Table 1–11 TOTAL POPULATION BY SEX AND FIVE YEAR AGE GROUPS IN 1976

Age	Number (Thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0–4	3,002	2,838	5,840	15.58	14.97	15.28
5–9	2,514	2,348	4,862	13.04	12.39	12.72
10–14	2,320	2,164	4,484	12.04	11.42	11.73
15–19	1,984	1,825	3,809	10.29	9.63	9.96
20–24	2,005	1,838	3,843	10.40	9.70	10.05
25–29	1,546	1,422	2,968	8.02	7.50	7.76
30–34	1,004	1,111	2,115	5.21	5.86	5.53
35–39	837	987	1,824	4.34	5.21	4.77
40–44	883	970	1,853	4.58	5.12	4.85
45–49	810	872	1,682	4.21	4.60	4.40
50–54	703	722	1,425	3.65	3.81	3.73
55–59	577	588	1,165	2.99	3.10	3.05
60–64	408	439	847	2.12	2.32	2.22
65–69	322	361	683	1.67	1.90	1.79
70–	359	469	828	1.86	2.47	2.16
TOTAL	19,274	18,954	38,228	100.00	100.00	100.00

Source: Joint Study Projection

(E) DETERMINATION OF THE FUTURE FERTILITY RATES : 1976 – 2026

1–9 Given the population in 1976 by sex and five year age groups and the future survival ratios
up to year 2026, the population projection for the next fifty years was possible only by
determining the future age specific fertility rates.
The total fertility rates had to be obtained before the age specific fertility rates were deter-
mined, as we have observed in paragraph 1–7.

The crude birth rate and the female population in age groups ranging between 15 and 49 (the population which can be reproductive), were the factors used to determine the total fertility rates.

However, the structure of the female population is inclined to change over a long period of time and thus long-term forecast is difficult. Therefore, the crude birth rates are the main factor for determining the future fertility rates in our projection.
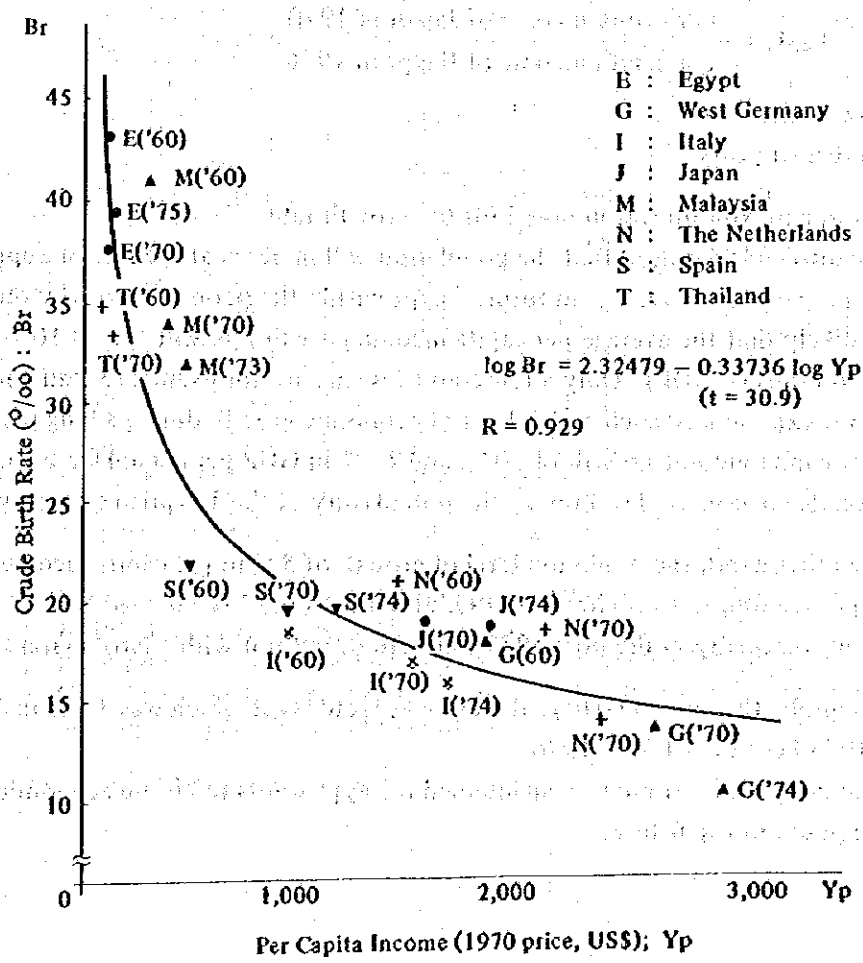
Our next step was to determine the future crude birth rates in Egypt.

It is a general phenomenon that the crude birth rate is inversely proportionate to the per capita income. As the per capita income increases in a country, the crude birth rates decline. The trend of the per capita income and crude birth rates in the past decade in some countries, both developed and developing, such as West Germany, Greece, Italy, Japan, Malaysia, The Netherlands, Mexico, Spain, The Philippines, and Thailand, were chosen to make a comparison with Egypt.
(See Annex 1—2).

Figure 1 shows the correlations between the crude birth rates and per capita income of some selected countries. The curve represents the regression equation between the variables.

Figure 1   CRUDE BIRTH RATES AND PER CAPITA INCOME

E : Egypt
G : West Germany
I : Italy
J : Japan
M : Malaysia
N : The Netherlands
S : Spain
T : Thailand

$$\log Br = 2.32479 - 0.33736 \log Yp$$
$$(t = 30.9)$$
$$R = 0.929$$

Per Capita Income (1970 price, US$); Yp

1—10 The next step was to forecast the future per capita income, in order to obtain the crude
birth rate.

We assumed that a sound economic development would be attained in Egypt, in terms of
per capita income, when it has reached the level of Japan in 1970.
The Net National Product (the difference between the NNP and the GDP in Japan in 1970
was negligible) at factor cost of Japan in 1970 was ¥57,138 billion in current price and
¥90,416 billion in 1975 price. On the other hand, the total population in 1970 was
104,665 thousand. Thus, the per capita income of Japan in 1970 becomes ¥863,870 in
1975 price, or US$2,399 using the exchange rate of US$1 = ¥360.

On the other hand, the Gross Domestic Production at factor cost of Egypt in 1976 was
LE 5,455 million in current price and becomes LE 5,168 million in 1975 price.
The total population in 1976 was 38,228 thousand, therefore the per capita income in
Egypt was LE 135 in 1975 price or US$193 using the exchange rate of US$1 = LE 0.70.
This shows that the per capita income in Japan in 1970 was 12.42 times higher than the
per capita income in Egypt in 1976 (1976 being the starting year of our projection).

Given these figures, the number of years necessary so that the per capita income in Egypt
reaches the level of Japan in 1970 can be expressed as per the following formula:

$$(1+r)^t = 12.42 = \frac{\text{per capita income of Japan in 1970}}{\text{per capita income of Egypt in 1976}}$$

r : growth rate
t : number of years

However, a maximum was imposed for the growth rate.
Taking into consideration that the population will increase at the rate of approximately
2 % per annum as an average in future Egypt within the period covered by our projection,
it is unlikely that the average per capita income growth rate will exceed 10 % per annum
(12 % in terms of GDP). Only a few countries such as, for example Japan and Korea,
have ever experienced such a high level of economic growth during a long period of time.
The per capita income growth of 10 %, and 12 % in GDP per annum were considered as
a reasonable maximum level taking the potentiality of the Egyptian economy into account.

On the other hand, the minimum level of growth of 5 % in per capita income and 7 % in
GDP, per annum, was also imposed. This level has only been exceeded in the recent years
in Egypt, especially in the post 1973 war period, but not with a large margin.

For example, the annual GDP growth rate at factor cost which was 3.2 % in 1974 and 9.8
% in 1975 became 8.1 % in 1976.
This minimum level should be maintained if Egypt wants to ensure economic and social
development in the future.

1-11 Applying the above minimum and maximum levels of growth rates into the formula, we can easily obtain the number of years required for the Egyptian per capita income to reach the level of Japan in 1970.

At 5 % growth, the number of years required is approximately fifty, and at 10 % growth, it is approximately twenty five years.

That is to say that the per capita income in Egypt would reach the level of Japan in 1970 by the year 2026 at the minimum growth rate, and by the year 2001 at the maximum growth rate.

We made the above assumptions as two alternatives referred to as Case 1 and Case 2 respectively throughout our report.

Table 1-12 ESTIMATED BIRTH RATES IN ACCORDANCE WITH THE PER CAPITA INCOME

Year	Case 1 (5 % Per Capita Income Growth)			Case 2 (10 % Per Capita Income Growth)		
	YP (1)	Birth Rates (2)	Average Birth Rates	YP (1)	Birth Rates (2)	Average Birth Rates
1976	141	39.8	38.1	141	39.8	36.9
1981	182	36.5	35.1	227	33.9	31.4
1986	230	33.7	32.4	366	28.8	26.7
1991	293	31.1	29.9	589	24.6	22.8
1996	374	28.6	27.5	948	20.9	19.4
2001	477	26.4	25.4	1,527	17.8	16.6
2006	609	24.3	23.5	2,350	15.4 (3)	—
2011	778	22.4	21.5	3,453	—	—
2016	992	20.6	19.8	4,842	—	—
2021	1,267	19.0	18.3	6,480	—	—
2026	1,616	17.5		8,271	—	—

Notes: (1) Estimated per capita income in Egypt in US Dollars (1970 price).
        (2) Birth rates per thousand population.
        (3) Birth rates in Case 2 are assumed to become stable after the year 2001.
        (4) Case 2 assumes the per capita income growth rate of 10 % per annum in real term by the year 2001, and gradual decline to 5 % by the year 2026.

Source: Joint Study Projection

1-12 Given the future per capita income of Egypt, we were able to forecast the future crude birth rates from the regression formula presented in Figure 1.

Table 1-12 shows the future crude birth rates in accordance with the per capita income for both Case 1 and Case 2.

The average crude birth rates shown are for each five years, and they were used for determining the total fertility rates indicated in paragraph 1-13.

The crude birth rates do not continue to decline after 2001-2006 in Case 2. The level which would be reached by 2001-2006, which is 15.4 per thousand, would remain stable until 2021-2026 in this projection.

The main reason for this assumption is that if the crude birth rate becomes lower, the population of Egypt would start decreasing in the long term. So in order to avoid this phenomenon, due to the unlikeness in the reality, the limit for the decline of the crude birth rate was imposed for Case 2.

Table 1-13   ESTIMATED FUTURE TOTAL FERTILITY RATES

(per thousand)

Period	Total Fertility Rates (1)	
	Case 1	Case 2
1976 – 1981	5.950	5.700
1981 – 1986	5.250	4.500
1986 – 1991	4.700	3.700
1991 – 1996	4.250	3.050
1996 – 2001	3.850	2.500
2001 – 2006	3.500	2.100 [2]
2006 – 2011	3.150	—
2011 – 2016	2.800	—
2016 – 2021	2.600	—
2021 – 2026	2.300	—

Notes: (1) Average total fertility rates of every five years.
        (2) The total fertility rates in Case 2 are assumed to become stable
             after the year 2001 – 2006.

Source: Joint Study Projection

1–13　The future total fertility rates were determined by the interrelationship between the crude birth rates and the total fertility rates.

The total fertility rates drop from 5.964 in the 1971–1976 period to 3.500 in Case 1 and 2.100 in Case 2 by the turn of the century. This implies that the 10 % per capita income growth reduces the total fertility rate by one third, whereas the 5 % growth only reduces it by less than half in twenty five years.

The importance of reducing the fertility rates is discussed further on.

1–14　From Table 1–13 we obtained the total fertility rates of 2.300 for Case 1 for the 2021–2026 period and 2.100 for Case 2 for the 2001–2006 period.

These figures were close to the ones of Japan in 1973, which was 2.1877.

The total fertility rate shows the number of births per thousand population during the five year period.

In order to obtain the age specific fertility rates, it was necessary to divide the total fertility rates, it was necessary to divide the total fertility rate by five in order to know the annual number of births.

This division by five gave the results of 0.4600 for Case 1 for the 2021–2026 period, and 0.4200 for Case 2 for the 2001–2006 period.

These figures were then broken down in each age group according to the same proportion as the age specific fertility rates of Japan in 1973.

After having determined the age specific fertility rate for the 2021–2026 period in Case 1 and the 2001–2006 period in Case 2, linear interpolations were made for each age group for each Case.

Each figure in each age group for the periods comprised between 1971–1976 and 2021–2026 in Case 1 and 1971–1976 and 2001–2006 in Case 2 were obtained by linear interpolation. The age specific fertility rates of the average of five years (e.g. 1976–1981.......2016–2021) were thus obtained.

The above results were summed to form the total fertility rates of every five years for the period extending between 1976 and 2026 for Case 1 and 1976 and 2026 for Case 2.

(Each set of five years has been represented as one group in our report for conveniency purposes).

Table 1-14 FORECAST OF FERTILITY RATES (1976 – 2026)

Age group	1960 (U.N.)	1966 (CAPMAS)	1966-71	1971-76	1976-1981		1981-1986		1986-1991		1991-1996	
					Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
15 – 19	0.0322	0.0426	0.0416	0.0412	0.0393	0.0353	0.0315	0.0243	0.0263	0.0170	0.0213	0.0116
20 – 24	0.2111	0.2349	0.2292	0.2273	0.2368	0.2326	0.2163	0.1953	0.2012	0.1695	0.1896	0.1482
25 – 29	0.3483	0.2760	0.2693	0.2671	0.2951	0.3021	0.2877	0.2763	0.2820	0.2575	0.2763	0.2373
30 – 34	0.3655	0.2904	0.2833	0.2810	0.2761	0.2622	0.2405	0.2016	0.2115	0.1621	0.1879	0.1305
35 – 39	0.1947	0.2158	0.2105	0.2089	0.1928	0.1744	0.1565	0.1179	0.1269	0.0807	0.1037	0.0531
40 – 44	0.0561	0.1181	0.1152	0.1143	0.1035	0.0923	0.0819	0.0594	0.0649	0.0385	0.0510	0.0220
45 – 49	0.0193	0.0548	0.0535	0.0530	0.0464	0.0410	0.0357	0.0252	0.0273	0.0148	0.0204	0.0073
Σ	1.2272	1.2326	1.2026	1.1928	1.1900	1.1400	1.0500	0.9000	0.9400	0.7400	0.8500	0.6100
5 × Σ	6.136	6.163	6.013	5.964	5.950	5.700	5.250	4.500	4.700	3.700	4.250	3.050

Age group	1996-2001		2001-2006		2006-2011		2011-2016		2016-2021		2021-2026	
	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
15 – 19	0.0177	0.0075	0.0147	0.0046	0.0113	—	0.0090	—	0.0068	—	0.0051	—
20 – 24	0.1771	0.1275	0.1666	0.1126	0.1550	—	0.1428	—	0.1362	—	0.1233	—
25 – 29	0.2695	0.2155	0.2625	0.1982	0.2526	—	0.2380	—	0.2340	—	0.2171	—
30 – 34	0.1679	0.1040	0.1498	0.0836	0.1323	—	0.1154	—	0.1056	—	0.0198	—
35 – 39	0.0839	0.0325	0.0672	0.0181	0.0523	—	0.0386	—	0.0291	—	0.0198	—
40 – 44	0.0393	0.0105	0.0294	0.0025	0.0208	—	0.0134	—	0.0078	—	0.0027	—
45 – 49	0.0146	0.0025	0.0098	0.0001	0.0057	—	0.0028	—	0.0005	—	0.0001	—
Σ	0.7700	0.5000	0.7000	0.4200	0.6300	—	0.5600	—	0.5200	—	0.4600	—
5 × Σ	3.850	2.500	3.500	2.100	3.150	—	2.800	—	2.600	—	2.300	—

Source: Joint Study Projection

Note: Fertility rates become stable after 2001–06 in Case 2.

(F) **POPULATION PROJECTION UP TO YEAR 2026 BY SEX AND FIVE YEAR AGE GROUPS**

1–15 Given the future survival ratios and age specific fertility rates, it is now possible to start the population projection up to the year 2026.

The same process as the one described in paragraph 1–8, to calculate the population in 1976 by sex and five year age groups, was applied.

However, this time the age specific fertility rates were designed to indicate two directions.

The first one, Case 1, reflects a slow decline in the future fertility rates, and the second one, Case 2, reflects a sharp decline as explained in paragraph 1–14.

The processes were repeated ten times for each case and the results for 1986, 2001, and 2026 are shown in Table 1–15.

The results of every five years from 1966 to 2026 are listed in Annex 1–3.

Table 1–15–1 ESTIMATED TOTAL POPULATION BY SEX AND FIVE YEAR AGE GROUPS IN 1986 (Case 1)

Age	Number (Thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 – 4	3,753	3,547	7,300	15.08	14.53	14.81
5 – 9	3,392	3,185	6,577	13.63	13.05	13.34
10 – 14	2,815	2,643	5,458	11.31	10.82	11.07
15 – 19	2,478	2,323	4,801	9.96	9.51	9.74
20 – 24	2,280	2,139	4,419	9.16	8.76	8.96
25 – 29	1,941	1,801	3,742	7.80	7.38	7.59
30 – 34	1,954	1,809	3,763	7.85	7.41	7.63
35 – 39	1,498	1,393	2,891	6.02	5.71	5.86
40 – 44	963	1,084	2,047	3.87	4.44	4.14
45 – 49	790	957	1,747	3.18	3.82	3.54
50 – 54	813	930	1,743	3.27	3.81	3.54
55 – 59	717	819	1,536	2.88	3.35	3.12
60 – 64	585	655	1,240	2.35	2.68	2.52
65 – 69	437	503	940	1.76	2.06	1.91
70 –	469	628	1,097	1.88	2.57	2.23
TOTAL	24,885	24,416	49,301	100.00	100.00	100.00

Source: Joint Study Projection

Table 1-15-2 ESTIMATED TOTAL POPULATION BY SEX AND FIVE YEAR AGE GROUPS IN 1986 (Case 2)

Age	Number (Thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 - 4	3,278	3,099	6,377	13.49	12.99	13.24
5 - 9	3,273	3,076	6,349	13.47	12.89	13.18
10 - 14	2,815	2,643	5,458	11.59	11.08	11.34
15 - 19	2,478	2,323	4,801	10.20	9.74	9.97
20 - 24	2,280	2,139	4,419	9.39	8.97	9.18
25 - 29	1,941	1,801	3,742	7.99	7.55	7.77
30 - 34	1,954	1,809	3,763	8.03	7.58	7.82
35 - 39	1,498	1,393	2,891	6.17	5.84	6.00
40 - 44	963	1,084	2,047	3.96	4.54	4.25
45 - 49	790	957	1,747	3.25	4.01	3.63
50 - 54	813	930	1,743	3.35	3.90	3.62
55 - 59	717	819	1,536	2.95	3.43	3.19
60 - 64	585	655	1,240	2.41	2.74	2.58
65 - 69	437	503	940	1.80	2.11	1.95
70 -	469	628	1,097	1.93	2.63	2.28
TOTAL	24,291	23,859	48,150	100.00	100.00	100.00

Source: Joint Study Projection

Table 1-15-3 ESTIMATED TOTAL POPULATION BY SEX AND FIVE YEAR AGE GROUPS IN 2001 (Case 1)

Age	Number (Thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 - 4	4,394	4,154	8,548	12.60	12.19	12.40
5 - 9	4,164	3,942	8,106	11.94	11.56	11.76
10 - 14	3,893	3,680	7,573	11.17	10.79	10.98
15 - 19	3,614	3,413	7,027	10.37	10.01	10.19
20 - 24	3,339	3,156	6,495	9.58	9.26	9.42
25 - 29	2,759	2,613	5,372	7.91	7.66	7.79
30 - 34	2,417	2,290	4,707	6.93	6.72	6.83
35 - 39	2,213	2,103	4,316	6.35	6.17	6.26
40 - 44	1,868	1,760	3,628	5.36	5.16	5.26
45 - 49	1,854	1,753	3,607	5.32	5.14	5.23
50 - 54	1,387	1,332	2,719	3.98	3.91	3.94
55 - 59	859	1,016	1,875	2.46	2.98	2.72
60 - 64	659	866	1,525	1.89	2.54	2.21
65 - 69	606	790	1,396	1.74	2.32	2.02
70 -	837	1,223	2,060	2.40	3.59	2.99
TOTAL	34,863	34,091	68,954	100.00	100.00	100.00

Source: Joint Study Projection

Table 1-15-4 ESTIMATED TOTAL POPULATION BY SEX AND FIVE YEAR AGE GROUPS IN 2001 (Case 2)

Age	Number (Thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 - 4	2,921	2,761	5,682	9.44	9.09	9.27
5 - 9	3,056	2,892	5,948	9.88	9.52	9.70
10 - 14	3,122	2,951	6,073	10.09	9.71	9.90
15 - 19	3,156	2,983	6,139	10.20	9.82	10.01
20 - 24	3,221	3,049	6,270	10.41	10.04	10.23
25 - 29	2,759	2,613	5,372	8.92	8.60	8.76
30 - 34	2,417	2,290	4,707	7.81	7.54	7.68
35 - 39	2,213	2,103	4,316	7.15	6.92	7.04
40 - 44	1,868	1,760	3,628	6.04	5.79	5.92
45 - 49	1,854	1,753	3,607	5.99	5.77	5.88
50 - 54	1,387	1,332	2,719	4.49	4.38	4.43
55 - 59	859	1,016	1,875	2.78	3.34	3.06
60 - 64	659	866	1,525	2.13	2.85	2.48
65 - 69	606	790	1,396	1.96	2.60	2.28
70 -	837	1,223	2,060	2.71	4.03	3.36
TOTAL	30,935	30,382	61,317	100.00	100.00	100.00

Source: Joint Study Projection

Table 1-15-5 ESTIMATED TOTAL POPULATION BY SEX AND FIVE YEAR AGE GROUPS IN 2026 (Case 1)

Age	Number (Thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 - 4	4,521	4,274	8,795	8.76	8.46	8.62
5 - 9	4,752	4,506	9,258	9.21	8.92	9.07
10 - 14	4,688	4,440	9,128	9.08	8.80	8.94
15 - 19	4,715	4,474	9,189	9.14	8.86	9.00
20 - 24	4,523	4,308	8,831	8.76	8.54	8.65
25 - 29	4,291	4,101	8,392	8.32	8.13	8.22
30 - 34	4,053	3,886	7,939	7.85	7.70	7.78
35 - 39	3,759	3,612	7,371	7.28	7.16	7.22
40 - 44	3,451	3,327	6,778	6.69	6.60	6.64
45 - 49	3,142	3,047	6,189	6.09	6.03	6.06
50 - 54	2,533	2,484	5,017	4.91	4.92	4.91
55 - 59	2,129	2,124	4,253	4.13	4.21	4.17
60 - 64	1,813	1,872	3,685	3.51	3.71	3.61
65 - 69	1,349	1,460	2,809	2.61	2.89	2.75
70 -	1,891	2,556	4,447	3.66	5.07	4.36
TOTAL	51,610	50,471	102,081	100.00	100.00	100.00

Source: Joint Study Projection

Table 1–15–6 ESTIMATED TOTAL POPULATION BY SEX AND FIVE YEAR AGE GROUPS IN 2026 (Case 2)

Age	Number (Thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 – 4	2,910	2,751	5,661	7.36	7.06	7.21
5 – 9	3,087	2,922	6,009	7.81	7.50	7.66
10 – 14	3,113	2,949	6,062	7.88	7.57	7.72
15 – 19	3,046	2,890	5,936	7.71	7.42	7.56
20 – 24	2,764	2,632	5,396	6.99	6.75	6.88
25 – 29	2,853	2,727	5,580	7.22	7.00	7.11
30 – 34	2,976	2,851	5,827	7.53	7.32	7.42
35 – 39	3,014	2,897	5,911	7.63	7.43	7.53
40 – 44	3,014	2,908	5,922	7.63	7.46	7.55
45 – 49	3,031	2,944	5,975	7.67	7.56	7.61
50 – 54	2,533	2,484	5,017	6.41	6.37	6.39
55 – 59	2,129	2,124	4,253	5.38	5.45	5.42
60 – 64	1,813	1,872	3,685	4.59	4.80	4.69
65 – 69	1,349	1,460	2,809	3.41	3.75	3.58
70 –	1,891	2,556	4,447	4.78	6.56	5.67
TOTAL	39,523	38,967	78,490	100.00	100.00	100.00

Source: Joint Study Projection

Table 1–16 ESTIMATED POPULATION INCREASE FROM 1976

(Millions)

Age Groups	Case 1		Case 2	
	2001	2026	2001	2026
0 – 4	2.7	3.0	0.1 (1)	0.1 (1)
5 – 9	3.2	4.4	1.1	1.1
10 – 14	3.1	4.7	1.6	1.6
15 – 19	3.2	5.4	2.3	2.1
20 – 24	2.7	5.0	2.4	1.6
25 – 29	2.4	5.4	2.4	2.6
30 – 34	2.6	5.8	2.6	3.7
35 – 39	2.5	5.6	2.5	4.1
40 – 44	1.8	4.9	1.8	4.1
45 – 49	1.9	4.5	1.9	4.3
50 – 54	1.3	3.6	1.3	3.6
55 – 59	0.7	3.1	0.7	3.1
60 – 64	0.7	2.8	0.7	2.8
65 – 69	0.7	2.1	0.7	2.1
70 –	1.2	3.6	1.2	3.6
TOTAL	30.7	63.9	23.1	40.3

(1) Population in decrease   Source: Joint Study Projection

Appendix II   EDUCATION AND MANPOWER

(A)   FORMATION OF SPECIFIC AGE GROUPS BY SEX

2–1   Obtaining the future population of Egypt with a differentiation by sex and five year age groups, makes it possible to project the future number of enrollments and supply of labor force.

However, before carrying out the projection, it is necessary to form specific age groups in order to be able to forecast more representative and accurate figures regarding the number of enrollments and supply of labor force. Three reasons were considered for this necessity, which are as follows:

First, because the classification by five year age groups does not correspond to the various levels of education within the Egyptian educational structure.

Secondly because it is more representative to integrate the economically active population into certain age groups (i.e. young (22–39 years old), middle aged (40–59 years old), and seniors (60–64 years old).

Thirdly, the old age population (65 years old and over) also has to be integrated into one age group in order to represent the dependent population.

Given these reasons, the results of Table 1–15 were reorganized into specific age groups (years 1986, 2001, 2026, Case 1 and Case 2).

The population of 1960, 1966, and 1976 was also reorganized into specific age groups so that the past trend could be studied.

The specific age groups are 0–5, 6–11, 12–14, 15–17, 18–21, 22–39, 40–59, 60–64, and 65 years old and over.

The 0–5 age group represents the population neither economically active nor engaged in education.

The 6–11, 12–14, 15–17 and 18–21 age groups represent the population engaged in primary, preparatory*, secondary*, and higher education respectively.

The 22–39, 40–59, and 60–64 age groups represent the economically active population. The age group containing the people of 65 years old and over represents the old age population, the dependent population.

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* Preparatory education in Egypt is equivalent to lower secondary education.

  Secondary education in Egypt is equivalent to upper secondary education.

2–2 The specific age groups were made for years 1960, 1966, 1976, 1986, 2001 and 2026 for both Case 1 and Case 2, males and females separately. The methods used for each year and for each case are as follows:

1) Calculations were made only for the 0–29 years old group. The other ages were directly available from the five year age groups.

2) The result of each five year age group was divided by five. This gave the average number of people of each age within the five year age groups.

3) A linear interpolation was made between each average figure obtained in sub-paragraph 2) above, giving the population of every single age between 2 and 27 years old. The results are represented by P2, P3, ... P27.

4) The above results were added by groups of five years according to the original five year age groups.

$$P5 + P6 + P7 + P8 + P9 = P5-9 \ (1) .....$$
$$..... P20 + P21 + P22 + P23 + P24 = P20-24$$

(1) P5–9 represents the population in the 5–9 age group.

The results are represented by P5–9, P10–14, ... P20–24.

5) The percentages of P5, P10–11, P20–21, P6–9, P12–14, P15–17 and P22–24 within their respective five year age group, obtained in 4), were then calculated as per the following example:

$$\left(\frac{P5}{P5-9} \% \ .... \ \frac{P22-24}{P20-24} \% \right)$$

6) Each percentage obtained as described in sub-paragraph 5) above, was then converted into actual figures by multiplying the percentages by the original population of each five year age group. (That is to say the population indicated in Tables 1–2, 1–8, 1–11, and 1–15). The number of people in each age group is represented by P'5, P'10–11, P'18–19, P'20–21, P'6–9, P'12–14, P'15–17, and P'22–24.

7) Specific age groups were formed by adding up the necessary age groups of 6) and the original population of each five year age group, as represented hereunder.

```
SP0–5     = OP0–4    + P'5
SP6–11    = P'6–9    + P'10–11
SP12–14   = P'12–14
SP15–17   = P'15–17
SP18–21   = P'18–19  + P'20–21
SP22–24   = P'22–24
```
where:
SP: Population in specific age group
OP: Population in original five year age group

Table 2–1–1 ESTIMATED POPULATION BY SPECIFIC AGE GROUPS IN 1960

Age	Number (thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 – 14	5,734	5,375	11,109	43.88	41.62	42.75
(0 – 5)	2,521	2,388	4,909	19.29	18.49	18.89
(6 – 11)	2,272	2,116	4,388	17.39	16.38	16.89
(12 – 14)	941	871	1,812	7.20	6.75	6.97
15 – 64	6,915	7,055	13,970	52.92	54.63	53.77
(15 – 17)	706	658	1,364	5.40	5.10	5.25
(18 – 21)	793	735	1,528	6.07	5.69	5.88
(22 – 39)	3,050	3,298	6,348	23.34	25.54	24.43
(40 – 59)	2,045	2,010	4,055	15.65	15.56	15.61
(60 – 64)	321	354	675	2.46	2.74	2.60
65 –	419	485	904	3.20	3.75	3.48
TOTAL	13,068	12,915	25,983	100.00	100.00	100.00

Source: Joint Study Projection

Table 2–1–2 ESTIMATED POPULATION BY SPECIFIC AGE GROUPS IN 1966

Age	Number (thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 – 14	6,621	6,127	12,748	43.63	41.12	42.39
(0 – 5)	3,062	2,893	5,955	20.18	19.42	19.80
(6 – 11)	2,325	2,093	4,418	15.32	14.05	14.69
(12 – 14)	1,234	1,141	2,375	8.13	7.65	7.90
15 – 64	8,051	8,225	16,276	53.05	55.20	54.12
(15 – 17)	1,015	910	1,925	6.69	6.11	6.40
(18 – 21)	1,033	1,018	2,051	6.81	6.83	6.82
(22 – 39)	3,247	3,571	6,818	21.40	23.97	22.67
(40 – 59)	2,388	2,308	4,696	15.74	15.49	15.61
(60 – 64)	368	418	786	2.41	2.80	2.62
65 –	504	548	1,052	3.32	3.68	3.49
TOTAL	15,176	14,900	30,076	100.00	100.00	100.00

Source: Joint Study Projection

Table 2-1-3 ESTIMATED POPULATION BY SPECIFIC AGE GROUPS IN 1976

Age	Number (thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 – 14	7,836	7,350	15,186	40.66	38.78	39.72
(0 – 5)	3,536	3,339	6,875	18.35	17.62	17.98
(6 – 11)	2,938	2,742	5,680	15.24	14.47	14.86
(12 – 14)	1,362	1,269	2,631	7.07	6.69	6.88
15 – 64	10,757	10,774	21,531	55.81	56.84	56.32
(15 – 17)	1,205	1,110	2,315	6.25	5.86	6.06
(18 – 21)	1,602	1,470	3,072	8.31	7.76	8.04
(22 – 39)	4,569	4,603	9,172	23.71	24.26	23.99
(40 – 59)	2,973	3,152	6,125	15.42	16.63	16.02
(60 – 64)	408	439	847	2.12	2.33	2.21
65 –	681	830	1,511	3.53	4.38	3.96
TOTAL	19,274	18,954	38,228	100.00	100.00	100.00

Source: Joint Study Projection

Table 2-1-4 ESTIMATED POPULATION BY SPECIFIC AGE GROUPS IN 1986 (CASE 1)

Age	Number (thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 – 14	9,960	9,375	19,335	40.02	38.40	39.22
(0 – 5)	4,466	4,218	8,684	17.95	17.28	17.61
(6 – 11)	3,862	3,625	7,487	15.52	14.85	15.19
(12 – 14)	1,632	1,532	3,164	6.55	6.27	6.42
15 – 64	14,019	13,910	27,929	56.34	56.97	56.65
(15 – 17)	1,517	1,422	2,939	6.10	5.82	5.96
(18 – 21)	1,904	1,786	3,690	8.61	8.06	8.33
(22 – 39)	6,730	6,257	12,987	26.09	24.89	25.49
(40 – 59)	3,283	3,790	7,073	13.19	15.52	14.35
(60 – 64)	585	655	1,240	2.35	2.68	2.52
65 –	906	1,131	2,037	3.64	4.63	4.13
TOTAL	24,885	24,416	49,301	100.00	100.00	100.00

Source: Joint Study Projection

Table 2-1-5 ESTIMATED POPULATION BY SPECIFIC AGE GROUPS IN 1986
            (CASE 2)

Age	Number (thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 - 14	9,366	8,818	18,184	38.56	36.96	37.77
(0 - 5)	3,944	3,726	7,670	16.24	15.62	15.93
(6 - 11)	3,790	3,560	7,350	15.57	14.89	15.23
(12 - 14)	1,632	1,532	3,164	6.75	6.45	6.61
15 - 64	14,019	13,910	27,929	57.71	58.30	58.00
(15 - 17)	1,517	1,422	2,939	6.24	5.96	6.10
(18 - 21)	1,904	1,786	3,690	7.84	7.49	7.66
(22 - 39)	6,730	6,257	12,987	27.71	26.22	26.97
(40 - 59)	3,283	3,790	7,073	13.52	15.88	14.69
(60 - 64)	585	655	1,240	2.40	2.75	2.58
65 -	906	1,131	2,037	3.73	4.74	4.23
TOTAL	24,291	23,859	48,150	100.00	100.00	100.00

Source: Joint Study Projection

Table 2-1-6 ESTIMATED POPULATION BY SPECIFIC AGE GROUPS IN 2001
            (CASE 1)

Age	Number (thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 - 14	12,451	11,776	24,227	35.71	34.54	35.14
(0 - 5)	5,246	4,961	10,207	15.05	14.55	14.80
(6 - 11)	4,902	4,639	9,541	14.06	13.61	13.84
(12 - 14)	2,303	2,176	4,479	6.60	6.38	6.50
15 - 64	20,969	20,302	41,271	60.15	59.55	59.85
(15 - 17)	2,202	2,079	4,281	6.32	6.10	6.21
(18 - 21)	2,797	2,642	5,439	8.02	7.75	7.89
(22 - 39)	9,343	8,854	18,197	26.80	25.97	26.39
(40 - 59)	5,968	5,861	11,829	17.12	17.19	17.15
(60 - 64)	659	866	1,525	1.89	2.54	2.21
65 -	1,443	2,013	3,456	4.14	5.91	5.01
TOTAL	34,863	34,091	68,954	100.00	100.00	100.00

Source: Joint Study Projection

Table 2–1–7 ESTIMATED POPULATION BY SPECIFIC AGE GROUPS IN 2001
(CASE 2)

Age	Number (thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 – 14	9,099	8,604	17,703	29.41	28.32	28.87
(0 – 5)	3,523	3,331	6,854	11.39	10.96	11.18
(6 – 11)	3,697	3,496	7,193	11.95	11.51	11.73
(12 – 14)	1,879	1,777	3,656	6.07	5.85	5.96
15 – 64	20,393	19,765	40,158	65.92	65.05	65.49
(15 – 17)	1,878	1,784	3,662	6.07	5.87	5.97
(18 – 21)	2,584	2,435	5,019	8.35	8.01	8.19
(22 – 39)	9,304	8,819	18,123	30.08	29.03	29.56
(40 – 59)	5,968	5,861	11,829	19.29	19.29	19.29
(60 – 64)	659	866	1,525	2.13	2.85	2.48
65 –	1,443	2,013	3,456	4.67	6.63	5.64
TOTAL	30,935	30,382	61,317	100.00	100.00	100.00

Source: Joint Study Projection

Table 2–1–8 ESTIMATED POPULATION BY SPECIFIC AGE GROUPS IN 2026
(CASE 1)

Age	Number (thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 – 14	13,961	13,220	27,181	27.05	26.19	26.63
(0 – 5)	5,460	5,163	10,623	10.58	10.23	10.41
(6 – 11)	5,691	5,396	11,087	11.03	10.69	10.86
(12 – 14)	2,810	2,661	5,471	5.44	5.27	5.36
15 – 64	34,409	33,235	67,644	66.68	65.85	66.27
(15 – 17)	2,842	2,695	5,537	5.51	5.34	5.43
(18 – 21)	3,708	3,524	7,232	7.18	6.98	7.09
(22 – 39)	14,791	14,162	28,953	28.66	28.06	28.36
(40 – 59)	11,255	10,982	22,237	21.81	21.76	21.78
(60 – 64)	1,813	1,872	3,685	3.52	3.71	3.61
65 –	3,240	4,016	7,256	6.27	7.96	7.10
TOTAL	51,610	50,471	102,081	100.00	100.00	100.00

Source: Joint Study Projection

Table 2-1-9 ESTIMATED POPULATION BY SPECIFIC AGE GROUPS IN 2026 (CASE 2)

Age	Number (thousands)			Ratio (%)		
	Male	Female	Total	Male	Female	Total
0 - 14	9,110	8,622	17,732	23.05	22.13	22.59
(0 - 5)	3,517	3,325	6,842	8.90	8.54	8.72
(6 - 11)	3,726	3,528	7,254	9.42	9.05	9.24
(12 - 14)	1,867	1,769	3,636	4.73	4.54	4.63
15 - 64	27,173	26,329	53,502	68.75	67.57	68.16
(15 - 17)	1,851	1,755	3,606	4.68	4.50	4.59
(18 - 21)	2,316	2,202	4,518	5.86	5.65	5.76
(22 - 39)	10,486	10,040	20,526	26.53	25.77	26.15
(40 - 59)	10,707	10,460	21,167	27.10	26.84	26.96
(60 - 64)	1,813	1,872	3,685	4.58	4.81	4.70
65 -	3,240	4,016	7,256	8.20	10.30	9.25
TOTAL	39,523	38,967	78,490	100.00	100.00	100.00

Source: Joint Study Projection

EDUCATION

(B) FORECAST OF THE NUMBER OF ENROLLMENTS IN EACH STAGE OF EDUCATION

2-3 The educational structure in Egypt was divided into the four following stages:

— The primary stage which is compulsory education provided for children between 6 and 11 years old.

— The preparatory stage for children between 12 and 14 years old.

— The secondary stage for age 15 to 17.

— Higher education, including universities, higher institutes and other post-secondary education, which is usually for age 18 to 21.

However, there are some institutions which do not correspond to the above age classification. For example, teacher training schools are for age 15 to 19, and technical training schools are for age 18 to 19.

In our projection, the number of students in teacher training schools was distributed between the secondary and higher education stages at the rate of 3 to 2, (due to the five year duration of the education), and the technical training school students were simply included in the higher education stage, merely for convenience purposes. The results in Table 2–2 overleaf, represent the total number and the ratios of pupils and students enrolled in the formal education within certain age groups in 1966 and 1976, regardless of the type of education.

Table 2–2   POPULATION, NUMBER OF ENROLLMENTS AND RATIOS OF EACH EDUCATIONAL STAGE IN 1966 AND 1976

| | 1966 | | | | 1976 | | | |
| | Population of Age Group ('000) | | Number ('000) (Ratios) | | Population of Age Group ('000) | | Number ('000) (Ratios) | |
Stages	Male	Female	Male	Female	Male	Female	Male	Female
Primary (6 – 11)	2,325	2,093	2,078 (89.4)	1,340 (64.0)	2,938	2,742	2,536 (86.3)	1,585 (57.8)
Preparatory (12 – 14)	1,234	1,141	423 (34.3)	178 (15.6)	1,362	1,269	869 (63.8)	470 (37.0)
Secondary(1) (15 – 17)	1,015	910	246 (24.2)	93 (10.2)	1,205	1,110	494 (41.0)	258 (23.2)
Higher (18 – 21)	1,033	1,018	–	–	1,602	1,470	339 (22.5)	145 (10.4)

(1)   The total number of students in general and technical secondary schools and 3/5 of the teacher training school students.

(2)   The total number of students in universities, higher institutes and 2/5 of teacher training school students. The number of higher institutes is from 1975 and only the total of male and female was available. Therefore the total figure was divided at the same ratio as the male-female university students ratio.

Source: Population;   Joint Study Projection
          Numbers;   CAPMAS

2–4   In Table 2–2, the primary stage enrollment ratio shows a slight decline between 1966 and 1976, while in the other stages the ratios increased significantly.
This is largely due to the rapid increase of population in the 6–11 age group and to the fact that the facilities and services are not able to follow the increase.

For the preparatory and secondary stages, the male enrollment ratios nearly doubled while the female enrollment ratios increase more than twice between 1966 and 1976.

For the higher education stage, although the 1966 figures were not available, a sharp increase can be observed between 1971 and 1976 for both male and female students.
The number of male university students increased from 132 thousand to 297 thousand, and the number of female students from 46 thousand to 124 thousand.
The number of students in higher institutes, male and female as a whole, increased from 36 thousand in 1971 to 50 thousand in 1976.
The number of students in technical training schools also increased from 11 thousand to 21 thousand for males, and from 4 thousand to 8 thousand for females, over the same period.

2–5   The enrollment ratios for preparatory and secondary education in total have shown an increase during the last decade. However, owing to a still low enrollment ratio in the preparatory stage, the 12–17 age group as a whole maintains a low ratio by international standards.
For example, in 1976, while the ratio of enrollment in the preparatory stage in Egypt was 42 %, higher ratios were observed in Greece (58 %), Jordan (50 %), Korea (46 %), and Malaysia (44 %).

The primary stage enrollment ratio was also low compared to some other countries, both developed and developing.

On the other hand, the enrollment ratio in universities was ranked second after Japan among the selected countries shown in Appendix 2–1. (For international comparison, see Annex 2–1).

2–6   In our projection, the enrollment ratios had to be set before projecting the future number of enrollments.
Some assumptions were made after having studied the trend of the past decade as indicated in paragraph 2–4, and after having set the rational target in the future so that Egypt could successfully follow the course of development.
These assumptions are as follows:

1)   That the compulsory primary education would be fully implemented by 1986.
Although this stage is compulsory, in 1976 only a little over 70 % of the population between 5 and 11 years old were enrolled.
That is to say that the figure would approach 100 % by 1986 in this projection.

2) That whether the preparatory education becomes compulsory heavily depends on a policy decision rather than on an extrapolation of the past trend.

However, we assumed that the preparatory stage would become compulsory by 2001, and we considered the period between 1976 and 1986 as a preparation period to execute the above assumption.

Thus, it is necessary to increase the enrollment ratios rather sharply for both males and females during this period.

In this projection, targets were set at 93.3 % for males and 58.4 % for females, by 1986. After 2001, nearly 100 % will be enrolled, due to the implementation of compulsory education.

3) During the last decade, the ratio increased from 18 % (1966) to 33 % (1976) for both males and females.

It is assumed that the ratio would reach the level of present developed countries, that is to say the level of Japan in 1975, by the year 2026, considering the fact that by that time the level of economic development would be approximately identical in Egypt and present Japan.

The ratios in 1986 and 2001 are the results of a linear interpolation using the figures of 1976 and 2026.

4) The enrollment ratio in higher education had already reached the level of some developed countries by 1976.

Assuming that in the future, emphasis is put on the improvement of the quality of education rather than on its quantity, a gradual increase of the enrollment ratio in this stage of education can be expected.

Our hypothesis in this projection is that by the year 2026, the ratio will have reached the level of Japan in 1975, which represents one of the highest ratios for higher education among the developed countries.

The ratios in 1986 and 2001 were also obtained by linear interpolation using the figures of 1976 and 2026.

-7 After having estimated the future male and female enrollment ratios separately, the results obtained were multiplied by the corresponding specific age groups, to obtain the future number of enrollments in the various stages of education.

The figures for males and females for each stage were totalled to calculate the total ratios of each stage. The results are given in Tables 2–3 and 2–4 overleaf.

Table 2—3 ENROLLMENT RATIOS IN DIFFERENT STAGES OF EDUCATION
CASE 1 and CASE 2

(%)

Age	Stages	1966 Male	1966 Female	1966 Total	1976 Male	1976 Female	1976 Total	1986 Male	1986 Female	1986 Total	2001 Male	2001 Female	2001 Total	2026 Male	2026 Female	2026 Total
6 — 11	Primary	89.4	64.0	77.4	86.3	57.8	72.5	99.0	99.0	99.0	99.8	99.8	99.8	99.9	99.9	99.9
12 — 14	Preparatory	34.3	15.6	25.3	63.8	37.0	50.9	93.3	58.4	76.4	99.8	99.8	99.8	99.9	99.9	99.9
15 — 17	Secondary	24.2	10.2	17.6	41.0	23.2	32.5	51.0	37.2	44.3	66.0	58.1	62.2	91.0	93.0	92.0
18 — 21	Higher	-	-	-	22.5	10.4	16.7	26.6	14.8	20.9	32.8	21.4	27.3	43.0	32.4	37.8

Source: Joint Study Projection
Note: Secondary stage includes 3/5 of teacher training school students.
Higher stage includes university students, higher university students, and 2/5 of teacher training school students.

Table 2—4 NUMBER OF ENROLLMENTS IN DIFFERENT STAGES OF EDUCATION
CASE 1

(Thousands)

Age	Stages	1966 Male	1966 Female	1966 Total	1976 Male	1976 Female	1976 Total	1986 Male	1986 Female	1986 Total	2001 Male	2001 Female	2001 Total	2026 Male	2026 Female	2026 Total
6 — 11	Primary	2,079	1,340	3,419	2,535	1,585	4,120	3,823	3,589	7,412	4,892	4,630	9,522	5,685	5,391	11,076
12 — 14	Preparatory	423	178	601	869	470	1,339	1,523	895	2,418	2,298	2,172	4,470	2,807	2,658	5,465
15 — 17	Secondary	246	93	339	494	258	752	774	529	1,303	1,453	1,208	2,661	2,586	2,506	5,092
18 — 21	Higher	-	-	-	360	153	513	506	264	770	917	565	1,482	1,594	1,142	2,736

CASE 2

Age	Stages	1966	1976	1986 Male	1986 Female	1986 Total	2001 Male	2001 Female	2001 Total	2026 Male	2026 Female	2026 Total
6 — 11	Primary	Same as above		3,752	3,524	7,276	3,690	3,489	7,179	3,722	3,525	7,247
12 — 14	Preparatory			1,525	895	2,418	1,875	1,773	3,648	1,865	1,767	3,632
15 — 17	Secondary			774	529	1,303	1,239	1,037	2,276	1,684	1,632	3,316
18 — 21	Higher			506	264	770	848	521	1,369	996	713	1,709

Source: Joint Study Projection
Note: Secondary stage includes 3/5 of teacher training school students.
Higher stage includes university students, higher institute students, and 2/5 of teacher training school students.

(C)   FORECAST OF REQUIRED SUPPLY OF TRAINED TEACHERS

2—12   In 1972/1973, the student-teacher ratios in Egypt were as follows:
  — 41 for the primary stage
  — 35 for the preparatory stage
  — 20 for the secondary stage.

The total average ratio for the preparatory and secondary stages was 28. These figures are far lower than the average student-teacher ratios of the nine advanced countries considered in Table 2—5, i.e. 26 for the primary stage, and 19 for the total of preparatory and secondary stages (See Table 2—5).
The position among developing countries shows that the ratios are relatively low. (See Table 2—6).

The student-teacher ratio being considered as one of the indicators representing the quality of education, it is desirable for Egypt to improve the ratio in future.
However, it may be better to assume that the student-teacher ratio after 1972/1973 was specially aggravated in the preparatory and secondary stages, due to the large population increase in the respective age groups.

Moreover, the expected continuous expansion of the school age population as a whole in the next ten years seems to increase the difficulty to meet the teacher needs in Egypt.

Taking the above conditions into consideration, it would be more realistic for Egypt to aim to attain the student-teacher ratios of current advanced countries by 2026 and not earlier.
In the next decade, emphasis should be put on trying to maintain the ratios of 1972/1973 and to avoid any deterioration since the improvement in ratios are rather unlikely to occur.
Thus, the figures in 1972/1973 were applied for the year 1986 in the forecast, and the figures in 2001 are the results of interpolation between those of 1986 and 2026.
The results are presented in Table 2—7.

Table 2-5 STUDENT-TEACHER RATIOS IN SOME ADVANCED COUNTRIES AND
IN EGYPT

Countries (Years)	Ratios	
	Primary Stage	Secondary Stage (1)
Austria (1973)	26	19
Canada (1972)	24	17
West Germany (1972)	33	22
Japan (1972)	25	20
The Netherlands (1972)	29	20
New Zealand (1973)	26	19
Norway (1972)	20	14
United Kingdom (1972)	26	17
U.S.A. (1972)	25	19
Average for the advanced countries	26	19
Egypt (1972/73)	41	28

Source: UNESCO STATISTICAL YEARBOOK, and CAPMAS

Note: (1) Education given to the age group 12-17
Including both preparatory and secondary education in the case of Egypt.

Table 2-6 STUDENT-TEACHER RATIO IN DEVELOPING COUNTRIES

Countries	Years	Primary Stage	Secondary Stage (Prep. & Sec.)
Algeria	1974	42	25
Morocco	1974	37	21
Jordan	1973	38	22
Indonesia	1973	32	16
Turkey	1973	34	27
Thailand	1973	32	24
Iraq	1973	22	26
Malaysia	1975	32	27
Brasil	1972	27	15
Ivory Coast	1972	46	25
Egypt	1973	41	28

Source: UNESCO

Table 2–7 STUDENT-TEACHER RATIOS IN EGYPT DURING THE PROJECTED PERIOD

Stages	1972/73	1986 [1]	2001	2026
Primary	41	41	35	26
Preparatory	35	35	31	24 [2]
Secondary	20	20	18	14 [2]

Source: Joint Study Projection

Notes: (1) It is assumed that the level of 1972/73 will be maintained until 1986
         (2) These figures are the result of break down of the advanced countries' average, i.e. 19.

2–13 The number of teachers required for the various stages of education can be calculated by dividing the number of pupils and students previously obtained in Table 2–4 by the future student-teacher ratios.

In Table 2–8, the actual and projected numbers of teachers required in order to attain the target which is to reach the level of developed countries by 2026 are given.
From this Table, it is clear that despite the fact that the student-teacher ratios do not improve until 1986, the number of teachers should be increased rather markedly. This is due to the increasing number of population eligible for enrollments, and to the increase in the enrollment ratios. Consequently, to maintain the student-teacher ratios of 1973 until 1986 seems a vital task in order to step forward to improve the quality of education towards the end of this century and in the first quarter of the next century.

In Case 1, there will be a large increase in every stage between 1986 and 2001 and in the secondary stage between 2001 and 2026.
The increase of enrollments in the primary and preparatory stages between 2001 and 2026 becomes moderate.
Compared to Case 1, Case 2 shows a rather moderate increase in every stage over the projected period except for the preparatory and secondary stages over the 1986–2001 period.

Table 2–8 ACTUAL AND PROJECTED NUMBER OF TEACHERS

	1973	1976	1986		2001		2026	
			Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
Number (thousands)								
Primary	98	102	181	177	272	205	426	279
Preparatory	29	38	69	69	144	118	228	151
Secondary	31	38	65	65	148	126	364	237
Total	157	176	315	311	564	449	1.018	667
Average Annual Increasing Rates (%)								
Primary	—	1.4	5.9	5.7	2.8	1.0	1.8	1.2
Preparatory	—	10.0	6.1	6.1	5.0	3.6	1.9	1.0
Secondary	—	6.8	5.5	5.5	5.6	4.5	3.7	2.6
Total	—	3.9	6.0	5.9	4.0	2.5	2.4	1.6

Source: Ministry of Education and Joint Study Projection

2–14 Hitherto the future demand of teachers required was projected. To fulfil this demand, the supply of trained teachers should be calculated by taking the number of teachers who retire or die during the projected period into consideration. This number of teachers replacing the retired and dead was assumed to be 5 % annually in our projection.
The increase in the number of teachers to be supplied has to exceed the number of teachers required in the future. The required supply of trained teachers is shown in Table 2–9 overleaf.

This Table indicates the necessity of increase of the number of teachers for every stage of education and especially for the secondary stage in both Case 1 and Case 2 in the next fifty years. Moreover, since the present government plan to increase the output of trained primary school teachers only supplement half of the required supply, it will be difficult to attain the target number of teachers which is to maintain the level of 1973 until 1986, or to raise the standard to the current level of developed countries unless an urgent alteration is made in the plan.

Table 2--9   REQUIRED SUPPLY OF TRAINED TEACHERS

(thousands)

	1976 – 1986		1986 – 2001		2001 – 2026	
	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
Number Primary	146 (67)	141 (66)	257 (166)	170 (142)	579 (425)	372 (298)
Preparatory	56 (25)	56 (25)	150 (75)	116 (67)	310 (226)	200 (167)
Secondary	52 (25)	52 (25)	157 (74)	129 (68)	511 (295)	328 (217)
Total	254 (117)	249 (116)	564 (315)	415 (277)	1,400 (946)	900 (682)
Average Annual Number						
Primary	14.6	14.1	17.1	11.3	23.2	14.9
Preparatory	5.6	5.6	10.0	7.7	12.4	8.0
Secondary	5.2	5.2	10.5	8.6	20.4	13.1
Total	25.4	24.9	37.6	27.7	56.0	36.0

Source: Joint Study Projection

Note: The fitures between brackets are the number of replacement teachers required
within the total required supply when an annual replacement rate of 5 % is con-
sidered.

(D)   FORECAST OF REQUIRED PUBLIC CURRENT EXPENDITURE FOR EDUCA-
TION

2--15   The forecast of government current expenditure for education up to year 2026 was made
for both Case 1 and Case 2 in this projection.

For the forecast, the unit cost which indicates the educational cost per student was first
projected. In this forecast, the expected increase in unit cost per student is taken into
account. For example, the annual increase in real wage for teachers of 5 % in Case 1 and
10 % in Case 2 were estimated according to the different rate of expected per capita in-
come growth in the future.

In unit cost, the qualitative expenditure such as educational facilities and services is in-
cluded, but the improvement of quality in the future is omitted.

The future unit costs per student for both Cases are presented in Table 2--10.

By multiplying the unit costs by the number of pupils and students, the government
current expenditures for education became available and are shown in Table 2--11.

The expenditure for administration, adult-literacy projects, education of the handicapped,
etc., is also included in the others.

This type of current expenditure occupied approximately 4.6 % to the total educational expenditure in 1976, and in this projection, an expenditure of 5 % is estimated throughout the projection period.

Table 2–10 PUBLIC CURRENT EXPENDITURE FOR EDUCATION; UNIT COST PER STUDENT

(LE Pounds, 1976 Price)

Stages	1976	1986		2001		2026	
		Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
Primary	20	33	52	68	217	229	1,173
Preparatory	29	47	75	98	314	333	1,701
Secondary	70 [1]	114	182	237	758	803	4,106
Higher	188	306	488	637	2,037	2,156	11,028

Source: Joint Study Projection

Note: (1) Average of different type of formal education given to the 15–17 age group

Table 2–11 GOVERNMENT CURRENT EXPENDITURE FOR EDUCATION

(Million L.E.; 1976 Price)

	1976	1986		2001		2026	
	(Actual)	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
Primary	82	245	378	647	1,558	2,536	8,501
Preparatory	38	114	182	438	1,145	1,820	6,178
Secondary	52	149	237	631	1,725	4,089	13,615
Higher	96	236	376	944	2,789	5,899	18,848
Others [1]	12	39	62	140	380	755	2,481
Total	280	783	1,235	2,800	7,597	15,099	49,623

Note: (1) Others include such current expenditure as for education of handicapped people, adult literacy projects, administration, etc.

Source: Joint Study Projections

2–16 The share of total educational public current expenditure to GDP during the projected period is shown in Table 2–12 overleaf.

The Table indicates that the required total expenditures to GDP in 2001 reach 7.87 % in Case 1 and 7.50 % in Case 2.

By 2026 they reach 8.46 % in Case 1 and 7.07 % in Case 2, showing a slight decline.

It is noteworthy that these expenditures exclude the capital expenditures required in the future and when they are included, the required expenditure in Case 1 will be far greater than that of Case 2 due to a slow decline in the fertility rates and to a rapid increase in the school age population.

Table 2-12 PUBLIC CURRENT EXPENDITURE IN EDUCATION TO GDP

(1976 price)

	1976	1986		2001		2026	
		Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
(1) Population (thousands)	38,228	49,301	48,150	68,954	61,317	102,081	78,490
(2) GDP (million L.E) (market price)	5,828	12,243	19,039	35,598	101,280	178,463	702,110
(3) Per Capita GDP (L.E.)	152	248	395	516	1,651	1,748	8,945
(4) Public Current Expenditure in Education (million L.E.)	280	783	1,235	2,800	7,597	15,099	49,623
(5) (4)/GDP (%)	4.81	6.40	6.49	7.87	7.50	8.46	7.07

Source: Joint Study Projection

2-17 Table 2-13 shows the public expenditure devoted to education in some countries both developed and developing.

Although the figures include both capital and recurrent expenditures to GNP and contain only the public and quasi-public expenditures, they can be useful as a type of indicator for understanding the position of future Egyptian standard.

Table 2-13 PUBLIC EXPENDITURE[1] FOR EDUCATION TO GNP IN FIFTEEN SELECTED COUNTRIES

Countries	Years	% GDP Devoted to Education (Public Exp. Only)	% Total Public Expenditure Devoted to Education
Canada	1972	7.7	19.4
Japan	1971	4.3	20.7
U.K.	1972	6.3	12.7
U.S.A.	1972	6.0	15.4
W. Germany	1972	4.2	14.2
The Netherlands	1972	8.5	19.1
Spain	1971	2.4	15.2 (1970)
Morocco	1974	5.0 (1972)	16.5
Brasil	1974	4.3	12.0
Jordan	1973	7.0	8.8
Korea	1973	2.9	20.1
Malaysia	1974	6.4	28.0
The Philippines	1974	2.5	14.9
Iraq	1972	6.7	16.3 (1973)
Egypt	1974	5.3	—

Source: UNESCO
(1) Including all capital and recurrent expenditures devoted to education by public and quasi-public agencies.

(E)   FORECAST OF MANPOWER SUPPLY

2—18   The problem of manpower is the most direct and crucial factor for economic development. The balanced demand and supply of labor force is an essential element for a sound economic development.

In the first chapter of this report, the increase of the population in Egypt for the next fifty years was observed. The large number of young population which is now hardly economically active, is expected to enter in the labor market in the future.

Moreover, the social changes together with a larger female population with educational background will induce more female participation in the labor market than the current level.

The growing enrollment ratios for every stage of education is also likely to change the formation of the society.

The rapid increase of the population and the growing inflow of new labor force with higher educational background will change not only the quantity but also the quality of the labor force in future Egypt.

The object of this part of the report is to present a projection and forecast of the number of labor force expected in the years 1986, 2001, and 2026, with a classification by sex and breakdown in some age groups.

2—19   Table 2—14 shows the population in each age group over 6 years old, and the labor force participation ratios in 1966.

The figures in the column entitled "Labor Force" are the results of the multiplication of each population by each participation ratio.

The ratios of the labor force to the total population are 52.1 % for males, 4.4 % for females, and 28.5 % as a total.

Since the latest data available is from 1966, our forecast of the number of labor force starts from this year.

Table 2-14 POPULATION, LABOR FORCE PARTICIPATION RATIOS, AND NUMBER OF LABOR FORCE IN EGYPT IN 1966

Age Groups	Male			Female			Total		
	(1) Popula-tion	Partici-pation Ratios	(1) Labor Force	(1) Popula-tion	Partici-pation Ratios	(1) Labor Force	(1) Popula-tion	Partici-pation Ratios	(1) Labor Force
6 - 11	2,325	10.2	237	2,093	2.7	57	4,418	6.7	294
12 - 14	1,234	32.2	397	1,141	6.7	76	2,375	19.9	473
15 - 19	1,588	58.7	932	1,447	7.3	106	3,035	34.2	1,038
20 - 29	1,908	83.7	1,597	2,147	7.8	167	4,055	43.5	1,764
30 - 39	1,799	98.0	1,763	1,905	5.3	101	3,704	50.3	1,864
40 - 49	1,444	98.4	1,421	1,388	5.4	75	2,832	52.8	1,496
50 - 59	944	96.9	915	920	5.1	47	1,864	51.6	962
60 - 64	368	85.9	316	418	4.0	17	786	42.4	333
65 -	504	64.5	325	548	2.3	13	1,052	32.1	338
TOTAL (6-)	12,144	65.2^4	7,903	12,007	5.4^8	658	24,121	35.4^9	8,561

Source: CAPMAS

Notes: (1) Population and labor force expressed in thousands
Participation ratios expressed in percentage

2-20 The forecast of the labor force was made for the years 1976, 1986, 2001, and 2026, for both Case 1 and Case 2.

The labor force participation ratios were obtained before calculating the number of labor force of each year.
A number of assumptions were made for the estimation of the ratios, as follows:

1) The 6-11 age group principally belongs to the compulsory education age group. However, in 1966, a portion of the population of this group participated in economic activities.

It was assumed that the same proportion also existed as labor force in 1976. The assumption in paragraph 2-4 which indicates that the compulsory education for the primary stage would be fully implemented by 1986 eradicates the labor force which belongs to this age group by that time.
Henceforth, the participation ratio in this age group becomes nil.

2) In 1976, the male enrollment ratio for the 12-14 age group was 63.8 % (see Table 2-3).
After excluding the handicapped and the population, enrolled in education in this age group, the labor force participation ratio becomes 31.2 %.
In 1986, the enrollment ratio increases to 93.3 % and the labor force participation

ratio drops to 5.7 % accordingly.

3) The female labor force participation ratio for the 12–14 age group of 1966 which was 6.7 % was also applied to the years 1976 and 1986.

4) It is assumed that the compulsory education for the preparatory stage will be introduced some time between 1986 and 2001, and that it will be fully implemented by the year 2001.

   Therefore, the labor froce participation ratio for this age group becomes nil for the years 2001 and 2026 for both males and females.

5) It is observed that a relatively large proportion of the male population in the 15–19 age group was neither engaged as labor force nor as students in 1966.
   This was probably due to an obligatory military service starting at the age of 18.
   We assumed that approximately the same proportion also existed in 1976. By excluding the above proportion and the enrollment ratios for secondary education and a part of higher education, the labor force participation ratio for males in 1976 became 44.3 %.

6) The female enrollment ratio for the secondary stage doubled during 1966 and 1976.
   It is natural to consider that this increase was due to an increasing social participation among the young female population, and we assumed that this increase could also apply to the labor force participation for the female population in the 15–19 age group.

   Therefore, it is assumed that the female labor force participation ratio doubled during the same period.

7) It is assumed by the year 2001, the female labor force participation ratio in the 15–19 age group will reach the level of Japan in 1965, and that by the year 2026 it will have reached the level of Japan in 1975. The enrollment ratios for this age group is expected to increase consistently in the future as we observed before.

   The future ratio showed a level similar to that of Japan as seen in the first part of our projection, and thus the labor force participation ratio is also assumed to follow the same pattern.

   However, when the enrollment ratio reaches its highest level in 2026, the labor force participation ratio drops after reaching the peak in 2001, due to the overwhelming population engaged in education.

8) The male labor force participation ratio for age groups over 20 years old and under 64 years old, have reached the high level of developed countries and no significant change is expected in the future.

   For the age group over 65, the labor force participation ratio is high in the present circumstances due to the large share of agricultural labor force. In the long-term, this

share will gradually decrease, to reach the level of developed countries.
Taking the above conditions into consideration, it is assumed, in this forecast, that the labor force participation ratio in Egypt will reach the level of Japan in 1975 by the year 2026.

The figures for 1976, 1986, and 2001 were obtained by linear interpolation using the ratios in 1966 and 2026.

9) From the international comparison, it is observed that the female participation ratio in present Egypt is extremely low.
For example, in Turkey, which is an Islamic country striving for modernization, the female participation ratio had already reached 29.8 % in 1975 while the male participation ratio was approximately the same as in Egypt.

In the case of Malaysia, where the population is predominantly Moslem, the female participation ratio reached 20.9 % in 1970.

Thus, it is implied that as the modernization and social changes proceed in Egypt, such as more female population with higher degree of qualification and more education, towards the year 2026 the attainment of a high female participation ratio is not unrealistic.

It this forecast, considering the above circumstances, it is assumed that the female labor force participation ratios for the age groups over 20 years old will reach the level of Japan in 1975 by the year 2026.
The figures for 1976, 1986, and 2001 were obtained by linear interpolation using the ratios of 1966 and 2026. (See Annex 2-2).

2-21 The future labor force participation ratios by sex and by age groups were obtained from the above mentioned assumptions and they are presented in Table 2-15.
The estimated number of labor force was drawn from Table 2-15, and it is presented in Table 2-16.
The numbers include Egyptians working abroad.

Table 2-15-1 ESTIMATED LABOR FORCE PARTICIPATION RATIOS BY SEX AND AGE GROUPS (%)
(CASE 1)

Age	1966			1976			1986			2001			2026		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
6 — 11	10.2	2.7	6.7	10.2	2.7	6.6	0	0	0	0	0	0	0	0	0
12 — 14	32.2	6.7	19.9	31.2	6.7	19.4	5.7	6.7	6.2	0	0	0	0	0	0
15 — 19	58.7	7.3	34.2	44.3	14.6	30.1	40.0	23.8	32.2	33.7	37.6	35.6	23.0	22.6	22.8
20 — 29	85.7	7.8	43.5	84.5	15.7	51.6	85.3	23.6	55.5	86.4	35.4	61.6	88.4	55.1	72.1
30 — 39	98.0	5.3	50.3	98.1	12.4	52.4	98.3	19.5	60.4	98.5	30.2	65.3	98.8	47.9	73.9
40 — 49	98.4	5.4	52.8	98.4	14.6	54.7	98.4	23.8	58.3	98.3	37.7	68.9	98.3	60.7	79.8
50 — 59	96.9	5.1	51.6	96.8	13.4	54.6	96.7	21.6	56.7	96.5	34.0	64.5	96.2	54.7	75.6
60 — 64	85.9	4.0	42.4	85.8	9.8	46.4	85.7	15.6	48.6	85.6	24.4	50.8	85.4	38.9	61.8
65 —	64.5	2.3	32.1	62.0	4.5	30.4	59.5	6.7	30.2	55.8	10.0	29.1	49.5	15.5	30.7
TOTAL(1)	52.1	4.4	28.5	52.3	9.1	30.9	49.5	13.3	31.6	52.3	21.1	36.9	59.5	33.6	46.7

Age	1966			1976			1986			2001			2026		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
6 — (2)	65.2	5.5	35.5	64.1	11.0	37.7	60.4	16.1	38.3	61.6	24.7	43.3	66.5	37.5	52.1
15 —	85.0	6.0	45.0	81.9	13.5	47.4	81.9	20.9	51.3	81.4	32.2	56.9	81.6	45.6	63.4
20 — 39	90.6	6.6	46.8	89.2	14.4	51.9	91.2	21.8	57.7	91.6	33.2	63.2	93.3	51.7	73.0
40 — 59	97.8	5.2	52.3	97.7	14.1	54.7	97.6	22.8	57.5	97.6	36.2	67.2	97.4	58.2	78.1

Source: Joint Study Projection

Note: (1) Represents the ratios to the total population

  (2) Represents the ratio to some specific age groups

Table 2–15–2 ESTIMATED LABOR FORCE PARTICIPATION RATIOS BY SEX AND AGE GROUPS (%)
(CASE 2)

	1986			2001			2026		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
6 – 11	0	0	0	0	0	0	0	0	0
12 – 14	5.7	6.7	6.2	0	0	0	0	0	0
15 – 19	40.0	23.8	32.2	33.7	37.6	35.6	23.0	22.6	22.8
20 – 29	85.3	23.6	55.5	86.4	35.4	61.6	88.4	55.1	72.1
30 – 39	98.3	19.5	60.4	98.5	30.2	65.3	98.8	47.9	73.9
40 – 49	98.4	23.8	58.3	98.3	37.7	68.9	98.3	60.7	79.8
50 – 59	96.7	21.6	56.7	96.5	34.0	64.5	96.2	54.7	75.6
60 – 64	85.7	15.6	48.6	85.6	24.4	50.8	85.4	38.9	61.8
65 –	59.5	6.7	30.2	55.8	10.0	29.1	49.5	15.5	30.7
TOTAL (1)	50.7	13.6	32.3	58.1	23.0	40.7	63.7	35.4	49.6
6 – (2)	60.6	16.2	38.5	65.6	25.8	45.9	69.9	38.7	54.4
15 –	81.9	20.9	51.3	82.4	32.1	57.3	82.7	45.4	64.1
20 – 39	91.2	21.8	57.7	91.7	33.1	63.2	93.8	51.4	73.0
40 – 59	97.6	22.8	57.5	97.6	36.2	67.2	97.4	58.1	78.0

Source: Joint Study Projection

Note: (1) Represents the ratios to the total population

  (2) Represents the ratios to some specific age groups

Table 2-16-1 ESTIMATED NUMBER OF LABOR FORCE BY SEX AND AGE GROUPS

(CASE 1)

(Thousands)

	1966			1976			1986			2001			2026		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
6 — 11	237	57	294	300	74	374	0	0	0	0	0	0	0	0	0
12 — 14	397	76	473	425	85	510	93	103	196	0	0	0	0	0	0
15 — 19	932	106	1,038	879	266	1,145	991	553	1,544	1,218	1,283	2,501	1,084	1,011	2,059
20 — 29	1,597	167	1,764	3,001	512	3,513	3,601	930	4,531	5,269	2,042	7,311	7,792	4,633	12,425
30 — 39	1,763	101	1,864	1,806	260	2,066	3,393	624	4,017	4,561	1,327	5,888	7,718	3,592	11,310
40 — 49	1,421	74	1,495	1,666	269	1,935	1,725	486	2,211	3,659	1,324	4,983	6,481	3,869	10,350
50 — 59	915	47	962	1,239	176	1,415	1,480	378	1,858	2,167	768	2,965	4,485	2,521	7,006
60 — 64	316	17	333	350	43	393	501	102	603	564	211	755	1,548	728	2,276
65 —	325	13	338	422	37	459	539	76	615	805	201	1,006	1,604	622	2,226
TOTAL	7,903	658	8,561	10,088	1,722	11,810	12,323	3,252	15,575	18,243	7,186	25,429	30,712	16,976	47,688

	1966			1976			1986			2001			2026		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
6 — (1)	7,903	658	8,561	10,088	1,722	11,810	12,323	3,252	15,575	18,243	7,186	25,429	30,712	16,976	47,688
15 —	7,269	525	7,794	9,363	1,563	10,926	12,230	3,149	15,379	18,243	7,186	25,429	30,712	16,976	47,688
20 — 39	3,360	268	3,628	4,807	772	5,579	6,994	1,554	8,548	9,830	3,369	13,199	15,510	8,225	23,735
40 — 59	2,336	121	2,457	2,905	445	3,350	3,205	864	4,069	5,826	2,122	7,948	10,966	6,390	17,356

Source: Joint Study Projection

(1) Number of labor force within some specific age groups

Table 2–16–2 ESTIMATED NUMBER OF LABOR FORCE BY SEX AND AGE GROUPS (CASE 2)

(Thousands)

Age	1986			2001			2026		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
6 – 11	0	0	0	0	0	0	0	0	0
12 – 14	93	103	196	0	0	0	0	0	0
15 – 19	991	553	1,544	1,064	1,122	2,186	701	653	1,354
20 – 29	3,601	930	4,531	5,166	2,004	7,170	4,965	2,953	7,918
30 – 39	3,393	624	4,017	4,561	1,327	5,888	5,918	2,753	8,671
40 – 49	1,725	486	2,211	3,659	1,324	4,983	5,942	3,552	9,494
50 – 59	1,480	378	1,858	2,167	798	2,965	4,485	2,521	7,006
60 – 64	501	102	603	564	211	775	1,548	728	2,276
65 –	539	76	615	805	201	1,006	1,604	622	2,226
TOTAL	12,323	3,252	15,575	17,986	6,987	24,973	25,163	13,782	38,945

	Male	Female	Total	Male	Female	Total	Male	Female	Total
6 – (1)	12,323	3,252	15,575	17,986	6,987	24,973	25,163	13,782	38,945
15 –	12,230	3,149	15,379	17,986	6,987	24,973	25,163	13,782	38,945
20 – 39	6,994	1,554	8,548	9,727	3,331	13,058	10,883	5,706	16,589
40 – 59	3,205	864	4,069	5,826	2,122	7,948	10,427	6,073	16,500

Source: Joint Study Projection

(1) Number of labor force within some specific age groups

Table 2–17 AVERAGE ANNUAL GROWTH RATES OF LABOR FORCE

	1966	1976	1986		2001		2026	
			Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
Male	--	2.5	2.0	2.0	2.6	2.6	2.1	1.4
Female	--	10.1	6.6	6.6	5.4	5.2	3.5	2.8
TOTAL	--	3.3	2.8	2.8	3.3	3.2	2.5	1.8
Average Annual Growth Rates of Population	2.4	2.4	2.6	2.3	2.3	1.6	1.6	1.0

Source: CAPMAS and Joint Study Projection

(F) FORECAST OF REQUIRED EMPLOYMENT

2–24 Hitherto, the number of labor force to be supplied in the future was observed.
For the attainment of a sound socio-economic development, the balance of demand and supply of labor force must be analyzed and hereafter, the demand of the labor force, i.e. employment, is surmised.

Since the recent figure of unemployment was not available, the projection was urged to estimate the unemployment rate of 1976 in order to forecast the future employments.
In 1976, the existing labor force was 11.810 thousand according to our estimation in Table 2–16.

The domestic employment according to the preliminary report of the 1976 census was 9,628 thousand. The difference of 2,182 thousand is considered as representative of the domestically unemployed.

However, the workers abroad must be taken into account and they must be substracted from the difference.

In the census, there were 1,572 thousand Egyptians living abroad, including the population in the occupied area.
If we assume, although it is not realistic, that all of them were included in the working population, the total unemployment becomes 610 thousand. On the other hand, if we assume that two-thirds of the population living abroad are included in the working population, the total unemployment becomes 1.182 thousand.
In percentages to the total labor force, they represent 5.2 % in the former assumption and 10.0 % in the latter assumption.
It is probably more realistic to consider that the real unemployment rate in 1976 was somewhere close to 10 % between the range of 5 % to 10 %. (See Table 2–18).

Table 2–18 ESTIMATED UNEMPLOYMENT RATES IN 1976

(1)	Labor force (thousands)		11,810
(2)	Domestic employment (thousands)		9,628
(3)	(1) – (2) (thousands)		2,182
(4)	Population living abroad* (thousands)		1,572
(5)	Number of workers abroad (thousands)	max.	1,572
		med.	1,000
(6)	Unemployment (3) – (5) (thousands)	min.	610
		med.	1,182
(7)	Unemployment rates (6)/(1) (%)	min.	5.2
		med.	10.0

*(4) includes the population in the occupied area of the Sinai.

Source: CAPMAS and Joint Study Projection

2–25 The share of number of persons engaged in agriculture to the total population, began to drop after reaching the peak in 1971, and in 1976 4,224 thousand workers were employed in this sector.

The agricultural sector's capacity to absorb employments seemed to reach a saturation point that even if the arable area is expanded by new land reclamation, it will not be able to increase the employments, and specially if a capital intensive technique in agriculture is expected to be introduced in the future.

Given the above hypothesis, in the forecast of the required employment, we have only considered non-agricultural sector as an unemployment creating sector in the future Egypt, while the agricultural sector maintains the same level as 1976 during the projection period.

Table 2–19 shows the required employment abroad and in domestic labor market, in 1976, 1986, 2001 and 2026.
The numbers indicated between brackets represent the following:

(1) The number of total labor force which was obtained in Table 2–15.

(2) The number of unemployment in 1976 was decided after the assumption that there was approximately 10 % unemployment.
For the period after 1986 until 2026, the unemployment rate was set at 5 %.
If full employment is aimed after 1986, the rate of unemployment should be restricted within 5 %.
The figures in Table 2–18 are considered as the maximum possible unemployment.

(3) This is the result of substracting the number of unemployment from the number of labor force and it represents the number of required employments in primary, secondary and tertiary sectors to pursue a full employment after 1986.

(4) The number of employment in the agricultural sector was 4,224 thousand in 1976 and it is assumed that this level will remain unchanged until 2026 as it was observed before.

(5) This is the result of substracting (4) from (3) and represents the required number of employments in the non-agricultural sector.

(6) It is assumed that in 1976 two-thirds of the population abroad were employed, that is to say one million.
The employment abroad is expected to rise to 1.5 million after 1986 until 2026 as one of the alternatives in this forecast.

(7) This is the result of substracting (6) from (5). The figures represent the number of non-agricultural employment required domestically assuming that the employment abroad will absorb 1.5 million non-agricultural workers.

(8) The figures represent the number of employments in the domestic non-agricultural sector, when the increase of employment continues to rise at the same rate of 3.3 % per annum (as in the last decade).

(9) This is the result of substracting (8) from (5). The implication of these figures is that if the domestic employment fails to increase at a rate higher than 3.3 % per annum, the employments have to be created abroad to pursue the full employment.

(10) If the employment abroad is limited to 1.5 million in the future, the required average annual increase of domestic non-agricultural employment becomes as presented in line number 10.

(11) The average annual increase rate of domestic non-agricultural employment (7) is shown in this line. The failure of increasing the employment in the domestic non-agricultural sector by more than the rates shown in this line, implies that the difference must be employed abroad.
However, the figures in (9) become rather unrealistic and imply the importance of increasing the domestic non-agricultural sector employment as close as possible to the rates of (11).

Table 2–19   REQUIRED EMPLOYMENT, DOMESTIC AND ABROAD

(thousands)

ITEMS	1976	1986 Case 1&2	2001 Case 1	2001 Case 2	2026 Case 1	2026 Case 2
(1) Labor force	11,810	15,575	25,429	24,973	47,688	38,945
(2) Unemployment	1,182	779	1,271	1,249	2,384	1,947
(3) Total employment (1)–(2)	10,628	14,796	24,158	23,724	45,304	36,998
(4) Agricultural sector Employment	4,224	4,224	4,224	4,224	4,224	4,224
(5) Non-Agricultural Sector Employment (3)–(4)	6,404	10,572	19,934	19,500	41,080	32,774
(6) Expected Employment Abroad	1,000	1,500	1,500	1,500	1,500	1,500
(7) Domestic Non-Agricultural Employment (5)–(6)	5,404	9,072	18,434	18,000	39,580	31,274
(8) Expected Domestic Non-Agricultural Employment (Annual Increase of 3.3 %)	5,404	7,513	12,316	12,316	28,068	28,068
(9) Required Employment Abroad (5)–(8)	1,000	3,059	7,618	7,184	13,012	4,706
	1966–76	1976–86	1986 – 2001		2001 – 2026	
(10) Average Annual Increase of (7)	152	367	624	595	846	531
(11) Average Annual Increase Rate of (7) (%)	3.3	5.3	4.8	4.7	3.1	2.2

Source: Joint Study Projection

Annex 1–1 ESTIMATED LIFE TABLE FOR 1965

a – Males;

x	1000_{qx}	l_x	d_x	L_x	P_x	T_x	$e°_x$
					0.8150		
0 –	148.57	100000	14857	88857	} 0.9113	4778121	47.78
1 –	122.55	85143	10434	318661	}	4689264	55.07
5 –	11.43	74709	854	371410	0.9892	4370603	58.50
10 –	10.09	73855	745	367413	0.9894	3999193	54.14
15 –	11.03	73110	806	363535	0.9871	3631780	49.67
20 –	14.74	72304	1066	358855	0.9838	3268245	45.20
25 –	17.59	71238	1253	353058	0.9806	2909390	40.84
30 –	21.07	69985	1475	346238	0.9758	2556332	36.52
35 –	27.22	68510	1865	337888	0.9682	2210094	32.25
40 –	36.47	66645	2431	327148	0.9561	1872206	28.09
45 –	51.48	64214	3306	312805	0.9374	1545058	24.06
50 –	74.28	60908	4524	293230	0.9107	1232253	20.23
55 –	105.47	56384	5947	267053	0.8743	939023	16.65
60 –	148.23	50437	7476	233495	0.8234	671970	13.32
65 –	209.73	42961	9010	192280	0.7466	438475	10.20
70 –	308.45	33951	10472	143575	0.4168	246195	7.25
75 +	1000.00	23479	23479	102620		102620	4.37

b – Females:

x	1000_{qx}	l_x	d_x	L_x	P_x	T_x	$e°_x$
					0.8177		
0 –	136.11	100000	13611	89792	} 0.8978	5120708	51.21
1 –	145.84	86389	12599	319098	}	5030916	58.23
5 –	9.95	73790	734	367115	0.9912	4711818	63.85
10 –	7.62	73056	557	363888	0.9916	4344703	59.47
15 –	9.00	72499	652	360865	0.9909	3980815	54.90
20 –	9.10	71847	654	357600	0.9900	3619950	50.38
25 –	10.84	71193	772	354035	0.9874	3262350	45.82
30 –	14.29	70421	1006	349590	0.9843	2908315	41.29
35 –	17.10	69415	1187	344108	0.9820	2558725	36.86
40 –	18.77	68228	1281	337938	0.9789	2214617	32.45
45 –	23.42	66947	1568	330815	0.9703	1876679	28.03
50 –	36.13	65379	2362	320990	0.9552	1545864	23.64
55 –	53.62	63017	3379	306638	0.9317	1224874	19.43
60 –	83.64	59638	4988	285720	0.8921	918236	15.39
65 –	134.37	54650	7343	254893	0.8240	632516	11.57
70 –	223.99	47307	10596	210045	0.4437	377623	7.98
75 +	1000.00	36711	36711	167578		167578	4.56

Source: CAPMAS

Annex 1–2 PER CAPITA INCOME AND BIRTH RATES IN SOME SELECTED COUNTRIES

Country	Year	P.C. Income (1)* Current price US$	P.C. Income* (1970 price US$)	Birth rate (2) (per thousand)	GDP index (2) (Const. Price 1970 = 100)	Population Index (2) 1970 = 100)	Remarks
West Germany	(1960)	1,210	1,939	17.8	62	88	
	(1970)	2,752	2,752	13.4	100	100	
	(1974)	5,461	3,022	10.1	112	102	
	(1975)	–	–	9.7	–	102	
Greece	(1960)	407	551	18.9	48	95	
	(1970)	1,090	1,090	16.5	100	100	
	(1974)	2,061	1,280	16.1	121	103	
Italy	(1960)	637	999	18.3	58	92	
	(1970)	1,585	1,585	16.8	100	100	
	(1974)	2,441	1,753	15.7	115	104	
	(1975)	–	–	14.8	–	105	
Japan	(1960)	417	662	17.2	36	89	
	(1970)	1,636	1,636	18.8	100	100	
	(1974)	3,562	1,960	18.6	127	106	
	(1975)	–	–	–	–	107	
Malaysia	(1960)	278	333	40.9	60	78	The GDP index is calculated as GDP
	(1970)	433	433	33.8	100	100	deflator 1960 = 95
	(1973)	690	512	31.9	130	110	1973 = 120 (1970 = 100)
The Netherlands	(1960)	880	1,514	20.8	59	87	
	(1970)	2,232	2,232	18.3	100	100	
	(1974)	4,694	2,487	13.7	117	105	
	(1975)	–	–	13.0	–	106	
Mexico	(1960)	313	430	46.0	51	75	
	(1970)	632	632	42.1	100	100	
The Philippines	(1960)	151	133	29.6	59	75	
	(1970)	169	169	26.2	100	100	
	(1973)	233	197	24.1	127	109	
Spain	(1960)	317	531	21.8	48	89	
	(1970)	985	985	19.5	100	100	
	(1974)	2,234	1,222	19.6	129	104	
Thailand	(1960)	93	100	34.7	46	77	
	(1970)	167	167	33.3	100	100	
Egypt	(1960)	90	127	43.1	71	78	Assuming that the GDP index 1963
	(1970)	140	140	37.6	100	100	= 85 and that the growth rate in '60
	(1973)	165	147	38.1	112	107	– '63 is 6.1 % ('61 – '66 average),
	(1975)	218	159	39.4	127	112	the GDP index in 1960 becomes 71

Sources: (1) UN Yearbook of National Accounts Statistics 1975.
(2) UN Demographic Yearbook 1975, Monthly Bulletin of Statistics supplemented with CAPMAS data for Egypt.

Notes: GDP index in Egypt is made from the "National Accounts Statistics" of the Ministry of Planning. Parallel Market Rate (LE 1 = US$ 1.7 before February 1976) is used for the exchange rate.

* P.C. Income = Per Capita Income

Annex 1-3-1   ESTIMATED EGYPTIAN POPULATION BY SEX AND FIVE YEAR AGE GROUPS

(Thousands)

Year		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-	TOTAL
1966	Male	2,551	2,022	2,048	1,588	1,037	871	929	870	777	667	504	440	368	222	282	15,176
	Female	2,407	1,853	1,867	1,447	1,134	1,013	1,000	905	757	631	490	430	418	201	347	14,900
	TOTAL	4,958	3,875	3,915	3,035	2,171	1,884	1,929	1,775	1,534	1,298	994	870	786	423	629	30,076
1971	Male	2,701	2,341	2,002	2,028	1,568	1,021	855	908	843	744	627	461	386	304	287	17,076
	Female	2,551	2,179	1,838	1,852	1,435	1,123	1,001	985	889	742	613	469	401	374	325	16,777
	TOTAL	5,252	4,520	3,840	3,880	3,003	2,144	1,856	1,893	1,732	1,486	1,240	930	787	678	612	33,853
1976	Male	3,002	2,514	2,320	1,984	2,005	1,546	1,004	837	883	810	703	577	408	322	359	19,274
	Female	2,838	2,348	2,164	1,825	1,838	1,422	1,111	987	970	872	722	588	439	361	469	18,954
	TOTAL	5,840	4,862	4,484	3,809	3,843	2,968	2,115	1,824	1,853	1,682	1,425	1,615	847	683	828	38,228

Source: Joint Study Projection

(Thousands)

Annex 1-3-2 ESTIMATED EGYPTIAN POPULATION BY SEX AND FIVE YEAR AGE GROUPS

(CASE 1)

Year		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-	TOTAL
1981	Male	3,546	2,833	2,495	2,302	1,963	1,980	1,523	985	816	852	769	651	515	343	415	21,988
	Female	3,349	2,656	2,334	2,151	1,813	1,824	1,408	1,098	973	953	850	694	553	397	543	21,596
	TOTAL	6,895	5,489	4,829	4,453	3,776	3,804	2,931	2,083	1,789	1,805	1,619	1,345	1,068	740	958	43,584
1986	Male	3,753	3,392	2,815	2,478	2,280	1,941	1,954	1,498	963	790	813	717	585	437	469	24,885
	Female	3,547	3,185	2,643	2,323	2,139	1,801	1,809	1,393	1,084	957	930	819	655	503	628	24,416
	TOTAL	7,300	6,577	5,458	4,801	4,419	3,742	3,763	2,891	2,047	1,747	1,743	1,536	1,240	940	1,097	49,301
1991	Male	3,972	3,639	3,376	2,799	2,457	2,258	1,919	1,926	1,468	936	758	763	650	500	582	28,003
	Female	3,754	3,427	3,173	2,633	2,312	2,127	1,788	1,793	1,377	1,068	936	899	776	599	784	27,446
	TOTAL	7,726	7,066	6,549	5,432	4,769	4,385	3,707	3,719	2,845	2,004	1,694	1,662	1,426	1,099	1,366	55,449
1996	Male	4,183	3,902	3,626	3,361	2,778	2,436	2,236	1,895	1,893	1,431	903	761	697	560	705	31,322
	Female	3,955	3,685	3,418	3,165	2,623	2,301	2,115	1,775	1,775	1,358	1,046	907	855	713	979	30,670
	TOTAL	8,138	7,587	7,044	6,526	5,401	4,737	4,351	3,670	3,668	2,789	1,949	1,623	1,552	1,273	1,684	61,992
2001	Male	4,394	4,164	3,893	3,614	3,339	2,759	2,417	2,213	1,868	1,854	1,387	859	659	606	837	34,863
	Female	4,154	3,942	3,680	3,413	3,156	2,613	2,290	2,103	1,760	1,753	1,332	1,016	866	790	1,223	34,091
	TOTAL	8,548	8,106	7,573	7,027	6,495	5,372	4,707	4,316	3,628	3,607	2,719	1,875	1,525	1,396	2,060	68,954

Annex 1-3-3   ESTIMATED EGYPTIAN POPULATION BY SEX AND FIVE YEAR AGE GROUPS

(CASE 1 Cont.)

(Thousands)

Year		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-	TOTAL
2006	Male	4,599	4,374	4,155	3,880	3,591	3,316	2,737	2,392	2,181	1,829	1,797	1,320	790	573	947	38,481
	Female	4,347	4,140	3,936	3,674	3,404	3,144	2,601	2,276	2,085	1,738	1,720	1,294	970	800	1,440	37,569
	TOTAL	8,946	8,514	8,091	7,554	6,995	6,460	5,338	4,668	4,266	3,567	3,517	2,614	1,760	1,373	2,387	76,050
2011	Male	4,762	4,578	4,364	4,141	3,855	3,566	3,290	2,709	2,357	2,136	1,773	1,710	1,215	687	982	42,125
	Female	4,502	4,333	4,134	3,930	3,664	3,391	3,130	2,586	2,257	2,059	1,705	1,670	1,236	896	1,582	41,074
	TOTAL	9,264	8,911	8,498	8,071	7,519	6,957	6,420	5,295	4,614	4,195	3,478	3,380	2,450	1,583	2,564	83,199
2016	Male	4,719	4,741	4,568	4,349	4,114	3,828	3,538	3,256	2,670	2,308	2,070	1,687	1,574	1,056	1,092	45,570
	Female	4,461	4,487	4,327	4,127	3,919	3,650	3,375	3,112	2,564	2,229	2,020	1,656	1,594	1,141	1,753	44,415
	TOTAL	9,180	9,228	8,895	8,476	8,033	7,478	6,913	6,368	5,234	4,537	4,090	3,343	3,168	2,197	2,845	89,985
2021	Male	4,773	4,698	4,731	4,552	4,321	4,085	3,798	3,502	3,209	2,614	2,237	1,970	1,552	1,368	1,446	48,856
	Female	4,521	4,446	4,481	4,320	4,116	3,904	3,635	3,355	3,086	2,532	2,187	1,962	1,580	1,473	2,072	47,668
	TOTAL	9,294	9,144	9,212	8,872	8,437	7,989	7,431	6,857	6,295	5,146	4,424	3,932	3,132	2,841	3,518	96,524
2026	Male	4,521	4,752	4,688	4,715	4,523	4,291	4,053	3,759	3,451	3,142	2,533	2,129	1,813	1,349	1,891	51,610
	Female	4,274	4,506	4,440	4,474	4,308	4,101	3,886	3,612	3,327	3,047	2,484	2,124	1,872	1,460	2,556	50,471
	TOTAL	8,795	9,258	9,128	9,189	8,831	8,392	7,939	7,371	6,778	6,189	5,017	4,253	3,685	2,809	4,447	102,081

Annex 1-3-4   ESTIMATED EGYPTIAN POPULATION BY SEX AND FIVE YEAR AGE GROUPS

(CASE 2)

(Thousands)

Year		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-	TOTAL
1981	Male	3,422	2,833	2,495	2,302	1,963	1,980	1,523	985	816	582	769	651	515	343	415	21,864
	Female	3,234	2,656	2,334	2,151	1,813	1,824	1,408	1,098	973	953	850	694	553	397	543	21,481
	TOTAL	6,656	5,489	4,829	4,453	3,776	3,804	2,931	2,083	1,789	1,805	1,619	1,345	1,068	740	958	43,345
1986	Male	3,278	3,273	2,815	2,478	2,280	1,941	1,954	1,498	963	790	813	717	585	437	469	24,291
	Female	3,099	3,076	2,643	2,323	2,139	1,801	1,809	1,393	1,084	957	930	819	655	503	628	23,859
	TOTAL	6,377	6,349	5,458	4,801	4,419	3,742	3,763	2,891	2,047	1,747	1,743	1,536	1,240	940	1,097	48,150
1991	Male	3,185	3,178	3,257	2,799	2,457	2,258	1,919	1,926	1,468	936	758	763	650	500	582	26,636
	Female	3,011	2,995	3,065	2,633	2,312	2,127	1,788	1,793	1,377	1,068	936	899	776	599	784	26,163
	TOTAL	6,196	6,173	6,322	5,432	4,769	4,385	3,707	3,719	2,845	2,004	1,694	1,662	1,426	1,099	1,366	52,799
1996	Male	3,070	3,129	3,167	3,242	2,778	2,456	2,236	1,895	1,893	1,431	903	716	697	560	705	28,858
	Female	2,902	2,955	2,988	3,057	2,623	2,301	2,115	1,775	1,775	1,358	1,046	907	855	713	979	28,349
	TOTAL	5,972	6,084	6,155	6,299	5,401	4,737	4,351	3,670	3,668	2,789	1,949	1,623	1,552	1,273	1,684	57,207
2001	Male	2,921	3,056	3,122	3,156	3,221	2,759	2,417	2,213	1,868	1,854	1,387	859	659	606	837	30,935
	Female	2,761	2,892	2,951	2,983	3,049	2,613	2,290	2,103	1,760	1,753	1,332	1,016	866	790	1,223	30,382
	TOTAL	5,682	5,948	6,073	6,139	6,270	5,372	4,707	4,316	3,628	3,607	2,719	1,875	1,525	1,396	2,060	61,317

Annex 1—3—5 ESTIMATED EGYPTIAN POPULATION BY SEX AND AGE GROUPS

(CASE 2 Cont.)

(Thousands)

Year		0—4	5—9	10—14	15—19	20—24	25—29	30—34	35—39	40—44	45—49	50—54	55—59	60—64	65—69	70—	TOTAL
2006	Male	2,810	2,908	3,049	3,111	3,136	3,198	2,737	2,392	2,181	1,829	1,797	1,320	790	573	947	32,778
	Female	2,656	2,752	2,888	2,946	2,975	3,038	2,601	2,276	2,085	1,738	1,720	1,294	970	800	1,440	32,179
	TOTAL	5,466	5,660	5,937	6,057	6,111	6,236	5,338	4,668	4,266	3,567	3,517	2,614	1,760	1,373	2,387	64,957
2011	Male	3,077	2,797	2,902	3,039	3,091	3,114	3,173	2,709	2,357	2,136	1,773	1,710	1,215	687	982	34,762
	Female	2,909	2,647	2,748	2,883	2,938	2,964	3,024	2,586	2,257	2,059	1,705	1,670	1,235	896	1,582	34,103
	TOTAL	5,986	5,444	5,650	5,922	6,029	6,078	6,197	5,295	4,614	4,195	3,478	3,380	2,450	1,583	2,564	68,865
2016	Male	3,134	3,063	2,791	2,892	3,020	3,069	3,090	3,141	2,670	2,308	2,070	1,687	1,574	1,056	1,092	36,657
	Female	2,963	2,899	2,643	2,744	2,875	2,927	2,950	3,006	2,564	2,229	2,020	1,656	1,594	1,141	1,753	35,964
	TOTAL	6,097	5,962	5,434	5,636	5,895	5,996	6,040	6,147	5,234	4,537	4,090	3,343	3,168	2,197	2,845	72,621
2021	Male	3,101	3,120	3,056	2,782	2,873	2,999	3,045	3,058	3,095	2,614	2,237	1,970	1,552	1,368	1,446	38,316
	Female	2,932	2,953	2,895	2,639	2,737	2,864	2,914	2,933	2,981	2,532	2,187	1,962	1,580	1,473	2,072	37,654
	TOTAL	6,033	6,073	5,951	5,421	5,610	5,863	5,959	5,991	6,076	5,146	4,424	3,932	3,132	2,841	3,518	75,970
2026	Male	2,910	3,087	3,113	3,046	2,764	2,853	2,976	3,014	3,014	3,031	2,533	2,129	1,813	1,349	1,891	39,523
	Female	2,751	2,922	2,949	2,890	2,632	2,727	2,851	2,897	2,908	2,944	2,484	2,124	1,872	1,460	2,556	38,967
	TOTAL	5,661	6,009	6,062	5,936	5,396	5,580	5,827	5,911	5,922	5,975	5,017	4,253	3,685	2,809	4,447	78,490

Annex 2–1 ENROLLMENT RATIOS IN DIFFERENT STAGES OF
EDUCATION IN SOME SELECTED COUNTRIES

Countries	Years	Primary Enrollment Ratio (%)	Secondary Enrollment Ratio (%) (2)	Higher Enrollment Ratio (%)
Greece	(1971)	95	58	11
Spain	(1970)	91	29	6
Japan	(1973)	99	94	38 (3)
U.K.	(1972)	99	63	11
Egypt	(1974)	73	42	17
Iran	(1973)	77	24	4
Jordan	(1973)	91 (1)	50 (1)	4
Korea	(1973)	97	46	6
Malaysia	(1975)	96	44	3
Turkey	(1972)	105 (1)	22 (1)	5

Source: UNESCO STATISTICAL YEARBOOK and Joint Study Projection

Note: (1) Includes the overaged students

(2) Education given to the 12–17 age group.
Includes both the preparatory and secondary stages in the case of Egypt.

(3) Figure in 1975.

Annex 2–2 LABOR FORCE PARTICIPATION RATIOS BY SEX AND AGE GROUPS
IN SOME SELECTED COUNTRIES (%)

Age	Mexico (1970)		Korea (1970)		Turkey (1975)		West Malaysia (1970)		The Philippines (1970)		Italy (1971)		Japan (1975)	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
− 15	2.2	0.9	1.1	1.1	7.1	7.2	2.5	2.2	5.7	3.6	0.7	0.5	0	0
15 − 19	49.9	20.9	45.9	40.3	59.4	46.7	52.3	32.7	52.4	31.5	52.0	36.7	23.0	22.6
20 − 24	79.6	24.1	50.3	43.9	80.2	46.0	86.9	41.7	76.0	34.4	79.8	44.7	79.0	66.6
25 − 29	90.6	17.4	85.7	31.7	91.4	44.5	93.4	38.2	87.6	35.7	93.7	36.2	97.7	43.5
30 − 44	93.8	15.9	96.0	41.6	92.9	46.7	93.9	39.4	90.5	37.9	96.0	30.5	98.7	51.3
45 − 49	93.9	16.4	95.2	48.5	92.1	48.2	91.4	40.5	89.7	38.7	92.1	29.7	98.2	62.2
50 − 54	92.3	15.9	91.9	45.2	88.6	48.9	86.6	36.4	87.1	36.5	87.2	26.3	97.5	58.6
55 − 59	90.6	15.1	85.4	39.1	82.5	46.3	75.4	29.0	85.8	33.3	75.0	16.9	94.9	50.7
60 − 64	86.1	14.1	67.9	26.9	76.8	40.7	65.0	23.5	79.3	28.6	46.0	9.9	85.4	38.9
65 −	70.4	10.9	35.1	10.6	64.9	27.9	45.7	12.8	56.5	17.7	13.4	3.2	49.5	15.5
TOTAL	43.6	10.2	42.8	23.2	51.1	29.8	44.2	20.9	46.0	21.3	54.3	19.6	62.3	35.2

Source: Year Book of Labour Statistics (1977) ILO.

Annex 3-1 SIZE OF HOUSEHOLD AND BIRTH RATE
IN JAPAN (1940 – 1975)

Years	Size of Household	Birth Rates
1940	5.10	29.4
1945	4.92	34.3 (1)
1950	5.02	28.1
1955	4.97	19.4
1960	4.76	17.2
1965	4.08	18.6
1970	3.69	18.8
1975	3.48	17.1

Source: Government Bureau of Statistics (Japan) and Ministry
          of Health (Japan)

Note: (1) Figure in 1947

Annex 3-2 ESTIMATED SIZE AND NUMBER OF HOUSEHOLDS AND REQUIRED NUMBER OF HOUSING UNITS

(thousands)

	1966	1976	1986 Case 1	1986 Case 2	2001 Case 1	2001 Case 2	2026 Case 1	2026 Case 2
Households (thousands)	5,706	6,986	9,096	9,049	13,391	13,182	23,829	21,854
Average Size of Households	5.3	5.2	5.2	5.1	5.0	4.5	4.2	3.5
Required Housing Units (thousands)	5,822	6,117	9,278	9,227	13,793	13,577	24,132	22,510

	1966 — 1976	1976 — 1986 Case 1	1976 — 1986 Case 2	1986 — 2001 Case 1	1986 — 2001 Case 2	2001 — 2026 Case 1	2001 — 2026 Case 2
Increase of Households	1,280	2,110	2,063	4,295	4,133	10,438	8,672
Increase of Housing Units	295	3,161	3,110	4,515	4,350	10,339	8,933
Number of Replacements	557	1,119	1,119	2,426	2,412	5,469	5,384
Required Construction of Housing Units	852	4,280	4,229	6,941	6,762	15,808	14,317
Average Annual Construction of Housing Units	85	428	423	463	451	632	573

Annex 3-3 REQUIRED HOUSING INVESTMENT FOR THE NEXT TWENTY FIVE YEARS

	1976 — 1986 Case 1	1976 — 1986 Case 2	1986 — 2001 Case 1	1986 — 2001 Case 2
Required Housing Construction (thousands units)	4,280	4,229	6,941	6,762
Required Housing Investment (ΣIh) (billion LE., 1976 price)	10.7	10.6	17.4	16.9
Accumulated GDP (ΣGDP) (billion LE.)	83.3	105.1	316.7	697.8
(1) Percentage of Required Housing Investment to Accumulated ($\Sigma Ih / \Sigma GDP$) (%)	12.9	10.1	5.5	2.4
(2) Percentage of Required Housing Investment to Total Fixed Investment ($\Sigma Ih / \Sigma I$) (%)	42.8	33.5	18.3	8.1

Source: Joint Study Projection

Note: (1) The percentages become 7.0 % in Case 1 and 3.4 % in Case 2 when it is calculated over the 1976 — 2001 period.
(2) Fixed investment to total GDP is assumed at 30 %.

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