

APPENDIX G. Tourism

G.1. Existing Tourism Facilities	G-1
G.2. Existing and Future Hotel Capacity	G-2
G.3. Visitors and Tourist Night Statics	G-3
G.4. Opinion Survey for Tourism	G-5
G.5. Accessibility Analysis by Shortest Path Method	G-14



G.1. Existing Tourism Facilities

NAME	GRADE	LOCATION
Aziz cafeteria	A	El Arish
Sinaruz Cafeteria	A	ditto
Maxim Casino	A	ditto
Tourist Casino	A	ditto
Tourist Massaid Makheem Casino	A	ditto
Samr Cafeteria	B	El Arish
Salam Cafeteria	B	ditto
Rafah Feiruz Cafeteria	B	Rafah
Sinai Sitar Casino	C	El Arish
Walim Restaurant	C	ditto
Sheikh Zuwayed Salam Cafeteria	C	Sheikh Zuwayed
El Takim Cafeteria	C	El Arish
El Mashrabiya Cafeteria	-	El Arish
Majulis El Arish Casino	-	ditto

Source: "The Movement of Hotels and Tourists"  
NSG Tourism Office, 1988

Cafeteria, Casino, Restaurant for tourism purposes  
concentrated in Eastern subarea

G.2. Existing and Future Hotel Capacity

Table 1 EXISTING HOTEL ROOMS (1988)

Sector	Number of Rooms	Number of Beds	Ratio Rooms	Beds
Tourism Sector	492	1270	46.86	37.20
Government Sector	314	1470	29.90	43.06
Private Sector	244	674	23.24	19.74
Total	1050	3414	100.00	100.00

SOURCE: "The Movement of Hotels and Tourist" by NSG Tourism Office, 1988

Table 2 PLANS AND PROJECTS

Project Name	Hotel	Bungalow	Apartment House	Target Year
S.A.M.A.	0	1500	0	1991
Ziral El Nakhel	0	500	0	1990
El Gandul	0	57	0	1988
Rafah	0	20	0	
El Sheikh Zuwayed	0	20	0	
Total	0	2097	0	

SOURCE: NSG Consultant for Governor

### G.3. Visitors and Tourist Night Statics

TABLE 1 : VISITORS AND TOURIST NIGHT IN ELARISH, RAFAH, SHEIKH ZUWAIED, BIR EL ABD  
BY RACE, 1987

MONTH	EGYPTIAN		ARAB		FOREIGNER		TOTAL		RATIO	
	VISITORS	T. NIGHT	VISITORS	T. NIGHT	VISITORS	T. NIGHT	VISITORS	T. NIGHT	VISITORS	T. NIGHT
JANUARY	70	140	-	-	-	-	70	140	0.7	0.3
FEBRARY	50	365	-	-	-	-	50	365	0.5	0.9
MARCH	118	332	-	-	-	-	118	332	1.2	0.8
APRIL	698	1042	-	-	-	-	698	1042	7.1	2.5
MAY	510	2150	-	-	8	24	518	2174	5.3	5.3
JUNE	1548	7190	-	-	-	-	1548	7190	15.7	17.4
JULY	2821	10302	-	-	-	-	2821	10302	28.7	25.0
AUGUST	2089	9823	-	-	-	-	2089	9823	21.2	23.8
SEPTEMBER	1727	8692	-	-	25	50	1752	8742	17.8	21.2
OCTOBER	135	495	-	-	-	-	135	495	1.4	1.2
NOVEMBER	20	600	12	24	-	-	32	624	0.3	1.5
DECEMBER	-	-	-	-	-	-	-	0	0.0	0.0
TOTAL	9786	41131	12	24	33	74	9831	41229	100.0	100.0
RATIO %	99.5	99.8	0.1	0.1	0.3	0.2	100.0	100.0		

SOURCE: "The Movement of Hotels and Tourists"  
by NSG Tourism Office, 1988

TABLE 2 : VISITORS TO TOURIST HOTEL IN EL ARISH  
BY TYPE OF ACCOMMODATION, 1987

MONTH	TOTAL VISITORS		TOURIST HOTEL VISITORS			YOUTH HOSTEL & GOV. HOTEL VISITORS		VISITORS OUT OF EL ARISH	TOTAL
	HOTELS	SHARIHAT	OBEROI	SINAI BEACH	SPORTS CLUB	SINAI ROSE	SHARIHAT		
JANUARY	2151	-	572	221	306	50	-	70	3370
FEBRARY	2060	-	373	272	184	101	14	50	3054
MARCH	2485	-	579	125	182	170	14	118	3673
APRIL	2172	8	1429	271	431	146	28	698	5183
MAY	2320	67	945	310	-	107	20	518	4287
JUNE	4534	258	1536	280	829	205	41	1548	9231
JULY	3710	887	2192	611	1075	178	104	2821	11578
AUGUST	3390	469	2360	765	1075	230	95	2089	10473
SEPTEMBER	2694	160	1727	192	1035	71	-	1752	7631
OCTOBER	2320	52	851	122	140	28	-	135	3648
NOVEMBER	1986	45	400	102	25	96	-	32	2686
DECEMBER	1927	16	429	207	288	47	-	-	2914
TOTAL	31749	1962	13393	3478	5570	1429	316	9831	67728

SOURCE: "The Movement of Hotels and Tourists"  
by NSG Tourism Office, 1988

VISITORS AND TOURIST NIGHT STATISTICS (2)

TABLE 3 VISITORS AND TOURIST NIGHT FOR PRIVATE AND LOCAL SECTORS  
1987

MONTH	EGYPTIAN		ARAB		FOREIGNER		TOTAL		RATIO	
	VISITORS	T. NIGHT	VISITORS	T. NIGHT	VISITORS	T. NIGHT	VISITORS	T. NIGHT	VISITORS	T. NIGHT
JANUARY	1775	3806	349	688	27	31	2151	4525	6.4	8.6
FEBRUARY	1769	2610	277	435	14	17	2060	3062	6.1	5.8
MARCH	2274	3256	192	342	19	21	2485	3619	7.4	6.9
APRIL	1859	2943	215	442	106	127	2180	3512	6.5	6.7
MAY	1972	2702	376	536	39	55	2387	3293	7.1	6.3
JUNE	4419	5656	300	441	73	124	4792	6221	14.2	11.8
JULY	3981	5132	548	848	68	115	4597	6095	13.6	11.6
AUGUST	3308	5314	452	763	99	162	3859	6239	11.4	11.9
SEPTEMBER	2431	4627	255	494	168	466	2854	5587	8.5	10.6
OCTOBER	1840	3004	384	620	148	353	2372	3977	7.0	7.6
NOVEMBER	1706	2977	252	688	73	196	2031	3861	6.0	7.4
DECEMBER	1584	2017	267	397	92	102	1943	2516	5.8	4.8
TOTAL	28918	44044	3867	6694	926	1769	33711	52507	100.0	100.0
RATIO	85.8	83.9	11.5	12.7	2.7	3.4	100.0	100.0		

SOURCE: "The Movement of Hotels and Tourists"  
by NSG Tourism Office, 1988

TABLE 4 VISITORS OF EL ARISH TOURIST EXHIBITION  
1987

MONTH	EGYPTIAN	ARAB & FOREIGNERS	TOTAL
JANUARY	1301	69	1370
FEBRUARY	1502	40	1542
MARCH	1501	42	1543
APRIL	1524	85	1609
MAY	6240	58	6298
JUNE	2779	63	2842
JULY	3683	78	3761
AUGUST	4024	39	4063
SEPTEMBER	1577	39	1616
OCTOBER	1047	105	1152
NOVEMBER	739	58	797
DECEMBER	1053	131	1184
TOTAL	26970	807	27777

SOURCE: "The Movement of Hotels and Tourists"  
by NSG Tourism Office, 1988

TABLE 5 PASSENGERS BY PLANE (EL ARISH-CAIRO)  
1987

MONTH	ARRIVAL PASSENGERS	DEPARTURE PASSENGERS	TOTAL PASSENGERS	NO. OF TRIP
JANUARY	-	-	-	-
FEBRUARY	-	-	-	-
MARCH	-	-	-	-
APRIL	-	-	-	-
MAY	77	27	104	3
JUNE	143	145	288	8
JULY	339	310	649	14
AUGUST	228	287	515	12
SEPTEMBER	70	50	120	3
OCTOBER	-	-	-	-
NOVEMBER	-	-	-	-
DECEMBER	-	-	-	-
TOTAL	857	819	1676	40

SOURCE: "The Movement of Hotels and Tourists"  
by NSG Tourism Office, 1988

# G.4. Opinion Survey for Tourism

## QUESTIONNAIRE

**SURVEY NAME** : OPINION SURVEY FOR TOURISM  
**SURVEY ORGANIZATION** : CAPMAS (Central Agency for Public Motivation and Statistics)

**SURVEY PERIOD** : 1986.7.31 ~ 1988.8.11

**SURVEY AREA** : Greater Cairo Region  
 Cairo  
 Giza  
 Qaliubia

**SAMPLE NUMBER** : 101

**OBJECTIVES** : Finding Opinions for  
 Fabonite resort places in Egypt  
 preferable resort activities  
 Expenditure for vacations  
 Vacation period, etc

**SURVEY DESIGN** : Appendix F-6b

**SURVEY RESULT** : Appendix F-6c

## OPINION SURVEY FOR TOURISM

### Q1. About Yourself

**Age**  
 1. 19 2. 20~24 3. 25~29 4. 30~39  
 5. 40~49 6. 50~59 7. 60 and over

**Sex**  
 1. male 2. female

**Marital Status**  
 1. married 2. single 3. divorced 4. others

**Address**  
 Cairo 1. Rod Al Farag 2. Maadi  
 3. Zamalek 4. Qasi Al Nil  
 5. Heliopolis 6. Nasr City  
 7. El Saïda Zeinab  
 Giza 8. Dokki 9. Bolak Al Dakror  
 Qaliubia 10. Shobra Al Kheime (1)  
 11. Shobra Al Kheime (2)

**Occupation**  
 1. Professionals 2. Management Staff 3. Clerks  
 4. Salesmen/woman 5. Service Workers 6. Agri/Fishery  
 7. Production Workers 9. Not Working

**Household size**  
 1. yourself 2. 2 3. 3 4. 4 5. 5  
 6. 6 7. 7 8. 8 9. 9 10. 10~

**Total annual income for your household, that is after deducting income tax, social insurance, pension schemes and so on.**  
 1. LE. 0~1000 2. LE. 1001~2000 3. LE. 2001~5000  
 4. LE. 5001~10000 5. LE. 10001~50000 6. LE. 50000

**Q2. Which is the latest year you took holidays lasting five days or more ?**  
 1. 1988 2. 1987 3. 1986 4. 1985 5. Before 1985

**Q3. Where did you mainly spend your last holiday ?**  
 1. Alexandria 2. North west coast  
 3. Delta coast (Ras El Bur/Balteem/Gamasa)  
 4. North Sinai/Mediterranean  
 5. South Sinai/Aqaba 6. Red sea  
 7. Country side 8. Other Internal Places  
 9. Abroad 10. Home

**Q4. What was the main objective of your last holiday ?**

1. Visiting friend/relatives

2. Holidays for relaxation/recreation
3. Cultural/study trip
4. Watching sports
5. Holidays for new experiences
6. Hobby trip

Q5. What was the total cost of your last year holiday including all expenses for travel such as accommodation, meals, moving, souvenirs, shopping and others with the number of person(s).

WRITE TOTAL COST LE. \_\_\_\_\_ WITH \_\_\_\_\_ PERSON(S)

Q6. Which of the places in Egypt would you like to visit on your holiday? (Choose [2] answers)

1. Alexandria
2. North west coast
3. Delta coast
4. North Sinai/Mediterranean
5. South Sinai/Aqaba
6. Red sea
7. Country side
8. Other Internal Places

Q7. How many days can you take for your holiday in a year?

WRITE NUMBER OF DAYS: \_\_\_\_\_ DAYS

Q8. How much would you expect to spend for your holiday this year?

WRITE TOTAL BUDGET LE. \_\_\_\_\_ WITH \_\_\_\_\_ PERSON(S)

Q9. Which type of accommodation do you like to stay on your holidays?

1. Apartment
2. Hotel
3. Bungalows/Chalet
4. Camp/Camping
5. Others (STAY AT \_\_\_\_\_)

Q10. What kind of activities do you like to play in your holidays? Choose three[3] answers.

1. Hiking
2. Hunting
3. Cycling (Bicycle, Horse riding)
4. Driving cars
5. Picnic
6. Golf/Other sports
7. Sky Sports (Skydiving, Paraglider, Hang glider)
8. Sea Sports (swimming, surfing, skin diving, scuba diving)
9. Fishing
10. Yachting(yachting, boating, water skiing, jet skiing)
11. Resting(relaxing at resort places)
12. Others(\_\_\_\_\_)

Q11. For the selected answers, did you try those activities before? Write the numbers you selected on Q10. then circle on "Yes" or "No".

1. ACTIVITY NUMBER \_\_\_\_\_ I TRIED IT, 1. Yes 2. No
2. ACTIVITY NUMBER \_\_\_\_\_ I TRIED IT, 1. Yes 2. No
3. ACTIVITY NUMBER \_\_\_\_\_ I TRIED IT, 1. Yes 2. No

Q12. What kind of recreation/leisure activities are you interested in to play at sea coast? (Choose THREE[3] answers)

1. Swimming
2. Surfing
3. rowboat/kayak
4. Yachting
5. Water skiing
6. Skin Diving/Scuba diving
7. Fishing
8. Drednet
9. Playing on shore
10. Small critter collection
11. Camping
12. Scenery exploring
13. Sight seeing
14. Resting

Q13. For the selected answers, did you try those activities before? Write the numbers you selected on Q.12 then circle on "Yes" or "No".

1. ACTIVITY NUMBER \_\_\_\_\_ I TRIED IT, 1. Yes 2. No
2. ACTIVITY NUMBER \_\_\_\_\_ I TRIED IT, 1. Yes 2. No
3. ACTIVITY NUMBER \_\_\_\_\_ I TRIED IT, 1. Yes 2. No

Q14. If you travel to North Sinai for your holiday, what type of transportation would you mostly like to use?

1. Airplane
2. Private car
3. Tour bus
4. Long range bus
5. Taxi/service
6. Others(SPECIFY \_\_\_\_\_)

Thank you for your cooperation to the study.



SURVEY RESULT (TABULATION)

Age	19	20 ~ 24	25 ~ 29	30 ~ 39	40 ~ 49	50 ~ 59	60 ~	ANSWER	RESPONDENTS	NO ANSWER
	1( 1.0/100.0)	2( 2.0/100.0)	2( 2.0/100.0)	25( 24.8/100.0)	55( 34.7/100.0)	13( 12.9/100.0)	23( 22.8/100.0)	101(100.0/100.0)	101(100.0/100.0)	1( --- /100.0)
	1( 1.0/100.0)	2( 2.0/100.0)	2( 2.0/100.0)	25( 24.8/100.0)	55( 34.7/100.0)	13( 12.9/100.0)	23( 22.8/100.0)	101(100.0/100.0)	101(100.0/100.0)	1( --- /100.0)

Age



Sex

Sex	female	male	ANSWER	RESPONDENTS	NO ANSWER
	89( 88.1/100.0)	12( 11.9/100.0)	101(100.0/100.0)	101(100.0/100.0)	1( --- /100.0)
	89( 88.1/100.0)	12( 11.9/100.0)	101(100.0/100.0)	101(100.0/100.0)	1( --- /100.0)

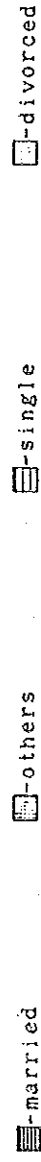
Sex



Marital status

Marital status	married	single	divorced	others	ANSWER	RESPONDENTS	NO ANSWER
	83( 83.0/100.0)	7( 7.0/100.0)	1( 1.0/100.0)	9( 9.0/100.0)	100(100.0/100.0)	100(100.0/100.0)	2( --- /100.0)
	83( 83.0/100.0)	7( 7.0/100.0)	1( 1.0/100.0)	9( 9.0/100.0)	100(100.0/100.0)	100(100.0/100.0)	2( --- /100.0)

Marital status



Address ----- NUMBER(HORIZONTAL%/VERTICAL%)

Address	Rod Al Farag	Maadi	Zamalek	Qast Al Nil	heliopolis	Nasr City	El Saïda Zeïnab	Dokki	Bolak Al Dakror	Shobra Al Kheïme
	10( 10.1/100.0)	9( 9.1/100.0)	10( 10.1/100.0)	10( 10.1/100.0)	10( 10.1/100.0)	10( 10.1/100.0)	9( 9.1/100.0)	11( 11.1/100.0)	11( 11.1/100.0)	9( 9.1/100.0)
	10( 10.1/100.0)	9( 9.1/100.0)	10( 10.1/100.0)	10( 10.1/100.0)	10( 10.1/100.0)	10( 10.1/100.0)	9( 9.1/100.0)	11( 11.1/100.0)	11( 11.1/100.0)	9( 9.1/100.0)

Address ----- NUMBER(HORIZONTAL%/VERTICAL%)

Address	ANSWER	RESPONDENTS	NO ANSWER
	99(100.0/100.0)	99(100.0/100.0)	5( --- /100.0)
	99(100.0/100.0)	99(100.0/100.0)	5( --- /100.0)

----- Address

TOTAL	10.1	10.1	10.1	10.1	10.1	10.1	10.1	11.1	11.1	9.1
-------	------	------	------	------	------	------	------	------	------	-----

-Bolak Al Dakror  -Dokki  -Nasr City  -Heliopolis

Occupation ----- NUMBER(HORIZONTAL%/VERTICAL%)

Occupation	Professionals	Management staff	Clerk	Salesman/woman	Service workers	Agri/Fishery	Production workers Not working	ANSWER	RESPONDENTS
	34( 33.7/100.0)	11( 10.9/100.0)	8( 7.9/100.0)	5( 5.0/100.0)	12( 11.9/100.0)	2( 2.0/100.0)	9( 8.9/100.0)	101(100.0/100.0)	101(100.0/100.0)
	34( 33.7/100.0)	11( 10.9/100.0)	8( 7.9/100.0)	5( 5.0/100.0)	12( 11.9/100.0)	2( 2.0/100.0)	9( 8.9/100.0)	101(100.0/100.0)	101(100.0/100.0)

Occupation ----- NUMBER(HORIZONTAL%/VERTICAL%)

Occupation	NO ANSWER
	1( --- /100.0)
	1( --- /100.0)

----- Occupation

TOTAL	33.7	10.9	11.9	19.8
-------	------	------	------	------

-Professionals  -Not working  -Service workers  -Management staff

Household Size

NUMBER(HORIZONTAL%/VERTICAL%)		2	3	4	5	6	7	8	9	10
alone										
4( 4.0/100.0)	15( 14.9/100.0)	17( 16.8/100.0)	29( 28.7/100.0)	13( 12.9/100.0)	13( 12.9/100.0)	13( 12.9/100.0)	6( 5.9/100.0)	3( 3.0/100.0)	1( 1.0/100.0)	0( 0.0/100.0)
4( 4.0/100.0)	15( 14.9/100.0)	17( 16.8/100.0)	29( 28.7/100.0)	13( 12.9/100.0)	13( 12.9/100.0)	13( 12.9/100.0)	6( 5.9/100.0)	3( 3.0/100.0)	1( 1.0/100.0)	0( 0.0/100.0)

Household Size

NUMBER(HORIZONTAL%/VERTICAL%)		ANSWER	RESPONDENTS	NO ANSWER
101(100.0/100.0)	101(100.0/100.0)	1( --- /100.0)		
101(100.0/100.0)	101(100.0/100.0)	1( --- /100.0)		

Household Size

NUMBER(HORIZONTAL%/VERTICAL%)		3	4	5	6
TOTAL		14.9	16.8	28.7	12.9

Income

NUMBER(HORIZONTAL%/VERTICAL%)		ANSWER	RESPONDENTS	NO ANSWER				
LE.0~LE.1000	LE.1000~LE.2000	LE.2001~LE.5000	LE.5001~LE.10000	LE.10001~LE.50000	LE.50001~	ANSWER	RESPONDENTS	NO ANSWER
13( 13.1/100.0)	37( 37.4/100.0)	33( 33.3/100.0)	13( 13.1/100.0)	2( 2.0/100.0)	1( 1.0/100.0)	99(100.0/100.0)	99(100.0/100.0)	3( --- /100.0)
13( 13.1/100.0)	37( 37.4/100.0)	33( 33.3/100.0)	13( 13.1/100.0)	2( 2.0/100.0)	1( 1.0/100.0)	99(100.0/100.0)	99(100.0/100.0)	3( --- /100.0)

Income

NUMBER(HORIZONTAL%/VERTICAL%)		3	4	5	6
TOTAL		13.1	37.4	33.3	13.1

Latest Year

NUMBER(HORIZONTAL%/VERTICAL%)		1987	1986	1985	before 1985	N/A	ANSWER	RESPONDENTS	NO ANSWER
LE.1000~LE.2000	LE.2001~LE.5000	LE.5001~LE.10000	LE.10000~LE.10000	LE.10000~LE.10000	LE.10000~LE.10000	LE.10000~LE.10000			
4( 50.0/100.0)	27( 32.9/100.0)	5( 6.1/100.0)	6( 7.3/100.0)	5( 6.1/100.0)	5( 6.1/100.0)	0( 0.0/100.0)	82(100.0/100.0)	82(100.0/100.0)	20( --- /100.0)
4( 50.0/100.0)	27( 32.9/100.0)	5( 6.1/100.0)	6( 7.3/100.0)	5( 6.1/100.0)	5( 5.7/100.0)	0( 0.0/100.0)	82(100.0/100.0)	82(100.0/100.0)	20( --- /100.0)

Latest Year

NUMBER(HORIZONTAL%/VERTICAL%)		1987	1986	1985	before 1985	N/A	ANSWER	RESPONDENTS	NO ANSWER
TOTAL		50.0	32.9	32.9	13.1				

1988 1987 1986 1985 1984

Place Visited Last Holiday NUMBER(HORIZONTAL%/VERTICAL%)

Alexandria	North west coast	North Sinai	South Sinai	Red sea	Country side	Other int. places	Abroad	Home	N/A
41( 55.1/100.0)	7( 7.7/100.0)	0( 0.0/100.0)	1( 1.1/100.0)	4( 4.4/100.0)	3( 3.3/100.0)	7( 7.7/100.0)	7( 7.7/100.0)	4( 4.4/100.0)	8( 8.8/100.0)
41( 55.1/100.0)	7( 7.7/100.0)	0( 0.0/100.0)	1( 1.1/100.0)	4( 4.4/100.0)	3( 3.3/100.0)	7( 7.7/100.0)	7( 7.7/100.0)	4( 4.4/100.0)	8( 8.8/100.0)

Place Visited Last Holiday NUMBER(HORIZONTAL%/VERTICAL%)

Ras El Sufu	Bal teem	Gamsa	ANSWER	RESPONDENTS	NO ANSWER
0( 0.0/100.0)	0( 0.0/100.0)	9( 9.9/100.0)	91(100.0/100.0)	91(100.0/100.0)	11( --- /100.0)
0( 0.0/100.0)	0( 0.0/100.0)	9( 9.9/100.0)	91(100.0/100.0)	91(100.0/100.0)	11( --- /100.0)

----- Place Visited Last Holiday

TOTAL	15.1	9.9
-------	------	-----

- Alexandria  - Gamsa  - N/A  - Abroad

Main Object for Holidays NUMBER(HORIZONTAL%/VERTICAL%)

Visiting friend	Relaxation	Cultural trip	Matching sports	New experiences	Hobby trip	N/A	ANSWER	RESPONDENTS	NO ANSWER
11( 12.4/100.0)	75( 84.3/100.0)	0( 0.0/100.0)	0( 0.0/100.0)	3( 3.4/100.0)	0( 0.0/100.0)	0( 0.0/100.0)	89(100.0/100.0)	89(100.0/100.0)	13( --- /100.0)
11( 12.4/100.0)	75( 84.3/100.0)	0( 0.0/100.0)	0( 0.0/100.0)	3( 3.4/100.0)	0( 0.0/100.0)	0( 0.0/100.0)	89(100.0/100.0)	89(100.0/100.0)	13( --- /100.0)

----- Main Object for Holidays

TOTAL	12.4	84.3
-------	------	------

- Relaxation  - Visiting friend  - New experiences  - N/A

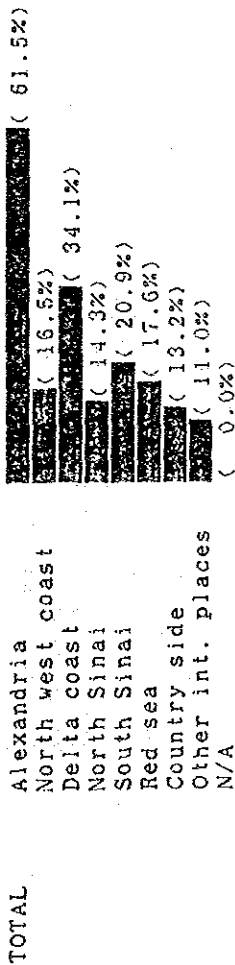
Preferable Place to Visit NUMBER(HORIZONTAL%/VERTICAL%)

Alexandria	North west coast	Delta coast	North Sinai	South Sinai	Red sea	Country side	Other int. places	N/A	ANSWER
56( 61.5/100.0)	15( 16.5/100.0)	31( 34.1/100.0)	13( 14.3/100.0)	19( 20.9/100.0)	16( 17.6/100.0)	12( 13.2/100.0)	10( 11.0/100.0)	0( 0.0/100.0)	172(189.0/100.0)
56( 61.5/100.0)	15( 16.5/100.0)	31( 34.1/100.0)	13( 14.3/100.0)	19( 20.9/100.0)	16( 17.6/100.0)	12( 13.2/100.0)	10( 11.0/100.0)	0( 0.0/100.0)	172(189.0/100.0)

Preferable Place to Visit NUMBER(HORIZONTAL%/VERTICAL%)

RESPONDENTS	NO ANSWER
91(100.0/100.0)	11( --- /100.0)
91(100.0/100.0)	11( --- /100.0)

--- Preferable Place to Visit



Preferable Accommodation

Accommodation	NUMBER(HORIZONTAL%/VERTICAL%)	ANSWER	RESPONDENTS	NO ANSWER
Apartment	10( 11.1/100.0)	4( 4.4/100.0)	5( 5.3/100.0)	1( 1.1/100.0)
Bungalow	17( 18.9/100.0)	4( 4.4/100.0)	5( 5.3/100.0)	1( 1.1/100.0)
Hotel	10( 11.1/100.0)	4( 4.4/100.0)	5( 5.3/100.0)	1( 1.1/100.0)
Others	17( 18.9/100.0)	4( 4.4/100.0)	5( 5.3/100.0)	1( 1.1/100.0)
Camping	17( 18.9/100.0)	4( 4.4/100.0)	5( 5.3/100.0)	1( 1.1/100.0)

--- Preferable Accommodation



- Apartment     - Bungalow     - Hotel     - Camping

Preferable Activities

Activity	NUMBER(HORIZONTAL%/VERTICAL%)	ANSWER	RESPONDENTS	NO ANSWER
Hiking	66( 72.5/100.0)	1( 1.1/100.0)	12( 13.2/100.0)	1( 1.1/100.0)
Hunting	0( 0.0/100.0)	4( 4.4/100.0)	5( 5.3/100.0)	1( 1.1/100.0)
Cycling	4( 4.4/100.0)	1( 1.1/100.0)	5( 5.3/100.0)	1( 1.1/100.0)
Driving cars	1( 1.1/100.0)	1( 1.1/100.0)	12( 13.2/100.0)	1( 1.1/100.0)
Picnic	5( 5.3/100.0)	1( 1.1/100.0)	14( 15.4/100.0)	23( 25.3/100.0)
Playing sports	12( 13.2/100.0)	1( 1.1/100.0)	14( 15.4/100.0)	23( 25.3/100.0)
Sky Sports	1( 1.1/100.0)	1( 1.1/100.0)	14( 15.4/100.0)	23( 25.3/100.0)
Sea sports	1( 1.1/100.0)	1( 1.1/100.0)	14( 15.4/100.0)	23( 25.3/100.0)
Fishing	1( 1.1/100.0)	1( 1.1/100.0)	14( 15.4/100.0)	23( 25.3/100.0)
Ice fishing	1( 1.1/100.0)	1( 1.1/100.0)	14( 15.4/100.0)	23( 25.3/100.0)

Preferable Activities

Activity	NUMBER(HORIZONTAL%/VERTICAL%)	ANSWER	RESPONDENTS	NO ANSWER
Rest	86( 94.5/100.0)	0( 0.0/100.0)	27( 29.7/100.0)	1( 1.1/100.0)
Others	10( 11.0/100.0)	0( 0.0/100.0)	9( 10.0/100.0)	1( 1.1/100.0)
N/A	0( 0.0/100.0)	0( 0.0/100.0)	27( 29.7/100.0)	1( 1.1/100.0)

--- Preferable Activities		Activity Experienced	Not Experienced
TOTAL		98.5	1.5
Hiking		( 72.5%)	0.0
Hunting		0.0	0.0
Cycling		75.0	25.0
Driving cars		100.0	0.0
Picnic		90.2	9.8
Playing sports		( 56.0%)	75.0
Sky Sports		100.0	0.0
Sea sports		71.4	28.6
Fishing		82.6	17.4
Yachting		33.3	66.7
Rest		98.8	1.2
Others		( 94.5%)	0.0
N/A		100.0	0.0

Interesting Activities	NUMBER(HORIZONTALS/VERTICALS)									
Swimming	Surfing	Rowboat	Yachting	Water skiing	Skin/scuba diving	Fishing	Dragnet	Playing on shore	Critter collection	
65( 72.2/100.0)	2( 2.2/100.0)	5( 5.6/100.0)	0( 0.0/100.0)	1( 1.1/100.0)	11( 12.2/100.0)	12( 13.3/100.0)	1( 1.1/100.0)	30( 33.3/100.0)	4( 4.4/100.0)	
65( 72.2/100.0)	2( 2.2/100.0)	5( 5.6/100.0)	0( 0.0/100.0)	1( 1.1/100.0)	11( 12.2/100.0)	12( 13.3/100.0)	1( 1.1/100.0)	30( 33.3/100.0)	4( 4.4/100.0)	

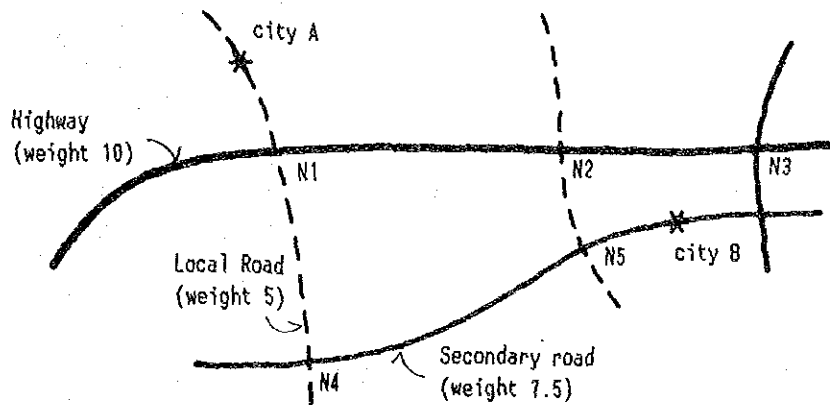
Interesting Activities	NUMBER(HORIZONTALS/VERTICALS)									
Camping	Scenery exploring	Sight seeing	Resting	N/A	ANSWER	RESPONDENTS	NO ANSWER			
0( 0.0/100.0)	16( 17.8/100.0)	55( 61.1/100.0)	61( 67.8/100.0)	0( 0.0/100.0)	263(292.2/100.0)	90(100.0/100.0)	12( --- /100.0)			
0( 0.0/100.0)	16( 17.8/100.0)	55( 61.1/100.0)	61( 67.8/100.0)	0( 0.0/100.0)	263(292.2/100.0)	90(100.0/100.0)	12( --- /100.0)			

--- Interesting Activities		Activity Experienced	Not Experienced
TOTAL		94.5	4.6
Swimming		( 72.2%)	50.0
Surfing		50.0	50.0
Rowboat		60.0	40.0
Yachting		0.0	100.0
Water skiing		100.0	0.0
Skin/scuba diving		90.0	10.0
Fishing		100.0	0.0
Dragnet		100.0	0.0
Playing on shore		100.0	0.0
Critter collection		100.0	0.0
Camping		0.0	100.0
Scenery exploring		93.8	6.3
Sight seeing		100.0	0.0
Resting		96.7	3.3
N/A		( 67.8%)	

### G.5. Accessibility Analysis by Shortest Path Method

Accessibility analysis is one of the major tools for assessing various physical characters of the region. The algorithm of calculating accessibility in a region is based on an idea of total minimum traveling time or distance. This concept is to calculate the total minimum distance from one city to all other cities in a region. Then it is interpreted that the better the distance or the time, the higher the accessibility.

Figure A



City A and City B are connected by highway, secondary road and local road like in figure A. There are two routes from A to B. One route is A-N1-N2-N5-B (route T1), and the other is A-N1-N4-N5-B (route T2). Five links are used for both routes.

Since the manageable running speed of roads are different by the type of roads, total travelling time between two cities may be different by route. The speeds and the grades of those roads are assumed as follows in this study:

Road	Driving Speed	Grade
Highway	80km	10
Secondary Road	60km	7.5
Local Road	40km	5

According to above mentioned assumption of driving speeds, travelling time/distance from city A to city B is:

$$T1 = \text{dist}(A-N1)/5 + \text{dist}(N1-N2)/10 + \text{dist}(N2-N5)/5 + \text{dist}(N5-B)/7.5$$

$$T2 = \text{dist}(A-N4)/5 + \text{dist}(N4-B)/7.5$$

Generally speaking, a travelling time /distance between two cities is:

Weighted travelling time/distance =  $(d_{ij}/w_i)$

$d_{ij}$  : travelling time/distance from node 1 to J  
 $w_i$  : grade of road between node 1 and J

Through shortest\_path algorithm, the accessibility index of city A to city B is selected the smaller travelling time/distance from either route T1 or route T2.

Since there are many cities or towns in North Sinai coastal region, every city has its own accessibility index to all other cities in the region. Therefore accessibility indices of all cities in the region can create a minimum travelling time/distance matrix(shortest path matrix) with at least the size of numbers of cities in the region. Usually the size of this matrix is much larger than the total number of cities because there are many divergence points or dummy points on road network.

The steps of calculating shortest-path matrix is explained in many transportation text books<sup>1)</sup> Simple flow chart of calculating shortest\_path matrix in this study is on the next page (Figure B) The data on nodes and links in the region are converted into direct connection matrix for calculating indirect connection matrix among cities.

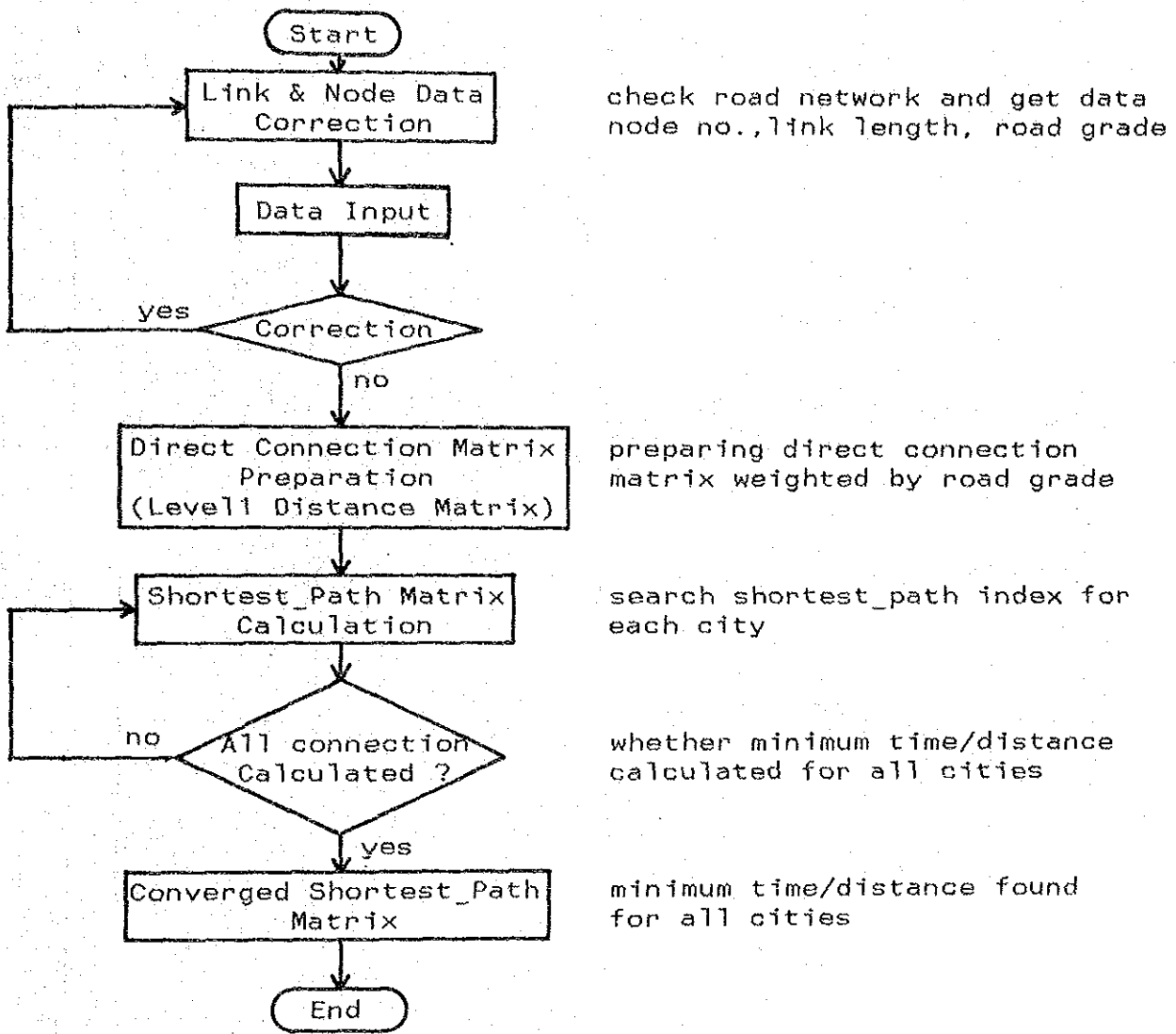
The shortest\_path matrix would converge into final distant matrix after enough iteration because there exist unique answer for each route as minimum time/distance. The concept of total minimum travelling time/distance algorithm is the sum of individual driving time/distance by cities. This total is a city's aggregated accessibility index to the region.

---

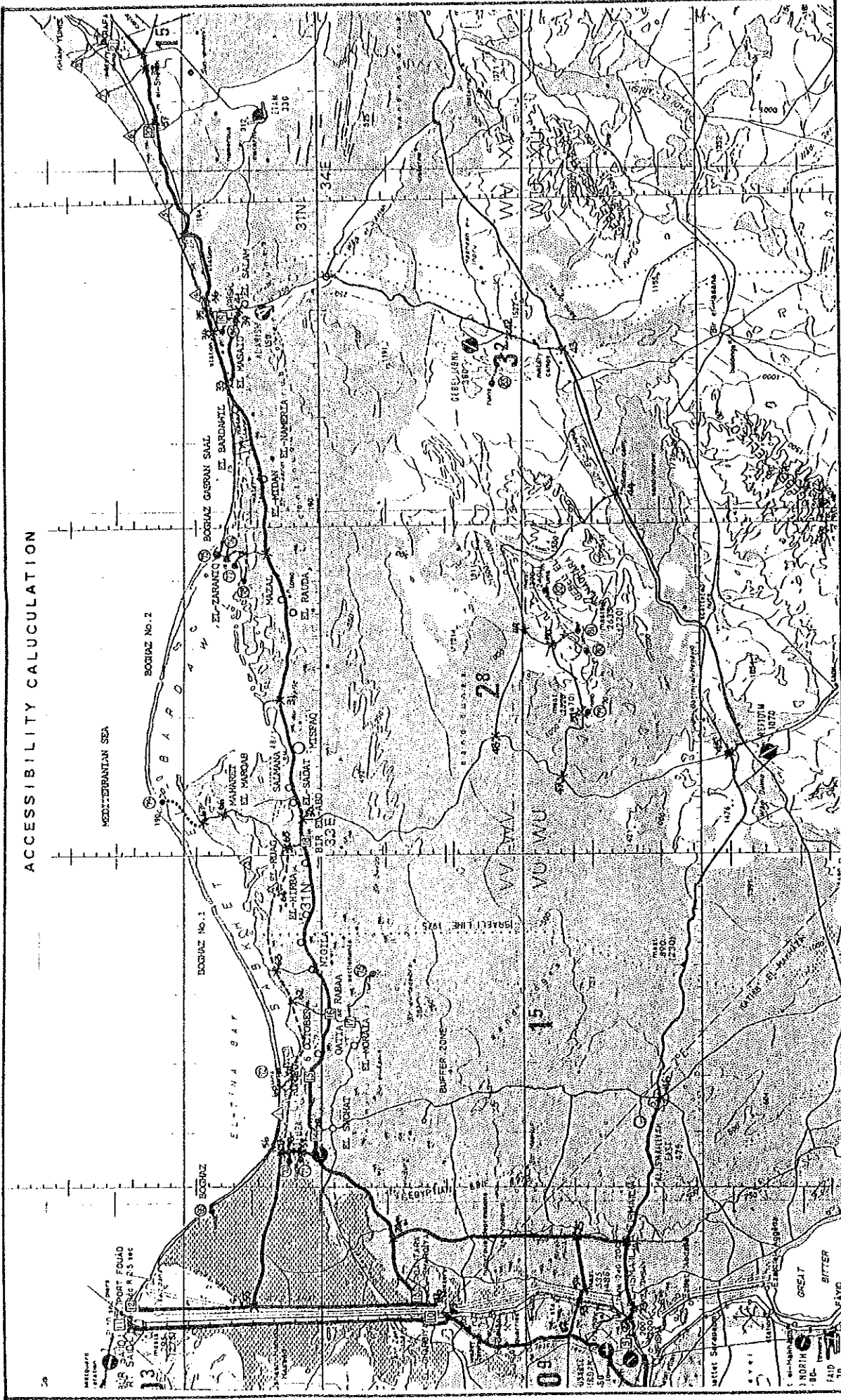
1) E.J.Taaffe,H.L.Gauthier.Jr., "Geography of Transportation", Foundations of Economic Geography Series, prentice-hall, 1973



Figure B



# ACCESSIBILITY CALCULATION



APPENDIX F-3 ACCESSIBILITY CALCULATION, NODES AND LINK (ROAD, TOURISM RESOURCES, CITIES AND TOWNS)

**LEGEND**

<p>Existing Road Grade 1, 30km/hr</p> <p>Existing Road Grade 2, 50km/hr</p> <p>Existing Road Grade 3, 60km/hr</p> <p>Proposed Road</p> <p>City or Town</p>	<p>Candidate Site for Tourism Development</p> <p>Tourism Resources</p>
--	--

SCALE

0 10 20 30 40 KM

**CALCULATION OF ACCESSIBILITY BY SHORTEST PATH METHOD (1)**

**TABLE 1 PROXIMITY FROM CANDIDATE SITES TO CITIES IN THE STUDY AREA**  
Road weight 10,7.5,5

	9	10	11	12	13	14	15	16	17	18	19	20	21	Index Total	Rank	Name of Candidates
1	86	56	57	47	42	16	14	24	31	50	131	165	184	903	1	Rumana
2	141	111	112	102	97	71	45	35	42	16	97	131	150	1150	2	Ruag
3	167	137	138	128	123	93	67	57	64	31	112	146	165	1428	3	Ruag'
4	222	192	193	183	178	148	122	112	119	86	10	29	48	1642	4	Raysa
5	243	213	214	204	199	169	143	133	140	107	31	24	43	1863	5	Massiada
6	315	227	228	218	213	183	157	147	154	121	45	6	25	2039	6	Sheikh Zuwayed
7	329	360	402	232	227	197	171	161	168	135	59	20	21	2482	7	Feirouz
8	341	368	410	400	235	205	179	169	176	143	67	28	9	2730	8	Rafah

**TABLE 2 ACCESSIBILITY FROM CANDIDATE SITES TO TOURIST POINTS IN THE STUDY AREA**  
Road weight 10,7.5,5

	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	Index Total	Rank
1	21	9	12	11	44	149	107	105	105	107	157	195	175	215	223	132	1767	2
2	76	64	67	52	55	109	73	71	71	73	123	161	141	181	189	98	1604	1
3	102	90	93	78	77	85	88	86	86	88	138	176	156	196	204	113	1856	3
4	157	145	148	133	132	185	51	49	49	51	183	219	199	239	103	11	2054	4
5	178	166	169	154	153	206	72	70	70	72	204	240	220	260	124	32	2390	5
6	192	180	183	168	167	220	86	84	84	86	218	254	234	274	138	46	2614	6
7	206	194	203	182	181	234	100	98	98	100	232	268	248	288	152	60	2844	7
8	214	370	211	190	189	242	108	106	106	108	240	276	256	296	160	68	3140	8

**TABLE 3 ACCESSIBILITY FROM CANDIDATE SITES TO BOTH CITIES AND TOURIST POINTS IN THE STUDY AREA**  
Road weight 10,7.5,5

	9	10	11	12	13	14	15	16	17	18	19	20	21	69	70	71	72	73	74
1	86	56	57	47	42	16	14	24	31	50	131	165	184	21	9	12	11	44	149
2	141	111	112	102	97	71	45	35	42	16	97	131	150	76	64	67	52	55	109
3	167	137	138	128	123	93	67	57	64	31	112	146	165	102	90	93	78	77	85
4	222	192	193	183	178	148	122	112	119	86	10	29	48	157	145	148	133	132	185
5	243	213	214	204	199	169	143	133	140	107	31	24	43	178	166	169	154	153	206
6	315	227	228	218	213	183	157	147	154	121	45	6	25	192	180	183	168	167	220
7	329	360	402	232	227	197	171	161	168	135	59	20	21	206	194	203	182	181	234
8	341	368	410	400	235	205	179	169	176	143	67	28	9	214	370	211	190	189	242

	75	76	77	78	79	80	81	82	83	84	Index Total	Rank	Name of Candidates
1	107	105	105	107	157	195	175	215	223	132	2670	1	Rumana
2	73	71	71	73	123	161	141	181	189	98	2754	2	Ruag
3	88	86	86	88	138	176	156	196	204	113	3284	3	Ruag'
4	51	49	49	51	183	219	199	239	103	11	3696	4	Raysa
5	72	70	70	72	204	240	220	260	124	32	4253	5	Massiada
6	86	84	84	86	218	254	234	274	138	46	4653	6	Sheikh Zuwayed
7	100	98	98	100	232	268	248	288	152	60	5326	7	Feirouz
8	108	106	106	108	240	276	256	296	160	68	5870	8	Rafah

SOURCE: Study Team

See APPENDIX F-3 for the Number of Candidate sites,Cities,Tourist Points

CALCULATION OF ACCESSIBILITY BY SHORTEST PATH METHOD (2)

TABLE 4 PROXIMITY FROM CANDIDATE SITES TO CITIES IN THE STUDY AREA  
SIMPLE ACCESSIBILITY INDEX AND POPULATION WEIGHTED ACCESSIBILITY  
Road weight 10,7,5,5

	9	10	11	12	13	14	15	16	17	18	19	20	21	Simple Index Total	Weighted Index Total	Rank	Name of Candidates
1	494	157	1040	139	37	32	26	24	21	19	103	10	23	903	2125	1	Rumana
2	302	79	529	64	16	7	8	17	15	60	139	13	28	1150	1277	3	Ruag
3	255	64	430	51	12	6	5	10	10	31	121	12	25	1428	1032	6	Ruag'
4	192	46	307	36	9	3	3	5	5	11	1353	60	87	1642	2116	2	Raysa
5	175	41	277	32	8	3	3	4	5	9	436	72	97	1863	1161	7	Massada
6	135	39	260	30	7	3	2	4	4	8	301	288	166	2039	1247	4	Sheikh Zuwayed
7	129	24	148	28	7	3	2	4	4	7	229	86	198	2482	869	8	Feirouz
8	125	24	145	16	7	3	2	3	4	7	202	62	462	2730	1059	5	Rafah

SOURCE: Study Team

See APPENDIX F-3 for the Number of Candidate sites, Cities, Tourist Points

APPENDIX-H. Comparative Evaluation of El Salam Canal Extension



## H.1. Comparative Evaluation of El Salam Canal Extension

In order to study project evaluation in case of expanding the El Salam Canal to M/P Area, the Area was divided into three stages, that is, short-term development plan, medium-term development plan and long-term development plan as shown in the following figure, and then project evaluation was carried out. Cropping patterns applied in each area are quoted from five cropping patterns proposed to F/S Area taking into consideration similar soil condition. Implementation schedule is based on the Table 5.2-1. Project benefits in each area are estimated as shown in the following figure.

Project cost is estimated including the cost for social infrastructures. The project cost for project evaluation was estimated taking into account construction cost at the west of Suez Canal which will be necessary for developing eastern part of the Suez Canal. Project benefit from fishery and tourism are not accounted. On the other hand, construction costs which have been invested since 1981/82 in the west of Suez Canal is as follows, according to MPWWR. However, these costs are not added to the project cost because of accounting as sunk cost.

### Invested amount in the west of Suez Canal

Construction works cost	100 million LE
Pump and equipments	4,436 million Yen (Yen loan)

Results of project evaluation are as follows:

	<u>EIRR</u> <u>Including</u> <u>Social Infra.</u>
Short-term development plan	7.8%
Medium-term development plan	7.8%
Long-term development plan	7.3%

The results indicate that agricultural development in the North Sinai area would be more profitable taking big area in order to reduce construction costs per feddan necessary for siphon, main/lateral canal and pump stations etc. Namely, medium-term development plan including F/S Area and areas up to Misfaq is the most profitable from the viewpoint of cost and benefit.

EIRR for the Master Plan was accounted based on the project cost and benefit estimated for F/S Area temporarily. And the results of EIRR might be lower than the actual. Therefore, feasibility study for each subproject should be done in order to estimate more detail EIRR. However, the implementation of this project answers the national purposes in increasing agricultural production and redistribution of population. And the Project will contribute to increasing employment opportunity, correcting regional disparity in income and regional development etc. which are the indirect and intangible benefits.



Table H-1.

Project Cost and Benefits, Short-Term Development Plan

( UNIT : MILLION LE. )

YEAR	PROJECT COST		TOTAL	BENEFITS	RETURN	PRESENT WORTH VALUE BY DISCOUNT RATE		
	CAPITAL	O & M				6 %	8 %	10 %
	(COST)	(BENEFITS)	(COST)	(BENEFITS)	(COST)	(BENEFITS)	(COST)	(BENEFITS)
1 1988	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 1989	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 1990	10.60	0.00	10.60	0.00	-10.60	8.90	8.41	7.96
4 1991	10.60	0.00	21.20	0.00	-21.20	17.80	16.82	15.92
5 1992	42.10	0.00	42.10	0.00	-42.10	31.46	28.65	26.14
6 1993	200.40	0.00	200.40	0.00	-200.40	141.27	126.29	113.12
7 1994	337.60	0.00	337.60	0.00	-337.60	224.52	196.99	173.24
8 1995	369.30	0.00	369.30	0.00	-369.30	231.71	199.52	172.28
9 1996	73.80	0.00	73.80	0.00	-73.80	43.68	36.92	31.30
10 1997	10.60	11.30	21.90	16.30	-5.60	12.23	10.14	8.44
11 1998	0.00	11.30	11.30	28.10	16.80	5.95	4.85	3.96
12 1999	0.00	11.30	11.30	45.90	34.60	5.62	4.49	3.60
13 2000	0.00	11.30	11.30	68.00	56.70	5.30	4.16	3.27
14 2001	0.00	11.30	11.30	91.70	80.40	5.00	3.85	2.98
15 2002	0.00	11.30	11.30	112.40	101.10	4.72	3.56	2.71
16 2003	0.00	11.30	11.30	125.70	114.40	4.45	3.30	2.46
17 2004	0.00	11.30	11.30	136.10	124.80	4.20	3.05	2.24
18 2005	0.00	11.30	11.30	141.70	130.40	3.96	2.83	2.03
19 2006	0.00	11.30	11.30	144.70	133.40	3.73	2.62	1.85
20 2007	0.00	11.30	11.30	148.00	136.70	3.52	2.42	1.68
21 2008	0.00	11.30	11.30	148.00	136.70	3.32	2.24	1.53
22 2009	0.00	11.30	11.30	148.00	136.70	3.14	2.08	1.39
23 2010	0.00	11.30	11.30	148.00	136.70	2.98	1.92	1.26
24 2011	0.00	11.30	11.30	148.00	136.70	2.79	1.78	1.15
25 2012	0.00	11.30	11.30	148.00	136.70	2.63	1.65	1.04
26 2013	0.00	11.30	11.30	148.00	136.70	2.48	1.53	0.95
27 2014	0.00	11.30	11.30	148.00	136.70	2.34	1.41	0.86
28 2015	0.00	11.30	11.30	148.00	136.70	2.21	1.31	0.78
29 2016	0.00	11.30	11.30	148.00	136.70	2.09	1.21	0.71
30 2017	0.00	11.30	11.30	148.00	136.70	1.97	1.12	0.65
31 2018	0.00	11.30	11.30	148.00	136.70	1.86	1.04	0.59
32 2019	0.00	11.30	11.30	148.00	136.70	1.75	0.96	0.54
33 2020	0.00	11.30	11.30	148.00	136.70	1.64	0.88	0.49
34 2021	0.00	11.30	11.30	148.00	136.70	1.56	0.81	0.44
35 2022	0.00	11.30	11.30	148.00	136.70	1.47	0.76	0.40
36 2023	0.00	11.30	11.30	148.00	136.70	1.39	0.71	0.37
37 2024	0.00	11.30	11.30	148.00	136.70	1.31	0.66	0.33
38 2025	0.00	11.30	11.30	148.00	136.70	1.23	0.61	0.30
39 2026	0.00	11.30	11.30	148.00	136.70	1.16	0.56	0.27
40 2027	0.00	11.30	11.30	148.00	136.70	1.10	0.52	0.25
41 2028	0.00	11.30	11.30	148.00	136.70	1.04	0.48	0.23
42 2029	0.00	11.30	11.30	148.00	136.70	0.98	0.45	0.21
43 2030	0.00	11.30	11.30	148.00	136.70	0.92	0.41	0.19
44 2031	0.00	11.30	11.30	148.00	136.70	0.87	0.38	0.17
45 2032	0.00	11.30	11.30	148.00	136.70	0.82	0.35	0.16
46 2033	0.00	11.30	11.30	148.00	136.70	0.77	0.33	0.14
47 2034	0.00	11.30	11.30	148.00	136.70	0.73	0.30	0.13
48 2035	0.00	11.30	11.30	148.00	136.70	0.69	0.28	0.12
49 2036	0.00	11.30	11.30	148.00	136.70	0.65	0.26	0.11
50 2037	0.00	11.30	11.30	148.00	136.70	0.61	0.24	0.10
TOTAL	1055.00	523.40	1578.40	5498.60	3920.20	805.90	681.87	584.93

BENEFIT COST RATIO BY DISCOUNT RATE (B/C) = 1.30 ( 6%), 0.97 ( 8%), 0.74 (10%)  
INTERNAL RATE OF RETURN (IRR)

Table H-2.

Project Cost and Benefits, Medium-Term Development Plan

( UNIT : MILLION LE. )

YEAR	PROJECT COST		TOTAL	BENEFITS	RETURN	6 %		8 %		10 %	
	CAPITAL	O & M				(COST)	(BENEFITS)	(COST)	(BENEFITS)	(COST)	(BENEFITS)
1 1988	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 1989	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 1990	10.60	0.00	10.60	0.00	-10.60	8.90	8.41	8.41	0.00	7.96	0.00
4 1991	10.60	0.00	10.60	0.00	-10.60	8.40	7.79	7.79	0.00	7.24	0.00
5 1992	42.10	0.00	42.10	0.00	-42.10	31.46	28.65	28.65	0.00	26.14	0.00
6 1993	200.40	0.00	200.40	0.00	-200.40	141.27	126.29	126.29	0.00	113.12	0.00
7 1994	337.60	0.00	337.60	0.00	-337.60	224.52	196.99	196.99	0.00	173.24	0.00
8 1995	369.30	0.00	369.30	0.00	-369.30	231.71	199.52	199.52	0.00	172.28	0.00
9 1996	73.80	0.00	73.80	0.00	-73.80	43.68	36.92	36.92	0.00	31.30	0.00
10 1997	10.60	11.30	21.90	16.30	-5.60	12.23	9.10	10.14	7.55	8.44	6.28
11 1998	72.40	11.30	83.70	28.10	-55.60	44.09	35.90	35.90	12.05	29.34	9.85
12 1999	229.40	11.30	240.70	45.90	-194.80	119.62	95.59	95.59	18.23	76.70	14.63
13 2000	398.30	11.30	409.60	68.00	-341.60	192.04	150.61	150.61	25.00	118.65	19.70
14 2001	422.50	11.30	433.80	91.70	-342.10	191.87	147.69	147.69	31.22	114.23	24.15
15 2002	84.30	23.80	108.10	123.30	15.40	45.11	51.53	34.08	38.93	25.88	29.57
16 2003	0.00	23.80	23.80	157.50	133.70	9.37	62.00	6.95	45.97	5.18	34.28
17 2004	0.00	23.80	23.80	194.60	170.80	8.84	72.27	6.43	52.59	4.71	38.50
18 2005	0.00	23.80	23.80	228.50	204.70	8.34	80.05	5.96	57.18	4.28	41.10
19 2006	0.00	23.80	23.80	253.30	229.50	7.87	83.72	5.51	58.69	3.89	41.42
20 2007	0.00	23.80	23.80	271.80	248.00	7.42	84.75	5.11	58.31	3.54	40.40
21 2008	0.00	23.80	23.80	284.10	260.30	7.00	83.57	4.73	56.44	3.22	38.39
22 2009	0.00	23.80	23.80	293.30	269.50	6.60	81.39	4.38	53.95	2.92	36.03
23 2010	0.00	23.80	23.80	299.50	275.70	6.23	78.41	4.05	51.01	2.66	33.45
24 2011	0.00	23.80	23.80	302.60	278.80	5.88	74.74	3.75	47.72	2.42	30.72
25 2012	0.00	23.80	23.80	308.80	285.00	5.55	71.95	3.48	45.09	2.20	28.50
26 2013	0.00	23.80	23.80	308.80	285.00	5.23	67.88	3.22	41.75	2.00	25.91
27 2014	0.00	23.80	23.80	308.80	285.00	4.94	64.04	2.98	38.66	1.82	23.56
28 2015	0.00	23.80	23.80	308.80	285.00	4.66	60.41	2.76	35.79	1.65	21.41
29 2016	0.00	23.80	23.80	308.80	285.00	4.39	56.99	2.55	33.14	1.50	19.47
30 2017	0.00	23.80	23.80	308.80	285.00	4.14	53.77	2.37	30.69	1.36	17.70
31 2018	0.00	23.80	23.80	308.80	285.00	3.91	50.72	2.19	28.42	1.24	16.09
32 2019	0.00	23.80	23.80	308.80	285.00	3.69	47.85	2.03	26.31	1.13	14.63
33 2020	0.00	149.90	149.90	308.80	158.90	21.91	45.14	11.85	24.36	6.45	13.30
34 2021	0.00	23.80	23.80	308.80	285.00	3.28	42.59	1.74	22.56	0.93	12.09
35 2022	0.00	23.80	23.80	308.80	285.00	3.10	40.18	1.61	20.89	0.85	10.99
36 2023	0.00	23.80	23.80	308.80	285.00	2.92	37.90	1.49	19.34	0.77	9.99
37 2024	0.00	23.80	23.80	308.80	285.00	2.76	35.76	1.38	17.91	0.70	9.08
38 2025	0.00	23.80	23.80	308.80	285.00	2.60	33.73	1.28	16.58	0.64	8.26
39 2026	0.00	23.80	23.80	308.80	285.00	2.45	31.82	1.18	15.35	0.58	7.51
40 2027	0.00	23.80	23.80	308.80	285.00	2.31	30.02	1.10	14.21	0.53	6.82
41 2028	0.00	23.80	23.80	308.80	285.00	2.18	28.32	1.01	13.16	0.48	6.20
42 2029	0.00	23.80	23.80	308.80	285.00	2.06	26.72	0.94	12.19	0.43	5.64
43 2030	0.00	23.80	23.80	308.80	285.00	1.94	25.21	0.87	11.28	0.40	5.13
44 2031	0.00	23.80	23.80	308.80	285.00	1.83	23.78	0.81	10.45	0.36	4.66
45 2032	0.00	23.80	23.80	308.80	285.00	1.73	22.44	0.75	9.67	0.33	4.24
46 2033	0.00	23.80	23.80	308.80	285.00	1.63	21.17	0.69	8.96	0.30	3.85
47 2034	0.00	23.80	23.80	308.80	285.00	1.54	19.97	0.64	8.29	0.27	3.50
48 2035	0.00	23.80	23.80	308.80	285.00	1.45	18.84	0.59	7.68	0.25	3.18
49 2036	0.00	23.80	23.80	308.80	285.00	1.37	17.77	0.55	7.11	0.22	2.89
50 2037	0.00	23.80	23.80	308.80	285.00	1.29	16.77	0.51	6.58	0.20	2.63
TOTAL	2261.90	1039.40	3301.30	10687.50	7386.20	1457.32	1863.34	1175.97	1141.29	964.91	725.67

BENEFIT COST RATIO BY DISCOUNT RATE (B/C) = 1.28 ( 6%), 0.97 ( 8%), 0.75 (10%)  
INTERNAL RATE OF RETURN (IRR) = 7.8 %

Table H-3.

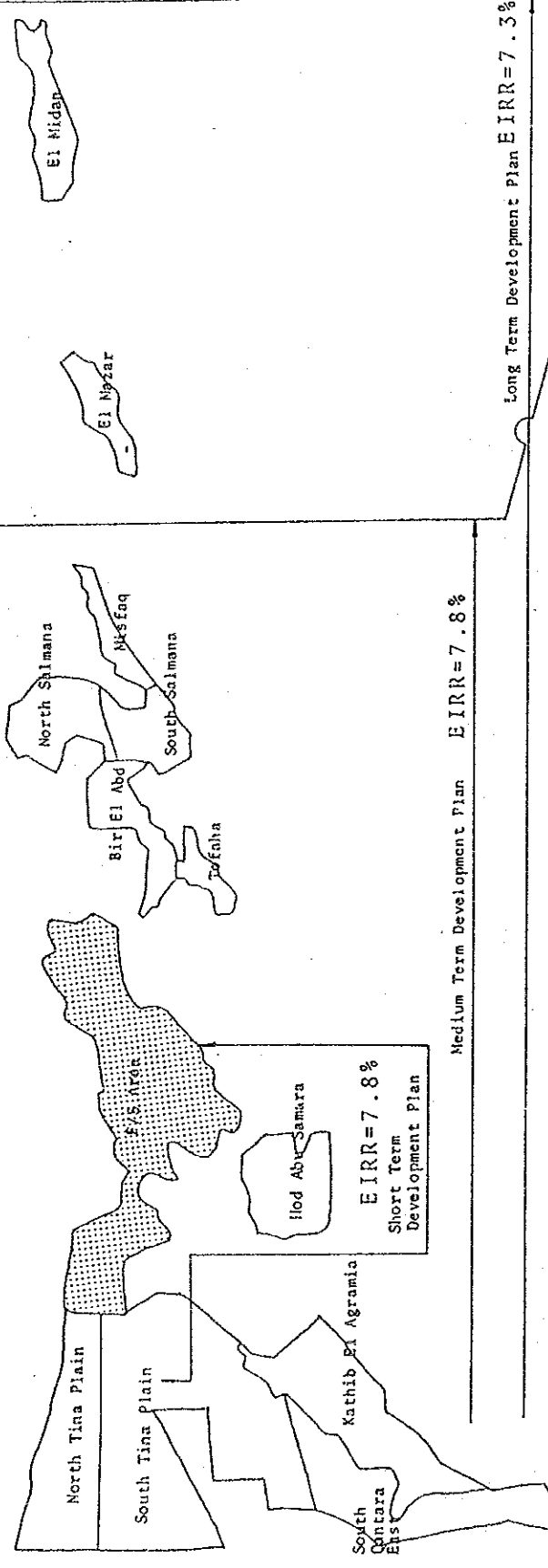
Project Cost and Benefits, Long-Term Development Plan

( UNIT : MILLION LE. )

YEAR	PROJECT COST		TOTAL	BENEFITS	RETURN	6 %		8 %		10 %	
	CAPITAL	O & M				(COST)	(BENEFITS)	(COST)	(BENEFITS)	(COST)	(BENEFITS)
1 1988	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 1989	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 1990	10.60	0.00	10.60	0.00	-10.60	8.90	0.00	8.41	0.00	7.96	0.00
4 1991	10.60	0.00	21.20	0.00	-21.20	17.80	0.00	17.22	0.00	15.92	0.00
5 1992	42.10	0.00	42.10	0.00	-42.10	31.46	0.00	28.65	0.00	26.14	0.00
6 1993	200.40	0.00	200.40	0.00	-200.40	141.27	0.00	126.29	0.00	113.12	0.00
7 1994	337.60	0.00	337.60	0.00	-337.60	224.52	0.00	196.99	0.00	173.24	0.00
8 1995	369.30	0.00	369.30	0.00	-369.30	231.71	0.00	199.52	0.00	172.28	0.00
9 1996	73.80	0.00	73.80	0.00	-73.80	43.68	0.00	36.92	0.00	31.30	0.00
10 1997	10.60	11.30	21.90	16.30	-5.60	12.23	9.10	10.14	7.55	8.44	6.28
11 1998	72.40	11.30	83.70	28.10	-55.60	44.09	14.80	35.90	12.05	29.34	9.85
12 1999	229.40	11.30	240.70	45.90	-194.80	119.62	22.81	95.59	18.23	76.70	14.63
13 2000	398.30	11.30	409.60	68.00	-341.60	192.04	31.88	150.61	25.00	118.65	19.70
14 2001	422.50	11.30	433.80	91.70	-342.10	191.87	40.56	147.69	31.22	114.23	24.15
15 2002	84.30	23.80	108.10	123.50	15.40	45.11	51.53	34.08	38.93	25.88	29.57
16 2003	23.80	23.80	47.60	157.50	110.70	18.42	62.00	13.66	45.97	10.19	34.28
17 2004	73.40	23.80	97.20	194.60	97.40	36.10	72.27	26.27	52.59	19.23	38.50
18 2005	127.30	23.80	151.10	229.00	77.90	52.94	80.23	37.81	57.31	27.18	41.19
19 2006	135.20	23.80	159.00	254.80	95.80	52.55	84.22	36.84	59.04	26.00	41.66
20 2007	27.10	25.50	52.60	274.50	16.40	16.40	85.59	11.29	58.89	7.82	40.80
21 2008	0.00	25.50	25.50	288.80	263.30	7.50	84.95	5.07	57.37	3.45	39.03
22 2009	0.00	25.50	25.50	307.90	274.40	7.08	83.23	4.69	55.16	3.13	36.84
23 2010	0.00	25.50	25.50	307.90	282.40	6.88	80.61	4.34	52.44	2.85	34.39
24 2011	0.00	25.50	25.50	312.20	286.70	6.30	77.11	4.02	49.23	2.59	31.70
25 2012	0.00	25.50	25.50	319.20	293.70	5.94	74.37	3.72	46.61	2.35	29.46
26 2013	0.00	25.50	25.50	319.80	294.30	5.61	70.30	3.45	43.24	2.14	26.83
27 2014	0.00	25.50	25.50	320.00	294.50	5.29	66.36	3.19	40.06	1.95	24.41
28 2015	0.00	25.50	25.50	320.20	294.70	4.99	62.64	2.96	37.12	1.77	22.20
29 2016	0.00	25.50	25.50	320.20	294.70	4.71	59.10	2.74	34.37	1.61	20.99
30 2017	0.00	25.50	25.50	320.20	294.70	4.44	55.75	2.53	31.82	1.46	18.35
31 2018	0.00	25.50	25.50	320.20	294.70	4.19	52.60	2.35	29.46	1.33	16.68
32 2019	0.00	25.50	25.50	320.20	294.70	3.95	49.62	2.17	27.28	1.21	15.17
33 2020	0.00	160.50	160.50	320.20	159.70	23.46	46.81	12.66	25.26	6.91	13.79
34 2021	0.00	25.50	25.50	320.20	294.70	3.52	44.16	1.86	23.39	1.00	12.53
35 2022	0.00	25.50	25.50	320.20	294.70	3.32	41.66	1.72	21.66	0.91	11.39
36 2023	0.00	25.50	25.50	320.20	294.70	3.13	39.30	1.60	20.05	0.82	10.36
37 2024	0.00	25.50	25.50	320.20	294.70	2.95	37.08	1.48	18.57	0.75	9.42
38 2025	0.00	25.50	25.50	320.20	294.70	2.79	34.98	1.37	17.19	0.68	8.56
39 2026	0.00	25.50	25.50	320.20	294.70	2.63	33.00	1.27	15.92	0.62	7.78
40 2027	0.00	25.50	25.50	320.20	294.70	2.48	31.13	1.17	14.74	0.56	7.08
41 2028	0.00	25.50	25.50	320.20	294.70	2.34	29.37	1.09	13.65	0.51	6.43
42 2029	0.00	25.50	25.50	320.20	294.70	2.21	27.71	1.01	12.64	0.47	5.85
43 2030	0.00	25.50	25.50	320.20	294.70	2.08	26.14	0.93	11.70	0.42	5.32
44 2031	0.00	25.50	25.50	320.20	294.70	1.96	24.66	0.86	10.83	0.38	4.83
45 2032	0.00	25.50	25.50	320.20	294.70	1.85	23.26	0.80	10.03	0.35	4.39
46 2033	0.00	25.50	25.50	320.20	294.70	1.75	21.95	0.74	9.29	0.32	3.99
47 2034	0.00	25.50	25.50	320.20	294.70	1.65	20.70	0.68	8.60	0.29	3.63
48 2035	0.00	25.50	25.50	320.20	294.70	1.56	19.53	0.63	7.96	0.26	3.30
49 2036	0.00	25.50	25.50	320.20	294.70	1.47	18.43	0.59	7.37	0.24	3.00
50 2037	0.00	25.50	25.50	320.20	294.70	1.38	17.38	0.54	6.83	0.22	2.73
TOTAL	2647.90	1101.00	3748.90	11016.30	7267.40	1600.50	1908.89	1276.70	1166.65	1036.48	740.23

BENEFIT COST RATIO BY DISCOUNT RATE (B/C) = 1.19 ( 6%), 0.91 ( 8%), 0.71 ( 10%)  
INTERNAL RATE OF RETURN (IRR) = 7.5 %

Figure H-1. Project Evaluation by Development Stage



Area Name Items	Medium Term Development Plan EIRR=7.8%										Long Term Development Plan EIRR=7.3%				
	North Tina Plain	South Tina Plain	South Cantara East	Kathib El Agramia	Hod Abu Samara	F/S Ayda	Bir El Abd	Tofaha	North Salmana	South Salmana	Misaq	El Mazar	El Midan		
Gross Area (feddan)	22,300	60,000	22,900	25,200	14,000	53,400	10,000	4,100	12,000	9,100	5,000	6,700	10,000		
Net Area (feddan)	16,700	50,600	18,300	20,200	11,200	41,600	8,000	3,300	9,600	7,300	4,000	5,000	8,000		
Proposed Cropping Pattern (CP)	CP-2	CP-1 CP-2 CP-3 CP-4	CP-1 CP-3	CP-4	CP-4	CP-1 CP-2 CP-3 CP-4 CP-5	CP-4	CP-1	CP-1	CP-1	CP-3	CP-1 CP-4	CP-1 CP-4		
Gross Production Value (1,000LE)	54,267	166,916	96,575	18,778	10,411	-	7,437	8,313	24,187	18,392	23,360	9,100	14,432		
Production Cost (1,000LE)	16,746	73,076	48,377	12,868	7,134	-	5,096	3,856	11,223	8,535	10,607	4,674	7,437		
Net Production Value (1,000LE)	37,521	93,840	48,198	5,910	3,277	54,071	2,341	4,457	12,964	9,857	12,753	4,426	6,995		
	Short Term Development Plan					Medium Term Development Plan					Long Term Development Plan				



JICA