item will increase 9.9% annually. Depreciation cost will be 1.87 times bigger than revenue in 2001/2002.

3) Deficit

Deficit will be worse from LE 133 million to LE 294 million in 2001/2002. Main reason of deficit will be caused by huge depreciation cost. In particular, construction cost for line 2 is very large amount. As a result, depreciation cost will rise steadily.

9.1.4 Comparison of Proposals

(Tables 9.1.27, 9.1.28, 9.1.29, 9.1.30, 9.1.31, 9.1.32, 9.1.33, 9.1.34, 9.1.35, 9.1.36)
(Figures 9.1.1, 9.1.2, 9.1.3, 9.1.4, 9.1.5, 9.1.6, 9.1.7, 9.1.8)

The results of the financial forecast of each alternative are compared and evaluated. The summary of the results of the financial forecast are shown in table 9.1.27. According to these forecasts, ENR's financial situation in each of the 4 "With Cases" will improve compared with the "Without Case". Financial results will be improved every year over the period 95/96 through 2001/2002. However, both ENR (excluding Metro) and Metro are estimated to suffered from a deficit over the period 95/96 through 2001/2002. The main reasons are as follows.

Firstly, the growth rate of passenger-km will slow down, relative to the past 5 years. Passenger-km grew 7.2% annually in the past 5 years. However, even in "Without Case", the passenger-km growth rate will be 3.4% per year over the period 94/95-2001/2002. Secondly, depreciation cost will be a large burden. Thirdly, interest costs will be added after 1998/99. This is because investment is forecast to exceed depreciation, and ENR will need external debts to finance this.

(1) Comparison with "Without Case"

1) ENR (excluding Metro)

There are 4 "With Cases". Judging from the result of the financial forecasts, "With Case 1-1" is the Case with most improvement among the 4 cases. This section compares "Without Case" and "With Case 1-1".

The deficit of "Without Case" in 2001/02 is forecast at LE 660 million. The deficit of "With Case 1-1" in 2001/02 is LE 12 million. The deficit will improve by LE 648 million in 2001/2002, compared to "Without Case". The main reasons for improvement are as shown in figure 9.1.3.

First, the impact of revenue increase is as follows. The higher rate of tariff increase in "With Case 1-1" will raise revenues by LE 60 million. Strengthening ticket inspection will increase revenue add LE 53 million. Compensation for excessive ticket discounts will add LE 62 million. Contribution of diversified businesses adds LE 5 million.

Second, the impact of cost savings is as follows. Zero recruiting will reduce personnel costs by LE 229 million. Interest cost will be fall by LE 200 million. Depreciation will fall by LE 56 million. The impact of line closure will be only LE 3 million.

Passenger-km in "With Case 1-1" is 2% lower than "Without Case". This will reduce revenues by LE 19 million.

From the break even point analysis point of view, there are big differences in terms of fixed cost between "With Case 1-1" and "Without Case". For example, fixed costs are estimated to be

around LE 1,012 million and LE 1,517 million respectively for "With Case 1-1" and "Without Case". 85% of the difference of fixed costs arise from wage and interest costs.

As for value added analysis, there are also big differences between "With Case 1-1" and "Without Case". In the "Without Case", value added will amount to LE 604 million in 2001/2002. Value added will increase at an annual rate of 9% for the period 94/95-2001/2002. On the other hand, in the case of "With Case 1-1", value added will be around LE 767 million in 2001/2002. Value added will rise 12.8% per year for the same period. In "With Case 1-1", the ratio of (personnel cost ÷ value added) and ratio of (personnel cost ÷ revenue) will improve from 88% to 51%, and from 47% to 34% respectively compared with "Without Case" in 2001/02.

As mentioned above, ENR's financial situation will improve, but there is still an important issue -- cash flow.
From the cash flow point of view, in the "Without Case" free cash flow will be negative from 94/95 through 2001/2002. In "With Case 1-1", free cash flow will continue to be negative but cash flow will be positive. Investments are estimated to be around LE 644 million per year over the period 95/96 through 2001/2002 in the "Without Case". In "With Case 1-1, average annual investment forecast at about LE 451 million. In both cases, investment will exceed depreciation. Therefore free cash flow will be negative, and need external debts. According to our forecast, debt will be accumulated to LE 3,235 million in 2001/2002 in the "Without Case". Even in "With Case 1-1", debt will be accumulated to around LE 981 million.

As for fixed assets turnover ratio, the ratio in "Without Case" is forecast at 0.0871 in 94/95, and 0.0957 in 2001/02. This ratio in 2001/02 is forecast at a better 0.112 in "With Case 2-1, and 0.113 in "With Case 1-1". These figures are shown in figure 9.1.8. The differences of these forecasts arise mainly from differences of investment amount. By keeping investment low compared with past, the ratio will increase.

2) Metro
The difference between "With Case" and "Without Case" arise from the difference of the rate of tariff increase. Metro will suffered from deficit in both "With Case" and "Without Case". However, there is no big difference in terms of deficit in both cases. For example, deficit will amount to LE 311 million in "Without Case" in 2001/02. In "With Case", deficit will amount to LE 295 million in 2001/02.

(2) Comparison to 4 "With Cases"

The difference between "Without Case" and the 4 "With Cases" are tariff raises and staff recruitment, as explained in Chapter 5. When comparing Case 1-1 & 2-1 versus 1-2 & 2-2, the results of financial forecast of Case 1-1 & 2-1 are better than for Case 1-2 & 2-2, due to the difference of recruitment. Financial forecasts of Case 1-1 & 1-2 are better than Case 2-1 & 2-2 due to the difference of capital costs. The difference of capital cost result different traffic volume forecast. In summary, Case 1-1 has the best financial result.

(3) Comparison to "Without government support"

The government plans to cut financial support to ENR from 98/99 as explained in section 3.8.

If government support is terminated as scheduled, ENR must depend on external debt and pay interest on new loans after 98/99. Because ENR will suffer from a deficit over the period 95/96-2000/2001, according to the forecast of financial statement.

1) Result of "Without Case"

If government support is terminated with regard to finance from 98/99, ENR has to pay large interest costs and its deficit will amount to LE 660 million in 2001/2002.
As shown in Table 9.1.20, external debt will accumulate to around LE 3,235 million in 2001/02. Interest cost also will grow from LE 84 million in 98/99 to LE 286 million in 2001/02.

2) Result of 4 "With Cases"

In the 4 "With Cases", the difference between government support and no support is forecast to range from LE 85 million to LE 140 million. For example, if there is government support, profit will be from LE 46 to LE 79 million in 2001/02. Without government support, the deficit range from LE 12 million to LE 90 million in 2001/02. However, even in "With Case 1-1, external debts will accumulate to about LE 981 million in 2001/02. As long as free cash flow is negative, external debts will expand as shown in Tables 9.1.20 to 9.1.26. Expanding external debts would be the start of the vicious circle ENR experienced in the 1980's. To stop expanding debts, profit should be maintained and free cash flow should be positive. To do so, appropriate government support and control of investment should be inevitable.

Table 9.1.1 **Without-case**

Income statement of ENR (excluding Metro) (unit million LE)

	Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Total Revenues	618.4	650.36	701.60	785.13	868.77	940.55	1024.42	1111.17
Total income from operations	493.9	533.36	582.60	666.13	747.77	819.55	900.42	987.17
Passenger revenue	332.2	349.76	380.13	433.23	480.56	521.45	565.80	613.82
Freight revenue	154.7	175.59	194.47	224.90	257.21	288.09	322.63	361.35
ENR share in dining and sleeping	4.1	5	5	5	7	7	9	9
Profit from share in Co.'s	2.9	3	3	3	3	3	3	3
Internal operations	6.2	6	6	6	6	6	6	6
Operations for others	13.2	6	6	6	6	6	6	6
miscellaneous revenues	105.1	105	107	107	109	109	112	112
Total expenses	814.3	890.87	974.21	1056.13	1228.39	1395.92	1598.26	1771.05
Wages	289.2	318.84	364.37	405.75	451.62	502.75	559.66	620.20
Material inputs	224.6	244.07	265.23	288.25	313.10	340.12	369.51	399.63
Service inputs	52.2	56.73	61.65	67.00	72.78	79.06	85.89	92.89
Interest	0	0	0	0.00	83.54	155.51	215.76	285.72
Depreciation	236.6	256.23	267.96	280.13	292.35	303.48	352.44	357.61
Other expenses	11.7	15	15	15	15	15	15	15
Profit	-195.9	-240.51	-272.61	-271.00	-359.62	-455.38	-573.84	-659.88
revenue-expence(ex depreciation)	40.7	15.72	-4.64	9.13	-67.27	-151.89	-221.40	-302.28
Profit(without government support)					-359.62	-455.38	-573.84	-659.88
Ratios excluding Depreciation %	107.05	102.48	99.34	101.18	92.81	86.10	82.23	78.61
Ratios including Depreciation %	75.94	73.00	72.02	74.34	70.72	67.38	64.10	62.71

Table 9.1.2 **With case 1-1**

Income statement of ENR(excluding Metro) (unit: million LE)

	Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Total Revenues	618.4	644.08	688.07	773.95	920.09	1010.36	1118.63	1231.19
Total income from operations	493.9	527.08	569.07	642.65	722.19	799.46	886.94	982.56
Passenger revenue	332.2	343.48	366.59	409.75	452.60	493.58	537.65	586.10
Freight revenue	154.7	175.59	194.47	224.90	259.59	295.88	337.29	384.46
ENR share in dining and sleeping	4.1	5	5	5	7	7	9	9
Profit from share in Co's	2.9	3	3	3	3	3	3	3
diversified business					7.2	8	8.8	9.8
Internal operations	6.2	6	6	6	6	6	6	6
Operations for others	13.2	6	6	6	6	6	6	6
miscellaneous revenues	105.1	105	107	107	109	109	112	112
ticket inspection				12.3	21.7	29.6	41.9	52.7
Total expenses	814.3	880.39	925.35	972.11	1054.91	1130.60	1184.74	1243.22
Wages	289.2	318.84	332.25	346.03	359.88	370.34	377.42	391.68
Material inputs	224.6	240.21	256.93	274.84	294.93	316.55	339.82	363.17
Service inputs	52.2	55.83	59.72	63.88	68.55	73.57	78.98	84.41
Interest	0	0	0	0.00	32.89	61.78	75.67	85.88
Depreciation	236.6	250.51	261.45	272.36	283.05	292.36	296.45	301.17
Other expenses	11.7	15	15	15	18.6	19	19.4	19.9
close					-3	-3	-3	-3
Profit	-195.9	-236.31	-237.28	-198.15	-134.82	-120.23	-66.11	-12.03
revenue-expence(ex depreciation)	40.7	14.20	24.17	74.21	148.24	172.13	230.34	289.14
Profit(without government support)					-134.82	-120.23	-66.11	-12.03
Profit(with government support)					-101.93	-58.46	9.56	73.85
compensation(excessive discount)					48.0	52.3	57.0	62.1
Ratios excluding Depreciation %	107.05	102.25	103.64	110.60	119.21	120.53	125.93	130.69
Ratios including Depreciation %	75.94	73.16	74.36	79.62	87.22	89.37	94.42	99.03

Table 9.1.3 **With case 1-2**

Income statement of ENR(excluding Metro) (unit: million LE)

	Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Total Revenues	618.4	644.08	688.07	773.95	920.07	1010.38	1118.63	1231.19
Total income from operations	493.9	527.08	569.07	642.65	722.19	799.46	886.94	982.56
Passenger revenue	332.2	343.48	366.59	409.75	452.60	493.58	537.65	586.10
Freight revenue	154.7	175.59	194.47	224.90	259.59	295.88	337.29	384.46
ENR share in dining and sleeping	4.1	5	5	5	7	7	9	9
Profit from share in Co's	2.9	3	3	3	3	3	3	3
diversified business					7.2	8	8.8	9.8
Internal operations	6.2	6	6	6	6	6	6	6
Operations for others	13.2	6	6	6	6	6	6	6
miscellaneous revenues	105.1	105	107	107	109	109	112	112
ticket inspection				12.3	21.7	29.6	41.9	52.7
Total expenses	814.3	880.39	931.41	983.57	1073.32	1157.37	1221.78	1292.11
Wages	289.2	318.84	358.31	357.49	376.62	393.10	406.97	419.56
Material inputs	224.6	240.21	256.93	274.84	294.93	316.55	339.82	363.17
Service inputs	52.2	55.83	59.72	63.88	68.55	73.57	78.98	84.41
Interest	0	0	0	0	34.56	65.89	83.16	96.90
Depreciation	236.6	250.51	261.45	272.36	283.05	292.36	296.45	301.17
Other expenses	11.7	15	15	15	18.6	19	19.4	19.9
close					-3	-3	-3	-3
Profit	-195.9	-236.31	-243.34	-209.62	-153.25	-147.09	-103.15	-50.93
revenue-expence(ex depreciation)	40.7	14.20	18.11	62.74	129.80	145.27	193.30	250.24
Profit(without government support)					-153.25	-147.09	-103.15	-50.93
Profit(with government support)					-118.69	-81.20	-19.99	45.97
compensation(excessive discount)					48.0	52.3	57.0	62.1
Ratios excluding Depreciation %	107.05	102.25	102.70	108.82	116.43	116.79	120.89	125.51
Ratios including Depreciation %	75.94	73.16	73.87	78.69	85.72	87.29	91.56	96.03

Table 9.1.4 **With case 2-1**

Income statement of ENR(excluding Metro) (unit: million LE)

	Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Total Revenues	618.4	650.36	701.60	797.56	957.23	1060.14	1183.57	1313.84
Total income from operations	493.9	533.36	582.60	665.56	754.35	842.10	941.77	1051.59
Passenger revenue	332.2	349.77	380.13	432.66	484.76	536.22	592.47	655.14
Freight revenue	154.7	175.59	194.47	224.90	259.59	295.88	337.29	384.46
ENR share in dining and sleeping	4.1	5	5	5	7	7	9	9
Profit from share in Co.'s	2.9	3	3	3	3	3	3	3
diversified business					7.2	8	8.8	9.8
Internal operations	6.2	6	6	6	6	6	6	6
Operations for others	13.2	6	6	6	6	6	6	6
miscellaneous revenues	105.1	105	107	107	109	109	112	112
ticket inspection				13	23.3	32.2	46.2	59
Total expenses	814.3	889.50	946.94	1006.00	1110.73	1210.78	1291.84	1369.71
Wages	289.2	318.84	334.85	350.12	364.87	376.44	384.90	391.68
Material inputs	224.6	244.07	265.23	288.25	313.15	340.23	369.69	399.89
Service inputs	52.2	56.73	61.65	67	72.79	79.09	85.94	92.96
Interest	0	0	0	0.00	43.43	84.12	111.12	134.83
Depreciation	236.6	254.86	270.21	285.62	300.90	314.89	323.78	333.44
Other expenses	11.7	15	15	15	18.6	19	19.4	19.9
close					-3	-3	-3	-3
Profit	-195.9	-239.14	-245.34	-208.44	-153.49	-150.64	-108.27	-55.87
revenue-expence(ex depreciation)	40.7	15.72	24.87	77.18	147.40	164.25	215.52	277.57
Profit(without government support)					-153.49	-150.64	-108.27	-55.87
Profit(with government support)					-110.07	-66.52	2.86	78.96
compensation(excessive discount)					51.4	56.8	62.8	69.4
Ratios excluding Depreciation %	107.05	102.48	103.68	110.71	118.20	118.33	122.26	126.79
Ratios including Depreciation %	75.94	73.12	74.09	79.28	86.18	87.56	91.62	95.92

Table 9.1.5 **With case 2-2**

Income statement of ENR(excluding Metro) (unit: million LE)

	Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Total Revenues	618.4	650.36	701.60	797.56	957.23	1060.14	1183.57	1313.84
Total income from operations	493.9	533.36	582.60	665.56	754.35	842.10	941.77	1051.59
Passenger revenue	332.2	349.77	380.13	432.66	484.76	536.22	592.47	655.14
Freight revenue	154.7	175.59	194.47	224.90	259.59	295.88	337.29	384.46
ENR share in dining and sleeping	4.1	5	5	5	7	7	9	9
Profit from share in Co.'s	2.9	3	3	3	3	3	3	3
diversified business					7.2	8	8.8	9.8
Internal operations	6.2	6	6	6	6	6	6	6
Operations for others	13.2	6	6	6	6	6	6	6
miscellaneous revenues	105.1	105	107	107	109	109	112	112
ticket inspection				13	23.3	32.2	46.2	59
Total expenses	814.3	889.50	947.94	1009.55	1118.68	1223.88	1310.92	1404.39
Wages	289.2	318.84	335.84	353.68	372.09	387.63	400.34	419.56
Material inputs	224.6	244.07	265.23	288.25	313.15	340.23	369.69	399.89
Service inputs	52.2	56.73	61.65	67	72.79	79.09	85.94	92.96
Interest	0	0	0	0	44.15	86.04	114.77	141.63
Depreciation	236.6	254.86	270.21	285.62	300.90	314.89	323.78	333.44
Other expenses	11.7	15	15	15	18.6	19	19.4	19.9
close					-3	-3	-3	-3
Profit	-195.9	-239.14	-246.33	-211.99	-161.45	-163.74	-127.35	-90.55
revenue-expence(ex depreciation)	40.7	15.72	23.88	73.63	139.45	151.15	196.43	242.89
Profit(without government support)					-161.45	-163.74	-127.35	-90.55
Profit(with government support)					-117.30	-77.71	-12.58	51.08
compensation(excessive discount)					51.4	56.8	62.8	69.4
Ratios excluding Depreciation %	107.05	102.48	103.52	110.17	117.05	116.63	119.90	122.68
Ratios including Depreciation %	75.94	73.12	74.01	79.00	85.57	86.62	90.29	93.55

Table 9.1.6 **Without-case**

Income statement of Metro (unit million LE)

	Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Total Revenues	73.8	75.85	93.35	108.09	117.08	124.39	132.10	140.38
Total income from operations	70.9	75.43	93.54	104.34	110.98	118.07	125.59	133.62
Passenger revenue	70.9	72.85	90.35	105.09	114.08	121.39	129.10	137.38
miscellaneous revenues	2.9	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Total expenses	206.6	220.86	214.48	253.51	330.14	372.79	421.25	451.69
Wages	9.1	10.0	12.7	14.4	15.6	16.8	18.2	19.6
Material inputs	30.3	32.4	40	44.7	47.7	50.9	54.4	57.8
Service inputs	23.6	25.2	31.2	34.8	37.2	39.7	42.4	45.1
Interest	0	0.0	0.0	0.0	42.0	44.5	47.3	50.2
Depreciation	143.6	153.2	130.6	159.6	187.7	220.8	258.9	278.9
Other expenses	0	0	0	0	0	0	0	0
Profit	-132.8	-145.02	-121.13	-145.43	-213.06	-248.40	-289.15	-311.32
revenue-expence (ex depreciation)	10.8	8.21	9.48	14.22	-25.40	-27.59	-30.21	-32.39
Profit (without government support)					-213.1	-248.4	-289.1	-311.3
Ratios excluding Depreciation	117.1	112.1	111.3	115.1	82.2	81.8	81.4	81.2
Ratios including Depreciation	35.7	34.3	43.5	42.6	35.5	33.4	31.4	31.1

Table 9.1.7 **With case**

Income statement of Metro (unit million LE)

	Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Total Revenues	73.8	75.85	93.35	108.11	118.07	127.50	137.74	148.76
Total income from operations	70.9	76.73	96.79	109.82	118.83	128.60	139.15	150.59
Passenger revenue	70.9	72.85	90.35	105.11	115.07	124.50	134.74	145.76
miscellaneous revenues	2.9	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Total expenses	206.6	220.86	213.89	252.21	327.78	368.95	415.43	443.33
Wages	9.1	10.0	12.1	13.1	13.5	13.9	14.4	14.8
Material inputs	30.3	32.4	40	44.7	47.7	50.9	54.4	57.8
Service inputs	23.6	25.2	31.2	34.8	37.2	39.7	42.4	45.1
Interest	0.0	0.0	0.0	0.0	41.7	43.6	45.3	46.7
Depreciation	143.6	153.2	130.6	159.6	187.7	220.8	258.9	278.9
Other expenses	0	0	0	0	0	0	0	0
Depreciation(ope only)								
Profit	-132.8	-145.02	-120.55	-144.10	-209.71	-241.45	-277.68	-294.58
revenue-expence(ex depreciation)	10.8	8.2	10.1	15.5	-22.1	-20.6	-18.7	-15.7
Profit(without government support)					-209.7	-241.5	-277.7	-294.6
Profit(with government support)					-168.0	-197.8	-232.4	-247.8
Ratios excluding Depreciation	117.1	112.1	112.1	116.8	84.3	86.1	88.0	90.5
Ratios including Depreciation	35.7	34.3	43.6	42.9	36.0	34.6	33.2	33.6

Table 9.1.8 **Without-case**

Break Even Point Analysis of ENR(excluding Metro) (unit: million LE)

		Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Total Revenues	(A)	618.4	650.36	701.60	785.13	868.77	940.55	1024.42	1111.17
Total expenses	(E)	814.3	890.87	974.21	1056.13	1228.39	1395.92	1598.26	1771.05
Wages		289.2	318.84	364.37	405.75	451.62	502.75	559.66	620.20
Material inputs		224.6	244.07	265.23	288.25	313.10	340.12	369.51	399.63
Service inputs		52.2	56.73	61.65	67.00	72.78	79.06	85.89	92.89
Interest		0	0	0	0	83.54	155.51	215.76	285.72
Depreciation		236.6	256.23	267.96	280.13	292.35	303.48	352.44	357.61
Other expenses		11.7	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Fixed cost	(F)	670.05	732.97	803.27	871.00	1027.95	1178.83	1363.06	1517.29
Variable cost	(G)	144.25	157.90	170.94	185.13	200.44	217.09	235.20	253.76
Variable cost/Revenue	(G)/(A)	0.23	0.24	0.24	0.24	0.23	0.23	0.23	0.23
1-(variable cost/revenue)	1-(G)/(A)=(H)	0.77	0.76	0.76	0.76	0.77	0.77	0.77	0.77
Break Even Point Sale	(F)/(H)=(I)	873.90	967.98	1062.03	1139.74	1336.25	1532.57	1769.27	1966.35
Current Profit		-195.9	-240.51	-272.61	-271.00	-359.62	-455.38	-573.84	-659.88
BEP/Total Revenue	(I)/(A)	1.41	1.49	1.51	1.45	1.54	1.63	1.73	1.77

Source: JICA Study Team

Table 9.1.9 **With case 1-1**

Break Even Point Analysis of ENR(excluding Metro) (unit: million LE)

		Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Total Revenues	(A)	618.4	644.08	688.07	773.95	920.09	1010.36	1118.63	1231.19
Total expenses	(E)	814.3	880.39	925.35	972.11	1054.91	1130.60	1184.74	1243.22
Wages		289.2	318.84	332.25	346.03	359.88	370.34	377.42	391.68
Material inputs		224.6	240.21	256.93	274.84	294.93	316.55	339.82	363.17
Service inputs		52.2	55.83	59.72	63.88	68.55	73.57	78.98	84.41
Interest		0	0	0	0	32.89	61.78	75.67	85.88
Depreciation		236.6	250.51	261.45	272.36	283.05	292.36	296.45	301.17
Other expenses		11.7	15.00	15.00	15.00	18.60	19.00	19.40	19.90
close						-3.00	-3.00	-3.00	-3.00
Fixed cost	(F)	670.05	724.87	759.52	795.25	866.87	929.04	968.64	1012.48
Variable cost	(G)	144.25	155.52	165.83	176.86	188.04	201.56	216.10	230.74
Variable cost Revenue	(G)/(A)	0.23	0.24	0.24	0.23	0.20	0.20	0.19	0.19
1-(variable cost/revenue)	1-(G)/(A)=(H)	0.77	0.76	0.76	0.77	0.80	0.80	0.81	0.81
Break Even Point Sale	(F)/(H)=(I)	873.90	955.61	1000.69	1030.80	1089.54	1160.56	1200.57	1245.99
Current Profit		-195.9	-236.31	-237.28	-198.15	-134.84	-120.21	-66.11	-12.03
BEP/Total Revenue	(I)/(A)	1.41	1.48	1.45	1.33	1.18	1.15	1.07	1.01

Table 9.1.10 **With case 1-2**

Break Even Point Analysis of ENR(excluding Metro) (unit: million LE)

		Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Total Revenues	(A)	618.4	644.08	688.07	773.95	920.07	1010.38	1118.63	1231.19
Total expenses	(E)	814.3	880.39	931.41	983.57	1073.32	1157.47	1221.78	1282.11
Wages		289.2	318.84	338.31	357.49	376.62	393.10	406.97	419.56
Material inputs		224.6	240.21	256.93	274.81	294.93	316.55	339.82	363.17
Service inputs		52.2	55.83	59.72	63.88	68.55	73.57	78.98	84.41
Interest		0	0	0	0	34.56	65.89	83.16	96.90
Depreciation		236.6	250.51	261.45	272.36	283.05	292.36	296.45	301.17
Other expenses		11.7	15.00	15.00	15.00	18.60	19.00	19.40	19.90
close						-3.00	-3.00	-3.00	-3.00
Fixed cost	(F)	670.05	724.87	765.58	806.71	885.28	955.91	1005.68	1051.37
Variable cost	(G)	144.25	155.52	165.83	176.86	188.04	201.56	216.10	230.74
Variable cost Revenue	(G)/(A)	0.23	0.24	0.24	0.23	0.20	0.20	0.19	0.19
1-(variable cost/revenue)	1-(G)/(A)=(H)	0.77	0.76	0.76	0.77	0.80	0.80	0.81	0.81
Break Even Point Sale	(F)/(H)=(I)	873.90	955.61	1008.67	1045.66	1112.68	1194.13	1246.47	1293.86
Current Profit		-195.9	-236.31	-243.34	-209.62	-153.25	-147.09	-103.15	-50.93
BEP/Total Revenue	(I)/(A)	1.41	1.48	1.47	1.35	1.21	1.18	1.11	1.05

Table 9.1.11 **With case 2-1**

Break Even Point Analysis of ENR(excluding Metro) (unit: million LE)

		Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Total Revenues	(A)	618.4	650.36	701.60	797.56	957.23	1060.14	1183.57	1313.84
Total expenses	(E)	814.3	889.50	946.94	1006.00	1110.73	1210.78	1291.84	1369.71
Wages		289.2	318.84	334.85	350.12	364.87	376.44	384.90	391.68
Material inputs		224.6	244.07	265.23	288.25	313.15	340.23	369.69	399.89
Service inputs		52.2	56.73	61.65	67.00	72.79	79.09	85.94	92.96
Interest			0.00	0.00	0.00	43.43	84.12	111.12	131.83
Depreciation		236.6	254.86	270.21	285.62	300.90	314.89	323.78	333.44
Other expenses		11.7	15.00	15.00	15.00	18.6	19	19.4	19.9
close						-3.00	-3.00	-3.00	-3.00
Fixed cost	(F)	670.05	731.60	776.00	820.87	911.46	994.62	1057.32	1116.33
Variable cost	(G)	144.25	157.90	170.94	185.13	199.27	216.16	234.52	253.38
Variable cost Revenue	(G)/(A)	0.23	0.24	0.24	0.23	0.21	0.20	0.20	0.19
1-(variable cost/revenue)	1-(G)/(A)=(H)	0.77	0.76	0.76	0.77	0.79	0.80	0.80	0.81
Break Even Point Sale	(F)/(H)=(I)	873.90	966.17	1025.98	1069.00	1151.08	1249.36	1318.59	1383.06
Current Profit		-195.9	-239.14	-245.34	-208.44	-153.49	-150.64	-108.27	-55.87
BEP/Total Revenue	(I)/(A)	1.41	1.49	1.46	1.34	1.20	1.18	1.11	1.05

Table 9.1.12 **With case 2-2**

Break Even Point Analysis of ENR(excluding Metro) (unit: million LE)

		Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Total Revenues	(A)	618.4	650.36	701.60	797.56	957.23	1060.14	1183.57	1313.84
Total expenses	(E)	814.3	889.50	947.94	1009.55	1118.68	1223.88	1310.92	1404.39
Wages		289.2	318.84	335.84	353.68	372.09	387.63	400.34	419.56
Material inputs		224.6	244.07	265.23	288.25	313.15	340.23	369.69	399.89
Service inputs		52.2	56.73	61.65	67.00	72.79	79.09	85.94	92.96
Interest			0	0	0	44.15	86.04	114.77	141.63
Depreciation		236.6	254.86	270.21	285.62	300.90	314.89	323.78	333.44
Other expenses		11.7	15.00	15.00	15.00	18.60	19.00	19.40	19.90
close						-3.00	-3.00	-3.00	-3.00
Fixed cost	(F)	670.05	731.60	777.00	824.42	919.41	1007.72	1076.41	1151.01
Variable cost	(G)	144.25	157.90	170.94	185.13	199.27	216.16	234.52	253.38
Variable cost Revenue	(G)/(A)	0.23	0.24	0.24	0.23	0.21	0.20	0.20	0.19
1-(variable cost/revenue)	1-(G)/(A)=(H)	0.77	0.76	0.76	0.77	0.79	0.80	0.80	0.81
Break Even Point Sale	(F)/(H)=(I)	873.90	966.17	1027.29	1073.63	1161.12	1265.82	1342.39	1426.02
Current Profit		-195.9	-239.14	-246.33	-211.99	-161.45	-163.74	-127.35	-90.55
BEP/Total Revenue	(I)/(A)	1.41	1.49	1.46	1.35	1.21	1.19	1.13	1.09

Table 9.1.13 Without-case

Break Even Point Analysis of Metro (unit: million LE)

		Actual 94'95	Forecast 95'96	Forecast 96'97	Forecast 97'98	Forecast 98'99	Forecast 99'00	Forecast 00'01	Forecast 01'02
Total Revenues	(A)	73.8	75.85	93.35	108.09	117.08	124.39	132.10	140.38
Passenger Km(Mil)	(B)	4596	4679	5553	5927	6033	6142	6252	6365
Number of Passenger(Mil)	(C)	328.306	334.2	457.8	509.5	518.6	528	537.5	547.1
Pass Rev/Pass Km	(D)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Total expenses	(E)	206.60	220.86	214.48	253.51	330.14	372.79	421.25	451.69
Wages		9.10	10.03	12.66	14.37	15.55	16.83	18.22	19.63
Material inputs		30.30	32.40	40.00	44.70	47.70	50.90	54.40	57.80
Service inputs		23.60	25.20	31.20	34.80	37.20	39.70	42.40	45.10
Interest		0.00	0.00	0.00	0.00	42.04	44.54	47.29	50.24
Depreciation		143.60	153.23	130.62	159.64	187.66	220.81	258.93	278.92
Other expenses		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fixed cost	(F)	179.65	192.06	178.88	213.76	287.69	327.49	372.85	400.24
Variable cost	(G)	26.95	28.80	35.60	39.75	42.45	45.30	48.40	51.45
Variable cost/Revenue	(G)/(A)	0.37	0.38	0.38	0.37	0.36	0.36	0.37	0.37
1-(variable cost/revenue)	1-(G)/(A)=(H)	0.63	0.62	0.62	0.63	0.64	0.64	0.63	0.63
Break Even Point Sale	(F)/(H)=(I)	282.99	309.63	289.15	338.10	451.33	515.07	588.44	631.81
Fixed cost/Pass Km	(F)/(B)=(J)	0.04	0.04	0.03	0.04	0.05	0.05	0.06	0.06
Variable cost/Pass Km	(G)/(B)=(K)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
P-(variable cost/Pass Km)	(D)-(K)=(L)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Break Even Point Pass Km	(F)/(L)=(M)	17623.72	19101.28	17201.02	18540.29	23255.66	25432.43	27818.83	28647.98
Current Profit		-132.80	-145.02	-121.13	-145.43	-213.06	-248.40	-289.15	-311.32
BEP/Total Revenue	(I)/(A)	3.83	4.08	3.10	3.13	3.85	4.14	4.45	4.50
BEP/Pass Km	(M)/(B)	3.83	4.08	3.10	3.13	3.85	4.14	4.45	4.50

Source: JICA Study Team

Table 9.1.14 With case

Break Even Point Analysis of Metro (unit: million LE)

		Actual 94'95	Forecast 95'96	Forecast 96'97	Forecast 97'98	Forecast 98'99	Forecast 99'00	Forecast 00'01	Forecast 01'02
Total Revenues	(A)	73.8	75.85	93.35	108.11	118.07	127.50	137.74	148.76
Passenger Km(Mil)	(B)	4596	4679	5553	5927	6033	6142	6252	6365
Number of Passenger(Mil)	(C)	328.306	334.2	457.8	509.5	518.6	528	537.5	547.1
Pass Rev/Pass Km	(D)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Total expenses	(E)	206.60	220.86	213.89	252.21	327.78	368.95	415.43	443.33
Wages		9.10	10.03	12.08	13.07	13.49	13.93	14.38	14.78
Material inputs		30.30	32.40	40.00	44.70	47.70	50.90	54.40	57.80
Service inputs		23.60	25.20	31.20	34.80	37.20	39.70	42.40	45.10
Interest		0.00	0.00	0.00	0.00	41.73	43.61	45.31	46.74
Depreciation		143.60	153.23	130.62	159.64	187.66	220.81	258.93	278.92
Other expenses		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fixed cost	(F)	179.65	192.06	178.29	212.46	285.33	323.65	367.03	391.88
Variable cost	(G)	26.95	28.80	35.60	39.75	42.45	45.30	48.40	51.45
Variable cost/Revenue	(G)/(A)	0.37	0.38	0.38	0.37	0.36	0.36	0.35	0.35
1-(variable cost/revenue)	1-(G)/(A)=(H)	0.63	0.62	0.62	0.63	0.64	0.64	0.65	0.65
Break Even Point Sale	(F)/(H)=(I)	282.99	309.63	288.21	336.01	445.51	502.02	565.86	599.09
Fixed cost/Pass Km	(F)/(B)=(J)	0.04	0.04	0.03	0.04	0.05	0.05	0.06	0.06
Variable cost/Pass Km	(G)/(B)=(K)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
P-(variable cost/Pass Km)	(D)-(K)=(L)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Break Even Point Pass Km	(F)/(L)=(M)	17623.72	19101.28	17144.68	18421.25	22764.56	24183.74	25683.65	25633.39
Current Deficit		-132.80	-145.02	-120.55	-144.10	-209.71	-241.45	-277.68	-294.58
BEP/Total Revenue	(I)/(A)	3.83	4.08	3.09	3.11	3.77	3.94	4.11	4.03
BEP/Pass Km	(M)/(B)	3.83	4.08	3.09	3.11	3.77	3.94	4.11	4.03

Source: JICA Study Team

Table 9.1.15 Without-case

Productivity Analysis of ENR(excluding Metro) *(unit: million LE)*

		Actual 94'95	Forecast 95'96	Forecast 96'97	Forecast 97'98	Forecast 98'99	Forecast 99'00	Forecast 00'01	Forecast 01'02
Value Added (total)	(A)	329.90	334.56	359.72	414.88	467.89	506.37	554.02	603.65
(Personnel Cost)	(B)	289.2	318.84	364.37	405.75	451.62	502.75	559.66	620.20
(Interest)	(C)	0	0	0	0	83.54	155.51	215.76	285.72
(Depreciation)	(D)	236.6	256.23	267.96	280.13	292.35	303.48	352.41	357.61
(Profit)	(E)	-195.90	-240.51	-272.61	-271.00	-359.62	-455.38	-573.84	-659.88
Number of Employee	(F)	71374	72184	76037	78043	80060	82136	84274	86476
Value added/employee	(A)/(F)	4622.13	4634.76	4730.93	5315.99	5844.26	6164.97	6574.10	6930.57
personnel cost/value added	(B)/(A)	87.66%	95.30%	101.29%	97.80%	96.52%	99.29%	101.02%	102.74%
Interest/value added	(C)/(A)					17.86%	30.71%	38.94%	47.33%
depreciation/value added	(D)/(A)	71.72%	76.59%	74.49%	67.52%	62.48%	59.93%	63.61%	59.24%
profit/value added	(E)/(A)	-59.38%	-71.89%	-75.78%	-65.32%	-76.86%	-89.93%	-103.58%	-109.32%
Revenue	(G)	618.4	650.36	701.60	785.13	868.77	940.55	1024.42	1111.17
Revenue/employee	(G)/(F)	8664	9009.692	9227.1813	10060.139	10851.514	11451.083	12155.899	12849.497
value added/revenue	(A)/(G)	53.35%	51.44%	51.27%	52.84%	53.86%	53.84%	54.08%	54.33%
personnel cost/revenue	(B)/(G)	46.77%	49.02%	51.93%	51.68%	51.98%	53.45%	54.63%	55.82%
personnel cost/employee	(B)/(F)	4051.8956	4417	4792	5199	5641	6121	6641	7172

Table 9.1.16 **With case 1-1**

Productivity Analysis of ENR(excluding Metro) (unit: million LE)

		Actual 94'95	Forecast 95'96	Forecast 96'97	Forecast 97'98	Forecast 98'99	Forecast 99'00	Forecast 00'01	Forecast 01'02
Value Added total	(A)	329.9	333.04	356.42	420.23	540.99	604.26	683.43	766.71
(Personnel Cost)	(B)	289.2	318.84	332.25	346.03	359.88	370.34	377.42	391.68
(Interest)	(C)		0	0	0	32.89	61.78	75.67	85.88
(Depreciation)	(D)	236.6	250.51	261.45	272.36	283.05	292.36	296.45	301.17
(Profit)	(E)	-195.9	-236.31	-237.28	-198.15	-134.84	-120.21	-66.11	-12.03
Number of Employee	(F)	71374	72184	69335	66556	63798	60503	56832	54613
Value added/employee	(A)/(F)	4622.13	4613.70	5140.54	6313.95	8479.71	9987.32	12025.45	14038.87
personnel cost/value added	(B)/(A)	87.66%	95.74%	93.22%	82.34%	66.52%	61.29%	55.22%	51.09%
interest/value added	(C)/(A)					6.08%	10.22%	11.07%	11.20%
depreciation/value added	(D)/(A)	71.72%	75.22%	73.35%	64.81%	52.32%	48.38%	43.38%	39.28%
profit/value added	(E)/(A)	-59.38%	-70.96%	-66.57%	-47.15%	-24.92%	-19.89%	-9.67%	-1.57%
Revenue	(G)	618.4	644.08	688.07	773.95	920.09	1010.36	1118.63	1231.19
Revenue/employee	(G)/(F)	8664	8922.69	9923.85	11628.56	14421.97	16699.41	19683.10	22543.81
value added/revenue	(A)/(G)	53.35%	51.71%	51.80%	54.30%	58.80%	59.81%	61.10%	62.27%
personnel cost/revenue	(B)/(G)	46.77%	49.50%	48.29%	44.71%	39.11%	36.65%	33.74%	31.81%
personnel cost/employee	(B)/(F)	4052	4417	4792	5199	5641	6121	6641	7172

Table 9.1.17 **With case 1-2**

Productivity Analysis of ENR(excluding Metro) (unit: million LE)

		Actual 94'95	Forecast 95'96	Forecast 96'97	Forecast 97'98	Forecast 98'99	Forecast 99'00	Forecast 00'01	Forecast 01'02
Value Added total	(A)	329.9	333.04	356.42	420.23	540.99	604.26	683.43	766.71
(Personnel Cost)	(B)	289.2	318.84	338.31	357.49	376.62	393.10	406.97	419.56
(Interest)	(C)		0	0	0	34.56	65.89	83.16	96.90
(Depreciation)	(D)	236.6	250.51	261.45	272.36	283.05	292.36	296.45	301.17
(Profit)	(E)	-195.90	-236.31	-243.34	-209.62	-153.25	-147.09	-103.15	-50.93
Number of Employee	(F)	71374	72184	70599	68762	66765	64221	61281	58500
Value added/employee	(A)/(F)	4622.13	4613.70	5048.49	6111.43	8102.87	9409.02	11152.34	13106.07
personnel cost/value added	(B)/(A)	87.66%	95.74%	94.92%	85.07%	69.62%	65.05%	59.55%	54.72%
interest/value added	(C)/(A)					6.39%	10.90%	12.17%	12.64%
depreciation/value added	(D)/(A)	71.72%	75.22%	73.35%	64.81%	52.32%	48.38%	43.38%	39.28%
profit/value added	(E)/(A)	-59.38%	-70.96%	-68.27%	-49.88%	-28.33%	-24.34%	-15.09%	-6.64%
Revenue	(G)	618.4	644.08	688.07	773.95	920.07	1010.38	1118.63	1231.19
Revenue/employee	(G)/(F)	8664	8922.69	9746.14	11255.55	13780.70	15732.77	18254.00	21045.90
value added/revenue	(A)/(G)	53.35%	51.71%	51.80%	54.30%	58.80%	59.81%	61.10%	62.27%
personnel cost/revenue	(B)/(G)	46.77%	49.50%	49.17%	46.19%	40.93%	38.91%	36.38%	34.08%
personnel cost/employee	(B)/(F)	4051.90	4417	4792	5199	5641	6121	6641	7172

Table 9.1.18 **With case2-1**

Productivity Analysis of ENR(excluding Metro) (unit: million LE)

		Actual 94'95	Forecast 95'96	Forecast 96'97	Forecast 97'98	Forecast 98'99	Forecast 99'00	Forecast 00'01	Forecast 01'02
Value Added total	(A)	329.9	334.56	359.72	427.31	555.69	624.82	711.54	804.09
(Personnel Cost)	(B)	289.2	318.84	334.85	350.12	364.87	376.44	384.90	391.68
(Interest)	(C)		0	0	0	43.43	84.12	111.12	134.83
(Depreciation)	(D)	236.6	254.86	270.21	285.62	300.90	314.89	323.78	333.44
(Profit)	(E)	-195.9	-239.14	-245.34	-208.44	-153.49	-150.64	-108.27	-55.87
Number of Employee	(F)	71374	72184	69877	67345	64681	61500	57958	54613
Value added/employee	(A)/(F)	4622.13	4634.83	5147.94	6345.11	8591.32	10159.62	12276.79	14723.40
personnel cost/value added	(B)/(A)	87.66%	95.30%	93.09%	81.94%	65.66%	60.25%	54.09%	48.71%
interest/value added	(C)/(A)					7.81%	13.46%	15.62%	16.77%
depreciation/value added	(D)/(A)	71.72%	76.18%	75.12%	66.84%	54.15%	50.40%	45.50%	41.47%
profit/value added	(E)/(A)	-59.38%	-71.48%	-68.20%	-48.78%	-27.62%	-24.11%	-15.22%	-6.95%
Revenue	(G)	618.4	650.36	701.60	797.56	957.23	1060.14	1183.57	1313.84
Revenue/employee	(G)/(F)	8664	9010	10041	11843	14799	17238	20421	24057
value added/revenue	(A)/(G)	53.35%	51.44%	51.27%	53.58%	58.05%	58.94%	60.12%	61.20%
personnel cost/revenue	(B)/(G)	46.77%	49.02%	47.73%	43.90%	38.12%	35.51%	32.52%	29.81%
personnel cost/employee	(B)/(F)	4052	4417	4792	5199	5641	6121	6641	7172

Table 9.1.19 **With case 2-2**

Productivity Analysis of ENR(excluding Metro) *(unit: million LE)*

		Actual 94'95	Forecast 95'96	Forecast 96'97	Forecast 97'98	Forecast 98'99	Forecast 99'00	Forecast 00'01	Forecast 01'02
Value Added total	(A)	329.9	334.56	359.72	427.31	555.69	624.82	711.54	804.09
(Personnel Cost)	(B)	289.2	318.84	335.84	353.68	372.09	387.63	400.34	419.56
(Interest)	(C)		0	0	0	44.15	86.04	114.77	141.63
(Depreciation)	(D)	236.6	254.86	270.21	285.62	300.90	314.89	323.78	333.44
(Profit)	(E)	-195.90	-239.14	-246.33	-211.99	-161.45	-163.74	-127.35	-90.55
Number of Employee	(F)	71374	72184	70084	68028	65962	63329	60283	58500
Value added/employee	(A)/(F)	4622.13	4634.83	5132.72	6281.37	8424.41	9866.32	11803.33	13745.06
personnel cost/value added	(B)/(A)	87.66%	95.30%	93.36%	82.77%	66.96%	62.04%	56.26%	52.18%
interest/value added	(C)/(A)					7.94%	13.77%	16.13%	17.61%
depreciation/value added	(D)/(A)	71.72%	76.18%	75.12%	66.84%	54.15%	50.40%	45.50%	41.47%
profit/value added	(E)/(A)	-59.38%	-71.48%	-68.48%	-49.61%	-29.05%	-26.21%	-17.90%	-11.26%
Revenue	(G)	618.4	650.36	701.60	797.56	957.23	1060.14	1183.57	1313.81
Revenue/employee	(G)/(F)	8664	9009.76	10010.83	11723.97	14511.87	16740.30	19633.56	22458.74
value added/revenue	(A)/(G)	53.35%	51.44%	51.27%	53.58%	58.05%	58.94%	60.12%	61.20%
personnel cost/revenue	(B)/(G)	46.77%	49.02%	47.87%	44.35%	38.87%	36.56%	33.82%	31.93%
personnel cost/employee	(B)/(F)	4052	4417	4792	5199	5641	6121	6641	7172

Table 9.1.20 Without-case

Cash Flow of ENR(excluding Metro) (unit: million LE)

		Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Profit	(A)	-195.90	-240.51	-272.61	-271.00	-359.62	-455.38	-573.84	-659.88
depreciation	(B)	236.6	256.23	267.96	280.13	292.35	303.48	352.44	357.61
investment	(C)		504.10	717.00	888.30	851.70	639.70	441.40	467.30
cash flow	(D)=(A)+(B)		15.72	-4.64	9.13	-67.27	-151.89	-221.40	-302.28
free cash flow	(E)=(D)-(C)		-488.38	-721.64	-879.17	-918.97	-791.59	-662.80	-769.58
finance by government			-488.38	-721.64	-879.17				
finance by ENR			0	0	0	-918.97	-791.59	-662.80	-769.58
repayment of debt									-91.90
ENR's debt			0	0	0	-918.97	-1710.56	-2373.36	-3234.84

Table 9.1.21 With-case 1-1

Cash Flow of ENR(excluding Metro) (unit: million LE)

		Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Profit	(A)	-195.90	-236.31	-237.28	-198.15	-134.84	-120.21	-66.11	-12.03
depreciation	(B)	236.6	250.51	261.45	272.36	283.05	292.36	295.45	301.17
investment	(C)		377.00	493.50	504.00	510.00	489.90	383.20	401.40
cash flow	(D)=(A)+(B)		14.20	24.17	74.21	148.21	172.15	230.34	289.14
free cash flow	(E)=(D)-(C)		-362.80	-469.33	-429.79	-361.79	-317.75	-152.86	-112.26
finance by government			-362.80	-469.33	-429.79	-361.79	-317.75	-152.86	-112.26
ENR's debt			0	0	0	0.00	0.00	0.00	0.00
finance by ENR			0	0	0	-361.79	-317.75	-152.86	-112.26
repayment of debt									-35.18
ENR's debt			0	0	0	-361.79	-679.54	-832.40	-980.84

Table 9.1.22 With-case 1-2

Cash Flow of ENR(excluding Metro) (unit: million LE)

		Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Profit	(A)	-195.90	-236.31	-243.34	-209.62	-153.25	-147.09	-103.15	-50.93
depreciation	(B)	236.6	250.51	261.45	272.36	283.05	292.36	295.45	301.17
investment	(C)		377.00	493.50	504.00	510.00	489.90	383.20	401.40
cash flow	(D)=(A)+(B)		14.20	18.11	62.74	129.80	145.27	193.30	250.24
free cash flow	(E)=(D)-(C)		-362.80	-475.39	-441.26	-380.20	-344.63	-189.90	-151.16
finance by government			-362.80	-475.39	-441.26	-380.20	-344.63	-189.90	-151.16
ENR's debt			0	0	0	0.00	0.00	0.00	0.00
finance by ENR			0	0	0	-380.20	-344.63	-189.90	-151.16
repayment of debt									-38.02
ENR's debt			0	0	0	-380.20	-724.83	-914.72	-1103.90

Table 9.1.23 With-case 2-1

Cash Flow of ENR(excluding Metro) (unit: million LE)

		Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Profit	(A)	-195.90	-239.14	-245.34	-208.44	-153.49	-150.64	-108.27	-55.87
depreciation	(B)	236.6	254.86	270.21	285.62	300.90	314.89	323.78	333.44
investment	(C)		473.70	595.00	612.60	625.10	611.90	512.50	538.40
cash flow	(D)=(A)+(B)		15.72	24.87	77.18	147.40	164.25	215.52	277.57
free cash flow	(E)=(D)-(C)		-457.98	-571.13	-535.42	-477.70	-447.65	-296.98	-260.83
finance by government			-457.98	-571.13	-535.42	-477.70	-447.65	-296.98	-260.83
ENR's debt			0	0	0	0.00	0.00	0.00	0.00
finance by ENR			0	0	0	-477.70	-447.65	-296.98	-260.83
repayment of debt									-47.77
ENR's debt			0	0	0	-477.70	-925.34	-1222.32	-1530.92

Table 9.1.24 With-case 2-2

Cash Flow of ENR(excluding Metro) (unit: million LE)

		Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Profit	(A)	-195.90	-239.14	-245.33	-211.99	-161.45	-163.74	-127.35	-90.55
depreciation	(B)	236.6	254.86	270.21	285.62	300.90	314.89	323.78	333.44
investment	(C)		473.70	595.00	612.60	625.10	611.90	512.50	538.40
cash flow	(D)=(A)+(B)		15.72	23.88	73.63	139.45	151.15	196.43	242.89
free cash flow	(E)=(D)-(C)		-457.98	-572.12	-538.97	-485.65	-460.75	-316.07	-295.51
finance by government			-457.98	-572.12	-538.97	-485.65	-460.75	-316.07	-295.51
ENR's debt			0	0	0	0.00	0.00	0.00	0.00
finance by ENR			0	0	0	-485.65	-460.75	-316.07	-295.51
repayment of debt									-48.57
ENR's debt			0	0	0	-485.65	-946.40	-1262.47	-1606.55

Table 9.1.25 Without-case

Cash Flow of Metro (unit: million LE)

		Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Profit	(A)	-132.80	-145.02	-121.13	-145.43	-213.06	-248.40	-289.15	-311.32
depreciation	(B)	143.60	153.23	130.62	159.64	187.66	220.81	258.93	278.92
investment	(C)		361.00	480.00	960.00	437.00	0.00	0.00	0.00
cash flow	(D)=(A)+(B)		8.21	9.48	14.22	-25.40	-27.59	-30.21	-32.39
free cash flow	(E)=(D)-(C)		-352.79	-470.52	-945.78	-462.40	-27.59	-30.21	-32.39
finance by government			-352.79	-470.52	-945.78				
finance by ENR			0.00	0.00	0.00	-462.40	-27.59	-30.21	-32.39
repayment of debt									-46.24
ENR's debt			0.00	0.00	0.00	-462.40	-489.99	-520.20	-598.84

Table 9.1.26 With-case

Cash Flow of Metro (unit: million LE)

		Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
Profit	(A)	-132.80	-145.02	-120.55	-144.10	-209.71	-241.45	-277.68	-294.58
depreciation	(B)	143.6	153.23	130.62	159.64	187.66	220.81	258.93	278.92
investment	(C)		361.00	480.00	960.00	437.00	0.00	0.00	0.00
cash flow	(D)=(A)+(B)		8.21	10.07	15.54	-22.06	-20.64	-18.75	-15.65
free cash flow	(E)=(D)-(C)		-352.79	-469.93	-944.45	-459.06	-20.64	-18.75	-15.65
finance by government			-352.79	-469.93	-944.45	-459.06	-20.64	-18.75	-15.65
ENR's debt			0	0	0	0.00	0.00	0.00	0.00
finance by ENR			0	0	0	-459.06	-20.64	-18.75	-15.65
repayment of debt									-45.90
ENR's debt			0	0	0	-459.06	-479.70	-498.45	-560.00

Table 9.1.27 Comparison of alternatives
Profit of ENR(without government support) (unit: million LE)

	Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
without	-195.90	-240.51	-272.61	-271.00	-359.62	-455.38	-573.84	-659.88
with 1-1	-195.90	-236.31	-237.28	-198.15	-134.82	-120.23	-66.11	-12.03
with 1-2	-195.90	-236.31	-243.34	-209.62	-153.25	-147.09	-103.15	-50.93
with 2-1	-195.90	-239.14	-245.34	-208.44	-153.49	-150.64	-108.27	-55.87
with 2-2	-195.90	-239.14	-246.33	-211.99	-161.45	-163.74	-127.35	-90.55

Table 9.1.28 Profit of Metro(without government support) (unit: million LE)

	Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
without	-132.80	-145.02	-121.13	-145.43	-213.06	-248.40	-289.15	-311.32
with	-132.80	-145.02	-120.55	-144.10	-209.71	-241.45	-277.68	-294.58

Table 9.1.29 Comparison of alternatives
Profit of ENR(with government support) (unit: million LE)

	Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
without	-195.90	-240.51	-272.61	-271.00	-359.62	-455.38	-573.84	-659.88
with 1-1	-195.90	-236.31	-237.28	-198.15	-101.95	-58.44	9.56	73.85
with 1-2	-195.90	-236.31	-243.34	-209.62	-118.69	-81.20	-19.99	45.97
with 2-1	-195.90	-239.14	-245.34	-208.44	-110.07	-66.52	2.86	78.96
with 2-2	-195.90	-239.14	-246.33	-211.99	-117.30	-77.71	-12.58	51.08

Table 9.1.30 Profit of Metro(with government support) (unit: million LE)

	Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
without	-132.80	-145.02	-121.13	-145.43	-213.06	-248.40	-289.15	-311.32
with	-132.80	-145.02	-120.55	-144.10	-167.98	-197.84	-232.37	-247.84

Table 9.1.31 Comparison of alternatives
Debt of ENR(without government support) (unit: million LE)

	Actual 94/95	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
without	0.00	0.00	0.00	0.00	-918.97	-1710.56	-2373.36	-3234.84
with 1-1	0.00	0.00	0.00	0.00	-361.79	-679.54	-832.40	-980.84
with 1-2	0.00	0.00	0.00	0.00	-380.20	-724.83	-914.72	-1103.90
with 2-1	0.00	0	0	0	-477.70	-925.34	-1222.32	-1530.92
with 2-2	0.00	0.00	0.00	0.00	-485.65	-946.40	-1262.47	-1606.55

Table 9.1.32 Improvement from without-case(without government suppo (unit: million LE)

	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
with 1-1	4.20	35.33	72.85	224.80	335.14	507.72	647.85
with 1-2	4.20	29.27	61.38	206.37	308.28	470.69	608.95
with 2-1	1.37	27.27	62.56	206.13	304.74	465.57	604.01
with 2-2	1.37	26.27	59.01	198.17	291.63	446.48	569.33

Table 9.1.33 Improvement from without-case(without government suppo (unit: million LE)

	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
with	0.00	0.59	1.32	3.35	6.95	11.46	16.74

Table 9.1.34 Improvement from without-case(with government support) (unit: million LE)

	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
with 1-1	4.20	35.33	72.85	257.67	396.94	583.40	733.73
with 1-2	4.20	29.27	61.38	240.93	374.18	553.85	705.85
with 2-1	1.37	27.27	62.56	249.55	388.86	576.69	738.84
with 2-2	1.37	26.27	59.01	242.32	377.67	561.25	710.96

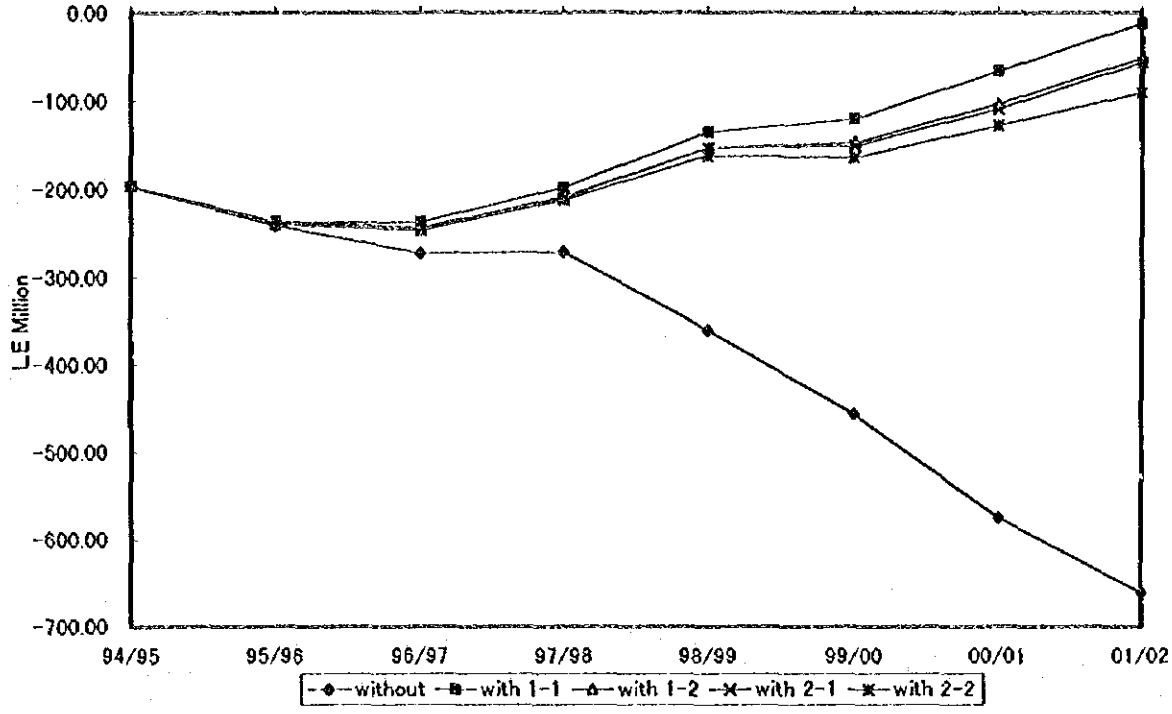
Table 9.1.35 Improvement from without-case(with government support)

	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
with	0.00	0.59	1.32	45.08	50.56	56.77	63.48

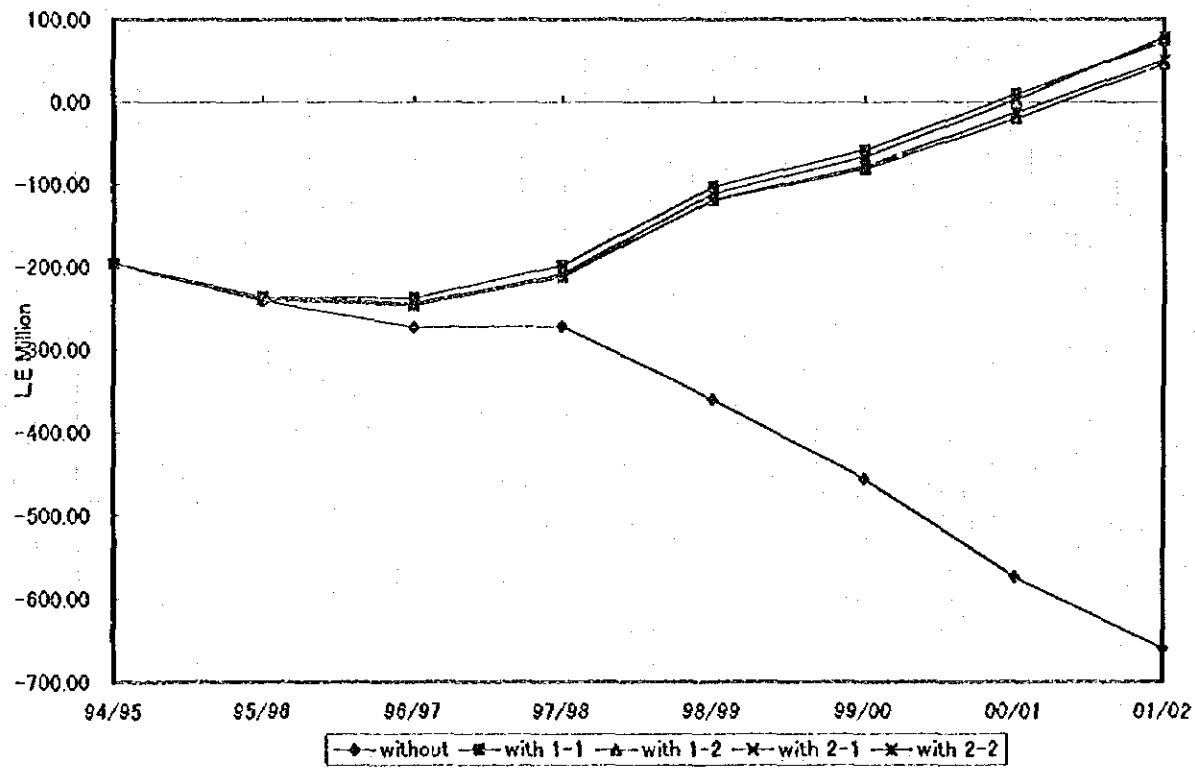
Table 9.1.36 Improvement from without-case (without government supp (unit: million LE)

	Forecast 95/96	Forecast 96/97	Forecast 97/98	Forecast 98/99	Forecast 99/00	Forecast 00/01	Forecast 01/02
with 1-1	0.00	0.00	0.00	557.18	1031.02	1540.96	2254.00
with 1-2	0.00	0.00	0.00	538.77	985.73	1458.64	2130.94
with 2-1	0.00	0.00	0.00	441.27	785.22	1151.04	1703.92
with 2-2	0.00	0.00	0.00	433.32	764.17	1110.89	1628.29

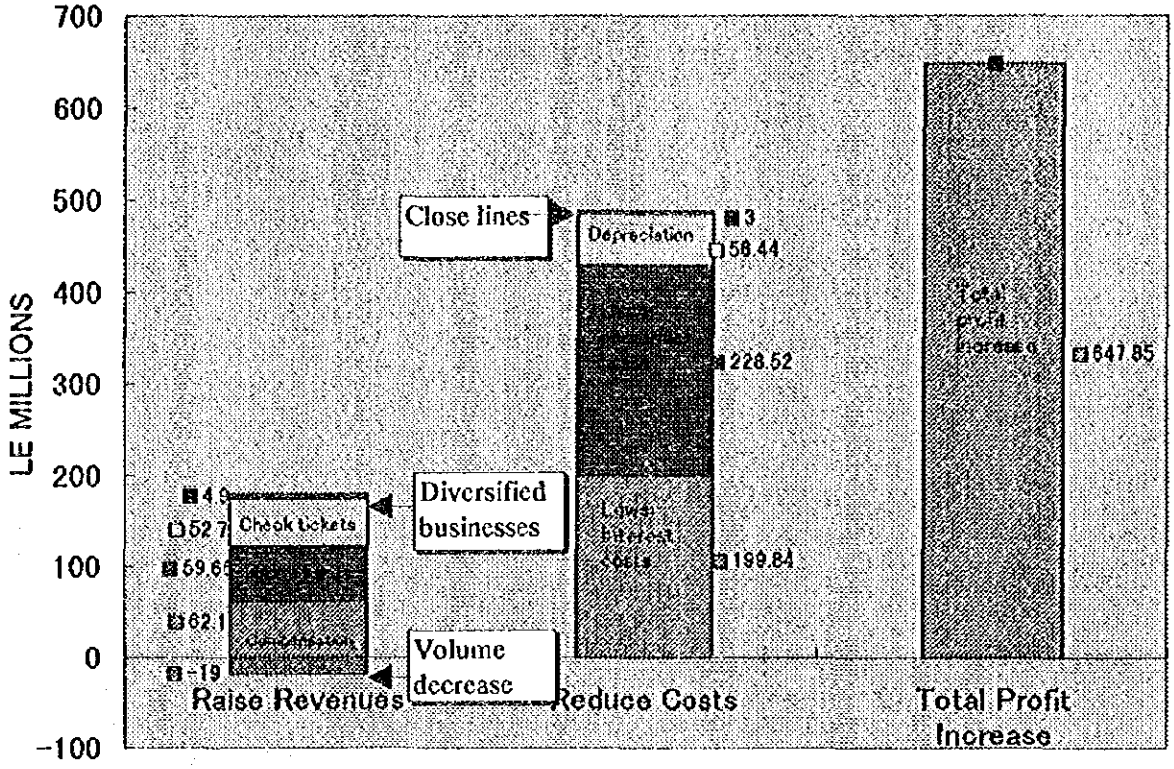
Fig, 9.1.1 Forecast of Profit (Without government support) ENR(ex. Metro)



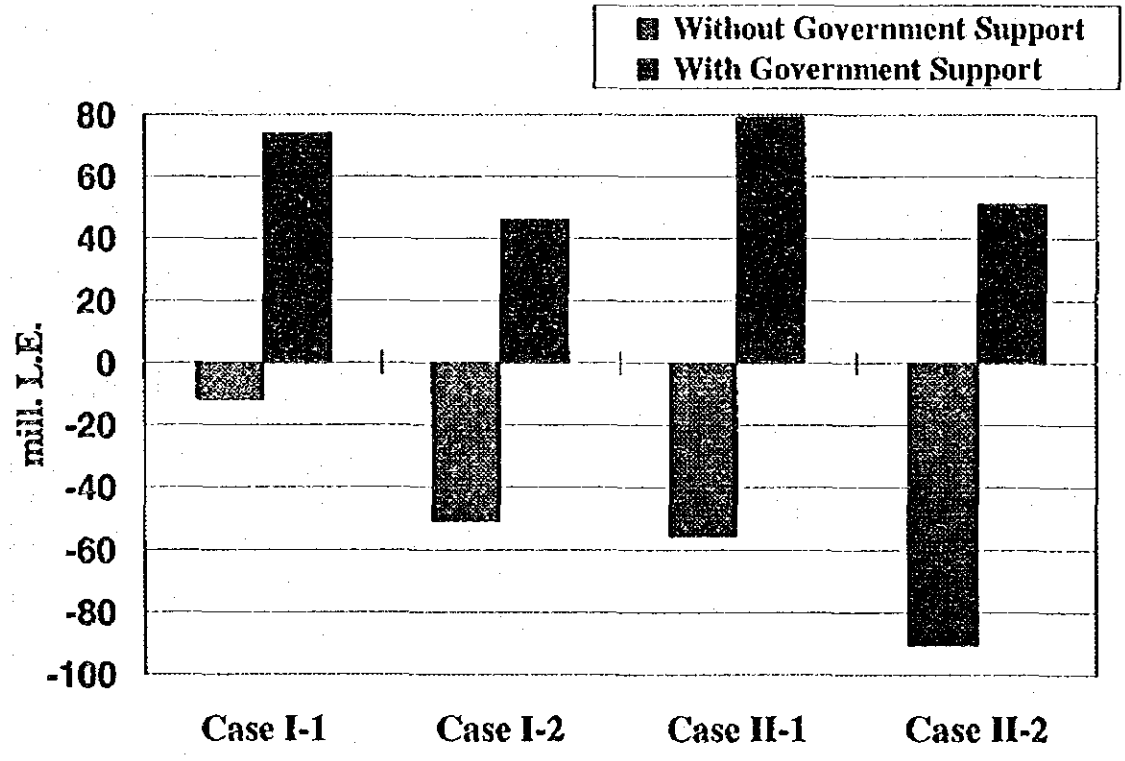
Fig, 9.1.2 Forecast of Profit (With government support) ENR(ex. Metro)



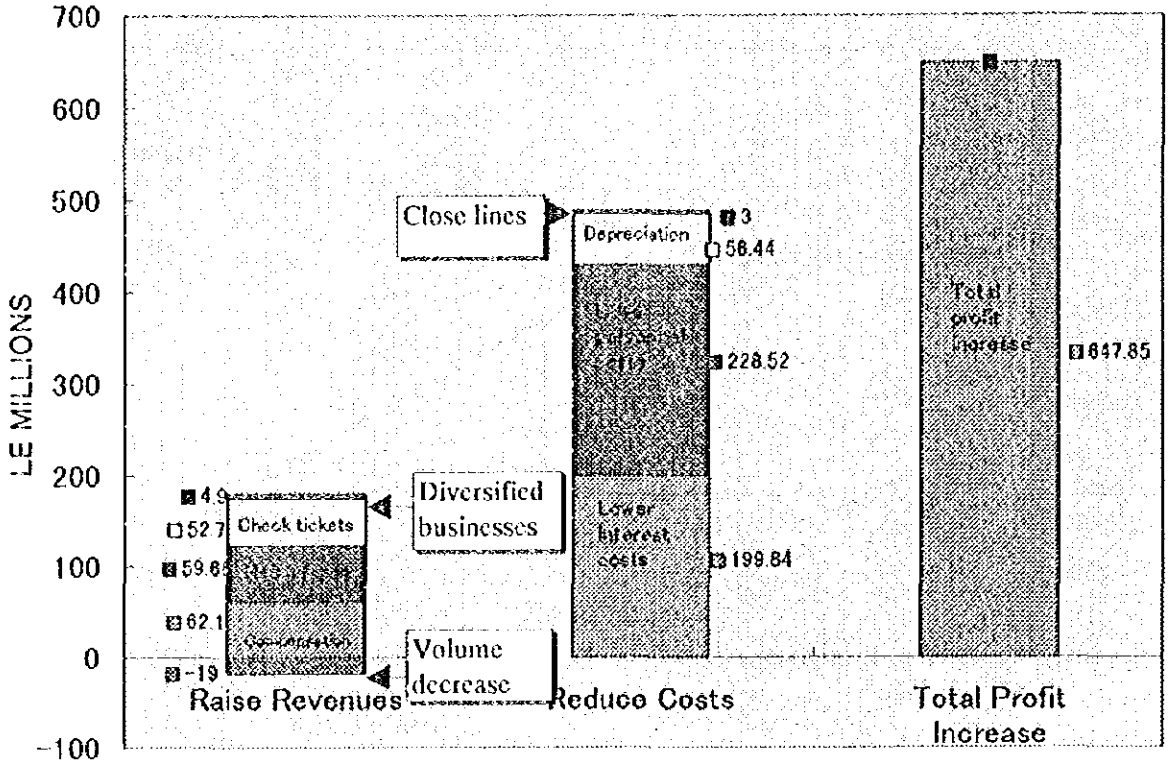
Fig, 9.1.3 2001/02 Profit Increase from Proposals



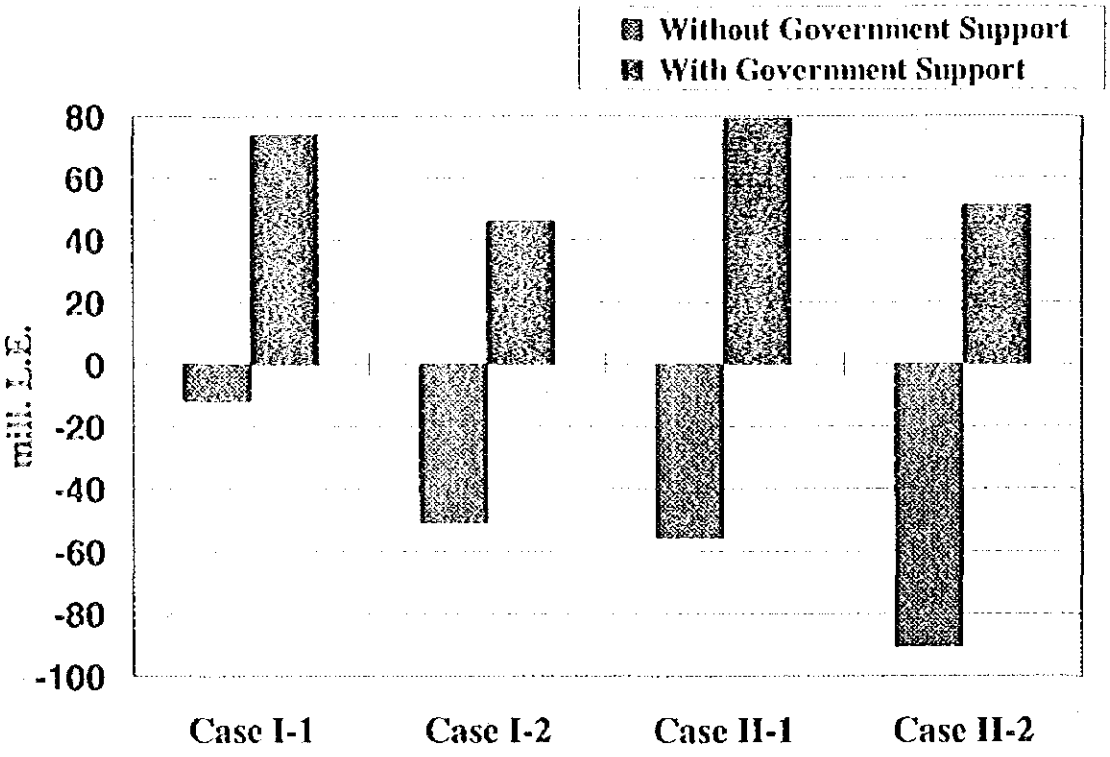
Fig, 9.1.4 Profit (Loss) of ENR in 2001/02 ex. Metro



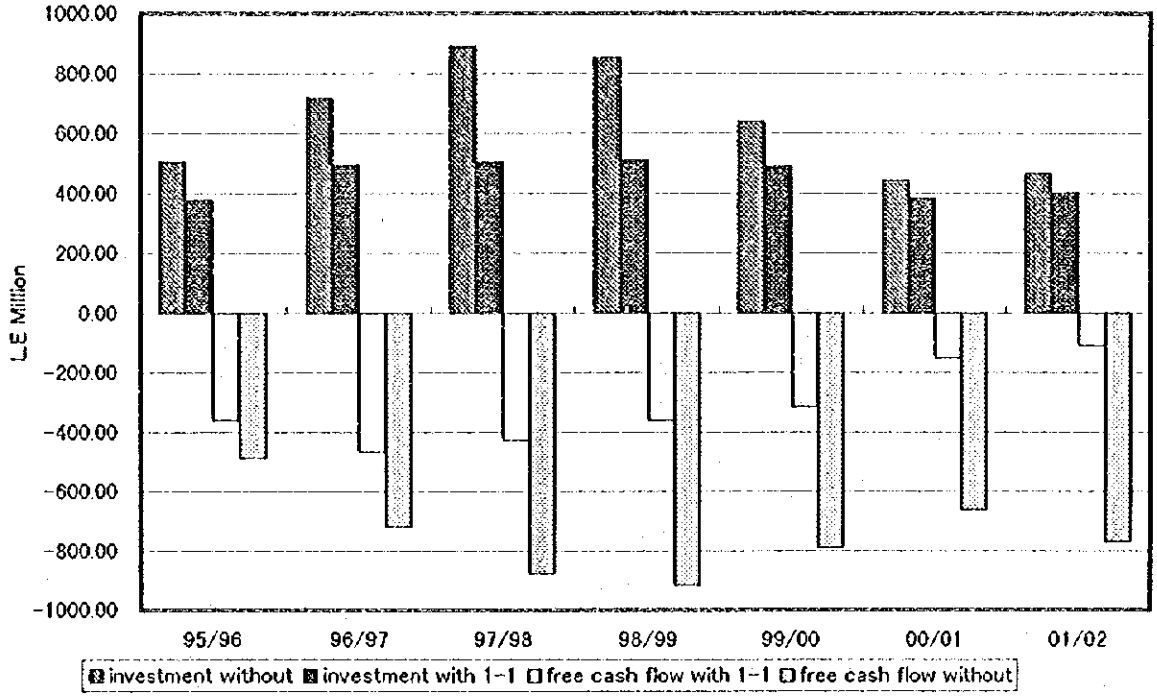
Fig, 9.1.3 2001/02 Profit Increase from Proposals



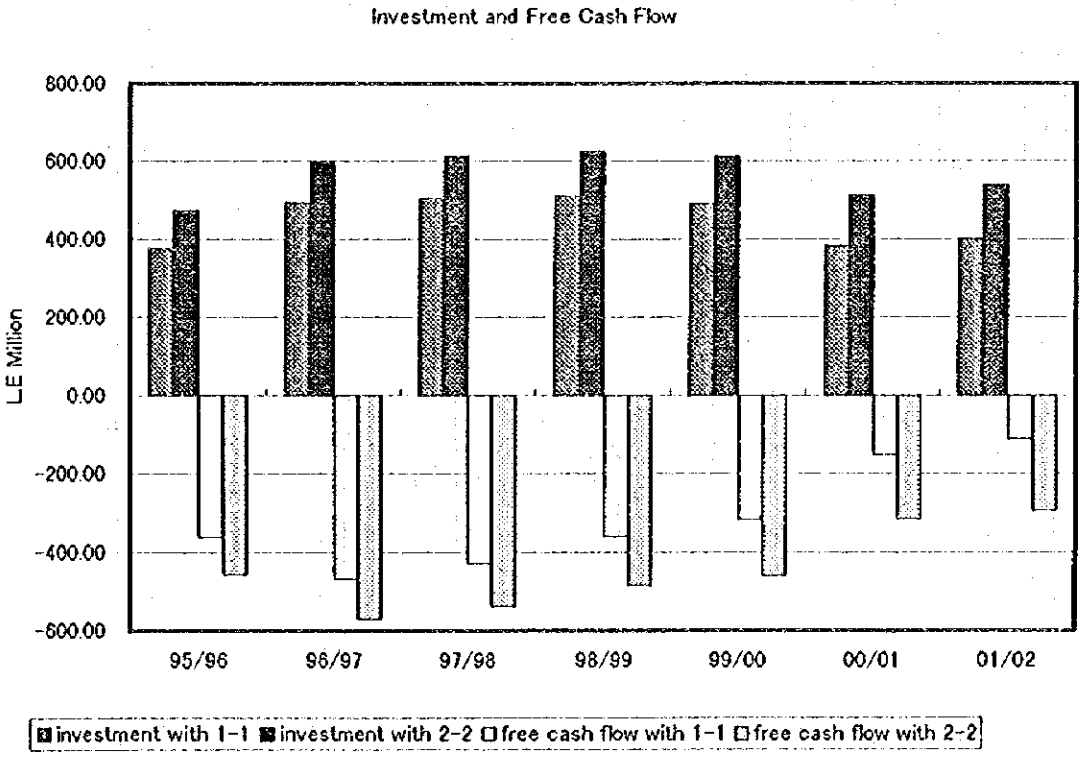
Fig, 9.1.4 Profit (Loss) of ENR in 2001/02 ex. Metro



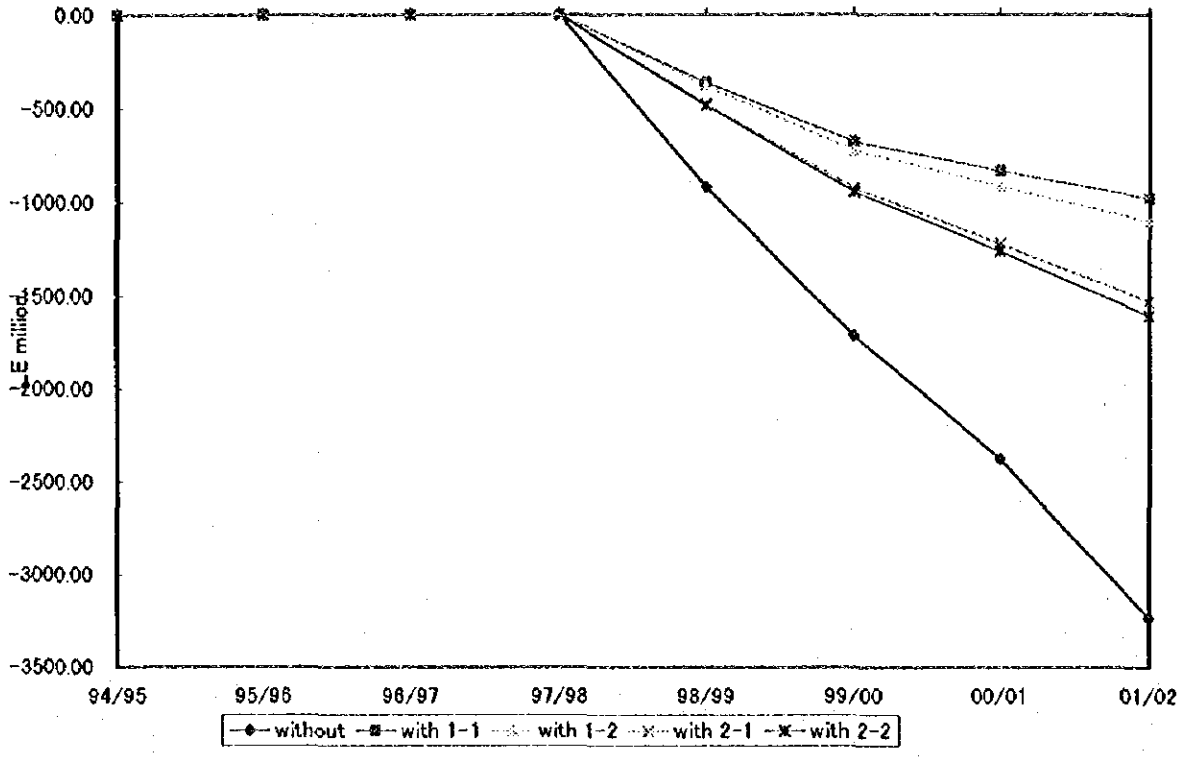
Fig, 9.1.5 Investment and Free Cash Flow ENR(ex. Metro)



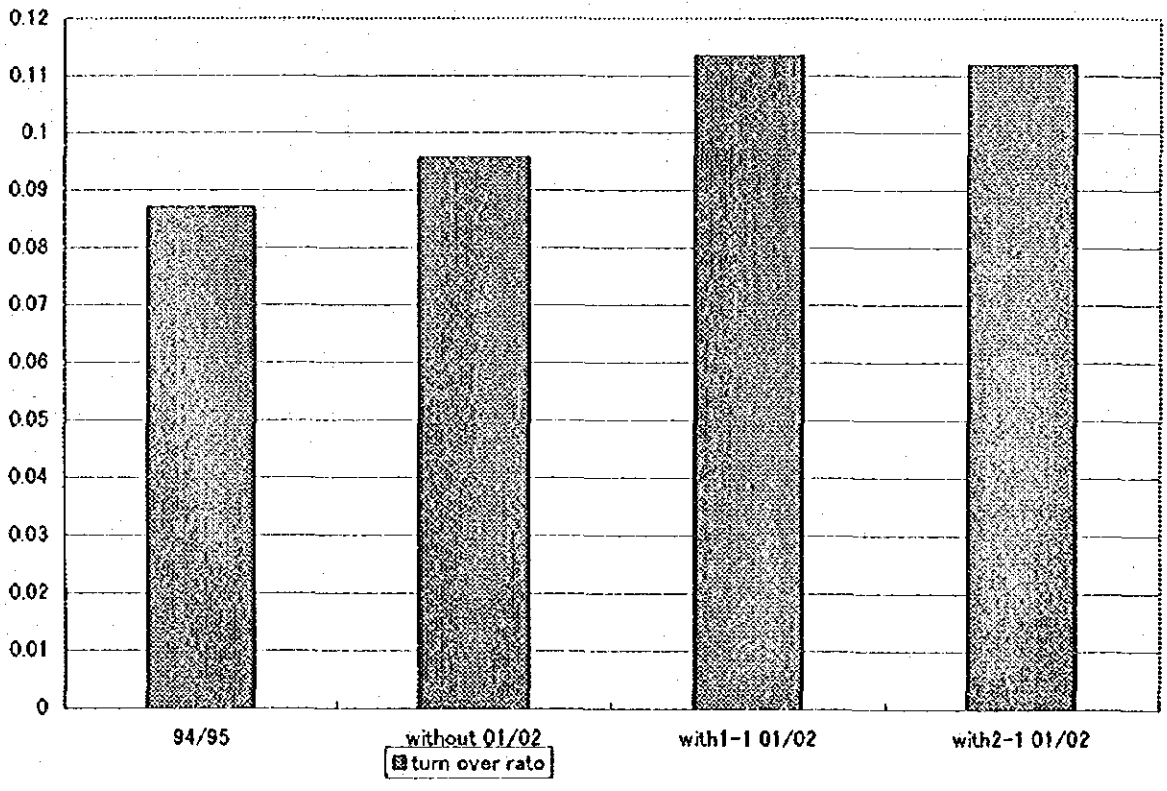
Fig, 9.1.6 Investment and Free Cash Flow ENR(ex. Metro)



Fig, 9.1.7 Forecast of Debt ENR(ex. Metro)



Fig, 9.1.8 Forecast of Fixed assets turn over ratio ENR(ex. Metro)



9.2 SOCIAL AND ENVIRONMENTAL IMPACT EXAMINATION

9.2.1 Social Impact Examination

(1) Overview

There are 3 major social impacts of the proposals in this study. These are: increased staff reductions, ticket prices, and closed lines. The table below is a summary of the detailed analysis which follows.

Reduce Staff	This project will not propose firing any staff. This study proposes keeping recruiting at low levels to reduce staff slowly through natural retirement each year. This will have very few social impact.
Raise Ticket Prices	The most important issue is ENR's low ticket prices. ENR has some of the lowest ticket prices in the world. ENR is being operated as a public service, providing very cheap transport. If the Egyptian government wants to run ENR as a public service, the central government must continue to pay for ENR's losses every year, like it is paying now. But the Egyptian government is pressuring ENR to operate like a business, covering its expenses with revenues. This is impossible with the lowest fares in the world. Ticket prices for government workers and students are especially low. Government workers have higher incomes than the average Egyptian, so this discount makes no sense for improving social fairness. There is also no reason ENR should pay for subsidies for students. This is an Education policy, not a transport policy. Subsidies for student should be paid from the education budget. In sum, Egypt must decide whether it wants to run ENR as a business or a social service.
Close Lines	Although the superficial financial savings for ENR from closing lines seems to be not large, a heavy train running with empty coaches is a waste of Egypt's precious social resources. And also it harms managerial spirit of ENR's person very much. If the alternative means of transport such as mini-bus are provided, local residents can enjoy more convenient and appropriate service and this contributes to social economy.

(1) Reduce the number of staff

The social impact of this proposal is minimal. No staff are fired. Staff is reduced mostly through retirement.
The Study Team recruitment proposals are as follows (from section 4.2.7, table 4.2.7-5) :

Table 9.2.1-1 ENR & Metro Staff

	1996	1997	1998	1999	2000	2001	2002	2003	
Without Case (recruit 1.67%)	72,184	76,037	78,043	80,060	82,136	84,274	86,476	88,751	
Case 1 (recruit 0%)	72,184	69,877	67,345	64,681	61,500	57,958	54,613	55,167	
Case 2 (recruit 1%)	72,184	70,599	68,762	66,765	64,221	61,281	58,500	58,994	
	2004	2005	2006	2007	2008	2009	2010	2011	2012
Without Case (recruit 1.67%)	91,107	93,548	96,078	98,702	101,356	104,138	107,058	110,125	113,352
Case 1 (recruit 0%)	55,722	56,278	56,834	57,390	57,929	58,478	59,035	59,602	60,179
Case 2 (recruit 1%)	59,485	59,972	60,455	60,934	61,397	61,864	62,335	62,810	63,290

Both Case 1 and Case 2 reduce overall employment in Egypt by a very small amount.

Case 1	Recruiting is reduced to 0% of staff per year (from 1.67% now). This is not practical, but even this low rate has a small social impact. Staff will fall to 54,613 in year 2002, rising thereafter. 54,613 is 20,352 less than the 74,965 in 1996. This will reduce employment in Egypt by 0.1%, a small impact (1 out of each 1,000 jobs).
Case 2	Recruiting is reduced to 1% of staff per year (from 1.67% now). Staff will fall to 58,500 in year 2002, rising thereafter. 58,500 is 16,465 less than the 74,965 in 1996. This will reduce employment in Egypt by 0.08%, a small impact (8 out of each 10,000 jobs).

(2) Tariff raise alternative

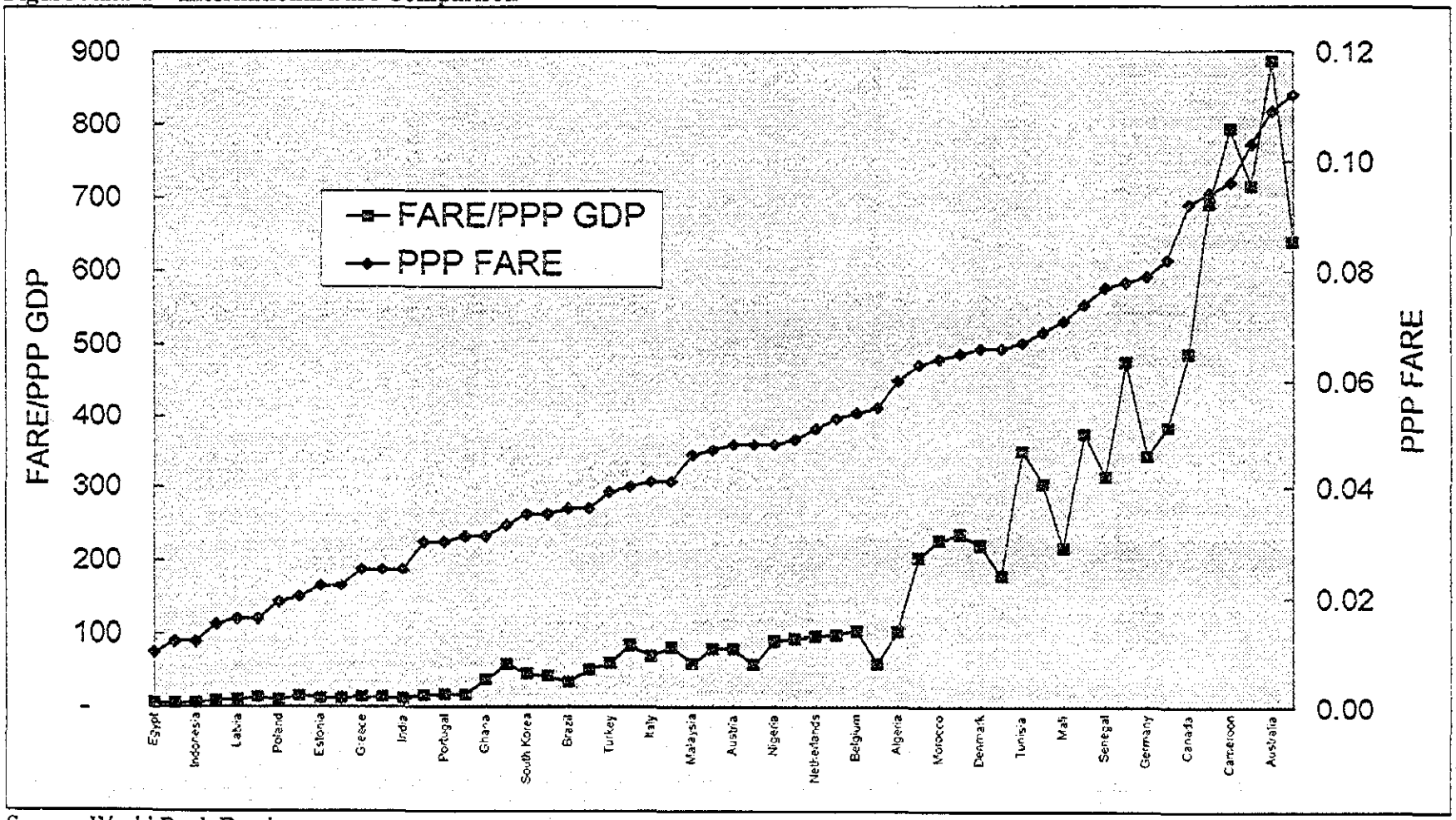
ENR (excluding Metro) lost 245 million LE in 1993/94. One of the reasons for this are ENR's very low ticket prices. Egypt needs cheap transport, and ENR provides exactly what Egypt needs. But the ticket prices are too low to meet costs. ENR losses have been huge in recent years, so ENR must take action. One necessary move is to increase ticket prices. ENR tariffs and policy is analyzed in sections 3.7 and 4.2.1, but there are 2 major issues regarding ticket prices which require social impact analysis. The issues discussed below are: (1) General ticket prices, and (2) discounts for government employees and students.

CONCLUSIONS :
1) Standard fares can be raised by up to 50% over several years.
2) Special government discounts are not as necessary as student discounts.
3) If the government forces ENR to give these discounts, the government should pay compensation to ENR.

General Ticket Prices

The chart below shows that Egypt has the lowest fares in the world in Purchasing Power Parity.

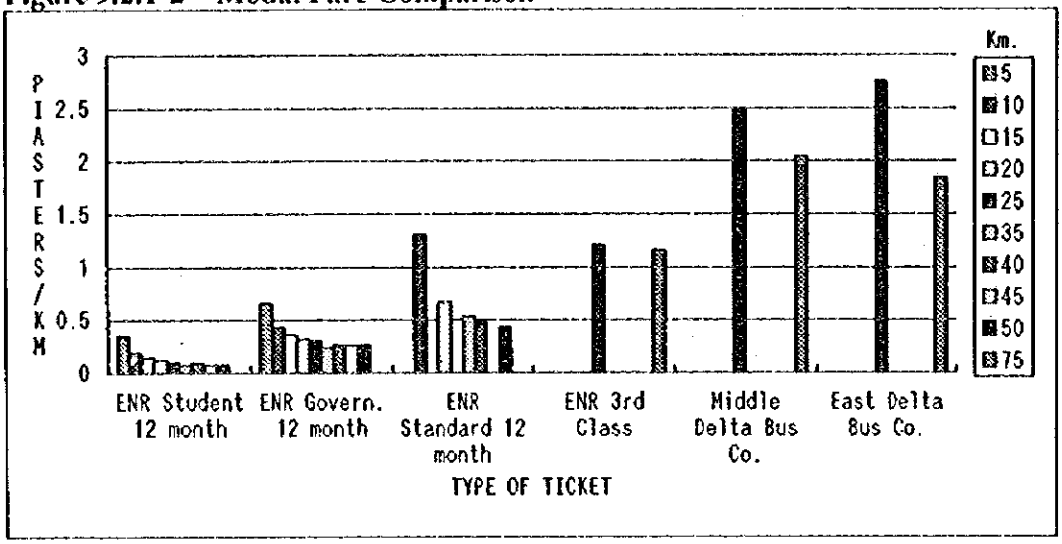
Figure 9.2.1-1 International Fare Comparison



Source: World Bank Database

ENR fares are very cheap, as shown by the graph below.

Figure 9.2.1-2 Modal Fare Comparison



Source: ENR, JICA Study Team

ENR tickets are very cheap, so the poor are more likely to use the train. But giving a special discount to train passengers is unfair to the many poor Egyptians using buses and taxis.

Table 9.2.1-2

ENR Passenger Incomes

INCOME	Train	Taxi	Bus
LE 0-100	45%	34%	36%
LE 100-250	32%	36%	36%
LE 250-400	13%	20%	18%
LE 400-700	6%	6%	7%
LE 700-1000	3%	2%	2%
LE > 1000	2%	1%	1%
TOTAL	100%	100%	100%

Source: JICA Study Team

CONCLUSION:

Increase standard fares by 50% over several years. Both passenger opinions and international comparison show that fares are very low. They are also unfair to poor travelers who must use other forms of transport. ENR fares are so cheap that even after increasing fares 100%, Egypt will still be the 5th cheapest railway in the world. An increase of 50% spread out over several years appears to be both acceptable and advisable. If government policy forces ENR to keep fares very low for social policy, the government should compensate ENR for its loss from the cheap tickets.

Government employee and student discounts.
Government employee and students receive large discounts.

Table 9.2.1-3 *Government Employee & Student Discounts*

Suburban Line	Standard	Government	Student
12 month ticket less than 7 km.	47 LE	17 LE	8 LE
Discount from 1 trip ticket (assume round trip 300 days/year)	74%	91%	96%

The special discounts for government employees and students should be reduced. The reasons are:

1) MODAL SPLIT
Many government employees and students ride the bus and share taxi. About 1/3 of government employees and students ride share taxis, which give no special discounts. These people do not receive the large discounts that ENR passengers receive. Bus discounts are also not as favorable as ENR discounts. The system is unfair to government employees and students who do not use ENR.

2) Government employees are wealthier than the average population.

Analysis of the Study Team's field survey shows that government and student passengers use rail, taxi, and bus in the following ratios:

Table 9.2.1-4 Modal Split for Government Employees & Students

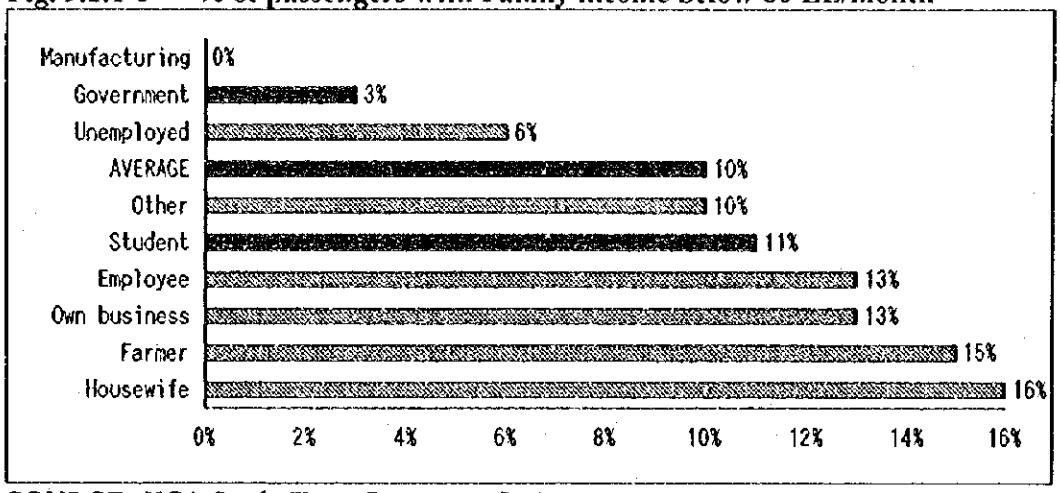
	Rail	Share Taxi	Bus
Government employees	44%	38%	17%
Students	53%	33%	13%

56% of government employees and 47% of students do not ride the train. These passengers cannot receive the subsidized ENR tickets. The ENR subsidy is not fair to these people.

ENR gives subsidized tickets to government employees, but government employees have higher incomes than the average Egyptian. Fewer government employees are in poverty, and government wages are 50% higher than average. Government employees are poor, but the average Egyptian is much poorer. The government employee discount is unfair.

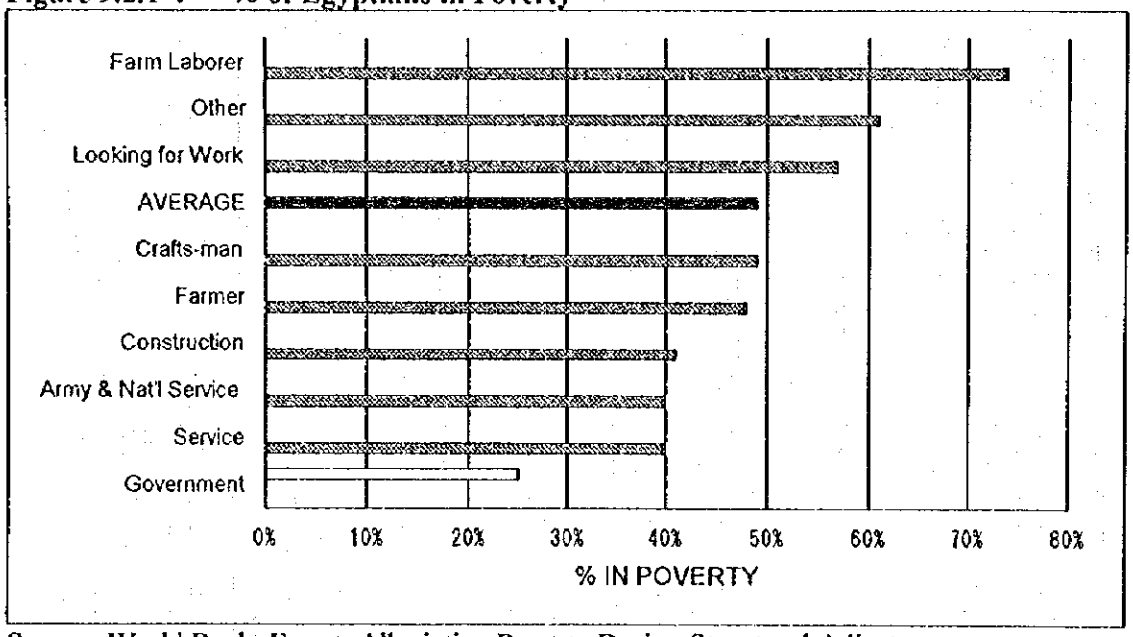
The graphs below show that government employees have higher incomes, and student families have average incomes.

Fig. 9.2.1-3 % of passengers with Family income below 80 LE/month



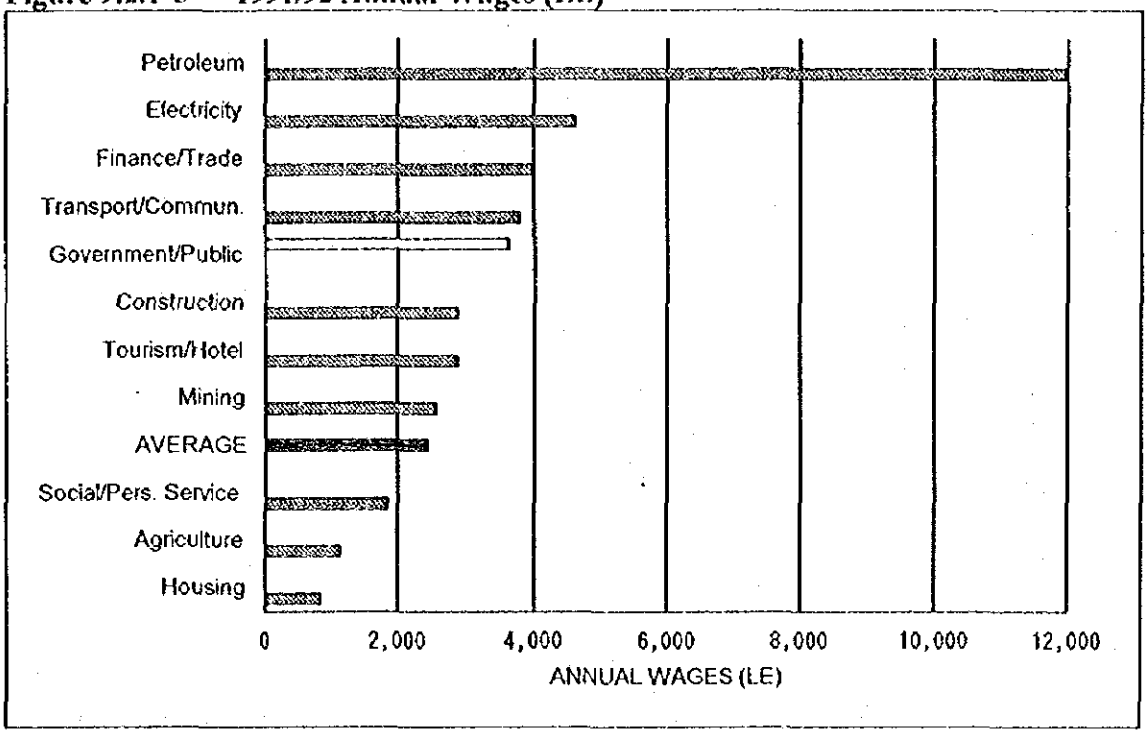
SOURCE: JICA Study Team Passenger Survey

Figure 9.2.1-4 % of Egyptians in Poverty



Source: World Bank, Egypt: Alleviating Poverty During Structural Adjustment

Figure 9.2.1-5 1991/92 Annual Wages (LE)



Source: JICA Study Team

The following is a summary of ENR subsidy policies, with analysis.

Table 9.2.1-5 ENR Season Ticket Discount Policy Summary

Passenger	Class	Discount	Yearly ENR Loss (LE)	Analysis
Government employees	1	86%	384,600	NO REASON 1st & 2nd class ticket subsidies are business marketing decisions. Government employees have higher income than the average Egyptian. This subsidy does not reduce poverty.
	2	86%	4,994,100	
	3	86%	9,674,800	NO REASON Government employees have higher income than the average Egyptian. A special government employee subsidy does not reduce poverty.
Other employees	1	73%	63,200	NO REASON 1st & 2nd class ticket subsidies are business marketing decisions. Employees are average Egyptians. This subsidy does not reduce poverty.
	2	74%	516,100	
	3	74%	1,019,200	NO REASON Employees are average Egyptians. A special subsidy for employees does not reduce poverty.
Students	2	99%	18,736,000	EDUCATION BUDGET Student families have same income as average families. This subsidy is for education policy, so subsidy should come from education budget.

CONCLUSION

- *Reduce special discounts*

ENR should slowly reduce the special discounts given to students, and especially to government employees. If the government wants ENR to maintain such discounts for social policy goals, then the government should compensate ENR for its losses from such discounts.

(3) Close lines which are lightly used

This topic is described at length in section 4.2.10. The Study Team performed a survey of each of these lines. A summary of the social impact issues on each line is shown below :

Table 9.2.1-6 Line Closure Recommendations

No.	Railway Segment	Close or Don't close	Social Impact
14	El Fayum - Abu Kesah	Don't close	The line should not be closed because: - The train is heavily used, and is very crowded during rush hours. - The train is cheaper and more comfortable than alternate transport. - The train is the only direct link between El Fayum & Abu Kesah.
20	Abu Kebir - Faqus - El Salhia	Don't close	The line should not be closed because: - The train is much preferred to alternative transport. The train is much cheaper, more comfortable, and the only direct transport from Abu Kebir to El Salhia. - There is very high demand for the train. The train is very crowded and is obviously needed in the region. - El Salhia has 2 military bases.
21	Benha - Zefta	Don't close	- The line should not be closed because the line is heavily used. - Eliminate service when the train is empty early morning and late evening. This will have minimum social impact.
22	Faqus - El Semaina	Close	- A local person told the Study Team: "Don't bother waiting, the train rarely shows up, and when it does, it stays here for a long time. Taking a taxi to Semaina is much better." - This shows there is minimal social impact from closing this line. - Most passengers ride the morning trains from Faqus and Semaina, and the afternoon train from Faqus. On most trains there are few riders. There are often no passengers on the last 2 round trip trains.
24	El Santa - Mahalet Rouh	Don't close	- There is no alternative transport.
29	Bouselli - El Qassabi	Don't close	- There is no alternative transport.
30	El Fayum - Sinnuris	Close	- This line is used by many students. It would be more efficiently served by school buses. But this line is politically more difficult to close, because by many students use it.

31	Desouk - Motobus	Don't close	- This line is heavily used. Some of the scheduled trains are mostly empty, so the schedule can be reduced.
37	Beni Suef - Shaweish - El Lahun	Close	- Few passengers use this train. There are many cheap share taxis available.
38	Shaweish - Menshat Abu El Sammad	Close	- Few passengers use this train. There are many cheap share taxis available.
40	Kafr Saad - Kafr Suleiman	Close	- Few passengers use this train. There are many cheap share taxis available.
	Mowaslet El Roda - El Roda	Close	- Few passengers use this train. There is plenty of alternative transport available. -Note: ENR data for this line was not available, so closing this line was not included in the business proposals. The suggestion to close this line is based on a visit to this line by the Study Team.

Questionnaire

To understand the social impact of closing lines, the Study Team worked with ENR and TPA officials and the local consultant to produce a survey appropriate for the situation in ENR. The questionnaire's goal was to understand what the social impact will be of closing or reducing service on the following 7 segments.

Table 9.2.1-7 Survey Questionnaires

No.	Railway line	Number of Questionnaires Completed
14	El Fayum - Abu Kesah	221
20	Abu Kebir - Faqus - El Salhia	221
22	Faqus - El Semaina	150
30	El Fayum - Sinnuris	148
37	Beni Suef - Shaweish - El Lahun	149
38	Shaweish - Menshat Abu El Sammad	148
40	Kafr Saad - Kafr Suleiman	149
	TOTAL	1,186

Translated Questionnaire
The following is a translation of the Arabic questionnaire used in the survey :

The ENR is trying to improve its services, and your opinion is very important. We are collecting many passengers' opinions, and according to your answers to the following questions, action will be taken to fulfill all passenger desires.

1	At what station did you get on the train?	
2	At what station will you get off the train?	
3	In general, the services provided by the train are :	1. Good 2. Acceptable 3. Bad
4	The ticket price is :	1. Cheap 2. Acceptable 3. Expensive
5	The train speed is :	1. Fast 2. Acceptable 3. Slow
6	The train schedule is :	1. Suitable 2. Acceptable 3. Not suitable
7	The train comfort is :	1. Enough 2. Acceptable 3. Not enough
8	Does the train depart and arrive on time?	1. Always on time 2. Not always on time 3. Always late
9	What is the main reason you use this train?	1. Cost 2. Speed 3. Schedule 4. Comfort 5. Convenient connections to other transport 6. No alternative transport 7. Can carry much luggage 8. Other (specify:)
10	Where do you usually go by this train?	0. University 1. Work 2. School 3. Marketplace 4. Business for oneself 5. Business for employer 6. Government business 7. Excursion or recreation 8. Other (specify:)

11	What do you ride when this train is not available?	1. Bus 2. Share taxi 3. Other (specify:) 4. Nothing		
12	How would you compare this train with other transportation, such as buses or share taxis?	Price	1. Train cheaper 2. Same 3. Train more expensive	
13		Speed	1. Train faster 2. Same 3. Train slower	
14		Schedule	1. Train more suitable 2. Same 3. Train less suitable	
15		Comfort	1. Train more comfortable 2. Same 3. Train less comfortable	
16		On time	1. Train better 2. Same 3. Train worse	
17	If the prices of other transport (bus or share taxi) were the same as the train, which would you feel is better?	1. Other transport better than train 2. Same 3. Other transport worse than train		
18	If you do not use this train, how much does it cost to use other transport?	1. Share taxi 2. Bus 3. Other (specify)	LE & Piasters	
19	What type of tickets do you use, and how much do they cost?	1. One way ticket 2. Two way ticket 3. Six month ticket 4. Nine month ticket 5. One year ticket	LE & Piasters	
20	What is your occupation?	1. Farmer or fisherman 2. Have own business 3. Manufacturing worker 4. Private or government enterprise employee 5. Government employee 6. Student 7. Unemployed 8. Housewife 9. Other (specify:)		
21	Do you agree that the price of the train ticket should increase, and by how much?	1. 100% 2. 50% 3. 25% 4. 10% 5. If it rises, I will use other transport 6. If it rises, I won't use any transport		

22	What is your age?	
23	What was your family's income in LE last month from both labor income and non-labor income?	1. Over 2000 LE 2. 1700 - 2000 3. 1250 - 1650 4. 800 - 1200 5. 400 - 750 6. 80 - 350 7. Less than 80
24	How many persons live off this income?	

Not asked - Written by the surveyor

25	Train class	1. Third class 2. Second class 3. Second class with air conditioning 4. First class 5. First class with air conditioning 6. Unified class
26	Sex of respondent	1. Male 2. Female

9.2.2 Environmental Examination and Consideration

(1) Initial environmental examination

1) Objectives

"The master plan study for Egypt National Railways in Egypt" is carried out. Initial environmental examination (hereafter referred to as " IEE ") should be studied at the project area. The objectives of the environmental analysis in this phase II is to determine the items for environmental analysis and for preparation of a full-scale environmental impact assessment in latter phase.

2) Method of the study

The study team has summarized and reviewed the alternatives: *Without Case, Case 1* (Case 1-1/2), *Case 2* (Case 2-1/2), the present situation of alternative plans have been grasped by survey and collecting the data and information (environmental standard, natural conservation area and environmental guideline). By using the screening and scoping method for some environmental components i.e. Socio-economic, Natural environment and Pollution. Predictions of environmental impacts that may be caused by the project activities are evaluated (Yes / No / Unknown) and its level. According to the results, over-all evaluation of environmental analysis will be carried out in this phase.

3) Screening

The purpose of the screening (Table 9.2.2-1 - 9.2.2-3) of environmental aspect is to identify significant environmental impacts and social issues which should be examined in more detail as appropriate if a full- scale assessment (Environment Impact Assessment : EIA) is necessary at a latter phase. The concept of the screening as follows:

a. In order to avoid the bad influences to the existence and life of the resident that live surround proposed project site, and the project secure the sustainable development of community, the screening examines to identify whether the project provide sufficient benefit to communities or not.

b. In order to avoid the loss of precious natural environment and precious natural resources, this study examines to identify the harmony of the environment in the future.

4) Scoping

The objective of the Scoping is to clarify the significant environmental impacts which may rise caused by the project. Table 9.2.2-4 - 9.2.2-6 show the results of the scoping.
The concept of the scoping as follows:

a. On execution of scoping, we assume the feasible plan setting in this phase.

b. Scope the environmental impacts which may rise to surroundings in construction and post-construction phase.

Table 9.2.2-1 Screening Alternative *Without Case*

Item		Content	Evaluation		
Socio-economic					
1	Removal of inhabitants	Removal of inhabitants for land acquisition	Yes	No	Unknown
2	Economic activities	Production opportunity is lost and difference of the income is expanded, basis of the economic activities will be changed, the unemployed and so on.	Yes	No	Unknown
3	Traffic	Traffic congestion, influences of traffic accidents.	Yes	No	Unknown
4	Public facilities	Removal of inhabitants caused by land acquisition,	Yes	No	Unknown
5	Split of communities	Community is split	Yes	No	Unknown
6	Population explosion	Community has changed with the population explosion	Yes	No	Unknown
7	Trouble in communities	Trouble between new comers and former habitats	Yes	No	Unknown
8	Right of common	Infringement of right of common.	Yes	No	Unknown
9	Archaeology / cultural property	Damage of cultural property	Yes	No	Unknown
10	Public health	Garbage, vermin , sanitation deteriorates.	Yes	No	Unknown
11	Waste disposal	construction wastes, surplus soil, common wastes	Yes	No	Unknown
12	Disaster	Ground collapse increase of accident	Yes	No	Unknown
Natural environment					
13	Topography / geology	Change of valuable topography / geology , coastal erosion, faults	Yes	No	Unknown
14	Soil erosion	Sandstorm, surface soil fowls out	Yes	No	Unknown
15	Underground water	excavation split the water vein	Yes	No	Unknown
16	Lake / swamp / river / hydrology	Flow and river bed has changed by reclamation and drainage	Yes	No	Unknown
17	Coastal area	The change of coastal area, coastal erosion, / sedimentation by reclamation and currency	Yes	No	Unknown
18	Fauna / flora	Decrease of the area where very rare fauna / flora habit	Yes	No	Unknown
19	Aquatic biota	As change of habitat condition, inhibition of propagation, extermination of species.	Yes	No	Unknown
20	Climate	Temperature, wind change are cause by large-scale land improvement and construction.	Yes	No	Unknown
21	Landscape	Lack of harmony between large-scale constructions and landscape.	Yes	No	Unknown
22	Recreation	Loss of tourist resort.	Yes	No	Unknown
Pollution					
23	Air pollution	Pollution caused by exhaust or poison gas.	Yes	No	Unknown
24	Water pollution	Pollution caused by surplus soil and concrete.	Yes	No	Unknown
25	Soil contamination	Pollution caused by dust, asphalt emulsion.	Yes	No	Unknown
26	Noise / vibration	Noise / vibration from construction equipment, vehicles. Increase noise and vibration caused by train speed-up.	Yes	No	Unknown
27	Land subsidence	Ground transformation caused by lowering of ground water level.	Yes	No	Unknown
28	Offensive odor	Offensive odor caused by exhaust, waste	Yes	No	Unknown
Overall evaluation		Environment impact assessment(EIA) is required or not	From the result of the evaluation, EIA is **NOT** required.		

Table 9.2.2-1 Screening Alternative *Without Case*

Item		Content	Evaluation		
Socio-economic					
1	Removal of inhabitants	Removal of inhabitants for land acquisition	Yes	No	Unknown
2	Economic activities	Production opportunity is lost and difference of the income is expanded, basis of the economic activities will be changed, the unemployed and so on	Yes	No	Unknown
3	Traffic	Traffic congestion, influences of traffic accidents	Yes	No	Unknown
4	Public facilities	Removal of inhabitants caused by land acquisition,	Yes	No	Unknown
5	Split of communities	Community is split	Yes	No	Unknown
6	Population explosion	Community has changed with the population explosion	Yes	No	Unknown
7	Trouble in communities	Trouble between new comers and former habitats	Yes	No	Unknown
8	Right of common	Infringement of right of common	Yes	No	Unknown
9	Archaeology / cultural property	Damage of cultural property	Yes	No	Unknown
10	Public health	Garbage, vermin, sanitation deteriorates	Yes	No	Unknown
11	Waste disposal	construction wastes, surplus soil, common wastes	Yes	No	Unknown
12	Disaster	Ground collapse increase of accident	Yes	No	Unknown
Natural environment					
13	Topography / geology	Change of valuable topography / geology, coastal erosion, faults	Yes	No	Unknown
14	Soil erosion	Sandstorm, surface soil fowls out	Yes	No	Unknown
15	Underground water	excavation split the water vein	Yes	No	Unknown
16	Lake / swamp / river / hydrology	Flow and river bed has changed by reclamation and drainage	Yes	No	Unknown
17	Coastal area	The change of coastal area, coastal erosion, / sedimentation by reclamation and currency	Yes	No	Unknown
18	Fauna / flora	Decrease of the area where very rare fauna / flora habit	Yes	No	Unknown
19	Aquatic biota	As change of habitat condition, inhibition of propagation, extermination of species.	Yes	No	Unknown
20	Climate	Temperature, wind change are cause by large-scale land improvement and construction	Yes	No	Unknown
21	Landscape	Lack of harmony between large-scale constructions and landscape	Yes	No	Unknown
22	Recreation	Loss of tourist resort	Yes	No	Unknown
Pollution					
23	Air pollution	Pollution caused by exhaust or poison gas	Yes	No	Unknown
24	Water pollution	Pollution caused by surplus soil and concrete	Yes	No	Unknown
25	Soil contamination	Pollution caused by dust, asphalt emulsion	Yes	No	Unknown
26	Noise / vibration	Noise / vibration from construction equipment, vehicles. Increase noise and vibration caused by train speed-up	Yes	No	Unknown
27	Land subsidence	Ground transformation caused by lowering of ground water level	Yes	No	Unknown
28	Offensive odor	Offensive odor caused by exhaust, waste	Yes	No	Unknown
Overall evaluation		Environment impact assessment(EIA) is required or not	From the result of the evaluation, EIA is **NOT** required		

Table 9.2.2-2 Screening Alternative *Case 1-1/2*

Item		Content	Evaluation		
Socio-economic					
1	Removal of inhabitants	Removal of inhabitants for land acquisition	Yes	No	Unknown
2	Economic activities	Production opportunity is lost and difference of the income is expanded, basis of the economic activities will be changed, the unemployed and so on.	Yes	No	Unknown
3	Traffic	Traffic congestion, influences of traffic accidents.	Yes	No	Unknown
4	Public facilities	Removal of inhabitants caused by land acquisition,	Yes	No	Unknown
5	Split of communities	Community is split by road	Yes	No	Unknown
6	Population explosion	Community has changed with the population explosion	Yes	No	Unknown
7	Trouble in communities	Trouble between new comers and former habitats	Yes	No	Unknown
8	Right of common / water	Infringement of right of fishery, water, common	Yes	No	Unknown
9	Archaeology / cultural property	Damage of cultural property	Yes	No	Unknown
10	Public health	Garbage, vermin , sanitation deteriorates.	Yes	No	Unknown
11	Waste disposal	construction wastes, surplus soil, common wastes	Yes	No	Unknown
12	Disaster	Ground collapse, cave-in, increase of accident	Yes	No	Unknown
Natural environment					
13	Topography / geology	Change of valuable topography / geology , coastal erosion, faults	Yes	No	Unknown
14	Soil erosion	Sandstorm, surface soil fowls out	Yes	No	Unknown
15	Underground water	excavation split the water vein	Yes	No	Unknown
16	Lake / swamp / river / hydrology	Flow and river bed has changed by reclamation and drainage	Yes	No	Unknown
17	Coastal area / sea area	The change of coastal area, coastal erosion, / sedimentation by reclamation and currency	Yes	No	Unknown
18	Fauna / flora	Decrease of the area where very rare fauna / flora habit	Yes	No	Unknown
19	Aquatic biota	As change of habitat condition, inhibition of propagation, extermination of species.	Yes	No	Unknown
20	Climate	Temperature, wind change are cause by large-scale land improvement and construction.	Yes	No	Unknown
21	Landscape	Lack of harmony between large-scale constructions and landscape.	Yes	No	Unknown
22	Recreation	Loss of tourist resort.	Yes	No	Unknown
Pollution					
23	Air pollution	Pollution caused by exhaust or poison gas.	Yes	No	Unknown
24	Water pollution	Pollution caused by surplus soil and concrete.	Yes	No	Unknown
25	Soil contamination	Pollution caused by dust, asphalt emulsion.	Yes	No	Unknown
26	Noise / vibration	Noise / vibration from construction equipment, vehicles. Increase noise and vibration caused by train speed-up.	Yes	No	Unknown
27	Land subsidence	Ground transformation caused by lowering of ground water level.	Yes	No	Unknown
28	Offensive odor	Offensive odor caused by exhaust, waste	Yes	No	Unknown
Overall evaluation		Environment impact assessment(EIA) is required or not	From the result of the evaluation, **EIA is required.**		

Table 9.2.2-2 Screening Alternative *Case 1-1/2*

Item		Content	Evaluation		
Socio-economic					
1	Removal of inhabitants	Removal of inhabitants for land acquisition	Yes	No	Unknown
2	Economic activities	Production opportunity is lost and difference of the income is expanded, basis of the economic activities will be changed, the unemployed and so on	Yes	No	Unknown
3	Traffic	Traffic congestion, influences of traffic accidents	Yes	No	Unknown
4	Public facilities	Removal of inhabitants caused by land acquisition,	Yes	No	Unknown
5	Split of communities	Community is split by road	Yes	No	Unknown
6	Population explosion	Community has changed with the population explosion	Yes	No	Unknown
7	Trouble in communities	Trouble between new comers and former habitats	Yes	No	Unknown
8	Right of common / water	Infringement of right of fishery, water, common	Yes	No	Unknown
9	Archaeology / cultural property	Damage of cultural property	Yes	No	Unknown
10	Public health	Garbage, vermin, sanitation deteriotates.	Yes	No	Unknown
11	Waste disposal	construction wastes, surplus soil, common wastes	Yes	No	Unknown
12	Disaster	Ground collapse, cave-in, increase of accident	Yes	No	Unknown
Natural environment					
13	Topography / geology	Change of valuable topography / geology, coastal erosion, faults	Yes	No	Unknown
14	Soil erosion	Sandstorm, surface soil fowls out	Yes	No	Unknown
15	Underground water	excavation split the water vein	Yes	No	Unknown
16	Lake / swamp / river / hydrology	How and river bed has changed by reclamation and drainage	Yes	No	Unknown
17	Coastal area / sea area	The change of coastal area, coastal erosion / sedimentation by reclamation and currency	Yes	No	Unknown
18	Fauna / flora	Decrease of the area where very rare fauna / flora habit	Yes	No	Unknown
19	Aquatic biota	As change of habitat condition, inhibition of propagation, extermination of species	Yes	No	Unknown
20	Climate	Temperature, wind change are cause by large-scale land improvement and construction	Yes	No	Unknown
21	Landscape	Lack of harmony between large-scale constructions and landscape	Yes	No	Unknown
22	Recreation	Loss of tourist resort	Yes	No	Unknown
Pollution					
23	Air pollution	Pollution caused by exhaust or poison gas	Yes	No	Unknown
24	Water pollution	Pollution caused by surplus soil and concrete	Yes	No	Unknown
25	Soil contamination	Pollution caused by dust, asphalt emulsion	Yes	No	Unknown
26	Noise / vibration	Noise / vibration from construction equipment, vehicles. Increase noise and vibration caused by train speed-up.	Yes	No	Unknown
27	Land subsidence	Ground transformation caused by lowering of ground water level.	Yes	No	Unknown
28	Offensive odor	Offensive odor caused by exhaust, waste	Yes	No	Unknown
Overall evaluation		Environment impact assessment(EIA) is required or not	From the result of the evaluation, **EIA is required.**		

Table 9.2.2-3 Screening Alternative *Case 2-1/2*

Item		Content	Evaluation		
Socio-economic					
1	Removal of inhabitants	Removal of inhabitants for land acquisition	Yes	[illegible]	Unknown
2	Economic activities	Production opportunity is lost and difference of the income is expanded, basis of the economic activities will be changed, the unemployed and so on.	Yes	[illegible]	Unknown
3	Traffic	Traffic congestion, influences of traffic accidents.	Yes	[illegible]	Unknown
4	Public facilities	Removal of inhabitants caused by land acquisition,	Yes	[illegible]	Unknown
5	Split of communities	Community is split by road	Yes	[illegible]	Unknown
6	Population explosion	Community has changed with the population explosion	Yes	[illegible]	Unknown
7	Trouble in communities	Trouble between new comers and former habitats	Yes	[illegible]	Unknown
8	Right of common / water	Infringement of right of fishery, water, common.	Yes	[illegible]	Unknown
9	Archaeology / cultural property	Damage of cultural property	Yes	[illegible]	Unknown
10	Public health	Garbage, vermin , sanitation deteriorates.	Yes	[illegible]	Unknown
11	Waste disposal	construction wastes, surplus soil, common wastes	[illegible]	No	Unknown
12	Disaster	Ground collapse, cave-in, increase of accident	Yes	[illegible]	Unknown
Natural environment					
13	Topography / geology	Change of valuable topography / geology , coastal erosion, faults	Yes	[illegible]	Unknown
14	Soil erosion	Sandstorm, surface soil fowls out	Yes	[illegible]	Unknown
15	Underground water	excavation split the water vein	Yes	[illegible]	Unknown
16	Lake / swamp / river / hydrology	Flow and river bed has changed by reclamation and drainage	Yes	[illegible]	Unknown
17	Coastal area / sea area	The change of coastal area, coastal erosion, / sedimentation by reclamation and currency	Yes	[illegible]	Unknown
18	Fauna / flora	Decrease of the area where very rare fauna / flora habit	Yes	[illegible]	Unknown
19	Aquatic biota	As change of habitat condition, inhibition of propagation, extermination of species.	Yes	[illegible]	Unknown
20	Climate	Temperature, wind change are cause by large-scale land improvement and construction.	Yes	[illegible]	Unknown
21	Landscape	Lack of harmony between large-scale constructions and landscape.	Yes	[illegible]	Unknown
22	Recreation	Loss of tourist resort.	Yes	[illegible]	Unknown
Pollution					
23	Air pollution	Pollution caused by exhaust or poison gas.	Yes	[illegible]	Unknown
24	Water pollution	Pollution caused by surplus soil and concrete.	Yes	[illegible]	Unknown
25	Soil contamination	Pollution caused by dust, asphalt emulsion.	Yes	[illegible]	Unknown
26	Noise / vibration	Noise / vibration from construction equipment, vehicles. Increase noise and vibration caused by train speed-up.	[illegible]	No	Unknown
27	Land subsidence	Ground transformation caused by lowering of ground water level.	Yes	[illegible]	Unknown
28	Offensive odor	Offensive odor caused by exhaust, waste	Yes	[illegible]	Unknown
Overall evaluation		Environment impact assessment(EIA) is required or not	From the result of the evaluation, **EIA is required.**		

Table 9.2.2-3 Screening Alternative *Case 2-1/2*

Item		Content	Evaluation		
Socio-economic					
1	Removal of inhabitants	Removal of inhabitants for land acquisition	Yes	No	Unknown
2	Economic activities	Production opportunity is lost and difference of the income is expanded, basis of the economic activities will be changed, the unemployed and so on	Yes	No	Unknown
3	Traffic	Traffic congestion, influences of traffic accidents	Yes	No	Unknown
4	Public facilities	Removal of inhabitants caused by land acquisition,	Yes	No	Unknown
5	Split of communities	Community is split by road	Yes	No	Unknown
6	Population explosion	Community has changed with the population explosion	Yes	No	Unknown
7	Trouble in communities	Trouble between new comers and former habitats	Yes	No	Unknown
8	Right of common / water	Infringement of right of fishery, water, common	Yes	No	Unknown
9	Archaeology / cultural property	Damage of cultural property	Yes	No	Unknown
10	Public health	Garbage, vermin , sanitation deteriorates.	Yes	No	Unknown
11	Waste disposal	construction wastes, surplus soil, common wastes	Yes	No	Unknown
12	Disaster	Ground collapse, cave-in, increase of accident	Yes	No	Unknown
Natural environment					
13	Topography / geology	Change of valuable topography / geology , coastal erosion, faults	Yes	No	Unknown
14	Soil erosion	Sandstorm, surface soil fowls out	Yes	No	Unknown
15	Underground water	excavation split the water vein	Yes	No	Unknown
16	Lake / swamp / river / hydrology	Flow and river bed has changed by reclamation and drainage	Yes	No	Unknown
17	Coastal area / sea area	The change of coastal area, coastal erosion, / sedimentation by reclamation and currency	Yes	No	Unknown
18	Fauna / flora	Decrease of the area where very rare fauna / flora habit	Yes	No	Unknown
19	Aquatic biota	As change of habitat condition, inhibition of propagation, extermination of species.	Yes	No	Unknown
20	Climate	Temperature, wind change are cause by large-scale land improvement and construction	Yes	No	Unknown
21	Landscape	Lack of harmony between large-scale constructions and landscape.	Yes	No	Unknown
22	Recreation	Loss of tourist resort.	Yes	No	Unknown
Pollution					
23	Air pollution	Pollution caused by exhaust or poison gas.	Yes	No	Unknown
24	Water pollution	Pollution caused by surplus soil and concrete.	Yes	No	Unknown
25	Soil contamination	Pollution caused by dust, asphalt emulsion	Yes	No	Unknown
26	Noise / vibration	Noise / vibration from construction equipment, vehicles. Increase noise and vibration caused by train speed-up	Yes	No	Unknown
27	Land subsidence	Ground transformation caused by lowering of ground water level.	Yes	No	Unknown
28	Offensive odor	Offensive odor caused by exhaust, waste	Yes	No	Unknown
Overall evaluation		Environment impact assessment(EIA) is required or not	From the result of the evaluation, **EIA is required.**		

6) Overall evaluation

Initial Environmental Examination was conducted on 3 alternatives namely ***Without Case, Case 1, Case 2*** by using screening and scoping method according to JICA Environmental Guideline. Overall evaluation based on IEE of the study are described as follows:

a. Without Case

- In alternative **Without Case**, significant environmental impact which may not rise caused by the project activities (setting 5 % fare up).
- Environmental Impact Assessment (EIA) is **NOT** required.

b. Case 1

- Increase Noise and Vibration intensity caused by train speed-up especially in urban area.
- Removal of inhabitants may be caused by land acquisition of truck addition.
- Closing 5 segments deprive people of the means of transportation.
- Environmental Impact Assessment is required.

c. Case 2

- Increase Noise and Vibration intensity caused by train speed-up and upgrading transport capacity especially in urban area.
- Closing 5 segments deprive people of the means of transportation.
- Environmental Impact Assessment is required.

It is concluded that EIA should be required for Alternative **Case 1, Case 2,** but **not** for **Without Case.**

Table 9.2.2-4 Scoping Alternative *Without Case*

Item		Level	Basis
Socio-economic			
1	Removal of inhabitants	D	Removal of inhabitants around the station especially
2	Economic activities	B	Almost significant impact to other transport system, bus, taxi.
3	Traffic	B	Almost significant impact to traffic
4	Public facilities	D	The project may not worsen amenity of public facilities.
5	Split of communities	D	The project may not split the communities
6	Population explosion	D	Increase population by the project, less significant impact
7	Trouble in community	D	No trouble in community
8	Right of common / water	D	Less significant to right of common
9	Archaeology / cultural site	D	There is not buried cultural heritage on cultural heritage distribution map.
10	Public health	D	None
11	Waste disposal	D	Excavated material, rock and surplus soil can be recycled.
12	Disaster	D	None
Natural environment			
13	Topography / geology	D	There is not rare topography and geology.
14	Soil erosion	D	Soil erosion may not occur
15	Underground water	D	Less significant to underground water
16	Lake / swamp / river / hydrology	D	None
17	Coastal area / sea area	D	None
18	Fauna / flora	D	Migrant birds stop over in wetlands which locate around the project site.
19	Aquatic biota	D	None
20	Climate	D	Less significant to climate
21	Landscape	D	Less significant to landscape
22	Recreation	D	None
Pollution			
23	Air pollution	D	Almost significant impact from heavy equipment and vehicles in construction phase and from vehicles in post-construction phase.
24	Water pollution	D	Less significant to the water quality
25	Soil contamination	D	None
26	Noise / vibration	D	Increase noise and vibration caused by train speed-up. Almost significant impact from heavy equipment and vehicles in construction phase and from vehicles in post-construction phase.
27	Land subsidence	D	None
28	Offensive odor	D	None

Note : The grading of environmental impact level as follows :

A : Significant impact

B : Almost significant impact

C : Unknown(Survey should be necessary, on executing the project, impact may be identified.)

D : Less significant impact

Table 9.2.2-5 Scoping Alternative *Case 1*

Item		Level	Basis
Socio-economic			
1	Removal of inhabitants	B	Removal of inhabitants around the station caused by land acquisition.
2	Economic activities	B	Almost significant impact to other transport system, bus, taxi.
3	Traffic	D	Almost significant impact to traffic
4	Public facilities	D	The project may not worsen amenity of public facilities.
5	Split of communities	D	The project may not split the communities
6	Population explosion	D	Increase population by the project, less significant impact
7	Trouble in community	D	No trouble in community
8	Right of common	D	Less significant to right of common
9	Archaeology / cultural site	D	There is not buried cultural heritage on cultural heritage distribution map.
10	Public health	D	None
11	Waste disposal	D	Excavated material, rock and surplus soil can be recycled.
12	Disaster	D	None
Natural environment			
13	Topography / geology	D	There is not rare topography and geology.
14	Soil erosion	D	Soil erosion may not occur
15	Underground water	D	Less significant to underground water
16	Lake / swamp / river / hydrology	D	None
17	Coastal area / sea area	D	None
18	Fauna / flora	D	Migrant birds stop over in wetlands which locate around the project site.
19	Aquatic biota	D	None
20	Climate	D	Less significant to climate
21	Landscape	D	Less significant to landscape
22	Recreation	D	None
Pollution			
23	Air pollution	B	Almost significant impact from heavy equipment and vehicles in construction phase and from vehicles in post-construction phase.
24	Water pollution	D	Less significant to the water quality
25	Soil contamination	D	None
26	Noise / vibration	A	Increase noise and vibration caused by train speed-up especially urban area. Almost significant impact from heavy equipment and vehicles in construction phase and from vehicles in post-construction phase.
27	Land subsidence	D	None
28	Offensive odor	D	None

Note : The grading of environmental impact level as follows :

A : Significant impact

B : Almost significant impact

C : Unknown(Survey should be necessary, on executing the project, impact may be identified.)

D : Less significant impact

Table 9.2.2-6 Scoping Alternative *Case 2*

Item		Level	Basis
Socio-economic			
1	Removal of inhabitants	D	Removal of inhabitants around the station especially
2	Economic activities	B	Almost significant impact to other transport system, bus, taxi.
3	Traffic	B	Almost significant impact to traffic
4	Public facilities	D	The project may not worsen amenity of public facilities.
5	Split of communities	D	The project may not split the communities
6	Population explosion	D	Increase population by the project, less significant impact
7	Trouble in community	D	No trouble in community
8	Right of common	D	Less significant to right of common
9	Archaeology / cultural site	D	There is not buried cultural heritage on cultural heritage distribution map.
10	Public health	D	None
11	Waste disposal	D	Excavated material, rock and surplus soil can be recycled.
12	Disaster	D	None
Natural environment			
13	Topography / geology	D	There is not rare topography and geology.
14	Soil erosion	D	Soil erosion may not occur
15	Underground water	D	Less significant to underground water
16	Lake / swamp / river / hydrology	D	None
17	Coastal area / sea area	D	None
18	Fauna / flora	D	Migrant birds stop over in wetlands which locate around the project site.
19	Aquatic biota	D	None
20	Climate	D	Less significant to climate
21	Landscape	D	Less significant to landscape
22	Recreation	D	None
Pollution			
23	Air pollution	D	Almost significant impact from heavy equipment and vehicles in construction phase and from vehicles in post-construction phase.
24	Water pollution	D	Less significant to the water quality
25	Soil contamination	D	None
26	Noise / vibration	A	Increase noise and vibration caused by train speed-up especially in urban area. Almost significant impact from heavy equipment and vehicles in construction phase and from vehicles in post-construction phase.
27	Land subsidence	D	None
28	Offensive odor	D	None

Note : The grading of environmental impact level as follows :

A : Significant impact

B : Almost significant impact

C : Unknown(Survey should be necessary, on executing the project, impact may be identified.)

D : Less significant impact

(2) Environmental consideration

Environmental consideration is to study whether a development project will have serious environmental impacts on the project site and its surrounding areas, analyze the study results, and establish necessary measures for a avoid or alleviation any adverse environmental impacts. This section will discuss environmental consideration for ENR facilities such as permanent way, workshop, depot, station.

1) Study area

Since Railways network of Egyptian National Railway spread out in following three geographical regions:

a. the Nile Delta,
b. the Nile Valley
c. the Suez Canal

Environmental study should be carried out in these three regions mainly. Field study of ENR facility was conducted in following lines in Phase I preliminary environmental study.

The Lines examined in preliminary study		Length
(a)	Cairo - Alexandria line	208 km
(b)	Cairo - Aswan line	879 km
(c)	Cairo - Ismailia line	159 km

2) Cairo - Alexandria Line

ENR Line Cairo - Alexandria is the one of the trunk line which length is about 208 km.

a. Permanent way

- Lots of litter occur on the permanent way particularly at the outskirts of Greater Cairo and Alexandria, which might be due to dumping from cars. The litter should not be pitched on the permanent way for not only aesthetic but also safety train operation.
- People are walking on the railway truck, they disturb safety operation.

b. Depot (Al Hadra, Tanta)

- Since depot ground is smeared with oil and grease, an absorbent(wood powder, etc.) should be spread on the ground.
- Discharged water treatment is not equipped.
- Rolling stocks were not washed, washing machine is not fully equipped

c. Workshop (Gabel El Zatoon)

- Caution: Do not smoke in the workshop, we saw a worker smoking in it.

d. Station (Ramses, Tanta, Alexandria)

- The stations are dusty and a lot of litters occur on the platform and trucks

3) Cairo - Ismailia via Zagazig

ENR Cairo - Ismailia is important line relates the Nile Delta and the Suez regions.

a. Permanent way

- Lots of litter occur on the permanent way particularly at the outskirts of Greater Cairo and Alexandria, which might be due to dumping from cars.
- People are walking on the railway truck, they disturb safety operation.

b. Depot (Ismailia)
- Since depot ground is smeared with oil and grease, a absorbent (wood powder, etc.) should be spread on the ground.
- Discharged water treatment is not equipped.

c. Station(Benha, Zagazig, Ismailia)
- Most of local lines (2nd class, 3rd class passenger car) are crowded with students, soldiers and the public.
- The stations are dusty and a lot of litters on the platform and trucks

4) Cairo - Aswan via Luxor

ENR line Cairo - Aswan is one of the trunk line connected lower and upper Egypt. Luxor sleeping car was installed for tourists on the line. Total length 879 km, 16 hours trip from Cairo to Aswan.

a. Permanent way
- Double truck on the Cairo to Luxor, single truck on Luxor to Aswan.

b. Depot (Aswan, Luxor)
- Rolling stock washing machine was installed in Aswan depot in the year 1990. It is operated daily.
- Discharged water treatment is not equipped.

c. Station (Aswan, Luxor)
- Most of local lines(2nd class, 3rd class passenger car) are crowded with students, soldiers and the public.
- The stations are dusty and a lot of litters on the platform and trucks.

d. Comfort of the sleeping car
- The sleeping car was comfortable

(3) Environmental management action plan

The study of environmental analysis is to identify the existing environmental issues in ENR facilities i.e. station, permanent way, rolling stock, depot, workshop etc..
Almost ENR facilities: stations, rolling stocks, depots, workshops are dusty, because of its dried climate in Egypt, a lot of litters occur on the permanent way and platforms due to dumping. It should be suggested to keep the facilities clean.

Table 9.2.2-7 summarized the Environmental Management Action Plan for ENR service.

Table 9.2.2-7 Environmental Management Action Plan for ENR

What/where	How/Action	When /Action	Who	Effects	Cost	Feasibility	Remarks
a) Permanent way(P.W.)							
-Lots of litter on the permanent way	-Dumping is prohibited. -Sweeping the permanent ways	Onwards	ENR	-better aesthetics -safety operation	-No cost, usual expense	Yes	
-People walking on the permanent ways	No entry into P.W.	Onwards	ENR	-safety operation	-No cost, usual expense	Yes	
b) Depot, Workshop							
-Depot, Workshop ground is smeared with oil and grease	-Wood powder etc. spread on the floor	Onwards	ENR	-clean and safety work	-Usual expense	Yes	
-Discharged water treatment facility is fully not equipped	-Discharged water treatment facility should be constructed at every depots and workshops		ENR	-better aesthetics			
-Rolling stock washing machine is not fully equipped	-Washing machine should be installed one facility in one region		ENR	-clean and comfortable			
c) Station							
-The stations are duty, a lot of litters on platforms and trucks	-Dumping is prohibited. -Sweeping the platforms and trucks	Onwards	ENR	-Clean and comfortable, -Safety operation	- No cost, usual expense	Yes	
-Most of local lines are crowded with students, soldiers							

9.3 GENERAL EVALUATION

Chapter 5 described 4 possible proposals termed "with Cases", which was evaluated in Chapters 9.1 and 9.2 with regard to financial results, and social and environmental impacts. The following discussion will select the most appropriate case for ENR, considering financial results and other factors.

9.3.1 Final Selection & Evaluation of Business Improvement Proposals

(1) Selection of best proposal

The main differences between the 4 cases are shown below:

CASE	ENR Yearly fare increase	Competing transport Yearly fare increase	New recruits (% of current staff)
1-1	7%	5%	0%
1-2	7%	5%	1%
2-1	7%	7%	0%
2-2	7%	7%	1%

1) Raise fares

All cases assume ENR raises fares by 7% per year (passenger, freight, metro). Cases 1-1 and 1-2 assume that other transport modes raise fares by 5% per year. Cases 2-1 and 2-2 assume that other transport modes raise fares by 7% per year. ENR's fare raise is considered necessary, considering its cheap fares and necessity for government fiscal balance. Considering forecast inflation, the impact on Egyptian passengers will be relatively small.

As for fare raise of other modes, it is not kind of the political decision. It is assumed for making alternative cases, which is considered a realistic level and combination judging with competitive aspect, market structure and so on. Namely, one is that the fare raise of other modes follows the railway, and other one is lower than railway fare rising.

A 10% annual fare rise was also considered, but this would exceed current and forecast inflation. To meet national goals of limiting inflation, this option was not selected.

2) Reduce staff

Improved productivity is crucial to raise financial results. ENR productivity is low when compared to developed countries. To reduce the social impact, the proposals do not fire employees. Yearly recruitment through year 2002 is reduced from the current 1.67% of total employees down to 1% (cases 1-2 & 2-2), or 0% (no recruitment) in cases 1-1 & 2-1. No employees are fired to improve the realistic chance of the proposals being implemented. Reallocation and re-education of employees will be necessary if these employee reduction plans are implemented.

To cooperate with national employment expansion policy and preserve balanced employee age and skill structure, continued minimum recruitment is preferable. However, forecasts show ENR will not be profitable through the year 2001/02 and a zero recruit policy should be unavoidable. Even zero recruitment at ENR will have a small impact on overall unemployment in Egypt.

3) Most appropriate "With Case"

This Study estimated the results of the 4 proposals both with and without government financial support after 1997/98. But in any case, the government subsidy program begun in 1990 should be considered as a special program for a limited time only. Therefore, the case which

requires minimum government support after 1997/98 was selected.
Of the 4 proposals, Case 1-1 produces the smallest financial losses even if ENR does not receive government support after 1997/98 (12,000,000 LE loss in 2001/02). Case 1-1 also has the advantage of accumulating the smallest amount of debt by 2001/02 (981,000,000 LE).
Case 1-1 and Case 1-2 assume lower fare raises for competing transport modes (bus, taxi, truck). These cases may be materialized because there is a good chance that other modes do not follow the fair raise of ENR in the competitive environment.
Case 1-1 is considered best because zero recruitment is unavoidable considering that ENR will lose money through 2001/02.

The Study Team selected Case 1-1 as the most appropriate proposal based on the above considerations.

(2) Evaluation of management improvements included in all 4 proposals

In addition to the fair raise and labor productivity improvement described above, there are several other improvement proposals in all 4 cases discussed in Chapter 4.2, and outlined below.

1) 10% speed increase on main lines
Increasing speed will not have much impact on attracting passengers in the current transport market, but it will increase efficiency of locomotive and staff utilization. Also, speed up must be inevitable in near future to compete with motor transport on improved roads, and attract passengers with rising incomes. The proposals include a 10% speed increase on Main Lines, which is feasible without huge investment if the actions described in section 4.2.3 are implemented.

2) Government compensation
a. Government compensation for extremely heavily discounted tickets
The current ENR fare system includes extremely large discounts, which ENR is forced to provide to meet government policy. Moderate discounts for season and prepaid tickets are standard business practice, but ENR provides over 50% (in some cases more than 90%) discounts to passengers like students and government employees. Discounts over 50% are provided for social goals (like education policy), and it is inappropriate policy to force ENR to maintain this burden.
Forcing ENR to bear this burden will damage the motivation of management to improve ENR's business, and encourage irresponsible management practices. Therefore, the government should compensate ENR for the part of discounts which exceed the rational discount level (at highest 50%).

b. Construction & operation of new lines for national goals
New lines like the Sinai Peninsula line built to meet government policy require huge investments. Even after construction, operation is likely to be very unprofitable. Therefore, the government must compensate ENR for the financial burden of both construction and unprofitable operation. At the same time, ENR must do its best to operate those lines as efficiently as possible.

3) Line closure
The 4 proposals plan for 5 lines to be closed. There are very few passengers on these lines, so even if ENR tries its best to raise efficiency, it is certainly impossible to make a profit. Other

modes such as bus transport are much more efficient for small transport volumes, so using such transport is a better use of Egypt's social and economic resources. Although the direct cost reduction of closing these lines is small, this will allow ENR to use the valuable rolling stock, staff, and management resources from these lines.
Opposition from local communities is expected, but as described in section 10.1, there are ways ENR can persuade them to resolve these problems.

4) Strengthen ticket checking
From 15% to 25% of 2nd and 3rd class passengers do not pay, which reduces revenues, and is unfair to paying passengers and society. By strengthening ticket inspection and building the fence around stations , the 4 proposals plan to increase 2nd and 3rd class revenues by 15% by 2001/02, which is considered feasible.

5) Increase rolling stock availability
Increased rolling stock availability is critical, considering the high purchase cost. The 4 proposals assume an increase of availability to 85%, from the current 74%. This is described in Chapter 4.2.8. This is feasible considering the 90% or more availability in developed countries.

6) Rationalize freight transport
ENR is similar to Japan in that its geography tends to make ENR more focused on passenger than freight transport. As for freight transport, ENR currently uses railway's strength in large volume transport to transport iron ore and phosphates, but detailed study is necessary to decide what role ENR should play in general and containerized freight. But one point which is certain is that ENR has many low volume freight stations in short distance and this fact greatly damages train operation efficiency and wastes the precious transport capacity of the track. ENR should close those small stations and try to shift cargoes handled there to adjacent larger improved railway stations as much as possible.

7) Correct the data collection system
Unfortunately, the most fundamental data of ENR such as passenger-km seems to be not correct as closely described in Chapter 4.2.12. These data are crucially important for the adequate judgment of the railway management in every aspects. The data collection system of ENR should be immediately improved before waiting the full-fledged sophistication of information system.

8) Other proposal items
a. Develop related businesses
b. Expand & improve safety systems
c. Improve information system

These items are considered both feasible and necessary to improve profitability, expand revenues, reduce costs, and improve safety.

9.3.2 Extend Government Financial Support Until 2001/02

The government originally plans to terminate its financial support for ENR in 1997/98. But as seen in section 9.1, ENR will lose money in all of this Study's 4 proposals through 2001/02. Also, ENR debt is forecast to grow, because of investments larger than cash flow. Even in

Case 1-1, which forecasts the lowest debt, by 2001/02 ENR debt will grow to 980 million LE (nearly equal to total revenues)without continuation of the government support. With this forecast, both the government and ENR should be careful to avoid the vicious circle of borrowing increasing amounts to pay past debts. Therefore, the government must extend its support for ENR through 2001/02. With government support and strenuous efforts by ENR to implement the proposals in this report (zero recruitment, improved efficiency and so on), ENR is likely to show a profit after depreciation.

9.3.3 ENR After 2002

Government support until 2003 is assumed in the 4 proposals, but if this Study's proposals are implemented, ENR will become financially stable after that. However, it is matter of course that management improvements should not stop at 2002. Improvement proposals described in Chapter 4 must be continued after 2002. The business environment is forecast to become more and more competitive after 2002. ENR management should be flexible enough to cope with the rapidly changing market environment. ENR must continue to improve operating efficiency, limit recruitment to minimum required staff, improve services to increase revenues, and limit investments to projects which will produce financial returns. This is especially true because from 2003 to 2012, ENR must replace large numbers of locomotives with 25 years in operation. This report has pointed out that a large share of ENR investments are in rolling stock. If the current rolling stock management situation is not improved, ENR will lose all the financial gains from its improvement efforts through 2002. To reduce purchase expenses, ENR must improve its rolling stock availability, utilization and life-span, and should seriously consider the domestic production of diesel locomotives by either herself or external factory.

9.3.4 Overall Evaluation

ENR operates a rail network primarily along the Nile River and in the Nile Delta, in high population density areas. This is very advantageous for rail transport. This is shown by the remarkably high density of rail transport in Egypt compared to other countries. Even so, ENR has not been able to correct its financial losses due to very low fares, burdens imposed on ENR by government policy, low labor productivity and the high price of imported locomotive. If ENR takes proper action to improve, it will be able to achieve financial stability.
Chapter 4 describes solutions for the problems described in Chapter 3. ENR has plenty of room to improve its management efficiency. But improvement will require extremely hard ENR efforts and full government support. The later improvements begin, the more serious will be the problems ENR experiences. Improvements must be begun immediately.
Great efforts must be made to emphasize profitability at an organization like the railway, with many public service aspects. Since 1991, Egypt's government has implemented reforms, moving towards a market economy, but ENR efforts to improve its business have been lacking. ENR must raise productivity of staff and facilities, build an efficient organization, and provide cheaper and better service than other transport modes. To do this, ENR must raise the efforts of employees to provide excellent service, and produce a more market-oriented commercially competitive environment. This will allow the railway to play an important role in the midst of growing motorization of Egypt's transport system, and ENR can continues its large contributions to Egypt's society and economy. By changing to a more efficient organization, ENR will lighten its burden on government finances, and contribute to Egypt while using Egypt's economic resources more efficiently.

CHAPTER 10 IMPLEMENTATION PLAN

10.1 MASTER PLAN

Based on recognition of the important changes in the transport environment mentioned below, the master plan was formulated for actions which ENR should take. The master plan for improvement of ENR is as follows.

(1) Changing business environment
As mentioned in Chapter 4.1, the business environment surrounding ENR has been changing steadily. The most important changes are the transition to a market economy and progress of privatization. These changes are expected to accelerate over the next 15 years.

(2) Market orientation and efficiency
ENR needs to review and reform its current organization to prepare for the large changes expected in the transport sector. Details of aspects which ENR should change are described in Chapter 4.2. Basic points which the Study team proposes are: strengthen market orientation; emphasize profitability; and clarify responsibility between ENR and the government. In sum, ENR needs to change its basic management attitude.

(3) Improvement items
This Study proposes changes in almost 20 aspects of ENR's operations. Details of each item are mentioned in Chapters 4.2.1 to 4.3.

(4) Implementation plan of improvement items
The outlines of each improvement item and investment plan, including objectives, cost, effect, and implementation schedule are described in Table 10.1.

10.2 ESTABLISHING AN IMPLEMENTATION ORGANIZATION

To implement the reform of ENR, firm will of ENR and the related government agencies, the understanding and cooperation of various related parties, and strong leadership from the top government officials are essential.
First, ENR managers and politicians must realize the serious losses ENR is likely to experience, as shown in section 9.1 (Without Case). Strong desire for reform cannot be expected without understanding this problem.
From this standpoint, the team proposes that a strong organization be established both inside and outside ENR to implement its improvement plan.

10.2.1 Establish ENR Reform Management Committee

It is a matter of utmost importance and urgency to make top government officials understand the necessity of reforming ENR and to have them establish an ENR Reform Management Committee composed of the top officials in related agencies and prominent opinion leaders outside the government. This Committee will establish the basic policies for reforming ENR, and also oversee implementation of the reform plan. Some laws or regulations may need to be changed to establish such a committee.

10.2.2 Establish Reform Team

ENR should form a team from active managers in each division. The team will create the detailed implementation plan, check its progress of implementation, and provide timely, accurate advice to every sector of ENR.

Several of the important reform items such as closing lines, closing small size freight stations, and reducing staff will be difficult to implement without the understanding and cooperation of affected regions, users, and labor unions. These actions will require time to implement. The implementation plan should divide actions into those which require time and cooperation like the above mentioned, and those which can be implemented immediately.

10.3 IMPROVEMENT PROPOSAL IMPLEMENTATION PLAN

10.3.1 Actions to be Implemented after thorough Discussion with Related Parties (Including Labor Union)

(1) Line closure

ENR needs the thorough understanding of the high government officials and the areas which will be affected.
ENR needs to show the government officials : (1) the large amount of economic resources wasted by continuance of railway transport on each of the targeted lines, and (2) rural areas will not be seriously damaged by closing the lines.
To persuade the affected societies, ENR should hold meetings with representatives of the communities, and discuss necessity of new alternative transport, who will bear the costs of this transport if necessary, and explain the convenience of the alternative transport.

(2) Closure of small freight stations

ENR needs to survey stations being considered for closure, resolve major problems which may arise from the closure, explain the merits of using the adjacent larger stations (i.e. shorter transport time), and gain the understanding of freight shippers. For larger stations that remain, improvement of freight handling equipment and facilities is necessary in view of the better performance of rail freight transport.

(3) Reduction of staff

It is important to convince all parties that an improved standard of living inevitably requires higher productivity. ENR managers and employees must understand that number of staff will be reduced only through stopping new recruitment for a limited period, without firing any employees.
ENR must explain to managers and employees who may be afraid of the drawbacks caused by stopping the new recruitment that the very existence of ENR shall be threatened if the reform of ENR cannot be achieved.
Staff reduction will require prudent actions such as reeducation for changing jobs, and housing for employees transferred to new areas in Egypt.

10.3.2 Issues to be Discussed with Government Institutions

The ENR Reform Management Committee must immediately make decisions on the following issues which require negotiations among the related government institutions :

- Government compensation for excessive tariff discounts and investment in new lines for political purposes.
- Fare increase.
- Clarification of relationship between ENR and the government.
- Domestic locomotive production.
  Locomotive production requires large investments, and requires complete study of many issues such as factory location (ENR factory or strategic private enterprise).
- Extension of government financial support for ENR.

10.4 ITEMS WHICH CAN BE IMPLEMENTED IMMEDIATELY

The following improvement proposals require neither discussion with parties outside ENR nor huge expenditure, and therefore should be implemented as fast as possible.

(1) Improve data collection system

First, improvement of data collection (the most basic data such as passenger-km) from each regional office to the central office is urgently required.
Build a system to provide reliable data for calculating revenues and expenses on each line, possibly using international aid. Report the data to ENR managers, improving their understanding of ENR business results. Clear data will help gain the understanding of related parties regarding ENR problems.
Resolve reliability problems regarding normal and conductor tickets. Quickly introduce machines to issue conductor tickets. Quickly introduce personal computer-based ticket machines in stations to replace the AEG Telefunken machines now in place.

(2) Improve facility cleanliness

(3) Strengthen ticket checking

(4) Change organization to emphasize marketing

(5) Reduce travel time on Main Lines

Table 10.1 Master Plan Outline

Proposal	Objectives	Cost (Mil LE)	Effect (Mil LE) (revenue increase) (*cost reduction)	Remarks	Implementation Schedule
		NOTE: Investment cost from 1996-2002	NOTE: The two numbers in parentheses for most cases below are: 1) Effect in first year 2) Effect in 2001/02		1996/97 | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | After 2003
Market oriented tariff policy	Increase revenue and keep competitive with other modes	Not significant cost. Set new policy		Consider social impact	
Stronger ticket checking system	Increase revenue	Not significant cost	Case 1 (12.3, 52.7) Case 2 (13, 59)	Purchase portable ticketing machines	
Faster trains on main lines	Increase customer service and keep competitive with other modes	Investment cost. case 1 & 2 : 88.8 mil LE	2.36 mil LE in 2001/02	10% faster	
Improve freight transport	Increase customer service and improve competitiveness with other modes	Investment cost case 1 & 2 134.5 mil LE for improvement of freight wagon		Close small freight stations	
Improve passenger service	Increase volume. Make tariff raise easier.			Make staff attitudes more customer oriented	
Compensation from government	Cover loss related to discounted tickets	Not significant cost. Negotiation with government.	Case 1 (48, 62.1) Case 2 (51.4, 69.4)	Compensation for amounts discounted for social and political policy	
Extension of current financial support	Avoid debt accumulation	Not significant cost. Negotiation with government	*Case 1-1 (32.9, 85.9) Case 1-2 (34.6, 96.9) Case 2-1 (43.4, 134.8) Case 2-2 (44.2, 141.6)	interest is reduced	

Proposal	Objectives	Cost (Mil LE)	Effect (Mil LE) (revenue increase)	Remarks	Implementation Schedule
		NOTE: Investment cost from 1996-2002	NOTE: The two numbers in parentheses for most cases below are: 1) Effect in first year 2) Effect in 2001/02		1996/97 | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | After 2003
Reduce staff	Increase productivity. Reduce cost.	Training cost and staff reallocation cost	*Case 1-1 (32.1, 228.5) Case 1-2 (26.1, 200.6) Case 2-1 (29.5, 228.5) Case 2-2 (28.5, 200.6)	Final target is to reach to productivity level of developed countries. Reduction achieved by stopping new recruitment. Don't fire existing staff.	
Raise rolling stock availability	Reduce investment	Cost for improving car maintenance depot in Cases 1&2: 35 Mil. LE		Raise availability to 85% from 74%.	
Investment for Rolling stock	Replace old rolling stock. Meet increased demand.	Investment cost for rolling stock case 1: 644.8 mil LE case 2: 1456 ml LE		Rise of availability of rolling stock is taken into consideration	
Investment decision process	Increase profitability. Utilize existing assets.	Not significant cost Set new role for ENR investments.		Set objective standards for investment decisions	
Close lines	Increase profitability	Not significant cost	*Case 1&2 (3, 3)	Close 5 lightly used lines. Take actions to ease social impact.	
More business orientation	Increase revenue and productivity			Make ENR organization more market oriented	
Data collection system	Improve management decision process	Investment cost: case 1&2 :15 mil LE		Computerize	
Better safety devices	Maintain ENR reputation for reliability.	Investment cost: case 1&2 :668.5 mil LE	secure train operation safety and heightens punctual train operation		

Proposal	Objectives	Cost (Mil LE)	Effect (Mil LE) (revenue increase)	Remarks	Implementation Schedule
					1996/97 | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 | After 2003
Improve track maintenance	Cope with speed up and more frequent train operation.	Investment cost : case 1 & 2 : 1130.8 mil LE			
Develop diversified business	Increase revenue	Estimated purchase price of land: 35 mil LE. Negotiation with government.	Case 1&2 (7.2, 9.8)	Land should be owned by ENR	
Clearer relationship with government	Clarify the responsibility between ENR and government. Reduce cost	Not significant cost. Negotiation with government.	Bridge construction (Suez) and new line (Ismailis - Rafah) are borne by government investment cost: Bridge (Suez) 350 mil LE; New line (Ismailis - Rafah) 600 mil LE	Cost of new lines built for national policy is borne by government	
Improve facility cleanliness	Improve customer service	Not significant cost			
Produce locomotives in Egypt	Reduce cost for the replacement of many locomotives		roughly 40 % of locomotive cost is reduced from current level	Feasibility Study is needed before 2000	
Privatization	Increase productivity. Improve customer service. Reduce government financial burden.			"Separation of accounts" is first step to accumulate accurate and adequate data. Then consider appropriate type of privatization.	Medium and long term goal

CHAPTER 11 OUTLINE OF FURTHER STUDY

11.1 PURPOSE OF FURTHER STUDIES

The Master Plan Study for Egyptian National Railway outlines a plan to make ENR a more sound business in the future. In this study, there are many items recommended, even though these are mostly for short term until 2002. Similar recommendations must also be implemented to develop ENR in the long term past 2002. However, this Study does not make detailed recommendations for the long term, because long term issues must be further examined by other studies. Items to be covered in further studies are :

(a) Improved railway management
(b) Commuter transport system

Item (a) would improve railway management by improving collection of data and information, and improving the freight transportation system. This item, especially data collection, may not directly increase railway revenues. It would help reduce costs and establish a more solid railway business.
Item (b) is important because a railway system is the most suitable commuter transport in large cities and suburbs. This is an important role for railways, and appropriate a commuter railway network system should be established in urban areas. However, improvement of commuter transport needs huge investments. So the study cover measures to secure its funding.

This Chapter describes details to study for the following 3 items :

(1) Establishment of data collection and information system, including analysis of this data
(2) Modernization of railway freight transport including containerization
(3) Development of railway urban transport in Cairo area

Beside this further study, follow up and review of the Master Plan will be necessary. It is important to follow up on implementation of the improvement proposals mentioned in the Master Plan, and to review these proposals based on more accurate data. This will help ENR management to steadily improve the business.

11.2 SUBSTANCES OF THE STUDY

11.2.1 Establishment of Data Collection and Information System

(1) Necessity of the study

Chapter 4.2.12 covers ideas on the ENR data collection/information system, recommends improvements. Existing ENR data may not show a clear picture for railway management. Business analysis must be carried out using accurate data, both nationally and broken down by service and line. To do this appropriately and accurately, an thorough plan should be prepared. The following study would prepare this plan.

(2) Purpose of the study

This study has 3 goals :

- Make an adequate data collection system for railway management, producing correct and suitable railway statistics.
- Make an adequate information system covering passenger and freight services, revenues, expenses, etc.
- Methods to analyze and apply this data and information.

Information concerning the train operation is not included in this study because this information is part of the train control system.

(3) Study outline

1) Method of the study

There are 2 methods to perform the study, by a study team with several specialists in this field, or by one or two specialists to guide installation of this system over 1 or 2 years. It is also possible to combine the 2 methods.

2) Contents of the study

The contents of study or guidance are as follows:

a. Examine current condition of ENR data collection and information system
b. Examine problems of the current system
c. Necessary data and information for each field
   - Passenger and freight traffic
   - Passenger and freight revenues
   - Passenger service information: seat reservation, train schedule, etc.
   - Freight cargo information system for customers
   - Data for cost in each field
d. Method for gathering, analysis and application of this data and information
e. Method of analysis of cost recover ratio of each line and each service
f. Develop staged implementation plan
g. Install data collection and information system
h. Begin implementation including training

3) Study fields

To establish this system, specialists of following fields should be prepared.

Passenger and freight traffic
Railway statistics
Financial statistics
Financial analysis
System engineering

11.2.2 Modernization of Railway Freight Transport

(1) Necessity of the study

Observing the freight transport of ENR, their efficiency and service level are mostly inadequate

as mentioned in Chapter 4.2.4, even if ENR strongly expected to increase the freight traffic revenues, which are now only 25 % in total revenues. Namely, railway freight trains speed are slow and the rotation of freight wagons are low. So that the freight services do not meet the customer's needs such as no on-time transport and uncertain arrival time of their cargoes etc. Furthermore, it is delay from the tendency of containerization in the world. Therefore, the study to modernize the railway freight service and transportation should be carried out soon.

(2) Purpose of the study

The purpose of study is that:

To make measures to develop the freight railway transport to meet the market oriented
To make efficient and rationalized freight train operation system
To make sophisticated loading/unloading system including relation of transportation agent
To plan the railway container transport system including marine container

In this study, it should be carried out whether this project is feasible or not from view point of ENR financial aspect.

(3) Object and contents of the study

1) Object and area of the study

The object of this study is all area of Egyptian National Railways

2) Contents of the study

This study consists of following items

a. Examine current condition of freight transport: railway and other modes
   - Traffic volume including each commodity
   - Traffic flow including each commodity
   - Freight train operation: numbers, formation, round trip time, etc.
   - Freight transportation system and service level
   - Freight station facilities
b. Examine needs of freight customers including needs for marine container transport
c. Evaluate problems of railway freight transport
d. Freight demand forecast including suitable cargoes for containerization
e. Plan build and scrap for freight stations
f. Freight train operation plan including efficient freight train operation
g. Make station improvement plan including container depot
h. Make rolling stock plan
i. Make freight information system plan
j. Make investment plan
k. Make financial analysis
l. Make implementation plan

3) Study fields

To carry out this study, specialists for following fields should be prepared.

a. Freight commercials
b. Freight transportation system
c. Freight demand forecasts

d. Train operation
e. Freight transport information system
f. Station facilities
g. Rolling stock
h. Financial analysis

4) Necessary period of the study
This study can be completed in 1 year.

11.2.3 Development of Railway Urban Transport in Cairo Area

(1) Necessity of the study

By the Population Census in 1986, the population in Greater Cairo area (Cairo, Giza Governorate, and part of Qalyubia Governorate), was more than 10.7 million in 1986. The JICA Study in 1989 estimated this population growing to 16 million in 2000 as shown in Table 11.2.1. With this growth of population, there are many housing and industrial activities in this area. Nowadays some of them are living and operating (Fig.11.2.1). By these activities, traffic flow also increases and will increase 60% from 1987 to 2002. In order to cope with increasing urban traffic volume, the railway transportation system should be well prepared. For that, Metro No.2 line is going to be commenced and No.3 line is planned (even though No.3 line is still only a conceptual plan). In comparison to this increase in urban transport demand, the capability of the existing railway network is still poor. In this connection, upgrading of the existing railway and construction of new lines for urban transport should be studied.

Table 11.2.1 Population Forecast in Greater Cairo

Area	1986	2000
Greater Cairo Region		
Cairo	6,052,836	7,388,000
Giza	3,183,358	5,809,000
Qalyubia	1,506,697	2,818,000
Total	10,742,891	16,015,000

Data source: JICA Study, Greater Cairo Region Transport Master Plan Study

(1) Purpose of the study

Goals of the study :

Improve transport by railway in urban and suburban Cairo
Maximize utilization of existing railway network
Secure commuter transport for new cities
Study measures to obtain funds for construction and improvements

(2) Object and contents of the study

1) Object and area of the study
The objective area of this study is urban and suburban Cairo including new cities.

2) Contents of the study

This study consists of the following items.

a. Analyze the social and economic condition in Cairo, then make a social economic framework for the future
b. Examine related developments such as new cities, road network, and other development activities
c. Make passenger demand forecast in urban/suburban area
d. Make alternative routes and selection of well suited routes
e. Make transportation plan for each mode
f. Make train operation plan
g. Make facilities plan including civil structure, station, track, depot, electrification, signaling, telecommunication etc.
h. Make rolling stock plan
i. Analyze financial situation of this project
j. Recommend source of funds
k. Make railway management plan

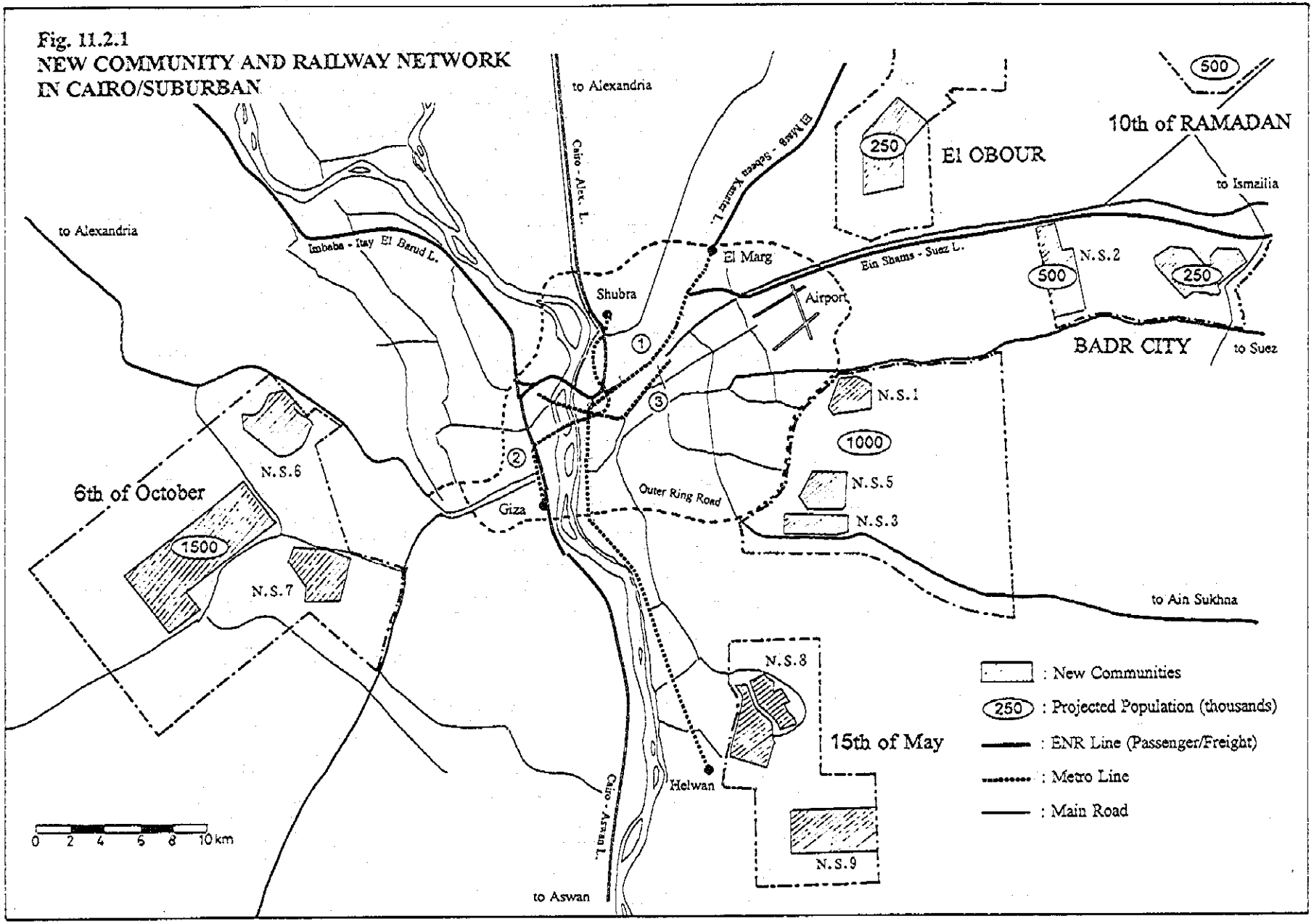
3) Study fields

a. Social and economy
b. Related development
c. Demand forecast
d. Train operation planning
e. Route and structure planning
f. Station and track planning
g. Electrification and power supply
h. Signaling & telecommunication
i. Rolling stock planning
j. Financial analysis

4) Study period

This study can be completed in 1.5 years.

Fig. 11.2.1
NEW COMMUNITY AND RAILWAY NETWORK
IN CAIRO/SUBURBAN



LIST OF TABLES AND FIGURES

TABLES & FIGURES