

CHAPTER 3 FINANCIAL PLAN

3.1 Financial Source for Stage I Development

Financial sources of the stage I development scheme for conveyance canal systems, access roads, No7 pumping station and power supply system are summarized as follows ;

- Tender package 1 : Source of the construction costs will be all Egyptian government budget as well as Fund of Egyptian Development Bank.
- Tender package 2 : Source of the construction costs will be both Egyptian government budget, as well as Fund of Egyptian Development Bank and international fund (Kuwait funds).
- Tender package 3 : Source of the construction costs will be all Egyptian government budget as well as Fund of Egyptian Development Bank
- Tender package 4 : Source of the construction costs will be both Egyptian government budget as well as Fund of Egyptian Development Bank.

3.2 Annual Disbursement Plan

Annual disbursement schedule for construction costs (conveyance canal systems, main irrigation and drainage systems and on-farm development costs) are described as following table and detail is shown in Table 3.2-3.

Table 3.2-1 Disbursement of Construction Cost Unit : Million LE

Description	2001	2002	2003	2004	2005	2006	Total
1. Conveyance canal							
1.1 Package 1	11.3	45.1	56.4	67.7	45.1	-	225.7
1.2 Package 2	25.3	101.4	126.7	152.0	101.4	-	506.8
1.3 Package 3	2.9	11.7	14.6	17.5	11.7	-	58.4
1.4 Package 4	2.1	8.3	10.3	12.4	8.3	-	41.3
Sub-total	41.6	166.5	208.0	249.7	166.5	-	832.3
2. Main Irrigation and Drainage							
2.1 I-1 zone	-	7.4	18.5	18.5	18.5	11.1	73.8
2.2 I-2 zone	-	16.3	40.7	40.7	40.7	24.4	162.7
2.3 I-3 zone	-	18.6	46.5	46.5	46.5	27.7	186.0
2.4 I-4 zone	-	14.0	35.0	35.0	35.0	21.0	140.0
Sub-total	-	56.3	140.7	140.7	140.7	84.2	562.5
3. On-farm Development							
3.1 I-1 zone	-		8.8	8.8	8.8	8.8	35.2
3.2 I-2 zone	-		25.6	25.6	25.6	25.6	102.4
3.3 I-3 zone	-		42.3	42.3	42.3	42.3	169.2
3.4 I-4 zone	-		31.3	31.3	31.3	31.3	125.2
Sub-total	-		108.0	108.0	108.0	108.0	432.0
Total	41.6	222.7	465.8	498.4	415.2	192.5	1,827.3

Note : Costs of package 1 and 3 indicates the amount of cost allocation between stage 1 and stage 2.

On the other hand, indirect costs i.e., procurement of equipment, consulting services and administration costs and physical contingencies will be disbursed as tabulated in the Table 3.2-2.

Table 3.2-2 Total Project Cost (Unit : 1,000 LE)

Description	2001	2002	2003	2004	2005	2006	Total
I. Direct Construction Cost	43,406	229,871	465,787	509,193	422,381	192,510	1,863,147
II. Indirect Construction Cost							
2.1 Procurement of OM Equipment	-	-	-	-	1,732	6,928	8,660
2.2 Consulting Services and Admi.	(15) 9,278	(20) 12,371	(20) 12,371	(20) 12,371	(20) 12,371	(5) 3,093	(100) 61,855
2.3 Physical Contingencies	(2) 1,231	(12) 6,519	(25) 13,209	(27) 14,439	(23) 11,978	(10) 5,459	(100) 52,834
Sub-total	10,509	18,890	25,580	26,810	26,081	15,480	123,349
Total (I) + (II)	53,915	248,760	491,366	536,003	448,462	207,990	1,986,496

In addition to the above investment cost, it should be considered previously invested cost as tabulated in Table 3.2-2 for upper reach conveyance canal between the Suez Canal Siphon and KM 86.500.

The allocation of invested costs among the respective beneficial area shall be made as following manners.

- (1) Between upper sub-project area and El Sir & El Kawareer area
 - Upper area : $265,000/400,000 = 66.2 \%$
 - El Kawareer area : $135,000/400,000 = 33.8 \%$
- (2) Stage 1 and Stage 2 of El Kawareer area
 - Stage 1 : $32.48/52.66 = 61.6 \%$
 - Stage 2 : $20.18/52.66 = 38.4 \%$

Invested cost allocation for El Kawareer area can be estimated as follows ;(Unit : 1,000 LE)

Fiscal Year	Total Invested Costs	Allocation for El Kawareer	Allocation for Stage I	Escalation ratio	Adjusted cost for Stage I
1993	20,000	6,760	4,160	1.316	5,475
1994	68,061	23,005	14,157	1.265	17,908
1995	58,703	19,842	12,210	1.217	14,860
1996	120,268	740,651	25,016	1.170	29,269
1997	99,096	33,494	20,612	1.125	23,189
1998	146,182	49,410	30,406	1.082	32,899
1999	200,136	67,646	41,670	1.040	43,337
2000	136,102	46,002	28,337	1.000	28,337
Total	848,548	286,810	176,675		195,274
	(100.0%)	(33.8%)	(20.8%)		

Total invested cost for upper reach conveyance canal is tabulated in the Table 3.2-4.

Table 3.2-3 Breakdown of Construction Cost

(1) Conveyance Canal Cost

(unit:1,000LE)

Year	Package-1		Package-2		Package-3		Package-4		Total
	%	Amount	%	Amount	%	Amount	%	Amount	
2,001	5	11,286	5	25,341	5	2,919	5	2,067	41,614
2,002	20	45,145	20	101,364	20	11,677	20	8,268	166,455
2,003	25	56,432	25	126,706	25	14,596	25	10,335	208,068
2,004	30	67,718	30	152,047	30	17,516	30	12,402	249,682
2,005	20	45,145	20	101,364	20	11,677	20	8,268	166,455
2,006									
Total	100	225,726	100	506,822	100	58,385	100	41,340	832,273

(2) Main Irrigation/Drainage Systems Cost

(unit:1,000LE)

Year	I -1 Area		I -2 Area		I -3 Area		I -4 Area		Total
	%	Amount	%	Amount	%	Amount	%	Amount	
2,001									
2,002	10	7,385	10	16,266	10	18,604	10	13,993	56,247
2,003	25	18,461	25	40,665	25	46,510	25	34,983	140,619
2,004	25	18,461	25	40,665	25	46,510	25	34,983	140,619
2,005	25	18,461	25	40,665	25	46,510	25	34,983	140,619
2,006	15	11,077	15	24,399	15	27,906	15	20,990	84,371
Total	100	73,845	100	162,658	100	186,041	100	139,930	562,474

(3) On-Farm Development Cost

(unit:1,000LE)

Year	I -1 Area		I -2 Area		I -3 Area		I -4 Area		Total
	%	Amount	%	Amount	%	Amount	%	Amount	
2,001									
2,002									
2,003	25	8,824	25	25,638	25	42,330	25	31,348	108,139
2,004	25	8,824	25	25,638	25	42,330	25	31,348	108,139
2,005	25	8,824	25	25,638	25	42,330	25	31,348	108,139
2,006	25	8,824	25	25,638	25	42,330	25	31,348	108,139
Total	100	35,295	100	102,550	100	169,318	100	125,393	432,556

**Table 3.2-4 Breakdown of Disbursement on Suez Canal Siphon,
Conveyance Canal and Pumping Station**

(Unit : 1,000 LE)

Item	Total Amount	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	Beyond 2000
1. Siphon									(Retention)
-Foreign C	123,298	0	37,041	7,047	29,279	9,736	526	0	39,669
-Local C.	72,435	0	20,319	18,485	14,967	7,964	7,405	12	3,283
-Sub-Total	195,733	0	57,360	25,532	44,246	17,700	7,931	12	42,952
2. No.4 PS									
-Foreign C	28,765	0	0	4,865	11,604	330	5,266	6,700	0
-Local C.	49,100	0	0	0	20,601	5,759	14,489	8,251	0
-Sub-Total	77,865	0	0	4,865	32,205	6,089	19,755	14,951	0
3. No.5 PS									
-Foreign C	28,418	0	0	0	4,203	0	8,261	13,536	2,418
-Local C.	36,600	0	0	0	1,950	8,800	13,516	9,734	2,600
-Sub-Total	65,018	0	0	0	6,153	8,800	21,777	23,270	5,018
4. No.6 PS									
-Foreign C	25,000	0	0	0	4,257	8,586	1,753	8,404	2,000
-Local C.	33,730	0	0	0	2,650	9,500	5,326	12,524	3,730
-Sub-Total	58,730	0	0	0	6,907	18,086	7,079	20,928	5,730
5. Canal (1)									
-Foreign C	0	0	0	0	0	0	0	0	0
-Local C.	113,800	4,500	2,143	3,435	1,024	18,050	53,307	31,341	0
-Sub-Total	113,800	4,500	2,143	3,435	1,024	18,050	53,307	31,341	0
6. Canal (2)									
-Foreign C	0	0	0	0	0	0	0	0	0
-Local C.	125,718	15,500	8,558	13,243	14,932	15,143	9,587	33,037	15,718
-Sub-Total	125,718	15,500	8,558	13,243	14,932	15,143	9,587	33,037	15,718
7. Canal (3)									
-Foreign C	0	0	0	0	0	0	0	0	0
-Local C.	79,249	0	0	11,628	2,865	9,768	13,649	32,090	9,249
-Sub-Total	79,249	0	0	11,628	2,865	9,768	13,649	32,090	9,249
8. Canal (4)									
-Foreign C	0	0	0	0	0	0	0	0	0
-Local C.	69,761	0	0	0	6,799	4,441	7,592	31,168	19,761
-Sub-Total	69,761	0	0	0	6,799	4,441	7,592	31,168	19,761
9. Canal (5)									
-Foreign C	0	0	0	0	0	0	0	0	0
-Local C.	62,674	0	0	0	5,137	1,019	5,505	13,339	37,674
-Sub-Total	62,674	0	0	0	5,137	1,019	5,505	13,339	37,674
Total									
-Foreign C	205,481	0	37,041	11,912	49,343	18,652	15,806	28,640	44,087
-Local C.	643,067	20,000	31,020	46,791	70,925	80,444	130,376	171,496	92,015
-Sub-Total	848,548	20,000	68,061	58,703	120,268	99,096	146,182	200,136	136,102

Note : Canal (1) : km 0.00 – 24.50, Canal (2) : km 24.50 – 46.75, Canal (3) : km 46.75 – 60.00

Canal (4) : km60.00 – 73.00, Canal (5) : km73.00 – km86.50

CHAPTER 4 ECONOMIC AND FINANCIAL PROJECT FEASIBILITY

4.1 Economic Justification

Project economic justification was made on the basis of overall investment cost of mainly irrigation components as well as operation / maintenance cost and replacement cost for mechanical/electrical equipment, and prospected net benefits from agricultural products including livestock raising and fruits production.

Detailed estimation of net incremental benefit (NIB) was used figures in the feasibility study report which has been prepared by JICA on March 1997. According to the F/S reports, there are nine (9) recommendable farming categories for each farmers classification. Of course, each farming categories combine several cropping pattern.

Overall project incremental benefits, therefore, can be summarized as following table, and detailed figures of each farming categories are as per attached in the Table 4.1-2 to 4.1-10.

Table 4.1-1 Summary of Net Incremental Benefit Creation for Stage I
(unit: 1,000 LE)

Item	2007	2008	2009	2010	2011	2012	2013	2014	2015
1. Crop product									
FC-1	80,277	104,575	128,286	144,388	160,286	160,640	161,158	161,587	161,587
FC-2	29,416	38,336	47,062	52,955	58,795	58,905	59,047	59,190	59,190
FC-3	25,196	35,878	44,466	50,125	61,240	61,416	63,498	65,581	67,521
FC-4	18,021	21,332	26,082	29,357	32,506	32,608	32,608	32,608	32,608
RC-5	-450	7,105	9,569	11,273	23,140	30,166	37,016	43,866	50,716
FC-6	5,848	6,687	8,208	9,327	10,216	10,459	10,494	10,494	10,494
FC-7	1,734	2,598	3,375	3,906	4,289	4,402	4,437	4,437	4,437
FC-8	1,455	2,238	2,753	3,144	3,446	3,601	3,636	3,636	3,636
FC-9	-6,274	-2,661	-2,661	-2,661	4,884	9,768	14,652	19,537	24,421
S. Total	155,223	216,089	267,139	301,812	358,802	371,967	386,548	400,935	414,610
2.Live-stock									
Small F.	2,255	2,631	3,007	3,383	3,759	3,759	3,759	3,759	3,759
Large F.	19,759	23,052	26,346	29,639	32,932	32,932	32,932	32,932	32,932
S. Total	22,014	25,683	29,353	33,022	36,691	36,691	36,691	36,691	36,691
Total	177,237	241,772	296,492	334,834	395,493	408,658	423,239	437,626	451,301

Note : FC means Farming Categories , Small F. and Large F. are Small Scale Farmers and Large Scale Farmers.

NIB value beyond the year 2016 is same as that of 2015 year's figures, because farm production of all categories reaches target yield and or production level.

Typical base cash flows between investment cost and benefit including EIRR (Economic Internal Rate of Return) is tabulated in the Table 4.1-11.

The sensitivity analysis against typical base case were examined the following cases and the results of analysis on indicators of the EIRR are tabulated in the Table 4.1-12, 4.1-13 and 4.1-14. The summary of the values describe as follows;

- (1) Base case : 13.03 %
- (2) 10 % increase construction case : 12.17 %
- (3) 10 % decrease net incremental cost : 12.00 %
- (4) Combined case (2) and (3) : 11.19 %

EIRR for all cases indicate over 10 % of opportunity cost of capital in Egypt. Therefore, the project investment costs based on the proposed infrastructure design can be judged reasonable and the project is economically feasible.

4.2 Financial Availability

According to the preliminary project cost estimates which was compiled as Volume VIII of Cost Estimate Report, required foreign currency including procurement of steel plate for pipe fabrication for the project implementation are summarized as follows ;

Cost Item	Egyptian pound (1,000 LE)	US Dollar (\$1,000)
(1) Direct construction cost		
- Mechanical equipment	69,354	20,279
- Electrical equipment	96,748	28,289
- Steel plate for pipeline	107,507	31,435
Sub-total	273,609	80,003
(2) Indirect construction cost		
- Procurement of OM equipment	8,424	2,463
- Consulting services	16,645	4,867
Sub-total	25,069	7,330
Total	298,678	87,333

Equivalent Kuwait Dinars is about 27.2 million.

Available fund source for the foreign currency component is Kuwait Development Fund. According to the NSDO information, balance of the Kuwait fund as of April 2000 is as follows ;

	Kuwait Dinars	Egyptian Pounds
Total commitment	: 71.35 m KD	784.85 m LE
Committed amount	: 30.00 m KD	330.00 m LE
Remaining amount	: 41.35 m KD	454.85 m LE

Table 4.1-2 Net Benefit Flow Computation of Farming Category (1)

Crop	Planted Area		Cropping pattern : Vegetables and Fodder										(Unit : 1,000 LE)	
	Total Net Benefit	G.Rate TNB	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year	8th year	9th year	
Wheat	1,680 feddans	G.Rate	0.52	0.56	0.60	0.72	0.80	0.92	1.00	1.00	1.00	1.00	1.00	
	480 LE/fed.	TNB	419	452	484	581	645	742	806	806	806	806	806	
Berseem (S)	2,500 feddans	G.Rate	0.50	0.60	0.70	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	
	490 LE/fed.	TNB	613	735	858	980	1,103	1,225	1,225	1,225	1,225	1,225	1,225	
Sorghum	4,160 feddans	G.Rate	0.60	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
	220 LE/fed.	TNB	549	732	824	915	915	915	915	915	915	915	915	
Broad Beans	4,160 feddans	G.Rate	0.50	0.67	0.83	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
	540 LE/fed.	TNB	1,123	1,505	1,865	2,067	2,246	2,246	2,246	2,246	2,246	2,246	2,246	
Tomato (F)	4,160 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
	14,800 LE/fed.	TNB	30,784	40,019	49,254	55,411	61,568	61,568	61,568	61,568	61,568	61,568	61,568	
Cantaloupe	4,160 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
	5,770 LE/fed.	TNB	12,002	15,602	19,203	21,603	24,003	24,003	24,003	24,003	24,003	24,003	24,003	
Water Melon	4,160 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
	2,780 LE/fed.	TNB	5,782	7,517	9,252	10,408	11,565	11,565	11,565	11,565	11,565	11,565	11,565	
Green Pepper	4,160 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
	2,410 LE/fed.	TNB	5,013	6,517	8,020	9,023	10,026	10,026	10,026	10,026	10,026	10,026	10,026	
Cumin	4,160 feddans	G.Rate	0.36	0.54	0.63	0.72	0.81	0.82	0.91	1.00	1.00	1.00	1.00	
	820 LE/fed.	TNB	1,228	1,842	2,149	2,456	2,763	2,797	3,104	3,411	3,411	3,411	3,411	
Total	33,290 feddans	TNB	57,513	74,921	91,908	103,444	114,834	115,087	115,459	115,766	115,766	115,766	115,766	
	16,700 feddans	TNB	3,444	4,486	5,503	6,194	6,876	6,891	6,914	6,932	6,932	6,932	6,932	

Table 4.1-3 Net Benefit Flow Computation of Farming Category (2)

Farming category	Graduate		Cropping pattern : Vegetables and Livestock										(Unit : 1,000 LE)		
	Planted Area	G.Rate	Cropping pattern : Vegetables and Livestock												
			Total Net Benefit	TNB	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year		9th year	
Squash	1,390 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	2,860 LE/fed.	TNB	1,988	2,584	3,180	3,578	3,975	3,975	3,975	3,975	3,975	3,975	3,975	3,975	3,975
Berseem (S)	1,390 feddans	G.Rate	0.50	0.60	0.70	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	490 LE/fed.	TNB	341	409	477	545	613	681	681	681	681	681	681	681	681
Sorghum	1,390 feddans	G.Rate	0.60	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	220 LE/fed.	TNB	183	245	275	306	306	306	306	306	306	306	306	306	306
Broad Beans	1,390 feddans	G.Rate	0.50	0.67	0.83	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	540 LE/fed.	TNB	375	503	623	691	751	751	751	751	751	751	751	751	751
Tomato (F)	1,390 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	14,800 LE/fed.	TNB	10,286	13,372	16,458	18,515	20,572	20,572	20,572	20,572	20,572	20,572	20,572	20,572	20,572
Cantaloupe	1,390 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	5,770 LE/fed.	TNB	4,010	5,213	6,416	7,218	8,020	8,020	8,020	8,020	8,020	8,020	8,020	8,020	8,020
Water Melon	1,390 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	2,780 LE/fed.	TNB	1,932	2,512	3,091	3,478	3,864	3,864	3,864	3,864	3,864	3,864	3,864	3,864	3,864
Green Pepper	1,390 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	2,410 LE/fed.	TNB	1,675	2,177	2,680	3,015	3,350	3,350	3,350	3,350	3,350	3,350	3,350	3,350	3,350
Cumin	1,390 feddans	G.Rate	0.36	0.54	0.63	0.72	0.81	0.81	0.82	0.82	0.91	0.91	1.00	1.00	1.00
	820 LE/fed.	TNB	410	615	718	821	923	935	935	935	1,037	1,037	1,140	1,140	1,140
Total	11,100 feddans														
	LE/fed.	TNB	21,201	27,630	33,919	38,166	42,374	42,454	42,557	42,659	42,659	42,659	42,659	42,659	42,659
Per one fed.	5,600 feddans														
	LE/fed.	TNB	3,786	4,934	6,057	6,815	7,567	7,581	7,599	7,618	7,618	7,618	7,618	7,618	7,618

Table 4.1-4 Net Benefit Flow Computation of Farming Category (3)

Farming category : Graduate
Cropping pattern : Vegetables and Fruit
(Unit : 1,000 LE)

Crop	Planted Area Total Net Benefit	G.Rate TNB	Cropping pattern : Vegetables and Fruit										
			1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year		
Squash	1,390 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	2,860 LE/fed.	TNB	1,988	2,584	3,180	3,578	3,975	3,975	3,975	3,975	3,975	3,975	3,975
Peach	1,390 feddans	G.Rate	-0.36	-0.16	-0.16	-0.17	0.40	0.40	0.60	0.80	1.00	1.00	1.00
	5,030 LE/fed.	TNB	-2,517	-1,119	-1,119	-1,189	146,826	2,797	4,195	5,593	6,992	6,992	6,992
Green Pepper	1,390 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	2,410 LE/fed.	TNB	1,675	2,177	2,680	3,015	3,350	3,350	3,350	3,350	3,350	3,350	3,350
Broad Beans	1,390 feddans	G.Rate	0.50	0.67	0.83	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	540 LE/fed.	TNB	375	503	623	691	751	751	751	751	751	751	751
Tomato (F)	1,390 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	14,800 LE/fed.	TNB	10,286	13,372	16,458	18,515	20,572	20,572	20,572	20,572	20,572	20,572	20,572
Cantaloupe	1,390 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	5,770 LE/fed.	TNB	4,010	5,213	6,416	7,218	8,020	8,020	8,020	8,020	8,020	8,020	8,020
Water Melon	1,390 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	2,780 LE/fed.	TNB	1,932	2,512	3,091	3,478	3,864	3,864	3,864	3,864	3,864	3,864	3,864
Cummin	1,390 feddans	G.Rate	0.36	0.54	0.63	0.72	0.81	0.82	0.91	1.00	1.00	1.00	1.00
	820 LE/fed.	TNB	410	615	718	821	923	935	1,037	1,140	1,140	1,140	1,140
Total	9,710 feddans												
	LE/fed.	TNB	18,160	25,858	32,048	36,126	188,281	44,264	45,765	47,266	48,664	48,664	48,664
Per one fed.	5,600 feddans												
	LE/fed.	TNB	3,243	4,617	5,723	6,451	33,622	7,904	8,172	8,440	8,690	8,690	8,690

Table 4.1-5 Net Benefit Flow Computation of Farming Category (4)

Farming category	Small Investor		Cropping pattern : Vegetables and Beef Cattle (Unit : 1,000 LE)									
	Planted Area	G.Rate	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year	
	Total Net Benefit	TNB										
Barley	2,080 feddans	G.Rate	0.60	0.73	0.80	0.93	1.00	1.00	1.00	1.00	1.00	
	510 LE/fed.	TNB	636	774	849	987	1,061	1,061	1,061	1,061	1,061	
Berseem (S)	2,080 feddans	G.Rate	0.50	0.60	0.70	0.80	0.90	1.00	1.00	1.00	1.00	
	490 LE/fed.	TNB	510	612	713	815	917	1,019	1,019	1,019	1,019	
Sorghum	2,080 feddans	G.Rate	0.60	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	
	220 LE/fed.	TNB	275	366	412	458	458	458	458	458	458	
Soy Bean	2,080 feddans	G.Rate	0.50	0.67	0.83	0.92	1.00	1.00	1.00	1.00	1.00	
	820 LE/fed.	TNB	853	1,143	1,416	1,569	1,706	1,706	1,706	1,706	1,706	
Tomato (Pro)	2,080 feddans	G.Rate	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	
	6,090 LE/fed.	TNB	6,334	8,234	10,134	11,400	12,667	12,667	12,667	12,667	12,667	
Cabbage	2,080 feddans	G.Rate	0.60	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	
	1,570 LE/fed.	TNB	1,959	2,123	2,612	2,939	3,266	3,266	3,266	3,266	3,266	
Potato	2,080 feddans	G.Rate	0.60	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	
	3,650 LE/fed.	TNB	4,555	4,935	6,074	6,833	7,592	7,592	7,592	7,592	7,592	
Onion	2,080 feddans	G.Rate	0.60	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	
	2,280 LE/fed.	TNB	2,845	3,083	3,794	4,268	4,742	4,742	4,742	4,742	4,742	
Total	16,600 feddans											
	LE/fed.	TNB	17,967	21,268	26,003	29,269	32,408	32,510	32,510	32,510	32,510	
Per one fed.	8,300 feddans											
	LE/fed.	TNB	2,165	2,562	3,133	3,526	3,905	3,917	3,917	3,917	3,917	

Table 4.1-6 Net Benefit Flow Computation of Farming Category (5)

Farming category	Small Investor	Cropping pattern : Vegetables and Beef Cattle (Unit : 1,000 LE)										
		Planted Area	G.Rate	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year
Grape	Total Net Benefit		TNB	-0.49	-0.10	-0.10	-0.10	0.20	0.40	0.60	0.80	1.00
	1,660 feddans	G.Rate	TNB	-5.450	-1,112	-1,112	-1,112	2,224	4,449	6,673	8,898	11,122
Olive	1,660 feddans	G.Rate	TNB	-0.21	-0.14	-0.14	-0.14	0.20	0.40	0.60	0.80	1.00
	6,680 LE/fed.	TNB		-2,329	-1,552	-1,552	-1,552	2,218	4,436	6,653	8,871	11,089
Orange	1,660 feddans	G.Rate	TNB	-0.16	-0.07	-0.07	-0.07	0.20	0.40	0.60	0.80	1.00
	7,190 LE/fed.	TNB		-1,910	-835	-835	-835	2,387	4,774	7,161	9,548	11,935
Soy Bean	830 feddans	G.Rate	TNB	0.50	0.67	0.83	0.92	1.00	1.00	1.00	1.00	1.00
	820 LE/fed.	TNB		340	456	565	626	681	681	681	681	681
Tomato (Pro)	830 feddans	G.Rate	TNB	0.50	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00
	6,090 LE/fed.	TNB		2,527	3,286	4,044	4,549	5,055	5,055	5,055	5,055	5,055
Cabbage	1,660 feddans	G.Rate	TNB	0.60	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00
	1,570 LE/fed.	TNB		1,564	1,694	2,085	2,346	2,606	2,606	2,606	2,606	2,606
Potato	830 feddans	G.Rate	TNB	0.60	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00
	3,650 LE/fed.	TNB		1,818	1,969	2,424	2,727	3,030	3,030	3,030	3,030	3,030
Onion	1,660 feddans	G.Rate	TNB	0.60	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00
	2,280 LE/fed.	TNB		2,271	2,460	3,028	3,406	3,785	3,785	3,785	3,785	3,785
Sesame	830 feddans	G.Rate	TNB	0.57	0.57	0.71	0.86	0.86	1.00	1.00	1.00	1.00
	1,520 LE/fed.	TNB		719	- 719	896	1,085	1,085	1,262	1,262	1,262	1,262
Total	11,620 feddans											
	LE/fed.	TNB		-449	7,084	9,541	11,239	23,070	30,076	36,905	43,734	50,564
Per one fed.	8,300 feddans											
	LE/fed.	TNB		-0.054	0.853	1.149	1.354	2.780	3.624	4.446	5.269	6.092

Table 4.1-7 Net Benefit Flow Computation of Farming Category (6)

Farming category	Large Investor		Cropping pattern : Vegetables and Cereals										(Unit : 1,000 LE)							
	Planted Area	G.Rate	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year									
Wheat	Total Net Benefit	TNB																		
	4,140 feddans	G.Rate	0.52	0.56	0.60	0.72	0.80	0.80	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maize	480 LE/fed.	TNB	1,033	1,113	1,192	1,431	1,590	1,828	1,987	1,987	1,987	1,987	1,987	1,987	1,987	1,987	1,987	1,987	1,987	1,987
	4,140 feddans	G.Rate	0.20	0.60	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Barley	830 LE/fed.	TNB	687	2,062	2,749	3,093	3,436	3,436	3,436	3,436	3,436	3,436	3,436	3,436	3,436	3,436	3,436	3,436	3,436	3,436
	4,140 feddans	G.Rate	0.60	0.73	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Soy Bean	510 LE/fed.	TNB	1,267	1,541	1,689	1,900	2,111	2,111	2,111	2,111	2,111	2,111	2,111	2,111	2,111	2,111	2,111	2,111	2,111	2,111
	4,140 feddans	G.Rate	0.50	0.67	0.83	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Sesame	820 LE/fed.	TNB	1,697	2,275	2,818	3,123	3,395	3,395	3,395	3,395	3,395	3,395	3,395	3,395	3,395	3,395	3,395	3,395	3,395	3,395
	4,140 feddans	G.Rate	0.57	0.57	0.71	0.86	0.86	0.86	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Cabbage	1,520 LE/fed.	TNB	3,587	3,587	4,468	5,412	5,412	6,293	6,293	6,293	6,293	6,293	6,293	6,293	6,293	6,293	6,293	6,293	6,293	6,293
	4,140 feddans	G.Rate	0.60	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Potato	1,570 LE/fed.	TNB	3,900	4,225	5,200	5,850	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500
	4,140 feddans	G.Rate	0.60	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Onion	3,650 LE/fed.	TNB	9,067	9,822	12,089	13,600	15,111	15,111	15,111	15,111	15,111	15,111	15,111	15,111	15,111	15,111	15,111	15,111	15,111	15,111
	4,140 feddans	G.Rate	0.60	0.65	0.80	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Total	2,280 LE/fed.	TNB	5,664	6,135	7,551	8,495	9,439	9,439	9,439	9,439	9,439	9,439	9,439	9,439	9,439	9,439	9,439	9,439	9,439	9,439
	33,120 feddans	TNB																		
Per one fed.	16,560 feddans	TNB	26,902	30,760	37,756	42,904	46,994	48,113	48,272	48,272	48,272	48,272	48,272	48,272	48,272	48,272	48,272	48,272	48,272	48,272
	LE/fed.	TNB	1,625	1,857	2,280	2,591	2,838	2,905	2,915	2,915	2,915	2,915	2,915	2,915	2,915	2,915	2,915	2,915	2,915	2,915

Table 4.1-8 Net Benefit Flow Computation of Farming Category (7)

Farming category : Large Investor		Cropping pattern : Dairy Cattle									
		(Unit : 1,000 LE)									
Crop	Planted Area	G.Rate	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year
	Total Net Benefit	TNB									
Wheat	4,140 feddans	G.Rate	0.52	0.56	0.60	0.72	0.80	0.92	1.00	1.00	1.00
	480 LE/fed.	TNB	1,033	1,113	1,192	1,431	1,590	1,828	1,987	1,987	1,987
Maize	8,280 feddans	G.Rate	0.20	0.60	0.80	0.90	1.00	1.00	1.00	1.00	1.00
	830 LE/fed.	TNB	1,374	4,123	5,498	6,185	6,872	6,872	6,872	6,872	6,872
Barley	4,140 feddans	G.Rate	0.60	0.73	0.80	0.90	1.00	1.00	1.00	1.00	1.00
	510 LE/fed.	TNB	1,267	1,541	1,689	1,900	2,111	2,111	2,111	2,111	2,111
Sorghum	8,280 feddans	G.Rate	0.50	0.67	0.83	0.92	1.00	1.00	1.00	1.00	1.00
	220 LE/fed.	TNB	911	1,220	1,512	1,676	1,822	1,822	1,822	1,822	1,822
Berseem (S)	4,140 feddans	G.Rate	0.57	0.57	0.71	0.86	0.86	1.00	1.00	1.00	1.00
	490 LE/fed.	TNB	1,156	1,156	1,440	1,745	1,745	2,029	2,029	2,029	2,029
Fodderbeet	4,140 feddans	G.Rate	0.40	0.50	0.75	0.90	1.00	1.00	1.00	1.00	1.00
	1,350 LE/fed.	TNB	2,236	2,795	4,192	5,030	5,589	5,589	5,589	5,589	5,589
Total	33,120 feddans										
	LE/fed.	TNB	7,977	11,949	15,523	17,967	19,729	20,251	20,410	20,410	20,410
Per one fed.	16,560 feddans										
	LE/fed.	TNB	0.482	0.722	0.937	1.085	1.191	1.223	1.233	1.233	1.233

Table 4.1-9 Net Benefit Flow Computation of Farming Category (8)

Farming category : Large Investor		Cropping pattern : Beef Cattle									
		(Unit : 1,000 LE)									
Crop	Planted Area	G.Rate	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year
	Total Net Benefit	TNB									
Wheat	4,140 feddans	G.Rate	0.52	0.56	0.60	0.72	0.80	0.92	1.00	1.00	1.00
	480 LE/fed.	TNB	1,033	1,113	1,192	1,431	1,590	1,828	1,987	1,987	1,987
Maize	8,280 feddans	G.Rate	0.20	0.60	0.80	0.90	1.00	1.00	1.00	1.00	1.00
	830 LE/fed.	TNB	1,374	4,123	5,498	6,185	6,872	6,872	6,872	6,872	6,872
Barley	4,140 feddans	G.Rate	0.60	0.73	0.80	0.90	1.00	1.00	1.00	1.00	1.00
	510 LE/fed.	TNB	1,267	1,541	1,689	1,900	2,111	2,111	2,111	2,111	2,111
Sorghum	8,280 feddans	G.Rate	0.50	0.67	0.83	0.92	1.00	1.00	1.00	1.00	1.00
	220 LE/fed.	TNB	911	1,220	1,512	1,676	1,822	1,822	1,822	1,822	1,822
Berseem (S)	4,140 feddans	G.Rate	0.57	0.57	0.71	0.86	0.86	1.00	1.00	1.00	1.00
	490 LE/fed.	TNB	1,156	1,156	1,440	1,745	1,745	2,029	2,029	2,029	2,029
Berseem (L)	4,140 feddans	G.Rate	0.50	0.60	0.70	0.80	0.90	1.00	1.00	1.00	1.00
	460 LE/fed.	TNB	952	1,143	1,333	1,524	1,714	1,904	1,904	1,904	1,904
Total	33,120 feddans										
	LE/fed.	TNB	6,694	10,297	12,665	14,460	15,854	16,567	16,726	16,726	16,726
Per one fed.	16,560 feddans										
	LE/fed.	TNB	0.404	0.622	0.765	0.873	0.957	1.000	1.010	1.010	1.010

Table 4.1-10 Net Benefit Flow Computation of Farming Category (9)

Farming category : Large Investor		Cropping pattern : Fruit										
Crop	Planted Area	G.Rate	(Unit : 1,000 LE)									9th year
	Total Net Benefit	TNB	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year		
Grape	4,140 feddans	G.Rate	-0.49	-0.10	-0.10	-0.10	0.20	0.40	0.60	0.80	1.00	
	6,700 LE/fed.	TNB	-13,592	-2,774	-2,774	-2,774	5,548	11,095	16,643	22,190	27,738	
Olive	4,140 feddans	G.Rate	-0.21	-0.14	-0.14	-0.14	0.20	0.40	0.60	0.80	1.00	
	6,680 LE/fed.	TNB	-5,808	-3,872	-3,872	-3,872	5,531	11,062	16,593	22,124	27,655	
Orange	4,140 feddans	G.Rate	-0.16	-0.07	-0.07	-0.07	0.20	0.40	0.60	0.80	1.00	
	7,190 LE/fed.	TNB	-4,763	-2,084	-2,084	-2,084	5,953	11,907	17,860	23,813	29,767	
Almond	4,140 feddans	G.Rate	-0.17	-0.13	-0.13	-0.13	0.20	0.40	0.60	0.80	1.00	
	6,340 LE/fed.	TNB	-4,462	-3,412	-3,412	-3,412	5,250	10,499	15,749	20,998	26,248	
Total	16,560 feddans											
	LE/fed.	TNB	-28,624	-12,141	-12,141	-12,141	22,281	44,563	66,844	89,126	111,407	
Per one fed.	16,560 feddans											
	LE/fed.	TNB	-1,729	-0,733	-0,733	-0,733	1,346	2,691	4,037	5,382	6,728	

Table 4.1-11 Computation of EIRR (Base case)

(unit: 1,000LE)

Year	Capital Cost	O & M Cost	Total	Benefit	Return	Present Value by Discount Rate					
						Interest= 0.10		Interest= 0.15		Interest= 0.20	
						Cost	Benefit	Cost	Benefit	Cost	Benefit
-7	5,475	0	5,475	0	-5,475	5,475		5,475		5,475	
-6	17,908	0	17,908	0	-17,908	17,908		17,908		17,908	
-5	14,860	0	14,860	0	-14,860	14,860		14,860		14,860	
-4	29,269	0	29,269	0	-29,269	29,269		29,269		29,269	
-3	23,189	0	23,189	0	-23,189	23,189		23,189		23,189	
-2	32,899	0	32,899	0	-32,899	32,899		32,899		32,899	
-1	43,337	0	43,337	0	-43,337	43,337		43,337		43,337	
0	28,337	0	28,337	0	-28,337	28,337		28,337		28,337	
1	52,095	0	52,095	0	-52,095	52,095	0	52,095	0	52,095	0
2	241,512	0	241,512	0	-241,512	199,597	0	182,618	0	167,717	0
3	482,405	0	482,405	0	-482,405	362,438	0	317,189	0	279,170	0
4	525,222	0	525,222	0	-525,222	358,734	0	300,297	0	253,290	0
5	441,320	0	441,320	0	-441,320	274,025	0	219,414	0	177,357	0
6	208,097	0	208,097	0	-208,097	117,465	0	89,966	0	69,691	0
7	0	29,709	29,709	177,237	147,528	15,245	90,951	11,169	66,630	8,291	49,464
8	0	29,709	29,709	241,772	212,063	13,859	112,788	9,712	79,036	6,909	56,228
9	0	29,709	29,709	296,492	266,783	12,600	125,742	8,445	84,282	5,758	57,462
10	0	29,709	29,709	334,834	305,125	11,454	129,093	7,344	82,766	4,798	54,078
11	0	29,709	29,709	395,493	365,784	10,413	138,618	6,386	85,009	3,998	53,229
12	0	29,709	29,709	408,658	378,949	9,466	130,211	5,553	76,381	3,332	45,834
13	0	29,709	29,709	423,239	393,530	8,606	122,597	4,829	68,788	2,777	39,558
14	0	29,709	29,709	437,626	407,917	7,823	115,241	4,199	61,849	2,314	34,085
15	0	29,709	29,709	451,301	421,592	7,112	108,038	3,651	55,462	1,928	29,292
16	0	29,709	29,709	451,301	421,592	6,466	98,216	3,175	48,228	1,607	24,410
17	0	29,709	29,709	451,301	421,592	5,878	89,287	2,761	41,938	1,339	20,342
18	0	29,709	29,709	451,301	421,592	5,343	81,170	2,401	36,467	1,116	16,951
19	0	29,709	29,709	451,301	421,592	4,858	73,791	2,088	31,711	930	14,126
20	0	29,709	29,709	451,301	421,592	4,416	67,083	1,815	27,575	775	11,772
21	0	29,709	29,709	451,301	421,592	4,015	60,985	1,578	23,978	646	9,810
22	0	29,709	29,709	451,301	421,592	3,650	55,441	1,373	20,850	538	8,175
23	0	29,709	29,709	451,301	421,592	3,318	50,400	1,194	18,131	448	6,812
24	0	29,709	29,709	451,301	421,592	3,016	45,819	1,038	15,766	374	5,677
25	0	29,709	29,709	451,301	421,592	2,742	41,653	902	13,709	311	4,731
26	0	65,709	65,709	451,301	385,592	5,513	37,867	1,736	11,921	574	3,942
27	0	29,709	29,709	451,301	421,592	2,266	34,424	682	10,366	216	3,285
28	0	29,709	29,709	451,301	421,592	2,060	31,295	593	9,014	180	2,738
29	0	29,709	29,709	451,301	421,592	1,873	28,450	516	7,838	150	2,281
30	0	29,709	29,709	451,301	421,592	1,703	25,863	449	6,816	125	1,901
31	0	29,709	29,709	451,301	421,592	1,548	23,512	390	5,927	104	1,584
32	0	29,709	29,709	451,301	421,592	1,407	21,375	339	5,154	87	1,320
33	0	29,709	29,709	451,301	421,592	1,279	19,432	295	4,482	72	1,100
34	0	29,709	29,709	451,301	421,592	1,163	17,665	257	3,897	60	917
35	0	29,709	29,709	451,301	421,592	1,057	16,059	223	3,389	50	764
36	0	29,709	29,709	451,301	421,592	961	14,599	194	2,947	42	637
37	0	29,709	29,709	451,301	421,592	874	13,272	169	2,562	35	531
38	0	29,709	29,709	451,301	421,592	794	12,065	147	2,228	29	442
39	0	29,709	29,709	451,301	421,592	722	10,969	128	1,938	24	368
40	0	29,709	29,709	451,301	421,592	656	9,971	111	1,685	20	307
41	0	29,709	29,709	451,301	421,592	597	9,065	96	1,465	17	256
42	0	29,709	29,709	451,301	421,592	542	8,241	84	1,274	14	213
43	0	29,709	29,709	451,301	421,592	493	7,492	73	1,108	12	178
44	0	29,709	29,709	451,301	421,592	448	6,811	63	963	10	148
45	0	29,709	29,709	451,301	421,592	408	6,191	55	838	8	123
46	0	65,709	65,709	451,301	385,592	820	5,629	106	728	15	103
47	0	29,709	29,709	451,301	421,592	337	5,117	42	633	6	86
48	0	29,709	29,709	451,301	421,592	306	4,652	36	551	5	71
49	0	29,709	29,709	451,301	421,592	278	4,229	32	479	4	60
50	0	29,709	29,709	451,301	421,592	253	3,844	27	416	3	50
Total	1,950,652	1,379,196	3,329,848	18,962,187	15,632,339	1,532,993	2,115,213	1,248,033	1,027,175	1,049,373	565,440
						EIRR = 13.03 %					
						B/C Ratio= 1.38 (10 %)					
						B/C Ratio= 0.82 (15 %)					
						B/C Ratio= 0.54 (20 %)					

Table 4.1-12 Computation of EIRR (Cost 10% increase)

(unit: 1,000LE)

Year	Capital Cost	O & M Cost	Total	Benefit	Return	Present Value by Discount Rate					
						Interest= 0.10		Interest= 0.15		Interest= 0.20	
						Cost	Benefit	Cost	Benefit	Cost	Benefit
-7	5,475	0	5,475	0	-5,475	5,475		5,475		5,475	
-6	17,908	0	17,908	0	-17,908	17,908		17,908		17,908	
-5	14,860	0	14,860	0	-14,860	14,860		14,860		14,860	
-4	29,269	0	29,269	0	-29,269	29,269		29,269		29,269	
-3	23,189	0	23,189	0	-23,189	23,189		23,189		23,189	
-2	32,899	0	32,899	0	-32,899	32,899		32,899		32,899	
-1	43,337	0	43,337	0	-43,337	43,337		43,337		43,337	
0	28,337	0	28,337	0	-28,337	28,337		28,337		28,337	
1	57,305	0	57,305	0	-57,305	57,305	0	57,305	0	57,305	0
2	265,663	0	265,663	0	-265,663	219,556	0	200,880	0	184,488	0
3	530,646	0	530,646	0	-530,646	398,682	0	348,908	0	307,087	0
4	577,744	0	577,744	0	-577,744	394,607	0	330,327	0	278,619	0
5	485,452	0	485,452	0	-485,452	301,428	0	241,356	0	195,092	0
6	228,907	0	228,907	0	-228,907	129,212	0	98,963	0	76,660	0
7	0	29,709	29,709	177,237	147,528	15,245	90,951	11,169	66,630	8,291	49,464
8	0	29,709	29,709	241,772	212,063	13,859	112,788	9,712	79,036	6,909	56,228
9	0	29,709	29,709	296,492	266,783	12,600	125,742	8,445	84,282	5,758	57,462
10	0	29,709	29,709	334,834	305,125	11,454	129,093	7,344	82,766	4,798	54,078
11	0	29,709	29,709	395,493	365,784	10,413	138,618	6,386	85,009	3,998	53,229
12	0	29,709	29,709	408,658	378,949	9,466	130,211	5,553	76,381	3,332	45,834
13	0	29,709	29,709	423,239	393,530	8,606	122,597	4,829	68,788	2,777	39,558
14	0	29,709	29,709	437,626	407,917	7,823	115,241	4,199	61,849	2,314	34,085
15	0	29,709	29,709	451,301	421,592	7,112	108,038	3,651	55,462	1,928	29,292
16	0	29,709	29,709	451,301	421,592	6,466	98,216	3,175	48,228	1,607	24,410
17	0	29,709	29,709	451,301	421,592	5,878	89,287	2,761	41,938	1,339	20,342
18	0	29,709	29,709	451,301	421,592	5,343	81,170	2,401	36,467	1,116	16,951
19	0	29,709	29,709	451,301	421,592	4,858	73,791	2,088	31,711	930	14,126
20	0	29,709	29,709	451,301	421,592	4,416	67,083	1,815	27,575	775	11,772
21	0	29,709	29,709	451,301	421,592	4,015	60,985	1,578	23,978	646	9,810
22	0	29,709	29,709	451,301	421,592	3,650	55,441	1,373	20,850	538	8,175
23	0	29,709	29,709	451,301	421,592	3,318	50,400	1,194	18,131	448	6,812
24	0	29,709	29,709	451,301	421,592	3,016	45,819	1,038	15,766	374	5,677
25	0	29,709	29,709	451,301	421,592	2,742	41,653	902	13,709	311	4,731
26	0	65,709	65,709	451,301	385,592	5,513	37,867	1,736	11,921	574	3,942
27	0	29,709	29,709	451,301	421,592	2,266	34,424	682	10,366	216	3,285
28	0	29,709	29,709	451,301	421,592	2,060	31,295	593	9,014	180	2,738
29	0	29,709	29,709	451,301	421,592	1,873	28,450	516	7,838	150	2,281
30	0	29,709	29,709	451,301	421,592	1,703	25,863	449	6,816	125	1,901
31	0	29,709	29,709	451,301	421,592	1,548	23,512	390	5,927	104	1,584
32	0	29,709	29,709	451,301	421,592	1,407	21,375	339	5,154	87	1,320
33	0	29,709	29,709	451,301	421,592	1,279	19,432	295	4,482	72	1,100
34	0	29,709	29,709	451,301	421,592	1,163	17,665	257	3,897	60	917
35	0	29,709	29,709	451,301	421,592	1,057	16,059	223	3,389	50	764
36	0	29,709	29,709	451,301	421,592	961	14,599	194	2,947	42	637
37	0	29,709	29,709	451,301	421,592	874	13,272	169	2,562	35	531
38	0	29,709	29,709	451,301	421,592	794	12,065	147	2,228	29	442
39	0	29,709	29,709	451,301	421,592	722	10,969	128	1,938	24	368
40	0	29,709	29,709	451,301	421,592	656	9,971	111	1,685	20	307
41	0	29,709	29,709	451,301	421,592	597	9,065	96	1,465	17	256
42	0	29,709	29,709	451,301	421,592	542	8,241	84	1,274	14	213
43	0	29,709	29,709	451,301	421,592	493	7,492	73	1,108	12	178
44	0	29,709	29,709	451,301	421,592	448	6,811	63	963	10	148
45	0	29,709	29,709	451,301	421,592	408	6,191	55	838	8	123
46	0	65,709	65,709	451,301	385,592	820	5,629	106	728	15	103
47	0	29,709	29,709	451,301	421,592	337	5,117	42	633	6	86
48	0	29,709	29,709	451,301	421,592	306	4,652	36	551	5	71
49	0	29,709	29,709	451,301	421,592	278	4,229	32	479	4	60
50	0	29,709	29,709	451,301	421,592	253	3,844	27	416	3	50
Tota	2,145,717	1,379,196	3,524,913	18,962,187	15,437,274	1,669,428	2,115,213	1,364,191	1,027,175	1,149,305	565,440
						EIRR = 12.17 %					
						B/C Ratio= 1.27		(10 %)			
						B/C Ratio= 0.75		(15 %)			
						B/C Ratio= 0.49		(20 %)			

Table 4.1-13 Computation of EIRR (Benefit 10% decrease)

(unit: 1,000LE)

Year	Capital Cost	O & M Cost	Total	Benefit	Return	Present Value by Discount Rate					
						Interest= 0.10		Interest= 0.15		Interest= 0.20	
						Cost	Benefit	Cost	Benefit	Cost	Benefit
-7	5,475	0	5,475	0	-5,475	5,475		5,475		5,475	
-6	17,908	0	17,908	0	-17,908	17,908		17,908		17,908	
-5	14,860	0	14,860	0	-14,860	14,860		14,860		14,860	
-4	29,269	0	29,269	0	-29,269	29,269		29,269		29,269	
-3	23,189	0	23,189	0	-23,189	23,189		23,189		23,189	
-2	32,899	0	32,899	0	-32,899	32,899		32,899		32,899	
-1	43,337	0	43,337	0	-43,337	43,337		43,337		43,337	
0	28,337	0	28,337	0	-28,337	28,337		28,337		28,337	
1	52,095	0	52,095	0	-52,095	52,095	0	52,095	0	52,095	0
2	241,512	0	241,512	0	-241,512	199,597	0	182,618	0	167,717	0
3	482,405	0	482,405	0	-482,405	362,438	0	317,189	0	279,170	0
4	525,222	0	525,222	0	-525,222	358,734	0	300,297	0	253,290	0
5	441,320	0	441,320	0	-441,320	274,025	0	219,414	0	177,357	0
6	208,097	0	208,097	0	-208,097	117,465	0	89,966	0	69,691	0
7	0	29,709	29,709	159,513	129,804	15,245	81,856	11,169	59,967	8,291	44,517
8	0	29,709	29,709	217,595	187,886	13,859	101,510	9,712	71,132	6,909	50,606
9	0	29,709	29,709	266,843	237,134	12,600	113,167	8,445	75,853	5,758	51,716
10	0	29,709	29,709	301,351	271,642	11,454	116,184	7,344	74,489	4,798	48,670
11	0	29,709	29,709	355,944	326,235	10,413	124,756	6,386	76,508	3,998	47,906
12	0	29,709	29,709	367,792	338,083	9,466	117,190	5,553	68,743	3,332	41,250
13	0	29,709	29,709	380,915	351,206	8,606	110,338	4,829	61,909	2,777	35,602
14	0	29,709	29,709	393,863	364,154	7,823	103,717	4,199	55,664	2,314	30,677
15	0	29,709	29,709	406,171	376,462	7,112	97,234	3,651	49,916	1,928	26,363
16	0	29,709	29,709	406,171	376,462	6,466	88,395	3,175	43,405	1,607	21,969
17	0	29,709	29,709	406,171	376,462	5,878	80,359	2,761	37,744	1,339	18,307
18	0	29,709	29,709	406,171	376,462	5,343	73,053	2,401	32,821	1,116	15,256
19	0	29,709	29,709	406,171	376,462	4,858	66,412	2,088	28,540	930	12,71
20	0	29,709	29,709	406,171	376,462	4,416	60,375	1,815	24,817	775	10,595
21	0	29,709	29,709	406,171	376,462	4,015	54,886	1,578	21,580	646	8,829
22	0	29,709	29,709	406,171	376,462	3,650	49,896	1,373	18,765	538	7,357
23	0	29,709	29,709	406,171	376,462	3,318	45,360	1,194	16,318	448	6,131
24	0	29,709	29,709	406,171	376,462	3,016	41,237	1,038	14,189	374	5,109
25	0	29,709	29,709	406,171	376,462	2,742	37,488	902	12,339	311	4,258
26	0	65,709	65,709	406,171	340,462	5,513	34,080	1,736	10,729	574	3,548
27	0	29,709	29,709	406,171	376,462	2,266	30,982	682	9,330	216	2,957
28	0	29,709	29,709	406,171	376,462	2,060	28,165	593	8,113	180	2,464
29	0	29,709	29,709	406,171	376,462	1,873	25,605	516	7,055	150	2,053
30	0	29,709	29,709	406,171	376,462	1,703	23,277	449	6,134	125	1,711
31	0	29,709	29,709	406,171	376,462	1,548	21,161	390	5,334	104	1,426
32	0	29,709	29,709	406,171	376,462	1,407	19,237	339	4,639	87	1,188
33	0	29,709	29,709	406,171	376,462	1,279	17,488	295	4,033	72	990
34	0	29,709	29,709	406,171	376,462	1,163	15,899	257	3,507	60	825
35	0	29,709	29,709	406,171	376,462	1,057	14,453	223	3,050	50	688
36	0	29,709	29,709	406,171	376,462	961	13,139	194	2,652	42	573
37	0	29,709	29,709	406,171	376,462	874	11,945	169	2,306	35	478
38	0	29,709	29,709	406,171	376,462	794	10,859	147	2,005	29	398
39	0	29,709	29,709	406,171	376,462	722	9,872	128	1,744	24	332
40	0	29,709	29,709	406,171	376,462	656	8,974	111	1,516	20	276
41	0	29,709	29,709	406,171	376,462	597	8,158	96	1,319	17	230
42	0	29,709	29,709	406,171	376,462	542	7,417	84	1,147	14	192
43	0	29,709	29,709	406,171	376,462	493	6,743	73	997	12	160
44	0	29,709	29,709	406,171	376,462	448	6,130	63	867	10	133
45	0	29,709	29,709	406,171	376,462	408	5,572	55	754	8	111
46	0	65,709	65,709	406,171	340,462	820	5,066	106	656	15	93
47	0	29,709	29,709	406,171	376,462	337	4,605	42	570	6	77
48	0	29,709	29,709	406,171	376,462	306	4,187	36	496	5	64
49	0	29,709	29,709	406,171	376,462	278	3,806	32	431	4	54
50	0	29,709	29,709	406,171	376,462	253	3,460	27	375	3	45
Tota	1,950,652	1,379,196	3,329,848	17,065,968	13,736,120	1,532,993	1,903,691	1,248,033	924,458	1,049,373	508,896
						EIRR = 12.00 %					
						B/C Ratio= 1.24		(10 %)			
						B/C Ratio= 0.74		(15 %)			
						B/C Ratio= 0.48		(20 %)			

Table 4.1-14 Computation of EIRR
(Combined case, cost 10% increase, benefit 10% decrease)

(unit: 1,000LE)

Year	Capital Cost	O & M Cost	Total	Benefit	Return	Present Value by Discount Rate					
						Interest= 0.10		Interest= 0.15		Interest= 0.20	
						Cost	Benefit	Cost	Benefit	Cost	Benefit
-7	5,475	0	5,475	0	-5,475	5,475		5,475		5,475	
-6	17,908	0	17,908	0	-17,908	17,908		17,908		17,908	
-5	14,860	0	14,860	0	-14,860	14,860		14,860		14,860	
-4	29,269	0	29,269	0	-29,269	29,269		29,269		29,269	
-3	23,189	0	23,189	0	-23,189	23,189		23,189		23,189	
-2	32,899	0	32,899	0	-32,899	32,899		32,899		32,899	
-1	43,337	0	43,337	0	-43,337	43,337		43,337		43,337	
0	28,337	0	28,337	0	-28,337	28,337		28,337		28,337	
1	57,305	0	57,305	0	-57,305	57,305	0	57,305	0	57,305	0
2	265,663	0	265,663	0	-265,663	219,556	0	200,880	0	184,488	0
3	530,646	0	530,646	0	-530,646	398,682	0	348,908	0	307,087	0
4	577,744	0	577,744	0	-577,744	394,607	0	330,327	0	278,619	0
5	485,452	0	485,452	0	-485,452	301,428	0	241,356	0	195,092	0
6	228,907	0	228,907	0	-228,907	129,212	0	98,963	0	76,660	0
7	0	29,709	29,709	159,513	129,804	15,245	81,856	11,169	59,967	8,291	44,517
8	0	29,709	29,709	217,595	187,886	13,859	101,510	9,712	71,132	6,909	50,606
9	0	29,709	29,709	266,843	237,134	12,600	113,167	8,445	75,853	5,758	51,716
10	0	29,709	29,709	301,351	271,642	11,454	116,184	7,344	74,489	4,798	48,670
11	0	29,709	29,709	355,944	326,235	10,413	124,756	6,386	76,508	3,998	47,906
12	0	29,709	29,709	367,792	338,083	9,466	117,190	5,553	68,743	3,332	41,250
13	0	29,709	29,709	380,915	351,206	8,606	110,338	4,829	61,909	2,777	35,602
14	0	29,709	29,709	393,863	364,154	7,823	103,717	4,199	55,664	2,314	30,677
15	0	29,709	29,709	406,171	376,462	7,112	97,234	3,651	49,916	1,928	26,363
16	0	29,709	29,709	406,171	376,462	6,466	88,395	3,175	43,405	1,607	21,969
17	0	29,709	29,709	406,171	376,462	5,878	80,359	2,761	37,744	1,339	18,307
18	0	29,709	29,709	406,171	376,462	5,343	73,053	2,401	32,821	1,116	15,256
19	0	29,709	29,709	406,171	376,462	4,858	66,412	2,088	28,540	930	12,71
20	0	29,709	29,709	406,171	376,462	4,416	60,375	1,815	24,817	775	10,595
21	0	29,709	29,709	406,171	376,462	4,015	54,886	1,578	21,580	646	8,829
22	0	29,709	29,709	406,171	376,462	3,650	49,896	1,373	18,765	538	7,357
23	0	29,709	29,709	406,171	376,462	3,318	45,360	1,194	16,318	448	6,131
24	0	29,709	29,709	406,171	376,462	3,016	41,237	1,038	14,189	374	5,109
25	0	29,709	29,709	406,171	376,462	2,742	37,488	902	12,339	311	4,258
26	0	65,709	65,709	406,171	340,462	5,513	34,080	1,736	10,729	574	3,548
27	0	29,709	29,709	406,171	376,462	2,266	30,982	682	9,330	216	2,957
28	0	29,709	29,709	406,171	376,462	2,060	28,165	593	8,113	180	2,464
29	0	29,709	29,709	406,171	376,462	1,873	25,605	516	7,055	150	2,053
30	0	29,709	29,709	406,171	376,462	1,703	23,277	449	6,134	125	1,711
31	0	29,709	29,709	406,171	376,462	1,548	21,161	390	5,334	104	1,426
32	0	29,709	29,709	406,171	376,462	1,407	19,237	339	4,639	87	1,188
33	0	29,709	29,709	406,171	376,462	1,279	17,488	295	4,033	72	990
34	0	29,709	29,709	406,171	376,462	1,163	15,899	257	3,507	60	825
35	0	29,709	29,709	406,171	376,462	1,057	14,453	223	3,050	50	688
36	0	29,709	29,709	406,171	376,462	961	13,139	194	2,652	42	573
37	0	29,709	29,709	406,171	376,462	874	11,945	169	2,306	35	478
38	0	29,709	29,709	406,171	376,462	794	10,859	147	2,005	29	398
39	0	29,709	29,709	406,171	376,462	722	9,872	128	1,744	24	332
40	0	29,709	29,709	406,171	376,462	656	8,974	111	1,516	20	276
41	0	29,709	29,709	406,171	376,462	597	8,158	96	1,319	17	230
42	0	29,709	29,709	406,171	376,462	542	7,417	84	1,147	14	192
43	0	29,709	29,709	406,171	376,462	493	6,743	73	997	12	160
44	0	29,709	29,709	406,171	376,462	448	6,130	63	867	10	133
45	0	29,709	29,709	406,171	376,462	408	5,572	55	754	8	111
46	0	65,709	65,709	406,171	340,462	820	5,066	106	656	15	93
47	0	29,709	29,709	406,171	376,462	337	4,605	42	570	6	77
48	0	29,709	29,709	406,171	376,462	306	4,187	36	496	5	64
49	0	29,709	29,709	406,171	376,462	278	3,806	32	431	4	54
50	0	29,709	29,709	406,171	376,462	253	3,460	27	375	3	45
Tota	2,145,717	1,379,196	3,524,913	17,065,968	13,541,055	1,669,428	1,903,691	1,364,191	924,458	1,149,305	508,896
						EIRR = 11.19 %					
						B/C Ratio= 1.14		(10 %)			
						B/C Ratio= 0.68		(15 %)			
						B/C Ratio= 0.44		(20 %)			

CHAPTER 5 PROJECT IMPLEMENTATION PLAN

5.1 Overall Project Implementation Plan

Schedules of the project implementation was divided into two stages as indicated in the previous section 1.2 of this report. According to the NSDO proposal on the overall project development plans, Stage I scheme will be commenced from the year 2001 after finalization of detailed designs and tender documents for both conveyance canal systems and irrigation/drainage infrastructures were made.

On the other hand, Stage II scheme will be started immediately after completion of the Stage I project by the large investors initiatives.

Construction of conveyance canal systems including El Salaam No.7 pumping station for stage I shall be divided into four(4) packages. These plans are summarized as follows ;

- 1st package : 22.0 km conveyance canal (No.1 and No.2 open canal and box culvert) two routes with 3.9 km of access roads, spillway and appurtenant structures
- 2nd package : El Salaam No.7 pumping station with four(4) units of main pump and motor, delivery pressured pipelines (3 rows) of 9.4 km long, No.3 access road with 5.1 km and appurtenant structures
- 3rd package : 13.9 km conveyance canal (No.3 open canal) and appurtenant structures
- 4th package : Main substation with 25MVA x 4 units transformers including appurtenant equipment and administration building

In parallel with construction of conveyance canal systems, construction of irrigation and drainage networks, roads and land reclamation and settlement infrastructures development will be executed by the authorities concerned under the NSDO organization.

Project implementation schedule for stage I is tabulated in the Table 5.1-1. Time spans of respective construction and development for stage I are assumed four (4) years for conveyance canals, irrigation/drainage canals and on-farm facilities, and five(5) years for social infrastructures development taking into consideration the actual construction progress of existing developing area and budget allocation tendencies.

5.2 Implementation Agency

Project implementation agency for the project shall be the North Sinai Development Authority.

Table 5.1-1 Project Implementation Schedule for Stage I

Execution Stage and Components	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
1. Preparatory Works											
(1) Preparation of T.D.											
(2) Tender Procedures											
(3) Negotiation / Contract											
2. Conveyance Canal System											
(1) 1st Package Contract											
(2) 2nd Package Contract											
(3) 3rd Package Contract											
(4) 4th Package Contract											
3. Main Irrigation/Drainage System											
(1) I-1 Area											
(2) I-2 Area											
(3) I-3 Area											
(4) I-4 Area											
4. On-Firm Development											
(1) I-1 Area											
(2) I-2 Area											
(3) I-3 Area											
(4) I-4 Area											
5. Social Infrastructure											
(1) I-1 Area											
(2) I-2 Area											
(3) I-3 Area											
(4) I-4 Area											