Table J.6-2 Project Economic Cost and Return
-Wahby Downstream Area-

(UNIT : MILLION L.E.)

YEAR	PROJECT COST			INCREMENTAL BENEFITS (2)	PROJECT RETURN (3) =(2)-(1)	PRESENT WORTH VALUE (3)*DISCOUNT RATE	
	CAPITAL	O & M	TOTAL (1)			(12 %)	(13 %)
1 1985	1.290	0.0	1.290	0.0	-1.290	-1.152	-1.142
2 1986	3.430	0.0	3.430	0.0	-3.430	-2.734	-2.686
3 1987	2.200	0.0	2.200	0.0	-2.200	-1.566	-1.525
4 1988	0.610	0.0	0.610	0.0	-0.610	-0.388	-0.374
5 1989	0.980	0.0	0.980	0.0	-0.980	-0.556	-0.532
6 1990	1.430	0.0	1.430	0.0	-1.430	-0.724	-0.687
7 1991	1.080	0.780	1.860	0.250	-1.610	-0.728	-0.684
8 1992	0.420	0.780	1.200	1.260	0.060	0.024	0.023
9 1993	0.0	0.780	0.780	2.890	2.110	0.761	0.702
10 1994	0.0	0.780	0.780	3.440	2.660	0.856	0.784
11 1995	0.0	0.780	0.780	3.440	2.660	0.765	0.693
12 1996	0.0	0.780	0.780	3.440	2.660	0.683	0.614
13 1997	0.0	0.780	0.780	3.440	2.660	0.610	0.543
14 1998	0.0	0.780	0.780	3.440	2.660	0.544	0.481
15 1999	0.0	0.780	0.780	3.440	2.660	0.486	0.425
16 2000	0.0	0.780	0.780	3.440	2.660	0.434	0.376
17 2001	0.0	0.880	0.880	3.440	2.560	0.373	0.321
18 2002	0.0	0.780	0.780	3.440	2.660	0.346	0.295
19 2003	0.0	0.780	0.780	3.440	2.660	0.309	0.261
20 2004	0.0	0.780	0.780	3.440	2.660	0.276	0.231
21 2005	0.0	0.780	0.780	3.440	2.660	0.246	0.204
22 2006	0.0	0.780	0.780	3.440	2.660	0.220	0.181
23 2007	0.0	0.780	0.780	3.440	2.660	0.196	0.160
24 2008	0.0	0.780	0.780	3.440	2.660	0.175	0.142
25 2009	0.0	0.780	0.780	3.440	2.660	0.156	0.125
26 2010	0.0	0.780	0.780	3.440	2.660	0.140	0.111
27 2011	0.0	0.780	0.780	3.440	2.660	0.125	0.098
28 2012	0.0	0.780	0.780	3.440	2.660	0.111	0.087
29 2013	0.0	1.290	1.290	3.440	2.150	0.080	0.062
30 2014	0.0	0.780	0.780	3.440	2.660	0.089	0.068
31 2015	0.0	0.780	0.780	3.440	2.660	0.079	0.060
32 2016	0.0	0.780	0.780	3.440	2.660	0.071	0.053
33 2017	0.0	0.780	0.780	3.440	2.660	0.063	0.047
34 2018	0.0	0.780	0.780	3.440	2.660	0.056	0.042
35 2019	0.0	0.780	0.780	3.440	2.660	0.050	0.037
36 2020	0.0	0.780	0.780	3.440	2.660	0.045	0.033
37 2021	0.0	0.780	0.780	3.440	2.660	0.040	0.029
38 2022	0.0	0.780	0.780	3.440	2.660	0.036	0.026
39 2023	0.0	0.780	0.780	3.440	2.660	0.032	0.023
40 2024	0.0	0.780	0.780	3.440	2.660	0.029	0.020
41 2025	0.0	0.780	0.780	3.440	2.660	0.026	0.018
42 2026	0.0	0.880	0.880	3.440	2.560	0.022	0.015
43 2027	0.0	0.780	0.780	3.440	2.660	0.020	0.014
44 2028	0.0	0.780	0.780	3.440	2.660	0.018	0.012
45 2029	0.0	0.780	0.780	3.440	2.660	0.016	0.011
46 2030	0.0	0.780	0.780	3.440	2.660	0.014	0.010
47 2031	0.0	0.780	0.780	3.440	2.660	0.013	0.009
48 2032	0.0	0.780	0.780	3.440	2.660	0.012	0.008
49 2033	0.0	0.780	0.780	3.440	2.660	0.010	0.007
50 2034	0.0	0.780	0.780	3.440	2.660	0.009	0.006
TOTAL	11.440	35.030	46.470	145.440	98.970	0.819	-0.167

I R R = 13 ..... 12 + 0.82 / (0.82 + 0.17) = 12.83

Table J.6-3 Project Economic Cost and Return
-South Area of Lake Qarun-

(UNIT : MILLION L.E.)

YEAR	PROJECT COST			INCREMENTAL BENEFITS	PROJECT RETURN	PRESENT WORTH VALUE	
	CAPITAL	O & M	TOTAL (1)	(2)	(3) =(2)-(1)	(3)×DISCOUNT RATE (15 %)	(16 %)
1 1987	0.160	0.0	0.160	0.0	-0.160	-0.139	-0.138
2 1988	0.690	0.0	0.690	0.0	-0.690	-0.522	-0.513
3 1989	1.290	0.0	1.290	0.0	-1.290	-0.848	-0.826
4 1990	1.650	0.0	1.650	0.0	-1.650	-0.943	-0.911
5 1991	1.260	0.010	1.270	0.330	-0.940	-0.467	-0.448
6 1992	0.650	0.020	0.670	0.580	-0.090	-0.039	-0.037
7 1993	0.0	0.040	0.040	0.860	0.820	0.308	0.290
8 1994	0.0	0.040	0.040	1.060	1.020	0.333	0.311
9 1995	0.0	0.040	0.040	1.150	1.110	0.316	0.292
10 1996	0.0	0.040	0.040	1.150	1.110	0.274	0.252
11 1997	0.0	0.040	0.040	1.150	1.110	0.239	0.217
12 1998	0.0	0.040	0.040	1.150	1.110	0.207	0.187
13 1999	0.0	0.040	0.040	1.150	1.110	0.180	0.161
14 2000	0.0	0.040	0.040	1.150	1.110	0.157	0.139
15 2001	0.0	0.040	0.040	1.150	1.110	0.136	0.120
16 2002	0.0	0.040	0.040	1.150	1.110	0.119	0.103
17 2003	0.0	0.040	0.040	1.150	1.110	0.103	0.089
18 2004	0.0	0.050	0.050	1.150	1.100	0.089	0.076
19 2005	0.0	0.050	0.050	1.150	1.100	0.077	0.066
20 2006	0.0	0.050	0.050	1.150	1.100	0.067	0.057
21 2007	0.0	0.040	0.040	1.150	1.110	0.059	0.049
22 2008	0.0	0.040	0.040	1.150	1.110	0.051	0.042
23 2009	0.0	0.040	0.040	1.150	1.110	0.045	0.037
24 2010	0.0	0.040	0.040	1.150	1.110	0.039	0.032
25 2011	0.0	0.040	0.040	1.150	1.110	0.034	0.027
26 2012	0.0	0.040	0.040	1.150	1.110	0.029	0.023
27 2013	0.0	0.040	0.040	1.150	1.110	0.025	0.020
28 2014	0.0	0.040	0.040	1.150	1.110	0.022	0.017
29 2015	0.0	0.040	0.040	1.150	1.110	0.019	0.015
30 2016	0.0	0.080	0.080	1.150	1.070	0.016	0.012
31 2017	0.0	0.090	0.090	1.150	1.060	0.014	0.011
32 2018	0.0	0.080	0.080	1.150	1.070	0.012	0.009
33 2019	0.0	0.040	0.040	1.150	1.110	0.011	0.008
34 2020	0.0	0.040	0.040	1.150	1.110	0.010	0.007
35 2021	0.0	0.040	0.040	1.150	1.110	0.008	0.006
36 2022	0.0	0.040	0.040	1.150	1.110	0.007	0.005
37 2023	0.0	0.040	0.040	1.150	1.110	0.006	0.005
38 2024	0.0	0.040	0.040	1.150	1.110	0.005	0.004
39 2025	0.0	0.040	0.040	1.150	1.110	0.005	0.003
40 2026	0.0	0.040	0.040	1.150	1.110	0.004	0.003
41 2027	0.0	0.040	0.040	1.150	1.110	0.004	0.003
42 2028	0.0	0.040	0.040	1.150	1.110	0.003	0.002
43 2029	0.0	0.050	0.050	1.150	1.100	0.003	0.002
44 2030	0.0	0.050	0.050	1.150	1.100	0.002	0.002
45 2031	0.0	0.050	0.050	1.150	1.100	0.002	0.001
46 2032	0.0	0.0	0.0	1.150	1.150	0.002	0.001
47 2033	0.0	0.0	0.0	1.150	1.150	0.002	0.001
48 2034	0.0	0.0	0.0	1.150	1.150	0.001	0.001
49 2035	0.0	0.0	0.0	1.150	1.150	0.001	0.001
50 2036	0.0	0.0	0.0	1.150	1.150	0.001	0.001
TOTAL	5.700	1.780	7.480	51.130	43.650	0.092	-0.163

I R R = 15 ..... 15 + 0.09 / (0.09 + 0.16) = 15.36

Table J.6-4 Project Economic Cost and Return
-Slaughterhouse-

(UNIT : MILLION L.E.)

YEAR	PROJECT COST			INCREMENTAL BENEFITS	PROJECT RETURN	PRESENT WORTH VALUE	
	CAPITAL	O & M	TOTAL (1)	(2)	(3) =(2)-(1)	(3)×DISCOUNT RATE (39 %)	(40 %)
1 1990	0.290	0.0	0.290	0.0	-0.290	-0.209	-0.207
2 1991	1.040	1.560	2.600	2.110	-0.490	-0.254	-0.250
3 1992	1.220	2.170	3.390	2.840	-0.550	-0.205	-0.200
4 1993	1.100	3.650	4.750	4.670	-0.080	-0.021	-0.021
5 1994	1.260	4.210	5.470	5.400	-0.070	-0.013	-0.013
6 1995	0.030	4.220	4.250	5.690	1.440	0.200	0.191
7 1996	0.0	4.220	4.220	5.690	1.470	0.147	0.139
8 1997	0.0	4.220	4.220	5.690	1.470	0.105	0.100
9 1998	0.0	4.220	4.220	5.690	1.470	0.076	0.071
10 1999	0.0	4.220	4.220	5.690	1.470	0.055	0.051
11 2000	0.320	4.220	4.540	5.690	1.150	0.031	0.028
12 2001	0.0	4.220	4.220	5.690	1.470	0.028	0.026
13 2002	0.0	4.220	4.220	5.690	1.470	0.020	0.019
14 2003	0.0	4.220	4.220	5.690	1.470	0.015	0.013
15 2004	0.0	4.220	4.220	5.690	1.470	0.011	0.009
16 2005	0.030	4.220	4.250	5.690	1.440	0.007	0.007
17 2006	0.0	4.220	4.220	5.690	1.470	0.005	0.005
18 2007	0.0	4.220	4.220	5.690	1.470	0.004	0.003
19 2008	0.0	4.220	4.220	5.690	1.470	0.003	0.002
20 2009	0.0	4.220	4.220	5.690	1.470	0.002	0.002
21 2010	0.320	4.220	4.540	5.690	1.150	0.001	0.001
22 2011	0.0	4.220	4.220	5.690	1.470	0.001	0.001
23 2012	0.0	4.220	4.220	5.690	1.470	0.001	0.001
24 2013	0.0	4.220	4.220	5.690	1.470	0.001	0.000
25 2014	0.0	4.220	4.220	5.690	1.470	0.000	0.000
TOTAL	5.610	95.990	101.600	126.820	27.220	0.010	-0.021

(R.R = 39 ..... 39 + 0.01 / (0.01 + 0.02) = 39.33

Table J.6-5 Project Economic Cost and Return
-Milk Processing Factory-

(UNIT : MILLION L.E.)

YEAR	PROJECT COST			INCREMENTAL BENEFITS (2)	PROJECT RETURN (3) =(2)-(1)	PRESENT WORTH VALUE (3)×DISCOUNT RATE	
	CAPITAL REPLACEMENT	O & M	TOTAL (1)			(24 %)	(25 %)
1 1990	0.970	0.0	0.970	0.0	-0.970	-0.782	-0.776
2 1991	2.770	2.800	5.570	4.020	-1.550	-1.008	-0.992
3 1992	3.420	4.980	8.400	6.690	-1.710	-0.897	-0.876
4 1993	2.230	7.440	9.670	9.670	0.0	0.0	0.0
5 1994	2.610	8.700	11.310	11.400	0.090	0.031	0.029
6 1995	2.830	9.250	12.080	12.010	-0.070	-0.019	-0.018
7 1996	0.0	9.250	9.250	12.010	2.760	0.612	0.579
8 1997	0.0	9.250	9.250	12.010	2.760	0.494	0.463
9 1998	0.0	9.250	9.250	12.010	2.760	0.398	0.370
10 1999	0.0	9.250	9.250	12.010	2.760	0.321	0.296
11 2000	2.470	9.250	11.720	12.010	0.290	0.027	0.025
12 2001	0.0	9.250	9.250	12.010	2.760	0.209	0.190
13 2002	0.0	9.250	9.250	12.010	2.760	0.168	0.152
14 2003	0.0	9.250	9.250	12.010	2.760	0.136	0.121
15 2004	0.0	9.250	9.250	12.010	2.760	0.110	0.097
16 2005	0.050	9.250	9.300	12.010	2.710	0.087	0.076
17 2006	0.0	9.250	9.250	12.010	2.760	0.071	0.062
18 2007	0.0	9.250	9.250	12.010	2.760	0.057	0.050
19 2008	0.0	9.250	9.250	12.010	2.760	0.046	0.040
20 2009	0.0	9.250	9.250	12.010	2.760	0.037	0.032
21 2010	2.470	9.250	11.720	12.010	0.290	0.003	0.003
22 2011	0.0	9.250	9.250	12.010	2.760	0.024	0.020
23 2012	0.0	9.250	9.250	12.010	2.760	0.020	0.016
24 2013	0.0	9.250	9.250	12.010	2.760	0.016	0.013
25 2014	0.0	9.250	9.250	12.010	2.760	0.013	0.010
TOTAL	19.820	208.920	228.740	271.980	43.240	0.174	-0.016

[R R = 25 ----- 24 + 0.17 / (0.17 + 0.02) = 24.91

Table J.6-6 Project Economic Cost and Return
-Recla. + Electric + Water Supply-

(UNIT : MILLION L.E.)

YEAR	PROJECT COST			INCREMENTAL BENEFITS	PROJECT RETURN	PRESENT WORTH VALUE	
	CAPITAL	O & M	TOTAL (1)	(2)	(3) =(2)-(1)	(3)*DISCOUNT RATE (13 %)	(14 %)
1 1985	1.610	0.0	1.610	0.0	-1.610	-1.425	-1.412
2 1986	5.220	0.0	5.220	0.0	-5.220	-4.088	-4.017
3 1987	3.810	0.0	3.810	0.0	-3.810	-2.641	-2.572
4 1988	1.880	0.140	2.020	0.0	-2.020	-1.239	-1.196
5 1989	4.920	0.140	5.060	0.0	-5.060	-2.746	-2.628
6 1990	9.100	0.160	9.260	0.0	-9.260	-4.448	-4.219
7 1991	7.730	1.660	9.390	0.190	-9.200	-3.911	-3.677
8 1992	4.850	3.000	7.850	2.170	-5.680	-2.137	-1.991
9 1993	0.0	2.930	2.930	6.320	3.390	1.128	1.042
10 1994	0.0	2.930	2.930	9.000	6.070	1.788	1.637
11 1995	0.0	2.930	2.930	10.280	7.350	1.916	1.739
12 1996	0.0	2.930	2.930	11.350	8.420	1.943	1.748
13 1997	0.0	3.980	3.980	12.100	8.120	1.658	1.478
14 1998	0.0	4.200	4.200	12.700	8.500	1.536	1.358
15 1999	0.0	3.890	3.890	13.220	9.330	1.492	1.307
16 2000	0.0	2.930	2.930	13.410	10.480	1.483	1.288
17 2001	0.330	3.370	3.700	13.450	9.750	1.221	1.051
18 2002	0.0	4.490	4.490	13.450	8.960	0.993	0.847
19 2003	0.0	5.170	5.170	13.450	8.280	0.812	0.687
20 2004	0.0	4.610	4.610	13.450	8.840	0.767	0.643
21 2005	0.0	2.930	2.930	13.450	10.520	0.808	0.671
22 2006	0.0	3.080	3.080	13.450	10.370	0.705	0.581
23 2007	0.0	3.980	3.980	13.450	9.470	0.570	0.465
24 2008	0.0	4.210	4.210	13.450	9.240	0.492	0.398
25 2009	0.0	3.890	3.890	13.450	9.560	0.450	0.361
26 2010	0.0	2.930	2.930	13.450	10.520	0.439	0.349
27 2011	0.0	2.930	2.930	13.450	10.520	0.388	0.306
28 2012	0.0	4.490	4.490	13.450	8.960	0.292	0.229
29 2013	0.0	5.760	5.760	13.450	7.690	0.222	0.172
30 2014	0.0	4.610	4.610	13.450	8.840	0.226	0.174
31 2015	0.0	2.930	2.930	13.450	10.520	0.238	0.181
32 2016	0.0	2.930	2.930	13.450	10.520	0.211	0.159
33 2017	0.0	3.980	3.980	13.450	9.470	0.168	0.125
34 2018	0.0	4.980	4.980	13.450	8.470	0.133	0.098
35 2019	0.0	3.890	3.890	13.450	9.560	0.133	0.097
36 2020	0.0	2.930	2.930	13.450	10.520	0.129	0.094
37 2021	0.0	2.930	2.930	13.450	10.520	0.114	0.083
38 2022	0.0	4.490	4.490	13.450	8.960	0.086	0.062
39 2023	0.0	5.170	5.170	13.450	8.280	0.070	0.050
40 2024	0.0	4.610	4.610	13.450	8.840	0.067	0.047
41 2025	0.0	2.930	2.930	13.450	10.520	0.070	0.049
42 2026	0.0	3.040	3.040	13.450	10.410	0.061	0.042
43 2027	0.0	3.980	3.980	13.450	9.470	0.049	0.034
44 2028	0.0	4.980	4.980	13.450	8.470	0.039	0.027
45 2029	0.0	3.890	3.890	13.450	9.560	0.039	0.026
46 2030	0.0	2.930	2.930	13.450	10.520	0.038	0.025
47 2031	0.0	3.080	3.080	13.450	10.370	0.033	0.022
48 2032	0.0	4.490	4.490	13.450	8.960	0.025	0.017
49 2033	0.0	5.170	5.170	13.450	8.280	0.021	0.013
50 2034	0.0	4.610	4.610	13.450	8.840	0.020	0.013
TOTAL	39.450	166.210	205.660	548.040	342.380	0.440	-1.915

I R R = 13 ..... 13 + 0.44 / (0.44 + 1.92) = 13.19

Table J.6-7 Project Economic Cost and Return
-Recla. + Electric + Water Supply (case-7)-

(UNIT : MILLION L.E.)

YEAR	PROJECT COST			INCREMENTAL BENEFITS (2)	PROJECT RETURN (3) =(2)-(1)	PRESENT WORTH VALUE (3)×DISCOUNT RATE	
	CAPITAL	O & M	TOTAL (1)			(11 %)	(12 %)
1 1985	1.610	0.0	1.610	0.0	-1.610	-1.450	-1.438
2 1986	5.220	0.0	5.220	0.0	-5.220	-4.237	-4.161
3 1987	3.810	0.0	3.810	0.0	-3.810	-2.786	-2.712
4 1988	1.880	0.140	2.020	0.0	-2.020	-1.331	-1.284
5 1989	4.920	0.140	5.060	0.0	-5.060	-3.003	-2.871
6 1990	9.100	0.160	9.260	0.0	-9.260	-4.951	-4.691
7 1991	7.730	1.660	9.390	0.190	-9.200	-4.431	-4.162
8 1992	4.850	3.000	7.850	2.170	-5.680	-2.465	-2.294
9 1993	0.0	2.930	2.930	5.060	2.130	0.833	0.768
10 1994	0.0	2.930	2.930	7.740	4.810	1.694	1.549
11 1995	0.0	2.930	2.930	9.020	6.090	1.932	1.751
12 1996	0.0	2.930	2.930	10.090	7.160	2.047	1.838
13 1997	0.0	3.980	3.980	10.840	6.860	1.767	1.572
14 1998	0.0	4.200	4.200	11.440	7.240	1.680	1.481
15 1999	0.0	3.890	3.890	11.960	8.070	1.687	1.474
16 2000	0.0	2.930	2.930	12.150	9.220	1.736	1.504
17 2001	0.330	3.370	3.700	12.190	8.490	1.440	1.237
18 2002	0.0	4.490	4.490	12.190	7.700	1.177	1.001
19 2003	0.0	5.170	5.170	12.190	7.020	0.967	0.815
20 2004	0.0	4.610	4.610	12.190	7.580	0.940	0.786
21 2005	0.0	2.930	2.930	12.190	9.260	1.035	0.857
22 2006	0.0	3.080	3.080	12.190	9.110	0.917	0.753
23 2007	0.0	3.980	3.980	12.190	8.210	0.745	0.606
24 2008	0.0	4.210	4.210	12.190	7.980	0.652	0.526
25 2009	0.0	3.890	3.890	12.190	8.300	0.611	0.488
26 2010	0.0	2.930	2.930	12.190	9.260	0.614	0.486
27 2011	0.0	2.930	2.930	12.190	9.260	0.553	0.434
28 2012	0.0	4.490	4.490	12.190	7.700	0.414	0.322
29 2013	0.0	5.760	5.760	12.190	6.430	0.312	0.240
30 2014	0.0	4.610	4.610	12.190	7.580	0.331	0.253
31 2015	0.0	2.930	2.930	12.190	9.260	0.364	0.276
32 2016	0.0	2.930	2.930	12.190	9.260	0.328	0.246
33 2017	0.0	3.980	3.980	12.190	8.210	0.262	0.195
34 2018	0.0	4.980	4.980	12.190	7.210	0.207	0.153
35 2019	0.0	3.890	3.890	12.190	8.300	0.215	0.157
36 2020	0.0	2.930	2.930	12.190	9.260	0.216	0.157
37 2021	0.0	2.930	2.930	12.190	9.260	0.195	0.140
38 2022	0.0	4.490	4.490	12.190	7.700	0.146	0.104
39 2023	0.0	5.170	5.170	12.190	7.020	0.120	0.084
40 2024	0.0	4.610	4.610	12.190	7.580	0.117	0.081
41 2025	0.0	2.930	2.930	12.190	9.260	0.128	0.089
42 2026	0.0	3.040	3.040	12.190	9.150	0.114	0.078
43 2027	0.0	3.980	3.980	12.190	8.210	0.092	0.063
44 2028	0.0	4.980	4.980	12.190	7.210	0.073	0.049
45 2029	0.0	3.890	3.890	12.190	8.300	0.076	0.051
46 2030	0.0	2.930	2.930	12.190	9.260	0.076	0.050
47 2031	0.0	3.080	3.080	12.190	9.110	0.068	0.044
48 2032	0.0	4.490	4.490	12.190	7.700	0.051	0.033
49 2033	0.0	5.170	5.170	12.190	7.020	0.042	0.027
50 2034	0.0	4.610	4.610	12.190	7.580	0.041	0.026
TOTAL	39.450	166.210	205.660	495.120	289.460	2.362	-0.765

I R R = 12 ..... 11 + 2.36 / (2.36 + 0.77) = 11.76

Table J.6-8 Project Economic Cost and Return
-Recla. + Social + Processing (case-8)-

(UNIT : MILLION L.E.)

YEAR	PROJECT COST			INCREMENTAL BENEFITS	PROJECT RETURN	PRESENT WORTH VALUE	
	CAPITAL	O & M	TOTAL (1)	(2)	(3) =(2)-(1)	(3)*DISCOUNT RATE (10 %)	(11 %)
1 1985	16.100	0.0	16.100	0.0	-16.100	-14.636	-14.505
2 1986	5.220	0.0	5.220	0.0	-5.220	-4.314	-4.237
3 1987	3.870	0.0	3.870	0.0	-3.870	-2.908	-2.830
4 1988	2.360	0.410	2.770	0.0	-2.770	-1.892	-1.825
5 1989	6.720	0.410	7.130	0.0	-7.130	-4.427	-4.231
6 1990	12.960	0.580	13.540	0.0	-13.540	-7.643	-7.239
7 1991	13.940	6.550	20.490	6.320	-14.170	-7.271	-6.825
8 1992	10.090	10.680	20.770	11.700	-9.070	-4.231	-3.936
9 1993	3.290	14.550	17.840	20.660	2.820	1.196	1.102
10 1994	2.640	16.370	19.010	25.800	6.790	2.618	2.391
11 1995	2.830	16.930	19.760	27.980	8.220	2.881	2.608
12 1996	0.0	16.930	16.930	29.050	12.120	3.862	3.464
13 1997	0.0	17.980	17.980	29.800	11.820	3.424	3.044
14 1998	0.0	18.200	18.200	30.400	12.200	3.213	2.830
15 1999	6.320	17.890	18.210	30.920	12.710	3.043	2.656
16 2000	2.470	16.930	19.400	31.110	11.710	2.548	2.205
17 2001	0.330	17.370	17.700	31.150	13.450	2.661	2.282
18 2002	0.0	18.490	18.490	31.150	12.660	2.277	1.935
19 2003	0.0	19.170	19.170	31.150	11.980	1.959	1.649
20 2004	0.030	18.610	18.640	31.150	12.510	1.860	1.552
21 2005	0.050	16.930	16.980	31.150	14.170	1.915	1.583
22 2006	0.0	17.080	17.080	31.150	14.070	1.728	1.416
23 2007	0.0	17.980	17.980	31.150	13.170	1.471	1.194
24 2008	0.0	18.210	18.210	31.150	12.940	1.314	1.057
25 2009	0.320	17.890	18.210	31.150	12.940	1.194	0.953
26 2010	2.470	16.930	19.400	31.150	11.750	0.986	0.779
27 2011	0.0	16.970	16.970	31.150	14.180	1.082	0.847
28 2012	0.0	18.490	18.490	31.150	12.660	0.878	0.681
29 2013	0.0	19.760	19.760	31.150	11.390	0.718	0.552
30 2014	0.240	18.610	18.850	31.150	12.300	0.705	0.537
31 2015	1.320	16.930	18.250	31.150	12.900	0.672	0.508
32 2016	2.170	16.930	19.100	31.150	12.050	0.571	0.427
33 2017	1.690	17.980	19.670	31.150	11.480	0.494	0.367
34 2018	0.0	18.980	18.980	31.150	12.170	0.476	0.350
35 2019	0.0	17.980	17.980	31.150	13.170	0.469	0.341
36 2020	0.0	16.930	16.930	31.150	14.220	0.460	0.332
37 2021	0.320	16.930	17.250	31.150	13.900	0.409	0.292
38 2022	2.470	18.490	20.960	31.150	10.190	0.272	0.193
39 2023	0.0	19.170	19.170	31.150	11.980	0.291	0.205
40 2024	0.0	18.610	18.610	31.150	12.540	0.277	0.193
41 2025	0.0	16.930	16.930	31.150	14.220	0.286	0.197
42 2026	0.300	17.040	17.340	31.150	13.810	0.252	0.172
43 2027	0.050	17.980	18.030	31.150	13.120	0.218	0.148
44 2028	0.0	18.980	18.980	31.150	12.170	0.184	0.123
45 2029	0.0	17.890	17.890	31.150	13.260	0.182	0.121
46 2030	0.0	16.930	16.930	31.150	14.220	0.177	0.117
47 2031	0.320	17.080	17.400	31.150	13.750	0.156	0.102
48 2032	2.470	18.490	20.960	31.150	10.190	0.105	0.068
49 2033	0.0	19.170	19.170	31.150	11.980	0.112	0.072
50 2034	0.0	18.610	18.610	31.150	12.540	0.107	0.068
TOTAL	97.360	764.930	862.290	1302.840	440.550	2.379	-3.909

I R R = 10 ..... 10 + 2.38 / (2.38 + 3.91) = 10.38

APPENDIX J-7 Financial Analysis

Table J.7-1 Farm Budget of 5.0 Feddan in 2000
- North Wahby and Com Osheem Area -

Item	Unit	Q'ty	Unit Price(LE/ton)	
1. Size of Farm	feddan	5.0	Case 1	Case 2
2. Net Cultivated Land	"	4.8	(Average)	(Low)
3. Cropped Area				
Summer: Sorghum	"	1.2	-	-
Watermelon	"	1.2	175	130
Groundnut	"	1.2	600	467
Winter: Berseem	"	2.4	-	-
Wheat	"	0.6	200	167
Tomato	"	0.6	100 (Domestic)	50 (Domestic)
Olive	"	0.48	500	400
Orange	"	0.36	309	250
Mango	"	0.24	880	650
Guava	"	0.12	200	150
Total		8.40		
4. Number of Cattle				
for fattening	head	0.9		
for milking	"	2.0		
5. Gross Income			(Case 1)	(Case 2)
Crop			3,792	2,638
Fruits			4,005	3,126
Animal			1,840	1,840
Total			9,637	7,604
6. Production Cost				
Crop			894	894
Fruits			835	835
Animal			1,454	1,454
Total			3,183	3,183
7. Farm Income			(Case 1)	(Case 2)
			6,454	4,421
8. Annual Amortization			1,050	1,050
9. Irrigation Water Charge			240	240
10. Disposal Income			(Case 1)	(Case 2)
			5,164	3,131
11. Cost of living:				
Case 1(Coefficient of Engel 50%)			3,700	3,700
Case 2(- do - 60%)			3,000	3,000
Case 3(- do - 70%)			2,640	2,640
12. Balance:Case 1			1,464	(-)569
Case 2			2,164	131
Case 3			2,524	491

Table J.7-2 Farm Budget of 15 and 20 feddan in 2000

- North Wahby and Com Osheem Area -

Item	Unit	15 feddans		20 feddans	
1. Size of Farm	feddan	15.0		20.0	
2. Net Cultivated Land	"	14.4		19.2	
3. Cropped Area					
Summer: Sorghum	"	3.6		4.8	
Watermelon	"	3.6		4.8	
Groundnut	"	3.6		4.8	
Winter: Berseem	"	7.2		9.6	
Wheat	"	1.8		4.4	
Tomato	"	1.8		2.4	
Olive	"	1.44		1.92	
Orange	"	1.08		1.44	
Mango	"	0.72		0.96	
Guava	"	0.36		0.48	
Total		25.20		35.60	
4. Number of Cattle					
for fattening	head	2.7		3.6	
for milking	"	6.0		8.0	
5. Gross Income		(Case 1)	(Case 2)	(Case 1)	(Case 2)
Crop	LE	11,376	7,914	15,168	10,552
Fruits	"	12,015	9,378	16,020	12,504
Animal	"	5,520	5,520	7,360	7,360
Total		28,911	22,812	38,548	30,416
6. Production Cost	"	14,697	14,697	20,348	20,348
7. Farm income	"	14,214	8,115	18,200	10,068
8. Annual Amortization	"	3,260	3,260	4,290	4,290
9. Irrigation Water Charge	"	720	720	960	960
10. Disposal Income	"	10,234	4,135	12,950	4,818
11. Cost of living					
Case 1		3,700	3,700	3,700	3,700
Case 2		3,000	3,000	3,000	3,000
12. Balance					
Case 1(Engels' Coeff 50%)		6,534	435	9,250	1,118
Case 2(- do - 60%)		7,234	1,135	9,950	1,818

Table J.7-3 Condition of Amortization for New Settler used in the Financial Analysis

Item	Unit	5 feddan	15 & 20 feddan
Reclamed Land	LE/fed	4,000	4,000
House	LE	3,060	4,140
Terminal Irrigation Facilities	LE	4,000	12,000 & 16,000
Repayment Period	years	25	25
Grace Period	years	5	5
Interest	%	0 to 8%	1.0 to 8%

Table J.7-4 Living Cost Forecast

Monthly food cost per average farm family	60 L.E.
Annual food cost	60 L.E. x 12 month = 720 L.E.
Annual living cost	720 ÷ 0.6(Engels' coefficient) = 1,200 L.E.
Annual growth rate of living cost	5.7 %
Living cost forecasted up-to the 2,000 years	1,200 L.E. x $1,057^{17}$ (1984 to 2000 years) = 1,200 x 2.566 = 3,080 ≒ 3,000 L.E.

Table J.7-5 Farm Economy at Present
- Farm Management Survey -

Item	Unit	Income	Per fed.	Average Farm
Acreage of field	(fed.)	7.6		2.8
No. of family	(person)	8.2		
No. of Cattle	(head)	4.2		
Gross income				
Summer Crop	L.E.	721	95	266
Winter Crop	"	1,419	187	524
Sub-total	"	(2,139)	(282)	(790)
Animal		850	112	314
Total G.I	"	2,989	394	1,104
Production Cost				
Summer Crop	"	424	56	157
Winter Crop	"	856	113	315
Sub-total	"	(1,280)	(169)	(473)
Animal	"	860	113	316
Total Cost	"	2,140	282	789
Net farm income		849	112	315
Farm income				
Case 1		1,527	202	565
Case 2		1,600	212	594
Case 3		1,694	224	627

Note: 1. Wage on operator and his family labor is included in production cost. This farm labor cost is not clear. Then a proportion of family labor cost to total labor cost is assumed at 80% of Case 1, 90% of Case 2 and 100% of Case 3.
2. The personal foods cost per farm household is roughtly estimated at around L.E. 60 per month or LE.720 per year.
3. Farm income of average size farm in Case 3 is not eought to pay L.E. 720 of foods cost per year. Hence they have to look for another job.

Source: Farm management survey conducted by the study team.

Table J.7-6 Farm Budget in Wahby Downstream Area

	Item	Unit	Without Project	With Project
1.	Arable land	fed.	2.8	2.8
2.	Cropped Area	fed.		
	Berseem		1.0	1.2
	Wheat		0.6	0.8
	Barley		0.2	0.2
	Beans		0.1	0.1
	Tomato		0.2	0.4
	Cotton		0.1	0.1
	Maize		0.5	0.8
	Millet		0.8	1.1
	Sesame		0.04	0.04
	Sunflower		0.06	0.06
	Total		3.6	4.8
3.	Cropping intensity	%	130	170
4.	Number of Cattle	head	1.3	2.0
5.	Gross income	L.E		
	Crop Husbandry		744	1,497
	Animal Husbandry		1,085	1,574
	Total		1,829	3,071
6.	Production Cost (excluding family labor cost)	L.E		
	Crop Husbandry		531	703
	Animal Husbandry		645	695
	Total		1,176	1,398
7.	Farm income		653	1,673

Note: 1. Farm bridget without Project is short to pay a living cost, then side job is necessary.

2. Farm budget with Project would be enough to pay a living cost. But this value is less than that of settler in North Wahby and Com Osheem Area.

3. As an incremental water charge per feddan is only one pound, it is easily paid by an incremental farm income.

Table J.7-7 Farm Budget in South Area of Lake Qarun

Item	Unit	Bats Said and Abu Tarfaya Area Without Project	Bats Said and Abu Tarfaya Area With Project	Abu Harawa Area Without Project	Abu Harawa Area With Project
1. Arable Land	fed.	2.8	2.8	2.8	2.8
2. Cropping Intensity	%	140	153	100	179
3. Cropped Area	fed.				
Berseem		1.32	1.42	0.7	1.54
Wheat		0.59	0.64	0.30	0.67
Beans		0.14	0.14	0.08	0.20
Barley		0.06	0.06	0.03	0.08
Tomato		0.08	0.06	-	-
Onion		-	0.03	-	-
Cotton		0.45	0.50	0.45	0.67
Maize		0.64	0.70	0.34	0.50
Millet		0.59	0.73	0.90	1.34
Sunflower		0.06	-	-	-
Total		3.93	4.28	2.80	5.0
4. Gross Income	L.E.				
Crop Husbandry		855	1,079	662	1,221
Animal Husbandry		670	765	770	801
Sub-total		1,525	1,844	1,432	2,022
5. Production Cost (excluding family labor cost)	L.E.	577	736	776	877
6. Farm Income		869	1,108	656	1,145

Note: 1. As the incremental water charge per feddan is only about eight pound, it is easily paid by the incremental farm income.

2. The functional role of the Project is not to develop actively the agricultural production, but to recover the agricultural productivity having fallen because of the rise of the Lake Qarun water level. Hence the incremental farm income is not so much. This would be useful to supplement the living cost rising.