

Table L.1.4 Average Annual Household Income of the Sample Farmers

Location		Upstream	Midstream	Downstream (West)	Downstream (East)	IP Areas
Family Size	(person)	9.6	7.2	7.8	7.3	7.9
Farm Size of the Sample	(fed)	2.8	3.8	5.4	3.1	3.1
Agricultural Income	(LE)	5,135	6,247	7,113	5,849	5,145
Non Farm Income	(LE)	1,942	2,178	494	4,402	1,488
Household Income	(LE)	7,077	8,425	7,607	10,251	6,633
Household Income per capita	(LE/capita)	737	1,170	975	1,404	840
Agri. Income per land	(LE/fed)	1,834	1,644	1,317	1,887	1,660
Farm Size in the Study Area	(fed)	2.0	2.7	4.2 *		3.1
Agri. Income in the Study Area	(LE)	3,668	4,439	5,531		5,145
Household Expenditure	(LE)	7,199	6,801	7,277	8,408	8,126
Expenditure per capita	(LE/capita)	750	945	930	1,152	1,029

Source: Result of Farm Economy Survey in 1998 by the Study Team

Average Farm Size in the Study Area is based on agricultural Census in 1999/00

Note: \* as of Downstream area.

Table L.1.5 Water Duty and Net Income by Crops

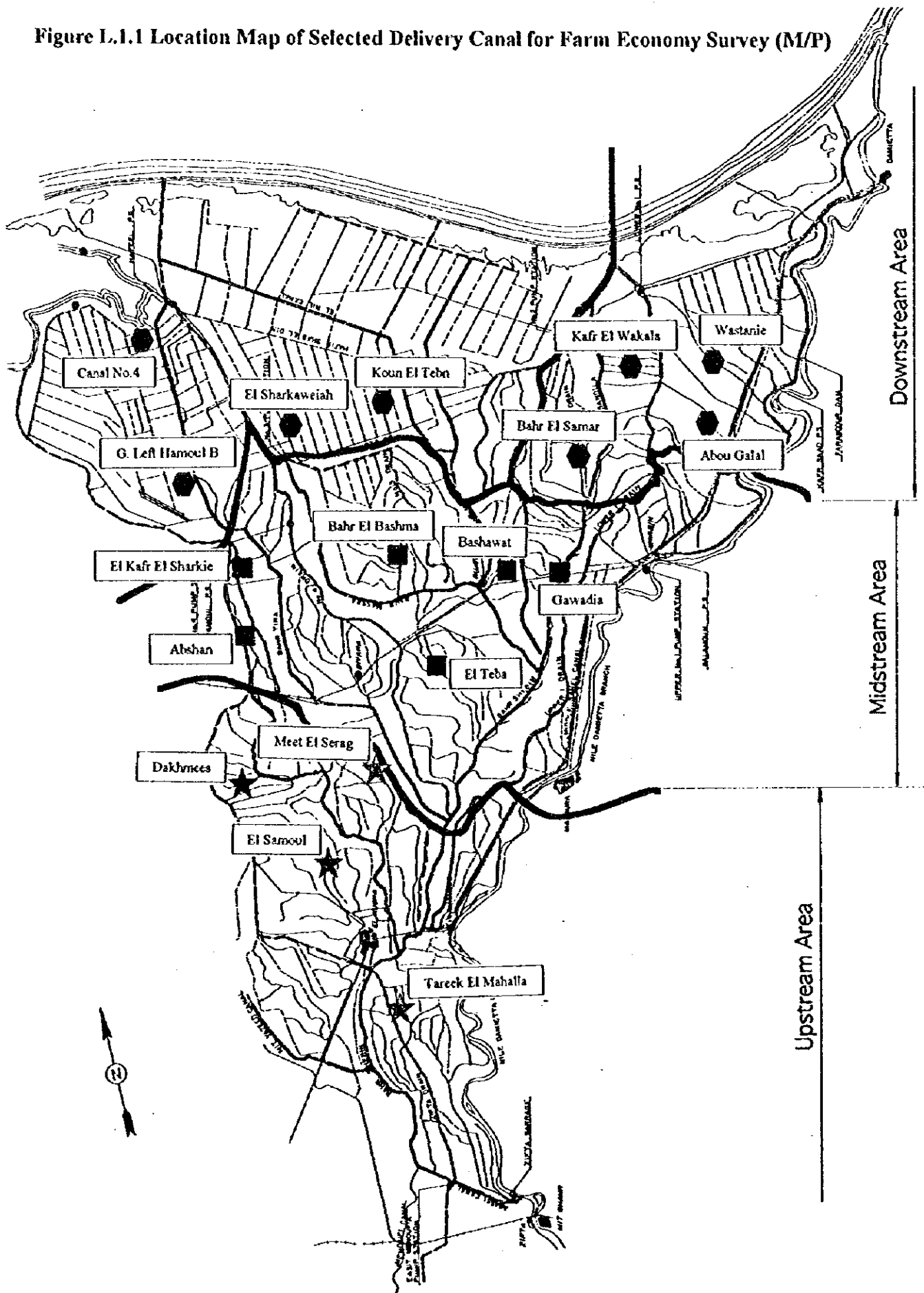
Crops	Water Duty (m <sup>3</sup> /fed)	Net Income per Feddan				Income per Water Duty			
		Gharbia (LE/fed)	Kaf El Sheikh (LE/fed)	Dakahlia (LE/fed)	Damietta (LE/fed)	Gharbia (LE/m <sup>3</sup> )	Kaf El Sheikh (LE/m <sup>3</sup> )	Dakahlia (LE/m <sup>3</sup> )	Damietta (LE/m <sup>3</sup> )
Wheat	2,152.53	560.4	649.8	543.7	562.9	0.27	0.30	0.25	0.26
Horse Beans	1,475.43	402.2	542.0	371.8	354.5	0.27	0.37	0.25	0.24
Barley	1,834.66		330			0.00	0.02	0.00	0.00
Lentils	1,704.66		342.2	59.8		0.00	0.20	0.04	0.00
Clover Crop	2,201.26	1,431.8	1,227.6	833.1		0.65	0.56	0.42	0.00
Clover Fodder	2,747.38	614.1	583.9	362.9		0.22	0.21	0.13	0.00
Flax	1,477.14	234.1	343.3	59.0	432.3	0.16	0.24	0.04	0.23
Winter Onion	2,591.76	1,297.8		1,032.4		0.49	0.00	0.40	0.00
Winter Garlic	2,591.76			209.2		0.00	0.00	0.08	0.00
Winter Vegetables(tomato)	1,713.28		1,514.6	976.0		0.00	0.88	0.57	0.00
Suger Beet	4,078.17	930.2	490.0	514.6		0.23	0.11	0.14	0.00
Cotton	3,552.63	1,953.3	2,224.1	1,331.1	2,083.0	0.55	0.63	0.37	0.59
Rice	7,041.81	1,207.7	1,078.6	931.9	1,038.0	0.17	0.15	0.13	0.15
Summer Maize	3,625.00	271.2	509.9	138.0		0.07	0.14	0.04	0.00
Summer Vegetables(tomato)	2,581.49	6,015.8	5,424.1	2,331.5	1,688.1	2.33	2.10	0.90	0.65
Summer Potatoes	1,680.77	4,368.6		5,956.1		2.61	0.00	3.54	0.00
Summer Sunflower	3,069.35			18.4		0.00	0.00	0.01	0.00
Nile Maize	2,583.22	272.6		242.5	253.5	0.11	0.00	0.09	0.10

Source: Water Duties MPAWR

Net Income: Agricultural Economy in 1995 MALR

Note: Here on this analysis, the statistical data for agricultural net income is used, for the data is more comprehensively collected on the statistics.

Figure L.1.1 Location Map of Selected Delivery Canal for Farm Economy Survey (M/P)



## L.2 Farm Economy Survey for the Feasibility Study

Table L.2.1 Average Data of Family Status and Agriculture by Farm Size as the result of Farm Economy Survey (F/S)

Item	Average (Total)	~3 fed.	3~5 fed.	5 fed.~	Priority Area Average					
1) No. of Sample Farm Households	130	74	33	23						
2) Family Size (persons)										
Total	8.3	7.5	10.0	8.4	5.2					
Men	4.4	3.9	5.2	4.5	2.6					
Women	3.9	3.6	4.8	3.9	2.6					
3) Labor Force in a family										
Total	5.1	4.8	6.1	5.2	3.2					
Men	2.6	2.5	3.2	2.8	1.7					
Women	2.5	2.3	2.9	2.4	1.5					
4) Farming Land(fed.)	3.2	1.8	3.8	7.2	2.1					
5) Farming Land per capita(fed./capita)	0.4	0.2	0.4	0.9	0.4					
6) Cropping Area(fed) and Intensity(%)	<u>Area</u>	<u>%</u>	<u>Area</u>	<u>%</u>	<u>Area</u>	<u>%</u>	<u>Area</u>	<u>%</u>	<u>Area</u>	<u>%</u>
Total	6.24	200	3.60	200	7.56	200	14.35	200	4.2	200
Wheat	1.06	34	0.59	33	1.31	34	2.31	32	0.68	32
Broad bean	0.40	13	0.24	13	0.46	12	1.21	17	0.28	13
Long Barseem	0.88	28	0.56	31	1.18	32	1.71	24	0.58	28
Short Barseem	0.29	10	0.18	10	0.21	6	0.91	13	0.19	9
Sugar Beet	0.31	10	0.16	9	0.51	13	0.71	10	0.19	9
Winter vegetables	0.20	7	0.00	0	0.10	3	0.31	4	0.18	9
Rice	1.88	59	1.05	58	2.42	64	4.06	56	1.23	59
Cotton	0.79	25	0.53	29	0.73	19	2.16	30	0.53	25
Maize	0.18	6	0.19	11	0.21	6	0.21	3	0.12	6
Water Melon Seed	0.25	8	0.10	6	0.43	11	0.76	11	0.22	10
7) Livestock(No. of Head)										
Cattle	1.1	0.8	1.1	1.8						
Buffalo	1.4	1.2	1.7	1.7						
Chicken(meat)	15.5	12.1	16.2	24.5						
Chicken(egg)	13.6	12.5	15.0	15.0						
Sheep or Goat	1.3	1.2	1.5	1.4						
8) % of Home Consumption										
Rice	37	47	36	28						
Maize	54	52	57	50						
Wheat	43	45	53	33						
Bean	23	25	19	22						
Berseem	85	86	77	90						
9) Worker and Working Days(day/year/capita) by Status										
Regular Work	<u>No.</u>	<u>Days</u>	<u>No.</u>	<u>Days</u>	<u>No.</u>	<u>Days</u>	<u>No.</u>	<u>Days</u>	<u>No.</u>	<u>Days</u>
On Own Farm(male)	1.4	327	1.2	326	1.6	306	1.8	333	0.9	0.9
On Own Farm(female)	0.5	266	0.4	283	0.6	292	0.3	299	0.3	0.3
On Other Farm(male)	0.1	176	0.0	0	0.3	198	0.0	0	0.1	0.1
On Other Farm(female)	0.1	307	0.0	0	0.1	300	0.0	0	0.1	0.1
Non Farm Occupation(male)	0.5	292	0.5	286	0.5	253	0.5	311	0.3	0.3
Non Farm Occupation(female)	0.1	188	0.1	80	0.2	146	0.1	355	0.1	0.1
Temporary Work										
On Own Farm(male)	1.1	148	1.2	147	1.0	161	1.0	118	0.7	0.7
On Own Farm(female)	0.7	145	0.7	135	0.8	175	0.4	113	0.4	0.4
On Other Farm(male)	0.2	135	0.3	106	0.0	0	0.3	199	0.1	0.1
On Other Farm(female)	0.1	85	0.1	120	0.0	0	0.1	250	0.1	0.1
Non Farm Occupation(male)	0.1	203	0.1	123	0.1	330	0.2	146	0.1	0.1
Non Farm Occupation(female)	0.1	215	0.0	0	0.0	360	0.0	0	0.1	0.1

Source: Result of Farm Economy Survey in 1998 by the Study Team

Table L.2.2 Unit Yield of Crop by Field Position along the Delivery Canals in the Priority Area

(Case 1)													
Canal	Area (feddan)	Dir./Feddan	Wheat	Broad beans	Berseem (long)	Berseem (short)	W. Vegetable = Onion	Suger beet	Rice	Cotton	Maize	S. Vegetable = Tomato	Water melon seed
1. Foda	1,650 (L=3.90km)	Upstream	1,300	1,550	24,000			20,000	2,050		1,120		333
		Downstream	1,300	1,344	24,000			20,000	2,050		1,120		333
2. B. No. 6.R	1,150 (L=3.66km)	Upstream	1,952	1,212	24,000	4,800		25,000	3,000	380	1,950		350
		Downstream	1,431	930	24,000	4,800		25,000	2,262	380	1,400		220
3. Bahr. El Nour	2,500 (L=7.39km)	Upstream	1,650	1,351	25,000		15,000	22,750	3,070	630	2,240	13,300	300
		Downstream	1,650	1,188	24,000		14,300	20,000	2,534	470	2,240	9,200	150
4. El Shoraha	840 (L=4.82km)	Upstream	1,319	930	24,000	6,000		17,000	2,500	472	1,680		
		Downstream	1,319	930	24,000	6,000		17,000	1,833	378	1,680		
5. Hazek	750 (L=2.78km)	Upstream	2,625	775	24,000	10,000		18,400	2,000	770	1,228	12,000	270
		Downstream	2,235	775	22,000	10,000		17,700	2,000	450	1,228	9,400	270
6. El Sharkawiah	1,712 (L=4.48km)	Upstream	1,887	930	24,000				2,174	840	2,049		220
		Downstream	1,820	930	21,000				2,174	584	1,595		220
7. El Kafr El Sharkie	1,428 (L=7.06km)	Upstream	1,905	930	15,000	7,000	6,700	21,700	2,834	618	1,838	13,300	370
		Downstream	1,635	930	10,000	6,800	4,000	19,000	2,834	515	1,232	10,700	335
8. B. No. 7.L	1,150 (L=3.25km)	Upstream	1,550	1,325	24,000	6,000	9,300		2,677	382			244
		Downstream	1,550	1,228	24,000	5,000	9,300		2,280	355			244
9. Zobia	3,800 (L=6.15km)	Upstream	1,800	1,240	24,000	6,000	4,600		3,000	630	2,240		350
		Downstream	1,650	1,151	24,000	5,600	4,200		2,263	483	1,680		320
Total (Average)	14,978	Upstream	1,747	1,191	23,310	6,334	8,478	21,382	2,694	611	1,908	13,091	315
		Downstream	1,626	1,090	22,224	6,010	7,673	20,009	2,293	459	1,610	9,690	268

(Case 2)													
Canal	Area (feddan)	Dir./Feddan	Wheat	Broad beans	Berseem (long)	Berseem (short)	W. Vegetable = Onion	Suger beet	Rice	Cotton	Maize	S. Vegetable = Tomato	Water melon seed
1. Foda	1,650 (L=3.90km)	Upstream		1,550									
		Downstream		1,344									
2. B. No. 6.R	1,150 (L=3.66km)	Upstream	1,952	1,212					3,000		1,950		350
		Downstream	1,431	930					2,262		1,400		220
3. Bahr. El Nour	2,500 (L=7.39km)	Upstream		1,351	25,000		15,000	22,750	3,070	630		13,300	300
		Downstream		1,188	24,000		14,300	20,000	2,534	470		9,200	150
4. El Shoraha	840 (L=4.82km)	Upstream							2,500	472			
		Downstream							1,833	378			
5. Hazek	750 (L=2.78km)	Upstream	2,625		24,000			18,400		770		12,000	
		Downstream	2,235		22,000			17,700		450		9,400	
6. El Sharkawiah	1,712 (L=4.48km)	Upstream	1,887		24,000					840	2,049		
		Downstream	1,820		21,000					584	1,595		
7. El Kafr El Sharkie	1,428 (L=7.06km)	Upstream	1,905		15,000	7,000	6,700	21,700		618	1,838	13,300	370
		Downstream	1,635		10,000	6,800	4,000	19,000		515	1,232	10,700	335
8. B. No. 7.L	1,150 (L=3.25km)	Upstream		1,325		6,000			2,677	382			
		Downstream		1,228		5,000			2,280	355			
9. Zobia	3,800 (L=6.15km)	Upstream	1,800	1,240		6,000	4,600		3,000	630	2,240		350
		Downstream	1,650	1,151		5,600	4,200		2,263	483	1,680		320
Total (Average)	14,978	Upstream	1,924	1,323	22,382	6,224	8,353	21,732	2,935	632	2,052	13,091	339
		Downstream	1,719	1,175	19,838	5,780	7,431	19,328	2,258	478	1,543	9,690	262

Source: Result of Farm Economy Survey (F/S)

Note: The collected data were evaluated between upperpart and lowerpart of a delivery canal in consideration of field observation and the aspect of physical and locational condition on irrigation. The data evaluation was concluded with 2 cases by omitting inadequate data.

Table L-2.3 Estimate of Farm Income by Farm Size

Farm Area	Area (fed)	Beans (LE/fed)	Long Barbecue (LE/fed)	Short Barbecue (LE/fed)	Wheat (LE/fed)	Sugarcane (LE/fed)	Vegetables (LE/fed)	Rice (LE/fed)	Cotton (LE/fed)	Maize (LE/fed)	Water main feed (LE/fed)
~3fed	3.8	0.24	0.56	0.16	0.59	0.16	0.00	1.00	0.53	0.19	0.10
3-5fed	3.8	0.48	1.18	0.21	1.31	0.51	0.10	2.42	0.73	0.21	0.43
5fed	7.2	1.21	1.71	0.31	2.31	0.71	0.31	4.06	2.16	0.21	0.76
Sample Ave.	3.2	0.40	0.88	0.29	1.06	0.31	0.20	1.88	0.79	0.18	0.25
F/S Ave.	2.1	0.28	0.56	0.19	0.68	0.19	0.16	1.23	0.53	0.12	0.22
Farm Unit											
Gross Return											
~3fed	1,719	1,398	396	1,540	2,211	2,171	1,801	2,130	1,161	2,550	
3-5fed	1,719	3,398	396	1,540	2,211	2,171	1,801	2,130	1,161	2,550	
5fed	1,719	1,398	396	1,540	2,211	2,171	1,801	2,130	1,161	2,550	
Sample Ave.	1,719	1,398	396	1,540	2,211	2,171	1,801	2,130	1,161	2,550	
F/S Ave.	1,719	1,398	396	1,540	2,211	2,171	1,801	2,130	1,161	2,550	
Farm Unit											
Unit Income											
~3fed	971	871	140	904	1,445	1,298	910	699	475	1,929	
3-5fed	971	871	140	904	1,445	1,298	910	699	475	1,929	
5fed	971	871	140	904	1,445	1,298	910	699	475	1,929	
Sample Ave.	971	871	140	904	1,445	1,298	910	699	475	1,929	
F/S Ave.	971	871	140	904	1,445	1,298	910	699	475	1,929	
Farm Total											
Gross Return											
~3fed	3,018	413	777	69	909	384	0	1,891	1,129	221	255
(1.8 fed)	per fed										
3-5fed	3,943	791	1,638	81	2,017	1,128	217	4,358	1,856	244	1,097
(3.8 fed)	per fed										
5fed	2,060	2,060	2,373	361	3,567	1,570	673	7,312	4,801	244	1,908
(7.2 fed)	per fed										
Sample Ave.	10,600	608	1,221	112	1,632	665	434	3,396	1,663	209	638
(3.2 fed)	per fed										
F/S Ave.	7,261	481	606	73	1,047	420	391	2,210	1,129	139	561
(2.1 fed)	per fed										
Farm Total											
Unit Income											
~3fed	3,119	233	488	25	633	231	0	996	370	99	193
(1.8 fed)	per fed										
3-5fed	7,192	447	1,026	20	1,184	737	126	2,292	910	100	829
(3.8 fed)	per fed										
5fed	13,066	1,175	1,492	127	2,080	1,026	390	3,695	1,510	100	1,466
(7.2 fed)	per fed										
Sample Ave.	5,084	368	766	41	959	446	262	1,711	592	66	482
(3.2 fed)	per fed										
F/S Ave.	3,690	272	506	27	615	275	229	1,119	370	57	474
(2.1 fed)	per fed										

Note: Farmers' average area, cropping intensity and unit yield are based on the result of the Farm Economy Survey in the Priority Area. The gross and net income per feddan is based on the Detailed Farm Economy Survey and some researches in the Priority Area. (Appendix N)

Table L.2.4 Non-Farm Income and Expenditure

Non-farm income (Annual)	yes	76 households	
	no	54 households	
	Range	400 LE to	16,600 LE
	Average	3,420 LE	(among 76 households)
		1,999 LE	(among 130 households)
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Expenditure	(Cash Base)		
	Average family size	8.2 persons	
	Average expenditure	5,971 LE/year	
	Expenditure per capita	728 LE/year	
	( Food Expenditure	2,883 LE )	
	( % of Food	48 % )	
	(Home Consumption Value)		
	Wheat(Main Product)	505 LE	(757kg*100LE/150kg)
	Wheat(By Product)	98 LE	(981kg*25LE/250kg)
	Broad Bean(Main Product)	124 LE	(101kg*190LE/155kg)
	Broad Bean(By Product)	10 LE	(169kg*15LE/250kg)
	Barseem	1,122 LE	(18,104kg*62LE/t)
	Maize(Main Product)	49 LE	(106kg*65LE/140kg)
	Maize(By Product)	1 LE	(33kg*10LE/250kg)
	Rice(Main Product)	905 LE	(1,508kg*600LE/t)
	Total	2,814 LE	
	Total Ave. Expenditure	8,785 LE	
	( Food Expenditure	4,466 LE )	
	( % of Food	51 % )	
	<u>Expenditure per capita</u>	<u>1,071 LE/year</u>	
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Expenditure in the Priority Area	(Ave. Family Size in the Priority Area)		
	Total	5.2 persons	
	<u>Total Ave. Expenditure</u>		
	Total	5,569 LE	(5.2*1,071LE)

Source: Farm Economy Survey (F/S)

Table L.2.5 Women's Priority in their Activity

Priority	(Unit %)						
	Children health	Vegetable cultivation	Chicken raising	Silk worm raising	Other Animal care	Dairy processing	Handicraft
No.1	84	4	8	4	8		
No.2	8		54		31	15	4
No.3	4		27		12	31	
No.4	4		8		23	27	
No.5		4					
No.6				4			
No.7							4

Source: Detailed farm Economy Survey for 26 sample farmers

Table L.2.6 Result of Farm Economy Survey by Delivery Canal in the Priority Area - Farmers' intention-

Question	Option	(Unit %)									
		Foda	G. No.6 R	Bahr Nur	Shorafa	Hazak	El Sharkawya	Kafr El Sharki	G. No. 7L	Zawbaa	Total
What kind of land development do you need apart from meeka improvement	subsurface drainage	93	0	80	0	100	33	0	0	90	42
	Land leveling	73	80	67	73	0	73	47	93	40	62
	Application of gypsum	0	60	93	13	0	27	60	27	60	37
	Subsoiling	0	33	40	0	0	13	53	47	20	23
	Deep plowing	0	20	7	0	0	33	40	27	0	15
	Application of green manure/compost	0	33	67	60	0	13	7	40	60	30
	Sprinkler irrigation	0	0	0	0	0	0	0	0	0	0
	Drip irrigation	0	0	0	0	0	0	0	0	0	0
	Other	27	0	0	93	0	0	7	0	0	15

Question	Option	(Unit %)									
		Foda	G. No.6 R	Bahr Nur	Shorafa	Hazak	El Sharkawya	Kafr El Sharki	G. No. 7L	Zawbaa	Total
If you grow more, what is the reason	Desalination of saline soils	0	54	73	50	53	13	7	40	70	33
	Maintenance of soil productivity, control of pests	40	77	53	57	7	0	0	33	40	39
	Profitable crop	0	46	53	21	67	87	73	87	30	50
	For home consumption	100	100	93	100	47	100	100	100	100	93
	Other	0	0	0	0	0	0	0	0	0	0

Question	Option	(Unit %)									
		Foda	G. No.6 R	Bahr Nur	Shorafa	Hazak	El Sharkawya	Kafr El Sharki	G. No. 7L	Zawbaa	Total
Do you agree to decrease rice if saline soil problem is solved by subsurface drainage/land improvement	No	100	40	40	100	87	40	53	40	50	62
	Yes-potatoes alternative	0	60	47	0	13	27	13	47	30	26
	Yes-vegetables	0	53	53	0	0	47	33	53	50	32
	Yes-fruits tree	0	0	0	0	0	0	0	0	0	0
	Yes-other	0	0	0	0	0	7	0	0	0	1

Question	Option	(Unit %)									
		Foda	G. No.6 R	Bahr Nur	Shorafa	Hazak	El Sharkawya	Kafr El Sharki	G. No. 7L	Zawbaa	Total
Who decides crops to grow	decide by themselves	100	87	100	73	100	13	13	60	60	68
	Obey predecessor's way	0	0	7	13	0	0	0	13	0	4
	land owner	0	0	7	13	7	13	20	0	20	8
	Cooperative	0	13	33	0	0	80	73	20	10	26
	Aula	0	20	27	7	0	0	0	27	0	9
	Agricultural Extension Worker	0	0	0	0	0	73	53	0	0	15
	Other	0	0	40	0	0	0	7	7	20	8

Question	Option	(Unit %)									
		Foda	G. No.6 R	Bahr Nur	Shorafa	Hazak	El Sharkawya	Kafr El Sharki	G. No. 7L	Zawbaa	Total
What do you consider to increase household income	raise agricultural productivity	100	100	100	100	100	100	93	100	100	99
	expand farming land by renting and purchasing	0	0	13	0	7	0	0	0	10	3
	cooperate with other farmers	0	0	20	0	7	20	13	47	20	14
	get non-farm job due to the limit of land	0	0	13	7	0	0	13	53	10	11
get non-farm job due to financial shortage	0	27	80	0	0	0	7	47	10	19	

Note: No. of Farms is 130 households. The answers are multiple.

Table L.2.7 Result of Farm Economy Survey by Delivery Canal in the Priority Area -Farmers' Opinion on Water Quality -

Question	Option	Foda	G. No.6 R	Behr Nur	Shorafa	Hazek	El Sherkanyya	Kafr El Sheriki	G. No. 7L	Zewbee	Total
Canal Water Use apart from irrigation	Drinking Water	0	7	0	27	0	27	13	0	10	9
	Domestic Water	0	20	20	27	0	33	40	20	60	23
	Livestock and Poultry	100	100	93	100	100	80	100	100	100	97
	Others	0	7	0	27	0	47	13	0	0	11

Question	Option	Foda	G. No.6 R	Behr Nur	Shorafa	Hazek	El Sherkanyya	Kafr El Sheriki	G. No. 7L	Zewbee	Total
Do you notice any water pollution on canal water at present? What is the cause?	No	27	0	0	0	0	0	0	13	0	5
	Yes-Domestic waste water	0	53	60	73	87	33	53	47	90	54
	Yes-Sewage water	0	40	93	100	100	67	80	73	80	70
	Yes-Livestock and Poultry	73	100	100	93	100	73	67	80	80	85
	Yes-Other	0	0	13	0	0	13	0	0	0	3

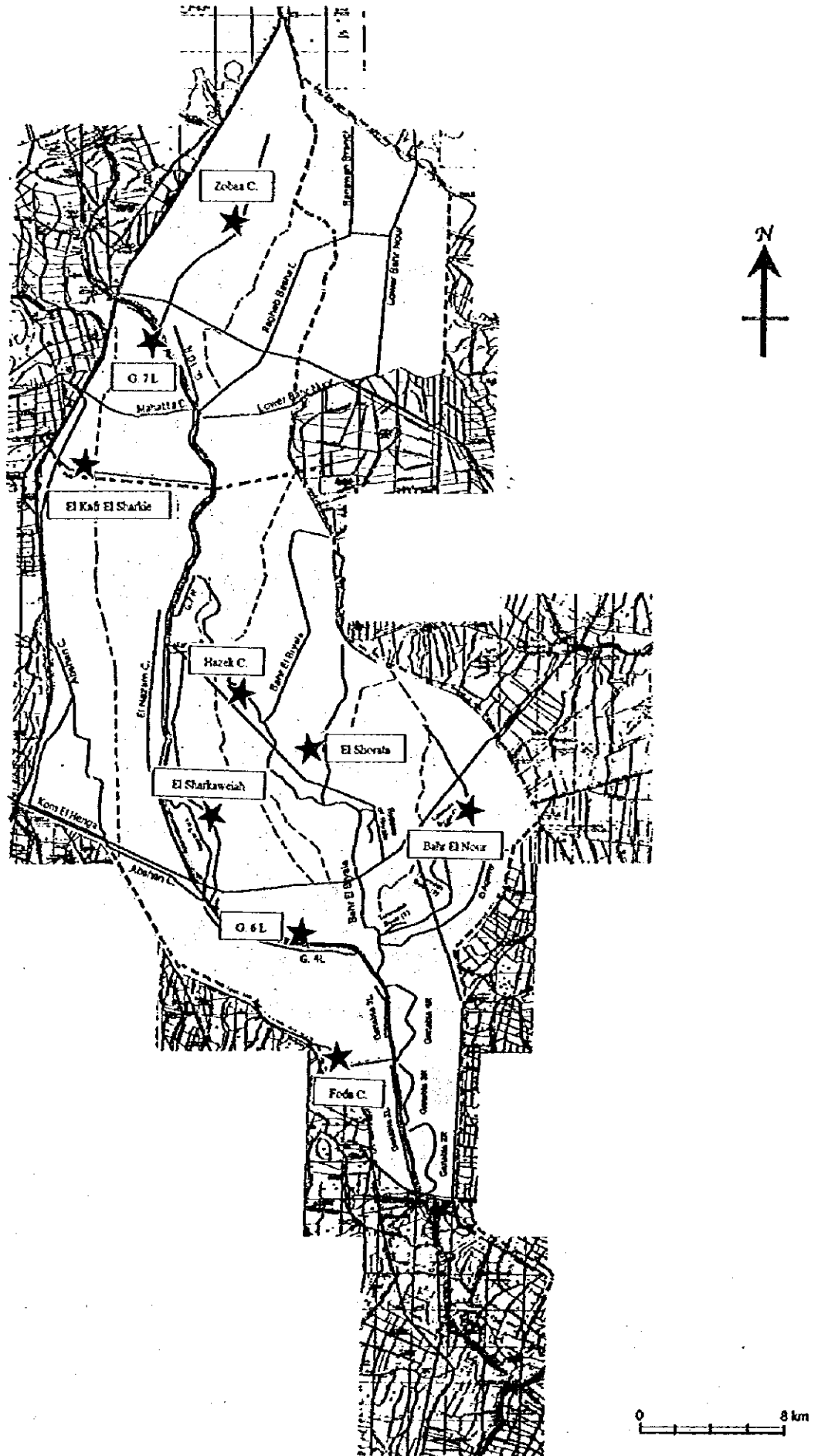
Question	Option	Foda	G. No.6 R	Behr Nur	Shorafa	Hazek	El Sherkanyya	Kafr El Sheriki	G. No. 7L	Zewbee	Total
Do you have any problem caused by water pollution?	No	27	7	0	0	0	7	7	7	0	6
	Yes-Disease	73	93	100	100	100	87	93	80	100	92
	Yes-Not suitable for domestic use	47	67	87	0	47	27	0	60	30	41
	Yes-Other	0	0	0	0	0	13	0	0	0	2

Question	Option	Foda	G. No.6 R	Behr Nur	Shorafa	Hazek	El Sherkanyya	Kafr El Sheriki	G. No. 7L	Zewbee	Total
Do you need to improve water quality in canal? What kind of measure?	No	13	0	0	0	0	0	0	0	0	2
	Yes-Drain development and treatment facilities	27	80	87	100	100	80	93	93	100	84
	Yes-Canal Protection against livestock	73	93	100	100	87	93	80	93	100	91
	Yes-other	0	0	0	0	0	7	7	7	0	2

Note: No. of Farms is 130 households. The answers are multiple.



Figure L.2.1 Location Map of Selected Delivery Canal for Farm Economy Survey (F/S)



L3 No. of Farm Household in the Priority Area

Table L3.1 Number of Farm Household by Land and Type of Ownership in the Priority Area in 1993

1) Mansaf District												
	Owner Operated Farm			Cash Rented + Own Farm			Share Rented + Own Farm			Total		
	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d
0-1 he/ctan	1,444	2,350	0.6	89	144	0.6	0	0	0.0	1,533	2,494	0.6
1-2 he/ctan	3,834	2,407	1.6	210	118	1.8	0	0	0.0	4,044	2,525	1.6
2-3 he/ctan	5,208	2,067	2.5	160	69	2.3	0	0	0.0	5,368	2,136	2.5
3-4 he/ctan	3,651	1,092	3.3	39	17	2.3	0	0	0.0	3,690	1,109	3.3
4-5 he/ctan	2,062	462	4.5	18	4	4.5	0	0	0.0	2,080	466	4.5
5-10 he/ctan	2,252	379	5.9	14	2	7.0	0	0	0.0	2,266	381	5.9
10-20 he/ctan	347	76	12.5	0	0	0.0	0	0	0.0	347	76	12.5
20-30 he/ctan	477	17	24.5	0	0	0.0	0	0	0.0	477	17	24.5
30-40 he/ctan	202	6	33.7	0	0	0.0	0	0	0.0	202	6	33.7
40-50 he/ctan	84	2	42.0	0	0	0.0	0	0	0.0	84	2	42.0
50 he/ctan -	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Total	20,308	8,658	2.3	550	254	1.8	0	0	0.0	20,858	8,912	2.3
Total - 3fe/d	16,496	6,824	1.9	459	231	1.4	0	0	0.0	16,955	7,055	1.9
	(81%)	(77%)		(84%)	(91%)					(81%)	(78%)	

2) Dhyala District												
	Owner Operated Farm			Cash Rented + Own Farm			Share Rented + Own Farm			Total		
	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d
0-1 he/ctan	2,418	4,363	0.6	173	173	0.7	173	351	0.4	2,764	4,977	0.6
1-2 he/ctan	2,902	2,733	1.0	252	152	1.7	481	254	1.9	4,535	3,181	1.5
2-3 he/ctan	5,091	1,925	2.6	510	207	2.5	176	90	2.0	5,777	2,222	2.6
3-4 he/ctan	2,220	647	3.4	159	43	3.7	159	39	4.2	2,538	729	3.5
4-5 he/ctan	1,748	384	4.6	48	13	3.7	90	17	5.3	1,887	416	4.5
5-10 he/ctan	2,778	426	6.5	44	7	6.3	206	37	5.6	3,028	453	6.7
10-20 he/ctan	1,874	129	14.6	39	6	6.5	204	12	17.0	1,914	147	13
20-30 he/ctan	464	19	24.4	22	1	24.0	32	2	26.0	516	22	24.4
30-40 he/ctan	219	10	21.9	0	0	0.0	37	1	37.0	256	11	24.4
40-50 he/ctan	209	5	41.8	0	0	0.0	0	0	0.0	209	5	41.8
50 he/ctan -	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Total	21,014	10,645	2.0	1,198	604	2.0	1,572	642	1.9	23,784	12,092	2.0
Total - 3fe/d	11,609	5,042	1.7	685	332	1.7	630	335	1.1	13,324	10,310	1.7
	(55%)	(48%)		(74%)	(55%)		(53%)	(52%)		(56%)	(85%)	

3) El Mahalla El Kuba District												
	Owner Operated Farm			Cash Rented + Own Farm			Share Rented + Own Farm			Total		
	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d
0-1 he/ctan	565	1,120	0.5	0	0	0.0	0	0	0.0	565	1,120	0.5
1-2 he/ctan	1,171	785	1.5	0	0	0.0	0	0	0.0	1,171	785	1.5
2-3 he/ctan	333	153	2.2	0	0	0.0	0	0	0.0	333	153	2.2
3-4 he/ctan	678	175	3.9	0	0	0.0	0	0	0.0	678	175	3.9
4-5 he/ctan	332	45	7.4	0	0	0.0	0	0	0.0	332	45	7.4
5-10 he/ctan	929	133	7.0	0	0	0.0	0	0	0.0	929	133	7.0
10-20 he/ctan	659	50	13.2	11	1	11.0	0	0	0.0	670	51	13.1
20-30 he/ctan	441	19	23.2	0	0	0.0	0	0	0.0	441	19	23.2
30-40 he/ctan	90	3	30.0	0	0	0.0	0	0	0.0	90	3	30.0
40-50 he/ctan	157	4	39.3	0	0	0.0	0	0	0.0	157	4	39.3
50 he/ctan -	37	1	37.0	0	0	0.0	0	0	0.0	37	1	37.0
Total	5,331	2,508	2.1	11	1	11.0	0	0	0.0	5,342	2,509	2.1
Total - 3fe/d	3,089	1,078	1.0	0	0	0.0	0	0	0.0	3,089	1,078	1.0
	(58%)	(43%)								(58%)	(43%)	

4) Taha District												
	Owner Operated Farm			Cash Rented + Own Farm			Share Rented + Own Farm			Total		
	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d
0-1 he/ctan	161	234	0.7	11	21	0.5	0	0	0.0	172	255	0.7
1-2 he/ctan	102	70	1.5	53	21	2.5	0	0	0.0	155	91	1.7
2-3 he/ctan	1,051	459	2.3	48	27	1.7	0	0	0.0	1,099	486	2.2
3-4 he/ctan	268	77	3.5	42	7	1.7	0	0	0.0	281	84	3.3
4-5 he/ctan	140	43	3.3	3	2	1.5	0	0	0.0	143	47	3.0
5-10 he/ctan	30	5	6.0	0	0	0.0	0	0	0.0	30	5	6.0
10-20 he/ctan	8	1	8.0	0	0	0.0	0	0	0.0	8	1	8.0
20-30 he/ctan	13	1	13.0	0	0	0.0	0	0	0.0	13	1	13.0
30-40 he/ctan	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
40-50 he/ctan	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
50 he/ctan -	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Total	1,774	902	2.0	125	78	1.6	0	0	0.0	1,899	980	1.9
Total - 3fe/d	1,314	773	1.7	110	63	1.6	0	0	0.0	1,424	842	1.7
	(74%)	(86%)		(88%)	(81%)					(75%)	(86%)	

Total												
	Owner Operated Farm			Cash Rented + Own Farm			Share Rented + Own Farm			Total		
	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d	Area (hectares)	No. of Owner	Average area/fe/d
0-1 he/ctan	4,806	8,085	0.6	272	308	0.7	173	351	0.4	5,251	8,814	0.6
1-2 he/ctan	9,009	6,017	1.5	515	291	1.8	481	254	1.9	10,005	6,562	1.6
2-3 he/ctan	11,693	4,616	2.5	716	303	2.4	176	90	2.0	12,575	5,009	2.5
3-4 he/ctan	7,018	1,931	3.6	230	67	3.0	159	39	4.2	7,407	2,098	3.5
4-5 he/ctan	4,183	936	4.5	63	21	3.0	90	17	5.3	4,342	974	4.5
5-10 he/ctan	5,987	926	6.5	58	9	6.4	206	37	5.6	6,245	972	6.4
10-20 he/ctan	3,309	256	12.9	50	7	7.1	204	12	17.0	3,563	275	13.0
20-30 he/ctan	1,332	58	23.0	22	1	23.0	32	2	26.0	1,407	58	23.0
30-40 he/ctan	611	19	32.2	0	0	0.0	37	1	37.0	648	20	32.4
40-50 he/ctan	457	11	41.5	0	0	0.0	0	0	0.0	457	11	41.5
50 he/ctan -	37	1	37.0	0	0	0.0	0	0	0.0	37	1	37.0
Total	48,430	22,814	2.1	1,884	1,037	1.6	1,572	642	1.9	51,886	24,793	2.1
Total - 3fe/d	25,498	10,718	1.4	1,454	932	1.6	630	335	1.1	27,282	10,385	1.4
	(53%)	(47%)		(77%)	(90%)		(53%)	(52%)		(54%)	(42%)	

Source: Agricultural Cooperatives in the Priority Area

Note: 1) The Land includes the owner's land registered in the Agricultural Cooperatives. The remaining 5,044 he/ctan is owned by the government.

2) In case the average area does not match the category classified by farm size such as the average size of 37.8 he/ctan in the class of more than 50 he/ctan, this is because the estimation for demarcation of the Priority Area.

#### L4 Agricultural Development Plan

Table L.4.1 Estimate of Income increase with Proposed Agricultural Development Plan in the Study Area

Upstream		20 fed/ha													
Crops	Crop Intensity	Without Project				With Project								Grand Total Income	
		area	Net Return per fed (LE/fed)	Total Net Value (fed)	Crop Intensity	area	Net Income per fed (LE/fed)	Total Net Income (LE)	WUA O/M	Soil improvement	Tile drainage	Meska improvement			
Wheat	37	0.74	1,470.34	1,088	42	0.84	1,692	1,421	70	50	0	141			
Broad Bean	3	0.06	1,271.55	76	3	0.06	1,491	89							
Flax	3	0.06	1,115.79	66	3	0.06	1,292	77							
Short Berseem	16	0.32	239.33	76	12	0.24	300	72							
Long Berseem	30	0.60	1,024.03	614	25	0.50	1,232	616							
Winter Vegetable	5	0.10	1,998.49	199	9	0.18	2,265	407							
Cotton	19	0.38	1,726.98	656	19	0.38	2,458	937							
Maize	33	0.66	847.37	559	50	1.00	1,259	1,259							
Rice	37	0.74	1,203.67	890	16	0.32	1,806	577							
Summer Vegetable	5	0.10	2,352.27	235	9	0.18	3,182	572							
Citrus	6	0.12	1,806.88	216	6	0.12	2,743	329							
<b>Total</b>	<b>194</b>	<b>3.68</b>	<b>4,675</b>	<b>2,338</b>	<b>194</b>	<b>3.68</b>	<b>6,356</b>	<b>3,178</b>	<b>140</b>	<b>100</b>	<b>0</b>	<b>282</b>	<b>5,834 (2,917)</b>		

Midstream		27													
Crops	Crop Intensity	Without Project				With Project								Grand Total Income	
		area	Net Return per fed (LE/fed)	Total Net Value (fed)	Crop Intensity	area	Net Income per fed (LE/fed)	Total Net Income (LE)	WUA O/M	Soil improvement	Tile drainage	Meska improvement			
Wheat	31	0.83	1,490.43	1,237	34	0.91	1,793	1,631	70	50	20	141			
Broad Bean	6	0.18	1,439.70	239	2	0.06	1,826	91							
Sugar beet	3	0.08	1,658.52	132	3	0.08	1,955	158							
Short Berseem	22	0.59	342.53	202	23	0.62	425	263							
Long Berseem	24	0.64	881.58	564	27	0.72	1,127	811							
Winter Vegetable	3	0.08	1,903.44	152	10	0.27	2,272	613							
Cotton	22	0.59	1,743.03	1,031	22	0.59	2,832	1,670							
Maize	16	0.43	839.62	361	42	1.13	1,410	1,593							
Rice	49	1.32	1,036.94	1,368	21	0.56	1,755	968							
Sunflower	0	0.00	0	0	0	0.00	0	0							
Summer Vegetable	7	0.18	2,304.08	414	14	0.37	3,430	1,291							
Citrus	1	0.02	2,226.90	44	1	0.02	3,632	72							
<b>Total</b>	<b>184</b>		<b>5,744</b>	<b>2,127</b>	<b>199</b>	<b>5.32</b>	<b>9,181</b>	<b>3,400</b>	<b>189</b>	<b>135</b>	<b>54</b>	<b>380.7</b>	<b>8,422 (3,119)</b>		

Downstream		42													
Crops	Crop Intensity	Without Project				With Project								Grand Total Income	
		area	Net Return per fed (LE/fed)	Total Net Value (fed)	Crop Intensity	area	Net Income per fed (LE/fed)	Total Net Income (LE)	WUA O/M	Soil improvement	Tile drainage	Meska improvement			
Wheat	22	0.92	1,332.55	1,225	28	1.17	1,617	1,891	70	50	20	141			
Broad Bean	5	0.21	1,104.89	232	7	0.29	1,379	399							
Sugar Beet	5	0.21	1,176.87	247	6	0.25	1,445	361							
Short Berseem	20	0.84	308.23	258	22	0.92	388	356							
Long Berseem	18	0.75	961.06	720	23	0.98	1,217	1,168							
Winter Vegetable	4	0.18	1,144.37	183	10	0.42	1,423	597							
Cotton	20	0.84	1,757.05	1,475	12	0.50	2,845	1,423							
Maize	10	0.42	849.97	358	9	0.37	1,425	527							
Rice	33	1.38	1,048.91	1,447	33	1.36	1,783	2,460							
Sunflower	0	0.00	701.64	0	6	0.25	1,125	281							
Summer Vegetable	7	0.29	2,124.49	616	10	0.42	3,248	1,364							
Citrus	2	0.08	1,851.20	148	2	0.08	3,151	252							
<b>Total</b>	<b>148</b>		<b>6,907</b>	<b>1,645</b>	<b>168</b>	<b>7.01</b>	<b>11,079</b>	<b>2,638</b>	<b>294</b>	<b>210</b>	<b>84</b>	<b>592.2</b>	<b>9,899 (2,357)</b>		

Note: Cost sharing by farmers for Meska improvement is estimated with no interest and 20 years repayment.

#### Average Income in the M/P area

average	W/O			
	Total	No Farm Income		
20	187,400	83,700	4,675	391,297,500
27	223,900	82,926	5,744	476,326,944
42	303,900	72,357	6,907	499,769,799
<b>Total (Average)</b>	<b>738,983</b>		<b>5,722</b>	<b>1,387,394,243</b>

average	W/			
	Total	No Farm Income		
20	187,400	83,700	5,834	488,306,800
27	223,900	82,926	8,422	698,427,650
42	303,900	72,357	9,899	716,247,472
<b>Total (Average)</b>	<b>738,983</b>		<b>7,963</b>	<b>1,902,980,921</b>

Table L.4.2 Estimate of Vegetable Supply from the Priority Area and Future Demand

(1) Estimate Supply of Vegetables from the Priority Area

Crop	Present Product				
	fed	ton/fed	Total	supply Ratio	Total Supply
<b>Winter Vegetable</b>					
Upstream	950	8.78	8,341	0.9	7,507
Midstream	210	8.78	1,844	0.9	1,660
Downstream	770	7.75	5,968	0.9	5,371
Sub-Total					14,538
<b>Summer Vegetable</b>					
Upstream	740	10.54	7,800	0.95	7,410
Midstream	620	10.54	6,535	0.95	6,208
Downstream	770	10.49	8,077	0.95	7,673
Sub-Total					21,291
<b>Grand Total</b>					<b>35,829</b>

Crop	Product With Project				
	fed	ton/fed	Total	supply Ratio	Total Supply
<b>Winter Vegetable</b>					
Upstream	1680	9.83	16,514	0.9	14,863
Midstream	1650	9.83	16,220	0.9	14,598
Downstream	2060	8.68	17,881	0.9	16,093
Sub-Total					45,554
<b>Summer Vegetable</b>					
Upstream	1470	14.23	20,918	0.95	19,872
Midstream	2270	14.23	32,302	0.95	30,687
Downstream	2060	14.16	29,170	0.95	27,712
Sub-Total					78,271
<b>Grand Total</b>					<b>123,825</b>

Source: Study Team

Note: Supply Ratio is the ratio of products being sold.

(2) Estimate of Demand

Total Population in 1996 = 59,272 thousand

Growth Ratio = 2.1%

Expected Population in 2007 =  $59,272 * 102.1\%^{11} = 74,496$  thousand

Vegetable Consumption = 204.7 kg per capita

Future Demand for vegetables in Egypt =  $204.7\text{kg} * 74,496$  thousand = 15,249 thousand tons

# L.5 Questionnaire

## L.5.1 FARM ECONOMY SURVEY

Para No.
-------------

Name of Farmer \_\_\_\_\_  
 Address: Subvillage : \_\_\_\_\_  
 Village : \_\_\_\_\_  
 District : \_\_\_\_\_  
 Governorate : \_\_\_\_\_  
 Delivery Canal : \_\_\_\_\_  
 Mesqua : \_\_\_\_\_

Date interviewed: \_\_\_\_\_, 1998  
 Enumerator : \_\_\_\_\_  
 Checked by : \_\_\_\_\_

1. Settlement in This Village : Since ( Years) \_\_\_\_\_  
 2. Family Composition and Working Conditions: \_\_\_\_\_

No.	Family Composition				Educa- tion (6yr old)	Working Days(Nov.,1997 to Oct.,1998)					Non-farm Occupation			
	Age	Sex		Family Status		Worked on Your Farms		Worked on Other Farms			Job Sites	Status	Days Worked (d/yr)	Yearly Income (LE/yr)
		Male	Female			Status	Days Worked (d/yr)	Status	Days Worked (d/yr)	Yearly Income (LE/yr)				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
1						R,T		R,D			R,D			
2						R,T		R,D			R,D			
3						R,T		R,D			R,D			
4						R,T		R,D			R,D			
5						R,T		R,D			R,D			
6						R,T		R,D			R,D			
7						R,T		R,D			R,D			
8						R,T		R,D			R,D			
9						R,T		R,D			R,D			
10						R,T		R,D			R,D			
11						R,T		R,D			R,D			
13						R,T		R,D			R,D			
14						R,T		R,D			R,D			
15						R,T		R,D			R,D			
16						R,T		R,D			R,D			
17						R,T		R,D			R,D			
18						R,T		R,D			R,D			

Note:

Col.	Code/Description	Col.	Code/Description
(4) Family Status	1=head of family	(6,8,12)	) Working Status
	2=spouse		
	3=children		
	4=son-in-law		
	5=daughter-in-law		
	6=parent		
	7=relatives		
	8=servant/employee & others		
(5) Education	1=illiterate	(11)	Job Site
	2=read and write		
	3=primary certificate		
	4=medium certificate		
	5=over medium certificate		
	6=university certificate		
	7=vocational/technical others(specify)		
			R=regular employee /worker
			T=temporary employee /worker
			D=per day basis
			1=within the village
			2=outside the village but within the district
			3=within the province but outside the district
			4=outside the province
			5=others(specify)

3. Area of Land Holding ( As of Oct.,1998 )

(Unit :fed.)

Land Items	Farming Land			Lease	Total	Share Cropping	Land Title #1
	Own	Rent	Subtotal				
1. Cultivated Land for	(1)	(2)	(3)	(4)	(5)=(3)+(4)	(6)	(7)
- Annual crops							
- Perennial crops							
Subtotal							
No. of plots							
Distance(in,max to min)							
2. Idle Land ( Cultivable Wasted )							
3. Homestead							
4. Others (Specify: )							
Total							

Note:(7) #1... a. national land b. registered as private c. Others(Specify)  
Distance : from residence to field

4. Rate of Rent and Leased Land Fee( Nov.,1997-Oct.,1998 )

Items	1. Annual Field Crops	2. Perennial Crops	3. Others
1. Rent fee per year			
a. Paid in cash (LE/fed.) (1)			
b. Paid in kind (Kg/fed.) (2)			
Kind (3)			
2. Lease fee per year			
a. Received in cash (LE/fed.) (4)			
b. Received in kind (Kg/fed.) (5)			
Kind (6)			
3. Price of land (LE/fed.) (7)			
4. Tax (LE/fed.) (8)			

Note: Others ...including the area of house lot and others.

5. Crop Production (Nov.1997-Oct.1998)

Name of Major Crops	Growing Period	Major Varieties	Crop Rotation	Production		Production (kg)	Damage			Water Source
				Planted Area (fed)	Unit Yield (kg/fed)		Lack of Water	Saline Soils	Drainage	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Winter Season						M				
1.						B				
2.						M				
3.						B				
4.						M				
Summer Season						B				
1.						M				
2.						B				
3.						M				
4.						B				
Nil						M				
1.						B				
2.						M				
Perennial Crops						B				
1.						M				
2.						B				

Note:

Col.		Code /	Description
(2)	Growing period From planting to harvesting		Ex. From Early Nov. - Mid May
(3)	Major Variety	1= high yielding/improved varieties (specify: ) 2= local/traditional varieties (specify: )	
(4)	Crop Rotation	1= two years rotation 2= three years rotation 3= no rotation	
(7)	Production	M= main products, B= by products	
(8),(9),(10)	Crop Damage	1= severely damaged 2= moderately damaged 3= no damage	
(11)	Water Source	1= canal 2= canal(re-use) 3= well 4= drain 5= others(specify)	

6. Destination of Crop Products, Major Eight Crops (Nov., 1997-Oct., 1998)

(Unit:Kq)

Crop	1. Home Consumption	2. To Middlemen			3. Private market			4. Cooperative	5. Directly to Customer	6. Seeds	7. Others
		by lot	farm-gate	village	local	central	atives				
1. Wheat	M	M	M	M	M	M	M	M	M	M	M
	B	B	B	B	B	B	B	B	B	B	B
2. Barley	M	M	M	M	M	M	M	M	M	M	M
	B	B	B	B	B	B	B	B	B	B	B
3. Maize	M	M	M	M	M	M	M	M	M	M	M
	B	B	B	B	B	B	B	B	B	B	B
4. Cotton	M	M	M	M	M	M	M	M	M	M	M
	B	B	B	B	B	B	B	B	B	B	B
5. Rice	B	B	B	B	B	B	B	B	B	B	B
	M	M	M	M	M	M	M	M	M	M	M
6. ( )	B	B	B	B	B	B	B	B	B	B	B
	M	M	M	M	M	M	M	M	M	M	M
7. ( )	B	B	B	B	B	B	B	B	B	B	B
	M	M	M	M	M	M	M	M	M	M	M
8. ( )	B	B	B	B	B	B	B	B	B	B	B
	M	M	M	M	M	M	M	M	M	M	M
9. ( )	B	B	B	B	B	B	B	B	B	B	B
	M	M	M	M	M	M	M	M	M	M	M



7. Inventory of Livestock and Poultry (Nov. 1, 1997 - Oct. 1, 1998)

Item	Unit	1. Cow (2 years)	2. Cow (2 years)	3. Buffalo (2 years)	4. Buffalo (2 years)	5. Chicken (Meat)	6. Chicken (Egg)	7. Sheep
1. July, 1998	No.							
2. Bought	No. Value(\$)							
3. Born	No.							
4. Sold	No. Value(\$)							
5. Died	No.							
6. Consumed at home	No.							
7. Others	No.							
8. Jan. 1997	No.							

8. Source of Domestic Water/Cooking Fuel, Toilet and Sewage

Source	Domestic Water		Feeding times/day	Other Domestic Water		Source of Cooking Fuel
	Distance in	Amount (3)		Source (5)	Distance in (6)	
(1) Type of Toilet			(4)			(8)
(10) Type of Sewage						
(11) Carbage Disposition						

Note:

Col.	Code / Description	Col.	Code / Description
(1)(3) Water source	1-deep well	(5)(6) distance	in meter/one way
	2-shallow well		from home
	3-irrigation canal		
	4-drainage canal	(9) Toilet type	1-no facilities 2-pit 3-flush toilet 4-other(specify)
	5-other etc.		
(5)(7) Amount	1-sufficient year round	(10) Sewage type	1-no facilities 2-pit 3-trinsectic canal 4-drainage canal 5-other(specify)
	2-sufficient only in winter season		
	3-insufficient year round	(11) Carbage Disposition	1-roads 2-cards 3-others(specify)
(8) Fuel source	1-wheat straw		
	2-other crop residue		
	3-propane gas		
	4-other(specify)		

9. Non-Farming Income (Nov,1997 - Oct,1998)

Source	Annual Income	
	In cash (LE)	In kind (Kg)
1. Renting Fee of Working Animals to Others		
2. Renting Fee of Farm Machinery's and or Accessories to others		
3. Interest Earned on Money Loaned to Others		
4. Allowance from Relative and Others		
5. Receipt of Gift from Relative		
6. Salary and Wages of Family Members		
7. Others(specify: )		
Total		

10. Household Expenditure

Items	Amount per Month		Amount per year (LE)
	Paid In Cash (LE)	Amount (Kg)	
1. Food per month	a. Wheat, corn and other grains		
	b. Beans		
	c. Eggs		
	d. Meat	i. Beef	
		ii. Poultry	
		iii. Milk	
		iv. Others( )	
	Subtotal		
	e. Fish	i. Freshwater fish	
		ii. Marine fish	
Subtotal			
f. Vegetables			
g. Other viands			
Total			
2. Tea, beverages and etc. per month			
3. Tobacco/Cigarettes per month			
4. Housing per year	a. House rent		
	b. House improvement		
	c. House maintenance/operation		
	d. House furnishing and equipment		
Total			
5. Fuel for light and water per year			
6. Clothing per year			
7. Personal and medical care expense per year			
8. Transportation and communication per year			
9. Recreation per year			
10. Education per year			
11. Tax per year			
12. Payment to WUA			
13. Others per year( )			
Ground Total			

**11. Information about Meska Irrigation System**

**(1) General Information on Irrigation System Covering Your Farmland**

- a. Number of parcels for your farmland \_\_\_\_\_
- b. Number of Meska canals covering your farmland \_\_\_\_\_
- c. Number of Water Users' Associations covering your farmland \_\_\_\_\_
- d. Water supply in Delivery Canal before Mesqua : rotationally \_\_\_\_\_  
continuously \_\_\_\_\_ In case of rotational irrigation, how is the rotation ?

<u>Summer Season</u>		<u>Winter Season</u>	
<u>Days On</u>	<u>Days Off</u>	<u>Days On</u>	<u>Days Off</u>
_____	_____	_____	_____

**e. Location of respective irrigation facilities**

	<u>Upstream</u>	<u>Midstream</u>	<u>Downstream</u>
- Delivery canal in main canal	_____	_____	_____
- Meska canal in delivery canal	_____	_____	_____
- Farmland(most parcels) in Meska canal	_____	_____	_____

f. Meska canal water management is in the way of group-use \_\_\_\_\_ or individual \_\_\_\_\_ ?

**g. Number of farmers and Marwa intakes of each Meska which serve your farmland**

<u>Meska</u>	<u>Number of farmers</u>	<u>Number of Marwa intakes</u>
A	_____	_____
B	_____	_____
C	_____	_____

(2) So called " Sakia Ring " or other traditional incorporating irrigation system is still viable in irrigation of your farmland ? "Yes" \_\_\_\_\_ , "Not viable \_\_\_\_\_

(3) Do you encounter any significant water shortage in the concerned Meska systems for the past ten years ? "Yes" \_\_\_\_\_ "No" \_\_\_\_\_ If "Yes", how is it inadequate?

- a. Only in summer season \_\_\_\_\_ (no. of days: max. \_\_\_\_\_ min. \_\_\_\_\_ )
- b. Both winter and summer seasons \_\_\_\_\_ (no. of weeks in total: \_\_\_\_\_ )
- c. Others ( specify: \_\_\_\_\_ )

(4) What do you think of the cause on water shortage ( respondent of (2) ) ?

- |  |         |          |
|--|---------|----------|
|  | Present | 10years  |
|  | _____   | ago_____ |
| a. Inadequate water is delivered to Mesqua by Delivery Canal                             | _____   | _____    |
| b. Water does not reach downstream in Meska even though water at head of Meska is enough | _____   | _____    |
| c. Meska facilities have less capacity to bring water adequately                         | _____   | _____    |
| d. Farmers tend to take excess water in the upstream                                     | _____   | _____    |
| e. Meska elevation is too high to bring the water from Delivery Canal                    | _____   | _____    |
| f. Others ( specify)   |         |          |
| Present _____  |         |          |
| 10 years ago _____   |         |          |

(5) Do you use water in drains as a supplemental water ? "Yes" \_\_\_\_\_ "No" \_\_\_\_\_ If "Yes", how often do you use water in drains ?

- a. Quite often during both summer and winter season \_\_\_\_\_
- b. Quite often but only during summer season \_\_\_\_\_
- c. Occasionally both summer and winter season \_\_\_\_\_
- d. Occasionally only during summer season \_\_\_\_\_
- e. Others (specify: \_\_\_\_\_ )

(6) What kind of Meska water losses do you notice ?

- a. Mesqua water is wasted during night \_\_\_\_\_
- b. Seepage water losses from Meska canal \_\_\_\_\_
- c. Illegal intake of water from other canals \_\_\_\_\_
- d. Others (specify: \_\_\_\_\_ )
- e. No losses are observed \_\_\_\_\_

## 12. Information about Operation and Maintenance of Meska Irrigation System

- (1) Do you have your own pump and / or Sakia for Marwa irrigation ? "Yes" \_\_\_\_\_, or "No" \_\_\_\_\_  
If "Yes", its capacity is \_\_\_\_\_ HP, \_\_\_\_\_ l/min, and /or applicable for \_\_\_\_\_ feddan.
- (2) By how many farmers the pump and /or Sakia is owned and used ? \_\_\_\_\_ farmers
- (3) How much you paid for the pump and/or Sakia including installation ? \_\_\_\_\_ LE
- (4) The pump and/or saqiya was purchased in 19\_\_\_\_, and expectedly more \_\_\_\_\_ years durable
- (5) Do you intake water directly from non-Meska canal ? "No" \_\_\_\_\_ , "Yes" \_\_\_\_\_
- (6) If "Yes" in (5) do you agree to stop the direct irrigation when IIP will contribute to distribute irrigation water properly "Yes" \_\_\_\_\_ , "No" \_\_\_\_\_

(7) At present, how you are joining a maintenance of Meska and drainage, such as dredging and weeding ?

	<u>Meska</u>	<u>Drainage(including the subsurface)</u>
a. By offering your own labor	_____	_____
b. By cost payment	_____	_____
c. By hiring laborers	_____	_____
d. By hiring rental machines	_____	_____
e. No joining	_____	_____
(specify the reason)	_____	_____

(8) How much money or how many days you spend annually for the above mentioned job ?

<u>Meska</u>	<u>Drain(including the subsurface)</u>
_____ LE/year, or _____ days/year	_____ LE/year, or _____ days/year

(9) How such rules are decided in allocating shared burden against each farmers ?

- a. By discussion among farmers in each year of crop season \_\_\_\_\_
- b. By customary law such as " haqq al-'arab" \_\_\_\_\_
- c. By fixed regulations etc. \_\_\_\_\_
- d. Others (specify: \_\_\_\_\_ )

(10) Have you encountered any conflict/disputes on water allocation and distribution for past ten years ?

	<u>Among users</u>	<u>With Governmental staff including gate keepers</u>
a. Quite often	_____	_____
b. Occasionally	_____	_____
c. Rarely	_____	_____
d. Never	_____	_____

(11) What kind of conflicts are mostly seen in your irrigation group ?

- a. Offense against the decided allocation as per canal O&M \_\_\_\_\_
- b. Inequity of water allocation between head and tail reaches \_\_\_\_\_
- c. Illegal installation of pump/Sakia \_\_\_\_\_
- d. Destruction or loss of pump/Sakia caused by other members \_\_\_\_\_
- e. Destruction of canals incurred by careless driving of tractor \_\_\_\_\_
- f. Others (specify: \_\_\_\_\_ )

(12) If rules decided are not observed by some farmers, then what kind of penalty will be imposed to him ?

- a. Monetary fine \_\_\_\_\_
- b. Report to police \_\_\_\_\_
- c. Others (specify: \_\_\_\_\_ )

(13) In case of penalty decision or conflict solution, who will be a most influential person in your irrigation group ?

- a. Village chief \_\_\_\_\_
- b. Police \_\_\_\_\_
- c. Senior member of rural community \_\_\_\_\_
- d. Through democratic negotiation among members \_\_\_\_\_
- e. Others(specify: \_\_\_\_\_ )

### 13. Intention on Improvement of Mesqua Operation and Maintenance

(1) Have you ever heard about "Irrigation Improvement Project(IIP)" which is aiming at a bold innovation of giving water users a large authority and responsibility through the establishment of "Water Users Association(WUA)", as a legal entity, in Meska canal ?

"Yes" \_\_\_\_\_ , or "No" \_\_\_\_\_

If "Yes", from whom you have heard this subject ?

- a. From other farmers of intimate \_\_\_\_\_
- b. From MPWWR staff \_\_\_\_\_
- c. From others \_\_\_\_\_
- (specify: \_\_\_\_\_ )

(2) If a WUA is established in your Meska canal, what kind of merit you expect ?

( Please more than one in accordance with your expectation )

- a. Stable and equitable water supply \_\_\_\_\_
- b. Decrease O/M cost for Meska and drainage \_\_\_\_\_
- c. More flexible and efficient water supply for diversified crops \_\_\_\_\_
- d. Decrease in conflict / dispute regarding water distribution \_\_\_\_\_
- e. Removal in over- intervention by Government for farmers' self- governing \_\_\_\_\_
- e. Other merit  
( specify: \_\_\_\_\_ )
- f. No merit is expected \_\_\_\_\_

(3) What kind of Mesqua improvement do you need ?

- a. Continuous flow of irrigation \_\_\_\_\_
- b. One-point lifting mesqua irrigation system(raised lining canal) \_\_\_\_\_
- c. One-point lifting Meska irrigation(pipe line)\_\_\_\_\_
- d. Lining of existing Meska canal \_\_\_\_\_
- e. Repair of existing Meska canal \_\_\_\_\_
- f. Others (specify: \_\_\_\_\_ )
- g. No response \_\_\_\_\_

(4) If the above said Meska irrigation system improvement succeeds to distribute water adequately and timely, do you agree to pay the project cost with applying specially arranged amortization system ?

“Yes” \_\_\_\_\_ “No” \_\_\_\_\_ If “No”, specify the reason:

(5) Can you afford to spare money for payment of water charge after improvement of irrigation system ? “Yes” \_\_\_\_\_ , “No” \_\_\_\_\_ If “Yes” how many percent in total farm income can you pay ?

- a. less than 4% \_\_\_\_\_
- b. 4-6% \_\_\_\_\_
- c. over 6% \_\_\_\_\_

#### 14. Information on Improvement Project Other than Meska System Development

(1) What kind of land development do you need to improve crop production other than Mesqua system improvement ?

- a. Subsurface drainage \_\_\_\_\_
- b. Land leveling \_\_\_\_\_
- c. Application of gypsum \_\_\_\_\_
- d. Subsoiling \_\_\_\_\_
- e. Deep plowing \_\_\_\_\_
- f. Application of green manure/ compost \_\_\_\_\_
- g. Sprinkler irrigation \_\_\_\_\_
- h. Drip irrigation \_\_\_\_\_
- i. Others( specify: \_\_\_\_\_ )

- (2) Do you grow rice ? "Yes" \_\_\_\_\_ "No" \_\_\_\_\_ If "Yes" What is the reason to grow rice ?
- Desalination of saline soils \_\_\_\_\_
  - Maintenance of soil productivity/ control of pests \_\_\_\_\_
  - Profitable crop \_\_\_\_\_
  - For home consumption \_\_\_\_\_
  - Others ( specify: \_\_\_\_\_ )
- (3) Do you agree to decrease rice cropping area or change rice to other crops if saline soil problems are properly solved through subsurface drainage / soil improvement ?
- "Yes" \_\_\_\_\_ , "No" \_\_\_\_\_ If "Yes", what kinds crop do you prefer to grow instead of rice
- Potato \_\_\_\_\_
  - Vegetables ( specify the major vegetables) \_\_\_\_\_
  - Fruit trees ( specify the fruit tree) \_\_\_\_\_
  - Others ( specify major crops) \_\_\_\_\_
- (4) Do you use canal water for other purpose than irrigation at present ?
- Drinking water \_\_\_\_\_
  - Domestic water \_\_\_\_\_
  - Livestock and poultry \_\_\_\_\_
  - Others (specify: \_\_\_\_\_ )
- (5) Do you notice any water pollution for canal water at present ? "Yes" \_\_\_\_\_ "No" \_\_\_\_\_
- \_\_\_\_\_ If "Yes" what cause on water pollution do you notice ?
- Domestic waste water pollutes canal water \_\_\_\_\_
  - Other sewage water than the above pollutes canal water \_\_\_\_\_
  - Livestock and poultry pollute mesqua water \_\_\_\_\_
  - Others (specify: \_\_\_\_\_ )
- (6) Do you have any kinds of problems caused by water pollution in canal ?
- "Yes", \_\_\_\_\_ "No" \_\_\_\_\_ If "Yes", specify the problems
- Disease were born by water \_\_\_\_\_ ? If so what kinds of diseases are ?  
\_\_\_\_\_
  - Canal water is not suitable for domestic use \_\_\_\_\_
  - Others (specify: \_\_\_\_\_ )
- (7) Do you need to improve water quality in canal ? "Yes" \_\_\_\_\_ "No" \_\_\_\_\_ If "Yes", what kind of measure do you want apply ?
- Stop to drain domestic water to canals through development of drainage and treatment facilities of polluted water \_\_\_\_\_



- b. Protection of canal water from pollution caused by livestock and poultry at village level \_\_\_\_\_
- c. Others (specify: \_\_\_\_\_ )

(8) How do you decide the planting crops, cropping area and cropping pattern?

- a. decide by myself considering profitability under the farming condition
- b. obey the others (chose from the list below)
  - i. predecessor's way
  - ii. land owner
  - iii. cooperative,
  - iv. Aila
  - v. Water User's Association
  - vi. agricultural extension worker
  - vii. other (specify: \_\_\_\_\_ )

(9) What do you consider to increase your household income

- a. raise agricultural productivity by improvement of land and irrigation system
- b. expand farming land by renting or purchasing
- c. cooperate with other farmers for production and selling
- d. get non-farm job due to the limit of farming land
- e. get non-farm job due to the financial shortage to improve land and irrigation system
- f. other(specify: \_\_\_\_\_ )

**15. Others**

What are the main constraints in your opinion about hampering agricultural production and / or income increase other than the preceding question to achieve successful standard of living ?

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (3) \_\_\_\_\_

## L.5.2 DETAILED FARM ECONOMY SURVEY

Farm  
No.

Name of Farmer who answered

\_\_\_\_\_

Date interviewed: \_\_\_\_\_, 1998

Address: Subvillage : \_\_\_\_\_

Enumerator : \_\_\_\_\_

Village : \_\_\_\_\_

Checked by : \_\_\_\_\_

District : \_\_\_\_\_

Governorate : \_\_\_\_\_

Delivery Canal : \_\_\_\_\_

No. of Family Member : \_\_\_\_\_

Total Farming Land : \_\_\_\_\_

Detailed Farm Survey

1. Farm-gate Price of Major Eight Sold Crop(Nov.1997-Oct.,1998)

Main Products	Unit	Unit Price							Form of Products*1
		Mid-Bemen		Directly to market			Cooperative	Directly to Consumers	
		By lot	Farm-gate	Village	Local	Central			
1. Wheat									
2. Faba bean									
3. Mazie									
4. Cotton									
5. Rice									
6. ( )									
7. ( )									
8. ( )									

Note: \*1---(1) Fresh (2)Dried (3) With shell

2 Inventory of Capital Investment ( As of Oct.,1998 )

Items	Capacity	Number	Used Year (year)	Original Value(LE)	Repair Cost(LE/yr)	% of non agr'l use
1.House(dwelling)						
2.Shed for animals						
3.Shed for farming						
4.Tractor,(wheel)	HP*					
5.Hand Tractor	HP*					
6.Irrigation Pump Set	HP					
7.Sprayer						
8.Other Machineries for Crop Production						
a.(Name )						
b.( )						
c.( )						
9.Harrow for Animal						
10.Bull Cart						
11.Cora Sheller (by man-power/ by engine)						
12.Bicycle						
13.Motor Bicycle						
14.Truck	cc					
15.Private Car	cc					
16.TV set						
17.Radio set						

Note: \*..Including attachments

3. Loan and Debt

Purpose	Remaining Debt (Jun,1997)	Source of Loan	Loan		Repayment of Debt by Jun.1998		Remaining Debt (Jun,1998)	
			Cash	In Kind	Principal	Interest		
								Item
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	(LE)		(LE)			(LE)	(LE/year)	(LE)
1.Crop Production								
a.								
b.								
c.								
2.Livestok								
3.Machinery								
4.Farm Land								
Total								

Note:

Col.	Code/Description	Col.	Code/Description
(1) Crop Production	1= fertilizer 2= seeds/seedlings 3= hired labor 4= others/spec others(specify)	(2) Source of Loan	1= merchant 2= land owner 3= relatives 4= bank(specify)

4-1. Use of Farm Input by Major Crop (Nov. 1997 - Oct. 1998)

1. Crop Name ( )

2. Variety ( )

3. Planted Area ( feddan)

4. Table

Item	Unit	per feddan	Total	Purchase Price (L.E./unit)	Purchase from	Purchase Fund by Credit	
						Term year	Interest %
A. Yield							
B. Farm Input							
1. Machinery							
(1) Tractor							
- Plowing	hr						
- Harrowing	hr						
(2) Irrigation pump	hr						
(3) Sprayer	hr						
(4) Thresher	hr						
(5) Combine	hr						
(6) Winnowing	hr						
2. Farm Input							
(1) Seeds/seedlings	Kg						
(2) Fertilizer	Kg						
- N	Kg						
(Major kind)							
- P2O5	Kg						
(Major kind)							
- K	Kg						
(Major kind)							
- Manure/Compost							
(3) Insecticides	liter						
(Major kind)							
(4) Fungicides	kg						
(Major kind)							
(5) Herbicides	kg						
(Major kind)							
(6) Animal works							
- Land preparation	cow hr						
- Transportation	donk hr						

4-2 Labor Input (man-hr) and Labor Cost by Operation, Month and Crop

1. Crop Name( )
2. Variety ( )
3. Planted Area( )
4. Table ( Man-hr per Acre)

Month	Operation		Seed-bedding	Land-preparation		Sowing/Planting	Watering	Fertilizing	Weeding	Spraying	Harvesting	Threshing	Winnowing	Transportation	Specify	Total
	man-hr	Wages(E)		Family/Hired	Family/Hired											
Nov.	man-hr	Wages(E)	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Dec.	man-hr	Wages(E)	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Jan.	man-hr	Wages(E)	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Feb.	man-hr	Wages(E)	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Mar.	man-hr	Wages(E)	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Apr.	man-hr	Wages(E)	/	/	/	/	/	/	/	/	/	/	/	/	/	/
May	man-hr	Wages(E)	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Jun.	man-hr	Wages(E)	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Jul.	man-hr	Wages(E)	/	/	/	/	/	/	/	/	/	/	/	/	/	/
AUG	man-hr	Wages(E)	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Sep.	man-hr	Wages(E)	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Oct.	man-hr	Wages(E)	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Note: # includes value of board

4-3 Volumes of Imported Machinery by Operation, by Month and by Major Crops

1. Crop Name( )
2. Variety ( )
3. Planted Area( )
4. Tolls (per Field)

Operation	Seed-bedding	Land-preparation	Sowing/Planting	Watering	Fertilizing	Weeding	Spraying	Harvesting	Threshing	Winnowing	Transportation	Specify	Total
Month (Specify)													
1. Machinery	Unit	Own/Hired	Own/Hired	Own/Hired	Own/Hired	Own/Hired	Own/Hired	Own/Hired	Own/Hired	Own/Hired	Own/Hired	Own/Hired	Own/Hired
(1) Tractor - Plowing	hr	/	/	/	/	/	/	/	/	/	/	/	/
	Cost(LE)	/	/	/	/	/	/	/	/	/	/	/	/
- Harrowing	hr	/	/	/	/	/	/	/	/	/	/	/	/
	Cost(LE)	/	/	/	/	/	/	/	/	/	/	/	/
- Other (specify)	hr	/	/	/	/	/	/	/	/	/	/	/	/
	Cost(LE)	/	/	/	/	/	/	/	/	/	/	/	/
(2) Irrigation pump	hr	/	/	/	/	/	/	/	/	/	/	/	/
	Cost(LE)	/	/	/	/	/	/	/	/	/	/	/	/
(3) Sprayer	hr	/	/	/	/	/	/	/	/	/	/	/	/
	Cost(LE)	/	/	/	/	/	/	/	/	/	/	/	/
(4) Thresher	hr	/	/	/	/	/	/	/	/	/	/	/	/
	Cost(LE)	/	/	/	/	/	/	/	/	/	/	/	/
(5) Combine	hr	/	/	/	/	/	/	/	/	/	/	/	/
	Cost(LE)	/	/	/	/	/	/	/	/	/	/	/	/
(6) Winnow Machinery	hr	/	/	/	/	/	/	/	/	/	/	/	/
	Cost(LE)	/	/	/	/	/	/	/	/	/	/	/	/
(7) Truck	hr	/	/	/	/	/	/	/	/	/	/	/	/
	Cost(LE)	/	/	/	/	/	/	/	/	/	/	/	/
(8) Specify	hr	/	/	/	/	/	/	/	/	/	/	/	/
	Cost(LE)	/	/	/	/	/	/	/	/	/	/	/	/
	hr	/	/	/	/	/	/	/	/	/	/	/	/
	Cost(LE)	/	/	/	/	/	/	/	/	/	/	/	/

4-4 Volumes of Materials by Operation, by Month and by Major Crops

1. Crop Name ( )
2. Variety ( )
3. Planted Area ( )
4. Table (per Feddan)

Operation	Seed-bedding	Land-preparation	Sowing/Planting	Watering	Fertilizing	Weeding	Spraying	Harvesting	Threshing	Winnowing	Transportation	Specify	Total
Month (Specify)	Unit												
1. Materials													
(1) Seeds/Seedlings	kg Cost (L.E)												
(2) Fertilizers													
- N (Major kind)	kg Cost (L.E)												
- P2O5 (Major kind)	kg Cost (L.E)												
- K (Major kind)	kg Cost (L.E)												
(3) Insecticides (Major kind)	litter Cost (L.E)												
(4) Fungicides (Major kind)	kg Cost (L.E)												
(5) Herbicides (Major kind)	kg Cost (L.E)												
(6) Other (Specify)													
(7) Oil/Lubrication oil	Cost (L.E) litter Cost (L.E)												
2. Animals													
(1) Cows	hr Cost (L.E)												
(2) Donkey	hr Cost (L.E)												
(3) Other (Specify)	hr Cost (L.E)												

Appendix

1. Participation of Women in Farm Activity ( Put the Serial Number of the Family Member)

1. Crop Husbandary										
Operation	Seed Storage	Land Preparation	Planting	Irrigation	Weeding	Post control	Harvesting	Storage		
Crop										
(1) Cotton										
(2) Wheat										
(3) Rice										
(4) Maize										
(5) Vegetables										
2. Animal Husbandary										
Operation	Feeding	Cleaning	Grazing	Breeding	Milking	Curing	Making Dung_Cake	Transportation		
Livestock/Poultry										
(1) Cattle /Buffalo										
(2) Chicken										
(3) Silk worm										
Operation	Fetching of water	Cooking food	Washing clothes	Cleaning house	Transportation	Processing dairy				
Item										
3. Domestic Works										

2. Participation in Decision Making ( Put the Serial Number of the Family Member)

Operation	Crops cultivate	Livestock raising	Crops marketing	Livestock trading	Land purchase	Machinery purchase
1 Farming						
Activity	Daily purchase	House purchase	Children education(male)	Children education(female)	Personal medical	Children medical
2. Domestic Activity						

3. Women Organization and Activity(At Present)

Name of Organization	
Its Activity	

4. Information Need on Women's priority

Number	item	Vegetable cultivation	Chicken raising	Silk worm raising	Other Animal care	Dairy processing	Handicraft
Priority in number	Children health						



APPENDIX M.

**COST ESTIMATE AND IMPLEMENTATION PLAN**

## **Appendix M Cost Estimate and Implementation Plan**

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## M.1 Cost Estimation of M/P

Table M.1.1 Project Cost Estimation (M/P)

Description	Unit: 1,000		Total
	Foreign Cost (L.E)	Local Cost (L.E)	
1. Improvement of Major Facilities			
(1) Monofy Regulator	13,203	7,427	20,630
(2) Rabbeen Regulator	44,346	25,314	69,660
(3) Improvement of Damara Regulator	24,960	14,040	39,000
(4) Bahr Tera and Abshan Motorization	439	192	631
(5) Tera Main Canal Reembment	316	734	1,050
(6) Hamoul Pumping Station	22,798	6,002	28,800
(7) Slope Protection	4,838	11,290	16,128
(8) Weed Control	6,120	680	6,800
<b>Subtotal</b>	<b>117,020</b>	<b>65,679</b>	<b>182,699</b>
2. Improvement of Delivery Canal			
(1) Slope Protection	9,246	3,082	12,328
(2) Installation of Check Gate	10,296	24,024	34,320
(3) Repair of Gates	743	319	1,062
(4) Replace of Intake Gate	4,601	1,559	6,160
<b>Subtotal</b>	<b>24,886</b>	<b>28,984</b>	<b>53,870</b>
3. Moska Improvement	547,835	821,754	1,369,589
4. Water Management	5,356	344	5,700
5. Drainage Improvement Tile Drainage	58,197	232,789	290,986
6. Pilot Scheme	4,083	4,850	8,933
7. Demonstration Farm	446	3,292	3,738
8. Pump, Gate and Apparatus Repair Shop	780	520	1,300
9. Water Conservation Plan	832	92	924
10. Administration & Consultants Remuneration	83,538	127,413	210,951
<b>TOTAL</b>	<b>842,972</b>	<b>1,285,717</b>	<b>2,128,690</b>

Table M.1.2 Cost Estimate of Project Component (1)

Item	Quantity	Unit	Unit Price (LE)	Total (000 LE)	Remark
<b>1. Main Irrigation System Improvement</b>					
(1) Monofy barrage	20	m	910,000	18,200	
Barrage Body w/ Gate					
Embankment	3,000	m <sup>3</sup>	25	75	
Stone Ptching	2,427	m <sup>3</sup>	100	243	
Temoprary Work		10%		1,852	
Geological Survey	1.0	LS	260,000	260	
		Total		20,630	
(2) Rahabeen Barrage					See Table M.2.2
(3) Improvement of Damara Regulator	80	m	300,000	24,000	
Box Culvert	3,000	m	2,000	6,000	
Temporary Work		30%		9,000	
		Total		39,000	
(4) Bahr Tera and Abshan Motorization					See Table M.2.2
(5) Tera Main Canal Reembankment					See Table M.2.2
(6) Hamoul Puming Station					See Table M.2.2
(7) Slope Protection	201,600	m <sup>3</sup>	80	16,128	
		(72km)			
		Total		16,128	
(8) Weed Control	4	set	1,700,000	6,800	
		Total		6,800	

Table M.1.3 Cost Estimate of Project Component (2)

Item	Quantity	Unit	Unit Price (LE)	Total (000 LE)	Remark
<b>2. Improvement of Delivery Canal</b>					
(1) Slope Protection	154,100	m <sup>3</sup>	80	12,328	92km
(2) Check Structure	6,864	m <sup>2</sup>	5,000	34,320	every 3km
(3) Repair	1,280	m <sup>2</sup>	830	1,062	80 delivery canals
(4) Replacement	1,232	m <sup>2</sup>	5,000	6,160	77 delivery canals
<b>Total</b>				<b>53,870</b>	
<b>3. Improvement of Meska Irrigation System</b>					
	695,223	fed	1,970	1,369,589	See Table M.2.2
<b>4. Water Management System Improvement</b>					
(1) Soft ware	144	set	31,644	4,557	
(2) Operation Cost	240	month	2,000	480	
(3) Training Cost	20	time	28,000	560	
(4) Seminar Operating Cost etc.	10	time	10,000	100	
(5) Miscellaneous	1	Ls		3	
<b>Total</b>				<b>5,700</b>	
<b>5. Drainage Improvement</b>					
Field Drainage	333,700	fed	600	200,220	See Table M.2.2
Repair Drainage	453,830	fed	200	90,766	
<b>Total 4</b>				<b>290,986</b>	
<b>6. Pilot Farm</b>					
					See Table M.2.2
<b>7. Demonstration Farm</b>					
					See Table M.2.2
<b>8. Reinforcement of Existing Workshop for Pump &amp; Gats etc.</b>					
Letho	4	set	250,000	1,000	
Others		30%		300	
<b>Total</b>				<b>1,300</b>	
<b>9. Water Conservation Plan</b>					
					See Table M.2.2

## M.2 Cost Estimation (F/S)

Table M.2.1 Project Cost Estimation (F/S)

<u>Description</u>	<u>Foreign Cost (LE)</u>	<u>Unit:1,000</u>	
		<u>Local Cost (LE)</u>	<u>Total</u>
1. Improvement of Major Facilities			
(1) Rahbeen Regulator	44,346	25,314	69,660
(2) Bahr Tera Intake Gate	258	102	360
(3) Epshan Regulator	181	90	271
(4) Slope Protection and Reembankment in the Tera Main Canal	316	734	1,050
(5) Hamoul Pump Station	22,798	6,002	28,800
<u>Subtotal</u>	<u>67,899</u>	<u>32,242</u>	<u>100,141</u>
2. Improvement of Delivery Canal			
(1) Installation of Check Gate	1,668	532	2,200
(2) Slope Protection	105	245	350
(3) Replace of Intake Gate	127	43	170
<u>Subtotal</u>	<u>1,900</u>	<u>820</u>	<u>2,720</u>
3. Improvement of Meska Canal 56,930 Feddan (23,911 ha)			
<u>Subtotal</u>	<u>44,860</u>	<u>67,292</u>	<u>112,152</u>
4. Water Management Improvement			
<u>Subtotal</u>	<u>8,416</u>	<u>684</u>	<u>9,100</u>
5. Drainage Improvement			
<u>Subtotal</u>	<u>1,878</u>	<u>7,512</u>	<u>9,390</u>
6. Pilot Sheme			
<u>Subtotal</u>	<u>4,083</u>	<u>4,850</u>	<u>8,933</u>
7. Demonstration Farm			
<u>Subtotal</u>	<u>35</u>	<u>258</u>	<u>293</u>
8. Establishment of Pump, Gate and Apparatus Repair Shop			
<u>Subtotal</u>	<u>195</u>	<u>130</u>	<u>325</u>
9. Water Conservation Plan			
<u>Subtotal</u>	<u>208</u>	<u>23</u>	<u>231</u>
10. Administration & Consultants Remuneration			
<u>Subtotal</u>	<u>13,382</u>	<u>13,382</u>	<u>26,764</u>
<u>TOTAL</u>	<u>142,856</u>	<u>127,193</u>	<u>270,049</u>

Table M.2.2 Cost Estimate of Project in the Priority Area (F/S)

1. Improvement of Major Facilities

(1) Rahbeen Regulator

Description	Unit	Q'ty	Unit Cost (LE)	Amount (1000 LE)		Total	Remarks	
				FC	LC		FC	LC
<b>1 Temporary Work</b>								
(1) Earth work (cut/backfill)	m <sup>3</sup>	6,480	28	36	145	181	20%	80%
(2) Gate (3m X 6No)	No	5	220,000	880	220	1,100	80%	20%
(3) Sheet pile	m	400	16,200	4,546	1,948	6,494	70%	30%
(4) Drainage operation	day	580	9,500	1,653	3,857	5,510	30%	70%
Sub-Total				7,115	6,170	13,285		
<b>2 Main Structure</b>								
(1) Earth work	m <sup>3</sup>	3,250	26	26	59	85	30%	70%
(2) Break of old structures	"	3,900	250	293	682	975	30%	70%
(3) Concrete work	"	6,500	2,550	8,290	8,290	16,580	50%	50%
(4) Sheet pile (water stop)	No	120	2,500	210	90	300	70%	30%
(5) Steed support pile	"	200	52,300	8,368	2,092	10,460	80%	20%
(6) Bridge (1-sharp)	m	70	174,860	9,792	2,448	12,240	80%	20%
(7) Gate and Hoist	9	sets	1,109,000	7,986	1,997	9,983	80%	20%
(8) Concrete block	m <sup>2</sup>	2,460	760	935	935	1,870	50%	50%
Sub-Total				35,900	16,593	52,493		
<b>3 Gate Operation Building</b>								
(1) Building work	m <sup>2</sup>	20	4,000	24	56	80	30%	70%
(2) Operation equipment at site	No	9	27,300	221	25	246	90%	10%
(3) Operation panel at Tanta	"	2	15,600	28	3	31	90%	10%
Sub-Total				273	84	357		
<b>4 Miscellaneous</b>								
				1,058	2,467	3,525	30%	70%
Total				44,346	25,314	69,660		









## (5) Hamoul Pump Station

Description	Unit	Q'ty	Unit Cost (LE)	Amount (1000 LE)		Remarks	
				FC	LC	FC	LC
<b>1 Access Canal Work</b>							
(1) Excavation	m <sup>3</sup>	58,100	24	418	976	1,394	30% 70%
(2) Embankment	"	3,000	32	29	67	96	30% 70%
<b>Sub-Total</b>				447	1,043	1,490	
<b>2 Pump House</b>							
(1) Reinforcing concrete	m <sup>3</sup>	1,700	2,600	2,210	2,210	4,420	50% 50%
(2) Pump house	m <sup>2</sup>	33	4,000	66	66	132	50% 50%
<b>Sub-Total</b>				2,276	2,276	4,552	
<b>3 Pump Unit and Apparatus</b>							
(1) Pump unit	No	3	4,100,000	10,800	1,200	12,000	90% 10%
(2) Valves, crane and trash plant	sets	"	1,760,000	4,752	528	5,280	90% 10%
(3) Coming electric board	"	"	990,000	2,673	297	2,970	90% 10%
(4) Operation panel	"	"	610,000	1,647	183	1,830	90% 10%
<b>Sub-Total</b>				19,872	2,208	22,080	
<b>4 Miscellaneous</b>							
				203	475	678	30% 70%
<b>Total</b>				22,798	6,002	28,800	



### 3. Improvement of Meska Irrigation System

Description	Unit	Q'ty	Unit Cost (LE)	Amount (1000 LE)			Remarks		
				FC	LC	Total	FC	LC	LC
Bahr El Nour	Fed	1,003	1,890	758	1,137	1,895	40%	60%	60%
Mashabik	Fed	80	1,930	62	92	154	40%	40%	60%
Rabwa West	Fed	92	2,180	80	120	200	40%	40%	60%
Rabwa East	Fed	100	4,300	172	258	430	40%	40%	60%
El Bora	Fed	50	1,920	38	58	96	40%	40%	60%
El Dewake	Fed	100	1,920	77	115	192	40%	40%	60%
Abo Kora	Fed	150	1,920	116	174	290	40%	40%	60%
Tarfaya	Fed	350	1,920	269	403	672	40%	40%	60%
Gobaah	Fed	40	1,920	30	46	76	40%	40%	60%
El Seteen	Fed	100	1,920	77	115	192	40%	40%	60%
Zant	Fed	150	1,920	115	173	288	40%	40%	60%
Abou El Ela	Fed	163	1,920	125	188	313	40%	40%	60%
El Bagara	Fed	93	1,920	71	107	178	40%	40%	60%
Hoad ~25"	Fed	233	1,920	179	268	447	40%	40%	60%
Matbek	Fed	76	1,920	58	88	146	40%	40%	60%
Meska Balat	Fed	13	1,920	10	15	25	40%	40%	60%
El Walda	Fed	130	1,920	100	150	250	40%	40%	60%
Safwat Ebed	Fed	40	1,920	30	46	76	40%	40%	60%
Sheikh Hassan	Fed	80	1,920	62	92	154	40%	40%	60%
Ganadi	Fed	35	1,920	27	41	68	40%	40%	60%
Kishar	Fed	100	1,920	77	116	193	40%	40%	60%
Nour(1)	Fed	160	1,920	123	185	308	40%	40%	60%
Nour(2)	Fed	207	1,920	159	239	398	40%	40%	60%
Nour(3)	Fed	455	1,920	350	524	874	40%	40%	60%
Total	Fed	4,000	1,920	3,166	4,749	7,915	40%	40%	60%
	Fed	1	1,970						
	Fed	56,930	1,970	44,860	67,292	112,152	40%	40%	60%



















6. Establishment of Pilot Scheme (Continue)

Name of Structures : Water Quality Equipment and Agriculture

Description	Unit	Q'ty	Unit Cost (LE)	Amount (1000 LE)			Remarks	
				FC	LC	Total	FC	LC
1 Water Quality								
Water Quality Checker(Handy Type)	set	2	9,250	19	0	19		
Rapid Water Quality Analyzer (N.P,K,etc.)	set	1	21,725	22	0	22		
Sub-total				41	0	41		
2 Agricultural Research								
Soil Stick and Soil Color Chart	set	2	1,134	2	0	2		
Soil Auger (Die 4")	set	2	2,925	6	0	6		
Soil Hardness Tester	set	2	1,159	2	0	2		
pH, EC Meter	set	2	2,750	6	0	6		
Electronic Balance	set	1	2,700	3	0	3		
Planimeter	set	2	2,113	4	0	4		
Measuring Tape(100m) and Hand Level	set	2	1,585	3	0	3		
GPS	set	2	4,587	9	0	9		
Survey Equipment(Level and Staff, etc.)	set	2	5,309	11	0	11		
Survey Equipment(Theodrite and pole, etc.)	set	1	15,773	16	0	16		
Tractor (80ps)	set	1	258,732	259	0	259		
Leveler (5m)	set	1	63,000	63	0	63		
Stable Cultivator	set	1	24,000	24	0	24		
Laser Equipment	LS	1	50,000	50	0	50		
Sub-total				458	0	458		

6. Establishment of Pilot Scheme (Continue)

Name of Structures : Irrigation and Drainage and Water Management

Description	Unit	Q'ty	Unit Cost (LE)	Amount (1000 LE)			Remarks	
				FC	LC	Total	FC	LC
<b>3 Irrigation and Drainage</b>								
Automatic Water Level Gauge (Logger Type)	set	14	9,278	130	0	130		
Current Meter	set	2	10,451	21	0	21		
AWD Station Wagon	set	2	61,546	123	0	123		
Sub-total				274	0	274		
<b>4 Water Management</b>								
Desktop Computer(Pentium II 450 Mz) HD6GB, win 98	set	6	7,731	46	0	46		
External HD 6.4 GB w/bay sapcar	set	3	3,107	9	0	9		
Color Monitor 21" class	set	3	3,865	12	0	12		
Color Monitor 17" class	set	3	2,577	8	0	8		
Printer (Leaser Printer) B&W A4 size	set	1	3,608	4	0	4		
Printer (BJ Printer) Color B4 size	set	1	1,030	1	0	1		
Scanner (A3 800 x 1600 dpi)	set	1	5,154	5	0	5		
Scanner (A4 800 x 1600 dpi)	set	1	2,061	2	0	2		
Router (for ISDN)	set	1	1,030	1	0	1		
Hub (10/100 M. 8 port)	set	1	773	1	0	1		
LAH & Modem (10 base-T + 56k)	set	2	515	1	0	1		
LAH board (Dos/V)	set	4	257	1	0	1		
Ether net cable (10base, 100m)	LS	1	515	1	0	1		
Printer Server	set	1	773	1	0	1		
Projector (Liquid Crystal, Resolution 800 x 600 dot)	set	1	17,010	17	0	17		
Desital Camera (1.3 million dot)	set	3	1,804	5	0	5		
Filter Screen	set	6	515	3	0	3		
CDRW (Driver/Rewritable)	set	6	1,030	6	0	6		
MS Office 97 (Professional)	set	6	1,288	8	0	8		
Page Maker 6.5	set	3	2,577	8	0	8		







7. Demonstration Farm (Continue)

Description	Unit	Q'ty	Unit Cost (LE)	Amount (1000 LE)			Remarks	
				FC	LC	Total	FC	LC
-Local specialized agronomist	M/M	60	5,000		300	300		
Sub-Total					1,128	1,128		
6 Input Materials								
(1) Seeds, fertilizers, chemicals	feddam	800	400		320	320	400 feddam x 2	
(2) Others	Ls				54	54	cropping	
Subtotal					374	374		
7 Training								
(1) Workshop/seminars	No	20	10,000		200	200		
(2) Overseas training	M/M	12	20,000		240	240	3 persons x 4 months	
(3) traveling/trips	M/M	100	6,000		600	600		
Sub-Total			16,000		1,040	1,040		
8 Fuel and others								
	Ls				500	500		
Total				432	3,306	3,738		
				35	258	293	F/S	
							= 3,738*4/51	





Table M.2.3 Cost Comparison : Alternative Plans of Regulator

Description	Plan-A (1,000LE)	Plan-B (1,000LE)	Plan-C (1,000LE)	Plan-D (1,000LE)
1 Temporary Work	13,285	13,285	13,285	16,923
2 Main Structure	42,510	41,938	42,630	42,510
3 Gate and Hoist	9,983	13,339	12,110	9,983
4 Miscellaneous	3,882	6,856	6,803	6,942
<b>Total</b>	<b>69,660 (100%)</b>	<b>75,418 (108)</b>	<b>74,828 (107)</b>	<b>76,358 (110)</b>

ALTERNATIVE PLANS		GATE			LIER			TOTAL LENGTH (m)
		SPAN(m)	No.	SUB TOTAL(m)	SPAN(m)	No.	SUB TOTAL(m)	
A	MAIN REGULATOR	5.0	6	30.0	1.5	5	7.5	37.5
	SUB #	5.0	3	15.0	1.5	2	3.0	18.0
B	MAIN #	11.5	3	34.5	1.5	2	3.0	37.5
	SUB #	11.5 5.0	1 1	16.5	1.5	1	1.5	18.0
C	MAIN #	5.0	8	40.0	1.5	7	10.5	50.5
	SUB #	11.5 5.0	1 1	16.5	1.5	1	1.5	18.0
D	MAIN #	5.0	6	30.0	1.5	5	7.5	37.5
	SUB #	5.0	3	15.0	1.5	2	3.0	18.0

Table M.2.4 Cost Comparison of Meska to be Proposed

Items	Description	Qty	A= 139 feddan											
			Case-1 Raised J-shape one-point P.	Case-2 Widen Ex. canal	Case-3 Raised Brick (Trap.) one-point P.	Case-4 Raised Brick (Rect.) one-point P.	Case-5 Pipeline w/ A. Valve one-point P.	Case-6 Pipeline w/F.pond one-point P.	Case-7 Stone Pitching	Case-8 Open G. Pipe w/Manholes	Case-9 Raised J-shape Ord. P.	Case-10 Raised Brick (Trap.) Ord. P.	Case-11 Raised Brick (Rect.) Ord. P.	
Pump Station	House	1	11,747	0	11,747	11,747	19,367	19,367	0	0	0	0	0	0
	Suction Pit	1	12,739	0	12,739	12,739	12,739	12,739	0	0	0	0	0	0
	Delivery Pit	1	3,764	0	3,764	3,764	9,391	9,391	0	7,990	3,764	3,764	3,764	3,764
	Intake	1	7,606	7,606	7,606	7,606	7,606	7,606	7,606	7,606	7,606	7,606	7,606	7,606
	Intake Pipe	15 m	3,761	3,761	3,761	3,761	3,761	3,761	3,761	3,761	3,761	3,761	3,761	3,761
	Paved canal	15 m	0	0	0	0	0	0	0	2,764	2,764	2,764	2,764	2,764
sub-total			39,618	11,367	39,618	39,618	52,864	52,864	11,367	11,367	22,121	17,895	17,895	17,895
Pump	Equipment	1	26,400	0	26,400	26,400	26,400	26,400	0	0	0	0	0	0
Canal	Canal	1,300 m	213,005	24,284	147,420	161,863	252,487	238,330	239,512	780,000	213,005	147,420	161,863	161,863
	Box	19	10,678	0	10,678	10,678	20,809	129,626	0	284,852	10,678	10,678	10,678	10,678
	Crossing	19	17,447	17,447	17,447	17,447	0	0	17,447	0	17,447	17,447	17,447	17,447
sub-total			241,130	41,731	175,545	189,988	273,296	367,956	256,959	1,064,852	241,130	175,545	189,988	189,988
Temporary Canal		1,300 m	42,120	42,120	42,120	42,120	42,120	42,120	42,120	42,120	42,120	42,120	42,120	42,120
Total	Construction cost		349,268	95,218	283,683	298,126	394,680	489,340	310,446	1,118,339	305,371	235,560	250,004	250,004
	w/ benefit	0%	0	0	0	0	0	0	0	0	0	0	0	0
Total			349,268	95,218	283,683	298,126	394,680	489,340	310,446	1,118,339	305,371	235,560	250,004	250,004
per feddan			2,513	685	2,041	2,145	2,839	3,520	2,293	8,046	2,197	1,695	1,799	1,799



Unit Cost

Pipe Line Meska (w/ Farmpound)

Items	Sepecification	Unit	Q'ty	Unit cost	Total	Total Qty	Unit	Cost	Remarks
Backfill of Existing Meska		m3	3.10	11.00	34.10	1,300	m	44,330	w/ transportation
Embankment		m3	0	11.00	0.00	1,300	m	0	w/ transportation
Slope shaped	berm	m2	0.00		0.00				
-do-	side slope	m2	0.00		0.00				
Canal	PVC (dia 400 mm)	m	1.00	200.00	200.00	400	m	80,000	
	PVC (dia 350 mm)	m	1.00	160.00	160.00	400	m	64,000	
	PVC (dia 300 mm)	m	1.00	100.00	100.00	500	m	50,000	
sub-total						1,300		194,000	
Outlets	Main body (concrete)	pc	26.40	500.00	13200.00				
	PVC (dia 250 mm)	m	3.20	115.00	368.00				reinforced C.
	Form	m2	48.00	100.00	4800.00				
	Gate (t= 5 mm)	ton	0.05	3000.00	150.00				
sub-total					18,518.00	71	pls	129,626	
Total								561,956	



Unit Cost

Pipe Line Meska (w/ Alfalfa Valve)

Items	Specification	Unit	Q'ty	Unit cost	Total	Total Q'ty	unit	Cost	Remarks
Backfill of Existing Meska		m3	3.10	11.00	34.10	1,300	m	44,330	w/ transportation
Embankment		m3	0.99	11.00	10.89	1,300	m	14,157	w/ transportation
Slope shaped	berm	m2	3.00		0.00				
- do -	side slope	m2	0.85		0.00				
Canal	PVC (dia 400 mm)	m	1.00	200.00	200.00	400	m	80,000	
	PVC (dia 350 mm)	m	1.00	160.00	160.00	400	m	64,000	
	PVC (dia 300 mm)	m	1.00	100.00	100.00	500	m	50,000	
sub-total						1,300	m	194,000	
Outlets	Alfalfa Valve	pc	1.00	190.00	190.00				
	PVC (dia 75 mm)	m	2.00	115.00	230.00				reinforced C.
	C. Box (concrete)	m3	0.48	500.00	240.00				
	Base concrete	m3	0.27	160.00	43.20				
	Iron cover	ton	0.02	1600.00	32.00				
	Form	m2	2.10	100.00	210.00				
	Gate (t= 5 mm)	ton	0.05	3000.00	150.00				
sub-total					1,095.20	19	pls	20,809	
Total								467,296	

Unit Cost

Brick Lining Meska (Trapezoid shape canal)

Items	Specification	Unit	Q'ty	Unit cost	Total	Total Q'ty	Unit	Cost	Remarks
Backfill of Existing Meska		m3	3.20	11.00	35.20	1,300	m	45,760	w/ transportation
Embankment		m3	1.72	11.00	18.92	1,300	m	24,596	w/ transportation
Slope shaped	berm	m2	1.00	2.00	2.00				
- do -	side slope	m2	2.26	3.00	6.78				
sub-total					8.78	1,300	m	11,414	
Canal	Concrete (base)	m3	0.10	160.00	16.00				
	Brick	m3	0.23	150.00	34.50				w/ mortar
sub-total					50.50	1,300	m	65,650	
Outlets	Concrete (base)	m3	0.00	160.00	0.00				
	Concrete (main body)	m3	0.22	500.00	110.00				reinforced C.
	Forms		3.02	100.00	302.00				
	Gate (t= 5 mm)		0.05	3000.00	150.00				
sub-total					562.00	19	pls	10,678	
Crossing	Concrete pipe (dia 600 mm)	m	3.00	60.00	180.00				
	Concrete	m3	3.50	500.00	1750.00				
	Backfill	m3	0.78	11.00	8.58				
sub-total					1938.58	9	pls	17,447	
Total								175,545	

Unit Cost

Brick Lining Meska (Rectangle shape canal)

Items	Sepecification	Unit	Qty	Unit cost	Total	Total Qty	uint	Cost	Remarks
Backfill of Existing Meska		m3	3.20	11.00	35.20	1,300	m	45,760	w/ transportation
Embankment		m3	1.69	11.00	18.59	1,300	m	24,167	w/ transportation
Slope shaped	berm	m2	1.00	2.00	2.00				
- do -	side slope	m2	3.54	3.00	10.62				
sub-total					12.62	1,300	m	16,406	
Canal	Concrete (base)	m3	0.11	160.00	17.60				
	Brick	m3	0.27	150.00	40.50				w/ mortar
sub-total					58.10	1,300	m	75,530	
Outlets	Concrete (base)	m3	0.00	160.00	0.00				
	Concrete (main body)	m3	0.22	500.00	110.00				reinforced C.
	Forms		3.02	100.00	302.00				
	Gate (t= 5 mm)		0.05	3000.00	150.00				
sub-total					562.00	19	pls	10,678	
Crossing	Concrete pipe (dia 600 mm)	m	3.00	60.00	180.00				
	Concrete	m3	3.50	500.00	1750.00				
	Backfill	m3	0.78	11.00	8.58				
sub-total					1938.58	9	pls	17,447	
Total								189,988	

## Unit Cost

## Pump Station for Pipe Line Meska

Items	Sepecification	Unit	Q'ty	Unit cost	Total	Total Qty	unit	Cost	Remarks
Pump House	Wall (brick)	m3	8.10	150.00	1,215.00				w/ transportation
	do (concrete)	m3	1.35	500.00	675.00				
	Pillar (concrete)	m3	1.13	500.00	565.00				
	Floor(concrete)	m3	3.00	500.00	1,500.00				
	Base (concrete)	m3	0.65	160.00	104.00				
	Roof (concrete)	m3	4.50	500.00	2,250.00				
	Window (iron bar dia 19 mm)	m3	0.40	1600.00	640.00				
	Door (iron plate t=5 mm)	ton	2.64	3000.00	7,920.00				
	Excavation (manual)	m3	4.32	7.00	30.24				
	backfill (manual)	m3	3.30	4.00	13.20				
	forms	m2	44.55	100.00	4,455.00				
sub-total					19,367.44	1	pc	19,367	
Suction pit	Base (concrete)	m3	1.52	160.00	243.20				
	main body (concrete)	m3	5.90	500.00	2,950.00				
	cover (iron plate t=4 mm)	ton	0.17	3000.00	510.00				
	excavation (machine)	m3	40.53	4.00	162.12				
	Backfill (machine)	m3	24.55	3.00	73.65				
	forms	m2	88.00	100.00	8,800.00				
sub-total					12,738.97	1	pc	12,739	
Deliver tank	Base (concrete)	m3	1.46	160.00	233.60				
	main body (concrete)	m3	6.50	500.00	3,250.00				
	excavation (machine)	m3	26.65	4.00	106.60				
	Backfill (machine)	m3	18.53	3.00	55.59				
	forms	m2	54.90	100.00	5,490.00				
	Over flow pipe		4.50	30.00	135.00				
	drain pipe		4.00	30.00	120.00				
sub-total					9,390.79	1	m	9,391	
Total								41,497	



Unit Cost

Intake Structure

Items	Sepecification	Unit	Qty	Unit cost	Total	Total Qty	Unit	Cost	Remarks
Intake section	Excavation (manual)	m3	0.00	7.00	0.00				w/ transportation
	do (machine)	m3	9.98	4.00	39.92				
	base concrete	m3	2.09	160.00	334.40				
	main body concrete	m3	2.66	500.00	1,330.00				
	forms	m2	25.20	160.00	4,032.00				
	Stone Pitching	m3	9.43	120.00	1,131.60				
	Screen (L-90)	ton	10.50	52.00	546.00				
	do (dia 19 mm)	ton	0.16	1200.00	192.00				
sub-total					7,605.92	1	pc	7,606	
Pipe Conduit	Excavation (manual)	m3	0	7.00	0.00				
	do (machine)	m3	4.88	4.00	19.52				
	backfill (manual)	m3	0	4.00	0.00				
	do (machine)	m3	4.54	3.00	13.62				
	base concrete	ton	0.36	160.00	57.60				
	Concrete pipe (dia 800 mm)	m	1.0	160.00	160.00				
sub-total					250.74	15	m	3,761	
Total								11,367	

Unit Cost

Pump Station (for Open Canal Meska)

Items	Sepecification	Unit	Q'ty	Unit cost	Total	Total Q'ty	Unit	Cost	Remarks
Pump House	Wall (brick)	m3	8.10	150.00	1,215.00				w/ transportation
	do (concrete)	m3	1.35	500.00	675.00				
	Pillar (concrete)	m3	1.13	500.00	565.00				
	Floor (concrete)	m3	3.00	500.00	1,500.00				
	Base (concrete)	m3	0.65	160.00	104.00				
	Roof (concrete)	m3	4.50	500.00	2,250.00				
	Window (iron bar dia 19 mm)	m3	0.40	1600.00	640.00				
	Door (iron plate t=5 mm)	ton	0.10	3000.00	300.00				
	Excavation (manual)	m3	4.32	7.00	30.24				
	backfill (manual)	m3	3.30	4.00	13.20				
	forms	m2	44.55	100.00	4,455.00				
sub-total					11,747.44	1	pc	11,747	
Suction pit	Base (concrete)	m3	1.52	160.00	243.20				
	main body (concrete)	m3	5.9	500.00	2,950.00				
	cover (iron plate t=4 mm)	ton	0.17	3000.00	510.00				
	excavation (machine)	m3	40.53	4.00	162.12				
	Backfill (machine)	m3	24.55	3.00	73.65				
	forms	m2	88	100.00	8,800.00				
sub-total					12,738.97	1	pc	12,739	
Deliver tank	Base (concrete)	m3	1.64	160.00	262.40				
	main body (concrete)	m3	2.59	500.00	1,295.00				
	excavation (machine)	m3	3.11	4.00	12.44				
	Backfill (machine)	m3	1.15	3.00	3.45				
	forms	m2	19.36	100.00	1,936.00				
	Over flow pipe		4.5	30.00	135.00				
	drain pipe		4.0	30.00	120.00				
sub-total					3,764.29	1	pc	3,764	
Total									28,251

Unit Cost

Pipe Meska by Gravity w/ Man-hole

Items	Sepecification	Unit	Qty	Unit cost	Total	Total Qty	unit	Cost	Remarks
Backfill of Existing Meska		m3	3.10	11.00	34.10	1,300	m	390,000	w/ transportation
Embankment									
	by machine	m3	0	7.00	0.00			0	w/ transportation
	by manual	m3	0	4.00	0.00				
sub-total					0.00	1,300	m	0	
Slope shaped									
	berm	m2	0.00		0.00				
	side slope	m2	0.00		0.00				
sub-total									
Canal									
	Concrete Pipe (dia 1,000 mm)	m	1.00	300.00	300.00	1,300	m	390,000	
Outlets (manhole)									
	excavation (machine)	m3	6.01	4.00	24.04				
	backfill (machine)	m3	2.76	3.00	8.28				
	Base Concrete	m3	1.06	160.00	169.60				
	Main body (concrete)	m3	3.94	500.00	1970.00				
	Cover (Dia 760 mm)	m3	0.05	500.00	25.00				
	forms	m2	32.81	100.00	3281.00				reinforced C.
sub-total					5477.92	52	pls	284,852	
Total								1,064,852	



Unit Cost

Stone Pitching Paved Meska

Items	Sepecification	Unit	Qty	Unit cost	Total	Total Qty	unit	Cost	Remarks
Backfill of Existing Meska		m3	0.00	0.00	0.00	1,300	m	0	w/ transportation
Excavation	by machine	m3	0.00	7.00	0.00				0 w/ transportation
	by manual	m3	0.96	4.00	3.84				
sub-total					3.84	1,300	m	4,992	
Slope shaped	berm	m2	0.00		0.00				
- do -	side slope	m2	0.00		0.00				
sub-total									
Canal	Concrete (Base)	m3	0.10	160.00	16.00				
	Pitching lining	m3	1.13	120.00	135.60				
	Concrete (foundation)	m3	0.18	160.00	28.80				
sub-total					180.40	1,300	m	234,520	
Outlets	Concrete (base)	m3	0.00	160.00	0.00				
	Concrete (main body)	m3	0.00	500.00	0.00				reinforced C.
sub-total					0.00	19	pls	0	
Crossing	Concrete pipe (dia 600 mm)	m	3.00	60.00	180.00				
	Concrete	m3	3.50	500.00	1750.00				
	Backfill	m3	0.78	11.00	8.58				
sub-total					1938.58	9	pls	17,447	
Total								256,959	

Unit Cost

Widening of Existing Meska

Items	Specification	Unit	Q'ty	Unit cost	Total	Total Q'ty	Unit	Cost	Remarks
Backfill of Existing Meska		m3	0.00	11.00	0.00	1,300	m	0	w/ transportation
Excavation									
	by machine	m3	0	7.00	0.00			0	w/ transportation
	by manual	m3	1.28	4.00	5.12				
sub-total					5.12	1,300	m	6,656	
Slope shaped									
	berm	m2	0.00	2.00	0.00				
- do -	side slope	m2	4.52	3.00	13.56				
sub-total					13.56	1,300	m	17,628	
Canal									
	J sahpe canal	m	0.00	102.00	0.00	0	m	0	
Outlets									
	Concrete (base)	m3	0.00	160.00	0.00				
	Concrete (main body)	m3	0.00	500.00	0.00				reinforced C.
	Forms		0.00	100.00	0.00				
	Gate (t= 5 mm)		0.00	3000.00	0.00				
sub-total					0.00	0	pls	0	
Crossing									
	Concrete pipe (dia 600 mm)	m	3.00	60.00	180.00				
	Concrete	m3	3.50	500.00	1750.00				
	Backfill	m3	0.78	11.00	8.58				
sub-total					1938.58	9	pls	17,447	
Total								41,731	

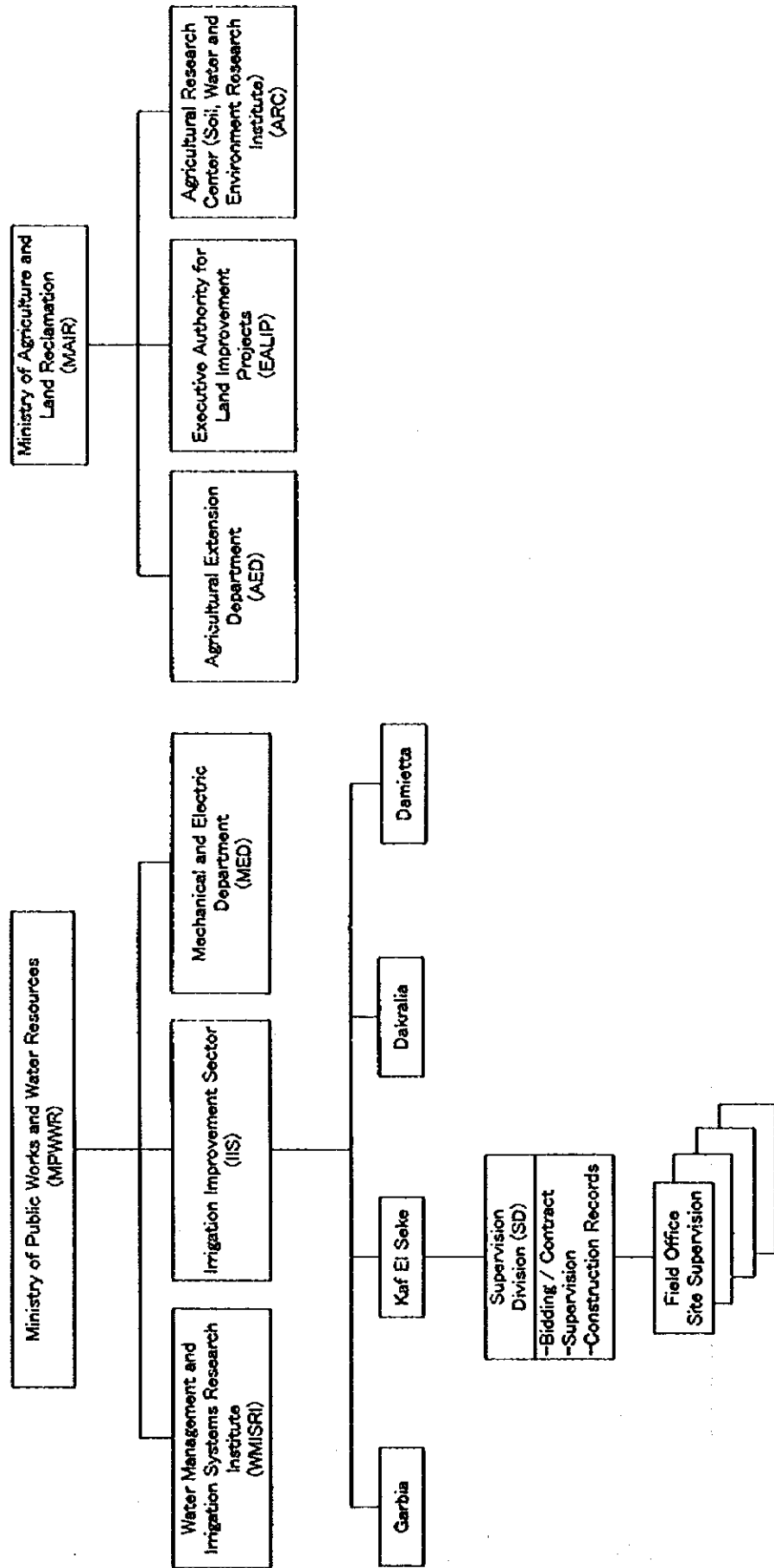
Unit Cost

J Shape Pre-Cast Canal

Items	Sepecification	Unit	Qty	Unit cost	Total	Total Qty	unit	Cost	Remarks
Backfill of Existing Meska		m3	3.20	11.00	35.20	1,300	m	45,760	w/ transportation
Compact fill		m3	1.51	11.00	16.61	1,300	m	21,593	w/ transportation
Slope shaped	berm	m2	1.00	2.00	2.00				
- do -	side slope	m2	2.68	3.00	8.04				
sub-total					10.04	1,300	m	13,052	
Canal	J shape canal	m	1.00	102.00	102.00	1,300	m	132,600	
Outlets	Concrete (base)	m3	0.00	160.00	0.00				
	Concrete (main body)	m3	0.22	500.00	110.00				reinforced C.
	Forms		3.02	100.00	302.00				
	Gate (t= 5 mm)		0.05	3000.00	150.00				
sub-total					562.00	19	pls	10,678	
Crossing	Concrete pipe (dia 600 mm)	m	3.00	60.00	180.00				
	Concrete	m3	3.50	500.00	1750.00				
	Backfill	m3	0.78	11.00	8.58				
sub-total					1938.58	9	pls	17,447	
Total								241,130	

### M.3 Implementation Plan

Figure M.3.1 Organization Chart of Project Implementation



**APPENDIX N.**

**PROJECT EVALUATION**

## **Appendix N Project Evaluation**

### **N.1 Feasibility Study..... N-1**

Table N.1.1 ~ N.1.19 Financial Price and Economic Price

Table N.1.20 ~ N.1.52 Project Benefit by Crop

Table N.1.53 ~ N.1.62 Estimate of IRR

### **N.2 Preliminary project evaluation of Master Plan..... N-3**

Table N.2.1 Benefit Flow of the Project in the Study Area (M/P) at Financial Price

Table N.2.2 Project Cost in the Study Area (M/P) at Financial Price

Table N.2.3 Cost Flow of the Project in the Study Area (M/P) (Financial Price)

Table N.2.4 Summary of Financial Analysis of the Project in the study Area (M/P)

## **Appendix N Project Evaluation**

### **N.1 Feasibility Study**

#### **N.1.1 Financial Price and Economic Price**

Financial prices are adapted by the research of MALR, Agricultural Cooperatives in the Priority Area, data of IIS monitoring section, wholesale price at Tanta wholesale market. Economic prices are estimated basing on commodity prices and price projections of World Bank in 1998 November and Standard Conversion Factor (SCF) with 0.88. Foreign exchange rate is applied with 3.40 LE to US\$ 1. (Refer to Table N.1~N.1.19)

#### **N.1.2 Project Benefit**

##### **(1) Net return of agricultural products**

Net return with and without project situation by crop is estimated with above-mentioned prices and input-output studied. The labor cost is divided into family labor and hired labor by the ratio of 0.7 : 0.3 regarding the farm economy survey and agricultural census in 1989/90. Unit yield increase of crops is fully attained after four (4) years of project implementation. The increase ratio of unit yield is different between location from upstream to downstream reaches of the Study Area as well as the Priority Area. Hence the benefit by unit yield increase varies by location. With project situation by introducing one-point pumping system operated by a WUA, the pumping cost is eliminated from production cost of with project situation. Instead, pumping cost is accounted at O& M cost of WUA with project situation. Cost of land leveling and land improvement (gypsum application and sub-soiling) is estimated at 50LE/fed (US\$35/ha) and deducted from the net return value with project situation, since the unit yield with project can be attained with this farming practice.

##### **(2) Reduction of Operation and Maintenance**

O&M costs are counted for the project evaluation with the difference between with and without project situation.

###### **1) Rehabilitated facilities: count difference of O&M between before and after implementation**

For the most of the facilities, O&M cost will be approximately same except for Rahbeen Regulator, Bahr Tera Intake Gate and Abshan Regulator which will be motorized and added 1 % of construction cost to that of after implementation.

###### **2) Newly constructed facilities: 3 % of construction cost**

###### **3) Meska : count O& M cost of WUAs as follows;**

**O & M cost (LE/fed/year)**

	Without Project	With Project	Net Benefit
<b>WUA O&amp;M cost</b>			
Pumping Operation	0	10	-10
Pumping	0	28	-28
Meska Maintenance	0	4	-4
Contingency	0	28	-28
Pumping cost by farmer	(187)	(0)	(187)
Meska Maintenance by Farmer	9	0	9
Delivery canal			
Operation	1	0	1
Maintenance	4	2	2
<b>Total</b>	<b>14 (201)</b>	<b>72 (72)</b>	<b>-58 (129)</b>

Note: Pumping cost by a farmer is included in the production cost without project situation.

The value of pumping cost without project situation is as of upstream reaches of the Priority Area. (Refer to Table N.1.55)

**N.1.3 Project Cost**

**(1) Investment Cost**

Financial investment cost is estimated with the conditions as follows;

- a) Investment Cost: estimate with foreign currency and local currency (See Appendix M)
- b) Administration and Consultant fee: 11% of a)
- c) Physical Contingency: 5 % of ( a) + b) )
- d) Price Escalation Contingency : F/C = World Bank Inflation Index

L/C = 4.2 % annually

( a) +b) ) × Price Escalation Contingency



**Price Escalation for Foreign Currency and Local Currency**

<b>Year</b>	<b>International Inflation Index 1998=100</b>	<b>Local Inflation Index</b>
1998	100.00	100.00
1999	101.33	104.20
2000	103.91	108.58
2001	106.57	113.14
2002	109.30	117.89
2003	112.10	122.84
2004	114.97	128.00
2005	117.91	133.38
2006	120.85	138.98
2007	123.86	144.82
2008	126.94	150.90
2009	133.32	157.24
2010	136.64	163.84
2011	140.04	170.72
2012	143.53	177.89
2013	147.10	185.36
2014	150.76	193.15
2015	154.51	201.26
2016	158.36	209.71
2017	162.30	218.52
2018	166.34	227.70

Source: Foreign: World Bank Commodity Market 1988 Nov.

Local: Wholesale Price Index in 1997 (Since the price Index in Egypt is Decreasing, recent index ratio is adapted.)

Economic investment cost is calculated by converting local currency to economic price with SCF and excluding price escalation contingency. (Refer to Table N.1.57)

**(2) Replacement Cost**

During 30 years (evaluation term), replacement cost is required for only Meska improvement with 190 LE/fed (9.6% of total construction cost) by every 10 years.

**N.2 Preliminary project evaluation of Master Plan**

With the same assumption of the Feasibility Study, the project evaluation for the Master Plan was carried out with FIRR estimate. (Refer to Table N.2.1~N.2.4)

Table N.1.1 Financial and Economic Farm-Gate Prices  
(L E at 1998/99 prices)

Crops	Local unit	(kg)	Unit Price		Remark
			Financial	Economic	
Wheat	ardab	1500	100	88	
Broad beans	ardab	1550	190	255	
Berseem(long)	ton	10000	62	55	Fin.Price*0.88
Berseem(short)	ton	10000	62	55	Fin.Price*0.88
W.Vegetables	ton	10000	260	264	
Sugar beet	ton	10000	100	126	
Rice(Unmilled)	ton	10000	600	397	
(seed) Cotton	kantear	157.5	520	458	
Maize(summer)	ardab	1400	65	54	
S.Vegetables	ton	10000	300	264	Fin.Price*0.88
Water melon seed	ton	10000	7500	6600	Fin.Price*0.88
Citrus	ton	10000	450	396	Fin.Price*0.88
Flax straw	load/calm	2500	250	220	Fin.Price*0.88
Sunflower	ton		1,320	1,162	Fin.Price*0.88
Wheat straw	load/calm	2500	25.00	22.00	Fin.Price*0.88
Broad bean straw	load/calm	2500	15.00	13.20	Fin.Price*0.88
Sugar beat stalks	load/calm	2500	4.40	3.87	Fin.Price*0.88
Cotton stalks	load/calm	2500	15.00	13.20	Fin.Price*0.88
Maize stalks	load/calm	2500	10.00	8.80	Fin.Price*0.88
Maize green fodder	load/calm	2500	120.00	105.60	Fin.Price*0.88
Rice straw	load/calm	2500	5.00	4.40	Fin.Price*0.88
Flax seed	ton		1,900.00	1,672.00	Fin.Price*0.88
Berseem seed	kg		3.10	2.73	Fin.Price*0.88
Wheat seed	kg		1.10	0.97	Fin.Price*0.88
Broad bean seed	kg		2.20	1.94	Fin.Price*0.88
Subar beet seed	kg		20.00	17.60	Fin.Price*0.88
W.Vegetables seed	kg		3.50	3.08	Fin.Price*0.88
Colton seed	kg		1.70	1.50	Fin.Price*0.88
Maize seed	kg		0.70	0.62	Fin.Price*0.88
Rice seed	kg		1.00	0.88	Fin.Price*0.88
Water melon seed	kg		7.50	6.60	Fin.Price*0.88
S.Vegetables seed	kg		7.00	6.18	Fin.Price*0.88
Citrus seedling	kg		105.28	92.65	Fin.Price*0.88
Flax seed	kg		2.60	2.29	Fin.Price*0.88
Sunflower Seed	kg		2.00	1.76	Fin.Price*0.88
Labour	man/hour		1.33	w/o 0.79	
				w/p 0.83	
Tractor	hour			30.62	
Pumping(irrigating)	"		3.20	(5HP) 3.33	
Plowing(Tractor)	"		25.00	38.00	
Machine threshing	"		12.00	13.00	
Machine winnowing	"		10.00	11.00	
total	"		22.00	24.00	
Sprayer	"		2.00	2.81	
Machine transportation ton-km				0.13	
Animal works:					
Cultivation	hour		1.4	1.23	Fin.Price*0.88
Transportation	"		0.7	0.62	Fin.Price*0.88
Fertilizer:					
N(Urea)	ton		(598)1,300	(766)1,665	
P2O5(TSP)	"		(1,113)2,100	(662)1,505	
K(MP)	"		(450)900	(580)1,160	
Manure	m3		2.40	2.11	Fin.Price*0.88
Agri. Chemicals					
Insecticides	liter		Differ by	Fin.Price*0.88	
Fungicides	"		crops.	"	
Herbicides	"		"	"	
Fuel					
Diesel oil	liter		0.40	0.39	
Lubricants	"		0.04	0.04	

Note:

Representative crop of winter vgwtable is onion.

Representative crop of summer vegetable is tomato.

Financial price is based on average farm-gate price during the last three years.

0.88= SCF(Standard conversion factor).

Fertilizer is Nutrient price.