

## **CHAPTER VIII PRELIMINARY PROJECT EVALUATION**

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## CHAPTER VIII PRELIMINARY PROJECT EVALUATION

### 8.1 Project Implementation Plan

Schedules of the project implementation was divided into two stages as indicated in the Chapter II. According to the NSDO proposal on the overall project development plans, Stage I scheme will be commenced from year 2001 after finalization of detailed designs and tender documents for both conveyance canal systems and irrigation and 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 systems shall be divided into four(4) packages and two(2) packages for stage I and stage II, respectively. These plans are summarized as follows ;

#### (1) Stage I :

- 1<sup>st</sup> 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 including spillway and appurtenant structures
- 2<sup>nd</sup> package :No.7 pumping station with four(4) units of main pump, delivery pressured pipelines (3 rows) of 9.3 km long and No.3 access road with 5.1 km and appurtenant structures
- 3<sup>rd</sup> package :13.9 km conveyance canal (No.3 open canal) and appurtenant structures
- 4<sup>th</sup> package :35 km long power supply line and substation with 25MVA x 4 units transformers

#### (2) Stage II

- 1<sup>st</sup> package :No.7 pumping station with three(3) units of main pump, delivery pressured pipelines(2rows) of 9.3km and appurtenant structures
- 2<sup>nd</sup> package :Expansion of substation with 25MVA x 2 units transformers

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.

Tentative project implementation schedules for stage I and stage II are tabulated in the Table 8.1-1 and 8.1-2. 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 facilities and budget allocation tendencies. These of stage II, however, are considered three(3) years for the former and three and half (3.5) years for the latter. Because, proposed infrastructures in the stage II are rather simple and extensive facilities as well as rather few works quantitatively compared to the stage I.

**Table 8.1-1 Project Implementation Schedule for Stage I**

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

**Table 8.1.1-2 Project Implementation Schedule for Stage II**

Execution Stage and Project 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. Main Irrigation/ Drainage Systems											
(1) II -1 Area								█			
(2) II -2 Area								█			
(3) II -3 Area								█			
(4) II -4 Area								█			
4. On-Farm Development											
(1) II -1 Area								█			
(2) II -2 Area								█			
(3) II -3 Area								█			
(4) II -4 Area								█			
5. Social Infrastructure											
(1) II -1 Area								█			
(2) II -2 Area								█			
(3) II -3 Area								█			
(4) II -4 Area								█			

## **8.2 Project Cost Estimate**

### **8.2.1 Cost of Conveyance Canals**

For the purpose of this project evaluation, disbursed cost of the existing conveyance canal from the beginning of Suez siphon shall be added to the costs. Since fiscal year 1993, construction works of upper reach of El Sheikh Gaber canal are being continued up to KM 86 +500 points. These costs are summarized in the Table 8.2-1.

Costs of the subject section, such as KM86+500 to KM132+500, were estimated based on preliminary bill of quantity and applicable unit cost referring unit prices of contract documents for upper reach canals. Summary costs of the conveyance canal, No.7 pumping station and access roads are tabulated in the Table 8.2-2, 8.2-3 and 8.2-4. The costs of each packages for stage I and stage II are also indicated in the Table 8.2-5.

In the Table 8.2-2, physical contingencies and engineering fees of 15% and 5% for the construction costs were added to the base (construction) costs, respectively

### **8.2.2 Cost of Irrigation and Drainage Infrastructures in the Beneficial Area**

Major cost items of irrigation/drainage facilities in the beneficial area are main irrigation and drainage canal networks and on-farm level irrigation/ drainage canals including night storage farm ponds and land reclamation works and main and farm roads.

Costs of irrigation and drainage networks and its appurtenant facilities modified by NSDO are summarized in the Table 8.2-6.

**Table 8.2-1 Breakdown of Disbursement on Suez 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

**Table 8.2-2 Summary of Project Cost (Preliminary Base)**

<u>Project Component</u>	(Unit : 1,000LE)		
	<u>Stage I</u>	<u>Stage II</u>	<u>Total(Overall)</u>
1. Conveyance Systems(Existing)	306,317	0	306,317
2. Conveyance Systems(New const.)	1,030,593	378,091	1,408,684
3. Main Irrigation & Drainage	562,474	230,366	792,840
4. On-farm Development	432,556	236,086	668,642
<b>Sub-total(A)</b>	<b>2,331,940</b>	<b>844,543</b>	<b>3,176,483</b>
5. Physical Contingencies(15% of A)	349,791	126,681	476,472
6. Engineering Fees(5% of A)	116,597	42,227	158,824
7. Social Infrastructures	656,000	281,150	937,150
<b>Sub-total(B)</b>	<b>1,122,388</b>	<b>450,058</b>	<b>1,572,446</b>
<b><u>Total(C)=(A) + (B)</u></b>	<b><u>3,454,328</u></b>	<b><u>1,294,601</u></b>	<b><u>4,748,929</u></b>

**Note :**

- 1 : Cost of conveyance systems (existing) was modified adding 4 % of price escalation
- 2 : Cost of main irrigation / drainage and on-farm development was provided by NSDO
- 3 : Cost of social infrastructures was referred from F/S report, 1997,JICA
- 4 : Cost of conveyance systems for new construction was made by JICA Study Team.

**Table 8.2-3 Summary of Conveyance System Cost (Preliminary Base)**

<u>Project Component</u>	(Unit : 1,000LE)		
	<u>Stage I</u>	<u>Stage II</u>	<u>Total(Overall)</u>
<b>1. Conveyance canals</b>			
1.1 No.1 Open canal	49,686		49,686
1.2 No.2 Open canal	40,133		40,133
1.3 No.3 Open canal	86,597		86,597
1.4 Box culvert	207,675		207,675
1.5 Bridges	4,692		4,692
1.6 Spillway	41,812		41,812
1.7 Trashrack and stop logs	31		31
<b>Sub-total</b>	<b>430,626</b>		<b>430,626</b>
<b>2. No.7 Pumping station</b>			
2.1 Settling basin	16,821	8,732	25,553
2.2 Pumping station	23,086	15,558	38,644
2.3 Pump equipment	165,339	126,749	292,088
2.4 Delivery pressure pipelines	304,936	200,690	505,626
2.5 Surge tanks	23,489	15,408	38,897
2.6 Discharge tanks	1,109	701	1,810
<b>Sub-total</b>	<b>534,780</b>	<b>367,838</b>	<b>902,618</b>
<b>3. Power Supply</b>			
3.1 Transmission lines	23,100	0	23,100
3.2 Main substation	28,532	10,253	38,785
<b>Sub-total</b>	<b>51,632</b>	<b>10,253</b>	<b>61,885</b>
<b><u>Total</u></b>	<b><u>1,017,038</u></b>	<b><u>378,091</u></b>	<b><u>1,395,129</u></b>

**Table 8.2-4 Summary of Access Road Cost (Preliminary Base)**

<u>Project Component</u>	(Unit : 1,000LE)		
	<u>Stage I</u>	<u>Stage II</u>	<u>Total(Overall)</u>
No.1 Access road	1,144	0	1,144
No.2 Access road	5,220	0	5,220
No.3 Access road	7,191	0	7,191
<b><u>Total</u></b>	<b><u>13,555</u></b>	<b><u>0</u></b>	<b><u>13,555</u></b>

**Table 8.2-5 Cost Breakdown of Conveyance Canal**

(Unit : 1,000LE)				
<u>Tender Package</u>	<u>Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Amount</u>
<b>Stage I</b>				
1st package	No.1 Open Canal	m	7,800	49,686
	No.2 Open Canal	m	6,700	40,133
	Box Culvert	m	7,500	207,675
	Spillway	LS	1	5,023
	Spillway Outlet Channel	m	2,100	26,166
	Dike	m	1,500	8,715
	Emergency Spillway	LS	1	1,908
	Bridge	Nos	3	2,346
	Trashrack, 4sets	ton	0.4	2
	Stop Log, 4sets	ton	6.4	29
	Sub-total			341,683
	No.1 Access Road	m	1,100	1,144
	No.2 Access Road	m	2,900	5,220
	Sub-total			6,364
	<b>Total</b>			<b>348,047</b>
2nd package	Settling basin	LS	1	16,821
	Pumping station	LS	1	23,086
	Pump equipment	LS	1	66,564
	Electricalequioment	LS	1	63,274
	Installation of equipment	LS	1	35,501
	Delivery pressure pipes, 3rows	m	9,400	304,936
	Surge tanks	LS	1	23,489
	Discharge tank	LS	1	1,109
	Sub-total			534,780
	No.3 Access road	m	5,100	7,191
Sub-total			7,191	
	<b>Total</b>			<b>541,971</b>
3rd package	No.3 Open canal	m	13,900	86,597
	Bridges	Nos	3	2,346
	<b>Total</b>			<b>88,943</b>
4th package	66kV Transmission lines	LS	1	23,100
	Main substation	LS	1	28,532
	<b>Total</b>			<b>51,632</b>
	<b>Grand Total</b>			<b>1,030,593</b>
<b>Stage II</b>				
<u>Tender Package</u>	<u>Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Amount</u>
1st package	Settling basin	LS	1	8,732
	Pumping station	LS	1	15,558
	Pump equipment	LS	1	50,498
	Electricalequioment	LS	1	47,671
	Installation of equipment	LS	1	28,580
	Delivery pressure pipes, 2rows	m	9,400	200,690
	Surge tanks	LS	1	15,408
	Discharge tank	LS	1	701
	Sub-total			367,838
	2nd package	Main substation	LS	1
	<b>Total</b>			<b>10,253</b>
	<b>Grand Total</b>			<b>378,091</b>



**Table 8.2-6 Summary of the Cost for Infrastructures Development in the Beneficial Area**

(Unit : 1,000 LE)

Description/Stage	Stage I	Stage II	Total
1.Main irrigation and drainage	-I-1 area: 73,485	-II-1 area: 26,656	Total : 792,840
	-I-2 area: 162,658	-II-2 area: 67,543	
	-I-3 area: 186,041	-II-3 area: 42,524	
	-I-4 area: 139,930	-II-4 area: 93,643	
	-Sub-total: 562,474	-Sub-total: 230,366	
2.On-farm development	-I-1 area: 35,295	-II-1 area: 25,263	Total : 768,642
	-I-2 area: 102,550	-II-2 area: 69,867	
	-I-3 area: 169,318	-II-3 area: 42,783	
	-I-4 area: 125,393	-II-4 area: 98,173	
	-Sub-total: 532,556	-Sub-total: 236,086	
3.Total cost	-I-1 area: 108,780	-II-1 area: 51,919	Total : 1,561,482
	-I-2 area: 265,208	-II-2 area: 137,410	
	-I-3 area: 355,359	-II-3 area: 85,307	
	-I-4 area: 265,323	-II-4 area: 191,816	
	-Sub-total: 1,095,030	-Sub-total: 466,452	

### 8.2.3 Operation & Maintenance Cost and Replacement Cost

Annual operation and maintenance costs of irrigation and drainage infrastructures including energy cost for No7. pumping station were used figures in the previous reports. Replacement costs for No.7 pumping station are also considered each 25 years after starting its operation. Summary of these costs can be tabulated in the Table 8.2-7.

**Table 8.2-7 Operation & Maintenance and Replacement Cost**

Description	Stage I	Stage II
Operation/maintenance cost	29,709,000	20,802,000
Replacement cost	24,893,000	18,670,000
Total (1) Within 25 year	29,709,000	20,802,000
Total (2) 26 <sup>th</sup> year	54,602,000	39,472,000

## 8.3 Project Benefit

### 8.3.1 Cropping Pattern

As mentioned in the Chapter II, proposed cropping patterns and farming categories for each settlers are not changed from original pattern in the previous feasibility reports. Matured periods of each crops and target yields of crop and livestock production are also applied the same figures as previous reports.

Totally nine (9) farming categories were applied for the project. Total area to be cropped for each stages can be summarized in the Table 8-3-1.

**Table 8.3-1 Farming Category and Acreage**

(Unit : feddans)

Farming categories	Stage I	Stage II	Total	Crop intensity
1. Vegetables + Livestock for graduates	23,310	0	23,310	200 %
2. Vegetables + Fruit for graduates	7,770	0	7,770	200 %
3. Vegetables + Fodders for small farmers	7,770	0	7,770	173 %
4. Vegetables + Beef Cattle for s. scale investors	8,325	0	8,325	200 %
5. Vegetables + Fruit for small scale investors	8,325	0	8,325	140 %
6. Land Use Farming for large scale investors	3,600	10,250	13,850	200 %
7. Dairy Farming for large scale investors	3,600	10,250	13,850	200 %
8. Livestock Raising for large scale farming	3,600	10,250	13,850	200 %
9. Fruit Growing for large scale investors	3,600	10,320	13,920	100 %
Total	69,930	41,070	111,000	180 %

**8.3.2 Project Incremental Benefits**

According to the information of the Project Planning Department (PPD) under the MPWWR, agricultural materials and construction cost, in general, are slightly increasing (4-6% per annum) since 1996 instead of increasing farm incomes because large effects of farm mechanization ( more than 10% per annum).

From the above mentioned information, the study team consider no modification of costs concerning irrigation/ drainage and social infrastructures in the beneficial area and benefits from the figures of previous feasibility study reports in 1997 prepared by JICA. Because difference of incremental benefits between the both studies period seems to be negligible small.

Therefore, incremental (net) benefits of crop production and livestock raising for stage I and stage II are tabulated in the Table 8.3-1 and Table 8.3-3, respectively.

**Table 8.3-1 Net Benefit of Crops Production (Stage-I) (1/2)**

(Unit : 1,000LE)

Year	Year in Order	FC-1	FC-2	FC-3	FC-4	FC-5	FC-6	FC-7	FC-8	FC-9	T.T.
<b>Cropped Area</b>		23,310	7,770	7,770	8,325	8,325	3,600	3,600	3,600	3,630	69,930
2001	1										
2002	2										
2003	3										
2004	4										
2005	5										
2006	6	80,277	29,416	25,196	18,021	-450	5,848	1,734	1,455	-6,274	155,223
2007	7	104,575	38,336	35,878	21,332	7,105	6,687	2,598	2,238	-2,661	216,089
2008	8	128,286	47,062	44,466	26,082	9,569	8,208	3,375	2,753	-2,661	267,139
2009	9	144,388	52,955	50,125	29,357	11,273	9,327	3,906	3,144	-2,661	301,812
2010	10	160,286	58,795	61,240	32,506	23,140	10,216	4,289	3,446	4,884	358,802
2011	11	160,640	58,905	61,416	32,608	30,166	10,459	4,402	3,601	9,768	371,967
2012	12	161,158	59,047	63,498	32,608	37,016	10,494	4,437	3,636	14,652	386,548
2013	13	161,587	59,190	65,581	32,608	43,866	10,494	4,437	3,636	19,537	400,935
2014	14	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2015	15	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2016	16	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2017	17	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2018	18	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2019	19	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2020	20	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2021	21	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2022	22	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2023	23	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2024	24	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2025	25	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2026	26	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2027	27	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2028	28	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2029	29	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2030	30	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2031	31	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2032	32	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2033	33	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2034	34	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2035	35	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2036	36	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2037	37	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2038	38	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2039	39	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2040	40	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2041	41	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2042	42	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2043	43	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2044	44	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2045	45	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2046	46	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2047	47	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2048	48	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2049	49	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610
2050	50	161,587	59,190	67,521	32,608	50,716	10,494	4,437	3,636	24,421	414,610

**Table 8.3-2 Net Benefit of Crops Production (Stage-II)(2/2)**

(Unit : 1,000LE)

Year	Year in Order	FC-1	FC-2	FC-3	FC-4	FC-5	FC-6	FC-7	FC-8	FC-9	T.T.
Cropped Area		0	0	0	0	0	10,250	10,250	10,250	10,320	41,070
2001	1										
2002	2										
2003	3										
2004	4										
2005	5										
2006	6										
2007	7										
2008	8										
2009	9										
2010	10										
2011	11	0	0	0	0	0	16,651	4,938	4,143	-17,838	7,894
2012	12	0	0	0	0	0	19,039	7,396	6,373	-7,566	25,242
2013	13	0	0	0	0	0	23,369	9,608	7,839	-7,566	33,250
2014	14	0	0	0	0	0	26,556	11,121	8,950	-7,566	39,060
2015	15	0	0	0	0	0	29,087	12,211	9,813	13,886	64,997
2016	16	0	0	0	0	0	29,780	12,535	10,254	27,771	80,340
2017	17	0	0	0	0	0	29,879	12,633	10,353	41,657	94,521
2018	18	0	0	0	0	0	29,879	12,633	10,353	55,542	108,407
2019	19	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2020	20	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2021	21	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2022	22	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2023	23	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2024	24	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2025	25	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2026	26	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2027	27	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2028	28	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2029	29	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2030	30	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2031	31	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2032	32	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2033	33	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2034	34	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2035	35	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2036	36	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2037	37	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2038	38	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2039	39	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2040	40	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2041	41	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2042	42	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2043	43	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2044	44	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2045	45	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2046	46	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2047	47	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2048	48	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2049	49	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292
2050	50	0	0	0	0	0	29,879	12,633	10,353	69,428	122,292

**Table 8.3-3 Net Benebit of Livestock Raising**

(Unit : 1,000LE)

Stage- I				Stage- II			
Year	Small F.	Large I.	Total	Year	Small F.	Large I.	Total
2006	2,255	19,759	22,014	2006	0	0	0
2007	2,631	23,052	25,683	2007	0	0	0
2008	3,007	26,346	29,353	2008	0	0	0
2009	3,383	29,639	33,022	2009	0	0	0
2010	3,759	32,932	36,691	2010	0	0	0
2011	3,759	32,932	36,691	2011	0	56,259	56,259
2012	3,759	32,932	36,691	2012	0	65,636	65,636
2013	3,759	32,932	36,691	2013	0	75,012	75,012
2014	3,759	32,932	36,691	2014	0	84,389	84,389
2015	3,759	32,932	36,691	2015	0	93,765	93,765
2016	3,759	32,932	36,691	2016	0	93,765	93,765
2017	3,759	32,932	36,691	2017	0	93,765	93,765
2018	3,759	32,932	36,691	2018	0	93,765	93,765
2019	3,759	32,932	36,691	2019	0	93,765	93,765
2020	3,759	32,932	36,691	2020	0	93,765	93,765
2021	3,759	32,932	36,691	2021	0	93,765	93,765
2022	3,759	32,932	36,691	2022	0	93,765	93,765
2023	3,759	32,932	36,691	2023	0	93,765	93,765
2024	3,759	32,932	36,691	2024	0	93,765	93,765
2025	3,759	32,932	36,691	2025	0	93,765	93,765
2026	3,759	32,932	36,691	2026	0	93,765	93,765
2027	3,759	32,932	36,691	2027	0	93,765	93,765
2028	3,759	32,932	36,691	2028	0	93,765	93,765
2029	3,759	32,932	36,691	2029	0	93,765	93,765
2030	3,759	32,932	36,691	2030	0	93,765	93,765
2031	3,759	32,932	36,691	2031	0	93,765	93,765
2032	3,759	32,932	36,691	2032	0	93,765	93,765
2033	3,759	32,932	36,691	2033	0	93,765	93,765
2034	3,759	32,932	36,691	2034	0	93,765	93,765
2035	3,759	32,932	36,691	2035	0	93,765	93,765
2036	3,759	32,932	36,691	2036	0	93,765	93,765
2037	3,759	32,932	36,691	2037	0	93,765	93,765
2038	3,759	32,932	36,691	2038	0	93,765	93,765
2039	3,759	32,932	36,691	2039	0	93,765	93,765
2040	3,759	32,932	36,691	2040	0	93,765	93,765
2041	3,759	32,932	36,691	2041	0	93,765	93,765
2042	3,759	32,932	36,691	2042	0	93,765	93,765
2043	3,759	32,932	36,691	2043	0	93,765	93,765
2044	3,759	32,932	36,691	2044	0	93,765	93,765
2045	3,759	32,932	36,691	2045	0	93,765	93,765
2046	3,759	32,932	36,691	2046	0	93,765	93,765
2047	3,759	32,932	36,691	2047	0	93,765	93,765
2048	3,759	32,932	36,691	2048	0	93,765	93,765
2049	3,759	32,932	36,691	2049	0	93,765	93,765
2050	3,759	32,932	36,691	2050	0	93,765	93,765

## 8.4 Project Evaluation

Preliminary project evaluation was made based on the data sheet of investment schedules and creation of incremental benefits in the following cases and conditions.

### (1) Base case :

Stage I ( BC-1)

Stage II (BC-2)

Overall project (BC-3)

### (2) Amortization case for Stage II project

Stage II (AC-1)

Overall (AC-2)

### (3) Cost increase case for 10 percent of original estimates

Stage I (IC-1)

Stage II(IC-2)

Overall project (IC-3)

The results of project evaluation by means of Economic Internal Rate of Return (EIRR) can be summarized in the Table 8.4-1 .

**Table 8.4-1 EIRR of the Project**

(Unit : percentage)

Case	Stage I	Stage II	Overall
Base case (BC)	11.65	11.37	11.62
Amortization (AC)	-	9.67	11.25
Cost increase10%(IC)	10.82	10.60	10.80

It is judged that the implementation of the project is justified from the economic viewpoints, because the EIRR is slightly higher than an assumed opportunity cost of capital of 10 % in Egypt. However, privatization policies to be applied to the stage II area shall be carefully considered to minimize the risk for political and financial aspects.