880 1 Cost 2,025,563 371,385 2,069,448 369,430 15,000 68,400	g Cost 306,481 0 1,708,582 2.88,601 10,500 47,880 1,00st 2,925,563 371,385 2,069,448 369,430 15,000 68,400		•				Ç	080 77	7% of 1	
2,025,563 371,385 2,069,448 369,430 15,000 45,500 58,400 58,93,663 371,385 2,069,448 366,32 25,500 164,160 68,400	2,025,563 0 1,708,582 2.8,601 10,500 47,500 2,893,663 371,385 2,069,448 369,430 15,000 68,400 68,400 809,214 371,384 0 369,430 175,500 164,160 68,400	1) Pre-Engineering Cost	306,481			228,601	905	47.880	7% OF 1 AP 2	
Sub-total         5,225,707         371,385         2,069,448         369,430         15,000         08,400           Sub-total         5,225,707         371,385         3,778,030         886,632         25,500         164,160           Poly 2,14         371,384         0         369,430         0         68,400           e)         2,957,145         4,456,625         24,472,530         4,950,362         175,500         916,560           e)         2,957,145         0         2,898,645         0         58,500         0           e)         2,957,145         0         2,898,645         0         58,500         0           e)         2,957,145         0         2,898,645         0         58,500         0           e)         0         0         0         432,220         0         434,340           10,302,546         2,228,312         3,693,464         0         58,500         0         0           2,903,851         0         2,903,851         0         2,903,851         0         2,903,851         0         2,903,851         0         2,903,851         0         0         0         0           2,548,260         0         2,4	Sub-total         5,225,707         371,385         2,069,448         369,430         15,000         68,400           Sub-total         5,225,707         371,385         3,778,030         886,632         25,500         164,160           809,214         371,384         0         369,430         0         68,400           e)         2,957,145         4,456,625         24,472,530         4,950,362         175,500         916,560           e)         2,957,145         0         2,898,645         0         58,500         0         482,220           9,008,380         2,228,312         3,693,366         2,604,482         0         482,220         0           4,347,544         2,228,313         5,294,013         2,345,880         0         434,340           2,903,851         0         4,289,044         0         58,500         0           2,903,851         0         2,903,851         0         2,903,851         0         2,903,851           10         2,548,260         0         2,903,851         0         2,903,851         0         0           2,548,260         10         2,903,851         0         2,903,851         0         2,548,260	2) Administration Cost	2,025,563			728,601	10,500	47,880	10% of 1.8.2	
Sub-total         5,225,707         371,385         3,778,030         886,632         25,500         164,160           809,214         371,384         0         369,430         0         68,400           Total         34,971,577         4,456,625         24,472,530         4,950,362         175,500         916,560           e)         2,957,145         0         2,898,645         0         58,500         0         482,220           9,008,380         2,228,312         3,693,366         2,604,482         0         58,500         0         434,340           10,302,546         2,228,312         3,693,366         2,604,482         0         58,500         0         434,340           2,903,851         0         2,903,851         0         2,903,851         0         0         0         0           2,903,851         0         2,903,851         0         2,903,851         0         2,903,851         0         2,489,760         0         58,500         0           2,548,260         0         2,489,760         0         2,489,760         0         58,500         0           2,548,260         0         2,4472,530         4,950,362         175,500         916,56	Sub-total         5,225,707         371,385         3,778,030         886,632         25,500         164,160           809,214         371,384         0         369,430         0         68,400           e)         2,957,145         4,456,625         24,472,530         4,950,362         175,500         916,560           e)         2,957,145         0         2,898,645         0         58,500         0         482,220           9,008,380         2,228,312         3,693,366         2,604,482         0         434,340         0           4,347,544         2,228,313         5,294,013         2,345,880         0         434,340           2,903,851         0         2,903,851         0         2,903,851         0         0           2,903,851         0         2,903,851         0         2,903,851         0         0         0           2,548,260         0         2,489,760         0         4950,362         175,500         916,560           Total         34,971,577         4,456,625         24,472,530         4,950,362         175,500         916,560           Total         34,971,577         4,456,625         24,472,530         4,950,362         175,500	2) Consulting Contract	2,893,663			369,430	15,000	68,400	10% 01 1 00 2	
6)         34,971,577         4,456,625         24,472,530         4,950,362         175,500         916,560           e)         2,957,145         0         2,898,645         2,604,482         0         58,500         0           9,008,380         2,228,312         3,693,366         2,604,482         0         482,220           9,008,380         2,228,312         3,693,366         2,345,880         0         434,340           2,903,851         0         2,903,851         0         2,903,851         0         2,903,851           2,903,851         0         2,903,851         0         2,903,851         0         2,903,851           2,548,260         0         2,489,760         0         58,500         0           2,548,260         0         2,489,760         0         58,500         0           2,548,260         0         2,489,760         0         58,500         0           2,548,260         0         2,4472,530         4,950,362         175,500         916,560	e)         2,957,145         4,456,625         24,472,530         4,950,362         175,500         916,560           e)         2,957,145         4,2228,312         3,693,366         2,604,482         0         58,500         0           10,302,546         2,228,312         3,693,366         2,604,482         0         434,340           2,903,851         0         2,993,851         0         2,903,851         0         2,903,851           Total         34,971,577         4,456,625         24,472,530         4,950,362         175,500         916,560           Niceruse Integrition as a water users association as a water users asso		5,225,707			886,631	25,500	164,160		
6)         2,957,145         4,456,625         24,472,530         4,950,362         175,500         916,560           e)         2,957,145         4,456,625         24,472,530         4,950,362         2,604,482         0         58,500         0           9,008,380         2,228,312         3,693,366         2,604,482         0         482,220           10,302,546         2,228,312         3,693,366         2,604,482         0         434,340           2,903,851         0         2,903,851         0         2,903,851         0         0           2,903,851         0         2,903,851         0         2,903,851         0         2,903,851           2,548,260         0         2,903,851         0         2,903,851         0         58,500         0           2,548,260         0         2,489,760         0         2,489,760         0         58,500         0           1 (2)         34,971,577         4,456,625         24,472,530         4,950,362         175,500         916,560	6)         2,957,145         4,456,625         24,472,530         4,950,362         175,500         916,560           e)         2,957,145         4,456,625         24,472,530         4,950,362         2,604,482         0         58,500         0           e)         2,957,145         0         2,898,645         0         58,500         0         482,220           9,008,380         2,228,312         3,693,366         2,604,482         0         482,220           10,302,546         2,228,312         3,693,366         2,604,482         0         434,340           4,347,544         0         2,903,851         0         2,903,851         0         0         0           2,903,851         0         2,903,851         0         2,903,851         0         0         0         0           2,548,260         0         2,903,851         0         2,903,851         0         0         0         0         0           2,548,260         0         2,489,760         0         58,500         0         0         0         0           2,548,260         0         2,489,760         0         2,489,760         0         58,500         0		•				•	0,	130/001	
Fotal         34,971,577         4,456,625         24,472,530         4,950,362         175,500           e)         2,957,145         0         2,898,645         0         58,500           9,008,380         2,228,312         3,693,366         2,604,482         0           10,302,546         2,228,312         3,693,366         2,604,482         0           4,347,544         0         4,289,044         0         58,500           2,903,851         0         2,903,851         0         0           2,548,260         0         2,489,760         0         58,500           2,548,260         0         2,489,760         0         58,500	Fotal         34,971,577         4,456,625         24,472,530         4,950,362         175,500           e)         2,957,145         0         2,898,645         0         58,500           9,008,380         2,228,312         3,693,366         2,604,482         0           10,302,546         2,228,312         3,693,366         2,604,482         0           4,347,544         0         2,903,851         0         58,500           2,903,851         0         2,903,851         0         0           2,548,260         0         2,903,851         0         58,500           2,548,260         0         2,489,760         0         58,500           10,234,754         0         2,903,851         0         0           2,548,260         0         2,903,851         0         58,500           2,548,260         0         2,489,760         0         58,500           1,048         34,971,577         4,456,625         24,472,530         4,950,362         175,500           Niceruse Inception as a water users association MENR: Ministry of Environment and Natural Re	4. Physical Contingency	809,214			369,430	<b>-</b>	68,4W	10/001	
Total         34,971,577         4,456,625         24,472,530         4,950,362         172,500           2,957,145         0         2,898,645         0         58,500           9,008,380         2,228,312         3,693,366         2,604,482         0           10,302,546         2,228,313         5,294,013         2,345,880         0           4,347,544         0         4,289,044         0         58,500           2,903,851         0         2,903,851         0         0           2,548,260         0         2,489,760         0         58,500           2,548,260         0         2,489,760         0         58,500	2,898,645 0 58,500 0 58,500 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						000 000	017 860		
2,957,145 0 2,898,645 0 58,500 0,908,380 2,2228,312 3,693,366 2,604,482 0 0,302,546 2,2228,313 5,294,013 2,345,880 0 0,4347,544 0 2,903,851 0 2,903,851 0 2,903,851 0 2,903,851 0 2,903,851 0 0,2,903,851 0 0 2,489,760 0 2,489,760 0 175,500	2,898,645 0 58,500 3,693,366 2,604,482 0 5,294,013 2,345,880 0 4,289,044 0 58,500 2,903,851 0 0 2,903,851 0 0 2,489,760 0 58,500 3,4472,530 4,950,362 175,500 MENR: Ministry of Environment and Natural Re	Total	34,971,577			4,950,362	175,500	000,019		
2,957,145       0       2,898,645       0       58,500         9,008,380       2,228,312       3,693,366       2,604,482       0         10,302,546       2,228,313       5,294,013       2,345,880       0         4,347,544       0       4,289,044       0       58,500         2,903,851       0       2,903,851       0       0         2,548,260       0       2,489,760       0       58,500         Total       34,971,577       4,456,625       24,472,530       4,950,362       175,500	2,898,645 0 58,500 3,693,366 2,604,482 0 5,294,013 2,345,880 0 4,289,044 0 58,500 2,903,851 0 0 0 2,903,851 0 0 0 2,903,851 0 0 58,500 2,489,760 0 58,500									
2,937,145 9,008,380 10,302,546 2,228,312 10,302,546 2,228,313 10,302,546 2,228,313 10,428,044 10,2903,851 10,290	2,933,66 2,604,482 0 5,294,013 2,345,880 0 58,500 0 5,903,851 0 0 0 5,903,851 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(Disbursement Schedule)	1			c	58.500	0		
9,008,380 2,228,312 3,695,500 2,504,013 10,302,546 2,228,313 5,294,013 2,345,880 0 4,347,544 0 2,903,851 0 2,903,851 0 2,903,851 0 2,903,851 0 58,500 12,548,260 0 2,489,760 0 58,500 175,500	5,294,013 2,345,880 0 4,289,044 0 58,500 2,903,851 0 0 2,903,851 0 0 2,489,760 0 58,500 3, 24,472,530 4,950,362 175,500 MENR: Ministry of Environment and Natural Re	- 1st year	2,957,14			0 604 483	Ç	482 220		
10,302,546 2,228,313 5,294,013 4,345,000 58,500 4,289,044 0 58,500 5,903,851 0 2,903,851 0 0 2,903,851 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2,294,013 2,345,000 58,500 4,289,044 0 58,500 0 0 2,903,851 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	- 2nd year	9,008,380	-	٠	2,004,402	<b>&gt;</b> ⊊	434 340		
4,347,544 0 4,289,044 0 9,2903,851 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4,285,044 0 0,000,000 0 0,000 0 0 0 0 0 0 0 0	- 3rd year	10,302,540	2,228,31		000,545,5	28 500	) ( ) ( )		
2,903,851 0 2,903,851 0 0 2,903,851 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2,903,851 0 0 0 2,903,851 0 58,500 2,489,760 0 58,500 3, 24,472,530 4,950,362 175,500 MENR: Ministry of Environment and Natural Re	- 4th vear	4,347,54			> <	) ) (	· c		
2,903,851 0 2,903,851 0 58,500 2,548,260 0 2,489,760 0 58,500 Total 34,971,577 4,456,625 24,472,530 4,950,362 175,500	2,903,851 0 58,500 2,489,760 0 58,500 3, 24,472,530 4,950,362 175,500 MENR: Ministry of Environment and Natural Re	- 5th year	2,903,85			<b>&gt;</b>	> <	> <		
2,548,260 0 2,489,760 0 58,500 Total 34,971,577 4,456,625 24,472,530 4,950,362 175,500	2,489,760 0 58,500 24,472,530 4,950,362 175,500 MENR: Ministry of Environment and Natural Re	A+h	2,903,85			<b>5</b>	<b>&gt;</b>	> <		
Total 34,971,577 4,456,625 24,472,530 4,950,362 175,500	; 24,472,530 4,950,362 175,500 MENR: Ministry of Environment and Natural Re	7th wear	2,548,26			0	58,500	5		
1,5,179,000	.1					4 050 367	175.500	916.560		
l		Total	75,175,	7 4,450,64	.1	40000000	2000	Description		

MOALD: Ministry of Agriculture and Livestock Development
MPWH: Ministry of Public Works and Housing

1) Administration cost for private sector projects shall be borne by the government.

Project Cost Sharing and Disbursement Schedule by Sector and by Agency for Ngomano/Nyangati Water Furrow Project **Table Q.2-6** 

(Unit: Ksh.)

Project Component  I. Construction Cost  I) Irrigation & Drainage Improvement	Total Cost	WITA					
I. Construction Cost I) Irrigation & Drainage Improvement	i	50.	MOALD	MPWH	MENR	Kirinyaga CC	
1) Irrigation & Drainage Improvement	170 073 0	m3E C/3 C	c	c	ç	c	A=48ha
	3,563,767	797,595,6			<b>&gt;</b>		T TOTAL
<ol><li>Marketing improvement</li></ol>	<b>5</b> (	> °		<b>&gt;</b> 0	> <	> <	
<ol> <li>Access Roads Improvement</li> </ol>		0	<b>-</b>	<b>O</b> •	، د	0	ě e
4) Village/Farm Roads Improvement	1,824,000	0		0	Ç.	1,824,000	L=3.2km
5) Domestic Water Supply Improvement	0 0	0	0	0	Ó	0	
Sub-total	5,387,767	3,563,767		0	Ç.	1,824,000	
2 Community Development & Support Services							
1) A originated Support Services	12 950 000	0	12.950.000	0	Ō	0	
1) Agricultum Juppoit Science	7.090.000			C	Ç	C	
<ol> <li>Community Development</li> </ol>	000,080,7	) (		> <	> <		
<ol> <li>Water Management Services</li> </ol>	1,810,000	0	Ť,	•	⊋	<b>5</b>	
4) Marketing Support Services	374.000	0	374,000	<b>Q</b>	<u>.</u>	0	
4) Manaching Support Services	140 000				150 000	0	
3) Fublic realth Services		> <	33 314 00	• •	150,000	• •	
S0D-1018	MAY 777	•		•	COOLOC I	,	
3. Associated Cost							
1) Pre-Fnoineering Cost	227.680	100,000	0	0	Ô	127,680	7% of $1$
2) Administration Cost	1 942 622	`	1 804 442	0	10.500	127,680	7% of 1 & 2
2) Aurimistration Cost	1,744,044	780 790		• <	15,000	192 400	10% 05 1.8%
3) Consulting Services	2,775,176	336,376		o ·	15,000	182,400	10% 01 1 02. 2
Sub-total	4,945,478	456,376	4,025,842	•	25,500	437,760	
		1		(	•	•	
4. Land Acquisition	175,000	175,000		<b>&gt;</b>	2	Þ	
5. Physical Contingency	538,776	356,376	•	0	<b>O</b>	182,400	10% of 1
		7 881 810	77 720 047	c	176 800	2 444 150	
Total	33,411,021	455,15C,4		•	ancic/T	7,444,100	
(Disbursement Schedule)					002 02	ć	-
- Ist year	7,757,760			>	טטייסי.		
- 2nd year	7,385,391	2,413,260		0	Ď	1,285,920	
- 3rd vear	8.664,000	2.138.259		0	<b>.</b>	1,158,240	
4th year	4,426,110	0	4,367,610	0	. 58,500	0	
111 July 111	3 444 480	0		0	Ç	0	
Cott Joan	3 444 480			· C	Ç	0	
- onlycal	000,000			•	20 402	, (	
- 7th year	3,088,800	0	3,030,300	>	28,500	o .	
		(14 14 1	47.000.000	<	175 500	2 444 160	
Total	53,411,021	Victoc.	•		McC/I	001,444,2	
Note: WUA: Rupingazi Ngerwe Irrigation Association as a water users association	n Association as a wat	er users association	MENR: Ministry of Environment and Natural Resources	ry of Environ Viringson Co	ment and Natur	al Resources	
MUALL : Ministry of Agriculture and Livestock Development	nd Livestock Develops	ווזכוזר	minyaga CC . 1	in in y aga 🧠	mary country		
MPWH: Ministry of Public Works and Housing	and Housing						

Q-6

Table Q.2-7 Project Cost Sharing and Disbursement Schedule by Sector and by Agency for Nkunjumo Water Project

(Unit: Ksh)

Designed Commonweal	Total Cost	WUA	T	MOALD HCDA	HCDA	MENR	Meru CC	Meru MC		- 1
1. Construction Cost	2000 1110 7		1						A=66ha	
1) Irrication & Drainage frontovernent	5,455,106		5,455,106	0	0		<b>-</b>	0	A=Joura	
2) Marketing Improvement	286,600,000		0	0	0				286,600,000 Meru market unprovement	
2) Access Doods Improvement	0		0	0	0				ì	
4) Willeas Come Doods Improvement	1 425 000		0	0	0		0 1,425,000	0	L=2.5km	
5) Democratic Modus Improvement	000000000000000000000000000000000000000		0	0	0		9	0		
S) Domestic water Supply improvement	293,480,106		5,455,106	0	0		0 1,425,000	3 286,600,000		
2. Community Development & Support Services	services				•			•		
1) Agricultural Support Services	10,640,000		0	10,640,000	0		- Ф	O *		
2) Community Development	7 086 000		0	7,086,000	0		<b>\$</b>			
2) Water Management Cornidos	1 960 000		0	1,960,000	0		<del>-</del>			
S) Water Management Services	21 280 000		0	380,000	20,900,000		<u>-</u>			
4) Marketing Support Services	000,004,14	٠	0	0	0		• •	0 0		
2) ruone meanu services Sub-total	40,966,000		•	20,066,000	20,900,000		- Ф	0		
3. Associated Cost				•	•			000 805 8	3 - 70% 051	
1) Pre-Engineering Cost	8,697,750		0	0	<b>.</b>				7,001.1	
2) Administration Cost	10,484,226		0	1,786,476	0				3 - /% OI 1 0C 2	
2) Consulting Controls	11 292,610		545,510	2,006,600	0	_	0 142,500		3 - 10% of 1 & 2	
5) Consuming Services Sub-total			545,510	3,793,076	-		0 342,000	0 25,794,000		
4. Physical Contingency	15,018,010		545,510	•	٠	_	0 142,500		14,330,000 5-10% of 1	
							ļ	000 100 000		
Fotal	379,938,702		6,546,126	23,859,076	20,900,000		005,800 t	0 320,724,000		- }
(Disbursement Schedule)			، ا		] ]		5			
. let vear	2,901,717		0	2,901,717	ت	_				
- 2nd vear	175,699,871	-	3,273,063	3,761,183	0		<del>-</del> Î			
and year	168,223,250		3,273,063	4,982,312	0	_	0 904,875	5 159,063,000		
## F 25.5	9 140 522		0	3,915,522	5,225,000	-	0	0		
4th wast	8 129 291		0	2,904,291	5,225,000	_	0			
- July Val.	8,129,291		O	2,904,291	5,225,000	_	<del>Q</del>	0		
- 7th year	7,714,760		0	2,489,760	5,225,000		φ			
Testor.	179 938 707		6.546.126	23.859.076	20,900,000		0 1,909,500	0 326,724,000		- 1
TOTAL	401,000,001		.1	Description of the second seco			-			

Meru CC : Meru County Council Meru MC : Meru Municipal Council MOALD: Ministry of Agriculture and Livestock Development
Mel
HCDA: Horticultural Crops Development Authority

Noi

Adramistration cost for private sector projects shall be borne by the government.

Project Cost Sharing and Disbursement Schedule by Sector and by Agency for Ruungu/Karocho Irrigation Project Table Q.2-8

(Unit: Ksh)

WUA         MOALD         IMOALD           4,520,200         0           1,500,000         0           0         0           0         0           0         0           0         0           0         7,120,000           0         1,810,000           0         23,264,000           0         1,733,480           150,000         2,326,400           255,000         4,059,880           150,000         2,326,400           255,000         4,059,880           150,000         2,326,400           2,260,100         2,326,400           3,567,180         900,000           900,000         5,515,230           0         3,704,220           0         3,704,220           0         3,287,700           6,425,200         27,323,880			Private Sector	Government Public Sector	ublic Sector			NCHEET AS
4,520,200         4,520,200         1,710,000         0         0         1,710,000         0	Project Component		WUA	MOALD	МРWН	MENR	Tharaka. CC	
1,500,000	1. Construction Cost	4 520 200	4 520 200		0	Ŷ	0	A=68ha
19,660,000	1) Imganon & Jamage improvencer 2) Modesting Immediatement	1 500 000	1,500,000	0	0	Q	0	Antena shop/storage, etc.
1,710,000         0         0         0         1,710,000           27,390,200         6,020,200         0         14,810,000         0         1,710,000           27,390,200         6,020,200         0         14,810,000         0         0         0           7,120,000         0         7,120,000         0         0         0         0         0           7,120,000         0         7,120,000         0         0         0         0         0         0           1,810,000         0         1,810,000         0         0         0         0         0         0         0         0           1,810,000         0         1,810,000         0         150,000         0	2) Movees Roads Improvement	19,660,000	0	0	14,810,000	Ĉ	4,850,000	L=37.5km
2         0	4) Village/Farm Roads Improvement	1,710,000	0	0	0	Ф	1,710,000	L=3.0km
27,390,200         6,020,200         0         14,810,000         0         6,560,000           1,810,000         0         7,120,000         0         0         0         0           2,84,000         0         1,810,000         0         0         0         0           2,84,000         0         1,810,000         0         0         0         0           2,84,000         0         1,810,000         0         0         0         0           2,84,000         0         1,810,000         0         0         0         0           2,3414,000         0         1,810,000         0         1,50,000         0         0           1,600,000         1,500,000         0         1,335,700         1,50,000         0         459,200           4,628,400         1,500,000         2,326,400         1,481,000         1,500         0         656,000           2,287,000         1,500,000         2,354,400         1,574,400         1,574,400         1,574,400           2,280,180         1,500,000         2,7323,880         19,845,400         1,755,00         4,165,600           2,280,180         2,256,100         2,7323,880         19,441,050	5) Domestic Water Supply Improvemen		0	0	0	¢	0 ;	
\$1,50,000         0         0         0         0           7,120,000         0         0         0         0           7,120,000         0         7,120,000         0         0           1,810,000         0         1,810,000         0         0           284,000         0         284,000         0         0         0           150,000         0         23,264,000         0         150,000         0         459,200           1,600,900         105,000         0         1,036,700         10,500         459,200         459,200           4,628,400         150,000         2,326,400         1,481,000         15,000         656,000           9,469,180         255,000         4,059,880         3,554,400         1,574,400         157,440           2,287,000         150,000         2,326,400         1,481,000         0         656,000           2,287,000         1,50,000         1,481,000         0         656,000         0           2,287,000         2,325,400         1,481,000         1,574,400         0         1,574,400           2,287,180         2,256,100         2,323,3880         19,845,400         1,75,500         4,624,800 <td>Sub-tota</td> <td></td> <td>6,020,200</td> <td>0</td> <td>14,810,000</td> <td><b>•</b></td> <td>6,560,000</td> <td></td>	Sub-tota		6,020,200	0	14,810,000	<b>•</b>	6,560,000	
14,050,000         0         14,050,000         0	2. Community Development & Support	10			•			
Sub-total	1) Agricultural Support Services	-	0	14,050,000	0	φ,	<b>⇔</b> «	
1,810,000	2) Community Development	7,120,000		7,120,000	0	ф·	0	
Services         284,000         0         284,000         0         284,000         0 </td <td>3) Water Management Services</td> <td>1,810,000</td> <td>0</td> <td>1,810,000</td> <td>0</td> <td>¢.</td> <td>0 1</td> <td></td>	3) Water Management Services	1,810,000	0	1,810,000	0	¢.	0 1	
Scub-total         150,000         0         150,000         0           g Cost         Sub-total         23,414,000         105,000         0         1,036,700         0         459,200           g Cost         1,600,900         105,000         2,326,400         1,036,700         0         459,200           vices         Sub-total         9,469,180         255,000         4,059,880         3,554,400         15,000         656,000           sency         2,287,000         150,000         2,324,400         1,574,400         656,000           gency         2,287,000         150,000         2,7323,880         3,554,400         15,7400         656,000           Total         6,250,380         150,000         2,7323,880         1,481,000         1,574,400           Feed,180         1,50,000         2,534,400         2,550         1,574,400           Augestyles         1,481,000         1,500         656,000           Augestyles         2,260,100         2,323,380         19,845,400         175,500         4,524,800           Augestyles         2,234,200         2,323,380         19,441,050         9,404,800           Augestyles         2,5	4) Marketing Support Services	284,000	0	284,000	0	<b>ф</b>	•	
gency         Sub-total         23,444,000         0         23,264,000         0         1,600,000         0         459,200           1, 500,900         1,50,000         0         1,733,480         1,036,700         0         459,200           1, 500,180         255,000         2,326,400         1,481,000         15,000         656,000           gency         2,287,000         150,000         2,325,400         1,481,000         1,574,400           gency         2,287,000         150,000         0         1,481,000         0         656,000           gency         2,287,000         150,000         27,323,880         19,481,000         0         656,000           medule)         5,234,240         2,260,100         2,915,640         175,500         4,165,600           19,985,180         900,000         2,515,50         9,404,350         0         4,165,600           19,985,180         900,000         5,515,50         9,404,350         0         4,165,600           4,688,190         0         3,704,220         0         3,704,220         0         9,404,350         0           3,704,220         0         3,377,000         0         3,285,000         0         0	5) Public Health Services	150,000		0	0	150,000	0	
g Cost         1,600,900         105,000         0         1,036,700         0         459,200           o Cost         3,239,880         0         1,733,480         1,036,700         10,500         459,200           vices         Sub-total         9,469,180         255,000         4,025,880         1,481,000         15,000         656,000           gency         2,287,000         150,000         2,325,400         1,481,000         0         656,000           gency         2,287,000         150,000         2,324,400         2,5500         1,574,400           gency         2,287,000         150,000         2,323,880         19,845,400         0         656,000           redule         5,234,240         2,260,100         2,1323,880         19,845,400         175,500         8,790,400           19,985,180         900,000         5,515,230         9,404,350         0         4,624,800           19,985,180         900,000         5,515,230         9,404,350         0         4,165,600           4,688,190         0         4,629,690         0         3,704,220         0         4,629,690         0           3,704,220         0         3,704,220         0         3,287,700			0	23,264,000	0	150,000	•	
1,600,900	3. Associated Cost		4	(	000000	Ç	750.000	7%, 0£1
Sub-total   9,469,180	1) Pre-Engineering Cost	1,600,900	000,001	0	1,056,700	9 6	007,654	1 0 0/ / et
Sub-total         9,4628,400         150,000         2,326,400         1,481,000         15,000         656,000           Z,287,000         1,60,000         4,059,880         3,554,400         25,500         1,574,400           Total         62,560,380         6,425,200         27,323,880         19,845,400         175,500         8,790,400           E)         5,234,240         2,260,100         2,915,640         0         58,500         0           21,898,130         3,265,100         3,567,180         10,441,050         0         4,624,800           4,688,190         0         4,629,690         0         4,624,800         0           3,704,220         0         3,704,220         0         0         0         0           3,346,200         6,425,200         27,323,880         19,845,406         175,500         8,790,400	2) Administration Cost	3,239,880	0	1,733,480	1,036,700	10,500	459,200	/% OI 1 & 2
Sub-total         9,469,180         255,000         4,059,880         3,554,400         25,500         1,574,400           Z,287,000         150,000         0         1,481,000         0         656,000           Total         62,560,380         6,425,200         27,323,880         19,845,400         175,500         8,790,400           E)         5,234,240         2,260,100         2,915,640         0         58,500         0           21,898,130         3,265,100         3,567,180         10,441,050         0         4,654,800           19,985,180         900,000         5,515,230         9,404,350         0         4,165,600           4,688,190         0         3,704,220         0         4,165,600         0           3,704,220         0         3,704,220         0         0         0         0           3,346,200         6,425,200         27,323,880         19,845,406         175,500         8,790,400	3) Consulting Services	4,628,400	150,000	2,326,400	1,481,000	15,000	656,000	10% 01 1 05 2
E)         5,234,240         6,425,260         27,323,880         19,845,400         175,500         8,790,400           E)         5,234,240         2,260,100         2,915,640         0         58,500         0         4,624,800           21,898,130         3,265,100         3,567,180         10,441,050         0         4,165,600         0           4,688,190         0         4,629,690         0         3,704,220         0         4,165,600         0           3,704,220         0         3,704,220         0         3,704,220         0         0         0         0           3,346,200         6,425,200         27,323,880         19,845,406         175,500         8,790,400			255,000	4,059,880	3,554,400	197°57	1,5/4,400	
Total         62,560,380         6,425,200         27,323,880         19,845,400         175,500           5,234,240         2,260,100         2,915,640         0         58,500           21,898,130         3,265,100         3,567,180         10,441,050         0           4,688,190         0         4,629,690         0         3,704,220         0           3,704,220         0         3,704,220         0         3,704,220         0           3,346,200         6,425,200         27,323,880         19,845,406         175,500	4. Physical Contingency	2,287,000	150,000	0	1,481,000	0	926,000	10% of 1
5,234,240 2,260,100 2,915,640 0 58,500 0 21,898,130 3,265,100 3,567,180 10,441,050 0 4,688,130 0,406,000 5,515,230 9,404,350 0 4,688,190 0 4,629,690 0 3,704,220 0 3,704,220 0 3,704,220 0 3,704,220 0 3,704,220 0 3,704,220 0 3,704,220 0 10,845,406 175,500	Tota		6,425,200	27,323,880	19,845,400	175,500	8,790,400	
5,234,240 2,260,100 2,915,640 0 38,500 21,898,130 3,265,100 3,567,180 10,441,050 0 19,985,180 900,000 5,515,230 9,404,350 0 4,688,190 0 4,629,690 0 3,704,220 0 3,704,220 0 3,704,220 0 3,704,220 0 3,704,220 0 3,704,220 0 3,704,220 0 10,845,400 175,500	(Disbursement Schedule)				,		(	
21,898,130 3,265,100 3,567,180 10,441,050 1 19,985,180 900,000 5,515,230 9,404,350 0 4,688,190 0 4,629,690 0 58,500 0 3,704,220 0 3,704,220 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	- 1st year	5,234,240	2,260,100	2,915,640	0	28,500 0	000,00	
19,985,180 900,000 5,515,230 9,404,350 0 4,688,190 0 4,629,690 0 3,704,220 0 3,704,220 0 3,704,220 0 3,704,220 0 3,704,220 0 3,704,220 0 3,704,220 0 58,500 0 3,704,220 0 3,346,200 0 3,287,700 0 58,500 0 175,500	- 2nd year	21,898,130	ເຕົ	3,567,180	10,441,050	÷.	4,624,800	
4,688,190 0 4,629,690 0 58,500 3,704,220 0 3,704,220 0 0 3,704,220 0 3,704,220 0 0 3,346,200 0 3,287,700 0 58,500 Total 62,560,380 6,425,200 27,323,880 19,845,406 175,500 8,790,40	- 3rd year	19,985,180	-	5,515,230	9,404,350	Q 62	4,165,600	
3,704,220 0 3,704,220 0 0 3,704,220 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	- 4th year	4,688,190		4,629,690	<b>D</b> (	58,500	<b>o</b> «	
3,704,220 0 3,704,220 0 0 3,287,700 0 58,500 Total 62,560,380 6,425,200 27,323,880 19,845,406 175,500 8,790,40	- 5th year	3,704,220		3,704,220	<b>D</b> (	<b>-</b>	<b>)</b>	
3,346,200 0 3,287,700 0 58,500 Total 62,560,380 6,425,200 27,323,880 19,845,406 175,500	- 6th year	3,704,220		3,704,220	o •	<b>⊋</b> ;	<b>&gt;</b> (	
62.560.380 6.425.200 27.323,880 19,845,406 175,500	- 7th year	3,346,200		3,287,700	0	28,500	<b>&gt;</b>	
	Tota	1 62.560.380	6,425,200	27,323,880	19,845,400	175,500	8,790,400	

Tharaka. CC: Tharaka Nithi County Council

MOALD: Ministry of Agriculture and Livestock Development
MPWH: Ministry of Public Works and Housing

1) Administration cost for private sector projects shall be borne by the government.

Table Q.2-9 Construction Cost for Irrigation/Drainage and Roads Improvement for Rupingazi Ngerwe Irrigation Scheme

tem	Description	Q'ty	Unit	Unit cost	Amount	Remarks
	•			(Ksh)	(Ksh)	
l. Irrigation & Drainage Im	provement					A=40ha
1) Direct cost						
a) Canal line						4
- Concrete pipe	φ 450mm	1,300	m	1,600	2,080,000	
- Fittings	Joint mortar, etc	l.s.				10% of pipes
- Skilled labour cost		l.s.				10% of material
- Transport cost		l.s.				5% of material
Sub-total					2,631,200	
b) Structures						
- Division box	Concrete	2	no.	30,000	60,000	
Sub-total					60,000	
Total of direct cost	•				2,691,200	
2) Temporary works						
- Temporary works	Camp, mobilization, etc.	l.s.			403,680	15% of direct cost
- Tomporary norm	<del></del>					
3) Contractor's cost						
- Contractor's cost	Engineers, overhead & profit	l.s.			618,976	20% of direct and
- Contractor's Cost	Digitions, overteen es pro			•		temporary works cos
					2 542 056	
Tota					3,713,856	
Tota					3,713,856	
		n Ássocia	tion s	hall provide		s for pipe laying work
	1) Rupingazi Ngerwe Irrigatio	n Associa	tion s	hall provide	casual labour	s for pipe laying work
		n Ássocia ccavation	tion s and b	hall provide ackfilling fo	casual labour	s for pipe laying work
Note:	Rupingazi Ngerwe Irrigation carth canal trimming, and ex	n Associa ceavation	tion s and b	hall provide ackfilling fo	casual labour	s for pipe laying work
Note:	Rupingazi Ngerwe Irrigation carth canal trimming, and ex- ment	cavation	and b	ackfilling fo	casual labour or structures.	
Note:  2. Access Roads Improven 1) Tarmac surface pavement	Rupingazi Ngerwe Irrigation     carth canal trimming, and ex sent  it	ccavation	and b	3,000,000	casual labour or structures.	
Note:	Rupingazi Ngerwe Irrigation carth canal trimming, and ex- ment	ccavation	and b	ackfilling fo	casual labour or structures.	
Note:  2. Access Roads Improven  1) Tarmac surface pavemen  2) Partial rehabilitation	Rupingazi Ngerwe Irrigation carth canal trimming, and extent  nent  It  With spot gravelling	ccavation	and b	3,000,000	casual labour or structures. 3,000,000 694,300	
Note:  2. Access Roads Improven 1) Tarmac surface pavement	Rupingazi Ngerwe Irrigation carth canal trimming, and extent  nent  It  With spot gravelling	ccavation	and b	3,000,000	casual labour or structures.	
Note:  2. Access Roads Improven  1) Tarmac surface pavemen  2) Partial rehabilitation	Rupingazi Ngerwe Irrigation carth canal trimming, and extent  nent  It  With spot gravelling	ccavation	and b	3,000,000	casual labour or structures. 3,000,000 694,300	
2. Access Roads Improven 1) Tarmac surface pavemen 2) Partial rehabilitation Tota	Rupingazi Ngerwe Irrigation carth canal trimming, and extent  nent  With spot gravelling  li	ccavation	and b	3,000,000	casual labour or structures. 3,000,000 694,300	
Note:  2. Access Roads Improven  1) Tarmac surface pavemen  2) Partial rehabilitation	Rupingazi Ngerwe Irrigation carth canal trimming, and extent  nent  With spot gravelling  li	1.0 5.3	and b	3,000,000	3,000,000 694,300	
Note:  2. Access Roads Improven 1) Tarmac surface pavemer 2) Partial rehabilitation  Tota  3. Village/Farm Roads Im	1) Rupingazi Ngerwe Irrigation carth canal trimming, and extent  nent  it  With spot gravelling  provement  With grading, regravelling, etc.	1.0 5.3	km km	3,000,000 131,000	3,000,000 694,300	

Table Q.2-10 Construction Cost for Irrigation/Drainage and Roads Improvement for Ngomano/Nyangati Water Furrow Project

mprovement		l	(Ksh)	(Ksh)	
mprovement					
inprovencia.					A=48ha
					11 10114
	30	cu.m	8,000	240,000	
				·-	
2.0m * 1.0m * 0.5m	112	no.			•
	560	cu.m	150		
•	. 1	no.	80,000		
,	1	BO.	,		
For diversion works	l.s.		•		<b>*</b>
For diversion works	l.s.		30%		
1				,	•
Concrete	2	no.	30.000	60.000	
H=0.50m/no.			,	· ·	
1			-,	•	
				0,,0,000	
	1.450	m	200	290.000	
1	-,				•
 st					
•				_,_ ,_ , , , ,	
Camp, mobilization, etc.	l.s.			387.366	15% of direct cost
Engineers, overhead & profit	l.s.			593.961	20% of direct and
0					temporary works cost
ıl				3,563,767	
: 1) Ngomano/Nyangati Water F	штоw A	ssocia	tion shall pr	ovide casual l	abours for earth canal
trimming, and manpower ex-	cavation	and ba	ckfilling for	r structures.	•
nrovement					
-	30	km	570 000	1 824 000	
,,,,,,, eramis, regravering, etc.	. J.L	MIL	370,000	1,024,000	
1				1.824.666	
	For diversion works  Concrete H=0.50m/no.  Camp, mobilization, etc.  Engineers, overhead & profit  I) Ngomano/Nyangati Water F trimming, and manpower exceptions.	2.0m * 1.0m * 0.5m By machine 560  \$\phi\$ 450mm, L=6.0m  For diversion works 1.s. For diversion works 1.s.  Concrete 2  H=0.50m/no. 102  1  Camp, mobilization, etc. 1.s.  Engineers, overhead & profit 1.s.  1) Ngomano/Nyangati Water Furrow Atrimming, and manpower excavation  provement  With grading, regravelling, etc. 3.2	By machine \$560 cu.m \$\psi\$ 1 no. \$\frac{1}{1}\$ no. \$\frac{1}\$ no. \$\frac{1}{1}\$ no. \$\frac{1}{1}\$ no. \$\frac{1}{1}\$ no.	2.0m * 1.0m * 0.5m  By machine  \$\operatorname{5}60 \text{ cu.m} \text{ 150} \\ \$\operatorname{4}450mm, L=6.0m} \text{ 1 no.} \text{ 80,000} \\ \$1 no.} \text{ 30,000} \\ For diversion works \text{ 1.s.} \text{ 40%} \\ For diversion works \text{ 1.s.} \text{ 30%} \\  1  Concrete  \$\overall \$\text{ 2 no.} \text{ 30,000} \\ \$\overline{1}4=0.50m/no.} \text{ 102 no.} \text{ 5,000} \\  1  Camp, mobilization, etc. \text{ 1.s.} \\  Engineers, overhead & profit \text{ 1.s.} \\  1) Ngomano/Nyangati Water Furrow Association shall preservement  With grading, regravelling, etc. \text{ 3.2 km} \text{ 570,000}	2.0m * 1.0m * 0.5m

Table Q.2-11

# Construction Cost for Irrigation/Drainage and Roads Improvement for Nkunjumo Water Project

em	Description	Q'ty	Unit	Unit cost	Amount (Ksh)	Remarks
		<u> </u>		(Ksh)	(1/211)	
Irrigation & Drainage I	nnrovement					A=56ha
) Direct cost	прточешен					
a) Pipeline						
- Material cost						
PVC pipe	φ 250mm, L=6.0m, class-B	25	no.	7,500	187,500	
- do	φ 200mm, L=6.0m, class-B	178	no.	4,400	783,200	
- do	φ 150mm, L=6.0m, class-D	197	no.	5,000	985,000	
- do	φ 100mm, L=6.0m, class-D	117	no.	2,900	339,300	
- do	φ 75mm, L=6.0m, class-D	75	no.	2,000	150,000	
- do	φ 63mm, L=6.0m, class-D	0	no.	1,300	0	
- do	φ 50mm, L=6.0m, class-D	200	no.	850	170,000	
- Fittings	, , ,	1.s.				10% of pipes
i mingo						Total of material
- Skilled labour cost		1.s				10% of material
- Transport cost		i.s			143,825	5% of material
Sub-tot	al				3,307,975	
b) Intake	-				•	
- Intake weir	L=5.0m, H=0.5m, concrete	1	no.	100,000	100,000	
- Intake box	,	1	пo.	30,000	30,000	
- G.I pipe	φ 250mm, L=6.0m	2	no.	45,000	90,000	
Šub-tot		-			220,000	
c) Structures	•					
- Valve chamber	Concrete	17	no.	5,000		
- Storage tank	V= 10 cu.m	1	no.	240,000		For secondary school
- do	V= 3 cu.m	1	no.	100,000	-	For polytechnics
Sub-to	al				425,000	
Total of direct co	est				3,952,975	
2) Temporary works						
- Temporary works	Camp, mobilization, etc.	1.:	S		592,946	15% of direct cost
· Tompormy works	Canap, and,					
3) Contractor's cost						
- Contractor's cost	Engineers, overhead & profit	1.	S.		909,184	1 20% of direct and
						temporary works cos
То	tal				5,455,100	5
No	te: 1) Nkunjumo Water Associati	on shall	provi	de casual lal	bours for pipe	laying works,
	and manpower excavation a	and back	filling	for structur	es.	
	2) Domestic water supply imp	rovemei	nt is ir	icluded in th	is cost estimat	e.
2. Village/Farm Roads I	mprovement					
1) Spot improvement	With grading, regravelling, et	c. 2.	5 km	1 570,00	0 1,425,00	0
	otal				1,425,00	ń

Table Q.2-12 Construction Cost for Irrigation/Drainage and Roads Improvement for Ruungu/Karocho Irrigation Project

tem	Description	Q'ty	Unit	Unit cost (Ksh)	Amount (Ksh)	Remarks
1. Irrigation & Drainage	Improvement					A=68ha
1) Intake and concrete str	=				3,638,000	
2) Trenching, infilling en	nbankment compacting				518,400	
3) Design and supervision					363,800	
Tot	al				4,520,200	
Note	e: 1) Above cost is taken from the construction is under impleme			n report pre	pared by SISE	OO since the
2. Access Roads Improve				101.000	2 (20 022	E 600 '
		20.0	km	131,000	2,620,000	For C92 road
1) Partial rehabilitation	With spot gravelling			=		E EGGG
2) Spot improvement	With grading, regravelling, etc.	11.5	km	1,060,000	12,190,000	For E788 road
<ul><li>2) Spot improvement</li><li>3) Spot improvement</li></ul>	With grading, regravelling, etc. With grading, regravelling, etc.	11.5 6.0	km km	1,060,000 570,000	12,190,000 3,420,000	For rural road
2) Spot improvement	With grading, regravelling, etc.	11.5 6.0	km	1,060,000	12,190,000 3,420,000	
<ul><li>2) Spot improvement</li><li>3) Spot improvement</li></ul>	With grading, regravelling, etc. With grading, regravelling, etc. Concrete	11.5 6.0	km km	1,060,000 570,000	12,190,000 3,420,000	For rural road For rural road
<ul><li>2) Spot improvement</li><li>3) Spot improvement</li><li>4) Spillway type brige</li></ul>	With grading, regravelling, etc. With grading, regravelling, etc. Concrete	11.5 6.0	km km	1,060,000 570,000	12,190,000 3,420,000 1,430,000	For rural road For rural road
Spot improvement     Spot improvement     Spot improvement     Spillway type brige  Tot  Note: The spot improvement of th	With grading, regravelling, etc. With grading, regravelling, etc. Concrete	11.5 6.0 5.0	km km no.	1,060,000 570,000 286,000	12,190,000 3,420,000 1,430,000 19,660,000	For rural road For rural road
Spot improvement     Spot improvement     Spillway type brige  Total	With grading, regravelling, etc. With grading, regravelling, etc. Concrete	11.5 6.0 5.0	km km	1,060,000 570,000	12,190,000 3,420,000 1,430,000 19,660,000	For rural road For rural road

Table Q.2-13 Project Cost for Agricultural Support Services

				i							D	T. Orton		
				Mannano	Vyanosti		Namiamo	oum			Kumba	3		
	Rupingazi Ngerwe	erwe		31	Ta your Burn		N.	17.44	Timit gont	There are Amount O'ty	110	Unit Co	Unit cost   Amount	nt Remarks
Category	Q'ty Unit	Unit cost Amount	Amount	Q'ty Unit		Unit cost Amount Quy	<u>x</u>		('000 Ksh)	(1000 Ksh) (1000 Ksh)	; ;		('000 Ksh) ('000 Ksh)	(sh)
1) Training 2) Demonstration 3) Trials 4) Associated support costs 5) Extension Materials	4 time 7 time 8 5 year	<del></del>	4,800 840 2,000 1,500 1,500	5 time 13 time 8 5 year 5 year	1	0 6,000 0 1,950 0 2,000 0 1,500 0 1,500		4 time 7 time 8 5 year 5 year	1,200 120 250 300	4,800 840 2,000 1,500 1,500	5 time 11 time 8 5 year 5 year		,400 7; 150 1; 300 2; 300 1, 300 1,	7,000 1,650 2,400 1,500 1,500
Total	· ·	-	10,640			12,950				10,640			14,	14,050
Tody Table			2,128			2,590				2,128			2	2,810

NGO Donor Donor

Donor

Donor Donor Donor

r the cost of supplying the item to IDB HQS

Table Q.2-14 Project Cost for Community Development

COST OF PROVIDING TRAINING AND INSTITUTIONAL CAPACITY BUILDING FOR MODEL AREAS		ľ	Unit Total	Number Cost Cost	2	man-day 40 50 2.000 Donor	40 20 800	7.5 500 3.750	item 1000 1,000	1250 0.5 625	8 175		2000 1 000 1	mane of ny apeut	20 20 400	500 3,750	item item 2500 2,500 Donor	2000 08 1 800	2000 0.0	Sub-Total		man-day 5 50 250 Donor	2001	2 500	1500 1500	3000 0 6 4 500	000	Sub-1otal			50 20	7.5 500 3	tem 2000 2 000	1050	35.5	c) / / min length one		10 50 500	2	3,000	item item 1000 1,000 Donor	750 0 375	- 240	C/O'C		_	man-day 5 20 100 MoA/NGO	375 1000 1076	3.75 500 1.8/3	item item 1500 1,500	km 750 0.5 375 Donor
TIONAL CAPACITY		ľ	Unit Total	Cost	000 000	50 2.000	20 800	500 3.750	1000	0.5 625	8 175		30 1 000	000,1	20 20 400	7.5   500   3,750	2500 2.500	1 800	0.0	9,450		50 250	20	2 500	1500	4 4 500	000	0.69.6		1,000	20 400	500 3.750	2000 2 000	0.5	25.	c) //		20 200	20	400 3,000	1000 1,000	0.5 375	- 220 3	c/n'c		50   250	20 100	4 676	5/8,1	1500 1,500	275
CAPACITY		ľ	Unit Total	Cost	020	2.000	900	3,750	1,000	625	8 175		000	3	400	3,750	2.500	008	9 ;	9,450		250	2	2 500	1 500	200	200	2,850		1,000	400	3.750	2 000	, E25	1 27.5			200	200	3,000	1,000	375	200	e/n'e		250	001	4 075	1,8/3	1,500	320
Ł							<u>i</u>	1	1		Ĺ			1	_		_	;		9,450		L			1	L		2,850	_:				ļ.,	·-	1		1	500 Donor			L	1	1	cyn'e	_i		-		ij	_	L
				Funcing	ופסהוכה		<u>i</u>	1	1		Ĺ			1	_		_	;		•••		L			1	L	_		_:				ļ.,	·	1		1	Donor			Donor	1	1		_i		MoA/NGO	00000	Conoc	Donor	
																									٠																										
							•			••							-	-	-																									•	***				_		
	- t-	·[.			į			0	-	- 1	1	· · · · · · · · · · · · · · · · · · ·	: :	_	6		_			101	21	]		-	- [	:	<u></u>											<u> </u>		<u> </u>	]										
Cost Ben	Cost item Cost item Fraining Production (Marketing Gps:	7.1 Accommodation (MoA/NGO staft)	7.2 Field Allowance (MoA/NGO staff)	7.3 Consultant	7.4 Training Materials	7.5 Travel		NGO Resinguing Support	5.1 Accommodation (	6.2 FIEW Allowance (for stall in held)	o.s consultant	8.4 Training materials	8.5 Travel		9 General Community Development	9 1 Community Organizer	in the second se	9.2 Consultant back-stopper		10 Followers & Facilities Support	to 1 And vehicle to 108 HOs *		10.2 Motor Cycle to DAU'S Unice	10.3 Computer to 108 Hqs	10.4 Computer to DAO's Offices	10.5 Computer to loca	10.6 Auger, Ph meter, Tensiometer				EDI of mail on principle of the part of superior of the fact of superior of the first of the superior of the s	Appointment to A						Year	Disburgement	Percentana											
	em Marketino Gos:	MoA/NGO staff)						10000					:	_		izer					TO ACT OF		ACS Office	Spr 5	O's Offices	al NGO			. ປ		1 autonazi / Napatan	awiaget i seguina			÷				Tent	906	a a										
ē		man-day	тал-дау	man-day	item	100	000	2000	mon day	man load	- Cay	nem	E i	Sub-Total		month		oay	Sub-fotal	:	140	: [:]	ij :	# .	ğ	<u> </u>	ř	Sub-Total	Grand Total		tage out to	in and coast				u,		-	41291	35%	2										
	or units	5	5	2	item	750		4	י ני	3	7.77	E S	3			7		4			200	} .	, i	C7.7		-	Eem.				of supply	idane io				Funds Disbursement (USD)		7	29494												
Number	-i-	147	8	905	5 8	0.5	+	, c	2 8	3.5	200	3 5	က ၁			750		200		:	30000	3 5	200	200	000	9	4000				ing the if	200 5				ourseme		ლ —	23595	20%											
Number Cost Cost of uoits USD USD	- 1	S	<u></u> i			- ;	7,75		2 5	3 2	5 6	3 5	2	13,475		1,500	5	3	3,500		7.500	2	3 6	3:8	500	3	3	56,350	117,975		5	2				ot (CSC		4	11798	10%											

6 5899 5%

5899 5%

# NYANGATI / NGAMANO

COST OF PROVIDING TRAINING AND INSTITUTIONAL CAPACITY BUILDING FOR MODEL AREAS

				2	
		Mingher Cont		) oct	Estadino
Cost llen	C L	of units USD	SS	OSD CSD	Source
Training IDB & DAD Staff					
1 1 Accompdation (Participants)	man-day	04	50	2 000	Donor
Civild Allowance (Dadicipopte)	200	\$	2	900	MoA
C. Lield Allowaline (Lendahus)	100	3,4	Ş	2 750	ľ
1,3 Consultant	LIBIT-CIRY	3:	3	;	+
1.4 Training Materials	ren	E a	000	3	-;
1.4 Travel	Ę	1250	90	750	Donor
	Sub-Total			8,300	
\$ 50 O O O O O O O O O O O O O O O O O O		į	1		
Transmitted Today	open com	5	, C	1 000	2000
Z.1 Accommodation (participants)		ì	5	9	
<ol> <li>2.2 Field Allowance (participants)</li> </ol>	nan-made	ļ	?	900	_
2.3 Consultant	man-made	7.5	8	3,750	Donor
2.4 Training Materials	item	ilem	2500	2,500	Ропог
J & Trove	E	1500	0.5	750	
	Park Total			8 400	
	100				-
Social Preparation Facilitation.					
3.1 Accommodation (IDB/NGO staff)	man-day	n	2	007	iouo.
3.2 Field Allowance (IDB/NGO staff)	man-day	s	2	200	MoA/NGO
Acceptance of the second secon	200	٧	5	2 500	Donor
3.3 Consultant	200	,	3	2	4
3.4 Training Materials	item	ren L	200	1,500	- !
3.5 Travel	Ę	800	0.5	400	Donor
	Sut-Total			4.750	
Tana (1997)					
Flaming wood.		S	20.	1 000	2000
Accommodation (IDS/NGC stall)		3	3 :	9	
4.2 Field Allowance (IDB/NGO staff)	man-day	8	ຂ	400	Σ
f.3 Consultant	man-day	7.5	န္တ	3,750	
4 A Training Materials	цеш	rea.	2000	2,000	Donor
Travol	E	1250	0.5	625	Donor
DANG	1 4 0			7776	Į
	PRIO I - GIAS				
5 Training WUA & Co-op Committees:		-		-	į
5.1 Accommodation (IDB/NGO staff)	man-day	2	옧	200	
5.2 Field Allowance (IDB/NGO staff)	man-day	2	2	200	MoANGO
E 3 Consultants	velo-dem		400	3 000	Donor
Conscitation			Ş	,	1
5.4 Training Materials		בנו	3	2	4
5.5 Trave	Ē	8	0.5	9	Conoc
	Sub-Total			5,100	
Training Momen Grouns.					
6 1 Accommedation (MoA/NGO staff	man-day	2	50	250	Donor
Section of the sectio		1	5	9	12
6.2 Field Allowance (MoA/NGO Staff)		, ;	3 3	7	
6.3 Consultant	man-cay	5,73	2	_	4
6.4 Training Materials	ie	item	58	٠-	_إ
A Travel	5	8	0.5	400	Donor

		Number Cost	Sosi	Cost	Funding
Cost Item	Coit	of units IUSD	SS	asn	Source
raining Production /Marketing leps:	man-day		S	250	Donor
7.2 Field Allowance (MoA/NGO staff)	man-day	2	8		ž
7.3 Consultant	man-day	45	200	2,500	Donor
7.4 Training Materials	ten	item	1000	1,000	Donor
7,5 Travel		750	0.5	375	Donor
	Sub-Total			4,225	
8 NGO Restructuring Support:					
8.1 Accommodation (for staff in field)	man-day	'n	S 	250	2000
	man-day	ъ	20	5	00 N
•	man-day	22.5	200	11,250	Donor
alerials	item	item	1500	1,500	Donor
8,5 Travel	Ě	750	0.5	375	Donor
	Sub-Total			13,475	
9 General Community Development:			_		
9.1 Community Organizer	month	7	750	1,500	Donor
9.2 Consultant Back-stopper	day day	4	200	2,000	Donor
	Sub-Total			3,500	
10 Equipment & Facilities Support:				_ !	i
10.1 4wd vehicle to IDB HQs *	noit	0.25	30000		_
0.2 Motor Cycle to DAO's Office	ü	က	2000	15,000	Donor
10.3 Computer to IDB Hqs *	ř	0.25	4000	1,000	Donor
10.4 Computer to DAO's Office	ž	-	400	<b>4</b>	
10.5 Computer to local NGOs	ň	Ψ.	4000	4,000	Donor
10.6 Auger. Phymeter. Tensiometer	ric <b>n</b>	item	4000	4,000	Donor
	Sub-Total		:	56,350	· !
	Grand Total			116,000	

Apportionment to Nyagati / Ngamano for the cost of supplying the item to IDB HQS

# Funds Disbursement (USD)

rear	-	7	6	4	'n	9	7	Total
Disbursement 40600   29000   1	40600	28000	23200	11600	5800	5800	0	116000
Percentage	35%	25%	50%	10%	35% 25% 20% 10% 5% 5% 0%	%	%	100%

250 Donor 100 NGO 11,250 Donor 1,500 Donor 375 Donor

Donor

Donor Donor Donor Donor

MoA/Donor Donor Donor Donor

Funding Source

5913 5%

5 5913 5%

	٠,
ı	
	Q-16

# RUUNGU/KAROCHO

COST OF PROVIDING TRAINING AND INSTITUTIONAL CAPACITY BUILDING FOR MODEL AREAS

			<u>S</u>		***
		Number Cost	Sosi	Total Costi Funding	Funding
Cost Item	ž	of units	aso	asn	Source
Training Production /Marketing Gps.					
7.1 Accommodation (MoA/NGO staff)	man-day	r,	S	250	
7.2 Field Allowance (MoA/NGO staff)	man-day	2	8	100	MOA/NGO
7 3 Consultant	man-day	S	200	2,500	Danor
7 4 Training Materials	item	item	1000	1,000	Donor
7.5 Travel		1600	0.5	800	Donor
	Sub-Total			4,650	:
8 NGO Restructuring Support:					
8 1 Accommodation (for staff in field)	man-day	2	S	250	_
8.2 Field Allowance (for staff in field)	man-day	2	20	100	00 V
8 3 Consultant	man-day	22.5	200	11 250	
8 4 Training materials	iem	iem	1500	1,500	Donor
8.5 Travel	£	8	0.5	<b>4</b>	Donoc
	Sub-Total			13,500	
General Community Development:					1
9.1 Community Organizer	month	7	750	1,500	
9.2 Consultant Back-stopper	day	4	200	2,000	Donor
	Sub-Total			3,500	
10 Equipment & Facilities Support:					
10.1 4wd vehicle to IDB HOs *	chit	0.25	30000	7,500	_
10.2 Motor Cycle to DAO's Office	unit	က	5000	15,000	
10.3 Computer to IDB Has	unit	0.25	4000	1,000	Donor
10.4 Computer to DAO's Office	Ē	-	4000	_	
10 5 Computer to local NGOs	nuit	-	4000	4 000	Donor
10.6 Auger. Ph meter. Tensiometer	: Em	item	4000	4 000	Donor
	Sub-Total			56,400	
	Grand Tota			118,675	

\* Apportionment to Ruungu / Karocho for the cost of supplying the item to IDB HQS

# Funds Disbursement (USD)

				,				
Year	1	2	6	4	Ś	φ.	_	
Disbursement 41536 29563 23650 11825 5913 5913 0	41536	29563	23650	11825	5913	5913	٥	118675
Decreeland 35% 25% 20% 10% 5% 5% 10% 100%	35%	25%	20%	10%	2%	28	%	100%
2600								

# Table Q.2-15 Project Cost for Effective Water Management

### 1. Preparation of W/M manual

(Unit : per scheme)

			One bersen	onic)
	Unit	Unit cost	Quant.	Total cost
		(kshs)		(1,000kshs)
Consultunts	man-day	30,000	26	780
MOALD Staff	man-day	1,200	16	20
Transportation	km	40	1000	40
Report	set	100,000	1	100
Total				940

# 2. Training of WUA Members on water management This program will be implemented for two(2) years

### (1) Rupingazi Ngerwe Irrigation Project

	Unit	Unit cost (kshs)	Number of person/ear	Number of day	Quant.	Total cost (1,000kshs)
a)Development of training materials b)Stationary and	set	100	200	-	200	20
printing c) Allowance	set	300	200	_	200	60
Participant	man-day	1,200	200	5	1,000	1,200
MOALD Staff d)Transportation	man-day	1,200	7	5	35	42
Participant	man-day	600	200	+	200	120
MOALD Staff Total	car-day	1,500	2	. 5	10	15 1,460

### (2) Ngomano/Nyangati Water Furrow Project

	Unit	Unit cost (kshs)		Number of day	Quant.	Total cost (1,000kshs)
a)Development						
of training materials	set	100	120	- '	120	. 12
b)Stationary and						
printing	sct	300	120		120	36
c) Allowance				ļ		
Participant	man-day	1,200	120	5	600	720
MOALD Staff	man-day	1,200	4	5	20	24
d)Transportation	•		l	İ		
Participant	man-day	600	120	_	120	72
MOALD Staff	car-day	1,500	1	5	5	8
Total		<u></u>	1			870

# (3) Nkunjumo Water Project

	Unit	Unit cost (kshs)	Number of person/car	Number of day	Quant.	Total cost (1,000kshs)
a)Development						
of training materials	sei	100	140	<u> </u>	140	14
b)Stationary and			•			
printing	set	300	140		140	: 42
c) Allowance						
Participant	man-day	1,200	140	. 5	700	840
MOALD Staff	man-day	1,200	- 5	5	25	30
d)Transportation		[ •	Ţ			
Participant	man-day	600	140	- '	140	84
MOALD Staff	car-day	1,500	2	5	10	15
Total		1				1,020

# (4) Ruungu /Karocho Irrigation Project

	Unit	Unit cost (kshs)	Number of person/car	Number of day	Quant.	Total cost (1,000kshs)
a)Development						
of training materials	set	100	170	- '	170	17
b)Stationary and						
printing	set	300	170	<b></b>	170	51
c) Allowance	•		,			
Participant	man-day	1,200	170	5	850	1,020
MOALD Staff	man-day	1,200	6	5	30	36
d)Transportation					11.	
Participant	man-day	600	170	- '.	170	102
MOALD Staff	car-day	1,500	2	5	10	15
Total		<u> </u>				1,240

Table Q.2-16

Development
Post-harvest
Marketing and
ect Costs for
Proj

				Project Area	Area	
**************************************	Stakeholders	Place	Rupingazi Ngerwe	Rupingazi Ngerwe Ngaomao/ Nyangati	Nkunjumo	Rumgu/Karocho
Configuration			Irrigation Scheme	Imigation Scheme Water Furrow Project	Water Project	Imigation Project
- M - M						
1. Marketing Flan		at farm level	Referring to d) Instit	Referring to d) Institutional Plan of 1.3.1.	1) Agricultural Infrastructure Plan	structure Plan
1) Halling of Situationers in graning, bost marked	-	at farm to market	Referring to b) Rura	Referring to b) Rural Roads Plan of 1.3.1. 2) Rural Infrastructure Plan	<ol><li>Rural Infrastructu</li></ol>	re Plan
2) Improved access road network in inigator areas	farmer	at farm level	All costs shall be bo	All costs shall be borne by farmers' groups		
3) Strengthering the price contection and these marketing at IKIIAT	JKUAT staff	at JKUAT				
*) Selfutions to statements on the comment of the c	University lecturer	at JKUAT	80,000	80,000	80,000	80,000
b) Organisation of marketing group and its function/operation through		at IKIIAT	140.000	140.000	140,000	140,000
PCM method (5.0days)					`	
b) Market prices information analysis at each local market and core	Marketing officer of	at JKUAT	11,000	11,000	11,000	11,000
wholesale markets (0.5days)	Marketing expert of HCDA	at JKUAT	11,000	11,000	11,000	,
c) Contract renumbs technical accompany (5.5 cm) 5/	Marketing expert of FPEAK	at JKUAT	11,000	11,000	11,000	ı
g) Utading and Markes Evandation Louis Save (5.5 mg) of exporter of KARI	or exporter	at JKUAT	11,000		11,000	11,000
g) Selection and production of columns seems of the state	JKUAT staff	at markets and exporter's	22,000		22,000	22,000
( isono r) canno marvennis marvenis (one)		facility	10,000		14,000	20,000
Other transporting costs (1 round)			296,000	25	300,000	284,000
5) Coordination with HCDA Horticultural Produce Handling Facilities						
Project for export produce	VGO113	at Women's Ember & Merry	000 05	\$0.000	50.000	1
a) Holding seminars at major town (1.0day)	Markeing expert of news	at farm level	30,000		30,000	ı
b) Dispatch of marketing experts (1.0day × 2 persons × 3 times)	: OHD -		80,000		80,000	0
Total (1)			376,000	374,000	380,000	284,000
2 Poet-harvest and processing plan of horticultural produce						
1) Construction of antenna shop/storage	only for Ruungu farmers	at Mitungau	All costs shall be bo	All costs shall be borne by farmers' groups	1	1,500,000
2) Construction of grading shed and charcoal cooling store  Total (2)	C 73711167 Y	1000				1,500,000
3. Regional market improvement plan for transaction modes and information					1	Cennected
11) Market facility improvement plan	Meru Municial Council	at Gakoromone, Meru	1	,	286,600,000	<del> </del>
2) Auction coordinating plan	HCDA Marketing officer of Men	at Galcoromone, Menu	)	ļ	20,400,000	· · · ·
3) Market information sources improvement pilot plan	DAO and price enumerators	Meru	-	,	000,000	
Total (3)			0	0	307,500,000	

	14.5 15.	377 1	As of 1998 Aug.	(1/3)
tem	Unit	Unit Cost (Ksh)	Source/Remarks	
. Contract Basis Cost for Irriga	tion &	Rural Water	Supply	
1) Earth work		200		
- Excavation (soil), by labour	cu.m	200		
- do , by machine	cu.m	150		
- Excavation (rock)	cu.m	600 350		
- Backfilling (for structure)	cu.m	200		
- Earth canal	m	200		
2) Concrete & pipeline work				
- Reinforced concrete	cu.m	8,000	6,500 for material	
- Plain concrete	cu.m	6,500	5,500 for material	
- Concrete flume	m	500	Dimension: B=0.2m, H=0.3m	
- Drop structure	no.	5,000	H=0.5m, W=0.3m	
- Pipe culvert (L=10m)	no.	15,000	Concrete pipe $\phi$ 8" (200mm), include earth work and mortar,	
- do	no.	15,000	Concrete pipe $\phi$ 12" (300mm), include earth work and mortar	,
- do	no.		Concrete pipe $\phi$ 18" (450mm), include earth work and mortan	
- do	no.		Concrete pipe \$24" (600mm), include earth work and mortan	
- do	no.	25,000	Concrete pipe $\phi$ 36" (900mm), include earth work and mortan	,
<ul> <li>Spillway type bridge</li> </ul>	no.	286,000	Width: 4.0m, length: 4m+10m*2	
- Weir	no.	500,000	L= 10m, concrete	
- do	no.		L=5m, concrete H=0.5m on the rock, WD manual, 75,000*1.	
- do	no.		L=10m, concrete H=0.5m on the rock, WD manual, 100,000*	1.3,
- Gabion	no.		2m*1m*0.5m, boulders are included,	
- Storage tank (V=100cu.m)	no.		Design sample, concrete tank	
- do (V≂10cu.m)	no.	240,000	•	
- do (V=3cu.m)	no.	100,000		
- Communal stand	no.		) -do-	:
- Valve chamber	no.		) -do-	
- Division box, intake box	no.	30,000		
- Treatment works	l.s	-	-do-, filtration tank with pot chlorination	
- Labour cost			of material cost	
- do (only for skilled labour)	-		of material cost	
- Transport cost		37	of material cost	
3) Material			From annual tender 97-98, only for material	
- Concrete pipe ( \phi 200mm)	m	1,30		
- do (φ300mm)	m	1,40	· · · · · · · · · · · · · · · · · · ·	
- do (\$\phi 450mm)	m	1,60		
- do (φ600mm)	m	1,70		
- do (φ900mm)	m	2,30		
- PVC pipe		(class B		
		H=90r	n H=120m H=150m	
- do (φ12.5mm)	6m		100	
- do (φ25mm)	6m		210	
- do (φ38mm)	6 <b>m</b>		450 550	
- do (φ50mm)	6m	400		
- do (φ63mm)	6m		750 1,300	
- do (φ75mm)	6 <b>m</b>	900		
- do (φ100mm)	6 <b>m</b>	1,600		
- do (φ150mm)	6 <b>m</b>	3,000		
- do (φ200mm)	6 <b>m</b>	4,400		
- do (φ250mm)	6m	7,500	9,600 13,600	

10	n	١

[tem	1 1	Unit Cost	Source/Remarks
		(Ksh)	
- Steel pipe (φ 100mm)	6m	6,500	n
- GI pipe (φ 12.5mm)	6m		0 class A
- do $(\phi 25\text{mm})$	6m		0 class B
- do $(\phi 50 \text{mm})$	6m		0 class B
- do $(\phi 75 \text{mm})$	блі		0 class B
- do $(\phi 100 \text{mm})$	6m		0 class B
- do (φ150mm)	6m		0 class B
- do (φ 200mm)	6m		0 class B
- do (φ250mm)	6m	,	0 class B
- do (φ250mm)	6m		0 class A
- do $(\phi 450 \text{mm})$	6m		0 class A
- Gate valve (φ 12.5mm)	unit	250	
- do $(\phi 25 \text{mm})$	unit	350	
- do $(\phi 50 \text{mm})$	unit	500	
- do (φ 75mm)	unit	1,000	
- do (φ 100mm)	unit	2,000	
- Suluce valve (φ 150mm)	unit	2,400	
· · · · · · · · · · · · · · · · · · ·	unit	3,800	
	unit	4,500	
\ -		35,000	
- Water flow meter ( $\phi$ 50)	unit 1.s.		% of pipes
- Fittings			00 V=1.0 cu.m
<ul> <li>Galvanized storage tank</li> <li>do</li> </ul>	no.		00 V=3.0 cu.m
	no.		00 V=5.0 cu.m
- do	no.		00 V=5.0 cu.m
- Plastic storage tank	no.		00 2m*1m*0.5m
- Gabion box	ло.	80	
- Murram (gravel)	ton	1,00	
- Sand	ton	1,80	
- Fine aggregate	ton	77	
- RSB (16mm)	ton	45	
- RSB (12mm)	ton		45 · 225*100*450
- Concrete block	nos		55 225*150*450
- do	nos	55	
- Cement (50kg bag)	bag		
4) Equipment		* *	
- Support vehicle, 4*2	unit	1,400,00	00
- Motor cycle, 125cc	unit	300,00	
- Pick-up	unit	1,400,00	
1 Av. 4P		., ,	
5) Manpower (contract basis)			
- Manager	monti	60,000	00
- Senior engineer/officer	month		
- Engineer/officer	monti		
- Clark/casual	montl		
- Unskilled labour	day	150-20	
2. Roads			For Contract works with labour intensive method,
1) General			,
- Gravel pavement	cu.m		00
- Concrete pavement	cu.m	8,00	
- Asphalt pavement	sq.m		00 25 mm bitumimen
- Road grading	sq.m		25
- Embankment (for road, etc)	cu.m		000
- Road side drain (earth)	m		40
<ul> <li>Road side drain (block)</li> </ul>	m.	10	Cont

12	n	١
O	IJ	i

				(313)
Item	Unit		Unit Cost	Source/Remarks
			(Ksh)	
<b>4</b> ) <b>4 1</b>				SIDA Roads 2000
2) Access roads	1		1.070.000	
- Spot improvement	km		1,060,000	
- Partial rehabilitation	km	•	131,000	Restoration to maintenable conditions by labour or graders
- Tarmac surface pavement			1 060 000	
* Improvement			1,060,000	
* Asphalt pavement		_	2,000,000	
* Total	km	*	3,000,000	Apply to steep sections of roads,
3) Village/farm roads				SIDA Roads 2000
- Spot improvement	km	*	570,000	1,060,000*3.5/6.5=570,000
- Partial rehabilitation	km	*	70,000	131,000*3.5/6.5=70,000
3. O&M Cost (annual)				
1) Roads			20.000	D 1 2000 14 11 CIDA E . MD 1000
- Routine maintenance	km	•	20,000	Roads 2000 assisted by SIDA, For M/P and F/S
			10.000	By lengthman method including grading, For access roads only,
- do	km	*	,	For village/farm roads, and for M/P and F/S
2) Rural water supply facilities			1.0 - 2.0 %	
3) Irrigation facilities		*	1.0 - 2.0 %	•
4. Associate Cost and Others				
* Pre-engineering cost			3% - 7%	•
* Administration cost			3% - <b>7</b> %	
* Consulting services			3% - 10%	~
* Physical contingency			5% - 10%	
* Land acquisition	acro	•	200,000	For farm land
	ha		500,000	-do-
* Profit & Overhead			30%-50%	6 For contract works inclusive temporary works
				50% is maximum with temporary works in river
* Exchange rate			1.0 US\$ =	60 Ksh = 135 J Yen

# ANNEX R

PROJECT IMPLEMENTATION AND O&M

# **List of Tables and Figures**

# R.1 Master Plan

- Figure R.1-1 Proposed Organization for Project Implementation
- Figure R.1-2 Proposed Organization for Operation and Maintenance of Facilities

# R.2 Feasibility Study

Table R.2-1	Implementation Process of Facility Construction for Rupingazi Ngerwe Irrigation Scheme
Table R.2-2	Implementation Process of Facility Construction for Ngomano/Nyangati Water Furrow Project
Table R.2-3	Implementation Process of Facility Construction for Nkunjumo Water Project
Table R.2-4	Implementation Process of Facility Construction for Ruungu/Karocho Irrigation Project
Table R.2-5	Annual Operation and Maintenance Cost for facilities by Sector and by Agency
Figure R.2-1	Implementation Flow for Self-help Project (Rupingazi Ngerwe Irrigation Scheme)
Figure R.2-2	Implementation Flow for Government Public Project (Rupingazi Ngerwe Irrigation Scheme)
Figure R.2-3	Implementation Flow for Self-help Project (Ngomano/Nyangati Water Furrow Project)
Figure R.2-4	Implementation Flow for Government Public Project (Ngomano/Nyangati Water Furrow Project)
Figure R.2-5	Implementation Flow for Self-help Project (Nkunjumo Water Project)
Figure R.2-6	Implementation Flow for Government Public Project (Nkunjumo Water Project)
Figure R.2-7	Implementation Flow for Self-help Project (Ruungu/Karocho Irrigation Project)
Figure R.2-8	Implementation Flow for Government Public Project (Ruungu/Karocho Irrigation Project)
Figure R.2-9	Proposed Organization Chart for Operation and Maintenance for Rupingazi Ngerwe Irrigation Scheme
Figure R.2-10	Proposed Organization Chart for Operation and Maintenance for Ngomano/Nyangati Water Furrow Project
Figure R.2-11	Proposed Organization Chart for Operation and Maintenance for Nkunjumo Water Project
Figure R.2-12	Proposed Organization Chart for Operation and Maintenance for Ruungu/Karocho Irrigation Project
Figure R.2-13	Proposed Organization Chart of WUA for Model Areas

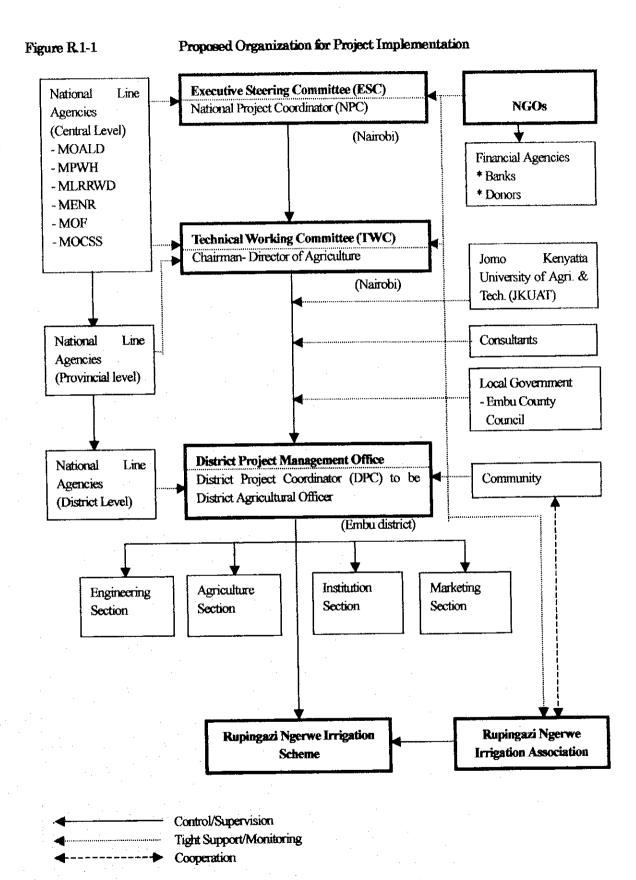
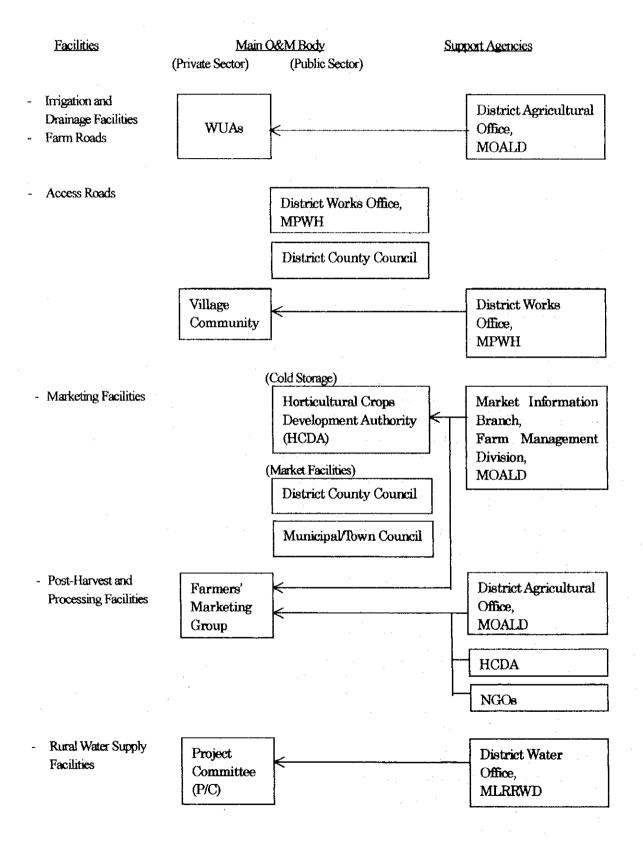


Figure R.1-2 Proposed Organization for Operation and Maintenance of Facilities



# Table R.2-1 Implementation Process of Facility Construction for Rupingazi Ngerwe Irrigation Scheme

(1/3)

# a) Self-Help Projects

- (1) Beneficiaries self-help group shall form WUA, and register to Ministry of Culture and Social Services (MOCSS), then open bank account of WUA to build a fund for project.

  (Rupingazi Ngerwe Irrigation Association has been formed, registered and functioned.)
- (2) WUA shall apply for water permit to the district water engineer of MLRRWD, and obtain authorization to commence construction work after investigation and examination of water availability conducted by MLRRWD. (Water permit has not officially obtained yet.)
- (3) It is a basic condition to proceed to the project implementation that either water permit or authorization to commence the work is obtained from MLRRWD.
- (4) NGOs will be selected and a contract is made between WUA and NGOs under witness of ESC. The role of NGOs will include the followings:
  - Survey, detailed design and costing
  - Procurement of funds with cooperation of ESC
  - Tendering for the selection of contractors
  - Construction supervision
  - Training of WUA members on water management, management of association, etc.
  - Monitoring of the projects at O/M stage, which may need a few years
  - Workshop meetings shall be held with WUA at stage by stage as physical work progresses.
- (5) For procurement of funds, since WUA has no access to financial agencies such as commercial banks, government banks, international development banks, foreign donor countries, financing NGOs, etc., strong support is required by ESC and NGOs. Possible fund resources will be the followings:
  - WUA members contribution
  - Loan from bank in Kenya such as Co-operative Bank of Kenya (CBK), Development Bank of Kenya (DBK) and Agricultural Finance Corporation (AFC)
  - Loan from international development bank such as World Bank (WB), African Development Bank (ADB)
  - Loan from donor countries
  - Grant from donor countries
  - Financing NGOs
- (6) After selection of NGOs, NGOs shall conduct workshop seminar as a part of preparation work to finalize basic improvement plan based on the result of F/S.

- (7) Then, after basic plan is confirmed with WUA, NGOs will start field survey, and conduct detailed design and costing. Field survey as an important step of the project implementation will include workshop seminar among WUA members and physical survey for intake site topomap, canal/pipeline longitudinal profiles, project area topo-map, etc. whatsoever necessary for design of new/improvement facilities.
  (Topo-maps and longitudinal canal profile have been made by JICA Study Team)
- (8) MOALD will conduct appraisal survey after NGOs design is made, and prepare an appraisal report to submit to ESC and WUA.
- (9) Workshop meeting will be held with WUA members at the time when design report, costing, MOALD appraisal report and financial arrangement are made. This is one of the most important workshop meeting in the project. All conditions on system design and functions, project cost and loan arrangement shall be presented for discussion and examination, then final decision be made by WUA members who have to bear all project cost and system functions.
- (10) After approved all conditions stated above, a loan agreement will be made between WUA and funding agencies under witness of ESC.
- (11) Tender for construction work is also held to select local contractors who is capable to execute the works through labour-based method.
- (12) A contract for construction work is signed between WUA, NGOs and Contractor(s) under witness of ESC. Then the construction work is commenced.
- (13) NGOs, WUA and Contractor(s) shall keep good relationship during the construction. NGOs conduct overall construction supervision. WUA supplies unskilled labour for breaking of hard rocks, canal excavation and trimming, bush clearing, etc. if necessary. Contractor(s) provide skilled labour and necessary construction materials and equipment, and carry out concrete work, masonry work, pipe work, etc.
- (14) NGOs shall also conduct training of WUA members in relation to community development and support services during the construction period on the followings:
  - Water management including water distribution and on-farm water application.
  - Farming techniques including cropping calendar, crop and seed selection, fertilizer application.
  - Operation and maintenance of facilities such as intake operation, canal maintenance and structure maintenance.
  - Management of WUA which includes collection of maintenance fee, project committee management, members meeting management, irrigation rules and regulations.

However, assistance from ESC, MOALD and other related agencies would be required particularly on technical matters such as agricultural farming techniques, water management and so on.

- (15) When construction is completed the test operation will be carried out by Contractor(s), checked by NGOs and witnessed by WUA. After successful test operation, all facilities shall be handed over to WUA and operation of improved irrigation system is commenced.
- (16) NGOs shall undertake monitoring work particularly on irrigation system operation and structure maintenance, which probably needs for two to three years.

# b) Government Public Projects

- (1) ESC shall make an effort to secure the funds for road improvement works. Financial arrangement may be done with MOF.
- (2) After the budget is obtained, consultants to render the services will be selected and a contract is made between ESC and Consultants. The role of Consultants will include the followings:
  - Survey, detailed design and costing
  - Tendering for the selection of contractors
  - ~ Construction supervision
- (3) Consultants will start field survey to identify road sections to be improved, and conduct detailed design and costing.
- (4) Tender for roads improvement is held to select local contractors who have capabilities to execute the works through recommended construction method as stated below:
  - For access roads improvement, equipment-based big contractor will be selected.
  - For village/farm roads, labour-based small contractor will be selected.
  - For both of them, labour intensive method will be used.
- (5) After selection of contractors, contracts for road works will be signed between MPWH and Contractor(s) for access roads and between County Council and Contractor(s) for village/farm roads. Both of them are witnessed by ESC.
- (6) Consultants conduct overall supervision during the road improvement works.
- (7) When the works are completed, improved access roads are handed over to MPWH and village/farm roads are to County Council. However, village/farm roads will be then handed over to communities for actual maintenance operation under community contract which will be arranged during workshop seminars held by NGOs.
- (8) Then operation and maintenance of roads is commenced by MPWH and village communities for their respective roads.

# Table R.2-2 Implementation Process of Facility Construction for Ngomano/Nyangati Water Furrow Project

(1/3)

# a) Self-Help Projects

- (1) Beneficiaries self-help group shall form WUA, and register to Ministry of Culture and Social Services (MOCSS), then open bank account of WUA to build a fund for project.

  (Ngomano/Nyangati Water Furrow Association has been formed, registered and functioned.)
- (2) WUA shall apply for water permit to the district water engineer of MLRRWD, and obtain authorization to commence construction work after investigation and examination of water availability conducted by MLRRWD. (Obtaining of water permit is under process.)
- (3) It is a basic condition to proceed to the project implementation that either water permit or authorization to commence the work is obtained from MLRRWD.
- (4) NGOs will be selected and a contract is made between WUA and NGOs under witness of ESC. The role of NGOs will include the followings:
  - Survey, detailed design and costing
  - Procurement of funds with cooperation of ESC
  - Tendering for the selection of contractors
  - Construction supervision
  - Training of WUA members on water management, management of association, etc.
  - Monitoring of the projects at O/M stage, which may need a few years
  - Workshop meetings shall be held with WUA at stage by stage as physical work progresses.
- (5) For procurement of funds, since WUA has no access to financial agencies such as commercial banks, government banks, international development banks, foreign donor countries, financing NGOs, etc., strong support is required by ESC and NGOs. Possible fund resources will be the followings:
  - WUA members contribution
  - Loan from bank in Kenya such as Co-operative Bank of Kenya (CBK), Development Bank of Kenya (DBK) and Agricultural Finance Corporation (AFC)
  - Loan from international development bank such as World Bank (WB), African Development Bank (ADB)
  - Loan from donor countries
  - Grant from donor countries
  - Financing NGOs
- (6) After selection of NGOs, NGOs shall conduct workshop seminar as a part of preparation work to finalize basic improvement plan based on the result of F/S.

- (7) Then, after basic plan is confirmed with WUA, NGOs will start field survey, and conduct detailed design and costing. Field survey as an important step of the project implementation will include workshop seminar among WUA members and physical survey for intake site topomap, canal/pipeline longitudinal profiles, project area topo-map, etc. whatsoever necessary for design of new/improvement facilities.
  (Topo-maps and longitudinal canal profile have been made by JICA Study Team)
- (8) MOALD will conduct appraisal survey after NGOs design is made, and prepare an appraisal report to submit to ESC and WUA.
- (9) Workshop meeting will be held with WUA members at the time when design report, costing, MOALD appraisal report and financial arrangement are made. This is one of the most important workshop meeting in the project. All conditions on system design and functions, project cost and loan arrangement shall be presented for discussion and examination, then final decision be made by WUA members who have to bear all project cost and system functions.
- (10) After approved all conditions stated above, a loan agreement will be made between WUA and funding agencies under witness of ESC.
- (11) Tender for construction work is also held to select local contractors who is capable to execute the works through labour-based method.
- (12) A contract for construction work is signed between WUA, NGOs and Contractor(s) under witness of ESC. Then the construction work is commenced.
- (13) NGOs, WUA and Contractor(s) shall keep good relationship during the construction. NGOs conduct overall construction supervision. WUA supplies unskilled labour for breaking of hard rocks, canal excavation and trimming, bush clearing, etc. if necessary. Contractor(s) provide skilled labour and necessary construction materials and equipment, and carry out concrete work, masonry work, pipe work, etc.
- (14) NGOs shall also conduct training of WUA members in relation to community development and support services during the construction period on the followings:
  - Water management including water distribution and on-farm water application.
  - Farming techniques including cropping calendar, crop and seed selection, fertilizer application.
  - Operation and maintenance of facilities such as intake operation, canal maintenance and structure maintenance.
  - Management of WUA which includes collection of maintenance fee, project committee management, members meeting management, irrigation rules and regulations.

However, assistance from ESC, MOALD and other related agencies would be required particularly on technical matters such as agricultural farming techniques, water management and so on.

- (15) When construction is completed the test operation will be carried out by Contractor(s), checked by NGOs and witnessed by WUA. After successful test operation, all facilities shall be handed over to WUA and operation of improved irrigation system is commenced.
- (16) NGOs shall undertake monitoring work particularly on irrigation system operation and structure maintenance, which probably needs for two to three years.

### b) Government Public Projects

- (1) ESC shall make an effort to secure the funds for road improvement works. Financial arrangement may be done with MOF.
- (2) After the budget is obtained, consultants to render the services will be selected and a contract is made between ESC and Consultants. The role of Consultants will include the followings:
  - Survey, detailed design and costing
  - Tendering for the selection of contractors
  - Construction supervision
- (3) Consultants will start field survey to identify road sections to be improved, and conduct detailed design and costing.
- (4) Tender for roads improvement is held to select local contractors who have capabilities to execute the works through recommended construction method as stated below.
  - For village/farm roads, labour-based small contractor will be selected.
  - For village/farm roads, labour intensive method will be used.
- (5) After selection of contractors, contracts for road works will be signed between County Council and Contractor(s) for village/farm roads and witnessed by ESC.
- (6) Consultants conduct overall supervision during the road improvement works.
- (7) When the works are completed, improved village/farm roads are handed over to County Council. However, village/farm roads will be then handed over to communities for actual maintenance operation under community contract which will be arranged during workshop seminars held by NGOs.
- (8) Then operation and maintenance of roads is commenced by village communities.

# Table R.2-3 Implementation Process of Facility Construction for Nkunjumo Water Project

(1/3)

### a) Self-Help Projects

- Beneficiaries self-help group shall form WUA, and register to Ministry of Culture and Social Services (MOCSS), then open bank account of WUA to build a fund for project. (Nkunjumo Water Association has been formed, registered and functioned.)
- (2) WUA shall apply for water permit to the district water engineer of MLRRWD, and obtain authorization to commence construction work after investigation and examination of water availability conducted by MLRRWD.
  (Water permit and authorization has been officially obtained from MLRRWD.)
- (3) It is a basic condition to proceed to the project implementation that either water permit or authorization to commence the work is obtained from MLRRWD.
- (4) NGOs will be selected and a contract is made between WUA and NGOs under witness of ESC. The role of NGOs will include the followings:
  - Survey, detailed design and costing
  - Procurement of funds with cooperation of ESC
  - Tendering for the selection of contractors
  - Construction supervision
  - Training of WUA members on water management, management of association, etc.
  - Monitoring of the projects at O/M stage, which may need a few years
  - Workshop meetings shall be held with WUA at stage by stage as physical work progresses.
- (5) For procurement of funds, since WUA has no access to financial agencies such as commercial banks, government banks, international development banks, foreign donor countries, financing NGOs, etc., strong support is required by ESC and NGOs. Possible fund resources will be the followings:
  - WUA members contribution
  - Loan from bank in Kenya such as Co-operative Bank of Kenya (CBK), Development Bank of Kenya (DBK) and Agricultural Finance Corporation (AFC)
  - Loan from international development bank such as World Bank (WB), African Development Bank (ADB)
  - Loan from donor countries
  - Grant from donor countries
  - Financing NGOs
- (6) After selection of NGOs, NGOs shall conduct workshop seminar as a part of preparation work to finalize basic improvement plan based on the result of F/S.

- (7) Then, after basic plan is confirmed with WUA, NGOs will start field survey, and conduct detailed design and costing. Field survey as an important step of the project implementation will include workshop seminar among WUA members and physical survey for intake site topomap, canal/pipeline longitudinal profiles, project area topo-map, etc. whatsoever necessary for design of new/improvement facilities.
  (Topo-maps and longitudinal pipeline profile have been made by JICA Study Team)
- (8) MOALD will conduct appraisal survey after NGOs design is made, and prepare an appraisal report to submit to ESC and WUA.
- (9) Workshop meeting will be held with WUA members at the time when design report, costing, MOALD appraisal report and financial arrangement are made. This is one of the most important workshop meeting in the project. All conditions on system design and functions, project cost and loan arrangement shall be presented for discussion and examination, then final decision be made by WUA members who have to bear all project cost and system functions.
- (10) After approved all conditions stated above, a loan agreement will be made between WUA and funding agencies under witness of ESC.
- (11) Tender for construction work is also held to select local contractors who is capable to execute the works through labour-based method.
- (12) A contract for construction work is signed between WUA, NGOs and Contractor(s) under witness of ESC. Then the construction work is commenced.
- (13) NGOs, WUA and Contractor(s) shall keep good relationship during the construction. NGOs conduct overall construction supervision. WUA supplies unskilled labour for breaking of hard rocks, canal excavation and trimming, bush clearing, etc. if necessary. Contractor(s) provide skilled labour and necessary construction materials and equipment, and carry out concrete work, masonry work, pipe work, etc.
- (14) NGOs shall also conduct training of WUA members in relation to community development and support services during the construction period on the followings:
  - Water management including water distribution and on-farm water application.
  - Farming techniques including cropping calendar, crop and seed selection, fertilizer application.
  - Operation and maintenance of facilities such as intake operation, pipeline maintenance and structure maintenance.
  - Management of WUA which includes collection of maintenance fee, project committee management, members meeting management, irrigation rules and regulations.

However, assistance from ESC, MOALD and other related agencies would be required particularly on technical matters such as agricultural farming techniques, water management and so on.

- (15) When construction is completed the test operation will be carried out by Contractor(s), checked by NGOs and witnessed by WUA. After successful test operation, all facilities shall be handed over to WUA and operation of improved irrigation system is commenced.
- (16) NGOs shall undertake monitoring work particularly on pipeline system operation and structure maintenance, which probably needs for two to three years.

#### b) Government Public Projects

- (1) ESC shall make an effort to secure the funds for road improvement works. Financial arrangement may be done with MOF.
- (2) After the budget is obtained, consultants to render the services will be selected and a contract is made between ESC and Consultants. The role of Consultants will include the followings:
  - Survey, detailed design and costing
  - Tendering for the selection of contractors
  - Construction supervision
- (3) Consultants will start field survey to identify road sections to be improved, and conduct detailed design and costing.
- (4) Tender for roads improvement is held to select local contractors who have capabilities to execute the works through recommended construction method as stated below:
  - For village/farm roads, labour-based small contractor will be selected.
  - For village roads, labour intensive method will be used.
- (5) After selection of contractors, contracts for road works will be signed between County Council and Contractor(s) and witnessed by ESC.
- (6) Consultants conduct overall supervision during the road improvement works.
- (7) When the works are completed, improved village/farm roads are handed over to County Council. However, village/farm roads will be then handed over to communities for actual maintenance operation under community contract which will be arranged during workshop seminars held by NGOs.
- (8) Then operation and maintenance of roads is commenced by village communities.

# Table R.2-4 Implementation Process of Facility Construction for Ruungu/Karoch Irrigation Project

(1/3)

#### a) Self-Help Projects

- Beneficiaries self-help group shall form WUA, and register to Ministry of Culture and Social Services (MOCSS), then open bank account of WUA to build a fund for project.
   (Ruungu/Karoch Irrigation Association has been formed, registered and functioned.)
- (2) WUA shall apply for water permit to the district water engineer of MLRRWD, and obtain authorization to commence construction work after investigation and examination of water availability conducted by MLRRWD.
  (Water permit has been obtained from MLRRWD.)
- (3) It is a basic condition to proceed to the project implementation that either water permit or authorization to commence the work is obtained from MLRRWD.
- (4) NGOs will be selected and a contract is made between WUA and NGOs under witness of ESC. The role of NGOs will include the followings: (SISDO has undertaken survey and detailed design and the implementation is on-going. However, damaged intake weir will need reconsideration on design)
  - Survey, detailed design and costing
  - Procurement of funds with cooperation of ESC
  - Tendering for the selection of contractors
  - Construction supervision
  - Training of WUA members on water management, management of association, etc.
  - Monitoring of the projects at O/M stage, which may need a few years
  - Workshop meetings shall be held with WUA at stage by stage as physical work progresses.
- (5) For procurement of funds, since WUA has no access to financial agencies such as commercial banks, government banks, international development banks, foreign donor countries, financing NGOs, etc., strong support is required by ESC and NGOs. Possible fund resources will be the followings: (Funds for on-going construction works were obtained from CKB, however it will be transferred to DKB)
  - WUA members contribution
  - Loan from bank in Kenya such as Co-operative Bank of Kenya (CBK), Development Bank of Kenya (DBK) and Agricultural Finance Corporation (AFC)
  - Loan from international development bank such as World Bank (WB), African Development Bank (ADB)
  - Loan from donor countries
  - Grant from donor countries
  - Financing NGOs

(Cont.)

- (6) After selection of NGOs, NGOs shall conduct workshop seminar as a part of preparation work to finalize basic improvement plan based on the result of F/S.
- (7) Then, after basic plan is confirmed with WUA, NGOs will start field survey, and conduct detailed design and costing. Field survey as an important step of the project implementation will include workshop seminar among WUA members and physical survey for intake site topomap, canal/pipeline longitudinal profiles, project area topo-map, etc. whatsoever necessary for design of new/improvement facilities.
  (Topo-maps and longitudinal canal profile have been made by JICA Study Team)
- (8) MOALD will conduct appraisal survey after NGOs design is made, and prepare an appraisal report to submit to ESC and WUA. (An appraisal report was prepared by IDB, MOALD in September 1996)
- (9) Workshop meeting will be held with WUA members at the time when design report, costing, MOALD appraisal report and financial arrangement are made. This is one of the most important workshop meeting in the project. All conditions on system design and functions, project cost and loan arrangement shall be presented for discussion and examination, then final decision be made by WUA members who have to bear all project cost and system functions.
- (10) After approved all conditions stated above, a loan agreement will be made between WUA and funding agencies under witness of ESC.
  (A loan agreement was made between WUA and CBK, however another loan arrangement will be required with DBK)
- (11) Tender for construction work is also held to select local contractors who is capable to execute the works through labour-based method.
- (12) A contract for construction work is signed between WUA, NGOs and Contractor(s) under witness of ESC. Then the construction work is commenced.
- (13) NGOs, WUA and Contractor(s) shall keep good relationship during the construction. NGOs conduct overall construction supervision. WUA supplies unskilled labour for breaking of hard rocks, canal excavation and trimming, bush clearing, etc. if necessary. Contractor(s) provide skilled labour and necessary construction materials and equipment, and carry out concrete work, masonry work, pipe work, etc.
- (14) NGOs shall also conduct training of WUA members in relation to community development and support services during the construction period on the followings:
  - Water management including water distribution and on-farm water application.
  - Farming techniques including cropping calendar, crop and seed selection, fertilizer application
  - Operation and maintenance of facilities such as intake operation, canal maintenance and structure maintenance.
  - Management of WUA which includes collection of maintenance fee, project committee management, members meeting management, irrigation rules and regulations.

(Cont.)

However, assistance from ESC, MOALD and other related agencies would be required particularly on technical matters such as agricultural farming techniques, water management and so on.

- (15) When construction is completed the test operation will be carried out by Contractor(s), checked by NGOs and witnessed by WUA. After successful test operation, all facilities shall be handed over to WUA and operation of improved irrigation system is commenced.
- (16) NGOs shall undertake monitoring work particularly on irrigation system operation and structure maintenance, which probably needs for two to three years.

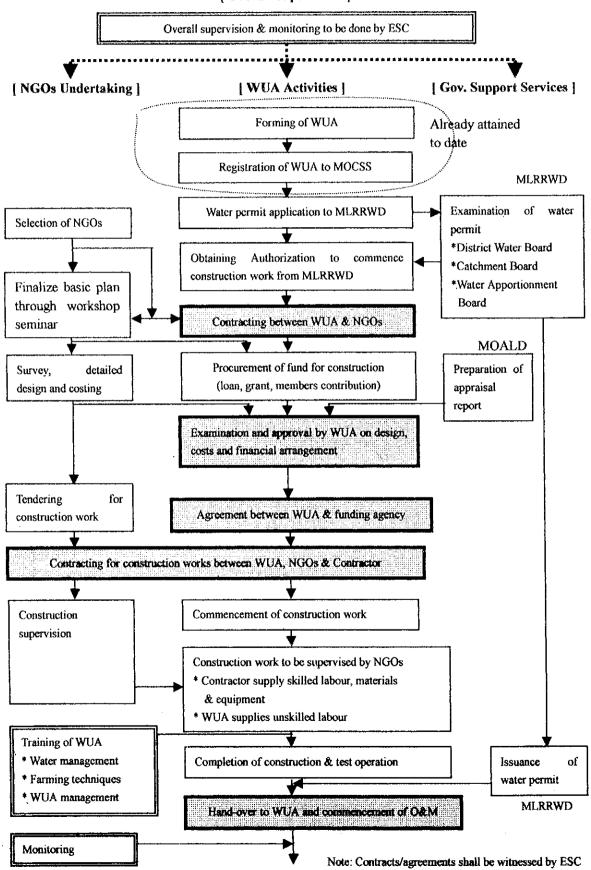
#### b) Government Public Projects

- (1) ESC shall make an effort to secure the funds for road improvement works. Financial arrangement may be done with MOF.
- (2) After the budget is obtained, consultants to render the services will be selected and a contract is made between ESC and Consultants. The role of Consultants will include the followings:
  - Survey, detailed design and costing
  - Tendering for the selection of contractors
  - Construction supervision
- (3) Consultants will start field survey to identify road sections to be improved, and conduct detailed design and costing.
- (4) Tender for roads improvement is held to select local contractors who have capabilities to execute the works through recommended construction method as stated below:
  - For access roads improvement, equipment-based big contractor will be selected.
  - For village/farm roads, labour-based small contractor will be selected.
  - For both of them, labour intensive method will be used.
- (5) After selection of contractors, contracts for road works will be signed between MPWH and Contractor(s) for classified access roads, and between County Council and Contractor(s) for unclassified access roads and village/farm roads. Both of them are witnessed by ESC.
- (6) Consultants conduct overall supervision during the road improvement works.
- (7) When the works are completed, improved classified access roads are handed over to MPWH, and unclassified access roads and village/farm roads are to County Council. However, village/farm roads will be then handed over to communities for actual maintenance operation under community contract which will be arranged during workshop seminars held by NGOs.
- (8) Then operation and maintenance of roads is commenced by MPWH, County Council and village communities for their respective roads.

Table R.2-5 Annual Operation and Maintenance Cost for Facilities by Sector and by Agency

				÷					(Unit: Ksh/year)
			-		Private Sector	Government Public Sector	ic Sector	7,1	Q
Item	O,th	Unit	Unit Cost	Total Amount	WUA	МРМН	Tharaka CC	IMENI MC	Ivalians
1. Rupingazi Ngerwe Irrigation Scheme 1) Irrigation & Drainage Facilities	1.0		l.s.	74,000	00 74,000		•		- 2.0% of construction cost
2) Marketing Facilities 3) Access Roads 4) Village/Farm Roads 5) Romeric Water Sunniv Facilities	10.40 km 5.70 km	e e	20,000 10,000	208,000 57,000 0	00	208,000			Routine maintenance Routine maintenance
Total	_	.		339,000	00 131,000	0 208,000			
2. Ngomano/Nyangati Water Furrow Project 1) Irrigation & Drainage Facilities 2) Merberno Facilities	roject			71,000	00 71,000	0.			- 2.0% of construction cost
2) Access Roads 4) Village/Farm Roads 5) Domestic Water Supply Facilities	15.70 km	Ē	10,000	0 157,000 0	0 00 157,000 0				- Routine maintenance
Total				228,000	00 228,000	0			
<ol> <li>Nkunjumo Water Project</li> <li>Irrigation &amp; Drainage Facilities</li> <li>Marketing Facilities</li> </ol>	1.0		1.s. 1.s.	109,000 2,866,00 <u>0</u>	00 109,000 00 000	0 1		2,866,000	- 2.0% of construction cost
<ul><li>3) Access Roads</li><li>4) Village/Farm Roads</li><li>5) Domestic Water Supply Facilities</li></ul>	6.20	6.20 km	10,000	0 62,000 0	0 00 62,000 0				Routine maintenance
Total		i		3,037,000	00 171,000	0	1	2,866,000	000
4. Ruungu/Karocho Irrigation Project 1) Irrigation & Drainage Facilities 2) Marketing Facilities 3) Access Roads 4) Village/Farm Roads 5) Downestic Water Sumby Facilities	1.0 1.0 49.70 km 7.50 km		1.s. 20,000 10,000	62,300 30,000 994,000 75,000 0	00 62,300 00 30,000 00 75,000	0 0 0 874,000	120,000		- From SISDO D/D report - 2.0% of construction cost - Routine maintenance - Routine maintenance -
Total	_			1,161,300	167,300	0 874,000	120,000		

Figure R.2-1 Implementation Flow for Self-help Project
(Rupingazi Ngerwe Irrigation Scheme)
[ Overall Supervision ]



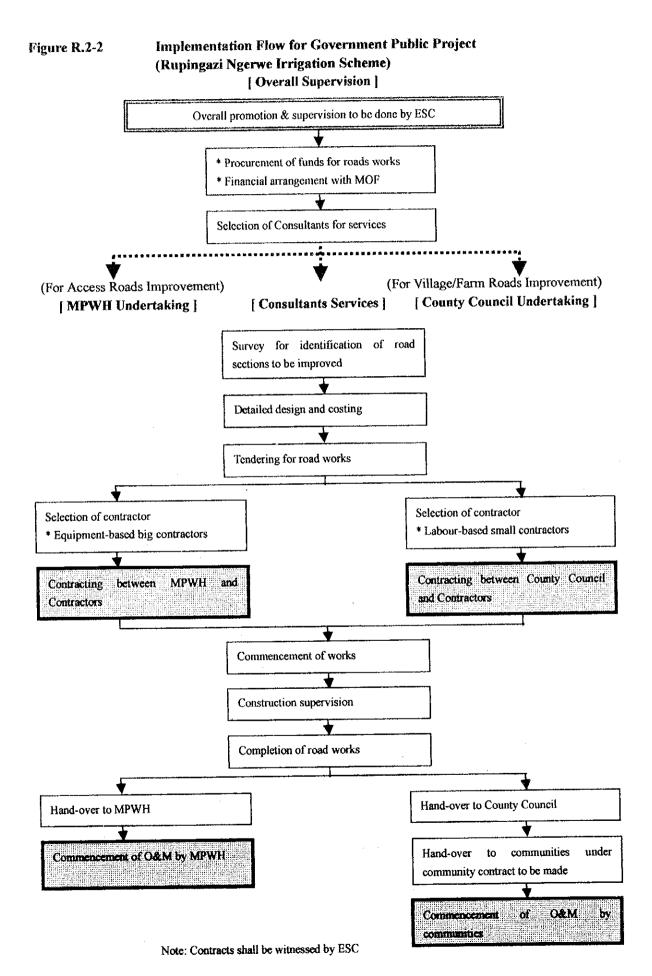


Figure R.2-3 Implementation Flow for Self-help Project
(Ngomano/Nyangati Water Furrow Project)
[Overall Supervision]

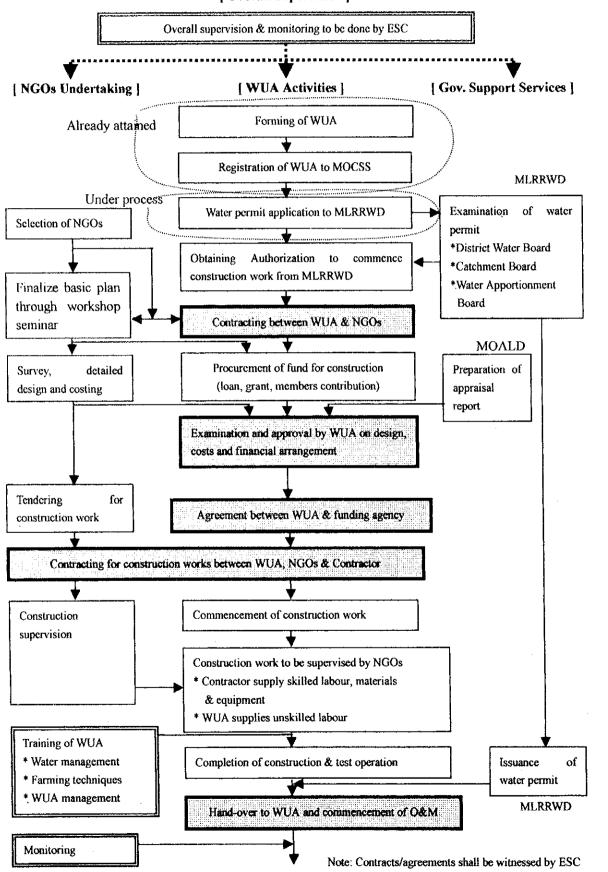


Figure R.2-4 Implementation Flow for Government Public Project
(Ngomano/Nyangati Water Furrow Project)

[ Overall Supervision ]

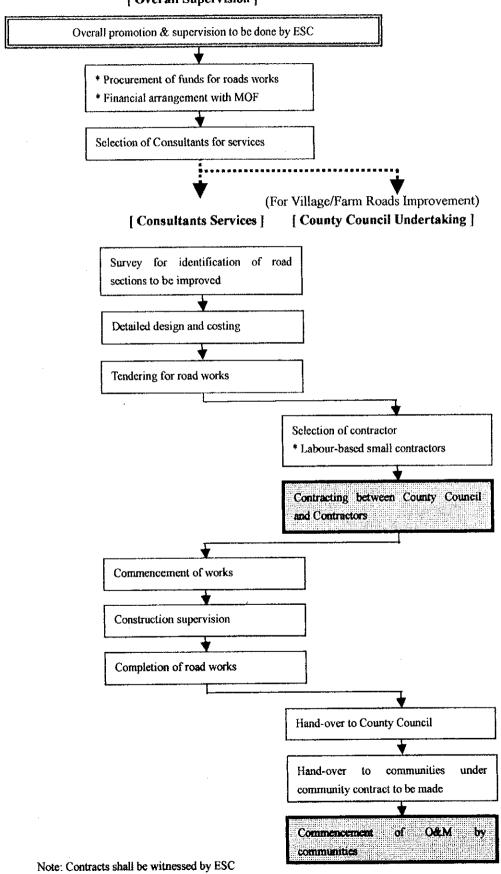
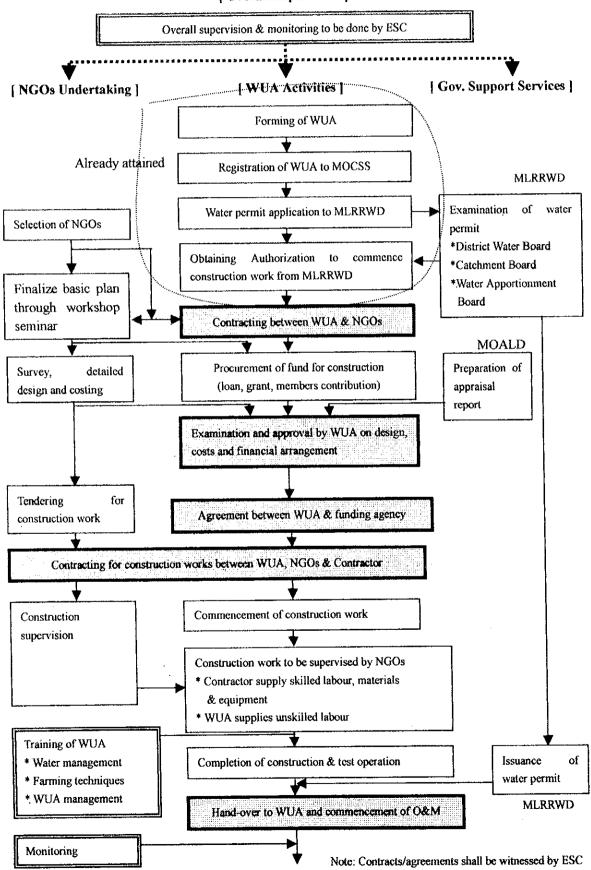
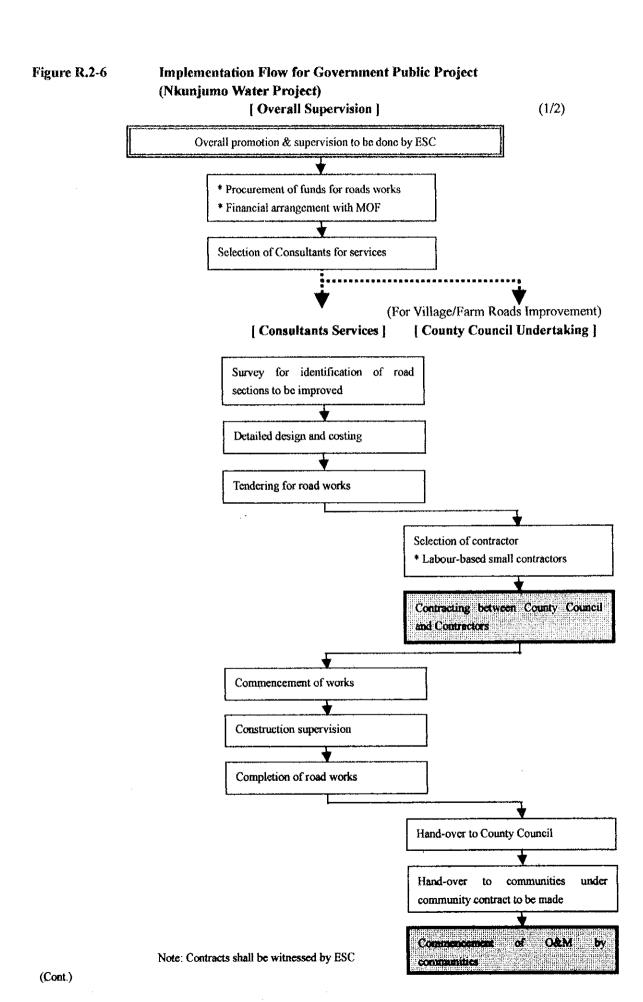


Figure R.2-5 Implementation Flow for Self-help Project
(Nkunjumo Water Project)

[ Overall Supervision ]

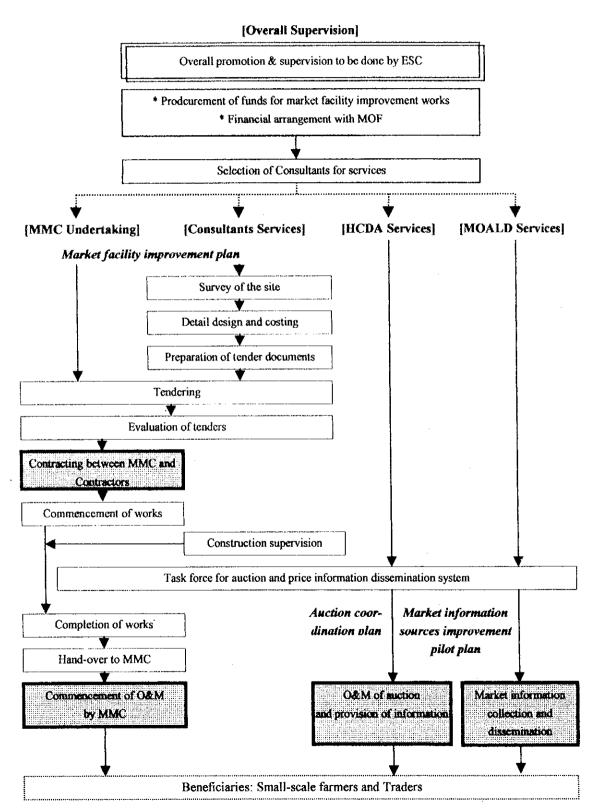




## (For Marketing Improvement for Kunjumo Water Project)

Regional Market Improvement Plan for Transaction Modes and Information Flows of Horticultural

Produce at Gakoromone Wholesale Market



Note: Contracts shall be witnessed by ESC.

Implementation Flow for Self-help Project Figure R.2-7 (Ruungu/Karocho Irrigation Project) [ Overall Supervision ] Overall supervision & monitoring to be done by ESC [ Gov. Support Services ] [ NGOs Undertaking ] [ WUA Activities ] Forming of WUA Alfeady attained Registration of WUA to MOCSS MLRRWD Water permit application to MLRRWD Examination of water Selection of NGOs permit \*District Water Board Obtaining Authorization to commence \*Catchment Board construction work from MLRRWD \*Water Apportionment Finalize basic plan Board through workshop Contracting between WUA & NGOs seminar **MOALD** Procurement of fund for construction Preparation of Śurvey, detailed (loan, grant, members contribution) appraisal design and costing report Examination and approval by WUA on design, costs and financial arrangement Tendering for Agreement between WUA & funding agency construction work Contracting for construction works between WUA, NGOs & Contractor Construction of Commencement of construction work Construction irrigation facilities supervision is on-going Construction work to be supervised by NGOs \* Contractor supply skilled labour, materials & equipment \* WUA supplies unskilled labour Training of WUA of Issuance \* Water management Completion of construction & test operation water permit \* Farming techniques \* WUA management MLRRWD Hand-over to WUA and commencement of O&M

Note: Contracts/agreements shall be witnessed by ESC

Monitoring

Figure R.2-8 Implementation Flow for Government Public Project (Ruungu/Karocho Irrigation Project) [ Overall Supervision ] Overall promotion & supervision to be done by ESC \* Procurement of funds for roads works \* Financial arrangement with MOF Selection of Consultants for services (For classified access roads (For unclassified access roads and village/farm roads improvement) improvement) [County Council Undertaking] [ MPWH Undertaking ] [Consultants Services] Survey for identification of road sections to be improved Detailed design and costing Tendering for road works Selection of contractor Selection of contractor \* Equipment-based big contractors \* Labour-based small contractors Contracting between County Council Contracting between MPWH and Contractors Contractors Commencement of works Construction supervision Completion of road works Hand-over to MPWH Hand-over to County Council Commencement of O&M by MPWH Hand-over communities under to community contract to be made Commencement Note: Contracts shall be witnessed by ESC communities

Figure R.2-9 Proposed Organization Chart for Operation and Maintenance for Rupingazi Ngerwe Irrigation Scheme

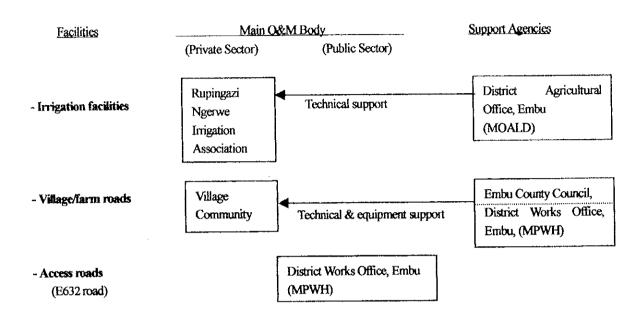


Figure R.2-10 Proposed Organization Chart for Operation and Maintenance for Ngomano/Nyangati Water Furrow Project

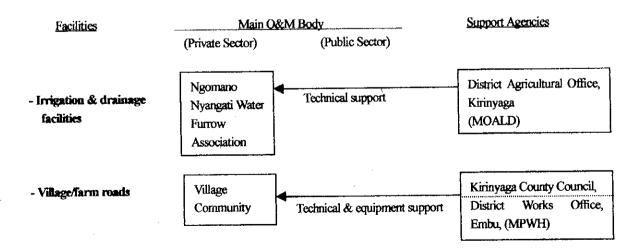


Figure R.2-11 Proposed Organization Chart for Operation and Maintenance for Nkunjumo Water Project

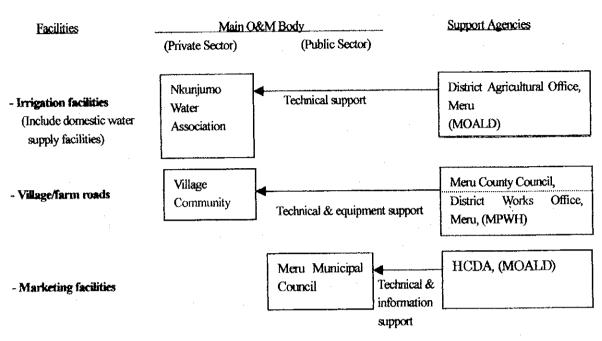
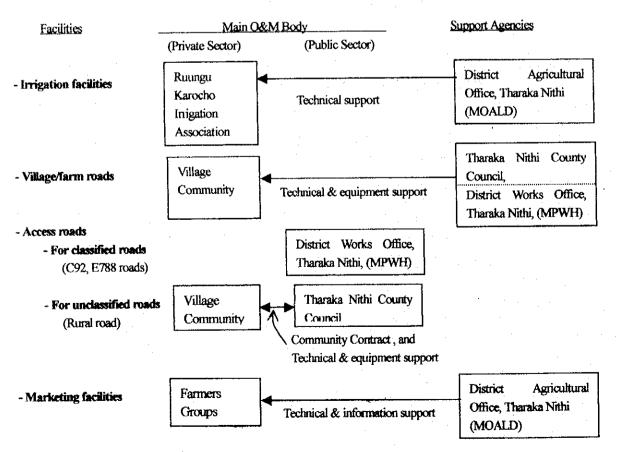


Figure R.2-12 Proposed Organization Chart for Operation and Maintenance for Ruungu/Karocho Irrigation Project



Committee

Chairman

Vice Chairmen

Secretary

Treasurer

Committee Members

Group Representatives

Association Members

Water Guard

Assist. Water Guard

Figure R.2-13 Proposed Organization Chart of WUA for Model Areas

## ANNEX S

PROJECT BENEFITS AND EVALUATION

## S.2 PROJECT BENEFITS AND EVALUATION

## List of Tables

S.2 Feasibility	Study
Table S.2.1-1	Farmgate Prices at Rupingazi Ngerwe
Table S.2.1-2	Standard Conversion Factor (SCF)
Table S.2.1-3	Price Structure of Maize (economic)
Table S.2.1-4	Price Structure of Fertilizer (economic)
Table S.2.1-5	Price Structure of Coffee and Tea (economic)
Table S.2.1-6	Economic Price of Vegetables
Table S.2.1-7	Crop Selection for Rupingazi Ngerwe
Table S.2.1-8	Cost Budget (Maize / Beans)
Table S.2.1-9	Cost Budget (Beans)
Table S.2.1-10	Cost Budget (Green Maize)
Table S.2.1-11	Cost Budget (Irish Potatoes)
Table S.2.1-12	Cost Budget (Cabbage / kale)
Table S.2.1-13	Cost Budget (French Beans)
Table S.2.1-14	Cost Budget (Sweet Potatoes)
Table S.2.1-15	Cost Budget (Millet)
Table S.2.1-16	Cost Budget (Okra)
Table S.2.1-17	Cost Budget (Coffee)
Table S.2.1-18	Cost Budget (Banana)
Table S.2.1-19	Cost Budget (Tea)
Table S.2.1-20	Estimation of the Agricultural Benefits (Rupingazi)
Table S.2.1-21	Project Cost (Rupingazi Ngerwe)
Table S.2.1-22	Operation and Maintenance Cost (Rupingazi Ngerwe)
Table S.2.1-23	Calculation of EIRR - Rupingazi Ngerwe -
Table S.2.1-24	Financial Analysis for Typical Farms (Rupingazi Ngerwe)
Table S.2.1-25	Cost Recovery (Rupingazi Ngerwe)
Table S.2.1-26	Estimation of Charge (Rupingazi Ngerwe)
m-11- 0 0 0 1	Farmgate Prices at Ngomano / Nyangati
Table S.2.2-1	Standard Conversion Factor (SCF)
Table S.2.2-2	Price Structure of Maize (economic)
Table S.2.2-3	Price Structure of Fertilizer (economic)
Table S.2.2-4	Economic Price of Vegetables
Table S.2.2-5 Table S.2.2-6	Crop Selection for Ngomano / Nyangati
Table S.2.2-7	Cost Budget (Maize / Beans)
Table S.2.2-7 Table S.2.2-8	Cost Budget (Green Maize)
Table S.2.2-9	Cost Budget (Green Mane)
Table S.2.2-10	Cost Budget (French Beans)
Table S.2.2-10 Table S.2.2-11	Cost Budget (Tomato)
Table S.2.2-11 Table S.2.2-12	
Table S.2.2-12	
Table S.2.2-14	
Table S.2.2-14 Table S.2.2-15	<u> </u>
Table S.2.2-16	— I
Table S.2.2-17	<del>-</del> , : - :
Table S.2.2-17	.T i'
Table S.2.2-19	
Table S.2.2-20	· · · · · · · · · · · · · · · · · · ·
1 4010 3.2.2-20	Cost Budget (Contre)

```
Estimation of the Agricultural Benefits (Ngomano / Nyangati)
Table S.2.2-21
Table S.2.2-22
                Project Cost (Ngomano / Nyangati)
                Operation and Maintenance Cost (Ngomano / Nyangati)
Table S.2.2-23
                Calculation of EIRR - Ngomano Nyangati -
Table S.2.2-24
                Financial Analysis for Typical Farms (Ngomano / Nyangati)
Table S.2.2-25
                Cost Recovery (Ngomano / Nyangati)
Table S.2.2-26
                Estimation of Water Charge (Ngomano / Nyangati)
Table S.2.2.27
                 Farmgate Prices at Nkunjumo
Table S.2.3-1
                 Standard Conversion Factor (SCF)
Table S.2.3-2
                 Price Structure of Maize (economic)
Table S.2.3-3
                 Price Structure of Fertilizer (economic)
Table S.2.3-4
                 Price Structure of Coffee and Tea (economic)
Table S.2.3-5
                 Economic Price of Vegetables
Table S.2.3-6
                 Crop Selection for Nkunjumo
Table S.2.3-7
                 Cost Budget (Maize / Beans)
Table S.2.3-8
                 Cost Budget (Beans)
Table S.2.3-9
Table S.2.3-10
                 Cost Budget (Kale)
                 Cost Budget (Irish Potatoes)
Table S.2.3-11
                 Cost Budget (Cabbage)
Table S.2.3-12
Table S.2.3-13
                 Cost Budget (French Beans)
                 Cost Budget (Sweet Potatoes)
Table S.2.3-14
                 Cost Budget (Tomato)
Table S.2.3-15
                 Cost Budget (Millet)
Table S.2.3-16
Table S.2.3-17
                 Cost Budget (Onion)
                 Cost Budget (Green Maize)
Table S.2.3-18
                 Cost Budget (Banana)
Table S.2.3-19
                 Cost Budget (Coffee)
Table S.2.3-20
                 Estimation of the Agricultural Benefits (Nkunjumo)
Table S.2.3-21
                 Project Cost (Nkunjumo)
 Table S.2.3-22
                 Operation and Maintenance Cost (Nkunjumo)
 Table S.2.3-23
 Table S.2.3-24
                 Calculation of EIRR - Nkunjumo -
                 Financial Analysis for Typical Farms (Nkunjumo)
 Table S.2.3-25
                 Cost Recovery (Nkunjumo)
 Table S.2.3-26
                 Estimation of Water Charge (Nkunjumo)
 Table S.2.3-27
                  Farmgate Prices at Ruungu / Karocho
 Table S.2.4-1
                  Standard Conversion Factor (SCF)
 Table S.2.4-2
                  Price Structure of Maize (economic)
 Table S.2.4-3
                  Price Structure of Fertilizer (economic)
 Table S.2.4-4
                  Economic Price of Vegetables
 Table S.2.4-5
                  Crop Selection for Ruungu Karocho
 Table S.2.4-6
                  Cost Budget (Maize)
 Table S.2.4-7
                  Cost Budget (Pulses)
 Table S.2.4-8
                  Cost Budget (Millet)
 Table S.2.4-9
                  Cost Budget (Sorghum)
 Table S.2.4-10
                  Cost Budget (Cotton)
 Table S.2.4-11
 Table S.2.4-12
                  Cost Budget (Sweet Potatoes)
                  Cost Budget (Onion)
 Table S.2.4-13
                  Cost Budget (Tomato)
 Table S.2.4-14
```

Table S.2.4-15	Cost Budget (Tabacco)
Table S.2.4-16	Cost Budget (Okra)
Table S.2.4-17	Cost Budget (Banana)
Table S.2.4-18	Cost Budget (Manogoes)
Table S.2.4-19	Estimation of the Agricultural Benefits (Ruungu / Karocho)
Table S.2.4-20	Project Cost (Ruungu / Karocho)
Table S.2.4-21	Operation and Maintenance Cost (Ruungu / Karocho)
Table S.2.4-22	Calculation of EIRR - Ruungu / Karocho -
Table S.2.4-23	Financial Analysis for Typical Farms (Ruungu / Karocho)
Table S.2.4-24	Cost Recovery (Ruungu / Narocho)
Table S.2.4-25	Estimation of Water Charge (Ruungu / Karocho)

Agricultural Credit Systems in the Selected Countries

Table S.2.1-1 Farmgate Prices at Rupingazi Ngerwe

		Unit Price(K	sh)	
	Unit	Financial Ed	conomic	
1. Crops				
Maize	kg	11.5	9.5	
Maize Green	kg	10.0	10.0	
Sorghum	kg	15.0	15.0	
Millet	kg	20.0	20.0	
Beans	kg	31.6	31.6	
French Beans	kg	29.6	32.6	
Irish Potatoes	kg	11.7	11.7	
Sweet Potatoes	kg	5.0	5.0	
<b>Bulb Onions</b>	kg	24.7	24.7	
Tomatoes	kg	24.0	23.0	
Cabbage	kg	10.7	10.7	
Kale	kg	3.0	3.0	
Carrots	kg	16.6	21.4	
Okra	kg	23.0	25.1	
Banana	Bunch	150.0	150.0	
Coffee	kg	25.0	17.2	
Tea	kg	16.8	17.7	
Milk	kg	23.8	23.8	
Macadamia nut	kg	29.0	29.0	
*				
2. Seed				
Maize	kg	90	84	
Cabbage	kg	1,200	1,121	
Bulb onion	kg	4,700	4,390	
Tomatoes	kg	6,400	5,978	
Carrot	kg	2,400	2,242	
Kale	kg	1,200	1,121	
3. Fertilizer			A +	
Nitrogen	kg	24.6	27.4	
Phosphate	kg	17.0	24.3	
Potassium	kg	23.8	16.4	
A A missilkamal Obsamia	de.			
4. Agricultural Chemica Dimethoate	ais lit.	600	560	
Dimetricate Sancozeb	iit. kg	460	430	
Sancozeb Milraz		1,450	1,354	
Miliraz Karate	kg lit.	1,395	1,303	
i/di di C	11 C.	1,000	,,,,,,,,	
5. Labour				
Labour	MD	70	35	
Animal Labour	MAD	1,000	500	
6. Nursery				
Banana	plant	50 50	50 50	
Coffee	plant	50	50	
Papaya	plant	40	40	
Mango	plant	60 50	60 · 50 ·	
Avocado	plant	50 50		
Tea	plant .	50 50	50 50	
Passion fruit	plant	50	50 60	
Macadamia nut	plant	60 50	50	
Cashew nut Source Farm Economi	plant			

Table S.2.1-2 Standard Conversion Factor (SCF)

		•				(unit:1,000 K	.Pound)	
	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	Average
(1)Imports	2,545,630	2,645,913	2,945,863	5,056,419	5,753,988	7,758,420	8,424,310	5,018,649
(2)Exports	1,244,010		1,742,268	3,678,247	4,282,132	4,866,950	5,910,000	3,336,153
(3)Import Duties	347,968		255,939	459,150	739,639	929,910	1,058,780	589,438
(4)Export Duties	729	·	740	222	130	0	0	270
(5)Subsidy on Exports	0	0	0	0	0	0	0	0
(6)=(1)+(2)	3.789.640	4.275,380	4,688,131	8,734,666	10,036,120	12,625,370	14,334,310	8,354,802
(7)=(1)+(2)+(3)-(4)+(5)			4,943,330	9,193,594	10.775,629	13,555,280	15,393,090	8,943,970
(8)SCF=(6)/(7)	0.916			0.950	0.931	0,931	0.931	0.934

Source.Economic Survey 1997 Statistical Abstract 1995

Table S.2.1-3 Price Structure of Maize (economic)

1. Projected 2010 world market price(\$/ton in 1990 price	94.9
2. Projected 2010 world market price(\$/ton in 1998 price	104.6
3. Quality adjustment(%)	90
4. World market equivalent(US\$/ton)	94
5. Freight and insurance(US\$/ton)	40
6. CIF Monbasa(US\$/ton)	134
7. Unloading and port handling(US\$/ton)	9
8. Value Kenya border	
- in US\$	143
- in Ksh(61.19Ksh/US\$)	8,750
9. Domestic handling, transport, margin(Ksh/ton)	831
10. Processing ratio(%)	100
11. Wholesale price(Ksh/ton)	9,581
12. Transport to/from farm(Ksh/ton)	103
13. Farmgate price(Ksh/ton)	9,478

Source.Commodity markets and the developing countries February 1998, World Bank

Table S.2.1-4 Price Structure of Fertilizer (economic)

		Muriate
Urea	TSP	of Potash
131.8	106.7	90.3
145.3	117.6	99.5
40	40	40
185.3	157.6	139.5
9	9	9
194.3	166.6	148.5
11,889	10,194	9,086
831	831	831
12,720	11,025	9,917
103	1,03	103
12,617	10,922	9,814
27.4	24.3	16.4
	131.8 145.3 40 185.3 9 194.3 11,889 831 12,720 103 12,617	131.8 106.7 145.3 117.6 40 40 185.3 157.6 9 9 194.3 166.6 11,889 10,194 831 831 12,720 11,025 103 103 12,617 10,922 27.4 24.3

Source.Commodity markets and the developing countries, February 1998, World Bank

Table S.2.1-5 Price Structure of Coffee and Tea (economic)

	Coffee	Tea
1. Projected 2010 World market price(\$/ton in 1990 price)	1,812	1,405
2. Projected 2010 World market price(\$/ton in 1998 price)	1,997	1,549
3. Adjustment for quality(%)	95	90
4. Weighted average export priceFOB price(US\$/ton)	1,897	1,471
5. Port charges/handling(US\$/ton)	9	9
6. Value at Kenya boder(per ton)		
~ in US\$	1,888	1,462
- in Ksh(61,19Ksh/US\$)	115,526	89,457
7. Domestic handling, transport, margin(Ksh/ton)	766	766
8. Ex-coffee factory price(Ksh/ton)	114,760	88,691
9. Yielding recovery(%)	15	20
10. Input price at coffee factory(Ksh/ton)	17,214	17,738
11. Transport to/from farm(Ksh/ton)	20	20
12. Farmgate price(Ksh/ton)	17,194	17,718

Source.Commodity markets and the developing countries, February 1998, World Bank

Table S.2.1-6 Economic Price of Vegetables

	French	
	Beans	0kra
1. FOB Price	75.00	58.00
2. Handling charge	3. 50	3.50
3. Expoter's revenue	24. 00	15.00
4. Grading & packing cost	9.34	8. 73
5. Transportation cost	5. 60	5. 60
6. Farmgate price	32.55	25. 16

Source. HCDA

		Carrots	Tomatoes
1.	FOB Price	48.00	56.00
2.	Handling charge	3. 69	3. 69
	Expoter's revenue	14. 00	19. 00
	Grading & packing cost	3. 27	4. 67
	Transportation cost	5. 60	5. <b>60</b>
	Farmgate price	21. 44	23. 04
	1100.1		

Source, HCDA

Table S.2.1-7 Crop Selection for Rupingazi Ngerwe

											_	N. C.	•
		Demand	Demand Demand for	Suitability		Suitability	Suitability Profitability						
					C. itability	for   and	-		Stability	Farmer's	for Rainfed	ţ	
	Staple	φ		5	Sultability	ב ב	·		_			- Indiantion	Total
. 4.	Food	Exporting sumption	sumption	Climate	for Soil	Form	Hectare	Storability of Price	-	Experience	T SELECTION A	Di di	
			·	L	۲	6	7	7	က	3	6		श्
Maize(dry)	?					•		C	7	-	E.	2	22
French Beans	0	3	0	7		7		5 6			C	C	17
Snow Deas	0	9	0		7	2	က	5	7	2	7	7	- 8
	·	C	2	3	3	2	7	~	7	3	63	7	२
Cabbage	9 0		) (			0		2	2	2	8	2	52
Carrots	7		4			6	C.	0	***	2	3	2	23
Tomatoes	3	2	5			7		6	*	0	6	2	24
Bulb Onions	က	Ó	3			7				10	0		80
Detatore	۲.	C	3	2	7	2	9	ۍ	?	7	-		
T U M U U		) (	7		3		2		<b>С</b>	က	က	2	53
SWeet Potatoes	7		> (	) (		6		С	•	က	6	7	22
/ales		<b>)</b>	2	2 6					~	8	3	2	3
Beans	6	0	<b>7</b>	2 (		7			2 6	C	3		27
Coffee		20			7: 	3 6		./	10	8			27
Tea	0	e	200		3 6	2 6		-   C	1 (7)	2		-	22
Papaya		0	7 0	7		יי (	2		C	3		-	28
Bananas		<b>)</b>	2			) (		7	6	6	3		27
Macadamia Nut	_	m	<b>5</b>	3	2	?		2					

Table S.2.1-8 Cost Budget (Maize / Beans)

Site:Rupingazi

Crop:Maize/Beans									(per ha)	
				Rain	fed			Irrig	ated	
		Unit	withou	t Project	with !	<sup>o</sup> roject	without	Project	with Pr	oject
•	Unit	Price	Quant	Value	Quant	Value	Quant-	Value	Quant-	Value
		(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs
1. Costs										
Seeds:Maize	kg	90	100	9,000	100	9,000			100	9,000
Beans	kg	32	15	480	15	480			15	480
Fertilizer:N	kg	24.6	0.0	0	0.0	0			4.0	98
Р	kg	17.0	0.0	0	0.0	0		<u> </u>	11.0	181
K	kg	23.8	0.0	0	0.0	0			4.0	98
Chemicals:	kg	460	0	0	1	460			1	460
Gunny bags	pieces	40	18	720	20	800	<u> </u>		27	1,080
Labour Costs	MD	70	80	5,600	82	5,740		<u> </u>	135	9,450
Irrigation	ha		1			}	<b>.</b>			210
Miscellaneous(5% of total)			<u> </u>	832	<u> </u>	867		<b>.</b>	Ĺ	1,10
Total Costs	]	<u></u>		16,632	1	17,347	L	L	L	22,16
2. Gross Income					<u> </u>	<u> </u>				<u> </u>
a. Main Product	kg	11.5	1,750	20,125	2,000	23,000		<u> </u>	2,250	25,87
b. Beans	kg	31.6	300	9,480	400	12,640	L	L	600	18,96
3. Net Profit	Kshs			12,973	li.	18,293			1	22,66

#### Cost and Return of Crops(economic)

Grop:Maize/Beans									(per na)		
				Rain	fed		Irrigated				
	}	Unit	Unit without		with i	Project	t without Project		with Project		
	Unit	Price	Quant	Value	Quant	Value	Quant-	Value	Quant~	Value	
		(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)	
1. Costs											
Seeds:Maize	kg	84	100	8,400	100	8,400			100	8,400	
Beans	kg	32	15	480	15	480			15	480	
Fertilizer:N	kg	27.4	0.0	0	0.0	0			4.0	110	
P	kg	24.3	0.0	0	0.0	0			11.0	267	
K	kg	18.4	0.0	0	0.0	0		·	4.0	66	
Chemicals:	kg	430	. 0	0	1	430			1	430	
Gunny bags	pieces	40	18	720	20	800			27	1,080	
Labour Costs	MD	35	80	2,800	82	2,870	<u> </u>	<u> </u>	135	4,725	
Irrigation	ha		<u> </u>	ļ <u>.</u>	<u> </u>			<u> </u>		210	
Miscellaneous(5% of total)	l :			653		683		<u> </u>		830	
Total Costs	]		L	13,053		13,663	L		L	16,59	
2. Gross income			L			<u> </u>	<u> </u>		ļ	<u> </u>	
a, Main Product	kg	9.5	1,750	16,625	2,000	19,000			2,250	21,37	
b. Beans	kg.	31.6	300	9,480	400	12,640			600	18,96	
3. Net Profit	Kshs			13,052	2	17,977			<u> </u>	23,73	

Table S.2.1-9 Cost Budget (Beans)

Site:Rupinga	Zį
--------------	----

				Rais	nfed				rrigate	d
		Unit	withou	t Project	with	Project	withou	t Projec	with	Project
}	Unit	Price	Quant-	Value	Quant-	Value	Quant-	Value	Quant-	Value
<u> </u>		(Kshs)	ity	(Kehs)	ity	(Kshs)	ity	(Kehe)	ity	(Kshs)
. Costs										
Seed	kg	30	25	750	25	750	25	750	25	750
Fertilizer:N	kg	24.6	0	0	2	49	3	74	10	246
Р	kg	17.0	0	0	2	34	3	51	10	170
K	kg	23.8	0	0	0	0	0	0	0	C
Manure	kg	1	3,000	3,000	3,000	3,000	4,000	4,000	4,500	4,500
Labour Costs	MD	70	65	4,550	70	4,900	65	4,550	67	4,690
Irrigation	ha									210
Miscellaneous(5% of total)		1		437		460		496		556
Total Costs		]		8,737	l	9,193	L	9,921	l	11,122
2. Gross Income		1								
a. Main Product	kg	31.6	600	18,960	650	20,540	700	22,120	750	23,700
3. Net Profit	Kshs	7 <b>-</b> -	Γ	10,223	I	11.347		12,199		12,578

#### Cost and return of Crops(economic)

Orop:Beans	-							Land		(per l	
				Rair			Irrigated				
		Unit	withou	t Project	with	Project	withou	t Projec	with	Project	
	Unit	Price	Quant-	Value	Quant-	Value	Quant-	Value	Quant-	Value	
		(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)	
. Costs											
Seed	kg	30	25	750	25	750	25	750	25	750	
Fertilizer:N	kg	27.4	0	. 0	- 2	55	. 3	82	10	274	
Р	kg	24.3	0	O	2	. 49	3	73	10	24:	
K	kg	16.4	0	0	0	0	0	. 0	0	(	
Manure	kg	1	3,000	3,000	3,000	3,000	4,000	4,000	4,500	4,500	
Labour Costs	MD	35	65	2,275	70	2,450	65	2,275	67	2,34	
Irrigation	ha	<u> </u>								210	
Miscellaneous(5% of total)				317	<u> </u>	332		378		43	
Total Costs		l	L	6,342	l	6,635		7,558		8,760	
2. Gross income											
a. Main Product	kg_	31.6	600	18,960	650	20,540	700	22,120	750	_23,70	
3. Net Profit	Kshe	]		12,618	I	13,905		14,562		14,94	

Table S.2.1-10 Cost Budget (Green Maize)

Site:Rupingazi

(per ha) Crop:Green Maize Irrigated Unit without Project with Project Value Quant- Value Unit Price Quant-(Kshs) (Kshs) (Kshs) 1. Costs 3,600 60 60 3,600 60 Seeds kg 98 Fertilizer:N kg 24.6 1.0 25 4.0 1.0 17 4.0 68 17.0 kg 0.0 0 0.0 0 23.8 K kg 460 460 0 kg Chemicals: 40 pieces 40 30 1,200 1,600 Gunny bags 70 70 4,900 80 5,600 **Labour Costs** MD 210 Irrigation ha 612 513 Miscellaneous(5% of total) 10,254 12,249 Total Costs 2. Gross Income 3,000 30,000 40,000 10.0 a. Main Product kg 27,751 19,746 3. Net Profit Kshs

#### Cost and Return of Crops(econmic)

Crop:Green Maize			(per ha)							
				Irrigat	ted					
		Unit	without	Project	with Pr	oject				
	Unit	Price	Quant-	Value	Quant-	Value				
		(Kshs)	ity	(Kshs)	ity	(Kshs)				
1. Costs										
Seeds	kg	60	60	3,600	. 60	3,600				
Fertilizer:N	kg	27.4	2.0	55	4.0	110				
Р	kg	24.3	2.0	49	4.0	97				
Κ	kg	16.4	0.0	0	0.0					
Chemicals:	kg	430	0	0	1	430				
Gunny bags	pieces	40	30	1,200	40	1,600				
Labour Costs	MD	35	70	2,450	80	2,80				
Irrigation	ha					210				
Miscellaneous(5% of total)		İ		387		46				
Total Costs		L		7,740	1	9,31				
2. Gross Income										
a. Main Product	kg	10.0	3,000	30,000	4,000	40,00				
3. Net Profit	Kshs			22,260	)	30,68				

Table S.2.1-11 Cost Budget (Irish Potatoes)

Site:Rupingazi Crop:Irish Potatoes

				Rainfe	d			
	] ]	Unit	without	Project	with P	with Project		
	Unit	Price	Quant-	Value	Quant-	Value		
	<u>[</u> ]	(Kehé)	ity	(Kshe)	ity	(Kshs)		
1. Costs					<b>-</b>			
Seeds	kg	20	2,000	40,000	2,000	40,000		
Fertilizer:N	kg	24. 6	55	1, 353	60	1,476		
P		17. 0	70	1, 190	75	1, 275		
K		23. 8	0	0	0	. (		
<b>Ba</b> nur <del>o</del>	kg	1	1,000	1,000	1,500	1,500		
Chemicals:	kg	1,450	1	1,450	2	2, 90		
Gunny bags	piece	40	75	3,000	80	3, 20		
Labour Costs	MD	70	250	17, 500	270	18, 90		
Irrigation	ha			0		<u></u>		
Miscellaneous (5% of total)			]	3, 447		3, 64		
Total Costs			L	68, 940	l	72, 89		
2. Gross Income		l						
a. Main Product	kg	11.	7, 500	87, 750	8,000	93, 60		
3. Net Profit	Kshs	]	T	18, 810	l	20, 70		

## Cost and Return of Crops (economic)

Site:Rupingazi

Grop: Irish Potatoes

			Rainfed							
	}	Unit	without	Project	with Project					
	Unit	Price	Quant-	Value	Quant-	Value				
<u> </u>		(Kshs)	ity	(Kshs)	ity	(Kshs)				
1. Costs			<u> </u>							
Seeds	kg	. 20	2,000	40,000	2,000	40,000				
Fertilizer:N	kg	27.4	55	1, 507	60	1,644				
Р	l	24.3	70	1, 701	75	1,823				
K		15.4		0	0	. 0				
Manure	kg	1	1,000	1,000	1, 500	1, 500				
Chemicals:	kg	1, 354	1	1, 354	2	2, 708				
Gunny bags	piece	40	75	3,000	- 80	3, 200				
Labour Costs	MĐ	35	250	8, 750	270	9, 450				
lrrigation	ha		<u> </u>	0		0				
Miscellaneous (5% of total)				3,016		3, 175				
Total Costs	I	<u></u>		60, 328	l	63, 499				
2. Gross Income										
a. Main Product	kg	11.	7, 500	87, 750	8,000	93,600				
3. Net Profit	Kshs			27, 422	<u> </u>	30, 101				

Table S.2.1-12 Cost Budget (Cabbage / kale)

Site:Rupingazi

Site:rupingazi										. : .		
Crop:Cabbage/kale			numara mata di sa							(per ha)		
				Rainfed			Irrigated					
		Unit	withou	ut Project	with F	roject	without	Project	with Project			
	Unit	Price	Quant	Value	Quant	Value	Quant-	Value	Quant-	Value		
		(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)		
1. Costs												
Seeds	kg	1,200	0.5	600	0.5	600	0.5	600	0.5	600		
Fertilizer:N	kg	24.6	20	492	22	541	45	1,107	90	2,214		
Р	kg	17.0	20	340	22	374	30	510	95	1,615		
K	kg	23.8	0	0	0	0	0	0	0	0		
Chemicals	lit.	600	1	300	1	480	1	300	1	480		
Labour Costs	MD	70	130	9,100	132	9,240	130	9,100	135	9,450		
Irrigation	ha								<u> </u>	210		
Miscellaneous(5% of total)				570		591		611		767		
Total Costs		I		11,402		11,827	L	12,228	l	15,336		
2. Gross income										<b></b>		
a. Main Product	kg	10.7	10,000	107,000	11,000	117,700	14,500	155,150	16,000	171,200		
3. Net Profit	Kshs	]	l	95,598		105,873		142,922		155,864		

#### Cost and Return of Crops(economic)

Site:Rupingazi

(per ha) Crop:Cabbage/kale Rainfed Irrigated with Project Unit without Project with Project without Project Value Value Quant-Value Quant-Unit Price Quant: Quant (Kshs) (Kshs) (Kshs) (Kaha) (Kshs) 1. Costs 0.5 561 0.5 561 0.5 561 0.5 561 1,121 Seeds 603 45 90 2,466 20 548 22 1,233 27.4 Fertilizer:N 22 30 729 95 2,309 20 486 535 24.3 kg 0 0 0 0 K 16.4 kg 280 448 280 448 560 lit Chemicals 130 135 4,725 130 132 4,620 4,550 MD 4,550 35 Labour Costs 210 Irrigation ha 564 338 387 356 Miscellaneous(5% of total) 7,739 11,282 Total Costs 6,763 7,122 2. Gross Income 11,000 117,700 14,500 155,150 107,000 10,000 a. Main Product kg 10.7 100,237 110,578 147,411 159,918 3. Net Profit Kshs

Table S.2.1-13 Cost Budget (French Beans)

Site:Rupingazi

				Reinf	edbe		Irrigated				
		Unit	without	Project	with Pa	oject	wi thou	l Project	with P	roject	
	Unit	Price	Quant-	Value	Quant⊣	Value	Quant	Value	Quant	Value	
		(Kehs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)	
1. Costs											
Seeds	kg	500	85	32, 500					65	32, 50	
Fertilizer:N	kg	24. 6	15	369					20	49	
P	kg	17. 0	20	340					25	42	
K	kg	23. 8	0	0					0		
Chemicals	lit.	1450	2	2, 900	<u> </u>				4	5, 80	
Labour Costs	₩0	70	150	10, 500	İ		l		155	10, 85	
Irrigation	ha					L			L	21	
#iscellaneous (5% of total)				2, 453	<u> </u>		l			2, 64	
Total Costs	L	l		49, 062	L		]			52, 92	
2. Gross Income					l	<u> </u>			1		
a. Main Product	kg.	29. 5	3,000	88, 800	L		]		4,000	118, 40	
3. Net Profit	Kahs	I	I	39, 738		[			1	65, 47	

#### Cost and Return of Grops (economic)

Site:Rupingazi Crop:French Beans

a. Main Product

				Rainf	ed			ler	igated	•
		Unit	without	Project.	with P	oject	wi thou	t Proj <b>ec</b> t	with P	roject
	Unit	Price (Kshs)	Quant- ity	Value (Kshs)	Quant- ity	Value (Kshs)	Quant ity	Value (Kshs)	Guant- ity	Value (Kshs)
1. Costs					1					
Seeds	kg	467	65	30, 355					65	30, 355
Fertilizer:N	kg	27.4	15	411					20	548
P	kg	24. 3	20	486					25	608
K	kg	16.4	0	0	l				0	
Chemicals	lit.	1354	2	2, 708					4	5, 416
Labour Costs	MD	35	150	5, 250					155	5, 425
lrrigation	ha								l	210
Riscellaneous (5% of total)				2, 064	1					2, 240
Total Costs				41, 274						44, 802

Table S.2.1-14 Cost Budget (Sweet Potatoes)

Site:Rupingazi

				Rainfe	edbe		L	Irri	gated	
		Unit	without	Project	with Project		without Project		with Project	
	Unit	Price	Quant-	Value	Quant-	Value	Quant-	Value	Quant-	Value
		(Kshs)	ity	(Ksha)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)
I. Costs							<b> </b>	<u> </u>		
Seeds	kg	3	400	1, 200			<b> </b>		400	1, 200
Fertilizer:N	kg	24, 8	0	0			<b> </b>		20	492
P	T I	17.0	0	0				,	20	340
K		23, 8	0	<u> </u>	<u> </u>				0	
Manuré	kg	1	1,000	1,000					1,500	
Chemicals:	kg	600	0	0	İ	ļ	<b></b>		1	600
Gunny baga	piece	40	65	2, 600	<b>!</b>		<b> </b>		85	
Labour Costs	MID	70	110	7, 700	<b>.</b>		<b></b>		115	-
Irrigation	ha		<u> </u>	0		ļ <u>.</u>	<b>_</b>		<u> </u>	210
Miscellaneous (5% of total)	1	l		658	1	ļ	<b></b>		ļ	83
Total Costs		I	1	13, 158	ļ		.	<b> </b>	<b> </b>	16,62
2. Gross Income	T	L			<u> </u>	<u>. </u>	<b>↓</b>		ļ	ļ <u>.</u>
a. Main Product	kg	5.0	6, 500	32,500	L	.L	.	L	8, 500	+
3. Net Profit	Kshs	T	I	19, 342	2	!		l	L	25, 87

#### Cost and Return of Crops (economic)

Site:Rupingazi Grop:Sweet Potato

rep:Sweet Potatoes				Rainfe	xd		Irrigated				
	! !	Unit	without	Project	with Project		without Project		with Project		
	Unit	Price	Quant	Value	Quant	Value	Quant-	Value	Quant	Value	
		(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)	
1. Costs							<b>]</b>			4 000	
Soods	kg_	3	400	1, 200					400	1, 200	
Fertilizer:N	kg .	27.4	0	0			<b>}</b>		20	548	
Р	1	24. 3	0	0			<b> </b>		20	486	
. К		16.4	0	0					. 0	0	
Manuro	kg	1	1,000	1,000					1, 500	1, 500	
Chemicals:	kg	560	0	0					1	560	
Gunny bags	piece	40	65	2, 600	ļ	ļ	-		85	3, 400	
Labour Costs	#D	35	110	3, 850			1		115		
Irrigation	ha	Ī	<u> </u>	0					<b>!</b>	210	
Miscellaneous (5% of total)		I		455		ļ <u>.</u>	1		<u> </u>	628	
Total Costs	L	I	1	9,105		ļ	. [		<b></b> -	12, 55	
2. Gross Income	Ι		1				<u> </u>		<b>_</b>	<del></del>	
a. Main Product	kg_	5.0	6, 500	32,500	L			<u> </u>	8,500		
3. Net Profit	Kshs	I	I	23, 395		<u> </u>	<u> </u>	L	<u> </u>	29, 94	

Table S.2.1-15 Cost Budget (Millet)

Site:Rupingezi Grop:Milfet										(per ha
700.311100				Rair	ıfed			İr	rigated	
		Unit	without F	roject	with pro	ject	without	Project	with p	roject
	Unit	Price	Quant-	Value	Quent-	Value	Quant-	Value	Quant-	Value
		(Kehe)	ity	(Kshs)	ity	(Kehe)	ity	(Kshs)	ity	(Kshs)
1. Costs										
Seeds	kg	10	4.0	40	4.0	40	<b>A</b>	40		ļ
Fertilizer:N	kg	24.6	2.0	49	3.0	74	<b>1</b> —	74		ļ
P	kg	17	5.0	85	6.0	102	6.0	102		l
K	kg	23.8	0.0	. 0	0.0	. 0	0.0	0		l
Kenure	kg	1	250	250	300	300	250	250		
Chemicals	kg	460	0	. 0	0	0		0		
Gunny bags	piece	40	9	360	9		A			L
Labour Costs	MD	70	85	5, 950	90	6,300	85	5, 950		
Irrigation	he		T	0				0	<b>.</b>	
Miscellaneous (5% of total)				354	<u> </u>	378		357		<u> </u>
Total Costs		]		7, 089		7, 553		7, 132	ļ	
2. Gross Income		1		<u> </u>		<b></b>	ļ	<u> </u>	ļ	ļ
a. Main Product	kg	20	850	17,000	850	17,000	1			ļ
3. Net Profit	Kshs		1	9,911	<u> </u>	9,44	1	10.868		1

Cost and Return of Grops (economic)

ito:Rupingazi		·	(economic)	•				•		(per ha
rop:#illet				Rein	fed			` 1r	rigated	-1
	1 1	Unit	without P	roject	with pro	ject	without	Project	with p	roject
	Unit	Price (Kshs)	Quant- ity	Value (Kshe)	Quant-	Valus (Kshe)		Value (Kshs)	Quant- ity	Value (Kshs
1. Costs										
Seeds	kg	10	4.0	40	4.0			40		<b></b>
Fartilizer:N	kg	27.4	2.0	55	3.0	82	3.0	82		<u> </u>
P	kg	24.3	5.0	122	6.0	148	6, 0	146	ļ	
. К	kg	16.4	0.0	0	0.0	0	0.0	0		ļ
Manure	kg	t	250	250	300	300	250	250	ļ	
Chemicals	kg	430	0	0	0	0	0	0	<b> </b>	<u> </u>
Gunny bags	piece	40	9	360	9	360	9	360		l
Labour Costs	MO	35	85	2, 975	90	3, 150	85	2, 975	<u> </u>	ļ
Irrigation	he			0	<u></u>	0		0	<b>!</b>	ļ
Miscellaneous (5% of total)			l	200		215		203	-	<b> </b>
Total Costs		1	<u> </u>	4,001	ļ	4, 293	<b>.</b>	4,056	l	
2. Gross Income					<u> </u>		<b></b>	ļ	ļ	<u> </u>
a, Main Product	kg	20	850	17,000	850	17,000	900			<b></b>
	V-1-	1	T	12 999	Į.	12 707	·1	13.944	l.	1

Table S.2.1-16 Cost Budget (Okra)

Site:Rupingazi

Crop:Okra										(per ha)
				Rainfed				Irriga	ted	
·		Unit	witho	ut Project	with I	Project	withou	t Project	with Pr	oject
	Unit	Price	Quant-	Value	Quant	Value	Quant~	Value	Quant-	Value
		(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)
1. Costs									L	
Seeds	kg	280	7.0	1,960	7.0	1,960	7.0	1,960	7.0	1,960
Fertilizer:N	kg	24.6	20	492	25	615	25	615	35	861
Р	kg	17.0	20	340	20	340	25	425	35	595
K	kg	23.8	0	0	0	0	0	0	0	0
Chemicals	lit_	1,450	1	725	1	1,450	1	725	3	4,350
Labour Costs	MD	70	200	14,000	205	14,350	220	15,400	300	21,000
Irrigation	ha			0		0		0		210
Miscellaneous(5% of total)				922		985	I	1,007		1,525
Total Costs			L	18,439		19,700	L	20,132	l	30,501
2. Gross Income	[								I	
a. Main Product	kg	23.0	4,000	92,000	4,500	103,500	5,000	115,000	6,000	138,000
3. Net Profit	Kshs	l	Γ	73,561	1	83,800		94,868		107,499

#### Cost and Return of Crops(economic)

Crop:Okra										(per ha)
				Re	infed			Irriga	ted	·
		Unit	withou	ut Project	with I	<sup>o</sup> roject	withou	t Project	with Pr	oject
	Unit	Price	Quant	Value	Quant	Value	Quant-	Value	Quant~	Value
		(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)	ity	(Kshs)
1. Costs										
Seeds	kg	262	7.0	1,834	7.0	1,834	7.0	1,834	7.0	1,834
Fertilizer:N	kg	27.4	20	548	25	685	25	685	35	959
P	kg	24.3	20	486	20	486	25	608	35	851
K	kg	16.4	0	0	0	0	0	0	0	0
Chemicals	lit	1,354	1	677	1	1,354	1	677	3	4,062
Labour Costs	MD	35	200	7,000	205	7,175	220	7,700	300	10,500
Irrigation	ha			0		0		0		210
Miscellaneous(5% of total)				555		607		605		969
Total Costs				11,100	I	12,141		12,109		19,385
2. Gross income	Ţ	<b></b> -	[							
a. Main Product	kg	25.1	4,000	100,400	4,500	112,950	5,000	125,500	6,000	150,600
3. Net Profit	Kshs		T	89,300	]	100,809	F	113,391		131,215

Table S.2.1-17 Cost Budget (Coffee)

i c
ODECTION
Š T E
d etc
8

Site:Rupingazi												٦	(unitaber ha)	7	ļ					
Crop:Coffee		1						De me								٦	Ir ign ted		١	T
											3	with Project		_			Ţ	with Project		
	_				without Project	770/05		T.	1	,	1	2 V Ass.	S.	3rd Year	10	let Year	2nd Year	, and	S	3rd Year
_		Č.	Ĭ	et Year	2	2nd Year		-	•		•		h		Value C		- Jump	Substantial Value County Value	2	300
-	Chik	Price	Price Quent	Value V	Out of	\ 	Overt Value		τ-		Ē	3	Ŀ		,		1	8	.₹	(Yek
		Kehe	Æ	(Kehe)	è	(Kehe)	ě	(¥e}	è	χ eγ	2	(Yella)	è	) L	_	Į.	1-		<del>  -  </del>	
Conta							]				ľ	1	6	٥	1350	005.79	ō	8	0	0
Nimery	Discost	50	1,350	67,500	٥	٥	7	0	8	300	1	1	7	946	S	996	2	586	98	1.906
N. T. S.	¥	24.6	7	1,722	75	8.	12	1.845	2	122	0	3	2 8	3	8	61.0	9	980	Ş	980
4	2	17.0	30	510	30	510	S	510	္က	015	8 8	2 :	3 6	15	8 8	71.6	8	*	8	417
		23.8	99	71.	8	714	၉	714	S	714	8	•	3	1	3		1 8	_	800	8
		-	=		8	1.500	.500	1.500	1.500	200	8	28	8	8	3	3	3		-	
					L						1	1	†		†		t	5	į	0 660
Tabour Conta	9	Š	Ç	0.100	30	2.100	90	2,100	8	2.30	8	8	8	2 8 8	38	2	3	3	2 5	3
Spraying	2	2 5	l	1		ı	ģ	1400	25	1.750	25	1,750	×	1 750	52	750	22	3	0	3
Weeding	3	?	1	1		ľ	L	ľ		4	20	907	2	1400	Ø	540	Z	3	8	- 0
Pruning	2	2				-	Ľ	ľ	L	ć	0	o	85	000	0	8	0	9	8	88
Picking		2/kg		٩	٥	2	l	300	ļ							210		210	1	210
Irrigation	2	1						5		100		517		86		4.192		848	1	1 74
Miscellansous(5% of total)				4.045		284		3/2		3	†	10.338		608.01		83.834		12.960	7	23.486
Total Conta				19891	1	- 9967		19,441	1	Cy.	+		-		-	-			-	
2 Gross Income							I		- 1		ľ	1	8	10.00	٥	c	o	0	5,000 125,000	25 000
Main Product	¥	25.0	0	0	0	0		4.500 112.500		<u> </u>	2	51 00	3	100.00		-A3 8343	1	-12,980		101,514
3 Net Profit	Keh			-80.891		-9.967		93,059		-81.258	]	10.330	1	37.50						

_
-울
Þ
8
÷
8
Ö
ō
ş
큦
ō
÷
Ĕ

Site:Rupingazi										i			(unitiper he)	3		ļ				
Crop:Coffee								Reinfad									Irri geted	·g		
		_									3	with Project					¥.	with Project		
		_			withou	without Project				,	1	3,77		3. V . W.	<u> </u>	1 et Year	2nd	2nd Year	e,	3rd Year
		5		tet Year	ş	2nd Year	5	٠ ا	-				,		77.		Supply Transfer to Law Company	Value	Carrie	Value.
	1	0	Direct Control	Velue	Ount	Overt- Value	Over	Quent Value	Ouen Feed	Quent Value	Quert Velue		1		5			1	,	3
	Š	(Kahe)	ē		_	(Kshe)	è	(Kahe)	Æ	(Kaha)	è	(Xehe)	ġ.	(Kaha)	è	X Shell	è	Kana	ě	(V.
1. Costs									1		4	-		٥	1360	62.500	٥	0	0	١
Numery	pieces	ဝင	1,350	67.500		-1		1	6	9	3 3	2 ARE	ľ	2 0.5	2		8	2,192	8	2,192
Fartilizen.	¥	27.4	5	1.918	35	۲ì		N		1		L.		.j_	8	32		972	9	972
a	¥	24.3	30	729	8	728						Ţ		400	Ĺ	COT		692	30	482
3	,	184	30	482	8	492	30	492	8	┙	_	ĺ	1	1	1	ľ	L	8	6	٤
	3	T	1.500	1.500	200	005'1	1.500	28	8	.50	28	28	- 58	8	8	3.00	3	2	3	5
Namura C	1			ļ		L										ı		1	1	18
Labour Conts	1		Ĺ	[	8	90	5	1 050	8	1,050	8	1.050	8	8		1225	8	- 729	3	ŝ
Spraying	2	3				1					36	R.7.6	25	875	8	875	SS	875	22	875
Weeding	ŝ	38	2	1	Ì					Ţ	L			ğ	2	7.0	22	770	22	077
Pruning	Ş	38	. 30	8	8	8	1	$\perp$		1			1	ľ	L	٥	O	0	5000	200
Picking		1/xg	٥	١	٩	٦	86.	300	7		?	1	3	1_		210		210		210
Irrigation	ž					1				2000		200		808		4.052		512		776
Miscallansous(5% of total)	-			3 926		88		6		0.950	I	200		10807		81 045		10.248		15,512
Total Conta			1	78.515	15	7.80		12343	-	900		/-/-	1	1,577,1	-	1000	1	1	; ; ;	1
						1	-	1	ľ	J	C	٩	4.500	77.400	0	0	0	0	5000	000
e. Main Product	y	hr 17.2	0	0	0			3		100	1	10,	1	64873	! ! !	91018		-10.248	_	
	,	_		-78 511		-7.006	_	3		000										

Table S.2.1-18 Cost Budget (Banana)

Cost and return of Crops(financial)

Crop:Banana														F						_
							8	Rainfed									Irrigated	ç <sub>a</sub>		1
					1						13	with Project					wit	with Project		
		_			Without Project	100							1							
		‡.	۲	at Year	2nd	2nd Year	Ę	3rd Year	벌	let Your	2nd	2nd Year	33	3rd Year	ist Year		272	2nd Year	Srd Year	
	-			al I	Value		Value	\ 	County Value		Quent- Value		Quent-	Velue	Quent-	Value	Quent	/elue	Quent-	Value Value
	<u></u>	1	"						,					(	Ā	(Koha)	Æ	(Kaha)	.≥	(Kehe)
		(Kehe)	Æ.	(Kehe)	Ş	(Kehe)	ě	Xe <sup>2</sup>	è	(Kans)	ž	Ž	è	(Aller)	<b>†</b>		1			
1 Courts									_    -			1	†	†			1	1	1	T
14	,	50	620	31 000	0	0	0	0	8	31,000	0	0	0	0	920	8	-	7	7	7
VINA BLA		3	ļ	i_	۶	402	8	492	8	492	8	492	20	492	€	984	\$	984	Ş	984
Fertilizer:N	2	0.4.2			3 8	L	3 8	940	8	340	۶	340	Ŕ	9	8	980	3	680	8	089
<u>.</u>	7	17.0	₹	3	\$	3	3	}	3	,	1		1	1	ŕ	(		c	c	c
¥	¥	23.8	•	•	0	ō	0	ö	0	=	히	5	7	3	1	5	3	1	1	
2	3	٦	3 000	2 000	2,000	2,000	2000	2,000	2,500	2.500	2,500	2,500	2,500	2,500	3.00	8 8	3,000	3,000	3,000	3,000
PLUTAM	2		1		7.0	L	L	200	Ş	5,800	ê	5.600	8	5.600	89	5.950	82	5,950	85	5.950
Labour Costs	\$	2/	2	3,320		270.7		2	3	1.		٥	T	c	-	210		210		210
hrigation	Ē			5				?		1		1	-		-	200		073		470
Miscellaneous(5% of total)				2,061		429		439		2,102		\$	†	0/4	+	37	†	1		,
Total Courts				41,213		8.58		8,591	1	42.034	1	9,402		9.402	1	44,025	1	\$50°C	111111	2
			1		1															
Z. CATORIA (HOOMA)	ا ا	1			L	7 000 52 500	L	8 500 63 750	6.500	48.750	7.500	56,250	8,500 63,750	33,750	7.500	56,250	8,500	63.750	10,000	75,000
a. Masn Product	7	! !	200	'i	1	1	i		1	17.0	1	07047	1	54 248	-     	12 225		52,356		63,606
3. Net Profit	Kahe			3.7871		43.93		2				2002			1					

орв(есополно)	
in a ci	
t end ret	
3	

Site:Rupingezi																			(unitiper ha)	3
Crop:Benene														r				l		
							æ	Rainfed						7			rrigated	2		Ī
	-				withour	without Project					Ŧ	with Project					wit	with Project		
		4		10,71	,	\ \ \ \ \	L	Art Year	-	let Year	Snd	2nd Year	3rd Year	Year	1st Year	96.	2nd	2nd Year	3rd Year	,ear
	1	5		,		Velue	å	/alse	Ouent	/elue	Quent- Value	-	Quant- Value	_	Quent	Velue	Quent	Value	Quent-	Value
	5	(X	į.		Æ	(Kehe)		χ H	ĵ.	(Kehe)	Ę.	(Kehe)	È	(Kshs)	,≩:	(Kehe)	<u>\$</u>	(Kehe)	₽	(Kshs)
Conta												1	+	1			ľ	1	1	
- Philippin	Discont	50	620	31 000	0		0	0	620	31 000	0	0	0	ō	620	31,000	0	2	3	2
remain and a second		27.0			2	548	8	548	8	548	20	548	20	548	4	1,096	<b>₽</b>	1,096	₹	1,096
ר פורנוונגפינו	2 3	24.3		486		486	20	486	&	486	20	486	20	486	€	972	\$	972	\$	972
	2 3	18.4		C			0	0	0	0	0	ō	0	0	0	Ö	0	0	٥	٥
e	2	7	, 65	8	200	2000	2000	2,000	2,500	2.500	2,500	2,500	2.500	2.500	3,000	3,000	3,000	3,000	3.000	3,000
Manura	2	3.6	丄	L			1	1		1	80	2,800	98	2,800	85	2,975	85	2,975	85	2,975
Lebour Costs	1	3				_		0		ō		0		٥		210		210		210
kragation /rik of total)				1 931		300		300		1,965		333		333		2,066		434		434
Without to the control of the contro				38 625		5,994		5,994		39,299		6,667		8,657	1	41,319	<del> </del>	8.687	1	8.687
	1	1	1			1	1													
2. Office income	<u> </u> -	┸	L.	45 000		52500	A 500	A3 750	8.500	48.750	7.500	7,500 56,250	8,500 63,750	33,750	7,500	56,250	8,500	63,750	10,000	75,990
Mein Product	2	7.7	0000	١,		2000	3		т,		1 1 1	000	1	100	1	1 4 9 2		55.083		66.313
2 Net Droft	ž			6,375		46,506		57,756		<b>2</b>	1	48.005	1	24.70						

Table S.2.1-19 Cost Budget (Tea)

Cost and return of Crope(financial)

Crop: Tea(rainfed)													(amcbar na)	
					without Project	Project					Ŧ	with Project		
		.t.	-	70 p.	2nd	2nd Year	3rd	3rd Year	1et	1st Year	2nd	2nd Year	E	3rd Yeer
	ini.	5	Ouent	95	Ouent	٠,	å	Velue	Quent	Value	Ouent	Value	Quant- Value	V.
	!	(Kehe)			.≱	(Kehe)	Ą	(Kahe)	. <u>£</u>	(Xehe)	Ą	(Kehe)	Æ	(a.k.)
1 Consta			1											
N. Carrier	DISCOSE	50	750	37,500	٥	0	0	O	750	37,500	٥	٥	٥	٥
N-4:	3	24.6		492	8	492	8	492	20	492	ଥ	492	ຂ	492
	2	2		170	õ	170	20	340	10	170	10	170	ଥ	340
		23.8		238	0	238	ଛ	478	10	238	9	238	ଛ	476
	2		2	2000	2,000	2,000	2,000	2.000	3,000	3,000	3,000	3,000	3,000	3,000
	,	99	0	0	ı	ł	-	900	0	0	1	900	=	900
Chemicals	2	2	0,00	6.440	95	6,650	105	7.350	99	6,650	97	6,790	110	7,700
Mind and Control (St. of total)	L.			2.465		503		593		2.529		594		964
The state of the s				49,305		10,053		11,851		50.579	1	11.884	1	13,272
Cover Income	1	1	1	1	 	 	 							
	ž	15.8	0	0	0	0	10,000	10,000 168,000	0	0	٥	0	10,000 168,000	168,000
A New Design	7	٠.	1	49,305	! ! !	-10,053		156,149		-50 579		-11,884		154,728

_
Ē
8
900
ō
Ę
ret.
Ě
Š

Order Land	L				without Project	Project					wit	with Project		
		Linit	-	1st Year	2nd	2nd Year	3rd	3rd Yeer	Te.	1st Year	2nd	2nd Year	3rd	3rd Year
	**		Ousnit	Velue	Quent	Value	Quent- Value	Value	Quant	Vekue	Quant- Value	Value	Quent- Value	Value
			Æ		Æ	(Kehe)	Š	(Kshs)	Æ	(Kehe)	è	(Kshe)	Ę	(Kshe)
Conta												-		
Numero	pieces	50	750	37.500	0	0	0	0	750	37,500	٥	Ó		٥
FactilisariN	2	27.4	50	548	8	548	20	548	8	548	જ	548	20	548
<u> </u>	2	243	10	243	ç	243	ୟ	486	10	243	10	243	ଷ	486
¥	3	16.4	10	20	10	164	20	328	10	164	10	164	20	328
		-	2 000	2.000	2,000	2,000	2,000	2,000	3,000	3,000	3,000	3,000	3,000	3,000
Chamicala	2	560	١	1	0	0	~	560	0	0	-	560	-	560
I show Comba	Ş	35	92	3.220	35	3,325	105	3,675	95	3.325	97	3,395	110	3,850
Minoslancous (5% of total)	1			}		331		400		2,357		416		462
Total Conta				45.974		8.611		7.997		47,137	1	8,326	1	9,234
١.	! ! ! ! !	!	1											
a Main Product	3	17.7	0	0	0	0	10,000	10,000 177,000	0	0	0	0	000	177,000
a Mar Dange	X	!	1	45,974		-6,611		169.003		-47,137		-8.326		167,766

Table S.2.1-20 Estimation of the Agricultural Benefits (Rupingazi)

(A) Rainfed Areas	2	Maiza	٠		Cabbage/ French	French	Sweet Napier	Apide	Ü		Peren	Perennial Crops		
	Green	Beans	Beans Potato	otato	Xale	Beans	Poteto Gress Millet	3rass		Veget	Coffee	Banana	Hea	Tota
I. Without Project			.		1	١	0.1		000	÷ 36	671	7.5	17.7	
Unit price (Ksh/kg)	0	9.5/31.5		11.7	10./	Ī	0.0		2	1000	1 2	2 2	2	
Vield(ter/he)	0	1,750	800	7,500		ļ	6,500 1	2,000		- 1	3	- 1	3	
General Income (Keh /he)	0	26.105	26.105 18,960	87,750	107,000	97,800 32,500	32,500	0	8	- 1	77,400		000/	
Cross Incompany in the	c	13.053	6.342	60,328	6.783	41,274	9,105		4,001		12,343	•	7,997	
Cost of Production (18)	0	12.059	12050 10818	97 A99	100 237	58.526	23.395	_	12,999	89,300	65,057	57,756	169,003	
Net Keturn(Kan/ na)	5	05.05	53 OR	5 11	1	1_	8	0.30	0.30	2.74	57.30	0.58	4.28	
Flanted Area(na)	3	0000		140			23	c	4	245	3.728	33		7,673
Total Net Return (1,000 Ksh)	o¦ ¦	762,1	8	1	7101	5	24		-1	] [] []		1	     	 
II. With Project							(		6	1 10	ŗ	7	7.7.	
Unit price (Ksh/kg)	0	9.5	31.6	11.7	10.7		3.5		200	3	71,7	3 5		
Vield(ke/he)	0	2,000	650	8,000		0		12,000	- 1	2000	300		3 3	
Green Income (Ksh/ha)	0	31,640	31,640 20,540	93,600	117,700		٥	0	- 1	112,950	77,400	_ I	3	
Cost of Deschirtion (Keh/ha)	0	13.663	6.635	63,499	7,122		0		4,293	1	12,527	8,887	9.234	÷
Not Determ(Keh /he)	c	17.977	17.977 13.905	30,101	110,578		0	-	12,707	- 1	64,873	57,083	167,786	
District Association	8	75.79	53.91	5.16	6.67	0.00	0.00	0.32	1.61	2.28	47.13	0.58	4.26	
THEREOF ATORNIA	3	1382		155					20	228	3,057	က် (၁)	715	7,059
TOTAL CONTROL MADE IN THE CONTROL OF	1		8	¥	AC	134	-23	ic I		! }	-670			-614
	Maize	Maize/ Beens	Reans Poteto	Dotato	Caboaga Kala	Cabbage/ French Kale Beans	Potato Grass	Grass	Milet	Veget	Coffee	Banane	T-8-8	
I. Midlouc Fronce	Q.	C	31.8	0	10.7	0 1	0.0		20.0	25.1	0	0	0	
Unit price (Nam) Ng	5			0	14.500		0	0	900	5,000	0	0	0	
TIBIO (L) TIBIO	2 2		60	C	-			0	0 18,000	125,500	0	0	0	
Gross incomethan/ na/	200			٥	1	0			4.058	12,109	0	0	0	
Cost of Production (Nan/ na)			- { *		1				13.944	113.391	0	0	0	
Net Keturn (Keh/ha)	22,200	2	200	000	1	Č	00	000	1.22	1.03	0.0	0.8	0.00	
Plunted Area(ha)	00	5.0		3	ļ			c	1.	117	C	0	0	598
Total Net Return(1,000 Ksh)	102		4	); !	1 1	1	1		; 		1	 	; ; ;	1 1 1 1 1
II. With Project		•		•	,	000	Ľ		Ċ	55.7	17.9	7.5	0	
Unit price (Ksh/kg)	2	6.6	-	9	1		0	200	3	900	200	1000	0	
Yield(kg/ha.)	8	2,250/600	2	9		١,	000	3	0	150 800	00098	75,000	C	
Gross Income(Ksh/hs)	9 9	40,335	1	١	7	71	30,400 42,300	>		300,000	45.610	200	1	
Cost of Production(Ksh/ha)	9,312	16.597	8,760	٥		Ì	44.802 12.557	ļ	2	13,000	1000	2000	P	
Net Return(Ksh/hs)	30,688	23,738	23,738 14,940	٥	129		2		ָר י	C17151	004.07	0100	2	
Planted Area(ha)	4.84	32.02		0.00				0.16	800	0.97	10.01	Ì	3	2718
Total Nat Return(1,000 Ksh)				o¦	640	924	168	0		/2	5	717	oi c	1
III. Incremental Benefit(1,000 Ksh)	47	760	78			.		0	-17	9	98	1	٥	3,120
And the state of t		078	97	10	207	7 890	144	0	Ÿ	9	35	212	-5	2,506
(C) Incremental beneath, typic has	l													

Table S.2.1-21 Project Cost (Rupingazi Ngerwe)

		Financial Cost(Ksh)	sh)	Economic Cost(Ksh)	Cost(Ksh)
		Of Which,	Of Which,		Of Which,
	Total Cost	Private Sector	Govt/Public Sect.	Total Cost	Private Sector
1. Construction cost	٠		•		000
1) Impation & drainage improvement	3,713,856	3,713,856	5	3,468,/42	3,408,742
9) Merketine improvement	0	0	O		0
2) Access made improvement	3.694.300	0	3,694,300	3,450,476	0
A) Village (feers speak investment	684,000	0	684,000	638,856	0
f) United States and the improvement	0	0		0	0
Sub-Total	8,092,156	3,713,856	4,378,300	7,558,074	3,468,742
2 Community Development & Supporting Services	Ces				
1) Aminuthinal authors sarvices	10.640.000	0	10,640,000	9,937,760	0
o) Committee development	7,078,500		7,078,500	6,611,319	0
2) Mater management appoint	2,600,000	0	2,600,000	2,428,400	0
A) Marketing amport services	376,000	0	376,000	351,184	0
A) Maintening outpoint to the A) Dublic health services	150,000	0	150,000	140,100	0
Sub-Total	20,844,500	0	20,844,500	19,468,763	0
3. Associated Cost					i
1) Dramanginaging cost	306,481	0	306,481	286,253	0
2) Administration cost	2.025,563	0	2,025,563	1,891,876	0
	2.893.663	371,385	2,522,278	2,702,681	346,874
Consuming and Co	5.225.707	371,385	4,854,322	4,880,810	346,874
4 Obinition Continuency	809.214	371,384	437,830	755,806	346,873
Tripologi Corenigono	34.971.577	4,456,625	30,514,952	32,663,453	4,162,488

Table S.2.1-22 Operation and Maintenance Cost (Rupingazi Ngerwe)

		(unit:Ksh/year)
Financial Cost		Economic Cost
Annual Operation and Maintenence Cost		
1) Imrestion & drainage facilities	74,000	69,116
2) Marketing facilities	0	0
2) Access 7080s	208,000	194,272
4) Village/farm roads	57,000	53,238
5) Rural water supply facilities	0	0
Total	339,000	316,626